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CIVILS WITH AKASH

Indian Polity

CIVILS WISHKASH



Jan Vishwas Bill, 2026



The Jan Vishwas (Amendment of Provisions) Bill, 2026 was recently passed in Lok sabha to foster trust-based governance.

Key provisions

- **Decriminalization**: replaces imprisonment with civil penalties for over **1,000 offences minor** offences.
  - **E.g.** up to Rs. 1 cr penalty for making national highway impassable instead of imprisonment.
- **Adjudication Mechanism:** to resolve penalties outside the court system.
- **Graduated response**: warnings/advisories before fines for first or second time lapses.
  - **Dynamic Monetary penalties:** 10% increment every 3 years to create deterrence.
- Several **outdated colonial-era laws** and offences are omitted.

Registered Unrecognised Political Parties

CIVILS WITH AKASH

The Election Commission of India (ECI) has relaxed the criteria for Registered Unrecognised Political Parties (RUPPs) to retain their common election symbols under the Election Symbols (Reservation and Allotment) (Amendment) Order, 2026.

- Parties now only need to **secure a 1% vote share in either of the last two elections** (Lok Sabha or Assembly) to retain their symbol, whereas previously they had to achieve this mark in both elections.

About RUPP:

- Either **newly registered parties** or those which have **not secured enough percentage of votes** in the assembly or general elections to become a state party,
  - Or, those which have **never contested elections** since being registered are considered **unrecognised parties.**
- Such parties **don't enjoy all the benefits extended to the recognised parties,** such as free broadcast time, exclusive right to a reserved symbol, etc.

Article 161



Madras HC held that the Governor must follow Cabinet advice while exercising powers under Article 161 of the Constitution.

About Article-161

- Grants Governor power to grant **pardons, reprieves, respites** or **remissions** of punishment or to **suspend, remit or commute** the sentence of any convicted person.
- **Scope:** Applies to offences under the **State's executive jurisdiction.**

NCERT

Government declared NCERT as a deemed to be university.

- Institutions that are **'deemed-to-be-university'** enjoy **academic status and privileges of a university.**
- Can be declared by Central Government on **advice of UGC.**

About NCERT (Hq: New Delhi)

- **Genesis:** Autonomous organisation set up in **1961.**
- **Ministry:** Ministry of Education
- As per National Education Policy 2020, it is **nodal agency** to develop **National Curriculum Frameworks (NCFs)** for **Early Childhood Care and Education (ECCE), School Education,** and **Adult Education.**

CIVILS WITH AKASH

Chief Election Commissioner



Rajya Sabha Chairman & Lok Sabha Speaker have rejected the notice of impeachment motion against CEC.

About CEC

- **Article 324** of the Constitution provides that CEC shall not be removed from his/her office except in **like manner and like grounds as a judge of the Supreme Court**.
  - A removal motion stating ground of removal can be **introduced in either House of Parliament**.
  - **Speaker/Chairman may admit or refuse the motion** and if admitted, a three-member committee is formed to investigate charges.
  - If committee finds the **CEC guilty of proved misbehaviour or incapacity**, then both the Houses must pass the resolution with a special majority.
  - After passage of removal motion, the **President issues the removal order.**

UCC



Gujarat Assembly passes the Gujarat Uniform Civil Code (UCC), 2026 Bill With the passage of the bill, Gujarat becomes the second state in the country, after Uttarakhand, to adopt the UCC.

About Bill

- **Objective:** Establish Common legal framework to govern marriage, divorce, succession, equal inheritance rights and live-in relationships, **irrespective of religion**.
- **Exemption:** Not applicable to Scheduled Tribes and certain groups whose customary rights are protected under the Constitution.
- **Key Provisions:**
  - Bigamy prohibited, individual cannot enter into a second marriage while their spouse is still alive.
  - Mandatory registration is required for **Live-in Relation**ships.

