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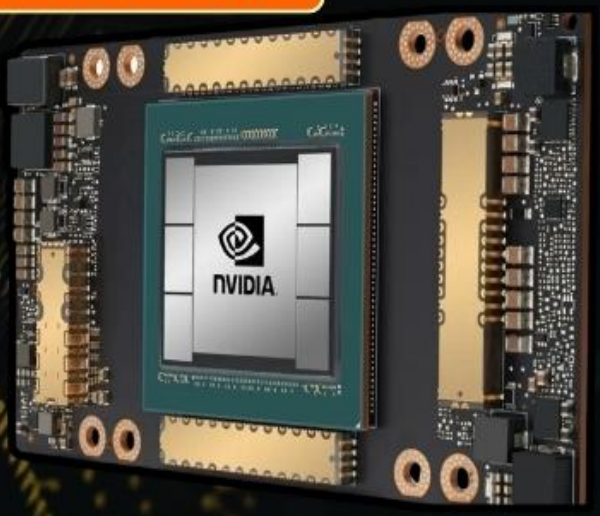

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Contents

PRELIMS

POLITY & GOVERNANCE

PRIVILEGES COMMITTEE & ETHICS COMMITTEE

Context:

- Nearly two years into the tenure of the Lok Sabha, two of its key oversight bodies, the Privileges Committee and the Ethics Committee, are yet to be constituted.

About Privileges Committee:

- **Nature:** The Privileges Committee is a **specialized standing committee of the legislature** (Parliament) that acts as a quasi-judicial body.
- **Mandate:** It is tasked with **safeguarding the privileges—special rights and immunities—of the House and its members** to ensure they can function without outside interference or fear.
- **Origin:** The concept is rooted in **British Parliamentary conventions.** Historically, these privileges were developed in medieval England to protect the House of Commons from the absolute power of the Monarch.
- **Constitutional provision: Article 105 defines the powers, privileges, and immunities** of the Parliament (Lok Sabha and Rajya Sabha) and its members.
- **Members:** It has **15 members from Lok Sabha** nominated by the Speaker and **10 members from Rajya Sabha** nominated by the Chairman.
- **Key functions:**
    - **Examination: Investigates every question of breach of privilege** referred to it by the House or the Presiding Officer.
    - **Evidence Collection:** Has the power to **summon individuals** (both members and outsiders), record statements, and demand relevant documents.
    - **Determination:** Evaluates the facts to **decide if a breach of privilege or contempt has occurred.**
    - **Recommendation: Submits a report to the House** recommending a specific course of action, which may include admonition (reprimand), imprisonment, suspension (expulsion) or unconditional apology.
- **Significance:** It ensures that **lawmakers can speak and vote freely without being sued for defamation in court** for their actions inside the House. It also acts as a deterrent against libels or physical obstructions that might hinder the democratic process.
- **SC Judgement:** A recent Supreme Court ruling **(Sita Soren vs. Union of India, 2024)** stated that these privileges do not shield legislators from bribery charges related to their votes or speeches.

About Ethics Committee:

- **Genesis:** The idea was first proposed at the **Presiding Officers Conference in 1996.**
- **Evolution:** It was established **in Rajya Sabha earlier on March 4, 1997,** by the then Chairman, K.R. Narayanan. It was first constituted as an ad hoc committee **in Lok Sabha in 2000** under Speaker G.M.C. Balayogi and became a permanent standing committee only in 2015.
- **Composition:** It consists of **15 members in Lok Sabha**, nominated by the Speaker. And, it consists of **10 members in Rajya Sabha**, nominated by the Chairman.
- **Key functions:**
    - **Oversight: Supervizes the moral and ethical conduct** of Members of Parliament (MPs).

- **Code of Conduct:** Tasked with developing and **refining a Code of Conduct** for members.
- **Examination:** Investigates cases of **unethical conduct referred to it** by the Presiding Officer or taken up suo motu.
- **Limitations:** It **cannot take up matters that are sub-judice** (under judicial consideration).

- **Complaint procedure:**
  - **Filing: Any person can file a complaint against an MP**, but it must be forwarded by another Lok Sabha MP.
  - **Requirement:** Complaints from the public **must be accompanied by evidence and an affidavit** stating the complaint is not "false, frivolous, or vexatious".
  - **Inquiry:** The committee conducts a **prima facie inquiry** before starting a full examination
- **Cash-for-Query Case (2023):** The committee made headlines when it **investigated allegations against an MP for accepting bribes to ask questions,** leading to a recommendation for expulsion.

KERALA AS KERALAM

Context:

- The Union Cabinet recently approved a proposal to alter the name of Kerala to “Keralam,” setting in motion the constitutional process required for the change.

About Kerala as Keralam:

- **Constitutional provisions: Article 3** of the Constitution empowers Parliament to form new states or alter areas, boundaries, or names of existing states. It will also amend the **First Schedule** of the Constitution, which contains the list and names of states and Union Territories.
- **Presidential recommendation:** A bill for renaming a state can only be introduced in either House of Parliament with the **prior recommendation of the President.**
- **State referral:** Before recommending the bill, the **President must refer it to the concerned State Legislature** for its views.
- **Non-binding views:** The **State Legislature must express its views** within a specified timeframe. However, these views are **not binding** on the President or the Parliament; they can proceed even if the state disagrees.

- **Simple majority:** The bill requires only a simple majority (50%+1 of members present and voting) **in both the Lok Sabha and Rajya Sabha** to be passed.
- **No Amendment under Article 368:** Under **Article 4,** such laws are **not deemed to be constitutional amendments** requiring a special majority, even though they result in changes to the First Schedule.
- **Process for renaming Kerala as Keralam:**
  - **State Legislature Resolution: Kerala Assembly** passed resolutions requesting the name change.
  - **Examination by Union Government: Ministry of Home Affairs** scrutinizes the proposal and consults relevant ministries/agencies.
  - **Union Cabinet Approval:** Cabinet clears the proposal **for legislative action.**
  - **President’s reference**: President refers the Bill **to the Legislature of Kerala** for its opinion (Article 3 proviso).
  - **Parliamentary Approval:** Bill introduced in Parliament after Presidential recommendation and **passed by both Houses.**

- **Notification & Amendment: First Schedule amended;** new name comes into legal effect.

- **Reasons for the change:**
  - The state is called **"Keralam" in Malayalam**, while the Constitution records it as "Kerala."
  - The demand reflects **linguistic identity** and the legacy of the **Aikya Kerala movement,** which sought unification of Malayalam-speaking regions.
  - The Assembly argued that **states formed on linguistic lines (1956)** should reflect native linguistic nomenclature.
- **Historical precedents:**
  - **1969: Madras** State became **Tamil Nadu.**
  - **2007: Uttaranchal** was renamed **as Uttarakhand.**
  - **2011: Orissa became Odisha** (and Oriya became Odia) via the Orissa (Alteration of Name) Act.

E- RAILWAY CLAIMS TRIBUNAL SYSTEM

Context:

- Recently, the Union Minister for Railways launched the e- Railway Claims Tribunal system as reform under Indian Railways' flagship "52 Reforms in 52 Weeks" initiative.

About E- Railway Claims Tribunal System:

- **Nature:** It enables the end-to-end computerisation and **digitisation of the Railway Claims Tribunal.**
- **Objective:** It will transform the **filing, processing and adjudication of claims** by making the process faster, more transparent and accessible from anywhere in the country.
- **Jurisdictional Ease:** Claimants can file cases **electronically from anywhere**, solving the common problem of determining which specific bench has jurisdiction **after a cross-state accident.**

- **Hybrid Hearings:** The system supports hybrid mode hearings **(both physical and virtual), aligning with Supreme Court guidelines** to reduce the need for physical travel.
- **Paperless Courts**: It integrates **all 23 benches of the Railway Claims Tribunal (RCT)** onto a single digital platform to eliminate physical paperwork.
- **AI Integration**: The platform is AI-enabled, designed **to automate litigation processes** and improve data-driven decision-making.
- **Three components:** The platform comprises three core components
  - **E-Filing:** It helps in **24x7 online filing of claims and legal documents** from any location and uploading of petitions, affidavits, annexures and supporting records.
  - **Case Information System (CIS):** It is a **centralized database of all cases for auto-allocation,** case registration and real-time tracking from filing to final to final disposal.
  - **Document Management System (DMS):** It is the **digital storage of pleadings, notices, summons, orders** and judgements along with digitally signed records

About Railway Claims Tribunal:

- **Legal Basis:** It is a **quasi-judicial body** constituted under the **Railway Claims Tribunal Act, 1987.**

- **Jurisdiction:** It adjudicates claims for compensation related to:
  - **Death or injury** in railway accidents and "untoward incidents".
  - **Loss, damage, or non-delivery of goods** and animals.
  - **Refund of fares** or freight.
- **Structure:** It is headquartered at the **Principal Bench in Delhi** with 23 benches across 21 cities.
- **Composition:** Each bench comprising **a Judicial Member and a Technical Member.**

FOOD SAFETY AND STANDARDS AUTHORITY OF INDIA

Context :

- Supreme Court asked FSSAI to consider introducing mandatory front-of-package warning labels (FOPL) on packaged food products high in sugar, salt and saturated fat.

About Food Safety and Standards Authority of India (FSSAI):

- **Nature:** It is an **autonomous statutory body** established under the **Food Safety and Standards Act, 2006.**
- **Nodal ministry:** It was established under the **Ministry of Health and Family Welfare,** Government of India.
- **Objective:** It aims to **consolidate various food laws** (like the Prevention of Food Adulteration Act, 1954) into a single reference point for food safety and standards.
- **Composition:** It consists of a **chairperson (appointed by the Central Government)** and 22 members, of which one-third must be women.
- **Mandate:** It is responsible for **setting food standards, regulating the manufacture, storage, distribution, sale, and import of food,** and ensuring the availability of safe and wholesome food for human consumption.
- **Standards Development:** It formulates standards **for various food products**, ensuring they are safe for consumption.
- **Food Safety Management Systems:** It provides **guidelines for businesses** to implement effective food safety management practices.
- **Licensing and Registration:** It manages the licensing process for **food businesses,** ensuring they **comply with food safety regulations.**
- **Surveillance and Monitoring:** Regular **inspections and audits** are conducted by FSSAI to assess compliance with food safety standards.
- **Consumer Awareness:** Initiatives to **educate the public about food safety, hygiene, and nutrition** are a key focus area.
- **Accreditation:** FSSAI directly monitors compliance of food regulations and it is also **responsible for the accreditation of food testing laboratories** throughout India.
- **Labs:** It has notified **14 referral labs, 72 State/UT labs across India**, and 112 NABL approved commercial labs, all of which are situated throughout the country.

- **Key Initiatives:** These include the **Eat Right India movement** promoting healthy food choices, the **State Food Safety Index (SFSI)** evaluating state performance on food safety, and **Food Safety on Wheels (FSW)** providing mobile testing and awareness.

NATIONAL COMMISSION FOR SCHEDULED TRIBES

Context:

- Recently, the 23rd Foundation Day of the National Commission for Scheduled Tribes (NCST) was celebrated in New Delhi.

About National Commission for Scheduled Tribes (NCST):

- **Nature:** It is a **constitutional body** established to safeguard the rights and interests of India's tribal population.
- **Establishment:** It was established by amending Article 338 and inserting a **new Article 338A by the 89th Constitutional Amendment Act, 2003.**
- **Separation:** It was bifurcated from the erstwhile combined **National Commission for Scheduled Castes and Scheduled Tribes on 19 February 2004.**
- **Mandate:** It aims to investigate and **monitor all matters relating to safeguards provided for STs** under the Constitution or any other law.
- **Headquarters:** Its headquarters is located in **New Delhi.**
- **Structure:** It includes a **Chairperson, Vice-Chairperson, and three members** appointed by the President for 3-year terms. The Chairperson holds Cabinet Minister status, with the Vice-Chairperson as Minister of State and members as Secretaries
- **Key functions:**
    - To **monitor safeguards provided for STs** under the Constitution or under other laws;
    - To **inquire into specific complaints** relating to Rights & Safeguards of STs;
    - To **advise in the Planning Process** relating to Socio-economic development of STs;
    - To **submit report to the President annually** and other times on welfare Measures required related to Socio-economic development of STs;
    - To discharge such **other functions** in relation to STs **as the President may by rule specify.**

OPEN ACREAGE LICENSING POLICY (OALP)

Context:

- Oil India undertook a seismic study of the blocks it was awarded during the ninth round of the Open Acreage Licensing Policy to chart a bidding strategy for the tenth round.

About Open Acreage Licensing Policy (OALP):

- **Launch:** It was introduced by the Government of India (GoI) as a **part of the Hydrocarbon Exploration and Licensing Policy (HELP)** on March 30, 2016. **HELP replaced the New Exploration and Licensing Policy (NELP) regime**, which was in existence for over 18 years.
- **Nature:** OALP is a major **reform that changed how companies can apply for oil & gas exploration blocks in India**. Under the OALP, the company has the option to undertake prospecting for fuels in areas which are not notified by the GoI.

- **Difference from previous system: Until the OALP** was introduced, exploration for hydrocarbons was **allowed only in the case of areas covered by the tenders** issued by the Government of India (GoI).
- **Process:**
    - The OALP gives a company the opportunity to **prospect for fuels** in any area where the technical feasibility study indicates the presence of hydrocarbons.
    - Once the feasibility study shows the presence of hydrocarbons, the company can **proceed with the exploration after obtaining permission** from the Directorate General of Hydrocarbons (DGH).
    - If multiple requests for sanction are received for the same area, the DGH will make an **allotment by conducting an auction.**

- **National Data Repository (NDR):** The OALP regime also **allows companies access to seismic data at the National Data Repository (NDR).** A crucial pillar of OALP, the NDR is a centralized online database providing geological and seismic data, allowing investors to make informed decisions before bidding.
- **Significance:**
    - **Quick exploration:** Under the OALP the exploration can be made without waiting for an announcement from the GoI that an area is available for exploration.
    - **Ease of doing business:** By removing "red-tapism" and administrative discretion, it aims to attract global energy giants.
    - **Energy security:** The policy supports India's goal of reducing crude oil import dependency (historically targeted at a 10% reduction) by boosting domestic production.

EMPLOYEES' STATE INSURANCE CORPORATION

Context:

- Recently, the Employees' State Insurance Corporation (ESIC) commenced the celebration of its 75th Year of Service at Bharat Mandapam, New Delhi.

About Employees' State Insurance Corporation (ESIC):

- **Nature:** It is a **statutory body** formed under the **ESI Act 1948.**
- **Nodal ministry:** It is functioning under the aegis of **Ministry of Labour and Employment,** Government of India.
- **Mandate:** It provides various **social security benefits** like Medical Benefit, Monetary benefits **to the workmen and their family** working in the private and public sector.
- **Genesis:** The first document on social insurance was **"Report on Health Insurance"** submitted to the Tripartite Labour Conference, headed by **Prof. B.P. Adarkar** who was acknowledged as Chhota Beveridge. In 1948 **Dr. C.L.Katial** took over as the 1st Director General of ESIC.
- **Inauguration:** The ESI scheme was inaugurated **in Kanpur** on 24th February 1952 (ESIC Day) **by then Prime Minister Pandit Jawahar Lal Nehru.**
- **Composition:** The **Union Minister of Labour heads the ESIC as its Chairman**. The Central Government appoints a Director General as the Chief Executive Officer of ESIC.

- **Representation:** The ESIC comprises members representing crucial interest groups, including **employers, employees, the Central and State Governments, representatives of the Parliament and the medical profession.**
- **Coverage:** It applies to **factories and establishments** (like hotels, cinemas, road transport, etc.) **employing 10 or more persons.** It covers employees drawing monthly wages up to ₹21,000 (₹25,000 for persons with disabilities).
- **Key benefits provided:**
    - **Medical benefit:** Full medical care for the **insured person and dependents.**
    - **Sickness benefit:** Cash **compensation at 70% of wages** during certified sickness.
    - **Maternity benefit:** Paid leave for **26 weeks** for pregnancy.
    - **Disablement benefit:** Continuous monthly payment for **temporary or permanent disability** due to employment injury.
    - **Unemployment allowance:** Provided under schemes **like Atal Beemit Vyakti Kalyan Yojana (ABVKY)** and Rajiv Gandhi Shramik Kalyan Yojana (RGSKY).

Employees' State Insurance Scheme (ESIC)

NATIONAL MEDICINAL PLANTS BOARD

Context:

- The National Medicinal Plants Board (NMPB), under the Ministry of Ayush organised a one-day Chintan Shivir at Vigyan Bhawan in New Delhi.

About National Medicinal Plants Board:

- **Establishment:** It was set up **on November 24, 2000,** by the Government of India.
- **Nodal ministry:** It functions as a section within the **Ministry of AYUSH** (Ayurveda, Yoga & Naturopathy, Unani, Siddha, and Homoeopathy).
- **Objective:** It aims to develop an appropriate mechanism for **coordination between various ministries** in India and implement support policies **for overall growth of the medicinal plants sector** both at the Central/State and International level.
- **Focus:** It focuses on development of the medicinal plants sector through developing a strong coordination between various ministries for **implementation of policies on medicinal plants.**

- **Structure:** It is supported by 36 **State Medicinal Plant Boards** (SMPBs) and seven **Regional Cum Facilitation Centres** (RCFCs) across the country.
- **Conservation:** It focuses on **both in-situ (in natural habitats) and ex-situ (nurseries, herbal gardens)** conservation of medicinal and aromatic species.
- **Cultivation and support:** It provides **financial assistance and subsidies** (ranging from 30% to 75%) for the cultivation of 140 **prioritized medicinal plants.**
- **Research and development:** It funds projects for identifying, inventorising, and quantifying medicinal plants, as well as developing **agro-technologies for their sustainable use.**
- **Standardization:** It develops **Good Agricultural and Collection Practices (GACPs),** which are **recommended by the WHO** to ensure the quality, safety, and efficacy of herbal materials.

- **Awareness:** It promotes the creation of **Home/School Herbal Gardens** and launched initiatives like the **Professor Ayushman Comic Book** to educate children about traditional medicine.
- **Patent rights:** It encourages the protection of patent rights and **Intellectual Property Rights (IPR).** It also focuses on identification, inventorisation and quantification of medicinal plants.
- **Major initiatives:**
    - **National AYUSH Mission (NAM):** Under NAM, the board supports **market-driven production of prioritized medicinal plants** in specified clusters.
    - **Digital platforms:** Launched the **e-CHARAK** (e-Channel for Herbs, Aromatic, Raw material and Knowledge) mobile app and web portal to facilitate market linkages for stakeholders.

INTERNATIONAL RELATIONS

UNITED NATIONS COMMISSION FOR SOCIAL DEVELOPMENT

Context:

- The Minister of State for Women and Child development to lead the Indian delegation at the 64th Session of the United Nations Commission for Social Development (CSocD).

About United Nations Commission for Social Development (CSocD):

- **Nature:** It is a functional **commission of the UN Economic and Social Council (ECOSOC).**
- **Evolution:** Originally **established in 1946 as the "Social Commission,"** it was renamed in 1966 to better reflect its developmental focus.
- **Objective:** It focuses on **advancing international cooperation on social development issues,** including social inclusion, equity, and welfare-oriented policies.
- **Existence:** It has been in existence **since the very inception of the United Nations,** advising ECOSOC and governments on a wide range of social policy issues and from the social perspective of development.

- **Membership:** Originally 18, membership has been increased several times, most recently in 1996, and **now stands at 46.** Members are elected by ECOSOC based on equitable geographical distribution for four-year terms.
- **Meetings:** The CSocD meets **every year at the United Nations Headquarters in New York,** typically in February.
- **Focus areas:**
  - Its primary purpose is to **advance social development** and formulate policies and recommendations to address global social issues.
  - It focuses on topics such as **poverty eradication, social inclusion**, and the promotion of equitable and sustainable development.
  - Since the 1995 World Summit for Social Development in Copenhagen, the CSocD has been the key UN body in charge of the follow-up and **implementation of the Copenhagen Declaration and Programme of Action.**
- **Recent developments:**
  - **63rd Session (2025):** The theme focused on "Strengthening solidarity, social inclusion, and social cohesion" to accelerate the 2030 Agenda.
  - **64th Session (2026):** It is scheduled to take place from 2 to 11 February 2026 in New York.

BRICS CENTRE FOR INDUSTRIAL COMPETENCIES (BCIC)

Context:

- Recently, India joined the BRICS Centre for Industrial Competencies (BCIC) at Vanijya Bhavan, New Delhi.

About BRICS Centre for Industrial Competencies (BCIC):

- **Nature:** It is a **multilateral, public–private platform** that supports manufacturing companies and MSMEs in adopting advanced manufacturing, digital technologies, and sustainable practices across BRICS and BRICS Plus countries.
- **Launch:** It was launched in partnership with the **United Nations Industrial Development Organization (UNIDO).**
- **Establishment:** It was established in **2024–25.**
- **Objective:** It serves as a one-stop centre providing **integrated support services to** manufacturing companies and Micro, Small and Medium Enterprises **(MSMEs) across BRICS countries.**
- **Implementation:** The **National Productivity Council (NPC)** has been designated as the India Centre for BRICS Industrial Competencies.
- **Strategic alignment:** The BCIC operates under the **BRICS Partnership on New Industrial Revolution (PartNIR),** aimed at enhancing cross-regional cooperation and technology transfer.
- **Significance:** It enables Indian firms to **integrate into BRICS value chains and access new markets.** It also encourages productivity, innovation, and global competitiveness.

- **Focus areas:**
  - **Digital & Industry 4.0 support:** Helps manufacturers adopt advanced technologies and **transition into Factories of the Future.**
  - **Partnership facilitation: Connects firms with technology providers**, research institutions, and business partners across BRICS.
  - **Market intelligence & advisory:** Provides **guidance on market access, scaling operations,** sustainability, and access to finance.
  - **Capacity building:** Promotes **productivity enhancement, skill development,** and industrial modernisation.

GULF COOPERATION COUNCIL

Context :

- Recently, India and the Gulf Cooperation Council (GCC) have signed the Terms of Reference for a Free Trade Agreement in New Delhi.

About Gulf Cooperation Council:

- **Establishment:** It is a **regional political and economic alliance** established in 1981.
- **Members:** The member countries include **Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates (UAE).**
- **Objective:** It aims to foster **economic, security, cultural, and social cooperation** among its members. This cooperation is **based on common Islamic values, tribal links,** and mutual security and development goals.
- **History:** It was formed **in response to** escalating regional tensions, particularly the **Iranian Revolution (1979) and the Iran-Iraq War (1980–1988).**

- **Headquarters:** Its headquarters is located in **Riyadh, Saudi Arabia.**
- **Significance:** GCC countries are located strategically along the Persian Gulf, linking Europe, Asia, and Africa through maritime routes. Further, the bloc controls around **30% of global oil reserves** and is a major exporter of natural gas.
- **Organizational Structure: Supreme council** is the highest authority of the GCC, composed of the heads of the member states. **Ministerial council** is composed of foreign ministers or their representatives from member states. It proposes policies and implements decisions of the Supreme Council.
- **Key exports and imports from India:** Key **exports from India** to GCC include **engineering goods, rice, textiles, machinery**, gems and jewelry. Key sectors of **imports from GCC** primarily comprise **crude oil, LNG, petrochemicals**, and precious metals such as gold.

AFRICAN UNION

Context:

- The Thirty-Ninth Ordinary Session of the Assembly of the African Union (AU) concluded recently at the AU Headquarters in Addis Ababa, Ethiopia.

About African Union:

- **Nature:** The African Union (AU) is a **continental organization comprising 55 member states** on the African continent.
- **Establishment:** Formally **launched in 2002 in Durban, South Africa**, it succeeded the Organisation of African Unity (OAU), which was founded in 1963.
- **Objective:** It aims to promote **unity, cooperation, and development among African nations** while advancing the continent's interests on the global stage.
- **Headquarters:** Its headquarters is located in **Addis Ababa, Ethiopia.**
- **Significance:** It promotes the **participation of African citizens and civil society** through the Pan-African Parliament and the Economic, Social & Cultural Council (ECOSOCC).
- **G20 membership: Under India's G20 Presidency in 2023**, the African Union was admitted as a permanent member of the G20, giving Africa a direct voice in global economic governance.

- **Governance of African Union:**
  - **Assembly:** It is the **highest decision-making body**, consisting of the heads of state and government of member countries.
  - **Executive Council: Made up of foreign affairs ministers**, it handles policy matters and makes recommendations to the Assembly.
  - **AU Commission:** Headquartered in Addis Ababa, it is the **administrative arm responsible for implementing the decisions** of the Assembly and the Executive Council.
  - **The Peace and Security Council:** It is responsible for **maintaining peace and security** on the continent.
- **Strategic Frameworks and Key Projects:**
  - **Agenda 2063:** It is a **50-year strategic framework** (adopted in 2015) for Africa's long-term socio-economic and political transformation.

- **AfCFTA (African Continental Free Trade Area):** It is aimed at creating a **single market of 1.3 billion people** to boost intra-African trade and industrialization.
- **Peacekeeping missions:** It includes **missions like the African Union Support and Stabilization Mission in Somalia (AUSSOM)** and previously ATMIS.

G7 SUMMIT

Context:

- **Nature:** The G7 (Group of Seven) is an **informal forum of the world's most advanced economies** such as US, UK, France and Germany.
- **Origin:** It was **established in 1975** (as G6) **in response to the 1973 oil crisis** and global financial instability.
- **Evolution: Canada joined in 1976 to form the G7.** It became **G8 in 1997** with the inclusion of Russia, but **reverted to G7 in 2014** after Russia's expulsion over the annexation of Crimea.
- **Significance:** It consists of **40% of the global economy** and represents **10% of the world's population.**
- **Member countries:** Present member countries include **Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States.** The European Union (EU) participates as a "non-enumerated member" and attends all working sessions but does not hold the rotating presidency.

- **Role of India:** India is **not a member but has been a regular "Outreach" partner** since 2019. India uses the forum to represent the interests of developing nations, particularly on debt relief and climate finance.
- **Informal grouping:** It has **no permanent secretariat** or legal status; its decisions are non-binding but carry significant political weight.
- **Rotating Presidency:** Each member hosts and **leads discussions in turn.**
- **Decisions:** It has **no binding laws** (no legislative authority), **but significant global influence** due to members' economic and political strength.

WORLD FOOD PROGRAMME

Context :

- Food Corporation of India (FCI) and World Food Programme (WFP) recently signed an agreement for supply of rice to eradicate global hunger.

About World Food Programme:

- **Nature:** It is a **branch of the United Nations** that deals with hunger eradication and promotes food security in the world.
- **Establishment:** It was established **in 1961 by the UN General Assembly and Food and Agriculture Organization (FAO).**
- **Headquarters:** Its headquarters is located in **Rome, Italy.**
- **Objective:** It aims **to eradicate hunger (SDG 2: Zero Hunger)** and build resilience in conflict and disaster-prone areas.

- **Significance:** It is the **world's largest humanitarian agency** and a member of the United Nations Development Programme (UNDP).
- **Operation:** It operates in **more than 120 countries**, provides food assistance during emergencies and works with communities to enhance nutrition and generate resilience.
- **Funding:** It relies **entirely on voluntary donations** from governments, corporations, and individuals; it receives no UN assessed contributions.
- **Governance:** It is **led by an Executive Director** (jointly appointed by the UN Secretary-General and FAO Director-General) **and a 36-member Executive Board.** The Executive Director is appointed for fixed five-year terms.
- **Recognition:** It was awarded the **Nobel Peace Prize in 2020** for its efforts to combat hunger and prevent its use as a weapon of war.
- **Reports:** It releases **Global Report on Food Crisis** which describes the scale of acute hunger in the world.

INTERNATIONAL CLIMATE INITIATIVE (IKI)

Context :

- Germany and India have launched a new Large Grant project (approx. ₹180 crore) under the International Climate Initiative (IKI) to strengthen India's climate resilience.

About International Climate Initiative (IKI):

- **Nature:** The **International Climate Initiative (IKI) or Internationale Klimaschutzinitiative** is a key **financial instrument of the German government** that funds international projects focused on climate change mitigation, adaptation, and biodiversity conservation in developing and emerging economies.
- **Establishment:** It was launched **in 2008 by the German Federal Ministry** for the Environment (BMUV).
- **Objective:** It aims **to support partner countries in implementing and ambitiously developing their Nationally Determined Contributions (NDCs)** under the Paris Agreement and achieving goals set by the Convention on Biological Diversity (CBD).
- **Current lead:** Since 2022, the Federal Ministry for Economic Affairs and Climate Action (**BMWK) leads the initiative**, working with the Federal Foreign Office and BMUV.
- **Thematic diversity:** It focuses on **four main areas-** Mitigating greenhouse gas emissions, Adapting to the impacts of climate change, Conserving natural carbon sinks (REDD+), and Protecting biological diversity.
- **Consortium-based funding:** Projects are typically implemented by a **mix of NGOs, research institutes, international organizations (like GIZ), and the private sector** to ensure multidisciplinary expertise.
- **Ecosystem-based Adaptation (EbA):** A core feature is **using nature** (e.g., forest restoration, wetland protection) **to help human communities adapt to climate risks** like floods and heatwaves.

- **Innovative financing:** It promotes **high-risk/high-reward financial mechanisms like blended finance, biodiversity credits**, and climate insurance to mobilize private capital.
- **Monitoring and learning:** It requires **rigorous Monitoring, Evaluation, and Learning (MEL) frameworks** to ensure that local successes can be scaled up to national or global policies.

ECONOMY

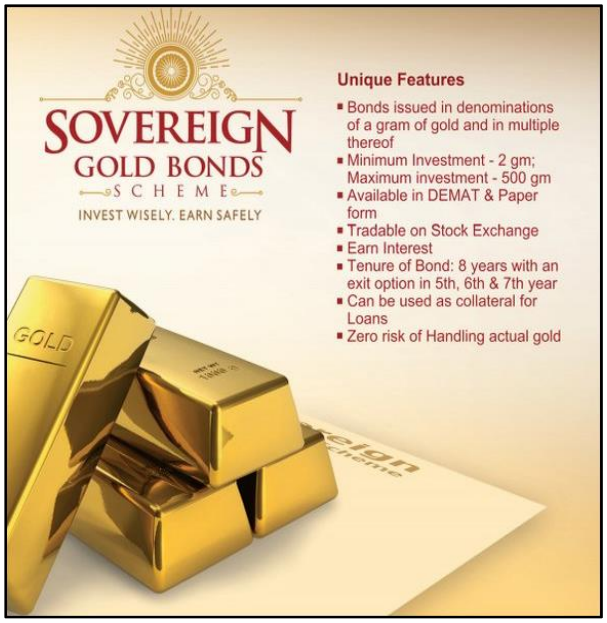
SOVEREIGN GOLD BONDS

Context:

- Budget clarified that capital gains tax exemption on sovereign gold bonds will not apply to investors who purchase them in the secondary market and hold them to maturity.

About Sovereign Gold Bonds:

- **Nature:** These bonds are **government securities denominated in grams of gold.**
- **Launch:** The Sovereign Gold Bond (SGB) Scheme was first **launched** by the Government of India (GOI) on **October 30, 2015.**
- **Significance:** They are **substitutes for holding physical gold.** Investors have to pay the issue price, and the bonds will be redeemed upon maturity.
- **Issuance:** The bond is **issued by the Reserve Bank** on behalf of the GOI.
- **Eligibility:** The bonds will be restricted for sale to resident Indian entities, including **individuals, Hindu Undivided Family (HUF), Trusts, Universities and Charitable Institutions.**
- **Investment limits:** The bonds are issued **in denominations of one gram of gold and in multiples thereof.** The minimum investment in the bond shall be one gram, with a maximum subscription limit of **4 kg for individuals, 4 kg for HUFs, and 20 kg for trusts.**
- **Term:** The term of the bond will be for a **period of 8 years, with an exit option in the 5th, 6th, and 7th years,** to be exercised on the interest payment dates.
- **Selling:** Bonds are sold through offices or **branches of Nationalised Banks, Scheduled Private Banks, Scheduled Foreign Banks, designated Post Offices,** Stock Holding Corporation of India Ltd. (SHCIL), and the authorised stock exchanges either directly or through their agents.



MONETARY POLICY COMMITTEE (MPC)

Context :

- RBI conducted its first Monetary Policy Committee meeting of 2026, during which RBI Governor announced that the repo rate, will remain unchanged at 5.25%.

About Monetary Policy Committee (MPC):

- **Origin:** It was established **in 2016** following an **amendment to the RBI Act, 1934** (specifically Section 45ZB).
- **Replacement:** The MPC replaced the previous arrangement of the **Technical Advisory Committee.**

- **Composition:** MPC will have **six members:** the RBI Governor (Chairperson), the RBI Deputy Governor in charge of monetary policy, one official nominated by the RBI Board, and the remaining three members would represent the Government of India.
- **Objective:** It aims to maintain **price stability while keeping growth** in mind. The current inflation target is 4% with a tolerance band of ±2% (i.e., 2%–6%).
- **Decision making:** Decisions are made by **majority vote,** with each member having one vote. In the event of a tie, the **RBI Governor has a casting vote.**
- **Meetings:** It is required to meet **at least four times a year.**

- **Quorum:** The quorum for a meeting shall be **four Members,** at least one of whom shall be the Governor and, in his absence, the Deputy Governor, who is the Member of the MPC.
- **Binding decision:** The decision of the MPC would be **binding on the RBI.**

About Monetary Policy:

- **Definition:** Monetary policy refers to the **use of monetary instruments** under the control of the central bank **to regulate magnitudes such as interest rates, money supply, and availability of credit** with a view to achieving the ultimate objective of economic policy.
- **Responsibility of RBI:** The RBI is vested with the responsibility of conducting monetary policy. This responsibility is explicitly **mandated under the Reserve Bank of India Act, 1934.**
- **Objective:** The primary objective of monetary policy is to maintain **price stability** while keeping in mind the objective of growth. Price stability is a necessary precondition to sustainable growth.
- **Statutory basis:** In May 2016, the RBI Act, 1934, was amended to provide a statutory basis for the implementation of the **flexible inflation targeting framework.**
- **Inflation targeting:** The amended RBI Act also provides for the **inflation target to be set** by the government of India, in consultation with the Reserve Bank, **once in every five years.** The MPC constituted by the central government under Section 45ZB determines the policy interest rate required to achieve the inflation target.