Uniform Civil Code (UCC)

- **Article 44** of the Constitution, under the **Directive Principles of State Policy (DPSP)**, directs the state to strive for a UCC for all citizens across India.
- In Goa, a form of **common civil code** is in practice under the **Portuguese Civil Code of 1867**.
- **Need in India**:
- **Equality before the Law:** Uniform laws replace community-based personal laws. E.g., Hindu Marriage Act, Muslim Personal Law (Sharia), etc.
- **Ensures Gender Justice:** E.g., Women's rights vary vastly depending on their religion, and customary laws are often patriarchal, depriving women of equal inheritance, property rights, etc.
  - Supreme Court (SC) in various cases (such as **Shah Bano Case (1985), Sarla Mudgal Case (1995,** etc.) highlighted **need** of implementing UCC to deal with such issues.
- **National Integration:** Separates religion from personal laws, promoting social harmony.
- **Challenges in implementing UCC**: Threatens diversity and religious freedom, lack of consensus among communities, etc.

CIVILS WITH AKASH

Recusal of Judges



Former Delhi Chief Minister sought Recusal of Delhi High Court Justice in a matter.

About Recusal of Judges

- **Meaning**: It is a **judge's withdrawal from a case** due to a potential conflict of interest or perceived bias.
- **Purpose:** Promote a **fair process, public confidence in administration o**f justice, **Judicial impartiality**, etc.
- **Underlying Principle: Rule Against Bias** (No person should be a judge on a case in which they have interest).
- **Regulation:** India has **no codified rules** governing it.
- **Legal Precedents:** Ranjit Thakur v Union of India (1987), Chandraprabha v. Union of India (2025) etc.

Custodial Deaths and Accountability



Death penalty imposed on Policemen for Custodial Death in Tamil Nadu Imposed by Additional District and Sessions Court in Madurai after death of two persons in 2020 in custody.

About Custodial Deaths

- It refers to death of a person in **custody due to torture and inhuman treatment.**
- In 2024, **National Human Rights Commission (NHRC) reported 2,739 custodial deaths.**

Key Issues with Custodial Deaths

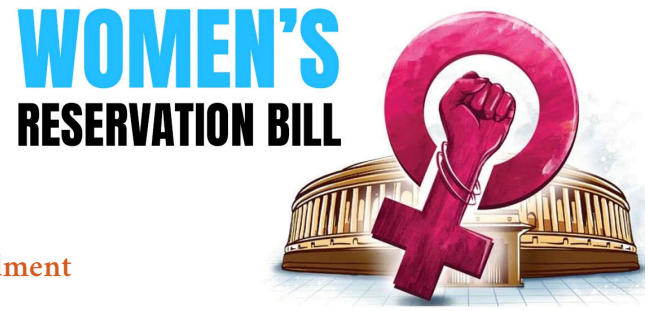
- **Against Constitutional Values:** Custodial torture represent a **reprehensible abuse of power** given vulnerability of detainees and unequal power dynamics.
- **Challenges To Accountability:** Due lack of **independent investigation** as investigation of custodial deaths is conducted by same police department where incident occurred.
- **Breach of Human Rights and Dignity:** Torture is a **grave violation of human rights**. E.g. 1972 rape case, involving a tribal woman raped in Police custody in Maharashtra.
- **Erosion of Police as an Institution:** Use of torture has been linked to **perpetuation of a culture of violence** within the police force.

CIVILS WITH AKASH

Safeguards Related to Custodial Torture

- **Constitutional**
  - **Article 20:** Grants protection **against arbitrary and excessive punishment**.
  - **Article 21:** No person to deprived of his life or personal liberty except according to **procedure established by law.**
  - **Article 22:** Provides protection for individuals against arrest and detention in certain cases.
- **NHRC's Guidelines on Custodial deaths (1993):** Reporting of custodial death or rape within 24 hours.
- **Previous Supreme Court (SC) Judgements:**
  - **D.K. Basu v. State of West Bengal (1996):** SC laid down detailed guidelines governing arrest and detention.
  - **Paramvir Singh Saini v. Baljit Singh (2020):** SC directed installation of CCTV in all police stations.
- **Global: Convention against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment** (UNCAT): India is a signatory but has not ratified it.

Reservation for Women in Legislative



Remarks came post Union Cabinet approved a draft amendment bill to operationalise Women's Reservation Act ahead of schedule, bringing it into effect for 2029 general elections.

- Further, decision has been made to convene Parliament to discuss and advance the issue in coming days as any **more delay would hinder the momentum of progress.**
- Further, proposal to **raise strength of Lok Sabha** (from 543 to 816), following a fresh delimitation exercise along with **vertical quota providing reservation to women within SCs/STs categories** was also considered.

Background

- As per **Nari Shakti Vandan Adhiniyam (Constitution (106th Amendment) Act),** reservation was to come into effect after an exercise of delimitation undertaken post **first census** after enactment of this Act.
- However, waiting for **2027 Census could have delayed the rollout** and hence basing the delimitation exercise on 2011 Census would **ensure speedy implementation.**

CIVILS WITH AKASH

Other Key Provisions of Nari Shakti Vandan Adhiniyam

- **Enactment:** 2023
- **Reservation for Women: One-third** of all seats for women in **Lok Sabha, state legislative assemblies, and Legislative Assembly of National Capital Territory of Delhi.**
  - Also applicable to seats reserved for SCs and STs.
- **Rotation of seats:** Seats reserved for women will be **rotated after each delimitation**, as per law by Parliament.
- **Proposes Insertion of New Articles:**
  - **330A:** Reservation in **Lok Sabha.**
  - **332A:** Reservation in **States Legislatives Assembly**
  - **239AA:** Reservation in **Legislative Assembly of National Capital Territory of Delhi.**

Right to Vote



Right to remain on roll and right to vote in the country of birth is not only constitutional but also sentimental: Supreme Court.

About Right to Vote

- Right to vote and to be elected in India is a **Constitutional Right.**
- **Key Constitutional Provisions:**
  - **Article 325:** No person to be ineligible for inclusion in electoral roll on grounds of religion, race, caste or sex.
  - **Article 326:** Elections to House of People and to Legislative Assemblies of States on basis of adult suffrage.
- **Related Sections under Representation of People Act (RPA)**
  - **Section 62 (RPA 1951):** Dealing with Right to Vote.
  - **Section 16 (RPA 1950):** Disqualifications for registration in an electoral roll.

Removal of Judges



Justice Yashwant Varma submitted his resignation to the President, withdrawing from the proceedings of impeachment process instituted against him.

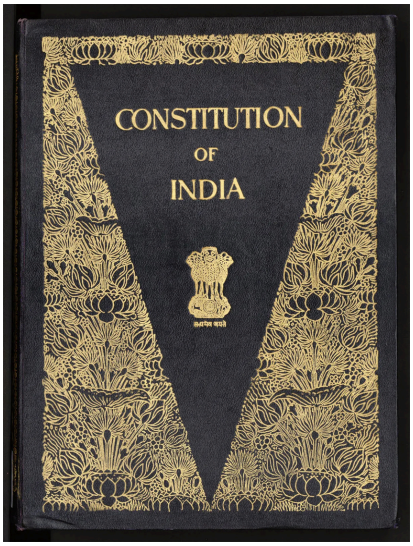
- **No judge** has been impeached till now.

Removal of Judges

- **Article 124 and Article 218** provides for the removal of supreme court judge and high court judge through impeachment.
  - Removal process is regulated by the **Judges Enquiry Act (1968).**
- **Impeachment Process:**
  - **Initiation:** Removal motion requires signature of 100 members (for Lok Sabha) or 50 members (For Rajya Sabha) to be submitted to Speaker/Chairman.
  - **Investigation:** On admission of motion, a 3-member committee investigates the charges.
    - If committee finds the judge guilty, both the Houses pass the removal motion with special majority.
    - The President then passes an order for removal.

CIVILS WITH AKASH

Indian Constitution in Different Languages



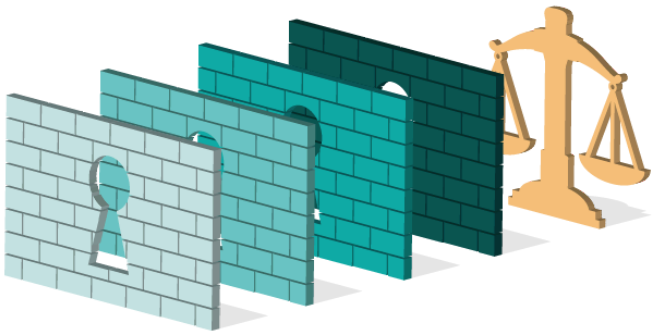
Recently, Vice-President of India, released the updated version of the Constitution of India in Sindhi language.