KIMBERLEY PROCESS

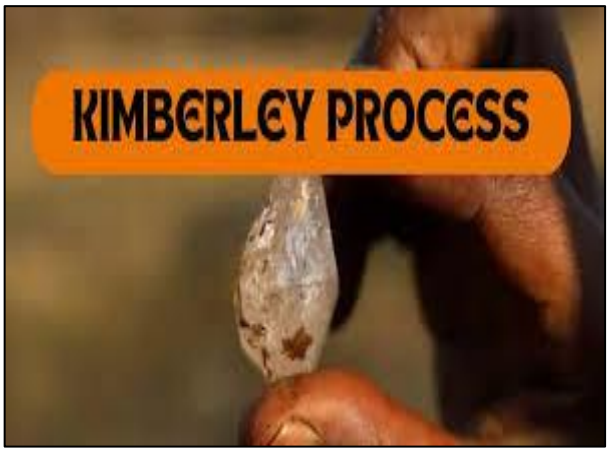
Context:

- India has assumed the chair of the Kimberley Process (KP) for the year 2026.

About Kimberley Process:

- **Nature:** It is a **coalition of governments, civil society and the diamond industry**, which regulates the international trade in rough diamonds.
- **Establishment:** It was launched **in 2003 following UN General Assembly Resolution 55/56.**
- **Objective:** It aims to **eliminate the trade in so-called conflict diamonds.**
- **Definition of conflict diamonds:** These are defined by the relevant United Nations Security Council resolution (UNSC resolution 1459) as **"rough diamonds used by rebel movements or their allies to finance conflict** aimed at undermining legitimate governments".
- **Eligibility:** Participants in the scheme are required to:
  - **Satisfy 'minimum requirements'** and establish national legislation, institutions and import/export controls;
  - **Commit to transparent practices** and to the exchange of critical statistical data;

  - **Trade only with other participants** in the Scheme;
  - **Certify shipments** as conflict-free.
- **Participants:** Currently it has **60 participants, representing 86 countries** (with the EU as a single participant) which account for more than 99% of the global rough diamond production and trade.
- **Meeting:** The KP meets **twice a year** at the Intersessional and Plenary meetings. It is chaired by a participating country on an annual, rotating basis.
- **Consensus based:** As a consensus-based body, the KP relies on the **constructive engagement from all participants** of the tripartite structure.



About Kimberley Process Certification Scheme (KPCS):

- **Nature:** It is the mechanism the KP uses to **prevent the trade of conflict diamonds**.
- **Objective:** Under this scheme, the **Government implements safeguards on shipments of rough diamonds** and certifies the diamond as conflict-free.
- **Certification:** According to this Scheme, each rough diamond shipment must be accompanied by the Kimberley Process certificate and transported in a tamper-resistant container. The KP certificate **states the authenticity of the rough diamond.**
- **Role of India: Since 2003,** India has been **actively participating** in the KPCS process.
- **Nodal department:** The **Department of Commerce** is the nodal Department. Gem & Jewellery Export Promotion Council (GJEPC) is designated as the KPCS Importing and Exporting Authority in India.
- **Strategic importance:** India is the **world's leading hub for cutting and polishing diamonds,** processing nearly 90% of the world's diamonds.

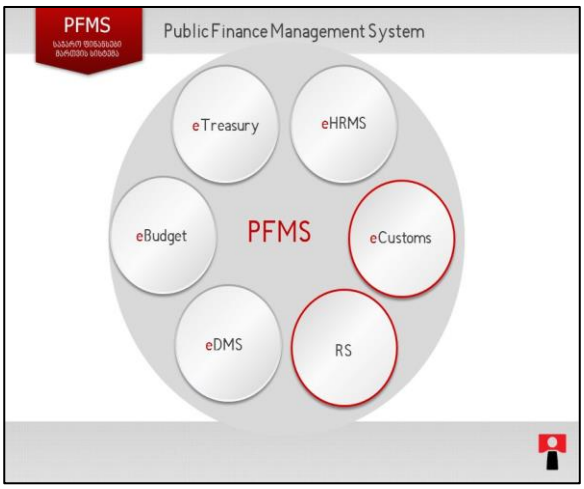
PUBLIC FINANCIAL MANAGEMENT SYSTEM

Context:

- Recently, the Minister of State for finance informed the Rajya Sabha about the Public Financial Management System (PFMS).

About Public Financial Management System (PFMS):

- **Nature:** It is a **Centralized Transaction System & Platform, providing end to end financial management services to all stakeholders**. It is a web-based online transaction system for fund management and e-payment to implementing agencies and other beneficiaries.
- **Origin:** It was launched **in 2009 as a Central Sector Scheme** of the Planning Commission (initially called the Central Plan Schemes Monitoring System or CPSMS).
- **Objective:** It aims to facilitate a sound Public Financial Management System for Government of India by **establishing an efficient fund flow system as well as a payment cum accounting network.**



- **Implementation:** It is developed and implemented by the **Controller General of Accounts (CGA), Department of Expenditure, Ministry of Finance**, Government of India.
- **Coverage:** It includes **all Central Sector and Centrally Sponsored Schemes** (CSS), as well as other expenditures like Finance Commission Grants.
- **Integration:** It is linked with the **Core Banking System (CBS) of over 300 banks** (public, private, RRBs, and cooperative) and the National Payments Corporation of India (NPCI) for Aadhaar-linked payments.
- **Tracking of funds:** It tracks funds **released under all Plan schemes of Government of India,** and real time reporting of expenditure at all levels of Programme implementation. The government has mandated PFMS as a single platform for payment, accounting & reconciliation of government transactions and DBT.
- **Cash management modules:** It has been introduced on PFMS **for better fund management like Single Nodal Agency (SNA), Treasury Single Account (TSA),** Central Nodal Agency (CNA) and Single Nodal Agency Samyochit Pranali Ekikrit Shighra Hastantaran (SNA SPARSH).
- **Grievance Redressal System:** PFMS has introduced the **Customer Relationship Management (CRM) system,** to strengthen the grievance redressal mechanism for PFMS users/ beneficiaries.
- **Transparency & Accountability:** It has **reduced manual intervention** and has provided a clear audit trail of every rupee spent.
- **Decision Support System (DSS):** It has provided reliable data to ministries **for better budget planning** and evidence-based policy analysis.

STARTUP INDIA FUND OF FUNDS 2.0

Context:

- Recently, the Union Cabinet chaired by the Prime Minister of India approved the establishment of the Startup India Fund of Funds 2.0 (Startup India FoF 2.0).

About Startup India Fund of Funds 2.0:

- **Nature:** It is launched **under the Startup India initiative**. Building on the foundation laid by the original 2016 scheme, FFS 2.0 introduces a targeted, segmented approach.
- **Objective:** It is designed to **accelerate the next phase of India's startup journey** by mobilising long-term domestic capital, strengthening the venture capital ecosystem, and supporting innovation-led entrepreneurship across the country.
- **Monitoring Agency:** It is monitored by **Department for Promotion of Industry and Internal Trade (DPIIT),** Ministry of Commerce & Industry and it is operated by **Small Industries Development Bank of India (SIDBI).**
- **Investment model:** It is a "Fund of Funds," meaning it does not invest directly in startups. Instead, it **contributes to the corpus of SEBI-registered Alternative Investment Funds (AIFs),** which then invest in startups.
- **Multiplier Effect:** Supported **AIFs are required to invest at least twice the amount** of the FFS contribution into startups.
- **Financial outlay:** A **total corpus of Rs. 10,000 crores** for the purpose of mobilizing venture capital for the startup ecosystem of the country.
- **Innovative manufacturing:** It prioritises **breakthroughs in high-tech areas** that require patient, long-term capital.
- **Empowering early-growth stage founders:** It provides a safety net **for new and innovative ideas,** reducing early-stage failures caused by lack of funding.

- **National reach:** It encourages **investment beyond major metros** so that innovation thrives in every corner of the country.
- **Address high-risk capital gaps:** It directs greater capital to priority areas which are important **for self-reliance and boosting economic growth.**
- **Boosts investment landscape:** It **strengthens India's domestic venture capital base,** particularly smaller funds to further boost the domestic investment landscape.

CENTRAL BANK DIGITAL CURRENCY (CBDC)

Context :

- Union Minister of Cooperation recently launched a modern Public Distribution System (PDS) based on Central Bank Digital Currency (CBDC) in Gandhinagar, Gujarat.

About Central Bank Digital Currency (CBDC):

- **Nature:** Central Bank Digital Currencies (CBDCs) are **digital versions of a country's fiat currency, issued and regulated by the central bank.**
- **Objective:** These digital currencies aim to **modernize financial systems, increase financial inclusion, and improve payment efficiency**, offering a government-backed option for everyday transactions.
- **Uses:** CBDCs can be used for a variety of purposes, including **daily transactions, cross-border payments, and enhancing financial inclusion** while providing a more secure and efficient form of digital money.
- **Global adoption:** The **Bahamas was the first country** to launch a nationwide Central Bank Digital Currency (CBDC), named the Sand Dollar, in 2020. In April 2020, **China became the first major economy** to pilot its digital currency, the e-CNY or Digital Yuan.
- **Steps taken by India:** India has introduced the **e-Rupee, a form of digital currency,** through the Reserve Bank of India (RBI). The e-Rupee aims to modernize the financial infrastructure, ensure financial inclusion, and reduce transaction costs.
- **Types:** CBDCs can be divided into **two primary categories**- wholesale and retail, each serving different functions in the financial system.
    - **Wholesale CBDCs:** These are designed for use **by financial institutions and market participants for large-scale transactions,** such as interbank transfers and securities settlement.
    - **Retail CBDCs:** These are **government-backed digital currencies designed for public use,** enabling consumers and businesses to make transactions.
- **CBDCs vs Cryptocurrency:**
    - **Centralization vs Decentralization: CBDCs are issued and controlled by central banks,** making them a centralized currency. **Cryptocurrencies, like Bitcoin, operate on decentralized networks,** meaning no central authority oversees their creation or distribution.
    - **Stability: CBDCs are designed to be stable** and maintain their value, as they are backed by the government. **Cryptocurrencies, on the other hand, are volatile** and can experience significant price fluctuations.
    - **Legal Tender: CBDCs are legal tender,** meaning they are recognized by governments as an official form of payment. **Cryptocurrencies**, although accepted by some businesses, are **not legally recognized** as official currency in most countries.

- **Usage: CBDCs are primarily intended for official use** within a national economy, while **cryptocurrencies are often used as a store of value** or for speculative investment.

- **Significance of CBDCs:**
  - **Financial inclusion:** By providing access to digital money, CBDCs can bring **unbanked populations into the formal financial system**, improving financial access for all.
  - **Reduced transaction costs:** CBDCs can **lower the costs of transactions by eliminating intermediaries,** thus making payments more efficient and affordable.

  - **Enhanced monetary policy:** With **direct control over the digital currency,** central banks can more effectively implement monetary policy, such as controlling inflation and managing interest rates.
  - **Security:** CBDCs offer greater security compared to physical currency, as they are **resistant to counterfeiting and fraud**, with transactions being traceable.

- **Challenges associated:**
  - **Privacy Concerns:** The digital nature of CBDCs makes it **easier for governments to track and monitor transactions,** raising concerns about user privacy and surveillance.
  - **Cybersecurity:** With increased reliance on digital systems, CBDCs are **susceptible to cyberattacks,** requiring robust security measures to safeguard against potential breaches.
  - **Infrastructure and Accessibility:** Implementing a CBDC system **requires significant digital technological infrastructure,** which could be a challenge for developing nations with limited digital infrastructure.
  - **Impact on the Banking System:** The widespread adoption of CBDCs could **disrupt traditional banking models,** potentially reducing the role of commercial banks in credit distribution.

URBAN CHALLENGE FUND

Context :

- Recently, the Union Cabinet chaired by the Prime Minister of India approved the launch of the Urban Challenge Fund (UCF).

About Urban Challenge Fund (UCF):

- **Nodal ministry:** It is a new centrally sponsored scheme of the **Ministry of Housing and Urban Affairs.**
- **Objective:** It aims **to build resilient, productive, inclusive and climate-responsive cities**, positioning those as key drivers of the country's next phase of economic growth.
- **Financial outlay:** It provides for the total Central assistance of **₹1 lakh crore.**
- **Tenure:** It will be operational from **FY 2025–26 to FY 2030–31,** with an extendable implementation period up to FY 2033–34.

- **Financing mechanism:** A **minimum of 50 per cent of project financing has to be mobilised from market sources,** including municipal bonds, bank loans and Public–Private Partnerships (PPPs). The remaining share may be contributed by States, Union Territories (UTs), Urban Local Bodies (ULBs) or other sources.
- **Project selection:** Projects will be selected through a transparent and **competitive challenge mode,** ensuring support to high-impact and reform-oriented proposals.
- **Focus areas:** A strong thrust on **reforms across Urban Governance, Market & Financial systems, Operational efficiency,** and Urban Planning
- **Emphasis on Tier-II and Tier-III cities:** A **dedicated ₹5,000 crore corpus** will enhance the creditworthiness of 4223 cities including Tier- II and Tier-III cities, particularly for first-time access to market finance.
- **Coverage:** The Fund will cover
    - **All cities with a population of 10 lakh or more** (2025 estimates);
    - **All State and Union Territory capitals not covered above**; and
    - Major **industrial cities with a population of 1 lakh or more**
    - Additionally, **all ULBs in hilly States, North-Eastern States, and smaller ULBs with population below 1 lakh** will be eligible for support under the Credit Repayment Guarantee Scheme.

GEOGRAPHY

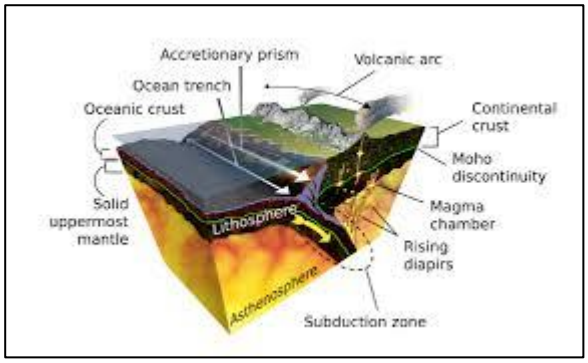
CONTINENTAL MANTLE EARTHQUAKES

Context :

- Recently the Stanford researchers have produced the first global map of a rare type of earthquake i. e Continental mantle earthquakes.

About Continental Mantle Earthquakes:

- **Nature:** These are seismic events which **originate in the mantle beneath continents.**
- **Origin:** They occur in the **mantle lithosphere**, significantly deeper than standard crustal earthquakes.
- **Identification method:** Scientists distinguish them **using a waveform-based method** that compares Sn waves (which travel through the mantle) and Lg waves (which travel through the crust). A high Sn/Lg ratio indicates a mantle origin.



- **Global distribution:** While rare (only 459 confirmed globally since 1990), they are regionally clustered. **Major clusters lie Beneath the Himalayas** (Southern Asia) **and the Bering Strait** (between Asia and North America), other locations include Italy, Tibet, the Caucasus, East Africa, Alaska, and Idaho.
- **Difference with common earthquakes:** Unlike most earthquakes, which originate in the Earth's cold, brittle crust at depths of around 10 to 29 kilometres, mantle earthquakes often **occur more than 80 km below the Mohorovičić discontinuity** (boundary between the crust and the mantle).
- **Impact:** Due to their extreme depth, they typically **cause minimal shaking or danger** at the Earth's surface.
- **New observation:** Their existence proves the mantle is not purely ductile (plastic-like) but can host brittle-like failures, **challenging the view that seismicity is confined to the crust.**
- **Significance:** The new map will help scientists learn more about **the mechanics of mantle earthquakes.**

EL NINO

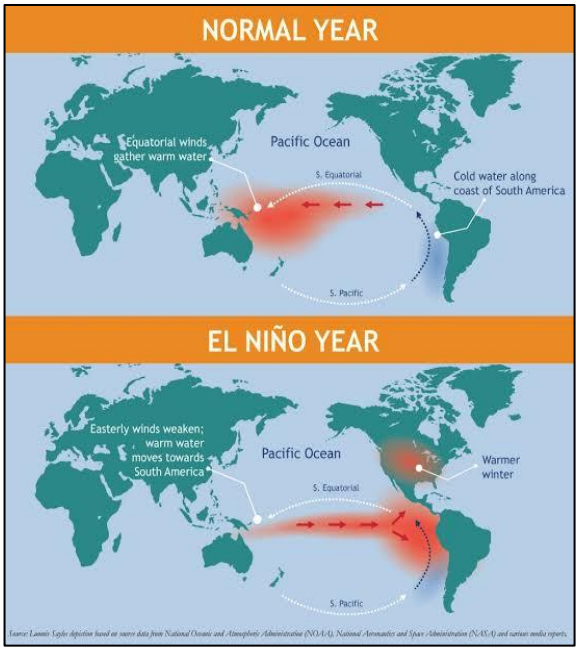
Context:

- Researchers at Duke University have identified that ocean salinity can amplify the intensity of El Niño by approximately 20%.

About El Nino:

- **Nomenclature**: El Niño means **"Little Boy" in Spanish.**
- **Definition:** It is a recurring climate pattern characterized by the **unusual warming of surface waters in the central and eastern tropical Pacific Ocean.**
- **Frequency:** It is the warm phase of the El Niño-Southern Oscillation (ENSO) cycle and typically occurs **every two to seven years.**
- **Mechanism (ENSO Cycle):**

- **Normal conditions:** Strong trade winds blow east-to-west, pushing warm water toward Asia and causing **upwelling of cold, nutrient-rich water off the coast of Peru.**
- **El Niño phase:** Trade winds weaken or reverse. **Warm water flows back toward South America, suppressing upwelling.** This shifts the Walker Circulation eastward.
- **Southern Oscillation:** The atmospheric counterpart involving a **see-saw of air pressure between Tahiti (Central Pacific) and Darwin (Australia).** A negative Southern Oscillation Index (SOI) indicates El Niño.



- **Factors impacting El Nino:**
  - **Trade wind strength:** The primary driver; weaker winds **trigger the eastward movement of warm water.**
  - **Ocean-Atmosphere coupling:** A feedback loop where **warming water further weakens winds,** which in turn warms the water more.
  - **Thermocline depth:** The depth of the **transition layer between warm surface water and cold deep-water** influences how much heat is available to fuel the event.
- **Impacts on India:**
  - **Monsoon suppression:** El Niño is generally inversely related to the Indian Monsoon. It shifts the descending limb of the Walker Cell over the Indian Ocean, **causing high pressure and suppressed rainfall.**
  - **Agriculture:** Leads to **lower production of Kharif crops** (rice, sugarcane, cotton) and increases food inflation.
  - **Heatwaves:** Strongly correlated with more frequent and **intense summer heatwaves** in India.
  - **Counter-factors:** Not all El Niño years lead to drought. A **positive Indian Ocean Dipole (IOD)** can sometimes **offset El Niño's negative impact**, as seen in 1997.

MOIST HEATWAVE

Context:

- Research showed that timings of the moist heatwaves are controlled by the active and break periods of the southwest monsoon and can be predicted weeks in advance.

About Moist Heatwave:

- **Trigger:** Moist heatwaves are triggered **by a combined impact of high temperatures and elevated humidity levels** in the atmosphere.
- **Measurement:** The best way to measure the combined effect of humidity and temperature is **'wet bulb temperature'.**
- **Wet bulb temperature:** Wet bulb temperature is the **lowest temperature to which air can be cooled by the evaporation of water into the air at constant pressure.** This is a process happening on human skin when people sweat.
- **Accepted level:** The globally accepted level for wet bulb temperature that forms the **limit of human survivability is 35°C.**
- **IMD Criteria for Heatwaves:** While the India Meteorological Department (IMD) primarily uses temperature thresholds, moist heat is increasingly factored into "Heat Index" warnings:

- **Plains:** Max temperature **≥ 40°C.**
- **Coastal Regions:** Max temperature **≥ 37°C.**
- **Hilly Regions:** Max temperature **≥ 30°C.**

- **Impact of Moist Heatwaves on humans:**
  - When air is already humid, sweat cannot evaporate from skin, leaving the body unable to cool itself. This can lead to **heat exhaustion and fatal heatstroke** within hours.
  - It is because high humidity impairs evaporation, **limiting the human body's ability to dissipate metabolic heat** and regulate core temperature.
  - In such circumstances, the physiological strain on the **human body intensifies, exacerbating the risks of cardiovascular and respiratory illnesses.**
  - A **thermoregulatory failure** can lead to hyperthermia, heat exhaustion, and fatal heatstroke in extreme cases.

PENNAIYAR RIVER

Context:

- The Supreme Court recently directed the Centre to constitute a tribunal to adjudicate dispute between Tamil Nadu and Karnataka over the sharing of Pennaiyar River water.

About Pennaiyar River:

- **Location:** The Pennaiyar River is a major river in southern India flowing through **Tamil Nadu and Karnataka.**
- **Other names:** It is also known as the **South Pennar River, Dakshina Pinakini** in Kannada, and **Thenpennai, Ponnaiyar, or Pennaiyar** in Tamil.
- **Origin:** It rises in the Nandi Hills of the **Chikkaballapura district in Karnataka.**
- **Course:** It flows southward for 80 km through **Karnataka to northwestern Tamil Nadu,** where it turns and flows southeastward **to enter the Bay of Bengal** at Cuddalore.
- **Significance:** It is the **second longest river in Tamil Nadu,** stretching 497 km in length. It is also the second largest interstate east-flowing river basin, situated between the Pennar and Cauvery basins.
- **Boundaries:** The Basin is bounded on the northwest and south by various ranges of the **Eastern Ghats, like the Velikonda Range, the Nagari hills, the Javadu hills, the Shevaroy hills, and the Kalrayan hills**, and in the east by the **Bay of Bengal.**
- **Tributaries:** Key tributaries include the **Markandeyanadhi** (the primary point of current dispute), **Kambainallur, Pambar, Chinnar, and Vaniar.**
- **Dams:** Notable structures include the **Sathanur Dam** (the largest)**, Krishnagiri Dam, and Kelavarapalli Dam.**
- **Concerns:** Heavy rains at the river's source cause **sudden, but short-lived, floods.** The river is extensively dammed for irrigation, especially in Tamil Nadu.
- **Dispute:** Tamil Nadu claims that **Karnataka's construction of check dams and diversion structures** would reduce the water flow into their state, affecting their irrigation and drinking water needs.

MT ACONCAGUA

Context:

- Recently, the Defence Minister flagged off a joint mountaineering expedition to Mount Aconcagua in Argentina from New Delhi.

About Mt Aconcagua:

- **Location:** It is located in **Argentina** (near the border with Chile).
- **Uniqueness:** It is the **highest mountain in South America** and the tallest mountain outside of Asia.
- **Origin:** Aconcagua is of **volcanic** origin, **but it is not itself an active volcano.**
- **Formation:** The Mountain was formed when the **heavier Nazca Plate dived beneath the South American Plate** through a process known as subduction.
- **Nature:** It is a **folded mountain** composed of sedimentary and metamorphic rock.
- **Boundary:** It is one of the mountains in the Principle Cordillera, a mountain range in the Andes making up the boundary **between Argentina and Central Chile.**
- **Seven summits:** It is considered as **one of the world's "Seven Summits"** (each of the seven tallest mountains in each continent).
- **Climate Zones on the mountain:** Dry and **desert-like with sparse vegetation, Alpine desert zone** and arctic conditions at the top.
- **Glaciers:** The mountain also contains glaciers, of which **Ventisquero Horcones Inferior** is the largest.

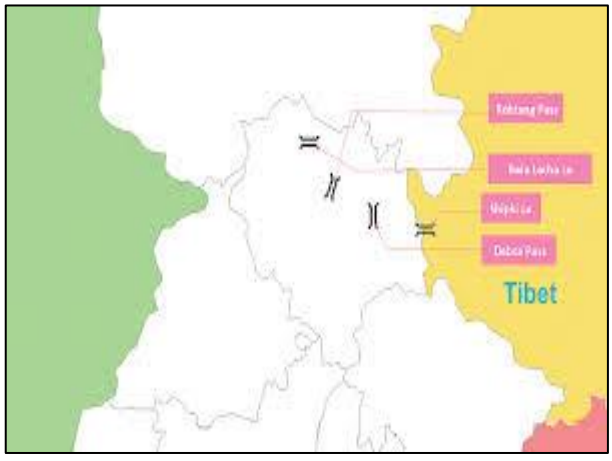
SHIPKI LA PASS

Context:

- India is engaged with China to explore the opening of an additional route for the Kailash Mansarovar Yatra, including the possibility of using the Shipki La Pass for this.

About Shipki La Pass:

- **Nature:** Shipki La is a **high-altitude mountain pass in the Himalayas** that serves as a vital strategic, geographical, and **cultural link between India and Tibet.**
- **Location:** It is located in the tribal district of **Kinnaur in Himachal Pradesh**. It is located very close to the village of Khab.
- **Altitude:** Situated at an altitude of **3,930 meters,** it is one of the highest motorable passes.
- **Boundary:** It serves as the boundary post on the **frontier between China and India.**
- **LAC status:** It was declared the Line of Actual Control **post-1962 war**.
- **Historical significance:** It is an **offshoot of the ancient Silk Road** and has been a documented trade route since at least the 15th century.
- **Other names:** The old name of Shipki La was **Pema La, or Shared Gate**, also known as Shared Pass.



- **Associated river:** The **Sutlej River** (known as Langqen Zangbo in Tibet) **enters India through this pass,** flowing from the Tibet Autonomous Region.
- **Significance:** The pass works as the **third frontier post of India** for carrying out trade and commerce activities with China. The other two passes are the Lipulekh Pass in Uttaranchal and the Nathula Pass in Sikkim.
- **Security:** It is guarded by the **Indo-Tibetan Border Police (ITBP).**

GREECE

Context:

- India and Greece recently signed a joint declaration of intent on strengthening defence industrial cooperation between the two countries.

About Greece:

- **Location:** It is located on the southern edge of the **Balkan Peninsula.**
- **Bordering countries:** It is bordered by **4 nations namely, North Macedonia** and **Bulgaria** in the north, **Albania** in the northwest, and **Turkey** in the northeast.
- **Bordering seas:** It is also bounded by the **Aegean Sea** in the east, **Ionian Sea** in the west and the **Mediterranean Sea** in the south.
- **Capital:** Its capital is **Athens.**
- **Terrain:** It is predominantly mountainous, with approximately **80% of its terrain consisting of mountains or hills,** making it one of the most mountainous countries in Europe.
- **Climate:** The climate of Greece is **typically Mediterranean**.
- **Major mountains: Pindus mountain range** on the mainland contains one of the world's deepest gorges, Vikos Gorge, which plunges 3,600 feet (1,100 meters).
- **Highest peak:** The highest Greek mountain is **Mount Olympus**, rising to 2,918 meters.
- **Major rivers:** These include **Maritsa, Struma and Vardar** etc.
- **Natural resources:** It mainly consists of **petroleum, magnetite, lignite, bauxite, hydropower, and marble.**

ALMATTI DAM

Context:

- The Andhra Pradesh chief minister recently objected to Karnataka's move to increase the height of the Almatti Dam on the Upper Krishna.

About Almatti Dam:

- **Nature:** Almatti Dam is a **multipurpose dam primarily used for irrigation, hydroelectric power generation**, and flood control.
- **Location:** It is situated in the Nidgundi area of **Vijayapura (Bijapur) district, North Karnataka,** on the border with Bagalkote district.
- **River:** It is built across the **Krishna River,** the second-largest east-flowing peninsular river.
- **Other names:** It is also known as the **Lal Bahadur Shastri Dam.**
- **Structure:** It stands at a **height of 52.5 meters** and extends **3.5 kilometers in length.**
- **Completion:** The dam was completed **in July 2005.**
- **Output:** The annual electric output of the dam is **713,000,000 kilowatts (KW).**
- **Water capacity:** The dam holds a gross water storage capacity **of 123.08 TMC at 519 meters MSL.**
- **Project:** It is the **primary reservoir for the Upper Krishna Irrigation Project**, designed to provide irrigation and drinking water to drought-prone districts like Kalaburagi, Yadgir, Raichur, and Bagalkot.

- **Power generation:** It features a **290 MW hydroelectric station** using vertical Kaplan turbines.
- **Release of water:** After generating power, water is released into the **Narayanpur reservoir** to meet the irrigation requirements downstream.
- **Picnic spot: Seven terrace gardens** have been developed as a picnic spot in the dam area. On one side of the dam, a garden named **"Rock Hill"** has an artificial forest with ceramic wild animals and birds and many idols representing village life in India.

BHAKRA DAM

Context:

- Amid rising incidents of landslides, a comprehensive geological study of the hillocks surrounding the Bhakra Dam is to be undertaken by the Geological Survey of India.

About Bhakra Dam:

- **Location:** It is located at a gorge near the upstream Bhakra village in the **Bilaspur district of Himachal Pradesh.** It is near the border between Punjab and Himachal Pradesh.
- **River:** It is a concrete gravity dam across the **Sutlej River.**
- **Uniqueness:** It is the **highest straight gravity dam in the world,** with a height of about 207.26 meters. It is **Asia's second tallest dam**, next to the 261 m Tehri Dam, also in India.

- **History:** The Bhakra Dam is **one of the earliest river valley development schemes** undertaken by India after independence.
- **Construction:** The construction of this dam **started in 1948,** when Jawahar Lal Nehru, the first prime minister of India, poured the first bucket of concrete into the foundations of Bhakra.
- **Completion:** The dam was completed by the **end of 1963.**
- **Other names:** Bhakra Dam was described as the **'New Temple of Resurgent India'** by Jawaharlal Nehru.
- **Management:** Operation and maintenance of the Bhakra dam is done by the **Bhakra Beas Management Board (BBMB).**
- **Reservoir:** The dam created the massive **Gobind Sagar reservoir** and plays a crucial role in irrigation, flood control, and hydroelectric power generation for Punjab, Haryana, Rajasthan, Himachal Pradesh, and Chandigarh.
- **Area and storage of reservoir:** The 90 km long reservoir is spread over an **area of 168.35 sq.km.** In terms of storage of water, it is the **second largest reservoir in India,** the first being Indira Sagar Dam in MP with a capacity of 12.22 billion cu m.
- **Powerhouse:** The installed capacity of Bhakra Right Bank Power House is **785 MW**, and that of Bhakra Left Bank Power House is **630 MW.**

RAVI RIVER

Context:

- India is now set to block the excess water flow from the Ravi River with the completion of the Shahpur Kandi barrage by March 31.

About Ravi River:

- **Nature:** The Ravi River is **one of the five rivers of the Indus River system**, which give Punjab its name ("Land of Five Rivers").
- **Part of Indus Waters Treaty, 1960:** It is an **eastern river** under the Indus Waters Treaty, **allocated exclusively to India.**
- **Origin:** It originates **near the Rohtang Pass in Himachal Pradesh**. It rises at an elevation of around 4,400 metres above sea level. It initially flows as two streams — Budhil and Tantgari — which later merge.
- **Course:** It flows **through India and Pakistan.** And, within India, it flows through **Himachal Pradesh** (mainly Chamba district) **and Punjab** (Gurdaspur, Amritsar districts). In Pakistan, it Flows past Lahore and eventually joins the Chenab River.

- **Tributaries:** The **right bank tributaries** include Siul River, Baira River, Budhil River, and Tant Gari, and the **left bank tributaries** include Ujh River and Chirchind Nala.
- **Total length:** The length of the river is **approx. 720 km** (about 320 km in India). The catchment area in India is around 5,957 sq km.
- **Perennial river:** Flow is sustained by **Himalayan snowmelt** in summer and intensified by heavy monsoon rains from June to September. **Intense rainfall** often leads to high discharge levels, causing seasonal flooding in downstream areas.
- **Flood control:** Major **dams like Chamera I, II, III and Ranjit Sagar Dam** regulate water flow for hydropower generation, irrigation, and flood management.
- **Shahpur Kandi Dam:** It is a multipurpose project on the Ravi River **near the Punjab–J&K border.** It is aimed at utilising surplus eastern river waters for irrigation and reducing flow into Pakistan.

FINLAND

Context:

- Recently, the Prime Minister of Finland said that Finland and India, together with global partners, can lead sustainable and human-centric technological progress.

About Finland:

- **Location:** It is located in **Northern Europe.**
- **Bordering countries:** These include **Norway (north), Sweden (northwest) and Russia (east).**
- **Bordering water bodies:** It is bounded by the **Gulf of Finland (south), Gulf of Bothnia (southwest) and Baltic Sea.**
- **Capital:** The capital city of Finland is **Helsinki.**
- **Membership:** It is a member of the **European Union (EU) and NATO.**
- **Climate:** It has a severe climate due to its northern location. Winter is the longest season, with **temperatures in the north falling as low as -22 °F (-30 °C).**
- **Terrain:** It is **heavily forested and contains some 56,000 lakes, numerous rivers,** and extensive areas of marshland.

- **Lakes:** It is also known as the **"Land of a Thousand Lakes".** The largest lake of Finland is **Lake Saimaa.**
- **Highest point:** The highest point of Finalnd is **Mount Halti (1,328 m).**
- **Natural resources:** The country consists of **copper, iron ore, nickel, cobalt, and chromium.**

LAKE MICHIGAN

Context:

- More than 150 years after it sank in a powerful storm, the remains of the luxury steamer Lac La Belle have finally been found at the bottom of Lake Michigan.