- Sindhi is one of the **22 official languages** enlisted in the Eighth Schedule of the Constitution.
  - Sindhi language was added by the 21st Constitutional Amendment Act 1967.

Original Language of Constitution

- Indian Constitution, the world's longest-written constitution, was originally drafted in **English.**
- Constituent Assembly then formed a Translation Committee led by **Ghansyam Das Gupta** to translate the Constitution into Hindi.
- **24 Jan 1950**: Hindi Constitution submitted to Rajendra Prasad (chairman of constituent assembly)
  - Members signed **both English and Hindi versions** on 24th January 1950.

Barriers to Access to Justice



Chief Justice of India (CJI) highlighted Access to Justice as Primary Impediment of Justice System He stated that the primary challenge is not a shortage of laws, but the limited access ordinary citizens have to them.

Key Barriers to Access to Justice

- **Economic and Geographical**
  - **Poverty and High Costs:** E.g., Around **75% of India's prisoners are undertrials**, many of whom remain in jail due to the inability to afford bail. (India Justice Report 2025)
  - **Physical Distance:** E.g., hilly and mountainous areas, remote, etc.
- **Institutional and Procedural**
  - **Systemic Delays, Complex Procedures**, Inadequate Infrastructure and Staffing.
  - **Language Barrier:** Use of English in higher courts alienates non-English-speaking litigants.
  - **Paucity of Awareness and Gaps in Legal Aid:** Free legal aid is poorly implemented.
- **Social, Cultural, and Intersectional**
  - **Black coat syndrome:** Refers to the fear, anxiety, and sense of alienation experienced by marginalized communities when engaging with or navigating the legal system.
  - **Discrimination and Institutional Apathy:** Marginalized groups face bias and difficulty.
  - **Secondary Victimization**: Sexual assault survivors face social pressure, intimidation, and humiliation.
  - **Lack of Trust and Vested Interests**: Corruption and resistance to reforms reduce public trust in the judiciary.

CLASS WITH AKASH

IMPORTANT NOTE!

INITIATIVES TAKEN TO PROMOTE ACCESS TO JUSTICE

- Constitutional Framework: Article 39A and the Legal Services Authorities Act 1987 mandate free legal aid through National Legal Services Authority (NALSA).
- Decentralization:Gram Nyayalayas Act 2008 enables local courts to deliver affordable and speedy rural justice.
- Procedural Reforms: E.g., Fast Track Courts; Undertrial Review Committees.
- Promoting Alternative Dispute Resolution (ADR): Lok Adalats offer Mediation, pre-litigation conciliation, and Lok Adalats.
- Technological Advancements: E.g., E-Courts Mission Mode Project and National Judicial Data Grid.
- Local and context-specific strategies: E.g., Access to Justice Project, One Stop Centres and Women Help Desks.

Delimitation and the Concerns of Southern States



Southern states have expressed concerns about delimitation, stating it could disproportionately affect their representation in the Parliament.

Concerns of Southern States with Delimitation

- **Population control paradox:** Delimitation based on population **may reduce the number of seats for southern states and dilute their political representation**, penalizing them for effective governance on population control.
- **Federalism and regional autonomy**: Significant shift in representation could weaken federalism as **national policies** might be tailored to suit northern states' priorities.

What is Delimitation?

- It is the process of **fixing the number of seats and boundaries** of territorial constituencies in each State for the Lok Sabha and Legislative assemblies.
- **Constitutional Provisions:**
  - **Articles 82 and 170: P**rovide for readjustment and the division of each State into territorial constituencies **(Parliamentary constituencies and Assembly constituencies)** by such authority and in such manner as Parliament may, by law, determine.
  - **Articles 330 and 332:** provide for refixing number of **seats reserved for SCs and STs** in Lok Sabha and Legislative Assemblies of States.
- **Delimitation Commission**: Constituted based on **Delimitation Act** enacted by Parliament, it demarcates the boundaries of the **constituencies**.
  - Till date, Delimitation Commissions have been Constituted **4 times** under Delimitation Commission **Acts of 1952, 1962, 1972, and 2002**.