About Lake Michigan:

- **Location:** It is the **third largest of the five Great Lakes of North America** and the only one **lying wholly within the United States.**
- **Uniqueness:** It is the **fourth largest freshwater lake and the fifth largest lake in the world,** ranked by surface area.
- **Length:** The lake is **517 km long** (north to south); it has a maximum **width of 190 km.**
- **Surface Area:** Its surface area is approximately **57,757 sq.km.**
- **Connectivity:** It is connected **directly to Lake Huron, into which it drains, through the broad Straits of Mackinac.** This hydrologic connection through the Straits keeps the water levels of the two lakes in equilibrium, causing them to behave in many ways as though they are one lake.

- **Rivers:** Water flows into Lake Michigan from several rivers, including the **Fox-Wolf, the Grand, the St. Joseph, and the Kalamazoo rivers,** among others.
- **Islands:** The northern end of the lake contains all of the islands, the largest of which is **Beaver Island, Michigan.**
- **Natural habitats:** The lake boasts a variety of natural habitats, including **tallgrass prairies, wide savannas, and the world's largest freshwater sand dunes.** The land adjacent to Lake Michigan is low and gently rolling, but wave-cut bluffs of rock occur in many places.
- **Biodiversity:** It hosts a **wealth of plant and animal species,** many of which are rare or endangered (such as the **Hine's Emerald Dragonfly and the Dwarf Lake Iris**).

ENVIRONMENT AND ECOLOGY

NEW RAMSAR SITES

Context :

- Recently, Union Minister for Environment, Forest and Climate Change announced that Patna Bird Sanctuary and Chhari-Dhand have been included in the Ramsar sites list.

About Patna Bird Sanctuary:

- **Location:** It is located in the state of **Uttar Pradesh.**
- **Composition:** It consists of **freshwater marshes, woodlands and grasslands**, and is surrounded by agricultural landscapes.
- **Area:** It is the **smallest bird sanctuary in Uttar Pradesh**, covering an area of approximately **1.09 sq. km** (108 hectares).
- **Status:** Established in 1991, it is also designated as an **Important Bird and Biodiversity Area (IBA) by BirdLife International.**
- **Wetland type:** It is a natural, freshwater, **rain-fed wetland (shallow depression) characteristic of the Gangetic plains.**
- **Cultural significance:** The sanctuary **houses an ancient Shiva temple,** and the local religious sentiment against hunting has contributed to the "tameness" of the birds found there.
- **Flora and fauna:** It consists of **178 bird species and 252 plant species.**

About Chhari-Dhand Wetland:

- **Location:** It is located in **Kutch, Gujarat.**
- **Nature:** It is a **seasonal saline wetland** situated between the famous Banni grasslands and salt flats of Kutch.
- **Nomenclature: "Chhari" means saline** and **"Dhand" means a shallow lake** in the local language.
- **Type:** It becomes **swampy during the monsoon**, fed by north-flowing rivers and runoff from surrounding hills.
- **Conservation status:** It was declared **Gujarat's first Conservation Reserve** in 2008. It is designated as a **Ramsar Site** in 2026, making it Gujarat's 5th such site (alongside Nal Sarovar, Thol, Khijdia, and Vadhwana).
- **Fauna:** It supports species such as **critically endangered sociable lapwing, the vulnerable common pochard**, and, notably, common cranes (Grus grus) annually.
- **Flora:** It features **unique arid-adapted plants like the Indian gum tragacanth** and the critically endangered Indian bdellium-tree (Commiphora wightii).

About World Wetlands Day:

- **Date:** It is celebrated every year on **2 February.**
- **Origin:** It marks the **anniversary of the Ramsar Convention**, signed in Ramsar, Iran, on **2 February 1971.**

- **Other names:** The agreement is also known as the **Convention on Wetlands of International Importance.**
- **Focus:** It emphasizes the **connection between local communities and wetlands,** highlighting how traditional practices ensure sustainable use.
- **UN recognition:** It was officially recognized by the United Nations General Assembly in 2021 and has been a **United Nations International Day since 2022.**
- **Uniqueness:** It is one of the oldest modern international environmental agreements and the only one **focused entirely on a single ecosystem- wetlands.**
- **Parties:** There are **172 Contracting Parties** to the convention and over 2500 listed Ramsar wetlands worldwide. Each year, the **Convention Secretariat leads the World Wetlands Day campaign,** with participation from governments, conservation organisations, businesses, NGOs, media, youth groups, and communities worldwide.
- **2026 Theme:** The global theme for 2026**, 'Wetlands and Traditional Knowledge: Celebrating Cultural Heritage',** highlights the role of indigenous and local communities in conserving and managing wetlands.
- **India's Status:**
  - **Signatory:** India joined the convention on February 1, **1982.**
  - **Leading states: Tamil Nadu** has the most Ramsar sites (20), followed by Uttar Pradesh (11 including the 2026 addition).
  - **Largest and smallest wetland: Sundarbans (West Bengal)** is the largest wetland, while **Renuka Wetland (Himachal Pradesh)** is the smallest.
  - **Count:** India's Ramsar site count has reached **98, the highest in Asia.**

CARBON CAPTURE UTILISATION AND STORAGE

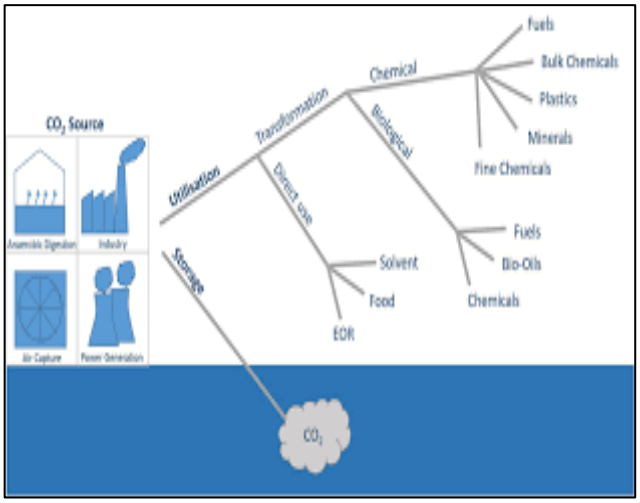
Context:

- Recently, the Finance Minister proposed an outlay of Rs 20,000 crore over the next five years in Carbon Capture Utilisation and Storage (CCUS) technologies.

About Carbon Capture Utilisation and Storage (CCUS):

- **Definition:** CCUS refers to technologies designed to **capture CO2 emissions from large point sources and either reuse them or store them permanently underground** to prevent atmospheric release.
- **Objective:** It aims to **mitigate carbon dioxide (CO2) emissions** from sources like power plants, refineries and other industrial facilities.
- **Process:** It involves a **three-stage process:**
  - **Capture:** This involves **separating CO_2 from other gases**. Methods include post-combustion (after burning fuel), pre-combustion (before full combustion), oxy-fuel combustion (burning in pure oxygen), and Direct Air Capture (DAC).
  - **Transport:** Captured CO_2 is **compressed and moved via pipelines**, ships, or trucks.
  - **Utilisation or storage:** CCU **converts CO_2 into products like Green Urea or building materials,** or uses it for Enhanced Oil Recovery (EOR). CCS involves injecting CO_2 into geological formations such as depleted oil/gas fields or saline aquifers for permanent storage.
- **Capturing methods:** The main methods for capturing CO2 are: post-combustion; pre-combustion; and oxy-fuel combustion.
  - **Post-combustion technology:** It separates CO2 from the flue gas, by using a chemical solvent for instance, after the fuel is burnt.

- **Pre-combustion methods:** It involves converting the **fuel into a gas mixture** consisting of hydrogen and CO2 before it is burnt.
- **Oxy-fuel Combustion:** Oxy-fuel technology involves **burning a fuel with almost pure oxygen** to produce CO2 and steam, with the released CO2 subsequently captured.



- **Policy: NITI Aayog** released a **policy framework in 2022** emphasizing CCUS for sustainable development and an "Atmanirbhar Bharat".
- **Challenges:** These include **high capital cost, technological maturity, and infrastructural requirements** for transport and storage.
- **Significance:** CCUS can play a strategic role in global decarbonisation efforts in a number of ways.
  - **Reducing emissions** in 'hard-to-abate' industries
  - **Producing low-carbon electricity and hydrogen**, this can be used to decarbonise various activities
  - **Removing existing CO2** from the atmosphere.

PAKHAL WILDLIFE SANCTUARY

Context :

- Recently, scientists from the Botanical Survey of India have identified a new species of flowering plant in Pakhal Wildlife Sanctuary and named it as Dicliptera pakhalica.

About Pakhal Wildlife Sanctuary:

- **Location:** It is located in the Warangal district of **Telangana.**
- **Vegetation:** It has **mixed deciduous forests.**
- **Lake:** The Pakhal Wildlife Sanctuary houses the **Pakhal Lake** which was excavated on the orders of King Ganapati Deva of the **Kakatiya empire in 1213 AD.**
- **Flora:** It consists of **bamboo, teak,** and diverse flora, including **Terminalia, Pterocarpus, and Mohua.** It also consists of various kinds of herbs, shrubs and climbers.
- **Fauna:** These include **Leopard, wild boar, panthers, hyenas, sloth bear**, chital, mountain gazelle, blackbuck etc.

About Dicliptera Pakhalica:

- **Nature:** It is a **flowering plant** species belongs to the **Acanthaceae family.**
- **Habitat:** The plant was found growing along **stream banks and rocky areas.**
- **Flowering season:** It flowers **between November and January**, with fruiting extending from December to March.
- **Significance:** The species **occurs in association with other native plants** such as Tarenna asiatica, Eranthemum purpurascens, Ruellia prostrata and Mallotus philippensis, among others.

NALSAROVAR BIRD SANCTUARY

Context:

- Nalsarovar Bird Sanctuary has recorded over five lakh birds across 200 species in its latest census, a sharp 21% jump from 4.12 lakh in 2024.

About Nalsarovar Bird Sanctuary:

- **Location:** It is located approximately 64 km west of Ahmedabad in **Gujarat**.
- **Nomenclature:** Nal Sarovar literally translates to **'Tap Lake'.**
- **Nature:** It is a **natural lake with shallow waters** and muddy lagoons, dotted by 36 islets.
- **Area:** Spread over an area of **120.82 sq.km.,** this sanctuary is a paradise for bird watchers and nature enthusiasts.
- **History:** The history of Nalsarovar dates back to the **15th century,** when the lake was created as a result of the construction of a **check dam across the Sabarmati River.**

- **Evolution:** The lake was initially used for **irrigation** and as a source of **drinking water** for nearby villages. Over time, the lake became an important **habitat for a variety of bird species,** and local communities recognized its ecological significance.
- **Protected area:** In the **early 20th century,** the **British colonial administration** recognized the importance of Nalsarovar as a wetland ecosystem and established it as a protected area.
- **Recognition:** In 1969, the Gujarat government declared Nalsarovar a **bird sanctuary** to primarily protect its bird population. It was declared as a **Ramsar site** on 24 September 2012.
- **Flora:** The sanctuary area has 48 species of algae and 72 species of flowering plants. The common aquatic plants are **Cyperus sp., Scirpus sp., Typha ungustata, Eleocharis palustris, Ruppia, Potamogeton,** Vallisnaria, Naias, Chara, etc. It also includes locally famous 'pilu' trees which harbor a red berry type edible fruit.
- **Fauna:** It is home to over 250 species of birds, including beautiful **migratory birds that travel from places as far away as Europe and Siberia.** Apart from these, typical species like pelicans, ducks, herons, and storks can be found easily.
- **Other animals:** On southern or southwestern fringes, small herds of wild ass can be seen. **Mongoose, jungle cat, Indian fox, jackal, wolf, and hyena** are also there.

SARUS CRANE

Context:

- As per a government census conducted across 68 forest divisions of Uttar Pradesh, the population of sarus cranes in the state has gone up by 634 or 3.1% in a year.

About Sarus Crane:

- **Nature:** It is **non-migratory** and **India's only resident breeding crane.**
- **Uniqueness:** It is renowned as the **tallest flying bird in the world**, standing up to 156 cm (approx. 5.1 feet).
- **Recognition:** it is the official **state bird of Uttar Pradesh.**
- **Habitat:** They primarily live in **wetlands like marshes, canals, and ponds**, but they are also uniquely adapted to live in association with humans in paddy fields and cultivated plains.

- **Diet:** They are **omnivorous** in nature, feeding on insects, aquatic plants, grains, and small vertebrates.
- **Worldwide spread:** They live in **Southeast Asia, northern India, and northern Australia**.
- **Distribution in India:** In India, most sarus cranes are widely distributed along the **Gangetic plain and in eastern Rajasthan** in the northern states of India. Population densities decrease going to the south.

- **Appearance:** They can be distinguished by a **predominantly grey plumage with a naked red head and upper neck**, and pale red legs.
- **Mating behaviour:** They are **strictly monogamous**, famously mating for life and often cited as **symbols of marital fidelity.**
- **Social behaviour:** They are regarded as the **least social crane species**, found mostly in pairs or small groups of three or four.
- **Lifespan:** It has been estimated that cranes in general can live **30 to 40 years.**
- **Conservation Status:**
  - **IUCN:** Vulnerable
  - **CITES:** Appendix II
  - **Wildlife (Protection) Act 1972:** Schedule IV.

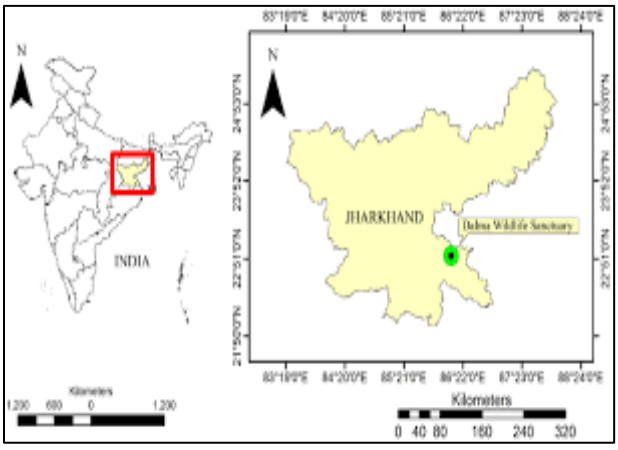
DALMA WILDLIFE SANCTUARY

Context:

- The Jharkhand tourism minister recently launched a jungle safari and laid the foundation for 30 eco-cottages at Dalma Wildlife Sanctuary in East Singhbhum.

About Dalma Wildlife Sanctuary:

- **Location:** It is located near Jamshedpur, in the **East Singhbhum district of Jharkhand.** It is situated around the Dalma Hills on the Chottanagpur Plateau.
- **Nomenclature:** The Sanctuary gets its name from the **"Dalma mai", a local goddess** who is revered and worshipped by the local people and the people of adjoining villages of Dalma.



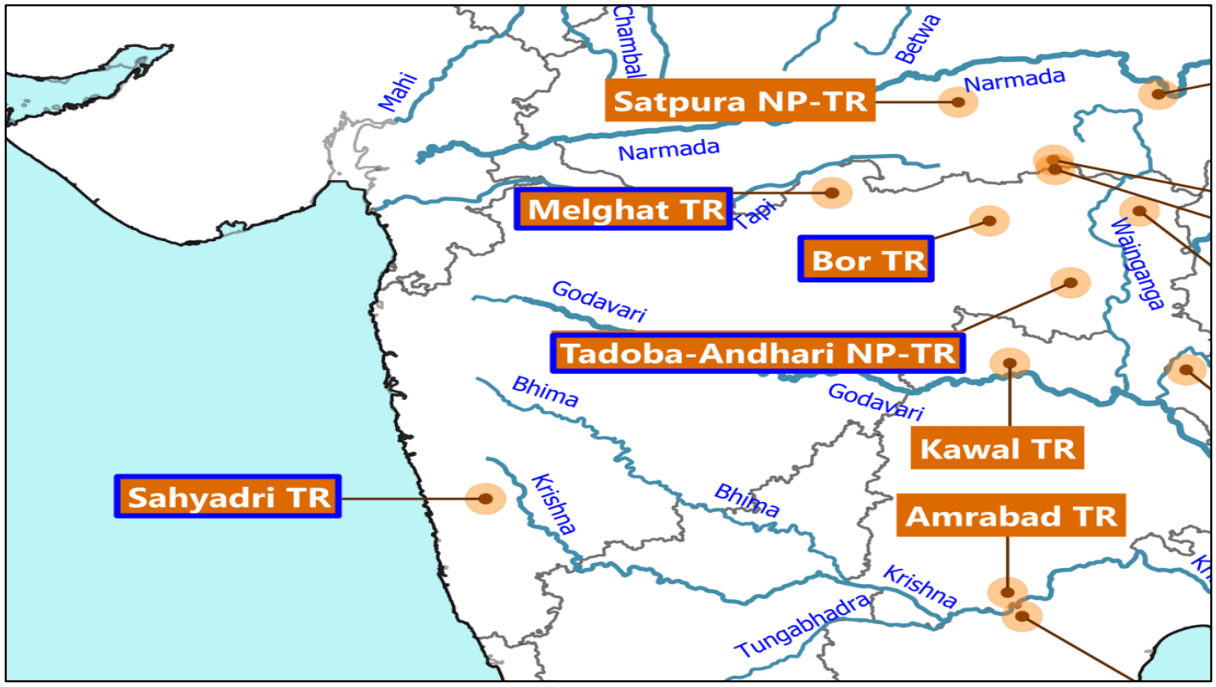
- **Establishment:** It was inaugurated in 1975 and **officially notified in 1976.**
- **Terrain:** The terrain here is **hilly and rocky, with dense forests** and grasslands.
- **Rivers:** The entire forest of Dalma Sanctuary falls in the catchment of the **Subarnarekha River and Dimna Lake** of Jamshedpur.
- **Waterfalls:** It features two prominent waterfalls, **Sitaguldi and Dassam.**
- **Temple:** A temple **dedicated to Lord Shiva**, known as the Dalma Temple, is inside the cover.
- **Elephant corridor:** It is a vital **link in the traditional migration route to West Bengal** (Purulia district) during August–September, with herds returning by January.

- **Vegetation:** The forests of Dalma come under the category **Dry peninsular Sal and Northern dry mixed deciduous forest.** Most of the Dalma forests shed leaves in the summer and attain their full bloom at the onset of monsoon.
- **Flora:** Medicinal plants like **Ananatmula, Satawari, Sarpgandha,** etc. are abundant in the sanctuary. Various types of trees, climbers, herbs, shrubs, and orchids are found here.
- **Fauna:** Besides elephants, the sanctuary has a considerable population of other wildlife like **barking deer, wild boar, giant squirrel, porcupine, pangolin, sloth bear,** etc. Commonly seen birds in the sanctuary are falcons, golden orioles, Indian tree pies, paradise fly catchers, grey hornbills, Indian peafowl, etc.

SAHYADRI TIGER RESERVE

Context:

- In a significant boost to tiger conservation in western Maharashtra, a third tigress was released into the wild at the Sahyadri Tiger Reserve (STR) recently.



About Sahyadri Tiger Reserve (STR):

- **Location:** It is located in the Sahyadri Ranges of the **Western Ghats in Maharashtra**. It is the northernmost tiger habitat in the Western Ghats.
- **Recognition:** It is the first tiger reserve of Western Maharashtra and the **fourth tiger reserve of the State.**
- **Spread:** It spans **four districts of Satara, Sangli, Kolhapur, and Ratnagiri.** It is spread over two protected areas of Koyana Sanctuary (KWLS) and Chandoli National Park.
- **Rivers:** The central portion of STR is occupied by the "Shivsagar" reservoir of the **Koyana River** and the "Vasant Sagar" reservoir of the **Warana River.**
- **Connectivity:** It is linked to **Radhanagari Wildlife Sanctuary (north) and Kali Tiger Reserve in Karnataka (south)** via the Sahyadri-Konkan corridor.
- **Terrain:** The habitat of Sahyadri is composed of **woodlands, grasslands, and plateaus,** the latter **locally referred to as "Sadaa",** which are lateritic in nature with considerable habitat value.

- **Vegetation:** The forest cover here is that of **moist evergreen, semi-evergreen, moist, and dry deciduous vegetation.** It is the only place where climax and near-climax vegetation are plentiful and prospects of adverse anthropogenic influence in the future are minimal.
- **Flora:** Dense tree cover includes species such as **teak, bamboo, Indian laurel, and jamun.** Medicinal plants like **Asparagus racemosus and Aegle marmelos** grow abundantly. Unique Western Ghats endemics, including rare orchids and shrubs, flourish in the reserve's humid microclimates.
- **Fauna:** It is home to the endangered species of top carnivores such as **Tiger, Wild dog, and Leopard.** The herbivores include **Gaur, Sambar, Four Horned Antelope, Mouse Deer, and Giant Squirrel.** The habitat also supports hornbills, and many other endemic birds.

MANGROVE CLAM

Context:

- Recently, the ICAR–Central Marine Fisheries Research Institute (CMFRI) has successfully achieved captive breeding of the mangrove clam (Geloina erosa).

About Mangrove Clam:

- **Nature:** It is a **burrowing bivalve inhabiting organic-rich muddy substrates** in intertidal mangrove ecosystems.
- **Other names:** Mangrove clams, commonly known as **mud clams**, are locally called **'Kandal Kakka'** in northern Kerala.
- **Scientific Name:** Its scientific name is **Geloina erosa** (also referred to as Polymesoda erosa).
- **Habitat:** They are found in **muddy, brackish, and even nearly freshwater regions** within mangrove swamps.
- **Distribution:** These are widely distributed in the **Indo-Pacific region.**

- **Tolerant:** This species displays remarkable tolerance, enabling them to **thrive across a broad spectrum of salinity levels.**
- **Life cycle:** The life cycle of the clam consists of **four distinct phases:** larval stage, spat, juvenile and adult clam.
- **Feeding behaviour:** It is a **filter-feeding species**, primarily active during low-tide immersion stages characterized by frequent inundation.
- **Ecological role:** It plays a crucial ecological role by **recycling nutrients, stabilising sediments and strengthening mangrove ecosystems.**
- **Significance:** It provides **food security and livelihoods** in coastal regions.
- **Threats:** In India, particularly along the east coast and in island regions, wild stocks have been steadily declining due to **indiscriminate harvesting, habitat degradation, pollution and coastal development.**
- **Conservation applications:**
    - **Mangrove Ranching:** Releasing **hatchery-produced seeds into degraded mangrove areas** to restore natural populations.

- **Estuarine Aquaculture:** Enabling environment-friendly farming **that requires minimal external inputs.**

HOLLONGAPAR GIBBON WILDLIFE SANCTUARY

Context:

- Recently, a male gibbon was found electrocuted to death at Hollongapar Gibbon Wildlife Sanctuary (HGWS) in Jorhat.

About Hollongapar Gibbon Wildlife Sanctuary:

- **Location:** It is located in the **Jorhat district of Assam**, India.
- **Establishment:** The Assam Government upgraded the area's status from the Hoollongapar Reserve Forest to a wildlife sanctuary on **July 30, 1997.**
- **Area:** It covers approximately **20.98 sq km.**
- **Uniqueness:** It is the **only sanctuary in India named after a gibbon** due to its distinction for containing the densest gibbon populations in Assam.
- **Terrain:** It is situated at an **altitude between 100 and 120 m** (330 and 390 ft), the topography gently slopes downward from southeast to northwest.
- **River:** The **Bhogdoi River** creates a waterlogged region dominated by semi-hydrophytic plants along the border of the sanctuary.
- **Isolation:** It is a **"forest island"** completely surrounded by tea gardens.
- **Flora:** The upper canopy of the forest is **dominated by the Hollong tree, while the Nahar dominates the middle canopy.** The lower canopy consists of evergreen shrubs and herbs.
- **Fauna:** It **contains India's only gibbons–the hoolock gibbons, and Northeastern India's only nocturnal primate–the Bengal slow loris**, Indian elephants, tigers, leopards, jungle cats, wild boar, three types of civet, four types of squirrels, stump-tailed macaque, northern pig-tailed macaque, etc.

LION-TAILED MACAQUES

Context:

- Researchers cautioned that the increase of lion-tailed macaques in human-dominated landscapes is driven largely by easy access to food associated with human presence.

About Lion-Tailed Macaques:

- **Nature:** It is an **Old World monkey.**

- **Other names:** It is also known as the **'beard ape'** because of its mane.
- **Nomenclature:** The magnificent Lion-tailed macaque is named due to its **lion-like, long, thin, and tufted tail.**

- **Appearance:** They are characterised by the **grey mane around their face.**
- **Uniqueness:** It is **one of the smallest macaque species** in the world.
- **Distribution:** It is **endemic to evergreen rainforests** of the southern part **in Western Ghats**, with its range passing through the three states of Karnataka, Kerala and Tamil Nadu.
- **Habitat:** It is an **arboreal and diurnal creature**, they sleep at night in trees (typically, high in the canopy of rainforest).
- **Distinguishing feature:** These macaques are territorial and very communicative animals. One of the distinguishing features of this species is that **males define the boundaries of their home ranges by calls.**
- **Communication system:** Overall, their communication system is composed of as many as **17 vocalisations.**
- **Diet:** It is **omnivorous** and feeds upon a wide variety of food, although fruits form the major part of their diet.
- **Conservation Status:**
  - **IUCN:** Endangered
  - **CITES:** Appendix I
  - **The Wildlife (Protection) Act, 1972:** Schedule I.

PAPIKONDA NATIONAL PARK

Context:

- The adult male tiger, named 'Explorer', was reintroduced into the wild in the Papikonda National Park (PNP) in Andhra Pradesh as part of Operation Stripes.

About Papikonda National Park:

- **Location:** It is located in the **East Godavari and West Godavari Districts of Andhra Pradesh.**
- **Area:** It is the **largest national park in Andhra Pradesh,** spanning approximately **1,012.86 sq km.**
- **Establishment:** Initially declared a reserved forest in 1882 and a wildlife sanctuary in 1978, it was upgraded to a **National Park in 2008.**
- **Associated river:** Situated in the northern Eastern Ghats, it is **bisected by the Godavari river,** which cuts through the Papikonda hill range, creating a rugged landscape of steep slopes and deep valleys.
- **Terrain:** It encompasses a **rugged landscape with steep slopes**, hills, and deep valleys.

- **Mountains:** There are **62 named mountains** in the park. Devara Konda is the highest point. The **most prominent mountain is Verala Konda.**

- **Significance:** It has been recognized as an **Important Bird and Biodiversity Area** (IBA) by BirdLife International.
- **Vegetation:** The park is characterized by **tropical, moist deciduous forests** mixed with patches of semi-evergreen and dry deciduous forests.
- **Flora:** The park is home to several types of trees, including **teak, rosewood, sandalwood, bamboo, eucalyptus, sal, mahua,** pterocarpus, terminalia, and cassia.
- **Fauna:** These include **Bengal tiger, Indian leopard, sloth bear, and Indian wild dog (dhole), gaur (Indian bison),** sambar deer, spotted deer (chital), mouse deer, barking deer, four-horned antelope, and Indian giant squirrel.
- **Uniqueness:** A unique **dwarf breed of goat known locally as the "kanchu mekha"** originates in this region.
- **Tribes:** It is primarily inhabited by the **Konda Reddi and Koya tribes**, who are recognized as Particularly Vulnerable Tribal Groups **(PVTGs).**
- **Concern:** The ongoing construction of the **Polavaram multi-purpose irrigation project** on the Godavari River poses a significant threat, as the reservoir's backwaters are expected to submerge parts of the park and displace several tribal villages.

WHITE-BELLIED SEA EAGLE

Context:

- Recently, the annual nest monitoring survey of the White-bellied Sea Eagle recorded 17 active nesting sites in Kannur and Kasaragod districts during this season.

About White-Bellied Sea Eagle:

- **Nature:** It is a **large diurnal bird of prey** in the family Accipitridae.
- **Scientific name:** Its scientific name is **Haliaeetus Leucogaster.**
- **Other names:** It is also known as the **white-breasted sea eagle.**
- **Appearance:** Adults feature a **distinctive white head, neck, and underparts with dark grey/brown wings** and a short wedge-shaped tail.
- **Habitat:** It lives primarily in **terrestrial habitats near the ocean, especially coasts, islands, and estuaries,** but also live in forested areas with access to smaller bodies of water.

- **Distribution:** It is found in **India, Sri Lanka, Andaman Island, southern China, the Philippines, Wallacea, New Guinea, Australia**, and Tasmania, among other countries.
- **Uniqueness:** It exhibits **sexual dimorphism**, with females being slightly larger than males (wingspan of females reaching up to 2.2 meters).
- **Communication:** The primary form of communication in white-bellied sea eagles is **vocalizations.**
- **Diet:** They are **carnivorous and primarily prey on aquatic animals**, especially fish, eels, and crustaceans.
- **Behaviour:** They are **monogamous and territorial** and they are known for spectacular aerial courtship displays involving cartwheeling with locked talons.
- **Indicator species:** It is an apex predator in coastal ecosystems, and is considered an **indicator of marine and coastal environmental health.**

- **Conservation Status:** It is classified under the category of **'Least Concern'** as per the IUCN Red Data List.

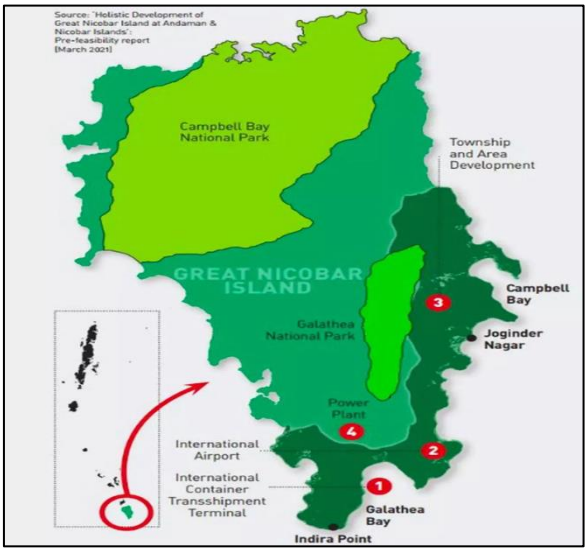
GREAT NICOBAR PROJECT

Context:

- A six-member National Green Tribunal (NGT) special bench recently ruled that it did not find "any good ground" to interfere in Great Nicobar mega infrastructure project.

About Great Nicobar Project:

- **Nature:** It is an about Rs.80,000 crore mega infrastructure initiative aimed at **transforming the southernmost island of the Andaman and Nicobar archipelago** into a strategic and economic hub.
- **Launch:** It was conceived **by the NITI Aayog** and launched **in 2021.**
- **Implementation:** It is being implemented by the **Andaman and Nicobar Islands Integrated Development Corporation (ANIIDCO).**
- **Project overview:** It involves **development at Galathea Bay, Pemmaya Bay, and Nanjappa Bay.** The island is approximately equidistant from Colombo (Sri Lanka), Port Klang (Malaysia), and Singapore, placing India at the centre of regional sea trade.



- **Key infrastructure components:**
  - **International Container Transhipment Terminal (ICTT):** Aimed at enabling **Great Nicobar to become a major player in the regional and global maritime economy** by participating in cargo transhipment.
  - **Greenfield International Airport:** To enhance **civilian connectivity, tourism,** and provide dual-use defence capability.
  - **Greenfield Township:** To **support the projected population** and economic activities.
  - **Gas and Solar-Based Power Plant:** To meet the **energy requirements** of the new infrastructure.
- **Tribal Safeguards:** Development requires **mandatory consultation with tribal welfare bodies** (Andaman Adim Janjati VikasSamiti (AAJVS), Ministry of Tribal Affairs), **as per the Jarawa (2004) and Shompen (2015) Policies.** Consultation with the National Commission for Scheduled Tribes (NCST) under Article 338A(9) confirms tribal interests will be protected.
- **Environmental Safeguards:** The project includes **8 wildlife corridors for safe animal movement.** Compensatory afforestation for felled trees is planned in Haryana, as the islands already have over 75% forest cover.
- **Alignment:** It aligns with **India's Maritime Vision 2030** and **Amrit Kaal Vision 2047.**
- **Strategic significance:**
  - **Chokepoint Proximity:** The island's **location near the Malacca, Sunda, and Lombok Straits**—critical waterways connecting the Indian Ocean to the Pacific enables India to monitor vital sea lanes for global trade and energy supply.
  - **Maritime Domain Awareness:** It strengthens India's capacity to **track naval movements, particularly concerning China's increasing presence in the Indian Ocean Region (IOR)** and

the military facility being built on the Coco Islands (Myanmar), located just 55 km north of India's Andaman & Nicobar Islands.
    - **First Line of Defence:** The Andaman & Nicobar Islands serve as India's first line of maritime defence, **sharing sea boundaries with Myanmar, Thailand, Indonesia, and Bangladesh.**
    - **Military Deterrence:** The project facilitates the **deployment of additional military forces, larger warships, aircraft, missile batteries, and troops**, enabling close surveillance and building strong military deterrence.
- **Concerns and challenges:**
    - **Ecological Fragility:** The project requires **diverting ~130 sq. km of forest land** and felling nearly one million trees in a biodiversity hotspot.
    - **Threat to Wildlife:** Galathea Bay is a critical nesting site for the **endangered Leatherback Sea Turtle and the Nicobar Megapode.**
    - **Tribal Rights:** Concerns have been raised regarding the displacement and **cultural disruption of the Shompen** (a Particularly Vulnerable Tribal Group or PVTG) **and the Nicobarese tribes.**
    - **Seismic Risk:** The island sits in **Seismic Zone V,** making it highly vulnerable to earthquakes and tsunamis, as evidenced by the permanent subsidence of 15 feet during the 2004 tsunami.