CIVILS WITH AKASH

History of Delimitation in India
42nd Amendment Act, 1976 Froze seat allocation in Lok Sabha to states and division of each state into territorial consitututency till year 2000 at 1971 level.
84th Amendment Act, 2001 Extended freeze until 2026 and empowered readjustment based on 1991 census.
87th Amendment Act, 2003 Delimitation based on 2001 census without altering seat allocation to each state in Lok Sabha.

Constitution (131st) Amendment Bill 2026



Constitution (131st) Amendment Bill 2026 defeated in Lok Sabha The bill failed to secure the 2/3rd majority required to pass a constitutional amendment bill.

- Following the defeat of the Constitution Amendment Bill, the government withdrew the **Delimitation Bill 2026** and the **Union Territories Laws (Amendment) Bill 2026**.
- The bill was opposed as it will disproportionately reduce the representation of the southern and north-eastern states on the basis of the 2011 Census.

About the 131st Amendment Bill

- **Increases the strength of the Lok Sabha**: From the existing 543 members to 850 members (815 from states and 35 from UTs).
- **Amend Article 334A:** Allow implementation of one-third women's reservation in Lok Sabha and State Assemblies immediately after delimitation.
  - It was introduced through **106th Constitution (Amendment) Act, 2023 (Nari Shakti Vandan Adhiniyam)**.
- **Amend Article 82**: Bill proposes to delete the third provision of Article 82, which mandates that the **next delimitation** exercise shall be undertaken based on the first Census conducted after the year 2026.
  - This will enable delimitation to be carried out using Census data available before the 2026–27 Census.

About Delimitation Bill 2026

- It aimed to repeal and replace the **Delimitation Act, 2002.**
- **Delimitation Commission (DC):** Union Government to constitute the DC, which will be chaired by a person who is or has been a Judge of the Supreme Court.
- It specified that the delimitation would be based on the latest published census at the time of the Commission's formation, meaning the 2011 census would be used.

The **Union Territories Laws (Amendment) Bill, 2026** extends similar changes to Delhi, Puducherry and Jammu and Kashmir.

IMPORTANT NOTE!

CONSTITUTIONAL AMENDMENT PROCESS (UNDER ARTICLE 368)

- Initiation: Can only be introduced in either House of Parliament.
- Special Majority: Must be passed by a majority of the total membership and a two-thirds majority of members present and voting in each House.
- State Ratification: Amendments affecting federal provisions require approval from at least half of the state legislatures.

CIVILS WITH AKASH

Nominated Members



For the first time, a nominated member was elected as Deputy Chairman of the Rajya Sabha for the third consecutive term.

About Deputy Chairman

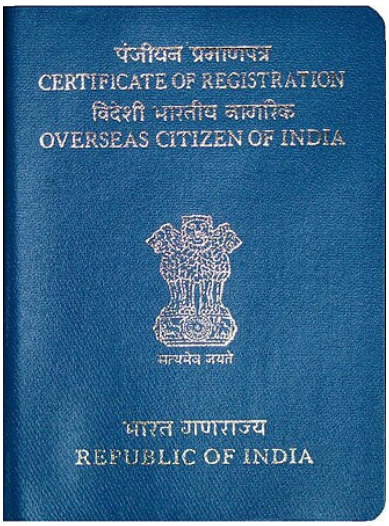
- Under **Article 89** of the Constitution **deputy chairman** is elected by the **Rajya Sabha** itself from **amongst its members.**
- The Deputy Chairman performs the duty of the Chairman's office when **it is vacant or when the Vice-President acts as a President.**

Nominated Members

- Under **Article 80** of the Constitution, Rajya Sabha can have up to **250 members, including 12 nominated by the President.**
- Nominations are from fields like **literature, science, art,** and **social service.**
- **Powers and Functions**
- Can participate **fully in debates** and **discussions.**
- **Cannot vote** in Presidential elections.
- **Can vote** in Vice-Presidential elections.
- Can **join a political party within 6 months** of taking a seat.
- So far, **no nominated member has been part** of the **Council of Ministers.**

CRACKS WITH AKASH

Overseas Citizen of India (OCI) Scheme



India extends OCI card eligibility in Sri Lanka to the sixth generation.

About OCI Scheme

- **Introduced: In 2005** by amending the **Citizenship Act, 1955.**
- **Eligibility:**
  - Those who are **eligible to become a citizen** of India, **spouses** of Indian nationals or other OCI cardholders, **Persons of Indian origin** (PIOs merged with OCI), etc.
  - **Exceptions:**
    - No person, who or either of **whose parents or grandparents had been a citizen of Pakistan, Bangladesh** or such other country as the government may specify.
    - **Foreign Military or police personnel** (serving or retired).
- **Benefits for OCI Cardholders**:
  - Lifelong **multiple-entry visa to visit India.**
  - **Equality with NRIs** in certain financial, economic and educational matters **except** for acquisition of agricultural or plantation land.
  - And, **prior special permission** is required for certain activities such as research activities, etc.

Tenth Schedule and Disqualification of Legislators



Recently, two-thirds of the Rajya Sabha MPs of AAP quit the party and joined the BJP, leading to the submission of a disqualification plea.

- As per the **Tenth Schedule,** Disqualification on the grounds of **defection not to apply** in case of **merger**.
- It provides that member of a House shall **not be disqualified** where his **original political party** merges **with another political party** with at **least 2/3 members.**
  - The **disqualification plea** argues that **Tenth Schedule** requires a genuine merger of the **original political party**, not just legislators switching sides.

Tenth Schedule and Disqualification of Legislators

- Popularly referred **Anti-Defection Law**
- Added in the Constitution through the **Fifty-Second Amendment Act, 1985.**
  - The 91st Constitutional Amendment Act strengthened the **anti-defection law by removing** the **1/3rd** split provision, making it at least 2/3rd.
- **Objective**: aimed to **combat political defections** and **safeguard democracy.**
- **Grounds for Disqualification:**
  - Voluntarily **giving up party membership**;
  - Defying **party whip** during voting;
  - If an **independently elected legislator** joins a political party;
  - If a nominated member joins any political party, after six months from the day he becomes a legislator.
- Entrusted the Speaker/Chairman with adjudication for fearless and expeditious decisions, explicitly to avoid lengthy court delays.

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Whip



A Political party issues a three- line whip ahead of the upcoming Parliament session.

About Whip

- **Definition:** It is a directive issued by political parties to ensure members **attend and vote as per the party line.**
  - It is based on the conventions of the parliamentary government.
- **Chief Whip:** Parties appoint **senior members** as Chief Whip, assisted by **additional whips,** to issue directions and ensure compliance in the House.
- **Types of Whips:** It includes:
  - **One Line whip**: Usually issued to inform party members of a vote, and allows them to abstain.
  - **Two Line Whip**: Directs members to be present during voting.
  - **Three line Whip:** Mandates members to strictly follow party line on important occasions, such as **no-confidence motion,** etc.
- **Legal Ramifications of defying whip**: The Anti-defection law allows the Speaker/ Chairperson to disqualify a member if he/she votes or abstains from voting in such House contrary to any direction issued by the political party.

Right to Education Act



Supreme Court (SC) in 'Lucknow Public School Vs. The State of Uttar Pradesh & Ors' held that neighbourhood schools are obligated to provide immediate admission to eligible students under the RTE Act, 2009.

About Right of Children to Free and Compulsory Education Act (or RTE Act), 2009

- Enacted to give effect to **Article 21A** of the Constitution.
  - **Article 21A** (introduced by the **86th Amendment Act of 2002**) provides right to free and compulsory education of all children (6 -14 years).
- The Act grants right of every child **(6–14 years)** to free and compulsory education in a neighbourhood school till completion of elementary education.
  - It is the **duty of appropriate Government and local authority** to **establish schools** and provide infrastructure, teachers and learning facilities.
- The Act also mandates **25% reservation in private unaided schools** for children from **economically weaker and disadvantaged sections** to promote inclusive and equitable education.
  - Schools are entitled to **reimbursement of per-child expenditure** by the State.

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Challenges in Implementation

- **School-Level Resistance:** Private schools continue to resist full inclusion of EWS students.
- **Hidden Costs Burden:** Expenses for uniforms, books, and materials shift the burden onto poor families.
- **Other:** Weak monitoring, limited accountability, inter-state variations in execution and outcomes, inadequate grievance redressal mechanisms, last-mile delivery challenges, etc.

Significance of the Judgement

- Promotes substantive equality and social integration from early childhood.
- Gives enforceable and operational meaning to fraternity as a core constitutional principle.
- Reinforces the Common School System envisioned by the Kothari Commission (1964-66).