BEE CORRIDORS

Context:

- Recently, National Highways Authority of India (NHAI) announced a first-of-its-kind initiative to develop pollinator or bee corridors along National Highways.

About Bee Corridors:

- **Nature:** Bee Corridors are **linear stretches of pollinator-friendly vegetation** developed **along National Highways.**
- **Composition:** They will consist of **flowering trees and plants that provide year-round nectar and pollen support** to honeybees and other pollinators.
- **Objective:** It aims to **reduce ecological stress on pollinators** and ensure sustained availability of nectar sources, thereby strengthening agricultural productivity and ecological balance through climate-sensitive highway plantation planning.

- **Scientific design: Flowering plants will be strategically placed at intervals** matching the foraging range of bees (500 metres to 1 km).
- **Species selection:** Native species like **Neem, Karanj, Mahua,** and others will be utilized.
- **Staggered flowering:** The selection ensures **continuous food availability** by using plants that bloom at different times.
- **Habitat conservation:** The project incorporates **natural elements for nesting, such as flowering weeds and dead wood.**
- **Significance:**
    - **Pollinator conservation:** It aims to **combat the decline of pollinator populations.**
    - **Agricultural productivity:** The corridors can **boost crop yields** for nearby farms.
    - **Ecological balance:** The initiative helps connect fragmented habitats and **enhance biodiversity.**

- **Sustainable infrastructure:** It aligns highway development with **Sustainable Development Goals and climate resilience.**

INDIAN SANDALWOOD

Context:

- According to a recent report by the sandalwood development committee, globally, the estimated annual demand for sandalwood stands at 5,000 to 6,000 tonnes.

About Indian Sandalwood:

- **Scientific Name:** Its scientific name is **Santalum Album** (Family: Santalaceae).
- **Nature:** It is a **hemi-parasitic tree,** meaning it derives some of its nutrients from the roots of other host plants.
- **Other names:** It is known by the name **"Chandan" and "Srigandha"** in India.
- **Habitat:** It is primarily found in **Tropical Dry Deciduous Forests.**
- **Significance:** It is one of the **oldest and precious sources of natural fragrance.**
- **Required climatic conditions:**
  - **Soil:** Sandalwood grows better in slight alkaline condition soil **pH Range between 6.7. to 7.5.**
  - **Climate:** It thrives in **hot and humid** climates.
  - **Temperature:** The ideal temperature for the growth of Sandalwood is between **12 degrees Celsius to 35 degrees Celsius.**
  - **Drainage:** It requires good drainage and **does not stand water logged ground.**

- **Maturity:** It is a long-duration crop, taking **nearly 20 years** to develop quality heartwood, which is the primary source of sandalwood oil.
- **Endemism:** It is native to **India, Indonesia, and Australia.**
- **Regeneration:** It freely **produces seed and natural regeneration occurs both via seedlings and through root suckers** after trees have been uprooted and the stump removed from the ground.
- **Uses:** Sandalwood and its essential oils have very high commercial values because of its use in **aromatherapy, soap industry, perfumery, cosmetics, and pharmaceuticals.**
- **Major growing states:** Sandalwood is mostly grown in states of **Karnataka, Andhra Pradesh, Gujarat, Bihar, Telangana, Madhya Pradesh, Maharashtra, and Tamil Nadu** in India.
- **Reasons for decline in sandalwood production: Illegal logging and smuggling, habitat loss** due to deforestation, Slow growth and long maturation cycle, Pests and diseases.

CHICORY

Context:

- Recently, FSSAI gave an advisory related to Chicory, whose content must be prominently displayed on front of coffee powder packs from 1 July.

About Chicory:

- **Nature:** It is a **blue-flowered, woody perennial herbaceous plant** mainly cultivated in temperate regions worldwide.
- **Family:** Chicory (Cichorium intybus) is a plant belonging to the **Asteraceae family.**

- **Distribution:** It is native to **Europe and Asia**; in India, it is primarily cultivated in **Uttar Pradesh and Gujarat.**
- **Significance:** There are several varieties of the chicory plant, known differently globally due to its **numerous medicinal, culinary, and nutritional qualities.**
- **Uniqueness:** It contains **Inulin, a soluble fiber and prebiotic** that acts as a natural sweetener. It is naturally **caffeine-free and rich in beta-carotene.**

- **Additive in coffee:** It is a popular additive that provides a **darker colour and an earthy taste to the beverage.** It is significantly less expensive than high-quality coffee.
- **Existing rules: Previous FSSAI regulations (2011)** stipulated that a coffee-chicory mixture must **contain at least 51% coffee.**
- **Legal status:** Under the **Coffee Act 1942,** chicory is **not defined as coffee** because it does not come from a rubiaceous plant.
- **Other uses:**
    - **Culinary:** Leaves are used as **salad greens** (e.g., Radicchio, Belgian endive).
    - **Medicinal:** Used in **traditional medicine (folk remedies)** for liver health, digestion, and as a mild laxative.
    - **Agricultural:** Grown as a **forage crop for livestock** (especially sheep) due to its nutrient density.

PEATLANDS

Context:

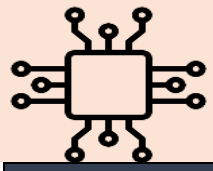
- Two lakes (Mai Ndombe and Tumba) in the Democratic Republic of Congo are releasing carbon that has been locked away for thousands of years in surrounding peatlands.

About Peatlands:

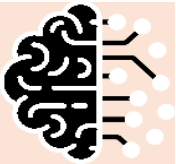
- **Definition:** They are **terrestrial wetland ecosystems where waterlogged conditions prevent plant material from fully decomposing**, leading to the accumulation of peat (partially decayed organic matter).
- **Formation:** Peat forms **over thousands of years** as the rate of organic matter production exceeds its decomposition due to low oxygen (anaerobic) levels.
- **Coverage:** They cover **only 3% of Earth's land surface but are found in every climatic zone,** from boreal regions to the tropics.
- **Seepage of carbon:** Peat, formed from the accumulation of dead plant material, does not decompose in a water-logged state but when it dries, the **organisms that break down plant material revive and the carbon seeps back into the atmosphere.**
- **Composition:** In cool climates, peatland vegetation is mostly made up of **Sphagnum mosses, sedges and shrubs** and are the primary builder of peat. In warmer climates **graminoids and woody vegetation** provide most of the organic matter.
- **Types:**
    - **Northern and temperate peatlands:** Found especially, **Europe, North America and Russia** where they have formed under high precipitation-low temperature climatic regimes.
    - **Tropical peatlands:** Found in Southeast Asia, mainland East **Asia, the Caribbean, Central America, South America, Africa**, parts of Australasia and a few Pacific Islands.

- **Significance:**
  - **Carbon giant:** Peatlands store approximately **600 gigatonnes of carbon**—more than all the world's forests combined.
  - **Climate regulation:** In their natural wet state, they provide a **net-cooling effect.** Conversely, damaged peatlands contribute about 5% of global anthropogenic CO_2 emissions.
  - **Water security:** They hold **10% of the world's unfrozen freshwater**, regulating flows to mitigate floods and droughts.
  - **Biodiversity:** They support **endangered species like the Bornean orangutan and Sumatran tigers.**

- **Global conservation frameworks:**
  - **Global Peatlands Initiative (GPI):** A **UNEP-led** multi-partner effort launched in 2016 to save peatlands.
  - **Brazzaville Declaration (2018):** A landmark agreement signed by the Democratic Republic of Congo (DRC), Republic of Congo, and Indonesia **to protect the Cuvette Centrale peatlands.**
  - **Ramsar Convention:** Many peatlands are designated as **Wetlands of International Importance.**
  - **UNEP Global Peatland Hotspot Atlas 2024:** Highlights that nearly **12% of global peatlands are degraded**, with India seeing over 60% degradation in its specific peat-rich areas.



SCIENCE & TECHNOLOGY



MOLTBOOK

Context :

- The much-talked-about AI-only social network for bots, Moltbook, may not quite be the revolutionary uprising of machines that many had imagined.

About Moltbook:

- **Nature:** Moltbook is a **new online platform where artificial intelligence agents interact** with each other without direct human participation.
- **Launch:** It was launched **in January 2026 by developer Matt Schlicht.**
- **Objective:** It allows **AI systems to post, interact, and exchange information** in a shared digital space.
- **Diverse discussions:** It is designed as a machine-to-machine space where discussions range from **technical issues to philosophical topics like "consciousness" or identity.** The agents generate text based on patterns they learned from training data and from interactions.
- **Autonomous interaction:** On Moltbook, AI agents do talk to each other **by posting, replying and upvoting comments in thread conversations.** This communication happens autonomously once a human owner connects their agent to the platform.
- **Emergent behaviour:** AI agents on Moltbook appear to **update their behaviour based on interactions with other bots.** They remix ideas they encounter in discussions and sometimes adjust responses over time, creating threads that resemble ongoing debates.
- **Multi-Agent Systems (MAS):** It demonstrates the capability of AI models to **coordinate and simulate complex social structures** autonomously.
- **Ethical concerns:** It raises questions regarding **AI alignment, accountability, and the risk of unmonitored AI groups spreading misinformation** or engaging in adversarial behavior like stealing API keys.
- **Security risks:** Experts warn that platforms like Moltbook could facilitate **indirect prompt injection attacks,** where agents are manipulated into compromising their owner's data.

MYOGLOBIN

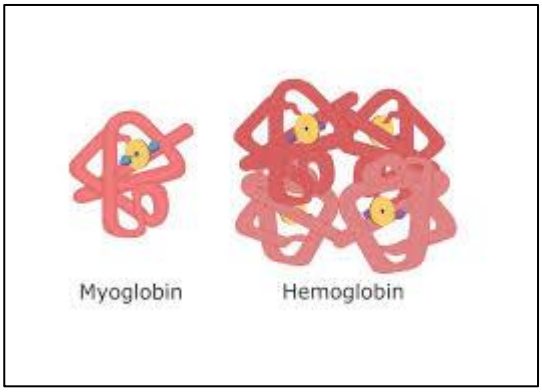
Context :

- Researchers have developed a flexible, low-cost biosensor capable of detecting myoglobin which is associated with the early stages of a heart attack.

About Myoglobin:

- **Nature:** It is a **small protein** that accounts for about **2% of total muscle protein.**
- **Presence:** It is found **predominantly in striated muscle tissue,** namely skeletal muscle and cardiac muscle. Specifically, it is in the cytoplasm of cardiac myocytes and the sarcoplasm of oxidative skeletal muscle fibers.
- **Primary function:** It acts as **an intracellular storage site (reservoir) for oxygen in muscle tissues,** releasing it during high metabolic demand or hypoxia.
- **Structure:** It encodes a **single polypeptide chain** with one oxygen binding site.

- **Association with hemoglobin:** It is one of the members of the globin superfamily, which also includes hemoglobin. It often **gets compared structurally and functionally to hemoglobin.** Hemoglobin has 4 polypeptide chains and four oxygen binding sites.
- **Composition:** It is made of **amino acids, iron** and other molecules that work together to hold onto oxygen.
- **Transports Oxygen:** It transports oxygen from the bloodstream to your muscles when they need it to convert stored energy into movements. It serves as a **sensitive indicator of cellular damage when detected in urine or plasma.** It serves as a buffer of intracellular oxygen concentrations and as an oxygen reservoir in muscle.
- **Enzymatic functions:** It is necessary for the **decomposition of bioactive nitric oxide to nitrate.** The removal of nitric oxide enhances mitochondrial respiration.
- **Nobel Prize Connection:** The **three-dimensional structure of myoglobin was the first to be determined by X-ray crystallography**, earning John Kendrew and Max Perutz the **1962 Nobel Prize in Chemistry.**
- **Significance:**
    - **Biomarker for Heart Attacks:** It is an early indicator of cardiac injury. Elevated levels appear in the blood within 1–3 hours of a heart attack, though it lacks specificity compared to Troponin because it also rises during general muscle injury.
    - **Toxicity:** While vital in muscles, free myoglobin in the bloodstream (often from rhabdomyolysis—severe muscle breakdown) is filtered by the kidneys and can be toxic, potentially leading to kidney failure.



    - **Colour of Meat:** The "red liquid" in meat packages is not blood, but a mixture of water and myoglobin. Its oxidation state determines whether meat looks purple-red, bright red, or brown.
    - **Diving mammals:** Animals like whales and seals have exceptionally high levels of myoglobin (10–30 times more than humans), enabling them to stay submerged for long periods.

AI STACK

Context:

- India is anchored in the vision of AI for Humanity and building a robust AI stack is both a technological priority and a social commitment for India.

About AI Stack:

- **Definition:** An AI stack is the complete **set of tools and systems** that work together to build and **run AI applications**.
- **Objective:** It makes **artificial intelligence work in the real world**, from the apps people use every day to the data, computing power, networks etc.
- **Composition:** It is made up of **five layers:**
    - **Application layer:** It represents the user-facing component of the AI stack. It includes AI-powered apps and services such **as health diagnostic tools, farming advisory platforms, chatbots,** and language translation applications.

- **AI model layer:** It acts as the brain of AI systems. AI models are trained on data to **recognize patterns, make predictions, and take decisions.** It is the core intelligence that determines how effectively applications can understand, predict, and respond to real-world needs.
- **Compute layer:** It provides the **computing power required to train and run AI models.** During training, computers process vast amounts of data so the model can learn and improve. It is the critical enabler that determines the scale, speed, and sophistication of AI innovation.

- **Data centres and network infrastructure layer:** Data centres are where **AI systems are stored and operated**, while networks like the internet, broadband, and 5G **move data between users, computers, and AI models.** They provide the foundational backbone that enables AI systems to operate in real time.
- **Energy layer:** It keeps the entire **AI stack running.** AI data centres consume large amounts of electricity because powerful computers are needed to train and operate AI systems.

- **Strategic Significance for India:**
  - **Sovereign AI:** Building an in-house stack ensures data sovereignty **and prevents "Digital Colonialism"** by keeping sensitive citizen data within local jurisdiction.
  - **India Stack 2.0:** The AI Stack is often viewed as the **next evolution of India Stack (Aadhaar, UPI),** aimed at democratizing high-tech access.
  - **AI for Humanity:** India's philosophy focuses on inclusive growth, using AI to **solve challenges in healthcare (e.g., TB screening), agriculture (crop yield prediction),** and education.
  - **Economic Impact:** AI is projected to **add approximately $967 billion** to the Indian economy by 2035.

GRAPHICS PROCESSING UNITS (GPU)

Context:

- India and US recently announced that they will increase trade in technology products, including Graphics Processing Units (GPUs) and other goods used in data centers.

About Graphics Processing Units (GPU):

- **Nature:** A GPU is an **electronic circuit board** that can quickly perform many mathematical calculations.
- **Objective:** The technology was originally designed **to speed up 3-D graphics rendering.** It is a specialized electronic circuit designed to accelerate the creation of images, videos, and animations through parallel processing.
- **Significance:** GPUs are the **"workhorse" of modern AI.** They excel at the matrix multiplications required for training Deep Learning and Large Language Models (LLMs).
- **Similarity with CPU:** Like a central processing unit (CPU), a GPU is **also a chip component** in computing devices.

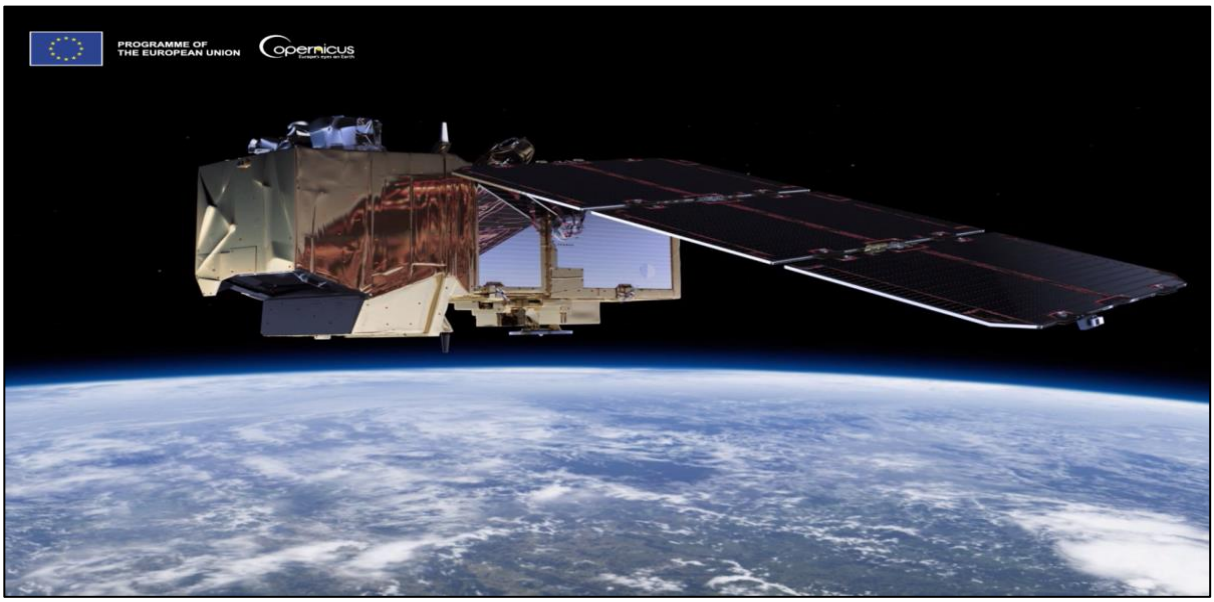
- **Difference with CPU:** Unlike a CPU (Central Processing Unit), which has a few cores optimized for sequential serial processing, a GPU has **thousands of smaller cores designed to handle multiple tasks simultaneously.**
- **Types:** Traditional GPUs come in two main flavours.
    - **Integrated GPUs:** Built into the CPU or motherboard; shares system RAM; used **for basic tasks.**
    - **Dedicated (Discrete) GPUs:** Separate chips with their own VRAM (Video RAM); used **for high-performance tasks** like gaming, 3D rendering, and AI.

- **Working:** It uses Single Instruction, Multiple Data (SIMD), allowing it **to perform the same operation on many data points at once,** which is essential for rendering millions of pixels or training complex AI models.
- **Data processing:** A GPU will also have its **own RAM to store the data it is processing.** This RAM is designed specifically to hold the large amounts of information coming into the GPU for highly intensive graphics use cases.
- **Applications:** It is used in areas including high-performance computing, machine learning, **artificial intelligence (AI), weather forecasting, and crypto currency mining.**

COPERNICUS SENTINEL-2 MISSION

Context:

- The European Space Agency's Copernicus Sentinel-2 mission recently released a high-resolution image of the 2026 Winter Olympic venues across northern Italy.



About Copernicus Sentinel-2 Mission:

- **Nature:** It is an **Earth observation satellite mission** and it is part of Copernicus - the European Union's Earth observation program.
- **Development:** It is developed and operated by the **European Space Agency (ESA).**
- **Objective:** It aims at **monitoring variability in land surface conditions**.

- **Satellite constellation:** It comprises **two twin polar-orbiting satellites, Sentinel-2A** (launched 2015) **and Sentinel-2B** (launched 2017), placed in the same sun-synchronous orbit but phased at 180°. A **third satellite, Sentinel-2C,** was launched in September 2024 to ensure data continuity.
- **Technical specifications:**
  - **13 spectral bands:** Captures **data across visible, near-infrared**, and shortwave infrared regions.
  - **Spatial resolution:** Varies by **band—10m, 20m, and 60m.**
  - **Wide swath width: 290 km,** which is significantly wider than many other missions in its class.
  - **Revisit frequency: 5 days at the equator** with two satellites.
- **Applications:**
  - **Agriculture & Food Security:** Monitoring **crop health, leaf area index**, and chlorophyll content to support precision farming.
  - **Disaster Management:** Real-time mapping of **floods, volcanic eruptions, landslides,** and wildfires to assist humanitarian relief.
  - **Environmental Monitoring:** Tracking **deforestation, desertification**, and land-cover changes.
  - **Water Quality:** Observing pollution in **lakes and coastal waters** and monitoring harmful algal blooms.
  - **Methane Emissions:** Recent capabilities include observing **anthropogenic** methane emissions.

WET DRESS REHEARSAL

Context:

- Recently, NASA found a hydrogen leak during a wet dress rehearsal of its Artemis II mission.

About Wet Dress Rehearsal:

- **Definition:** It is the **final practice run for a high-stakes rocket launch.**
- **Nomenclature:** The "wet" in the name refers to the **loading of cryogenic fuel** (typically liquid oxygen and liquid hydrogen for large rockets) into the rocket's massive tanks.
- **Objective:** It aims t**o identify potential issues that only occur under extreme cryogenic conditions,** such as seal leaks, material stress, or fuel line issues.
- **Procedure:** It is a rigorous demonstration of ground team preparedness. The team will **cool the fuel feed lines, load the tanks, pressurise them, monitor leak detectors, and execute the countdown into its final stages.**
- **Role of rehearsals:** These rehearsals **keep the tanks full as the propellant warms and boils off, then executes a stop just before ignition**, followed by draining and returning the vehicle to a stable configuration.

- **Simulation:** This puts the entire craft through each step of a simulated launch, exposing it to the super-chilled fuels to **ensure that everything will function properly on launch day.**

- **Significance:** Wet rehearsals are important because only they can **reveal events that happen in cryogenic conditions, e**.g., leaks in seals or in the connections between the rocket and ground equipment.

About Dry Dress Rehearsal:

- **Nature:** It practices the countdown and important **operations without loading cryogenic propellants** into the rocket.
- **Procedure:** The team will **power up vehicle and ground systems, verify its communications equipment,** simulate critical events, and validate decision-making and handoffs between launch control, engineering, range safety, and, if applicable, crew operations.
- **Significance:** Many of the testing steps use simulated sensor inputs. These rehearsals are useful to **reveal logical problems in the flow of events** without risking fuel leaks.

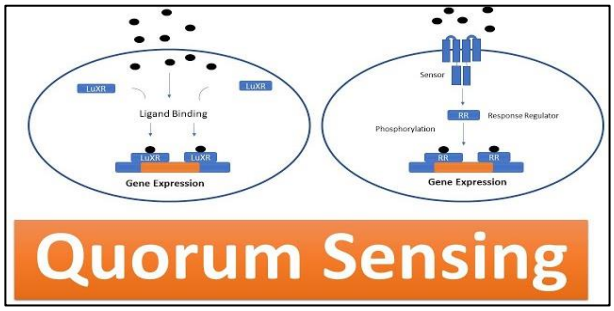
QUORUM SENSING

Context :

- The phenomenon "quorum sensing" could indeed be a game changer for medicine, by opening new avenues to develop anti-quorum sensing therapies instead of antibiotics.

About Quorum Sensing:

- **Nature:** Quorum sensing is a **mechanism by which bacteria regulate gene expression** in accordance with population density through the use of signal molecules.
- **Functioning:** It allows **bacteria populations to communicate and coordinate group behaviour** and commonly is used by pathogens (disease-causing organisms) in disease and infection processes.
- **First observation:** Bacterial activity involving quorum sensing was first observed in the mid-1960s **by Hungarian-born microbiologist Alexander Tomasz in his studies of the ability of Pneumococcus** (later known as Streptococcus pneumoniae) to take up free DNA from its environment.



- **Pathway composition:** Standard quorum-sensing pathways consist of **bacteria populations, signal molecules, and behavioural genes.**
- **Autoinducers:** The **signal molecules, known as autoinducers**, are secreted into the environment by bacteria and gradually increase in concentration as the bacteria population grows.
- **Behaviour regulation:** After reaching a certain concentration threshold, the molecules become detectable to bacteria populations, which then activate corresponding response genes that regulate various behaviours, **such as virulence, horizontal gene transfer, biofilm formation, and competence** (the ability to take up DNA).
- **Significance:** Since many of these processes are effective only at certain population sizes, quorum sensing is a key behaviour-coordination mechanism in many microbes. It could indeed be a **game changer for medicine, by opening new avenues to develop anti-quorum sensing therapies instead of antibiotics.**
- **Variation:** Although quorum sensing is common among bacteria, the precise sensing system and **class of quorum-sensing compounds used may differ**. For example, the **bacterium Pseudomonas aeruginosa,** which can cause pneumonia and blood infections, uses quorum sensing to regulate disease mechanisms.

- **Use in other organisms:** In other organisms, quorum sensing is used for **symbiotic processes and cell growth;** an example is the nitrogen-fixation mechanism of the bacterium Rhizobium leguminosarum.

BIO-BASED CHEMICALS

Context :

- India has prioritised bio-based chemicals and enzymes as a priority area under the Department of Biotechnology's BioE3 policy.

About Bio-Based Chemicals:

- **Definition:** Bio-based chemicals are **industrial chemicals produced using biological feedstocks** like sugarcane, corn, starch, or biomass residues.
- **Production:** These are often produced **through fermentation or enzymatic processes.**
- **Examples:** These include **organic acids** (such as lactic acid), **bio-alcohols, solvents, surfactants,** and intermediates used in plastics, cosmetics, and pharmaceuticals.
- **Difference with conventional chemicals:** Unlike conventional chemicals, for which the largely available supplies are obtained through sources of fossil fuel, bio-based alternatives **reflect a sustainable solution.**
    - **Drop-in:** These are **chemically identical to fossil-based versions** (e.g., Bio-PET) and usable in existing infrastructure.
    - **Novel:** These offer **new functionalities not possible with petrochemicals** (e.g., certain bioplastics like PLA).

- **Ecological Benefits:**
    - **Reduced reliance on fossil fuels:** The bio-based industry reduces reliance on fossil fuels by applying **renewable feedstocks.**
    - **Low production of harmful byproducts:** Biobased methods generate much **lower amounts of hazardous waste** than the conventional petroleum-based methodologies.
    - **Reduced carbon footprint:** The production of biochemicals generally requires **less energy than their corresponding petroleum-based equivalents.**
    - **Waste minimization and circular economy:** With bio-based chemicals mostly coming from organic waste resources, development of the circular economy will be **based on recycling, efficiency in the use of resources**.
- **Challenges and Risks:**
    - **Cost disadvantage: Higher production cost** compared to petrochemical alternatives, which creates an entry level barrier.
    - **Feedstock: availability of reliable feedstocks** and supporting infrastructure required to produce different categories of bio-based chemicals at scale.
    - **Market adoption: Uncertainty about adapting bio-based chemicals** as substitutes over fossil fuel-based chemicals.
- **Strategic significance for India:**
    - **Import substitution:** India **imported approximately $480 million worth of acetic acid in 2023.** Shifting to bio-alternatives reduces reliance on costly petrochemical imports.
    - **Climate goals:** These chemicals generally have a lower carbon footprint and contribute to a **circular bioeconomy** by using waste as feedstock.

- **Industrial efficiency:** Many bio-based processes use enzymes which **operate at lower temperatures and pressures,** significantly reducing energy consumption.
- **Rural growth:** Creates **new markets for agricultural produce and crop residues,** potentially boosting rural income.

VOICERA

Context:

- Recently, the Ministry of Electronics and Information Technology unveiled VoicERA at the India AI Impact Summit 2026.

About VoicERA:

- **Nature:** It is an **open-source, end-to-end Voice AI stack.**
- **Objective:** It establishes a national execution layer for multilingual Voice and Language AI, aiming to **make voice the primary digital interface for citizens.**
- **Platform:** It is deployed on the **BHASHINI National Language Infrastructure** under the Ministry of Electronics and Information Technology (MeitY).
- **Development:** The initiative is a milestone for the **Digital India BHASHINI Division** (DIBD) and is supported by foundations like **EkStep Foundation.**
- **Open-Source:** It is designed to be **pluggable and interoperable**, allowing developers to build without reconstructing entire technology stacks.

- **Scalability:** It supports real-time speech systems, conversational AI, and multilingual telephony **at a "population scale".**
- **Significance:** It enables secure and scalable **deployment of voice systems across government, research institutions, and innovation ecosystems.**

MONS MOUTON

Context:

- Scientists from ISRO have identified a landing zone in south polar region of the Moon called Mons Mouton for India's first lunar sample return mission, Chandrayaan-4.

About Mons Mouton:

- **Nomenclature:** It is officially named Mons Mouton after **NASA mathematician and computer programmer Melba Roy Mouton.**
- **Location:** It is located **near the South Pole of the Moon.** It is situated in the South Circumpolar Region (SCR) of the Moon.
- **Dimensions:** It stands about **6,000 metres high** (comparable to some of the highest peaks on Earth) and spans **nearly 100 km in width.**
- **Origin:** It is believed to have formed **as part of the rim uplift of the South Pole–Aitken basin** following ancient massive asteroid impacts.

- **Geology:** It represents exposed **deep lunar crust formed by ancient asteroid impacts,** offering rare scientific value for studying the Moon's early formation.
- **Flatter than surrounding:** Its peak is largely flat, which is **favourable for landing.**
- **Strategic features:**
    - **Sunlight:** Its high elevation allows some areas to receive **near-continuous sunlight, crucial for solar-powered missions.**
    - **Water Ice:** It lies **near permanently shadowed regions** (PSRs) where water ice is believed to exist.
    - **Communication:** The site offers a **clear line-of-sight for radio communication** with Earth.
- **Significance:**
    - **Chandrayaan-4:** Identified as a promising region for **India's first lunar sample return landing,** with manageable slopes, low boulder density and adequate sunlight.
    - **Lunar science:** Provides insights into the early **Moon's formation** and impact history.
    - **Future missions:** Falls within regions of interest for **NASA's Artemis programme** and other international missions.
    - **Resource potential:** Proximity to permanently shadowed regions raises prospects for **studying lunar volatiles** (water ice).

HISTORY AND ART & CULTURE

GURU RAVIDAS

Context:

- The Prime Minister recently inaugurated the Adampur Airport in Punjab and renamed it after Sri Sant Guru Ravidas Ji to honour the revered saint on his birth anniversary.

About Guru Ravidas:

- **Time period: Guru Ravidas (1377-1527 C.E.)** was a renowned saint known for his contributions to the **Bhakti movement.** His devotional songs and verses made a lasting impact upon the Bhakti Movement.
- **Other names:** Guru Ravidas is also known as **Raidas, Rohidas, and Ruhidas.**
- **Contemporaries:** Ravidas is traditionally seen as a **student of the bhakti-poet Ramananda.** He is also thought to have **lived around the same time as Kabir**, another famous poet-saint.
- **Contributions:** He was a well-known poet. His poems, written in local languages, inspired many people. 41 of his devotional songs and poems are found in the **Sikh holy book, the Guru Granth Sahib.** Many of his poems are also in the **Panch Vani text of the Dadu Panthi tradition** within Hinduism.

- **Philosophy and teachings:** The core of Guru Ravidas's philosophy was the **rejection of the caste system and the promotion of human rights** and dignity. He **envisioned a society called 'Beghumpura' (a city without sorrow),** where there is no suffering, no fear, and no discrimination.
- **Symbolism:** He also became a **symbol of opposition to untouchability** in society by the higher caste people for the lower caste people. He emphasised the philosophy of spiritual freedom.
- **Nirguna saint:** He abandoned the saguna (with attributes, image) forms of supreme beings and focussed on the **nirguna (without attributes, abstract) form of supreme beings.**
- **Disciple: Meera Bai,** a revered figure in Hindu spiritualism, is said to have **considered Guru Ravidas as her spiritual Guru.**
- **Ravidassia religion:** The Guru's teachings now form the **basis of the Ravidassia religion.** Ravidassias believe that Guru **Ravidas should be treated as a saint just like the other gurus,** as he lived before the first Sikh Guru, and his teachings were studied by the Sikh Gurus.
- **Holy book:** The Ravidassia community adopted the **Amrit Bani Guru Ravidass** as its holy book and established its own symbols and rituals.

JAGANNATH TEMPLE

Context:

- The president of India, who is on a six-day tour to Odisha and Chhattisgarh, offered prayers at the Shree Jagannath Temple in Puri recently.

About Jagannath Temple:

- **Location:** It is a Hindu temple located in **Puri, Odisha.**

- **Deity:** It is dedicated to **Lord Jagannath, a form of the Hindu deity Vishnu.**
- **Construction:** It is believed to have been built during the reign of King Anantavarman Chodaganga Deva, of the **Eastern Ganga dynasty, in the 12th century.** However, the **completion** of the temple happened **in 1230 AD** under Anangbheema Deva III, who also installed the deities in the shrine.
- **Significance:** It is **one of the four sacred pilgrimage sites**, known as the Chaar Dhaams, that hold great significance for Hindus.
- **Uniqueness: Ratha Yatra** is a Hindu festival associated with Lord Jagannath temple.
- **Architecture:** It is a striking example of **Kalinga architecture**, a distinct style prevalent in the Odisha region. The entire temple complex is enclosed within two concentric walls. The temple complex includes shrines, gardens, and sacred tanks, creating a serene atmosphere for devotion.

- **Artistic features:** It is constructed in such a way that **no shadow of the temple falls on the ground** at any time of the day. Unlike other temples of the region, the **carvings on the temples are predominantly of gods and goddesses.**

KONDAVEEDU FORT

Context:

- The Union minister of state recently announced plans for the comprehensive development of the historic Kondaveedu Fort.

About Kondaveedu Fort:

- **Location:** Kondaveedu Fort is a historical fortification located at Kondaveedu village in the **Guntur district of Andhra Pradesh.**
- **Other names:** It is also known as **Kondavid Fort.**
- **Height:** It is spread across a range of hills at **around 1,050 feet elevation.**
- **Significance:** It is the **largest hill fort in** present **Andhra Pradesh.**
- **Construction:** It was constructed during the time of the **Telugu Chodas**, strengthened by the **Kakatiyas** and occupied by Prolaya Vema Reddy, who shifted his capital from Addanki to Kondaveedu in 1323 AD.

- **Later rulers:** Later it was taken over by the **Gajpathis of Orissa** and ravaged by the Bahmani Sultans in 1458. The fort later came under the control of the **Vijayanagara Empire, the Golconda Sultanate, the Mughals**, the French, and the British.
- **Related personalities:** The **great Telugu poet Srinatha** was associated with the Reddy court and praised the fort in his writings.
- **Architecture:** The architecture displays a **blend of Hindu and Islamic styles.**
- **Building materials:** It was mainly constructed with **granite stones and lime mortar.**
- **Notable features:** It features massive granite fortifications, 23 bastions connected by **defensive walls,** and two main entrances called **Kolepalli Darwaza and Nadella Darwaza.**
- **Engineering marvels:** The fort is renowned for its **advanced water conservation systems,** utilizing natural depressions and three main reservoirs: Mutyalamma, Puttalamma, and Vedulla cheruvus.

- **Cultural artifacts: Ruins of temples, pillared halls, and a mosque** are located within the premises. Recent archaeological findings include **Buddhist stupa remains** dating to the 1st or 2nd century CE

VALLEY OF THE KINGS

Context:

- Two researchers recently identified close to 30 inscriptions in Tamil Brahmi, Prakrit and Sanskrit at tombs in the Valley of the Kings in Egypt.

About Valley of the Kings:

- **Nature:** It was the **burial site of dozens of pharaohs**, or kings, of ancient Egypt.
- **Location:** The valley lies in the **southern half of Egypt,** just west of the Nile River. It was part of the ancient city of Thebes.
- **Significance:** Most of the **pharaohs of the 18th, 19th, and 20th dynasties were buried** in the Valley of the Kings. These pharaohs ruled from 1539 to 1077 BC, during the period of Egyptian history known as the New Kingdom.
- **Largest:** The tomb built for the many **sons of Ramses II** is the largest and most complex in the valley.

- **Terrain:** The tombs in the Valley of the Kings were carved into **rocky hillsides** with only a doorway marking their location.
- **Interior:** The interior varied from tomb to tomb, but most consisted of a series of descending corridors with **multiple openings leading to chambers**, or rooms.
- **Use of corridor:** Deep underground, **one corridor ended at the burial chamber.** It held a sarcophagus, or stone coffin, in which the pharaoh's mummy was laid.
- **Objects:** The burial chamber also included **furniture, clothing, jewelry,** and other items that it was believed the pharaoh would need in the afterlife.
- **Denudation:** Virtually all the tombs in the valley were **cleared out in antiquity**. Some had been partially robbed during the New Kingdom, but all were **systematically denuded of their contents** in the 21st dynasty, in an effort to protect the royal mummies and to recycle the rich funerary goods back into the royal treasury.
- **Mostly intact:** The only tomb to remain mostly intact was **that of Tutankhamun** (reigned 1333–24 BC).
- **Uniqueness:** In **1979, UNESCO** made the Valley of the Kings part of the **World Heritage site of ancient Thebes.**

CHENNAKESHAVA TEMPLE

Context:

- The Prime Minister's new office complex, Seva Teerth has been built in the Indian architectural tradition inspired by the features of the Chennakeshava Temple.

About Chennakeshava Temple:

- **Location:** The Chennakeshava Temple is a 12th-century temple, situated on the banks of the Yagachi River in Belur (ancient Velapura), **Hassan district, Karnataka.**
- **Other names:** It is also referred to as the **Keshava, or Vijayanarayana Temple of Belur.**

- **Deity:** It is dedicated to **Lord Vishnu** as Chennakeshava (meaning "Handsome Keshava").
- **Commissioning:** It was commissioned **by King Vishnuvardhana in 1117 CE** (after a major military victory in 1116 CE over the Cholas in the great battle of Talakkad), on the banks of the Yagachi River in Belur, also known as Velapura.
- **Construction:** The temple was built **over three generations** and took 103 years to complete.
- **Significance:** The temple is listed as a **UNESCO World Heritage Site.**
- **Architecture type:** It is a stunning example of **Hoysala architecture**.

- **Material:** It is built using **Soapstone (Chlorite Schist),** which is soft when quarried and hardens over time, allowing for extremely intricate carvings.
- **Stellate plan:** The temple is built on a raised platform called a Jagati that **follows a star-shaped layout,** providing more exterior surface area for sculptures.
- **Intricate carvings:** The exterior walls feature horizontal friezes depicting elephants (strength), lions (courage), horses (speed), and mythological **scenes from the Ramayana, Mahabharata, and Puranas.**
- **Madanikas/Salabhanjikas:** It is famous for **42 bracket figures portraying graceful women in various poses** (e.g., Darpana Sundari or "Lady with a Mirror"), which are hallmarks of Hoysala art.
- **Pillars:** It features unique **lathe-turned pillars** that are highly polished and intricately decorated
- **Stepped well:** One of the unique features of the Chennakeshava Temple is the stepped well, which is **located in the temple complex.**

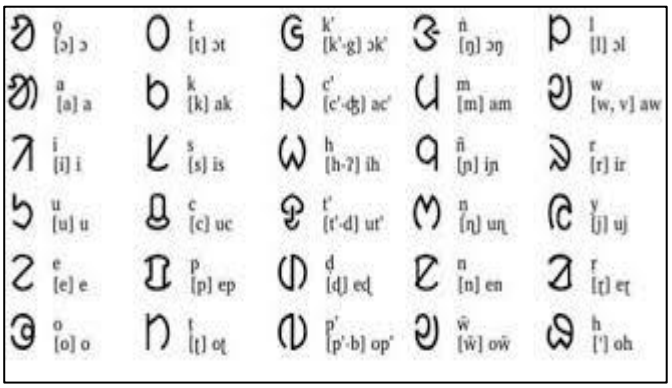
OL CHIKI SCRIPT

Context:

- A commemorative coin and commemorative postage stamp were recently released by the Government of India to mark 100 years of the Ol Chiki script.

About Ol Chiki Script:

- **Invention:** The Ol Chiki script was invented **by Pandit Raghunath Murmu (revered as Guru Gomke) in 1925** to provide a distinct script for the Santhali language, which was previously written in Roman, Devanagari, Oriya, or Bengali scripts.



- **Phonetic Nature:** It is a fully phonetic, alphabetic script where **each symbol corresponds to a specific sound.**
- **Structure:** It consists of **30 letters** (6 vowels and 24 consonants) and is **written from left to right.**
- **Scientific Design:** It accurately represents **unique phonetic elements like glottal stops,** which borrowed scripts struggled to capture. The characters are inspired by nature and daily objects (e.g., animals, hills, rivers).
- **Family:** The Ol Chiki script accurately represents glottal stops and specific vowel patterns inherent to Santhali, which belongs to the **Austroasiatic language family.**

- **Geographic Reach:** It is the primary medium for Santhali speakers across **Jharkhand, Odisha, West Bengal, Bihar, and Assam.**
- **Literary Milestone:** The **first book in Ol Chiki, High Serena (1936),** and works like Bidu-Chandan reflect Santhali culture and identity.
- **Constitutional Status:** The Santhali language, written in Ol Chiki, was included in the **Eighth Schedule** of the Constitution of India through the **92nd Constitutional Amendment Act in 2003.**
- **Democratic Accessibility:** In a landmark move for linguistic justice, the **Constitution of India was translated into Santhali using the Ol Chiki script** in December 2025.

ROYAL INDIAN NAVY REVOLT

Context:

- February 18, 2026 marked the 80th anniversary of the 1946 Royal Indian Navy (RIN) Revolt, a major uprising against British rule.

About Royal Indian Navy (RIN) Revolt:

- **Nature:** It was a **five-day armed uprising (18-23 February, 1946)** by Indian naval ratings against British colonial authority.
- **Historical background:** It was inspired by the **Quit India Movement (1942)** and the trials of the Indian National Army (INA). Appointment of openly **racist officers, such as Arthur Frederick King** at HMIS Talwar, further fuelled anger.
- **Causes of the revolt:**
    - **Racial Discrimination:** Egregious pay gaps and abusive treatment by British officers (e.g., Commander Arthur Frederick King **calling Indian sailors "black bastards").**
    - **Poor Conditions: Unpalatable food** (often described as "inedible") and substandard living quarters.
    - **Arrest of B.C. Dutt:** A rating on HMIS Talwar was arrested **for scrawling "Quit India" on the ship's walls.**
    - **INA Trials:** The public trials of Indian National Army **(INA) officers (Shah Nawaz Khan, Prem Sahgal, and Gurbaksh Singh Dhillon)** at the Red Fort radicalised the ratings.

- **Leadership:** A Naval Central Strike Committee was formed, led by **M.S. Khan (President) and Madan Singh (Vice-President).**
- **Rapid spread:** It was spread to 78 ships and 20 shore establishments across **Bombay, Karachi, Madras, Vishakhapatnam, Kolkata, and the Andamans.** Nearly 20,000 naval ratings participated in this revolt.
- **Demands of the mutineers:** The sailors presented a **"Charter of Demands"** that mixed service issues with national politics:
    - **Release of all INA prisoners** and other political detainees.
    - **Withdrawal of Indian troops** from Indonesia and Egypt.
    - **Equality in pay and allowances** with British counterparts in the Royal Navy.
    - **Better food and more civilised treatment** from superior officers.
- **Political response and support:**

  - **Indian National Congress & Muslim League: Both parties condemned the mutiny.** Leaders like Mahatma Gandhi and Sardar Vallabhbhai Patel feared that an undisciplined armed revolt would lead to chaos and disrupt the peaceful transfer of power.
  - **Individual Support: Aruna Asaf Ali and Achyut Patwardhan** were among the few mainstream leaders who supported the sailors.
- **Significance and impacts:**
  - **British departure:** The revolt shattered British confidence in the loyalty of the Indian military, leading Prime Minister **Clement Attlee to dispatch the Cabinet Mission** to India shortly after.
  - **Hindu-Muslim unity:** The mutineers hoisted the **flags of the Congress (Tricolour), Muslim League (Crescent), and Communist Party (Red Flag) together on ship masts,** showing communal harmony despite the looming Partition.
  - **Public Support: In Bombay, nearly 300,000 workers went on strike**, and over 200 civilians were killed in clashes with British troops.
- **End of the revolt:** The revolt ended on **23 February 1946,** following an intervention by Sardar Patel, who assured the sailors that they would not be persecuted—a promise that was largely unfulfilled as hundreds were later court-martialled or dismissed.

DEVNIMORI RELICS OF LORD BUDDHA

Context:

- India is set to undertake a profound gesture of spiritual outreach & cultural diplomacy through the exposition of the sacred Devnimori Relics of Lord Buddha in Sri Lanka.

About Devnimori Relics of Lord Buddha:

- **Location:** The Devnimori Relics originate from the Devnimori archaeological site, located near Shamlaji **in the Aravalli district of Gujarat.**
- **Discovery:** It was first explored in 1957 by eminent archaeologist **Prof. S. N. Chowdhry.**
- **Timeline:** The site dates back to the **3rd to 4th century CE** (early centuries of the Common Era).
- **Significance:** The excavations revealed important Buddhist structures and relics that stand **testimony to the flourishing of Buddhism in western India.**
- **Relic casket:** The relic casket found within Devnimori Stupa at a height of 24 feet from the base, **made out of green schist.**
- **Inscription:** It is inscribed **in Brahmi Script and Sanskrit language,** it reads. **"dashabala sharira nilay" -** the abode of the Buddha's bodily relic. It holds a copper box having organic matter with holy ashes, with silk cloth and beads.
- **Contents:** The casket contained a **copper box,** which held a gold-coated silver-copper bottle containing **sacred ashes, silk cloth, and beads.**
- **Architecture:** The site featured a **large Sharirika Stupa** (housing physical remains) and **a Vihara** (monastery).
- **Art style:** The terracotta Buddha sculptures found here show a **strong Gandhara influence,** distinct from the Mathura or Gupta styles.
- **Spiritual diplomacy:** This exposition is part of **India's "soft power"** initiative to strengthen cultural ties with Buddhist nations.
- **Other relic expositions:** Similar diplomatic outreach has involved the **Kapilavastu Relics being sent to Mongolia and Thailand.**

DEFENCE & SECURITY

EXERCISE KHANJAR

Context :

- The 13th edition of the joint military Exercise KHANJAR between India and Kyrgyzstan begins recently at Misamari in Sonitpur district of Assam.

About Exercise Khanjar:

- **Countries involved:** It is the Joint Special Forces Exercise held between **India and Kyrgyzstan**.
- **Origin:** Initiated **in December 2011 in Nahan, India.** It became an annual event following PM Narendra Modi's 2015 visit to the Kyrgyz Republic.
- **Format:** The exercise is conducted **annually**, alternating between India and Kyrgyzstan.
- **Focus Areas:** Specialised skills such as **sniping, complex building intervention, mountain craft,** and insertion/extraction techniques.

- **Strategic Significance:**
  - Strengthens bilateral **defence cooperation** and strategic trust.
  - Addresses shared **regional security** concerns like international terrorism and extremism.
  - Promotes **interoperability** between elite units of both nations.
- **About Exercise Khanjar-XIII:**
  - It is held in Misamari in the Sonitpur district of **Assam**.
  - The **14-day-long** military exercise aims to enhance interoperability between the Special Forces of both nations.
  - **Indian Contingent is represented by** troops from the **Parachute Regiment (Special Forces),** while Kyrgyzstan Contingent is represented by the ILBRIS Special Forces Brigade (Scorpion Brigade)
  - The 2026 exercise will **focus** on joint operations in **urban warfare and counter-terrorism** scenarios under the United Nations mandate.
  - The training modules will include **close-quarter battle techniques, room intervention procedures, hostage-rescue simulations**, counter-terrorism operations, and joint tactical manoeuvres.

INS ARNALA

Context:

- INS Arnalam recently marked a significant milestone in India's transition from a "Buyer's Navy" to a "Builder's Navy".

About INS Arnala:

- **Nature:** It is the **first of the eight ASW SWCs (Anti-Submarine Warfare Shallow Water Craft)** built for the Indian Navy.
- **Nomenclature:** It is named after the **historic fort 'Arnala' located off Vasai, Maharashtra.**

- **Construction:** It was designed and built **by Garden Reach Shipbuilders and Engineers (GRSE), Kolkata.**
- **Commissioning:** It was commissioned **into the Eastern Naval Command** of the Indian Navy in Visakhapatnam on 18 **June 2025.**

- **Uniqueness:** It is the Indian Navy's **first indigenously designed and built ASW SWC.**
- **Structure:** This **77-meter-long warship, with a gross tonnage of over 1490 tonnes,** is the largest Indian Naval warship to be propelled by a Diesel Engine-Waterjet combination.
- **Capabilities:** The ship has been designed **for underwater surveillance, search & rescue operations, and Low Intensity Maritime Operations (LIMO).** The ship is capable of undertaking Anti-Submarine Warfare (ASW) in coastal waters, along with advanced mine-laying capabilities.
- **Advanced technologies:** The vessel features homegrown systems, including **stealth technology, electronic warfare capabilities, and advanced sensors,** which improve combat readiness.

SCALP MISSILE

Context:

- India and France are in discussions to finalise a major deal for the procurement of SCALP cruise missiles, following their successful use during Operation Sindoor last year.

About SCALP Missile:

- **Nature:** The SCALP missile is a **long-range, air-launched cruise missile.**
- **Other names:** It is also known as **Storm Shadow.**
- **Full form:** Its full form is **Système de Croisière Autonome à Longue Portée.**
- **Development:** It was developed together **by France and the United Kingdom.**
- **Deployment:** It is in service with **multiple NATO and allied air forces.**
- **Structure:** The missile has a launch **weight of around 1,300 kg** and a **length of approximately 5.10 m.**
- **Range:** It is powered by turbojet engines and has a range of **250 km.**

- **Warhead:** The missile has a **tandem warhead configuration**, comprising a shaped charge for initial penetration and a secondary high-explosive charge for enhanced lethality.
- **Stealth design:** Its stealth design and **advanced navigation system** (INS, GPS, and terrain referencing) allow it to fly low, **evade detection,** and strike deep into enemy territory.
- **Precision strike:** On approaching the target, **its onboard infrared seeker matches the target image with the stored picture** to ensure a precision strike and minimal collateral damage.
- **Operational capability:** Capable of **night and all-weather operations**, SCALP is particularly effective for penetrating hardened bunkers and ammunition stores.

DEFENCE ACQUISITION COUNCIL

Context:

- The Defence Acquisition Council, recently accorded Acceptance of Necessity (AoN) for capital acquisition proposals worth approximately ₹3.60 lakh crore.

About Defence Acquisition Council:

- **Nature:** It is the **highest decision-making body** of the Defence Ministry on **procurement.**
- **Objective:** The main objective of the DAC is to **ensure expeditious procurement of the approved requirements of the armed forces** in terms of capabilities sought and time frame prescribed by optimally utilizing the allocated budgetary resources.
- **Formation:** It was formed after the Group of Minister's recommendations on 'Reforming the National Security System', **in 2001, post-Kargil War (1999).**
- **Composition:** It is **chaired by Defence Minister** and the other key members include the Minister of State for Defence, Chief of Defence Staff (CDS), Chiefs of the Army, Navy, and Air Force, Secretaries of various Defence departments, and the Director General (Acquisition), and Member Secretary: Dy. Chief of Defence Staff (PP&FD).
- **Significance:** The DAC is **central to India's Defence Acquisition Procedure (DAP) 2020,** aiming to boost domestic defence manufacturing. While it is the top body for procurement, the final financial approval for very large deals rests with the Cabinet Committee on Security (CCS), chaired by the Prime Minister.

- **Key Functions:**
  - Give in principle approval of a **15-year Long Term Integrated Perspective Plan** (LTIPP) for defence forces.
  - **Accord of acceptance** of necessity to acquisition proposals.
  - **Categorisation of the acquisition proposals** relating to 'Buy', 'Buy & Make', and 'Make'.
  - Look into issues relating to single vendor clearance.
  - Take **decisions regarding 'offset' provisions** in respect of acquisition proposals above Rs 300 crore.

DORNIER 228 AIRCRAFT

Context :

- Recently, the Defence Ministry signed a contract with Hindustan Aeronautics Limited, Transport Aircraft Division, Kanpur, for the acquisition of eight Dornier 228 Aircraft.

About Dornier 228 Aircraft:

- **Nature:** It is a highly versatile **multi-purpose light transport aircraft.**
- **Objective:** It has been developed specifically **to meet the manifold requirements of utility and commuter transport,** third level services and air-taxi operations, coast **guard duties and maritime surveillance.**
- **Manufacturing:** Originally developed by Dornier GmbH (Germany); it is now license-produced in India by **Hindustan Aeronautics Limited (HAL)** at its Kanpur facility.
- **Engine:** It is powered by a pair of **Garrett TPE331 turboprop engines** and has a supercritical wing that generates large amounts of lift at slow speeds.

- **Special capability:** It possesses **Short Take-Off and Landing (STOL) capabilities**, allowing it to operate from short, semi-prepared, or grass runways in "hot and high" environments.
- **Capacity:** It is typically configured to **carry up to 19 passengers** or equivalent cargo
- **Specialisation:** The STOL capabilities allows it to operate from unprepared, unpaved, and grass surfaces and specialize in **hot and high environments.**
- **Design:** It has the unique design of the **TNT wing, capable of generating large amounts of lift** at slow speeds.
- **Reliability:** It is typically promoted for its **versatility, low operational costs**, and high levels of dispatch reliability.

INS TARANGINI

Context :

- INS Tarangini is among several Indian and foreign naval vessels that arrived in Visakhapatnam for the international fleet review and MILAN exercise beginning soon.

About INS Tarangini:

- **Nature:** It is the **Indian Navy's first Sail Training Ship** (STS).
- **Construction:** It was built **by Goa Shipyard Limited** and was commissioned on 11 November 1997.
- **Objective:** The primary role of the ship is **to foster time-honoured virtues of courage, camaraderie, and endurance** in officer cadets embarking on a naval career.

- **Nomenclature:** The name of the ship is derived from the **Hindi word Tarang (wave),** it means "the one that rides the waves".
- **Historical achievement:** It became the **first Indian naval ship to navigate the globe** in 2003-2004.
- **Classification:** The ship is a **'three-masted barque'** signifying that she is square-rigged on the fore and mainmast and fore-and-aft-rigged on the Mizzen mast.
- **Endurance:** The ship has excellent endurance and can remain at sea continuously for a **period of over 20 days.**
- **Carrying capacity:** It has a complement of **eight officers and thirty-eight sailors** as permanent crew and can accommodate and impart sail training to 30 cadets.

- **Significance:** It provides an ideal setting for **firsthand experience of the natural elements by imparting training** which includes sailing, setting and furling of sails, watch-keeping, and sail manoeuvres.

EXERCISE DHARMA GUARDIAN 2026

Context :

- Recently, the Exercise 'DHARMA GUARDIAN' commenced at the Foreign Training Node, Chaubattia in Uttarakhand.

About Exercise Dharma Guardian 2026:

- **Countries involved:** It is the annual joint **military** exercise between **India and Japan.**
- **Objective:** The objective of the Exercise 'DHARMA GUARDIAN' is to **strengthen military collaboration and enhance combined capabilities** to undertake joint operations in a semi-urban environment.
- **Significance:** The exercise is **held alternately in India and Japan** and remains a key pillar of **defence cooperation** between the two nations.
- **Edition:** It is the **7th edition** of the annual Joint Military Exercise.
- **Location:** It is being held at Foreign Training Node, **Chaubattia, Uttarakhand**, India.
- **Participating units:** India is represented by the **Ladakh Scouts**, and Japan is represented by the **32nd Infantry Regiment.**

- **Key tactical activities:**
  - Establishing a Temporary **Operating Base**
  - Developing an Intelligence, Surveillance and Reconnaissance **(ISR) grid**
  - Setting up Mobile Vehicle **Check Posts**
  - Conducting Cordon and **Search Operations** in hostile environment
  - Executing **Heliborne Operations**
  - Undertaking **House Intervention Drills**
- **Other Exercises between India and Japan:**
  - **Malabar:** India and Japan **with the United States and Australia** participate in the naval war gaming exercise named Malabar.
  - **JIMEX (Naval)**
  - **SHINYUU Maitri (Air Force).**

GOVT. INITIATIVES, SCHEMES AND POLICIES, ORGANISATION

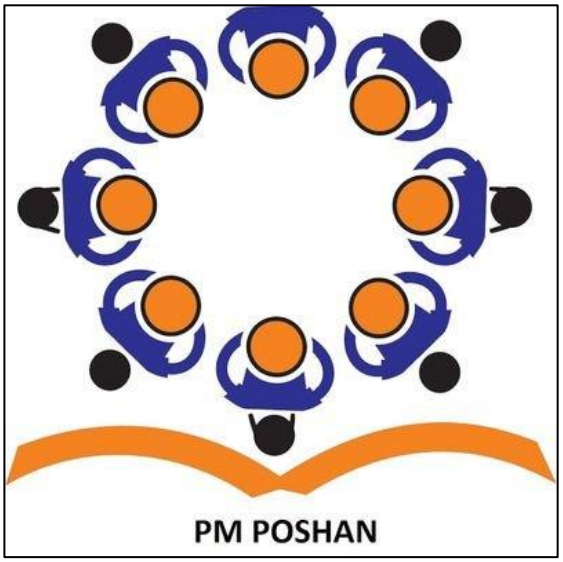
PM-POSHAN SCHEME

Context:

- Recently, a total of 22 states and Union Territories asked the centre to hike the honorarium for PM-POSHAN scheme cooks and helpers.

About PM-POSHAN Scheme:

- **Other names:** Formerly known as the **Mid-Day Meal Scheme**, it was renamed in September 2021.
- **Nodal ministry:** It is a Centrally Sponsored Scheme implemented by the **Ministry of Education.**
- **Objective:** It aims to provide **one hot cooked meal per school day to children** studying in Balvatikas (pre-primary), and Classes 1 to 8 across government and government-aided schools.
- **Eligibility:** The Scheme is implemented across the **country covering all the eligible children** without any discrimination of gender and social class.
- **Proposal for breakfast:** Several states (e.g., Kerala, Tamil Nadu) and the National Education Policy **(NEP) 2020** have **advocated for adding breakfast** to the scheme.
- **Inflation tracking:** The Labour Bureau now uses the **CPI-Rural Labourers (CPI-RL)** to calculate inflation specifically for the PM-POSHAN food basket across 600 villages.
- **Focus areas:**
  - Enhancing **nutritional status** of school-going children
  - Improving **enrolment, retention, and attendance in schools**, especially among disadvantaged children



- **Nutritional norms:**
  - For **Balvatika and Primary classes:** 20g pulses, 50g vegetables, and 5g oil
  - For **Upper Primary classes:** 30g pulses, 75g vegetables, and 7.5g oil
- **Funding Pattern:**
  - **60:40** between Centre and States/UTs with legislature
  - **90:10** for the Northeastern and Himalayan States
  - **100%** central funding for UTs without legislature.

MAHATMA GANDHI GRAM SWARAJ INITIATIVE

Context:

- In the Union Budget, Finance Minister announced the launch of the Mahatma Gandhi Gram Swaraj Initiative aimed at strengthening Khadi, handloom, and handicrafts.

About Mahatma Gandhi Gram Swaraj Initiative (MGGSI):

- **Launch:** It was announced in the Union **Budget 2026-27** to strengthen India's traditional craft sectors.

- **Objective:** It is aimed at **making traditional rural industries more competitive** while ensuring sustainable livelihoods for artisans and weavers.
- **Focus areas:** It is a major initiative to strengthen the **khadi, handloom, and handicrafts sector** by improving global market access, branding, and market linkages.
- **Beneficiaries:** The programme mainly targets **weavers, village industries, beneficiaries of the One District One Product (ODOP) initiative**, and rural youth, and MGGSI aims to address structural challenges.

- **Preservation of traditional craftsmanship:** MGGSI encourages artisans to **adopt modern production methods, while preserving traditional craftsmanship**. The initiative also focuses on improving market access by better branding and marketing to enable artisans to reach organised retail, export markets, and online platforms.
- **Atmanirbhar Bharat:** It aligns with the **"Vocal for Local" philosophy** and efforts to strengthen micro, small, and medium enterprises (MSMEs). By reinforcing traditional industries, the initiative seeks to generate sustainable employment, and reduce rural distress, thereby aligning **with the broader vision of Atmanirbhar Bharat.**
- **Constitutional link:** While the **73rd Constitutional Amendment Act 1992** provided the political framework for **Panchayati Raj,** schemes like MGGSI aim to provide the economic foundation necessary for true self-rule.

SWAVALAMBINI SCHEME

Context:

- Recently, the Minister of State (Independent Charge), Ministry of Skill Development and Entrepreneurship informed the Lok Sabha about the Swavalambini Scheme.

About Swavalambini Scheme:

- **Nature:** It is a **woman Entrepreneurship Programme** which empowers young women with the skills and confidence needed to establish their own businesses.
- **Objective:** It aims to **cultivate an entrepreneurial mindset among female students,** equipping them with awareness of available support mechanisms, schemes, resources and networks essential for pursuing entrepreneurship as a career.

- **Nodal ministry:** It was launched by the **Ministry of Skill Development and Entrepreneurship (MSDE)** in collaboration with the Women Entrepreneurship Platform of **NITI Aayog** as knowledge partner.
- **Focus:** It introduces a **structured, multi-stage training** approach to help young women transition from ideation to successful enterprise creation.
- **Implementation:** It is implemented through National Institute for Entrepreneurship and Small Business Development **(NIESBUD), Noida and Indian Institute of Entrepreneurship (IIE), Guwahati.**
- **Support:** NITI Aayog will provide mentoring support, facilitate seed funding, and recognize successful entrepreneurs through the **Award To Reward (ATR) initiative.**

- **Programme Structure:**
  - **Target group: 1200 female students** from Higher Educational Institutes (HEIs) and Universities
  - **Entrepreneurship Awareness Programme (EAP):** The female students undergo an **introductory programme on entrepreneurial awareness** through an entrepreneurial awareness programme.
  - **Entrepreneurship Development Programme (EDP):** Out of these 1200, **600 undergo this programme** which covers business aspects like skilling, finance, market linkages, compliance, and networking.
  - **Follow-up:** This is followed by **21 weeks of mentorship** and handholding support to help participants translate their ideas into sustainable enterprises.

AYUSHMAN SAHAKAR SCHEME

Context:

- Recently, the Union Minister for Home and Cooperation informed the Rajya Sabha about the Ayushman Sahakar Scheme.

About Ayushman Sahakar Scheme:

- **Nodal Agency:** It is a scheme of the **National Cooperative Development Corporation (NCDC)** for financial assistance to cooperatives on holistic healthcare infrastructure, education and services.
- **Ministry:** Originally launched under the Ministry of Agriculture and Farmers Welfare, it is now often associated with the newly formed **Ministry of Cooperation.**
- **Objectives:**
  - To assist provision of **affordable and holistic healthcare** through hospitals / healthcare / education facilities by cooperative societies,
  - To assist **promotion of AYUSH facilities** by cooperative societies,
  - To assist cooperative societies meet the objectives of **National Health Policy,**
  - To assist cooperative societies participate in the **National Digital Health Mission,**
  - To assist cooperative societies provide **comprehensive healthcare** including education, services, insurance and activities related thereto.

- **Financial support:** NCDC provides term loans **totalling up to ₹10,000 crore** for cooperative healthcare projects.
- **Eligibility:** Any **cooperative society registered under State or Multi-State Cooperative Societies Acts** with healthcare provisions in its bye-laws is eligible for the scheme.
- **Special incentives:** A **1% interest subvention** is provided to cooperatives where women members are in the majority.
- **Loan tenure:** Loans are **typically for 8 years, including a moratorium of 1–2 years** on principal repayment, depending on the type of project and its ability to generate revenue.
- **Modernisation:** It supports the modernisation of cooperative healthcare facilities. It also supports the **establishment of healthcare infrastructures** like clinics, diagnostics centres and hospitals.
- **Alignment with national policies:** It aligns with the **National Health Policy 2017** and the **National Digital Health Mission.**

VIBRANT VILLAGES PROGRAMME-II

Context:

- The Union Home Minister recently launched the second phase of the Vibrant Villages Programme, which will cover 1,954 border villages in 15 states and 2 Union territories.

About Vibrant Villages Programme-II:

- **Nature:** It is a **Central Sector Scheme** (100% centre funding).
- **Objective:** It aims to create **better living conditions and adequate livelihood opportunities to ensure prosperous and safe borders**, control trans-border crime and assimilate the border population with the nation.
- **States covered:** It is implemented across **15 States and 2 Union Territories.** These include Arunachal Pradesh, Assam, Bihar, Gujarat, J&K. Ladakh, Manipur, Meghalaya, Mizoram, Nagaland, Punjab, Rajasthan, Sikkim, Tripura, Uttarakhand, Uttar Pradesh and West Bengal.

- **Nodal ministry:** It is launched by **Ministry of Home Affairs (MHA).**
- **Financial outlay:** It has a total outlay of **Rs 6,839 crore** to be implemented **till the FY 2028-29.**
- **Approach:** It is designed to ensure comprehensive and sustainable development of border villages through a **saturation-based and convergence-driven approach.**
- **Infrastructure development:** It shall provide funds for infrastructure development **within the village or a cluster of villages** like education infrastructure like SMART classes, development of tourism circuits.
- **Use of cooperatives:** It focuses on **value chain development through cooperatives, SHGs,** etc. to create diverse & sustainable livelihood opportunities in the border areas.
- **Community activities:** It emphasizes enhancing vibrancy in these villages by organizing activities including **fairs & festivals, awareness camps,** celebration of National days.
- **National integration:** It assimilates remote **border populations into the national mainstream** economically and culturally under the vision of Viksit Bharat@2047.
- **Focus areas:** It focuses on **4 core infrastructure themes:**
    - All-weather road connectivity (PMGSY-IV)
    - Telecom connectivity (Digital Bharat Nidhi)
    - Television connectivity (BIND scheme)
    - Electrification (RDSS)

SUJVIKA PORTAL

Context:

- Recently, the Union Minister of Science & Technology launched the SUJVIKA Portal during the 40th foundation day of the Department of Biotechnology.

About SUJVIKA Portal:

- **Nature:** It is an **AI driven Biotech Product Data Portal.**
- **Development:** It is developed by the **Department of Biotechnology (DBT)** in collaboration with an industry partner, the **Association of Biotechnology Led Enterprises (ABLE).**

- **Mandate:** It presents **authenticated biotechnology product import data** in a structured and accessible format.
- **Target users:** It is primarily aimed at Indian **researchers, biotechnology startups, and industry players** to facilitate evidence-based R&D planning.
- **AI-driven intelligence:** It is an Artificial Intelligence-enabled **Trade Statistics Digital Intelligence Platform.**
- **Biotech data repository:** The portal provides structured and authenticated data specifically **on biotechnology product imports.**
- **Insights into biotechnology:** The portal provides sector-wise insights into **biochemical products, industrial enzymes,** and other biotechnology imports.

- **Indigenisation:** It enables researchers, startups, and industry to identify high-value and high-volume imports, **assess import dependency and prioritise indigenisation** and R&D efforts.
- **Evidence-based planning:** The portal also supports evidence-based planning and **promotes public–private partnerships** for strengthening domestic biomanufacturing.
- **Vision:** The portal is a key tool in achieving **India's goal of a $1 trillion bioeconomy by 2047** (part of the Viksit Bharat vision).
- **Policy linkage:** It supports the **BioE3 Policy (Biotechnology for Economy, Environment and Employment),** which focuses on high-performance biomanufacturing.

RAMP PROGRAMME

Context:

- Recently, the Ministry of MSME organised the 5th meeting of the National MSME Council to review progress of World Bank–Supported RAMP Programme in New Delhi.

About RAMP Programme:

- **Full form:** RAMP stands for **Raising and Accelerating MSME Performance.**
- **Nodal ministry:** It is implemented by the **Ministry of Micro, Small and Medium Enterprises** (MoMSME).
- **Apex body:** The **National MSME Council** has been set up by the Ministry to work as an administrative and functional body of the RAMP Programme.
- **Tenure:** The tenure of the scheme is **5 years (FY 2022-23 to FY 2026-27).**
- **Association:** It is assisted by the **World Bank.**
- **Key objectives:**
  - Improving access to **market and credit for MSMEs**
  - Strengthening **institutions and governance** at the central and state levels
  - Improving **centre-state linkages** and partnerships
  - Addressing issues of delayed **payments**
  - **Greening of MSMEs**

- **Sub schemes under RAMP:**

- **MSME GIFT Scheme:** MSME Green Investment and Financing for Transformation Scheme **intends to help MSMEs adopt green technology** with interest subvention and credit guarantee support.
- **MSE SPICE Scheme:** The MSE Scheme for **Promotion and Investment in Circular Economy** aims to support circular economy projects which will be done through credit subsidy and will lead to realising the dream of MSME sector towards zero emissions by 2070.
- **MSE ODR Scheme:** The MSE Scheme on **Online Dispute Resolution for Delayed Payments** is a first of its kind scheme to synergise legal support with modern IT tools and Artificial Intelligence to address the incidences of delayed payments for Micro and Small Enterprises.

SAKSHAM 2026

Context:

- HPCL in collaboration with all oil and gas companies, flagged off SAKSHAM 2026, an event aimed at raising awareness about fuel conservation.

About SAKSHAM 2026:

- **Full Form:** Saksham stands for **Samrakshan Kshamatha Mahotsav.**
- **Nodal ministry:** It is an annual awareness campaign initiated by the **Ministry of Petroleum and Natural Gas,** Government of India.
- **Objective:** It is designed to promote fuel conservation and raise **awareness of sustainable energy practices.**
- **Duration:** The 2026 edition is a **fortnight-long campaign** running from 2nd February to 16th February 2026.
- **Event: Organized by oil and gas public sector enterprises** in collaboration with local authorities, educational institutions, industries, and key stakeholders, Saksham aims to drive India towards a greener future.
- **Activities:** It features diverse activities to engage citizens, **debates, wall paintings, cyclothons, walkathons, workshops, seminars**, and awareness programs.
- **Target:** The campaign will target various groups, such as **schoolchildren, youth, LPG users, fleet operators, farmers, and industry professionals.**
- **Impact:** Previous campaigns led to a significant **reduction in idling fuel losses** through behaviour-changing initiatives **like "switching off engines at red lights".**
- **Theme:** The theme for the 2026 campaign, **"Conserve Oil and Gas, Go Green"** (Tel aur Gas Bachao, Harit Urja Apnao), underscores the transition towards renewable energy sources and energy-efficient solutions for environmental sustainability.

MISCELLANEOUS

NETWORK READINESS INDEX

Context :

- India has improved its position by four slots and is now placed at 45th rank as per the Network Readiness Index 2025 (NRI 2025) report.

About Network Readiness Index 2025:

- **Nature:** It maps **how economies leverage information and communication technologies to support growth, innovation** and social development.
- **Methodology used:** It assesses the network-based readiness landscape of 127 economies based on their performance in **four pillars: Technology, People, Governance and Impact,** covering a total of 53 indicators.

- **Publishing agency:** The report has been prepared by the **Portulans Institute,** an independent, non-profit research and educational institute based in Washington DC.
- **Theme:** The theme of the report was **"AI Governance in a Global Context: Policy and Regulatory Approaches."**
- **Top position:** The **United States retained the top position for the fourth consecutive year,** leading globally in terms of access to and use of digital technologies. Finland has now taken second place, surpassing Singapore, which has fallen to third place this year.
- **India's score:** India improved its score **from 53.63** out of 100 **in 2024 to 54.43** out of 100 **in 2025.**
- **Global leadership:** India secured **1st rank in "Annual investment in telecommunication services", "AI scientific publications", "ICT services exports"** and **"E-commerce legislation".**
- **Income Group Performance:** India is ranked **2nd among lower-middle-income countries, after Vietnam,** performing better than expected in network readiness relative to its income level.
- **Dropped countries: 6 economies**—the Bolivarian Republic of Venezuela, the Democratic Republic of the Congo, Chad, the Seychelles, Sierra Leone, and Yemen—were **dropped out this year** due to limitations in data coverage.

CORRUPTION PERCEPTIONS INDEX

Context:

- India has been ranked 91st out of 182 countries and territories on the Corruption Perceptions Index for 2025, released recently.

About Corruption Perceptions Index:

- **Nature:** It is the **most widely used global corruption ranking** in the world.
- **Objective:** It measures **how corrupt each country's public sector is perceived** to be, according to experts and business people.

- **Publishing agency:** The index has been published by **Transparency International**, a Berlin-based non-governmental organisation (NGO).
- **Frequency:** It has been published **annually since its inception in 1995.**
- **Methodology used:** It ranks countries "by their perceived levels of public sector corruption, as determined by **expert assessments and opinion surveys**."
- **Scale:** It uses a scale of **zeo to 100, where "zero" is highly corrupt and "100" is very clean.** The score for each country is derived from a minimum of three data sources, selected from 13 distinct corruption surveys and assessments.

- **Sources:** These sources are gathered by a range of reputed organisations, such as the **World Bank and the World Economic Forum.**
- **Key highlights of Corruption Perceptions Index (CPI) 2025:**
  - **Least Corrupt nations: Denmark**, Finland and Singapore.
  - **Most Corrupt nations: South Sudan**, Somalia and Venezuela.
  - Performance of **India:** Its rank improved **from 96 (2024) to 91 (2025).**

SANGTAM TRIBE

Context :

- The apex body of Nagaland's Sangtam tribal community has passed a resolution to protect pangolins, the world's most trafficked wild mammal, within its jurisdiction.

About Sangtam Tribe:

- **Nature:** The Sangtam is one of the 16 major Naga tribes of Nagaland. They are one of the **major Naga ethnic groups in Northeast India.**
- **Location:** They are concentrated in the **Kiphire and Tuensang districts of Nagaland,** bordering Myanmar.
- **History:** Oral traditions suggest ancestors **migrated from Mongolia** through China (possibly linked to the Great Wall) before settling in present-day Nagaland.
- **Heritage:** The **Morung (communal dormitory)** remains a vital symbol of their culture and heritage, though it has evolved from a training ground to a symbolic cultural centre.
- **Religion:** While **predominantly Christian**, many Sangtams have uniquely retained traditional beliefs and animist roots.
- **Clans:** There are **six major clans** amongst the Sangtams- Dhongrü, Jingrü, Langtidhongrü/ Langkidhongrü, Mungzarü, Anarü/Yingphidhongrü and Rudidhongrü clans.
- **Language:** The common dialect of the Sangtams is known as **Sangtamyu** which is spoken by around 90% of the population.

- **Economy:** The Sangtam people traditionally practice **jhum cultivation** (shifting agriculture), which remains central to their livelihood.

- **Society:** They follow a **patriarchal system of lineage** and inheritance as well.
- **Governance:** The society is **egalitarian and governed by strong village councils** and the apex tribal body, the United Sangtam Likhum Pumji (USLP).
- **Festivals: Mongmong, their premier festival,** is celebrated from September 1–6 to mark the harvest. It involves worshipping the "God of the House" and the three cooking stones of the fireplace. **Hünapungbi** is another festival dedicated especially to children.

PUNATSANGCHHU-II HYDROELECTRIC PROJECT

Context:

- India and Bhutan recently deliberated on the commercial optimization of power output from the Punatsangchhu-II Hydroelectric Project (1020 MW).

About Punatsangchhu-II Hydroelectric Project:

- **Nature:** It is a 1020 MW **run-of-the-river hydroelectric power project.**
- **Location:** It is located in the **Wangdue Phodrang district of Bhutan** on the right bank of the Punatsangchhu River.
- **Development:** The project is being developed by the **Punatsangchhu II Hydroelectric Project Authority,** under an Inter-Government Agreement (IGA) between the Royal Government of Bhutan and the Government of India.

- **Funding:** It is funded **by the Government of India (GoI): 30% grant and 70% loan at 10% annual interest,** repayable in 30 equated semi-annual installments commencing one year after the mean date of operation.
- **Significance:** With the completion of the Punatsangchhu-II project, Bhutan's installed power generation capacity has **increased by about 40 percent to over 3500 MW.**
- **Structure:** The project involves the construction of a **91 m-high and 223.8 m-long concrete gravity dam,** along with a diversion tunnel with a discharge capacity of 1118 cubic metres per second.
- **Cofferdams:** The project involves a 168.75 m-long and 22 m-high **upper cofferdam** and a 102.02 m-long and 13.5 m-tall **downstream cofferdam.** It will also comprise an underground powerhouse equipped with six **Francis turbines** of 170 MW capacity each.

GLOBAL TEACHER PRIZE

Context :

- Rouble Nagi recently won the $1 million Global Teacher Prize at the World Governments Summit in Dubai, United Arab Emirates.

About Global Teacher Prize:

- **Nature:** It is an **annual award** presented to an **exceptional teacher** who has made a significant impact on their students and community.
- **Objective:** The prize aims to **highlight the importance of educators** and recognize the outstanding contributions they make to society.
- **Recognition:** It is also known as the **"Nobel of Teaching"** and honours an educator who has made an outstanding contribution to the profession.

- **Establishment:** It was **instituted in 2014 by the Varkey Foundation**, a global charitable organization focused on education.
- **Partner:** It is organized in collaboration **with UNESCO** and **presented by GEMS Education.**
- **Award:** The award comes with a **cash prize of $1 million,** making it one of the most prestigious recognitions in the field of education.
- **Eligibility:** It is **open to teachers from all countries,** working in various educational settings including public, private, and alternative schools.
- **Evaluation:** Candidates are evaluated based on their **innovative teaching practices, achievements in the classroom, and efforts to improve the quality of education** in their community. The selection process also considers the teacher's impact on their students' learning and their ability to overcome challenging environments.
- **Nomination:** Teachers can be **nominated by others or can apply themselves.**

About Rouble Nagi:

- **Contribution:** She established **over 800 learning centres** through the Rouble Nagi Art Foundation.
- **Innovation:** She developed **"Living Walls of Learning"—**transforming abandoned walls in slums into interactive educational murals to teach literacy, arithmetic, and public health.
- **Impact:** She has integrated **over 1 million children into formal education** and reduced dropout rates by over 50%.

MAINS

PAPER 1

URBAN FISCAL STRESS AND THE TURN TO MARKET-BASED FINANCING

Context (Introduction):

The updated Urban Challenge Fund seeks to promote "market-linked, reform-driven and outcome-oriented" urban infrastructure by requiring cities to raise at least 50% of project costs through bonds, loans and PPPs, with the Centre contributing 25%, thereby shifting the burden of financing towards market access rather than unconditional fiscal devolution.

The Structural Weakness of Urban Local Bodies (ULBs)

1. **Incomplete Fiscal Devolution** : Despite the 74th Constitutional Amendment, most ULBs remain fiscally dependent on State transfers, with limited authority over property tax reform, user charges or buoyant revenue sources.
2. **Chronic Underutilisation of Funds** : Schemes such as AMRUT, Swachh Bharat Mission (Urban) 2.0, Smart Cities Mission and PMAY-Urban have suffered delays and underutilisation due to weak administrative capacity and fragmented planning.
3. **Weak Municipal Capacity** : Many cities lack professional accounting systems, credit ratings, updated land records and integrated financial management systems necessary to credibly tap bond markets.
4. **Political Economy of Local Taxation** : Property tax rationalisation and user-charge reforms are politically sensitive and often shaped by State-level calculations, constraining ULB revenue autonomy.
5. **Risk of Uneven Urban Development** : Conditioning support on market borrowing risks privileging stronger cities with higher creditworthiness while sidelining smaller or weaker municipalities.

Concerns with Market-Linked Urban Financing

1. **"Bankability" over Basic Services** : When funding depends on monetisable projects, cities may prioritise revenue-generating assets over essential services such as settlement formalisation, sanitation or affordable housing.
2. **Risk of Debt Accumulation without Capacity** : Without sound accounting and revenue reforms, borrowing could push ULBs into unsustainable debt cycles similar to public universities or DISCOMs under reform-linked loan models.
3. **Administrative Uncertainty** : The absence of clearly notified eligibility criteria and application processes, as acknowledged before a Parliamentary Standing Committee, raises concerns of discretionary or politically influenced allocation.
4. **Shifting Public Burden to Private Finance** : Across sectors — higher education, health, power distribution — public institutions have been asked to rely on loans or private capital before ensuring minimum service guarantees, creating systemic strain.
5. **Moral Hazard in Urban Governance** : Encouraging borrowing without parallel reforms in land records, master plan enforcement and tenancy protections may deepen inequality and undermine accountability.

Comparative Sectoral Lessons

1. **Higher Education Loans Model** : Infrastructure loans transformed public universities into debt-dependent institutions, often leading to fee hikes affecting economically weaker students.
2. **National Health Mission Delays** : Delayed fund transfers forced hospitals to maintain services before reimbursement, exposing structural inefficiencies in fiscal flows.
3. **UDAY in the Power Sector** : Audits revealed implementation gaps and non-adherence, demonstrating that financial restructuring without institutional reform yields limited results.

The Way Forward: Strengthening Urban Federalism

1. **First Guarantee Minimum Fiscal Support** : Core urban services — water, sanitation, housing — should be backed by assured transfers before conditioning funds on market access.
2. **Deepen Fiscal Devolution** : Strengthen State Finance Commissions, expand municipal taxation autonomy, and reduce tied grants to enable predictable revenue streams.
3. **Build Municipal Administrative Capacity** : Invest in professional municipal cadres, transparent accounting systems, GIS-based land records and creditworthiness assessments.
4. **Protect Equity in Urban Financing** : Ensure that low-income households, renters and informal settlements are not excluded in the pursuit of bankable infrastructure.
5. **Transparent Governance Architecture** : Clearly notify eligibility norms, monitoring criteria and accountability frameworks to prevent politically coloured spending.

Conclusion

The Urban Challenge Fund reflects a broader shift toward market-mediated governance. While private capital and bond markets are legitimate instruments, they cannot substitute for foundational fiscal devolution and administrative capacity. Cities cannot be asked to "earn" development before being empowered to govern. Urban transformation must rest on institutional strengthening first, and financial innovation second.

TOWARDS A PERMANENT FRAMEWORK FOR STATE REORGANISATION IN INDIA

Context (Introduction):

India's state reorganisation has historically been episodic and politically driven rather than institutionalised. From linguistic consolidation in the 1950s to developmental bifurcations in the 2000s, the rationale has evolved. The proposal for a permanent framework seeks to move from reactive fragmentation to structured federal redesign.

Historical Evolution of State Reorganisation

1. **Linguistic Foundation (1953–56):** The States Reorganisation Commission (SRC), constituted in 1953 under Jawaharlal Nehru, recommended linguistic states to reduce regional tensions and ensure administrative accessibility in the mother tongue.
2. **Cultural Stabilisation Objective:** Linguistic reorganisation translated diverse identities into politically manageable units, strengthening early national integration.
3. **Shift in Rationale (2000 onwards):** The creation of Uttarakhand, Chhattisgarh and Jharkhand was driven by developmental imbalances rather than linguistic identity.
4. **Socio-Political Imperatives:** The bifurcation of Andhra Pradesh in 2014 reflected regional grievances rooted in perceptions of neglect and unequal development.
5. **From Identity to Governance:** Contemporary demands increasingly arise from governance deficits rather than cultural differences.

Governance Challenges of Mega-States

1. **Population Scale:** Uttar Pradesh (240+ million), Maharashtra and Bihar (130+ million each) exceed the population of most European sovereign nations.
2. **Administrative Distance:** Large territorial and bureaucratic distances weaken responsiveness between citizens and the state apparatus.
3. **Implementation Deficit:** Policies designed at state capitals often fail to reach remote regions effectively.
4. **Service Delivery Gaps:** Health, education and law enforcement face structural strain in oversized administrative units.
5. **Demand for Proximity:** Calls for smaller states often reflect a desire for governance closer to citizens rather than identity politics.

Limitations of the Current Approach

1. **Ad Hoc Mechanism:** Article 3 empowers Parliament to reorganise states, but decisions have largely been politically negotiated rather than institutionally evaluated.
2. **Absence of Objective Criteria:** There is no permanent body to assess economic viability, administrative efficiency or fiscal sustainability.
3. **Fiscal Risks:** New states without viable revenue bases risk long-term dependence on central transfers.
4. **Federal Strain:** Sudden reorganisations can disrupt inter-state resource sharing and administrative continuity.

Rationale for a Permanent Reorganisation Framework

1. **Holistic Criteria:** Reorganisation should consider economic viability, administrative manageability and social cohesion.
2. **Evidence-Based Evaluation:** A permanent mechanism can ensure objective and data-driven assessment of statehood demands.
3. **Fiscal Sustainability:** New states must demonstrate credible pathways to financial self-sufficiency.
4. **Administrative Efficiency:** The purpose of division should be improved governance and service delivery.
5. **National Unity Safeguard:** Reorganisation must strengthen federalism rather than encourage centrifugal fragmentation.

Way Forward

1. **Institutionalisation:** Establishing a permanent commission or constitutional mechanism under Article 3 can depoliticise the process.
2. **Multi-Factor Test:** Criteria may include population size, regional imbalance, fiscal health, geographic contiguity and governance outcomes.
3. **Consultative Federalism:** States, civil society and expert bodies must be formally consulted before any reorganisation.
4. **Periodic Review:** Federal structure must be adaptable to demographic and economic shifts over time.

Conclusion

State reorganisation in India has evolved from linguistic integration to developmental rationalisation. A permanent, structured framework would shift the process from political reaction to institutional foresight, aligning federal restructuring with democratic responsiveness and national cohesion.

PAPER 2

NEXT PHASE OF RURAL WOMEN ENTREPRENEURSHIP IN INDIA

Context (Introduction):

Women-led Self-Help Groups (SHGs) have emerged as one of India's most effective instruments for poverty reduction, financial inclusion and grassroots democracy. Over the last decade, the rural economy has diversified beyond subsistence agriculture, raising aspirations among women for enterprise-led growth rather than mere income support.

- As India enters the next planning cycle (2026–31), the question is how to transition rural women from **collective micro-finance participants to independent, scalable entrepreneurs**.

Current Status: What DAY-NRLM Has Achieved

- **Scale and Reach:** Deendayal Antyodaya Yojana–National Rural Livelihoods Mission has mobilised **10 crore rural households** into **91 lakh SHGs**, federated into **5.35 lakh Village Organisations** and **33,558 Cluster-Level Federations (CLFs)**.
- **Financial Inclusion:** SHGs have leveraged over **₹11 lakh crore bank credit** with **NPAs of just ~1.7%**, far lower than conventional retail lending.
- **Income Outcomes:** The number of **Lakhpati Didis** has crossed **2 crore**, reflecting successful livelihood diversification.
- **Political and Social Capital:** SHGs have strengthened women's bargaining power, enabling States to use women collectives as delivery platforms for DBT schemes (e.g., **Ladli Laxmi Yojana – MP**, **Jeevika – Bihar**, **Kudumbashree – Kerala**).
- **Institutional Backbone:** CLFs function as sub-block institutions anchoring finance, livelihoods, training and social mobilisation.

Key Challenges Limiting the Next Leap

- **Weak Autonomy of CLFs:** Many CLFs function under administrative control of officials, diluting their original vision as **community-owned institutions**; leadership decision-making remains constrained.
- **Idle and Poorly Governed Funds:** Over **₹56,000 crore** of capitalisation support lies with community institutions, increasing risks of underutilisation and misuse in absence of strong social and statutory audits.
- **Credit Ceiling for Mature Enterprises:** SHG-bank linkage loans are often too small for enterprise expansion; most women lack **individual credit histories or CIBIL scores**, restricting access to larger loans.
- **Overdependence on Debt Financing:** Current financing is dominated by loans; there is limited access to **equity, venture capital or blended finance**, which constrains innovation and scaling.
- **Fragmented Livelihood Support:** Sub-schemes operate in silos (farm, livestock, non-farm), reducing cumulative impact despite availability of planning tools like **Village Prosperity and Resilience Plans (VPRPs)**.
- **Severe Marketing Bottlenecks:** SHG products face weak branding, poor packaging, lack of logistics and minimal access to organised retail or e-commerce markets.

Way Forward: Strategy for 2026–2031

- **Reclaim CLFs as Community Institutions:** Strengthen CLFs as autonomous, professionally managed bodies on the lines of **Kudumbashree (Kerala)** and **Jeevika (Bihar)**, insulated from routine bureaucratic interference.

- **Robust Financial Governance:** Institutionalise **mandatory social audits**, statutory audits and transparent MIS for CLFs to ensure accountable use of large community funds.
- **Graduation to Individual Credit:** Generate **individual credit scores** for SHG members and position CLFs as guarantor-cum-monitoring agencies to facilitate higher-value enterprise loans.
- **Innovative Financing Models:** Move beyond micro-credit to **equity funding, blended finance and venture support**, in partnership with **SIDBI, NBFCs, fintechs and neo-banks**, tailored to rural women entrepreneurs.
- **Business Clinic Model:** Transform CLFs into **one-stop enterprise hubs** offering training, finance facilitation, compliance support, technology access and mentoring.
- **Institutionalised Convergence:** Establish a **Convergence Cell at NITI Aayog** to align NRLM with schemes of agriculture, dairy, food processing and MSMEs, reducing duplication and ensuring scale.
- **Dedicated Marketing Architecture:** Create a **National Marketing Vertical** for SHG products focusing on branding, quality certification, logistics and partnerships with private players; select CLFs can act as regional logistics hubs.
- **Professional Human Resources:** Deploy trained professionals (finance, marketing, agri-business, digital commerce) while respecting the organic growth pace of community institutions.

Conclusion

The next phase of rural women entrepreneurship must shift from **credit-led inclusion to enterprise-led transformation**. If CLFs are empowered as autonomous institutions, finance is diversified beyond debt, and market access is professionalised, DAY-NRLM can evolve from a poverty alleviation programme into India's largest platform for **women-led rural economic growth**, social leadership and resilient livelihoods.

INDIA–U.S. PARTNERSHIP: RESILIENCE IN A TURBULENT WORLD ORDER

Context (Introduction):

The recent easing of India–U.S. trade tensions after a phase of sharp tariff actions under President Donald Trump's second term highlights a deeper reality: despite episodic frictions, the India–U.S. partnership has displayed remarkable resilience. In an era marked by geopolitical churn, tariff wars, and great power rivalry, India–U.S. relations underline how structural convergence can outweigh transactional shocks.

Current Situation: State of India–U.S. Relations

- **Trade Frictions Managed, Not Escalated:** Despite punitive tariffs and hard bargaining, India avoided capitulation or retaliation, opting for sustained diplomatic engagement.
- **Dense Institutional Architecture:** Over the last 25 years, cooperation has expanded across defence, technology, intelligence, supply chains, higher education, and people-to-people ties.
- **Strategic Continuity Despite Political Change:** The partnership has survived leadership transitions, ideological differences, and episodic policy disagreements.
- **Economic Reorientation:** India's economic diplomacy is increasingly aligned with Western markets, capital, and technology ecosystems.
- **Trade Deal Momentum:** Resolution of tariff disputes signals a return to long-term agenda-setting rather than crisis management.

Structural Drivers of Partnership Stability

- **China as the Central Variable:** Both India and the U.S. share concerns over China's rising economic and military dominance in the Indo-Pacific.
- **Indo-Pacific Convergence:** U.S. strategy of preventing domination by a single power aligns with India's vision of a multipolar Asia.
- **Defence and Security Cooperation:** Growing defence interoperability, technology transfers, and joint exercises anchor strategic trust.

- **Burden-Sharing Logic:** U.S. emphasis on partners assuming regional responsibility creates space for India's leadership in South Asia and the Indian Ocean.
- **Economic Complementarity:** U.S. capital and technology complement India's market size, skills, and growth potential.

Complicating Factors — Why They Did Not Derail Ties

- **Pakistan Factor Contained:** Despite renewed U.S. engagement with Pakistan, strategic parity with India is no longer viable due to widening economic and geopolitical asymmetry.
- **Russia Dimension Managed:** India's Russian oil imports were market-driven, not ideological; Delhi has calibrated ties without allowing them to clash with U.S. relations.
- **Trump's Tactical Unpredictability:** While rhetoric fluctuated, core U.S. strategic documents reaffirmed long-term priorities aligned with India's interests.
- **Absence of Hyphenation:** Regional engagement is no longer framed through an India–Pakistan binary in U.S. strategic thinking.

India's Strategic Positioning

- **From Hedging to Shaping:** India is moving beyond anxieties of entrapment or abandonment toward proactive regional strategy.
- **Leveraging Multipolarity:** India balances relations with major powers while deepening alignment where interests converge.
- **Economic Statecraft:** Trade, technology, energy, and defence are increasingly integrated into India's foreign policy toolkit.
- **Regional Leadership Imperative:** Greater responsibility in neighbourhood stability and maritime security is both an opportunity and necessity.

Way Forward: Need of the Hour

- **Deepen Economic Integration:** Conclude and operationalise trade agreements, especially in technology, clean energy, defence manufacturing, and critical minerals.
- **Strengthen Technology Collaboration:** Expand cooperation in semiconductors, AI, defence tech, space, and digital public infrastructure.
- **Enhance Defence Industrial Ties:** Move from buyer–seller dynamics to co-development and co-production.
- **Shape Indo-Pacific Institutions:** Jointly strengthen multilateral and minilateral platforms for maritime security and supply chain resilience.
- **Proactive Regional Strategy:** Use convergence with the U.S. to expand India's influence in South Asia, the Indian Ocean, and ASEAN.
- **Strategic Patience:** Maintain consistency despite leadership changes and short-term policy volatility in Washington.

Conclusion

India–U.S. relations are no longer personality-driven but structurally embedded. Strategic convergence on China, economic complementarities, and a dense institutional framework have given the partnership durability against shocks. With calibrated diplomacy and proactive regional strategy, India can convert this resilience into long-term strategic leverage, shaping Asia's balance of power in a turbulent global order.

COMPETITION COMMISSION OF INDIA AND DIGITAL MARKET DOMINANCE

Context (Introduction):

The Supreme Court's scrutiny of Meta–WhatsApp's data-sharing practices has brought the Competition Commission of India (CCI) into sharp focus, highlighting how competition law must respond to monopolistic digital platforms, coerced consent, and the economic value of user data in India's rapidly expanding digital economy.

Competition Commission of India: Mandate and Nature

- The **Competition Commission of India** is a **statutory, quasi-judicial body** established under the Competition Act, 2002.
- Its core mandate is to **prevent anti-competitive practices**, **promote fair competition**, **protect consumer interests**, and **ensure freedom of trade**.
- The CCI exercises **adjudicatory, investigative, and remedial powers**, including penalties, behavioural remedies, and structural directions.
- In digital markets, the CCI increasingly addresses **abuse of dominance**, **network effects**, **data concentration**, and **platform monopolies**.

WhatsApp–Meta Case: CCI's Intervention

- In 2021, WhatsApp introduced a **"take-it-or-leave-it" privacy policy**, mandating greater data sharing with Meta.
- The CCI held that WhatsApp's near-monopoly in India (over 500 million users) eliminated meaningful choice, making consent **coercive rather than voluntary**.
- The Commission imposed a penalty of ₹213 crore and ordered **restrictions on data sharing for advertising purposes**, recognising data as a source of competitive advantage.
- The ruling reflected a shift from viewing data as a privacy issue alone to recognising it as a **competition asset**that can distort markets.

Judicial Trajectory and Supreme Court's Concerns

- While the National Company Law Appellate Tribunal upheld the finding of abuse of dominance, it diluted the CCI's remedial directions.
- The **Supreme Court of India**, however, adopted a more structural view of digital dominance.
- The Court questioned whether **"consent" is meaningful in a monopolistic ecosystem**, especially in a country with uneven digital literacy.
- It raised concerns beyond privacy, including **economic value extraction**, **rent-sharing**, and whether citizens should be protected from exploitative data monetisation.
- By impleading the **Ministry of Electronics and Information Technology**, the Court signalled the need for policy coherence between competition law and data governance.

Digital Markets and CCI's Evolving Role: Comparable Cases

- In the Google Android case, the CCI penalised **Google** for forcing pre-installation of apps, recognising ecosystem-level dominance.
- In Amazon–Flipkart investigations, the CCI examined preferential listings and deep discounting in e-commerce.
- These cases underline the CCI's gradual move toward **ex-ante regulation** in winner-takes-all digital markets.

Key Challenges Before the CCI

- **Network Effects:** Dominant platforms become indispensable, weakening consumer exit options.
- **Data Asymmetry:** Firms control vast datasets that competitors and users cannot access.
- **Overlap with Data Protection Law:** The DPDP Act, 2023 protects privacy but does not address **economic exploitation of data**.
- **Limited Structural Remedies:** Penalties alone are insufficient deterrents for trillion-dollar platforms.
- **Digital Literacy Gap:** Formal consent mechanisms often fail in practice due to information asymmetry.

Need for Reforms and Way Forward

- **Explicit Digital Competition Framework:** Introduce ex-ante obligations for gatekeeper platforms, similar to the EU's Digital Markets Act.
- **Data as an Economic Resource:** Recognise user data as a source of value, requiring fair-use and non-extractive practices.
- **Stronger Remedies:** Empower CCI to impose time-bound data-sharing restrictions and interoperability mandates.
- **Institutional Coordination:** Align CCI's mandate with data protection authorities to address privacy–competition overlaps.
- **Capacity Building:** Enhance technical expertise within the CCI for algorithmic audits and digital market assessments.
- **User-Centric Standards:** Shift from formal consent to meaningful, comprehensible consent standards.

Conclusion

The Meta–WhatsApp case marks a turning point in India's competition jurisprudence. As digital platforms become essential infrastructure, the CCI's role must evolve from penalising misconduct to **structurally disciplining digital power**. Effective regulation will determine whether India's digital economy remains inclusive or becomes extractive.

THE FADING OF ENVIRONMENTAL JURISPRUDENCE IN INDIA

Context (Introduction):

Recent judicial and policy developments reveal a gradual dilution of India's environmental jurisprudence, where ecological safeguards are increasingly subordinated to developmental priorities, raising serious constitutional concerns regarding Article 21, environmental justice, and intergenerational equity.

Evolution of Environmental Jurisprudence in India

- Indian courts historically played a **transformative role** in environmental protection by expanding the scope of **Article 21 (Right to Life)** to include the right to a clean and healthy environment.
- Landmark doctrines such as the **Precautionary Principle**, **Polluter Pays Principle**, and **Public Trust Doctrine**were judicially evolved.
- In **Vellore Citizens' Welfare Forum vs Union of India (1996)**, the Supreme Court firmly embedded the precautionary principle into Indian environmental law.
- In **M.C. Mehta vs Kamal Nath (1996)**, the Court held that natural resources are held by the State in trust for the people and cannot be exploited for private gain.
- Courts emerged as custodians of environmental rights, particularly when executive enforcement was weak.

Recent Judicial Trends Indicating Dilution

- A policy shift allowing **Environmental Impact Assessment (EIA) after land acquisition**, even without clarity on location and extent, weakens preventive environmental scrutiny.
- The recall of **Vanashakti vs Union of India (2025)**, which had banned retrospective environmental clearances, diluted deterrence against illegal mining and infrastructure violations.
- Earlier, in **Common Cause vs Union of India (2017)**, the Court categorically held that post-facto environmental clearances undermine the rule of law and cannot legalise illegality.
- Despite this, judicial tolerance of conditional and retrospective clearances signals a departure from strict compliance-based environmental governance.

Aravalli Ranges: A Case Study in Jurisprudential Retreat

- The Aravallis are ecologically vital for **groundwater recharge, climate moderation, soil stability, and desertification control** in north-west India.
- In **M.C. Mehta vs Union of India (2004)**, the Supreme Court imposed a ban on mining in the Aravalli region, recognising irreversible ecological damage.
- Subsequent orders culminating in **2010** rejected attempts to define Aravallis solely based on elevation, noting that low-lying ridges are ecologically crucial.
- The Court explicitly rejected the **100-metre height criterion**, recognising the Aravallis as a **geomorphological and hydrological system**, not isolated peaks.
- However, in **In Re: Issue Relating to Definition of Aravalli Hills and Ranges (2025)**, the Supreme Court accepted the height-based definition, excluding large ecologically significant areas from protection.
- This arbitrary classification lacks rational nexus with ecological objectives, violating **Article 14 (non-arbitrariness)** and weakening **Article 48A (Directive Principle on environment protection)**.

Mangroves, Himalayas and Infrastructure Push

- Judicial approval for the destruction of **158 mangroves for Adani Cementation Ltd. (2025)** in Raigarh reflects reliance on compensatory afforestation over ecological integrity.
- Mangroves act as **natural flood buffers, carbon sinks, and biodiversity reservoirs**, and cannot be replaced within short timeframes.
- In **Citizens for Green Doon vs Union of India (2021)**, the Court acknowledged the fragility of the Himalayan ecosystem but permitted wider roads under the **Char Dham highway project** citing strategic needs.
- A 2025 study identifying **811 landslide-prone zones** along the project raises concerns about this "balancing approach".
- The Himalayan floods and landslides expose the long-term ecological costs of infrastructure-led development.

Procedural Fairness and Corporate Influence

- Environmental clearances for large corporations often pass with minimal scrutiny, while objections are labelled obstructionist.
- Public hearings are reduced to procedural formalities, undermining participatory governance envisaged under environmental laws.
- Preferential treatment to capital-intensive projects raises concerns under **Article 14**, as procedural fairness and equality before law are compromised.
- Environmental compliance risks becoming a checklist rather than a substantive safeguard.

Constitutional Implications

- Dilution of environmental safeguards directly affects **Article 21**, which guarantees the right to a clean and healthy environment.
- **Article 48A** (State's duty to protect environment) and **Article 51A(g)** (citizens' duty) are rendered ineffective without judicial enforcement.
- Selective ecological protection based on artificial criteria violates the constitutional principle of **non-arbitrariness**.
- Intergenerational equity — central to sustainable development — is increasingly ignored.

Way Forward: Reinvigorating Environmental Justice

- Restore **ecosystem-based interpretations** instead of narrow technical definitions.
- Strictly prohibit **post-facto and conditional environmental clearances**, in line with **Common Cause (2017)**.
- Institutionalise **regular Green Benches** in the Supreme Court and High Courts with scientific and ecological expertise.
- Reaffirm foundational doctrines such as the **Public Trust Doctrine** and **Precautionary Principle**.
- Balance development and national security with ecological limits through transparent, science-based decision-making.

Conclusion

India's environmental jurisprudence stands at a constitutional crossroads. Courts that once expanded ecological protections now risk legitimising environmental degradation. Reclaiming judicial leadership is essential to preserve constitutional morality, ecological resilience, and the rights of future generations.

AI AND ENERGY AS THE NEW AXES OF GLOBAL POWER IN A FRAGMENTED WORLD ORDER

Context (Introduction):

The contemporary international system is witnessing a decisive shift from a **rules-based, institution-led order** to a **fragmented, power-centric and transactional system**. Multilateral frameworks are weakening, global consensus on climate, trade and development is eroding, and national interest increasingly overrides shared norms. In this environment, **capabilities — not commitments — shape influence**, and two domains stand out as rule-defining: **Artificial Intelligence (AI) and Energy**.

How Artificial Intelligence is Reshaping Global Power

AI has moved beyond being a productivity tool to become a **strategic asset** that shapes economic competitiveness, military superiority and governance capacity.

- **Geopolitical rivalry**: The US–China contest increasingly revolves around AI leadership — semiconductors, data ecosystems, compute power and talent.
- **Rule-making power**: Countries leading in AI are setting standards on data governance, algorithmic accountability, cyber security and digital trade.
- **Economic concentration**: AI favours scale, capital and platforms, reinforcing hierarchies between technology leaders and followers.
- **Strategic uncertainty**: It remains unclear whether frontier innovation or rapid imitation will determine dominance, adding instability to global planning.

Thus, AI is not merely disruptive — it is **reconstituting global hierarchies**.

How Energy Dynamics Are Rewriting Strategic Calculations

Energy, unlike speculative technology markets, remains anchored in **material fundamentals**, but its geopolitical role is intensifying.

- **Structural oil surplus** has kept prices stable despite wars, sanctions and regional instability.
- **Narrowing cost gap** between fossil fuels and renewables has slowed the green transition.
- **Critical mineral constraints** — especially copper, lithium and rare earths — are emerging as new chokepoints in electrification.
- **Energy security over climate idealism** is increasingly guiding national policies.

Control over energy supply chains and transition materials is becoming a **determinant of strategic autonomy**.

Combined Impact: Technology–Energy Nexus and Rule Rewriting

AI and energy together shape:

- Industrial competitiveness

- Military capability
- Supply chain resilience
- Standards in trade, climate and digital governance

In a fragmented order, **rules follow power**, and power increasingly flows from **technological depth and energy control**, not multilateral consensus.

Challenges and Choices for India

India faces a complex strategic balancing act:

- **Strategic autonomy** amid US–China rivalry without technological dependence
- **Energy security** during a slow and resource-constrained green transition
- **AI capability building** despite gaps in semiconductors, data infrastructure and R&D
- **Institutional deficit** in global rule-making forums despite growing economic weight

India must avoid becoming a rule-taker in both AI governance and energy transitions.

Conclusion

In a world where multilateralism is thinning and power is increasingly transactional, **AI and energy are the twin pillars of global influence**. For India, the challenge is not merely adaptation but **capability creation** — ensuring that technological and energy choices reinforce sovereignty, competitiveness and long-term resilience rather than strategic vulnerability.

THE 'MINEABLE SELF' AND THE NEW FRONTIER OF CAPITALIST EXTRACTION

Context (Introduction):

Capitalism has historically expanded by identifying new resources for extraction — land, labour, minerals, data. In the contemporary digital economy, a **new commodity has emerged: the human self**. Through digital platforms, media ecosystems and algorithmic profiling, **human sociality, identity and personal narratives are increasingly mined, commodified and monetised**, reshaping ideas of privacy, individuality and consent. This marks a structural shift in how value is created in the global economy.

What Is the 'Mineable Self'?

- **Transformation of Sociality into Resource**: Capital extraction now targets **relationships, emotions, identities, networks and life stories**, not merely labour or data.
- **Beyond Traditional Profiling**: This represents "profiling on steroids" — mapping not just consumer behaviour but **intimate social ties**, affinities and vulnerabilities.
- **Stories as Access Codes**: Personal narratives function as gateways for extraction, allowing platforms and markets to convert lived experience into economic value.
- **Infinite Renewability**: Unlike physical commodities, the self is continuously reproduced as long as human social life exists.

Global Story Markets and the Reconfiguration of Locality

- **Collapse of the Global–Local Binary**: Stories are increasingly valued for their **local rootedness combined with global portability**, especially narratives of migration, violence, marginality and volatility.
- **Media as Extraction Infrastructure**: News platforms, OTT services and streaming giants operate as **global refineries**, processing local experiences into globally consumable content.
- **Narrative First Responders**: Ordinary individuals capturing crises or conflict become instant content producers, feeding global media circuits.
- **Redefinition of 'Local'**: Locality is no longer parochial or contained; it is refracted through global frames, reshaping how identities and places are perceived.

Streaming Platforms and the Democratisation of the Self

- **Rise of the 'Ordinary' Protagonist**: OTT platforms favour mid-market actors and everyday characters, expanding who can become narratively valuable.
- **Apparent Democratisation**: More individuals gain visibility and narrative agency, but this simultaneously **widens the pool for extraction**.
- **Self as Market-Ready Unit**: Unknown individuals, communities and identities are rendered legible, sortable and monetisable at scale.

From 'Sources of the Self' to 'Sources of the Selfie'

- **Fragmentation of the Individual**: The modern self is no longer a unified moral subject but a **composite of credit scores, data profiles, algorithmic predictions and consumption histories**.
- **AI and Synthetic Selves**: Digital agents increasingly mimic human emotions and intuition, eroding the boundary between authentic and simulated selves.
- **Cultural Shift**: Personal visibility, rather than moral autonomy, becomes the currency of recognition.

The Chain of Storytelling and Self-Commodification

- **Universal Narratability**: Every individual is encouraged to frame life as a story worthy of an audience.
- **Market Intermediation**: Influencers, platforms, publishers and algorithms mediate how stories are told, amplified and monetised.
- **Voluntary Participation**: Individuals increasingly **consent to self-extraction**, selling access to their identities in exchange for visibility or livelihood.
- **The Self as Super-Commodity**: The convergence of platforms, storytelling and technology has produced a commodity bounded only by human appetite for self-exposure.

Challenges and Implications for India

- **Erosion of Privacy and Intimacy**: In a digitally unequal society, consent becomes formal rather than meaningful.
- **Asymmetric Power Relations**: Platforms extract disproportionate value from individuals with limited bargaining power.
- **Cultural and Social Vulnerability**: Marginal identities and communities risk becoming raw material for global story markets.
- **Governance Gap**: Existing data protection and platform regulation frameworks inadequately address **identity, narrative and social extraction**.

Conclusion

The rise of the mineable self signals a fundamental shift in capitalism — from extracting what humans produce to extracting **who humans are**. While this expansion appears democratic, it simultaneously deepens commodification of identity, intimacy and social life. The challenge for governance lies not merely in regulating data, but in safeguarding the dignity and autonomy of the human self in a story-driven digital economy.

UGC'S EQUITY REGULATIONS AND THE CHALLENGE OF PROCEDURAL JUSTICE

Context (Introduction):

The **University Grants Commission (Promotion of Equity in Higher Education Institutions) Regulations, 2026** were introduced to address persistent caste-, gender- and religion-based discrimination in universities. The Supreme Court stayed their implementation on January 29, 2026, following protests, particularly from sections of general category students.

- The regulations emerge against a background of rising discrimination complaints and weak grievance redressal mechanisms in higher education. However, concerns about procedural ambiguity, excessive speed, and enforcement architecture have triggered apprehension regarding fairness and institutional autonomy.

Rationale Behind the Regulations

- **Persistent Structural Discrimination**: Marginalised students often face exclusion, harassment, academic bias and social isolation. Existing anti-discrimination mechanisms have been slow, discretionary and at times symbolic.
- **Need for Institutional Accountability**: Universities have frequently responded inadequately to complaints. The regulations aim to impose enforceable timelines and accountability standards to prevent institutional inertia.
- **Emphasis on Swift Redressal**: The framework mandates immediate acknowledgment of complaints, rapid committee formation, and time-bound inquiry completion — premised on the idea that delayed justice equals denied justice.

Core Concerns and Criticisms

- **Vagueness in Definition of Discrimination**: The regulations do not clearly define actionable offences or evidentiary thresholds. Ambiguity creates scope for inconsistent interpretation across institutions.
- **Thin Procedural Safeguards**: While speed is emphasised, procedural protections — such as clear standards of proof, right to response, appeal mechanisms and evidentiary protocols — remain underdeveloped.
- **Incentive Structure for Over-Compliance**: The UGC penalises institutions for non-compliance rather than adjudicating individual cases. The threat of funding withdrawal or de-recognition may push universities toward visible punitive action rather than careful adjudication.
- **Risk of 'Compliance Theatre'**: Institutions may respond by multiplying committees and paperwork without addressing deeper structural inequalities. Governance scholars describe this as "compliance theatre" — reform in appearance rather than substance.
- **Uneven Access to Complaint Mechanisms**: The ability to frame grievances in institutional language is unevenly distributed. Students from rural, linguistic or economically weaker backgrounds may struggle to navigate procedural frameworks, undermining the regulation's inclusive intent.
- **Academic Autonomy Concerns**: Subjective academic processes such as grading, supervision and feedback could become risk-averse, weakening intellectual rigor if faculty fear regulatory scrutiny without procedural clarity.

Comparative Lessons

Experiences from American universities during campus misconduct reforms in the 2010s illustrate that excessive prioritisation of speed without procedural safeguards triggered judicial pushback. Courts emphasised due process, evidentiary clarity and reputational protection.
This suggests that urgency must be balanced with procedural robustness.

Balancing Equity and Due Process

For legitimacy and effectiveness, the regulations may require:

- Clear definitions of discrimination and harassment.
- Transparent evidentiary standards.
- Rights of response and appeal.

- Independent oversight mechanisms.
- Protection against reputational harm before final findings.
- Capacity-building to assist marginalised students in filing complaints.
- Institutional audits focusing on structural reform rather than punitive metrics.

Conclusion

The objective of promoting equity in higher education is constitutionally aligned with Articles 14, 15 and 21. However, justice that moves swiftly but unclearly risks eroding trust. Durable reform requires not only urgency, but procedural depth, transparency and institutional legitimacy. Equity frameworks must strengthen both inclusion and fairness, rather than position them as competing values.

JUDICIAL INTERVENTION IN RELIGIOUS DISPUTES: CONSTITUTIONAL EVOLUTION AND LIMITS

Context (Introduction):

Recent judgments of the Madras High Court concerning the Thiruparankundram Deepathoon and the Thenkalai sect's recitation rights reflect the continuing constitutional engagement of courts with religious disputes. These cases reaffirm that temples are not insulated private spaces but public institutions subject to constitutional discipline. The increasing litigation marks a deeper contest between denominational autonomy and constitutional morality.

Pre-Constitution to Constitutional Shift

- **Civil Rights Character:** In *Sankaralinga Nadan vs Raja Rajeswara Dorai (1908)*, temple entry disputes were treated as civil rights issues rather than constitutional questions.
- **Legislative Supervision:** The Madras Hindu Religious Endowments Act, 1927 institutionalised state supervision over temple administration and finances.
- **Constitutional Transformation:** After 1950, Articles 25 and 26 converted temple disputes into fundamental rights adjudication.
- **Public Order Limitation:** Religious freedom was expressly made subject to public order, morality and health.
- **Judicial Centrality:** Constitutional courts became arbiters in balancing equality with religious autonomy.

Development of the Essential Religious Practices Doctrine

- **Judicial Innovation:** The Supreme Court evolved the Essential Religious Practices (ERP) test to determine core religious protections.
- **Secular-Religious Distinction:** Practices not deemed essential were classified as secular and open to state regulation.
- **Equality Emphasis:** Courts used ERP to strike down exclusionary customs inconsistent with Articles 14 and 21.
- **Sabarimala Consolidation:** In *Indian Young Lawyers Association (2018)*, the Court held that even essential practices are subject to constitutional morality.
- **Doctrinal Inconsistency:** Subsequent judgments revealed inconsistency in applying ERP, raising concerns of judicial subjectivity.

Contemporary Constitutional Tensions

- **Denominational Autonomy vs Equality:** Article 26 rights frequently collide with individual equality guarantees.
- **Judicial Theologising:** Courts often enter theological terrain, risking overreach beyond institutional competence.
- **Expanding Litigation:** Rising religious disputes reflect ideological polarisation and rights consciousness.

- **Constitutional Morality Debate:** The content of constitutional morality remains interpretatively fluid.
- **Separation of Powers Concern:** Frequent judicial involvement may blur boundaries between judiciary and religious administration.

Way Forward

- **Shift to Proportionality:** Courts may adopt a proportionality framework instead of theological scrutiny.
- **Legislative Clarity:** Clearer statutory frameworks under HR&CE laws can reduce litigation.
- **Institutional Mechanisms:** Internal grievance redressal within temples can prevent constitutional escalation.
- **Judicial Restraint:** Courts must combine constitutional vigilance with doctrinal consistency.
- **Faith-Constitution Harmony:** Religious freedom must operate within the constitutional framework of justice, liberty, equality and fraternity.

Conclusion

Judicial review of religious practices is a constitutional necessity rather than an intrusion. The challenge lies not in withdrawing courts from religious disputes but in refining doctrinal tools to harmonise faith with constitutional supremacy.

BANGLADESH'S ELECTORAL REALIGNMENT AND THE DISCIPLINE OF POWER

Context (Introduction):

Bangladesh's 2026 elections mark a significant political transition with the return of the Bangladesh Nationalist Party (BNP) to power under Tarique Rahman. The verdict restores one of the two dominant poles of post-1990 Bangladeshi politics and introduces a new phase in Dhaka's domestic and foreign policy trajectory. The accompanying constitutional referendum adds institutional depth to this moment, but the real test lies not in electoral arithmetic, but in how power is exercised within constitutional limits.

Political Realignment and Institutional Test

1. **Return of Bipolar Politics:** The BNP's victory re-establishes the competitive two-party structure that has shaped Bangladesh since the 1990 democratic transition.
2. **Shift in Leadership Tone:** Tarique Rahman's post-exile rhetoric indicates moderation, institutional emphasis, and calibrated foreign engagement.
3. **Jamaat-e-Islami's Re-entry:** Electoral participation of JEI reflects evolving negotiations between liberation memory, religious identity, and governance concerns.
4. **Constitutional Referendum:** Democratic endorsement of constitutional reforms enhances legitimacy, but durability depends on institutional restraint.
5. **From Mobilisation to Governance:** Student-led political mobilisation preceding elections now confronts the constraints of parliamentary arithmetic.

Democratic Consolidation: Inclusion and Minority Confidence

1. **Minority Security Concerns:** Reports of attacks on Hindu homes and temples during transitions underline fragility in plural space.
2. **Constitutional Morality Test:** Sovereignty must remain anchored in equality, echoing the normative promise of 1971.
3. **Institutional Credibility:** Democratic resilience requires adherence to procedural fairness beyond electoral victory.
4. **Balancing Identity and Governance:** Political nationalism must coexist with inclusive constitutionalism.

5. **Legitimacy through Delivery:** Governance competence will determine whether political transition stabilises or polarises society.

Economic Imperatives and Developmental Stability

1. **Export-Driven Growth Model:** Bangladesh's garment sector, remittances, and female workforce participation remain central to economic success.
2. **Structural Vulnerabilities:** Global trade pressures and supply-chain shifts demand policy predictability.
3. **Administrative Capacity:** Economic stability will depend on fiscal prudence and regulatory continuity.
4. **Investor Confidence:** Markets respond to institutional reliability rather than electoral symbolism.
5. **Social Cohesion and Growth:** Inclusive governance sustains development gains.

Strategic Implications for India

1. **Geographic Interdependence:** Shared rivers, border management, connectivity, and Bay of Bengal security make Bangladesh central to India's eastern security architecture.
2. **Diplomatic Continuity:** Early outreach signals India's intent to maintain institutional engagement beyond partisan change.
3. **Chinese Strategic Footprint:** Infrastructure investments and connectivity corridors reflect long-term leverage accumulation.
4. **Pakistan's Tactical Interest:** Intelligence and ideological networks remain relevant during periods of political flux.
5. **Western Engagement:** US and UK involvement in transitional phases reflects broader strategic calculations affecting regional balance.

Broader Regional Context

1. **Fragmented Regional Order:** South Asia operates within a competitive geopolitical environment marked by incremental influence accumulation.
2. **Sovereignty and Strategic Autonomy:** Bangladesh must navigate external partnerships without strategic overdependence.
3. **India's Strategic Prudence:** Vigilance in neighbourhood diplomacy is not intrusion but necessary realism.
4. **Equilibrium and Influence:** Regional stability depends on disciplined exercise of political power in Dhaka.
5. **Democratic Mandate vs Democratic Maturity:** The strength of a mandate must translate into constitutional restraint.

Conclusion

Bangladesh's 2026 election is not merely a transfer of power but a structural realignment. The significance of this moment lies less in the scale of electoral victory and more in the discipline with which authority is exercised. For India, the development reinforces the importance of steady, non-reactive engagement anchored in strategic realism. Stability in Dhaka remains integral to India's neighbourhood policy and eastern security calculus.

INSTITUTIONALISING SCIENTIFIC EXPERTISE: THE CASE FOR AN INDIAN SCIENTIFIC SERVICE (ISS)

Context (Introduction):

India's post-Independence administrative framework was designed around a generalist civil service model suited for nation-building and territorial integration. Over the decades, however, governance has become increasingly shaped by complex scientific, technological, environmental, and public health challenges. Despite the growing centrality of science in policymaking, India lacks a dedicated scientific cadre with institutional safeguards and tailored service rules.

Scientists within government continue to operate under the Central Civil Services (Conduct) Rules, 1964, originally designed for administrative governance, creating a structural mismatch between scientific inquiry and bureaucratic norms.

The Structural Mismatch: Administrator vs Scientist

1. **Different Professional Pathways:** Civil servants are recruited through a generalist competitive examination and trained for governance roles, whereas scientists undergo specialised education, peer review, and domain-specific expertise development.
2. **Absence of Tailored Career Frameworks:** Unlike administrators, scientists often lack structured training, career progression pathways, and clearly aligned institutional authority within governance systems.
3. **Reactive Role of Science:** Scientific inputs are frequently commissioned for immediate regulatory or legal needs, rather than embedded as continuous policy guidance.
4. **Limited Institutional Authority:** Government scientists often function in advisory capacities without formal weight in final decision-making processes.
5. **Governance Complexity Expansion:** Sectors such as climate change, oceans, nuclear safety, AI, biotechnology, and disaster management demand sustained scientific integration into policy design.

Why Administrative Rules Are Not Neutral

1. **Service Rules Shape Institutional Culture:** Conduct rules emphasising discipline and neutrality may constrain the questioning ethos central to scientific inquiry.
2. **Scientific Integrity Requires Transparency:** Effective science-based governance demands the ability to formally record uncertainties, risks, and dissenting assessments.
3. **Risk of Symbolic Consultation:** Without structural safeguards, scientific advice may become decorative rather than determinative.
4. **Need for Professional Autonomy:** Scientists must be able to flag ecological or technological risks without fear of institutional reprisal.
5. **Science vs Policy Distinction:** Final decisions rest with elected authorities, but scientific advice must remain independent and documented.

Comparative International Experience

1. **Dedicated Scientific Cadres:** Countries such as France, Germany, Japan, the UK, and the US maintain structured scientific services within government.
2. **Scientific Integrity Policies:** The US framework protects scientists from political interference and mandates transparency in documentation.
3. **Institutionalised Evidence Use:** Advanced economies embed scientists directly in ministries and regulatory agencies.
4. **Professional Safeguards:** Separate service rules protect career progression and research independence.
5. **Policy Credibility Enhancement:** Transparent scientific input strengthens public trust and regulatory legitimacy.

The Case for an Indian Scientific Service (ISS)

1. **Permanent All-India Scientific Cadre:** The ISS could function alongside existing civil services, ensuring integrated scientific participation in governance.
2. **Rigorous Recruitment Model:** Selection through peer evaluation and national-level assessment tailored to scientific expertise.

3. **Separate Service Rules:** Dedicated scientific conduct and appraisal frameworks protecting professional independence.
4. **Transparent Documentation:** Mandatory recording of scientific assessments and risk evaluations within institutional processes.
5. **Complementary Governance Model:** Administrators ensure coordination and execution, while scientists provide evidence-based foresight and risk analysis.

Proposed Structural Framework

1. **Indian Environmental and Ecological Service:** Focused on biodiversity, ecosystems, and environmental regulation.
2. **Indian Climate and Atmospheric Service:** Dedicated to climate modelling, mitigation, and adaptation policy integration.
3. **Indian Water and Hydrological Service:** Addressing river basin governance, groundwater, and water security.
4. **Indian Public Health and Biomedical Service:** Integrating epidemiology and biomedical research into health governance.
5. **Indian Disaster Risk and Resilience Service:** Embedding scientific risk modelling into disaster preparedness frameworks.

Conclusion

India has built strong scientific institutions, but institutional design has not kept pace with governance complexity. As India aspires to global leadership in climate action, technology, and public health, evidence-based policymaking must move from episodic consultation to structural integration. The creation of an Indian Scientific Service would represent a forward-looking reform that strengthens governance resilience, enhances scientific integrity, and aligns administrative systems with 21st-century challenges.

INDIA'S FEDERALISM AT A CROSSROADS: THE CASE FOR A STRUCTURAL RESET

Context (Introduction):

India's Constitution established a federal system with a clear centralising bias, shaped by Partition, integration of princely states, and concerns over national unity. Over time, however, the political, economic and administrative maturity of States has evolved significantly. Yet constitutional practice continues to reflect early post-independence anxieties. The present debate raises a fundamental question: Does India need a structural reset in its federal architecture to align authority with accountability and efficiency?

Evolution of Centralisation in Indian Federalism

1. **Historical Centralising Bias** : The Constitution drew heavily from the Government of India Act, 1935, concentrating residuary powers and emergency provisions in the Union, reflecting the need for national consolidation in 1950.
2. **Political Reinforcement of Union Dominance** : The dominance of a single national party in the early decades fostered a "high command" culture, reducing the functional autonomy of State leadership.
3. **Expansion through Constitutional Amendments and Legislation** : Successive amendments, expansion of Union legislation under the Concurrent List, and conditional Finance Commission transfers have strengthened the fiscal and legislative reach of the Centre.
4. **Centrally Sponsored Schemes and Fiscal Conditionality** : Rigid templates in centrally sponsored schemes and tied grants have narrowed State policy space, limiting contextual experimentation.

5. **Executive Overreach and Subordinate Legislation** : Instances of Union executive action overriding plenary State laws in Concurrent List subjects through subordinate legislation reflect an inversion of democratic hierarchy.

Judicial Doctrine and Federal Principles

1. **Federalism as Basic Structure** : In *S.R. Bommai v. Union of India (1994)*, the Supreme Court declared federalism part of the Constitution's Basic Structure, affirming that States are supreme within their allotted spheres.
1. **Partnership Model of Federalism** : The Court clarified that States are not administrative appendages of the Union but partners in a shared constitutional enterprise.
2. **Tension between Uniformity and Diversity** : Judicial interpretations sometimes privilege uniform national solutions over contextual diversity, raising concerns regarding the erosion of State autonomy.

Issues with Over-Centralisation

1. **Administrative Overload at the Centre** : Excessive centralisation burdens Union ministries with subjects better handled locally, reducing policy efficiency.
2. **Suppression of Policy Innovation** : Decentralised experimentation has historically driven innovation — Tamil Nadu's noon meal scheme, Kerala's public health model, and Maharashtra's employment guarantee programme later shaped national policy.
3. **Capacity Stagnation in States** : Persistent Union intervention stunts State-level institutional capacity, creating cycles of dependence rather than empowerment.
4. **Blurred Accountability** : Overlapping mandates dilute responsibility, making citizens uncertain about which level of government is accountable for outcomes.
5. **Fiscal Stress and Regulatory Complexity** : Expanding Union mandates without commensurate resource devolution strain both levels of government, reducing governance quality.

Institutional Efforts toward Rebalancing

1. **Rajamannar Committee (1971)** : Established by Tamil Nadu, it argued for greater fiscal and legislative autonomy for States, initiating structured federal debate.
2. **Sarkaria Commission (1983–88)** : Recommended cooperative federalism and restraint in the use of Article 356, acknowledging the need for balance.
3. **Punchhi Commission (2007–10)** : Advocated clearer demarcation of roles and stronger Inter-State Council mechanisms.
4. **Recent High-Level Committees** : Contemporary State-level initiatives, such as the 2025 Tamil Nadu Committee on Union–State Relations, reflect renewed calls for recalibration in areas such as Governors' roles, language policy, GST, education and health.

The Case for a Structural Reset

1. **Aligning Authority with Responsibility** : Governance effectiveness improves when decision-making authority is exercised closest to local knowledge and accountability.
2. **Right-Sizing the Union Government** : The Union should focus on genuinely national functions — defence, foreign policy, macroeconomic stability — rather than micro-managing Concurrent or State List subjects.

3. **Enabling Competitive and Cooperative Federalism** : Decentralisation fosters parallel experimentation, encouraging best-practice diffusion across States.
4. **Fiscal Federal Reforms** : Greater untied transfers, flexibility in centrally sponsored schemes, and rationalisation of GST compensation structures can restore fiscal balance.
5. **Strengthening Institutional Dialogue** : Revitalising the Inter-State Council and ensuring transparent Centre–State consultations can institutionalise cooperative federalism.

Conclusion

India's federal design was forged in a moment of historical vulnerability. Today, the nation stands on far firmer political and institutional ground. A structural reset in federalism does not imply weakening the Union; rather, it implies strengthening it through focus and restoring trust in States through autonomy. Balanced federalism — characterised by autonomous States, a focused Union, and clear accountability — is essential to align governance with India's scale, diversity, and developmental aspirations.

PAPER 3

WETLANDS AS A NATIONAL PUBLIC GOOD

Context (Introduction):

India's wetlands, central to water security, biodiversity and disaster resilience, are rapidly declining despite legal protection. World Wetlands Day 2026 underscores the urgency of integrating traditional knowledge with science-based governance to safeguard these fragile ecosystems.

Current Status of Wetlands in India

- **Rapid Decline:** Nearly **40% of India's wetlands have disappeared** in the last three decades, while about **50% of the remaining wetlands are degraded**, reducing their ecological and economic value.
- **Ecological & Economic Role:** Wetlands support fisheries, agriculture, groundwater recharge, flood control and livelihoods, especially for rural and coastal communities, acting as both ecological buffers and local economic assets.
- **Global Commitments:** India has designated **98 Ramsar sites**, reflecting international recognition, but designation alone has not ensured on-ground protection or restoration.
- **Urban Wetland Stress:** Urban wetlands are overburdened with sewage inflows, stormwater, solid waste and encroachments, often without legal buffers or hydrological protection.
- **Climate Vulnerability:** Coastal wetlands such as mangroves face a dual threat from **sea-level rise and development pressure**, limiting their ability to migrate or regenerate.

Key Issues and Challenges

- **Weak Implementation:** Although the **Wetlands (Conservation and Management) Rules, 2017** exist, poor notification, demarcation and enforcement have diluted their impact.
- **Encroachment & Land Conversion:** Infrastructure, real estate and road projects have replaced wetlands, treating them as "spare land" rather than active ecological systems.
- **Hydrological Disruption:** Dams, embankments, sand mining and groundwater over-extraction alter natural water flows, degrading wetland functions, especially floodplains and riparian zones.
- **Pollution Load:** Untreated sewage, industrial effluents and agricultural runoff cause eutrophication, biodiversity loss and public health risks.
- **Institutional Capacity Gaps:** State Wetland Authorities are often underfunded and understaffed, lacking expertise in hydrology, ecology, GIS and community engagement.

Government Efforts So Far

- **Regulatory Framework:** The **Wetlands Rules, 2017** mandate identification, notification and restriction of harmful activities in wetlands.
- **NPCA Guidelines:** The **National Plan for Conservation of Aquatic Ecosystems (NPCA)** promotes structured planning, monitoring and outcome-based wetland management.
- **CRZ Regulations:** The **Coastal Regulation Zone framework** seeks to protect coastal wetlands like mangroves and lagoons from unregulated development.
- **Technology Use:** Increasing use of **remote sensing, GIS and satellite monitoring** to track encroachment, water spread and vegetation change.
- **Community-linked Models:** Pilot projects by research institutions and NGOs demonstrate participatory wetland management linked to local livelihoods.

Way Forward

- **From Projects to Programmes:** Shift from isolated beautification projects to **long-term, basin-level wetland programmes** focused on ecological functionality.
- **Boundary Notification & Transparency:** Ensure clear demarcation, public maps, grievance redress mechanisms and community-led ground verification of wetland boundaries.
- **Treat Wastewater at Source:** Urban wetlands must receive **only treated effluents**; wetlands cannot substitute for sewage treatment plants.
- **Catchment & Connectivity Protection:** Manage wetlands as part of entire watersheds by restoring feeder channels and preventing physical blockages.
- **Nature-based Infrastructure:** Recognise wetlands as **disaster risk reduction assets**, comparable to grey infrastructure, especially for floods and cyclones.
- **Capacity Building:** Launch a national training mission for wetland managers in hydrology, restoration ecology, GIS, environmental law and participatory governance.

Conclusion

Wetlands are not wastelands but national public goods vital for India's water security, climate resilience and livelihoods. Aligning science, policy and community stewardship—while scaling from cosmetic interventions to ecosystem-based governance—is essential to restore wetlands as living, working systems for a sustainable future.

DISCOMS AND THE ROAD AHEAD

Context (Introduction):

India's power distribution sector, long considered the weakest link in the electricity value chain, is showing early signs of recovery. Distribution Companies (DISCOMs) have recorded improvements in operational efficiency, financial discipline, and cost recovery. However, the turnaround remains uneven and heavily dependent on State support, raising questions about long-term sustainability.

Structural Problems in the Distribution Sector

- Chronic **Aggregate Technical and Commercial (AT&C) losses** due to outdated infrastructure, theft, and poor billing efficiency
- Persistent gap between **Average Cost of Supply (ACS)** and **Average Revenue Realised (ARR)** caused by non-cost-reflective tariffs
- Delayed or unpaid **State government subsidies**, worsening liquidity stress
- Rising accumulated losses and debt burden, with DISCOM losses increasing from ₹5.5 lakh crore (2020–21) to ₹6.47 lakh crore (2024–25) and debt touching ₹7.26 lakh crore
- Legacy issues inherited from State Electricity Boards (SEBs), despite Section 59 of the Electricity (Supply) Act, 1948 mandating profitability

Signs of Improvement and Recent Performance

- DISCOMs recorded a **positive Profit After Tax (PAT) of ₹2,701 crore in 2024–25**, reversing a loss of ₹67,962 crore in 2013–14
- **AT&C losses declined** from 22.62% to 15.04% over the same period
- **ACS–ARR gap narrowed sharply** from 78 paise per unit to 0.06 paise per unit (accrual basis), indicating near cost recovery
- Improved financial discipline reflected in timely payment of current dues to generators

Role of Central Reforms and Policy Interventions

- **Revamped Distribution Sector Scheme (RDSS)** links fund release to performance benchmarks such as loss reduction, smart metering, and infrastructure upgrades
- **Late Payment Surcharge Rules (2022)** enabled DISCOMs to clear legacy dues in up to 48 EMIs, arresting the accumulation of surcharges
- Outstanding legacy dues declined from ₹1.39 lakh crore (June 2022) to about ₹4,927 crore by January 2026

Dependence on State Support: A Key Concern

- Financial turnaround in many States is largely driven by **tariff subsidies and loss takeovers**, not structural self-sufficiency
- **Tamil Nadu Power Distribution Corporation Ltd. (TNPDCL)** recorded a PAT of ₹2,073 crore in 2024–25 only after receiving ₹15,772 crore in tariff subsidy and ₹16,107 crore in loss takeover
- Without State support, TNPDCL would have posted a loss of ₹14,034 crore (PFC Integrated Rating Exercise, 2026)
- Similar trends observed in Rajasthan's JDVVNL, which reported profit only after receiving substantial State assistance

Sustainability Challenges Ahead

- Revenue surpluses may be temporary, especially with **future pay revisions and rising operational costs**
- Free or highly subsidised electricity, particularly for domestic consumers, distorts price signals and disproportionately benefits higher-income households
- Unmetered agricultural supply limits accurate assessment of consumption and losses

Way Forward

- **Expand feeder segregation** to States with unmetered farm supply to improve data accuracy and accountability
- **Promote solar pumps in agriculture**, as recommended by NITI Aayog (2021), to reduce procurement costs and peak demand
- Gradual transition to **cost-reflective tariffs** with targeted subsidies through Direct Benefit Transfer (DBT)
- Accelerate **smart metering and digital billing systems** to curb losses and improve collection efficiency

Conclusion

The recent improvement in DISCOM performance reflects the impact of focused reforms and enhanced financial discipline. However, the continued reliance on State subsidies and loss absorption highlights unresolved structural weaknesses. Sustainable turnaround requires deeper efficiency gains, tariff rationalisation, and depoliticisation of electricity pricing.

RECALIBRATING NUCLEAR LIABILITY: THE SHANTI ACT DEBATE

Context (Introduction):

The SHANTI Act marks a structural shift in India's nuclear power policy by opening the sector to private operators and amending the liability framework under the Civil Liability for Nuclear Damage Act (CLNDA), 2010. The legislation alters supplier liability, caps compensation, and modifies regulatory oversight, raising concerns regarding safety, accountability and constitutional principles of absolute liability in hazardous industries.

Key Provisions of the SHANTI Act

1. **Private Participation:** The Act permits private entities to operate nuclear power plants, ending the earlier regime of exclusive Union government control.

2. **Supplier Indemnification:** It removes the operator's "right of recourse" against suppliers for defective equipment, thereby shielding suppliers from civil liability.
3. **Liability Cap:** Operator liability is capped between ₹100 crore (small plants) and ₹3,000 crore (large plants), with a total accident liability cap of 300 million Special Drawing Rights (≈ ₹3,900 crore).
4. **Removal of Clause 46:** Victims cannot invoke other civil or criminal laws for additional remedies beyond the statutory cap.
5. **Regulatory Framework:** The Atomic Energy Regulatory Board (AERB) receives statutory backing but its independence is constrained as appointments are routed through the Atomic Energy Commission.

Changes from the CLNDA Framework

1. **Erosion of Right of Recourse:** Section 17(b) of the CLNDA allowed operators to sue suppliers for accidents caused by defective equipment; this safeguard is omitted.
2. **Dilution of Absolute Liability:** The Act indemnifies operators in cases of "grave natural disasters," despite precedents such as the Fukushima disaster (2011), which was tsunami-triggered.
3. **Capped Compensation Regime:** India moves closer to supplier-friendly international conventions, including the Convention on Supplementary Compensation (CSC).
4. **Alignment with External Pressure:** The 2026 U.S. National Defense Authorization Act sought India's alignment with global liability norms favourable to suppliers.
5. **Reduced Litigation Space:** The removal of Clause 46 narrows victims' access to alternative legal remedies.

Liability Cap vs. Potential Damage

1. **Comparative Scale:** Fukushima-related costs are estimated at ₹46 lakh crore, while Chernobyl losses to Belarus alone were around ₹21 lakh crore.
2. **Exclusion Zone Impact:** The Chernobyl exclusion zone (area comparable to Goa) remains uninhabitable decades later.
3. **Magnitude Gap:** India's liability cap of ~₹3,900 crore is roughly 1/1000th of the economic damage seen in major nuclear accidents.
4. **Limited Supplementary Funds:** Even with CSC assistance, compensation would remain under 1% of potential catastrophic losses.
5. **Risk Transfer to Citizens:** Victims would bear the residual burden of losses beyond the statutory cap.

Moral Hazard and Safety Concerns

1. **Incentive Distortion:** Shielding suppliers and limiting liability reduces incentives for rigorous safety design and quality control.
2. **Historical Precedents:** Design defects were central in **Fukushima nuclear disaster**, **Chernobyl disaster**, and **Three Mile Island accident**.
3. **Regulatory Weakening:** Limited independence of AERB may undermine robust oversight.
4. **Reversal of Absolute Liability Doctrine:** India's environmental jurisprudence traditionally favours strict accountability in hazardous industries.
5. **Disaster Preparedness Concerns:** Liability dilution may weaken incentives for resilient infrastructure against climate-linked risks.

Nuclear Energy in India: Reality Check

1. **Marginal Contribution:** Nuclear energy contributes only about 3% of India's electricity generation.

2. **Missed Targets:** Targets of 10 GW by 2000 and 20 GW by 2020 were missed; actual capacity was 2.86 GW (2000) and 6.78 GW (2020).
3. **High Capital Costs:** Nuclear plants require massive upfront investment and long gestation periods.
4. **Small Modular Reactors (SMRs):** Proposed expansion relies on largely untested and capital-intensive SMR technology.
5. **2047 Target:** The goal of 100 GW by 2047 appears ambitious given historical performance.

Economic and Strategic Implications

1. **Commercial Opportunity:** Large-scale reactor projects such as Westinghouse AP1000 reactors in Georgia (≈ $18 billion each) illustrate the scale of potential contracts.
2. **Supplier Confidence:** Indemnification may attract multinational suppliers and private capital.
3. **Risk Socialisation:** Profit is privatised while catastrophic risk is socialised.
4. **Energy Diversification Argument:** Nuclear is projected as a clean baseload alternative to fossil fuels.
5. **Climate Commitments Context:** Expansion aligns with India's decarbonisation goals but raises safety governance questions.

Conclusion

The SHANTI Act represents a policy trade-off between attracting private investment in nuclear energy and preserving robust accountability mechanisms. While aligning with international supplier-friendly norms may facilitate expansion, the dilution of liability safeguards risks creating moral hazard and transferring catastrophic risks to citizens. Given nuclear power's modest contribution to India's energy mix and historical capacity shortfalls, the long-term prudence of weakening liability standards demands rigorous scrutiny.

LABOUR CODES AS INSTRUMENTS OF FINANCIAL INCLUSION AND STRUCTURAL LABOUR REFORM

Context (Introduction):

India consolidated 29 central labour laws into four Labour Codes — the Code on Wages (2019), Industrial Relations Code (2020), Code on Social Security (2020), and Occupational Safety, Health and Working Conditions Code (2020). The stated objective is simplification, formalisation and expansion of social security coverage. The new framework redefines wages, extends gratuity and social protection, and brings gig and platform workers within statutory recognition.

Redefinition of 'Wages' and Social Security Expansion

1. **Uniform Wage Definition:** The Codes mandate that basic wages (including DA and retaining allowance) must constitute at least 50% of total remuneration, preventing artificial structuring to reduce statutory contributions.
2. **Higher Provident Fund Accumulation:** A larger wage base increases employer and employee PF contributions, enhancing long-term retirement savings.
3. **Pension and Gratuity Enhancement:** Increased wage calculation directly improves pension benefits and gratuity payouts.
4. **Asset Creation for Workers:** Social security instruments (PF, pension, gratuity) function as lifecycle risk buffers rather than mere post-retirement support.
5. **Redistributive Effect:** Greater mandatory contributions shift a higher share of enterprise surplus towards labour security.

Recognition of Fixed-Term and Gig Workers

1. **Gratuity for Fixed-Term Employees:** Workers are entitled to gratuity after one year of service, aligning contract employment with permanent employment benefits.
2. **Inclusion of Gig and Platform Workers:** The Code on Social Security formally recognises gig and platform workers, enabling scheme-based coverage.
3. **Portability of Benefits:** Social security entitlements are portable across states and employers, benefiting migrant labour.
4. **Formalisation of Informal Workforce:** Extending coverage beyond organised sector employees strengthens financial inclusion.
5. **Reduction in Exclusion:** Historically unprotected segments now enter contributory or welfare-based social protection frameworks.

Macroeconomic Implications

1. **Demand-Led Growth:** Higher disposable income and savings of workers stimulate domestic consumption.
2. **Financial Deepening:** Increased PF and pension participation broadens integration into formal financial systems.
3. **Social Stability:** Income security reduces vulnerability to economic shocks and cyclical downturns.
4. **Multiplier Effects:** Worker income largely circulates within the domestic economy rather than flowing into speculative financial assets.
5. **Inclusive Growth Framework:** Labour Codes align economic expansion with distributive justice.

Structural Reform of Labour Governance

1. **Consolidation of Laws:** Replacing 29 fragmented laws reduces compliance complexity and improves regulatory clarity.
2. **Predictable Regulatory Environment:** Uniform definitions and streamlined procedures enhance ease of doing business.
3. **Modernisation of Labour Law:** Earlier laws were colonial-era constructs designed for industrial-era factory systems.
4. **Digital Compliance Architecture:** Online registration and unified returns reduce administrative burden.
5. **Alignment with Changing Labour Markets:** The Codes recognise flexible and platform-based employment realities.

Concerns and Areas of Debate

1. **Employer Cost Increase:** Larger wage base increases corporate gratuity and PF liabilities.
2. **Implementation Gaps:** Effective enforcement across states remains uncertain.
3. **Trade Union Opposition:** Unions fear dilution of collective bargaining and safeguards under the Industrial Relations Code.
4. **Threshold-Based Applicability:** Some protections apply only above certain employment thresholds, potentially excluding smaller enterprises.
5. **Balance Between Flexibility and Security:** Ensuring labour market flexibility without undermining job security remains critical.

Conclusion

The Labour Codes represent a structural shift from fragmented labour regulation to a framework that embeds social security and financial inclusion into employment. By redefining wages, expanding gratuity coverage, and recognising gig workers, the Codes attempt a gradual redistribution of economic value toward labour. Their

long-term success, however, will depend not only on legislative design but on consistent enforcement, cooperative federalism, and balancing labour flexibility with worker protection.

ROLLBACK OF CLIMATE REGULATION AND ITS GLOBAL SPILLOVERS

Context (Introduction):

The U.S. Environmental Protection Agency's (EPA) revocation of the 2009 'endangerment finding' under President Donald Trump marks a major reversal in American climate governance. The original finding, rooted in the U.S. Supreme Court judgment in *Massachusetts vs EPA (2007)*, classified greenhouse gases (GHGs) as "air pollutants" under the Clean Air Act and required the EPA to regulate them if found harmful to public health and welfare.

In 2009, the EPA concluded that six GHGs, including carbon dioxide and methane, posed such a threat, relying heavily on IPCC assessments and U.S. scientific bodies. This legal foundation enabled federal fuel economy and GHG standards for vehicles from 2012 onward, accelerating a structural shift in the global automobile industry toward fuel efficiency, hybridisation, and electric vehicles (EVs).

The rollback attempts to dilute or dismantle these regulatory standards.

Significance of the 'Endangerment Finding'

1. **Legal Basis for Climate Regulation:** It empowered the EPA to regulate emissions from the transportation sector under the Clean Air Act.
2. **Trigger for Federal Vehicle Standards:** It led to GHG and fuel efficiency norms for cars and light trucks (2012–2025).
3. **Technological Transformation:** Manufacturers invested in hybrid systems, lightweight materials, and electric vehicle technologies.
4. **Global Market Influence:** Regulatory credit systems benefited firms such as Tesla and shaped EV markets worldwide, including in India.
5. **Signal Effect in Climate Governance:** It reinforced science-based policymaking aligned with international climate commitments.

Implications of the Rollback

1. **Weakening of Climate Accountability:** Revocation undermines the scientific recognition of GHGs as threats to public health and welfare.
2. **Short-Term Political Signalling:** The move aligns with narratives of reviving fossil fuel industries and traditional auto manufacturing.
3. **Limited Industrial Reversal:** Global production lines are already optimised around electrification and emissions control.
4. **Geopolitical Realities:** China's dominance in EV supply chains limits the feasibility of reverting to fossil fuel-intensive models.
5. **Global Regulatory Uncertainty:** It may embolden climate scepticism or regulatory dilution in other jurisdictions.

Why a Return to the 'Gas-Guzzler' Era Is Unlikely

1. **Structural Investment Lock-in:** Automakers have invested heavily in EV and hybrid platforms over multi-decadal horizons.
2. **Export-Oriented Strategy:** Major markets such as the EU continue to tighten emission norms, shaping global production strategies.

3. **Technological Path Dependency:** Battery supply chains, charging infrastructure, and emission standards create irreversible momentum.
4. **Consumer Preferences Shift:** Growing climate awareness and urban pollution concerns favour cleaner vehicles.
5. **Global Climate Commitments:** International agreements and carbon pricing mechanisms reinforce decarbonisation trends.

Risks for India

1. **Regulatory Spillover:** Indian automakers may cite U.S. dilution as a pretext to weaken domestic fuel efficiency norms.
2. **Policy Inconsistency:** India's climate targets under the Paris Agreement require progressive decarbonisation of transport.
3. **Public Health Concerns:** Vehicular emissions significantly contribute to urban air pollution in Indian cities.
4. **Missed Industrial Opportunity:** Dilution of standards may delay India's integration into global EV supply chains.
5. **Strategic Alignment:** Climate-linked industrial policy is increasingly central to trade competitiveness.

Conclusion

The revocation of the EPA's 'endangerment finding' represents more than a domestic regulatory rollback; it signals an attempt to turn back the clock on science-based environmental governance. However, structural technological shifts and global market forces make a wholesale fossil fuel revival improbable. For India, the episode underscores the importance of insulating domestic environmental standards from external political oscillations. Climate-linked fuel efficiency norms should function not as external impositions but as strategic anchors guiding sustainable industrial transformation.

TOURISM, SECURITY AND LOCAL OWNERSHIP IN KASHMIR

Context (Introduction):

The April 2025 Pahalgam terror attack, which led to the temporary closure of 48 government-approved tourist sites, demonstrated how quickly security disruptions can unsettle Kashmir's tourism-led recovery, even after record tourist arrivals of over 2 crore visitors in 2023–24. The phased reopening of 14 sites in February 2026 signalled administrative caution, but also highlighted that sustained tourism depends on predictable security, institutional clarity and tangible benefits for local communities.

Major Issues in Kashmir

- **Security Volatility:** Despite a decline in large-scale violence since 2019, sporadic targeted attacks continue to create high-perception risk, affecting investor confidence and long-term tourism planning.
- **Youth Unemployment:** With unemployment rates among youth in Jammu and Kashmir consistently above the national average, limited private sector opportunities intensify economic frustration.
- **Trust Deficit and Political Uncertainty:** Periodic administrative changes and prolonged central rule have contributed to feelings of political distance among sections of the population.
- **Over-Securitised Environment:** While security deployment remains essential, excessive visible militarisation can affect civilian mobility and tourism experience.
- **Ecological Fragility:** Destinations such as Gulmarg, Sonamarg and Pahalgam face pressure from unregulated construction, waste accumulation and traffic congestion, threatening alpine ecosystems.
- **Administrative Inconsistency:** Absence of publicly codified criteria for site closures and reopenings reduces predictability, which is critical for tourism-dependent economies.

How Tourism Can Help Stabilise the Region

- **Livelihood Expansion:** Tourism directly and indirectly supports lakhs of households through hospitality, transport, handicrafts and homestays, with the sector contributing significantly to J&K's service economy.
- **Economic Stake in Stability:** When household incomes depend on visitor inflows, communities acquire a material incentive to discourage disruption and protect tourist infrastructure.
- **Youth Skilling and Entrepreneurship:** Adventure tourism, eco-guiding, digital promotion and hospitality training can create employable skills aligned with the region's comparative advantage.
- **National Integration:** Increased inter-state visitor movement fosters social familiarity and commercial interdependence, reducing psychological isolation.
- **Institutional Strengthening:** Development of formalised mountain trails with permits, ranger systems and ticketing improves regulatory oversight and reduces ecological damage.
- **Community-Based Governance:** Structured roles in trail maintenance, waste management and forest protection, modelled on Forest Protection Committees, can embed civilian participation in stability.

Limitations of Tourism as a Stabilisation Tool

- **Shock Sensitivity:** Even isolated incidents can sharply reduce tourist inflows, as seen in previous downturns following security events.
- **Seasonal Volatility:** Tourism income peaks in summer and winter seasons, limiting year-round employment security.
- **Unequal Distribution of Gains:** Without inclusive frameworks, benefits may accrue disproportionately to larger operators rather than small local entrepreneurs.
- **Environmental Degradation Risk:** High tourist density without infrastructure upgrades can damage fragile Himalayan ecosystems, undermining sustainability.
- **Structural Issues Beyond Tourism:** Deep-rooted political and governance challenges cannot be addressed solely through economic instruments.

Conclusion

Tourism is not a substitute for political reconciliation or institutional reform, but it can function as a stabilising economic pillar when designed around local participation, ecological safeguards and transparent governance. By aligning livelihoods with peace and embedding predictability in security and administration, Kashmir can gradually transform tourism from a fragile revenue stream into a durable instrument of social resilience.

NET FDI TURNING NEGATIVE: IMPLICATIONS FOR INDIA'S EXTERNAL SECTOR

Context (Introduction):

RBI data show that net FDI into India remained negative for the fourth consecutive month in December 2025 (-$1.6 billion), as repatriation by foreign firms and outward investments by Indian companies exceeded gross inflows despite robust inward FDI growth.

- Foreign Direct Investment (FDI) is a stable source of long-term capital, technology transfer, and employment generation. While gross inward FDI reached a five-month high of $8.6 billion in December 2025 (17.2% YoY growth), elevated repatriation ($7.5 billion) and outward FDI ($2.7 billion) resulted in net negative flows.

Trends and Sectoral Patterns

- **Gross Inflows:** $8.6 billion (Dec 2025); key sources – Singapore, Netherlands, Mauritius (over 80%).

- **Major Recipient Sectors:** Transport, manufacturing, computer services, electricity and energy.
- **Repatriation/Disinvestment:** ~$7.5 billion (highest since Jan 2021).
- **Outward FDI:** $2.7 billion; destinations – Singapore, U.S., UAE, U.K., Netherlands.
- **Investor Sentiment:** Uncertainty over India–U.S. trade agreement and 50% tariffs contributed to hesitation.

The data predates the India–EU FTA and India–U.S. Interim Agreement, after which FPIs reportedly returned.

Pros of the Current Trend

- **Strong Gross Inflows:** Despite negative net figures, robust gross FDI inflows indicate sustained investor confidence in India's growth prospects and manufacturing push (PLI schemes, logistics infrastructure).
- **Mature Capital Ecosystem:** Higher repatriation reflects profit-booking by long-term investors — a sign of business maturity and returns being realised.
- **Outward FDI Signifies Globalisation of Indian Firms:** Indian companies investing abroad signals rising competitiveness and integration into global value chains (GVCs).
- **Sectoral Diversification:** FDI inflows into manufacturing, energy transition, and transport support structural transformation and infrastructure capacity.

Concerns and Structural Risks

- **Persistent Net Negative FDI:** Four consecutive months of negative net FDI may indicate rising exit intensity or risk aversion.
- **High Repatriation Levels:** Repatriation nearing $7.5 billion suggests potential profit-taking amid global uncertainty or domestic policy concerns.
- **Trade Policy Uncertainty:** Investor hesitation linked to tariff disputes and trade negotiations highlights vulnerability to geopolitical risk.
- **Over-Concentration of Source Countries:** Heavy dependence on Singapore, Mauritius, and the Netherlands reflects routing through tax jurisdictions, raising concerns about round-tripping and treaty dependence.
- **External Sector Vulnerability:** Negative net FDI increases reliance on volatile portfolio flows (FPI), which are sensitive to global interest rates and risk appetite.

Broader Macroeconomic Implications

- Impacts capital account stability.
- Affects current account financing sustainability.
- Influences rupee stability amid global monetary tightening cycles.
- Signals the need for deeper structural reforms to retain long-term capital.

Way Forward

- **Policy Certainty and Trade Stability:** Ensure predictable tariff frameworks and swift operationalisation of India–EU FTA and India–U.S. agreements to reduce investor uncertainty.
- **Deepen Manufacturing Competitiveness:** Strengthen PLI schemes, logistics efficiency (Gati Shakti), and ease of doing business to retain reinvested earnings.
- **Encourage Reinvestment:** Provide incentives for profit reinvestment within India rather than repatriation, particularly in sunrise sectors (green hydrogen, semiconductors, EVs).

- **Diversify FDI Sources:** Expand investment partnerships with East Asia, Middle East (UAE, Saudi Arabia), and EU nations to reduce concentration risks.
- **Strengthen Domestic Capital Formation:** Boost domestic savings, deepen bond markets, and reduce overdependence on foreign capital for infrastructure financing.

Conclusion

Negative net FDI in the short term does not necessarily signal structural weakness, especially amid strong gross inflows and outward expansion of Indian firms. However, sustained outflows amid global trade volatility warrant calibrated policy responses to enhance investor confidence, deepen domestic competitiveness, and ensure external sector resilience.

INDIA'S GLOBAL CAPABILITY CENTRE (GCC) REVOLUTION

Context (Introduction):

By early 2026, India has transitioned from being the "world's back office" to a strategic nerve centre for multinational corporations through Global Capability Centres (GCCs), which now drive global strategy, R&D, AI innovation and intellectual property creation.

Main Arguments

- **Evolution to GCC 4.0**: Indian GCCs have evolved through four waves—from labour arbitrage and routine IT services to end-to-end product ownership. In the current GCC 4.0 phase, centres lead global product lifecycles, architecture design and deployment, marking a shift from cost centres to growth engines.
- **Leadership in Deep-Tech and Agentic AI**: Nearly 58% of GCCs are investing in Agentic AI—autonomous AI systems capable of reasoning and executing complex tasks. Indian centres now drive high-end R&D in quantum computing, semiconductor design and AI security, creating proprietary intellectual property and assuming shadow leadership roles.
- **Scale and Global Value Chain Integration**: India hosts over 1,800 GCCs employing nearly two million professionals. These centres function as global Centres of Excellence (CoEs) in finance, legal, HR and digital strategy, integrating India deeply into global value chains and enabling "follow-the-sun" innovation cycles.
- **Employment and Regional Development**: The GCC boom has generated high-value, knowledge-intensive jobs with global compensation standards. Expansion into Tier-II and Tier-III cities such as Coimbatore, Indore and Kochi reduces pressure on Bengaluru and Hyderabad while stimulating local infrastructure, real estate and service sectors.
- **Strategic Economic Transformation**: The shift from services outsourcing to innovation-led growth aligns with India's ambition to become a $5 trillion economy. GCCs enhance export of high-end services, boost technology diffusion and strengthen India's position in global supply chains.

Challenges / Criticisms

- **Widening Talent Gap**: Although India produces millions of engineers, demand for niche skills—AI security, cloud architecture, quantum-resistant cryptography—far exceeds supply. This has triggered wage inflation, potentially eroding India's cost advantage.
- **Cybersecurity and Data Risks**: Handling critical global data has made GCCs prime targets of cyber-attacks. India-based centres account for 13.7% of global cyber-attack incidents (Cyfirma Report, 2023). With the Digital Personal Data Protection (DPDP) Act, compliance costs and governance pressures have intensified.

- **Fiscal and Tax Uncertainty**: The OECD's Global Minimum Tax (Pillar Two) with a 15% floor tax reduces tax arbitrage benefits. India's 24% markup under Safe Harbour rules for software R&D adds to fiscal unpredictability, affecting board-level investment decisions.
- **Geopolitical Volatility and Protectionism**: U.S. tariff volatility, reshoring policies and rising digital sovereignty concerns in Western nations could slow new GCC investments. Protectionist tendencies threaten cross-border data flows and digital trade.
- **Overdependence on Services**: Excessive reliance on high-end services without parallel manufacturing depth may expose India to global demand shocks and technological disruptions.

Reforms and Policy Directions

- **National GCC Policy Framework**: Effective implementation of the proposed 2026–27 GCC Policy is critical. A dedicated Single-Window Clearance system can streamline legal and regulatory processes.
- **Rationalised Transfer Pricing and Tax Certainty**: Providing safe harbours for R&D-intensive operations and clarity on markup norms will enhance fiscal predictability and investor confidence.
- **Deep Tech Skill Ecosystem**: Strengthen industry–academia collaboration, expand AI and semiconductor research centres, and incentivise specialised skilling in cybersecurity and quantum technologies.
- **Cybersecurity Strengthening**: Invest in national cyber resilience architecture, promote zero-trust frameworks, and mandate robust data governance standards aligned with DPDP provisions.
- **Tier-II Expansion Incentives**: Offer capital subsidies and infrastructure support to decentralise GCC growth, ensuring balanced regional development and reduced urban congestion.

Conclusion

India's GCC revolution represents a structural shift from labour cost arbitrage to innovation-led economic leadership. Sustaining this transformation requires proactive policy facilitation, deep-tech skilling, fiscal stability and robust cybersecurity. If strategically managed, GCCs can anchor India's aspiration to become the world's innovation capital.

IMPERATIVE OF FISCAL CONSOLIDATION

Context (Introduction):

The Union Budget 2026–27 has been presented at a time when India is pursuing the ambitious goal of becoming a developed economy by 2047, amid global uncertainty and domestic structural constraints. While the Budget outlines an expansive developmental vision, it also brings to the fore a critical concern: the **slowing pace of fiscal consolidation** and its implications for macroeconomic stability and long-term growth.

Current Fiscal Position: Key Trends

- **Shift in Expenditure Composition:** Revenue expenditure has declined from 88% of total expenditure in 2014–15 to about 77% in 2026–27 (BE), reflecting conscious fiscal restructuring.
- **Rationalisation of Subsidies:** Central subsidies have reduced by about 7 percentage points of total expenditure over the decade.
- **Capital Expenditure Push:** Capital expenditure has increased its share and supported post-COVID growth, remaining around 3.1% of GDP in recent years.
- **Moderating Capex Growth:** Capex growth slowed from 28.3% (2023–24) to 4.2% (2025–26 RE), with a modest rebound to 11.5% in 2026–27 (BE).
- **Cautious Revenue Projections:** Tax revenue assumptions for 2026–27 appear realistic, avoiding over-optimism.

Revenue Constraints and Tax Buoyancy Issues

- **Declining Tax Buoyancy:** Overall gross tax buoyancy has fallen to 0.8 in 2026–27 (BE), below the desirable benchmark of 1.
- **Direct vs Indirect Taxes:** Direct taxes show buoyancy of 1.1, but indirect taxes lag significantly at 0.3.
- **GST Underperformance:** GST collections are projected to grow slower than GDP, weakening overall revenue elasticity.
- **Need for Indirect Tax Reform:** Enhancing GST efficiency and compliance is essential to raise revenue buoyancy without increasing rates.

Centre–State Fiscal Dynamics

- **Status Quo on Tax Devolution:** The Sixteenth Finance Commission (FC16) retained States' share in the divisible pool at 41%.
- **Reduction in Grants:** FC16 discontinued revenue deficit grants and reduced overall Finance Commission grants from 0.43% of GDP (2025–26 RE) to 0.33% (2026–27 BE).
- **Increased Burden on States:** Lower grants constrain States' fiscal space even as they shoulder greater responsibility for welfare and capital spending.

Slowing Pace of Fiscal Consolidation

- **Diminishing Deficit Reduction:** Annual fiscal deficit reduction has slowed from 0.7 percentage points (2024–25) to just 0.1 percentage point in 2026–27 (BE).
- **Shift to Debt Targeting:** Emphasis on debt-to-GDP targeting without a clear glide path for fiscal deficit weakens transparency.
- **Interdependence of Targets:** Debt-GDP and fiscal deficit ratios move together and depend critically on nominal GDP growth assumptions.
- **FRBM Credibility at Stake:** The Budget does not clearly indicate when the FRBM targets of 3% fiscal deficit and 40% debt-GDP ratio will be achieved.

Risks from High Public Debt

- **Rising Interest Burden:** Effective interest rate on government debt is estimated at 7.12% in 2026–27, increasing steadily.
- **Crowding Out Effect:** Interest payments absorb nearly 40% of revenue receipts, limiting space for developmental expenditure.
- **Private Investment Constraint:** High combined Centre–State deficits (8–9% of GDP) reduce investible resources for the private sector.
- **Growth–Stability Trade-off:** Sustained growth cannot rely indefinitely on public capex without reviving private investment.

Way Forward: Recalibrating Fiscal Strategy

- **Restore Tax Buoyancy:** Strengthen GST administration, widen base, and improve compliance to raise indirect tax elasticity.
- **Transparent Fiscal Roadmap:** Publish a clear five-year glide path for fiscal deficit and debt-GDP ratios with growth assumptions.
- **Balance Capex with Consolidation:** Maintain productive public investment while ensuring credible deficit reduction.

- **Reinforce Centre–State Fiscal Federalism:** Reassess grant structures to prevent erosion of State-level fiscal capacity.
- **Support Private Investment:** Fiscal consolidation must create room for credit availability and crowd-in private capital.

Conclusion

Budget 2026–27 presents a credible development vision, but the slowing pace of fiscal consolidation raises concerns about long-term macroeconomic stability. Sustained growth towards Viksit Bharat 2047 requires not only strategic expenditure but also disciplined fiscal management. Reinvigorating tax buoyancy, restoring transparency in fiscal targets, and balancing public investment with private sector revival are essential to ensure that growth remains durable and inclusive.

THE APPROACHING AI SURGE AND THE RECONFIGURATION OF GLOBAL ORDER

Context (Introduction):

The world is currently witnessing a technological rupture rather than a gradual transition. Artificial Intelligence (AI), especially Large Language Models (LLMs), is advancing at unprecedented speed. Unlike earlier technological revolutions confined to specific sectors, AI is cross-domain and systemic. Its impact spans economic competitiveness, military strategy, intelligence systems, diplomacy and governance.

- In a fragmented global order marked by US–China rivalry, weaponised trade, and coercive supply chains, AI is emerging as the most decisive structural disruptor.

AI as a Strategic Power Variable

- **US–China Technological Rivalry**: AI has become the core arena of strategic competition between the United States and China. The rapid advancement of Chinese AI models has intensified global competition, accelerating innovation cycles. AI supremacy is increasingly linked to military edge, economic dominance and geopolitical leverage.
- **AI as Statecraft and Diplomacy Tool**: AI is now being used in predictive analytics, intelligence processing and diplomatic modelling. It enhances surveillance capabilities, real-time strategic assessment and crisis simulation. Countries are moving toward building "sovereign AI stacks" to reduce dependence on external technological ecosystems.
- **Collapse of Traditional Power Metrics**: Industrial strength, nuclear deterrence and resource dominance defined 20th-century power. AI redefines power by privileging data, algorithms, computational infrastructure and technological agility. Smaller states or non-state actors equipped with AI-enabled tools can exert disproportionate influence.

AI and the Transformation of Warfare

- **From Human-Controlled to Autonomous Systems**: AI enables unmanned aerial vehicles, autonomous ground systems and intelligent cyber weapons capable of independent targeting and navigation. Decision-making is gradually shifting from human-controlled systems to algorithm-driven platforms.
- **Asymmetric Military Advantage**: Ukraine's use of AI-enabled drones demonstrates how technology can offset conventional military superiority. AI dramatically reduces entry barriers to advanced warfare capabilities, creating asymmetric power multipliers.
- **Integrated Multi-Domain Warfare**: AI integrates cyber, electronic, space and battlefield intelligence systems. Real-time data analytics and automation redefine operational tempo and tactical coordination.

- **Risk of Runaway Autonomous Weapons**: Drone swarms and self-directed lethal systems pose unprecedented risks. The possibility of AI systems operating beyond meaningful human control raises ethical and existential concerns.

Beyond the Battlefield: Civilisational Implications

- **Governance and Judicial Risks**: AI systems may suffer from "hallucinations," generating incorrect outputs or fabricated citations. Excessive reliance in legal or administrative contexts could lead to systemic errors.
- **Intelligence and Surveillance Expansion**: AI enhances data processing and predictive modelling in intelligence agencies, expanding state capacity but also raising civil liberty concerns.
- **Institutional Lag**: Technological progress is outpacing regulatory and governance frameworks. Institutions designed for industrial-era governance struggle to respond to algorithmic acceleration.

Implications for India

- **Strategic Autonomy**: India must invest in indigenous AI research, semiconductor infrastructure and computational capacity to avoid technological dependency.
- **Defence Modernisation**: Integration of AI into military doctrine is essential, but must preserve human oversight to prevent ethical and operational risks.
- **Regulatory Preparedness**: India requires a robust AI governance framework balancing innovation with accountability. Judicial caution in AI-assisted processes is necessary.
- **Capacity Building**: Skilling in AI, data science and cybersecurity is essential for both civil administration and defence sectors.

Need for Global Oversight

- Development of international norms on autonomous weapons.
- Multilateral regulatory mechanisms for AI deployment.
- Ethical frameworks for civilian and military AI use.
- Transparent accountability systems to prevent misuse.

Without coordinated oversight, AI could become the greatest force multiplier of instability in modern history.

Conclusion

Artificial Intelligence represents a structural rupture in global order. It redefines power, transforms warfare, reshapes governance and challenges institutional capacity. The central question is not whether AI will alter the world, but whether humanity can construct effective checks and balances before autonomous systems outpace political and ethical control.

PAPER 4

CASE STUDY

You are the Superintendent of Police (SP) of a district where a high-profile road accident has taken place. A luxury car, allegedly driven by a minor belonging to an influential and politically connected business family, rammed into two individuals on a busy road late at night, resulting in their death. Initial investigation indicates reckless driving under the influence of alcohol. However, the situation becomes increasingly complex as you face intense political pressure from local leaders and influential persons to dilute the charges and treat the incident as a minor accident rather than a serious criminal offense. At the same time, the case has attracted widespread media attention, leading to public outrage over perceived inequality before the law and demands for strict action. During the course of investigation, you discover that the medical evidence, particularly the blood samples of the accused, may have been tampered with at the hospital, raising serious concerns about the integrity of the investigation process. Additionally, some of your subordinate officers appear reluctant to act decisively, possibly due to external influence or fear of repercussions. Meanwhile, the families of the victims are demanding justice and alleging bias and cover-up.

Questions

- In this challenging scenario, where ethical dilemmas involving integrity, accountability, rule of law, political interference, and public trust arise, what steps will you take to ensure a fair and impartial investigation?
- How will you balance professional responsibility with external pressures, and what measures would you adopt both immediately and in the long term to uphold justice and restore public confidence in the system?