Other Constitutional Provisions related to Right to Education

- Fundamental Duty: Article 51A(k) specifies duty of parents to provide opportunities for education to child (6-14 years)
- Directive Principles of State Policy (DPSP): Article 45 directs the state to provide early childhood care and education to children below 6 years.



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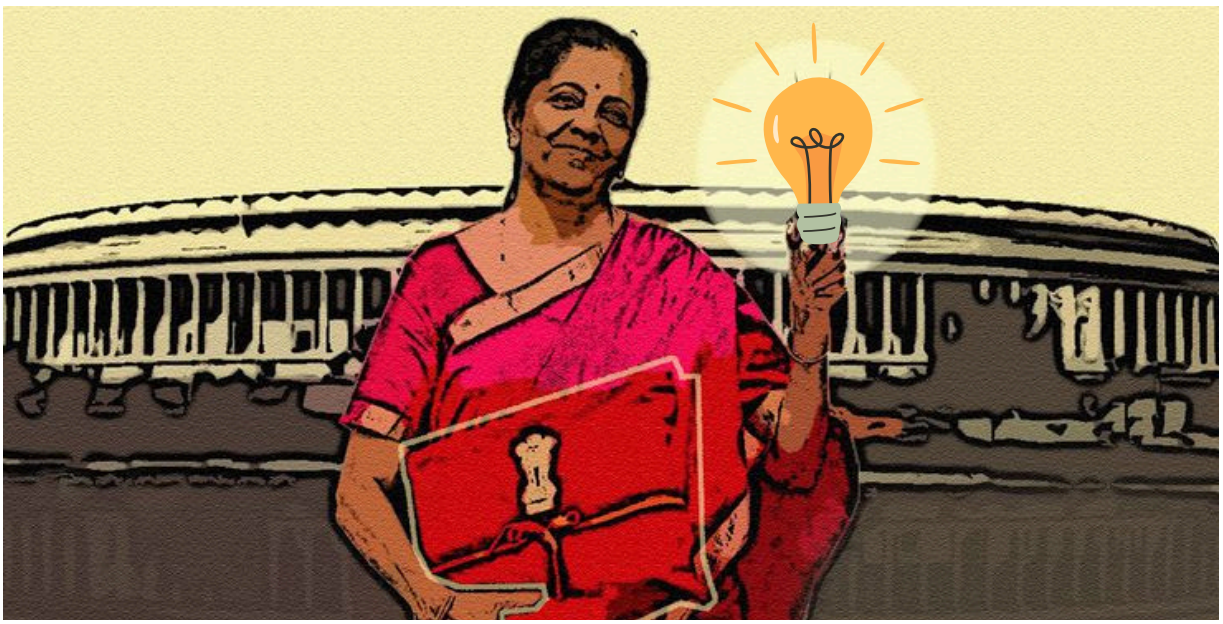

Telangana Gig Workers Bill



Telangana Legislative Assembly passed the Telangana Platform-Based Gig Workers Telangana Gig Workers Bill seeks to regulate gig and platform work, and is similar to those passed by four other states: Karnataka, Rajasthan, Jharkhand, and Bihar.

- Telangana Bill provides for constitution of a special welfare board, government levy on aggregators, unique ID for gig workers and penalties for non-compliance.

About Gig Workers

- Defined by Code on Social Security 2020, Gig worker is a person who performs work or participates in a work arrangement and earns from such activities **outside of traditional employer-employee relationship**.
- **Scale:** Gig workers increased from 77 lakh workers in FY21 to **120 lakh workers in FY25**, representing over 2% of India's total workforce.
- **Challenges:** Income and job volatility, challenging in accessing credit, financial inclusion, algorithmic biases, lack of social security, safety concerns etc.
- **Code on Social Security 2020:** It provides a **formal recognition to Gig workers and Platform workers.**
  - Aggregators are required to contribute **1-2% of their annual turnover** (capped at 5% of payments made or payable to gig/platform workers) to a **Social Security Fund**.
    - The fund finances a range of welfare schemes for these workers.
  - Each worker will receive a **unique Aadhaar-linked ID generated through registration on e-Shram**, allowing their social security benefits to be **portable across platforms**.

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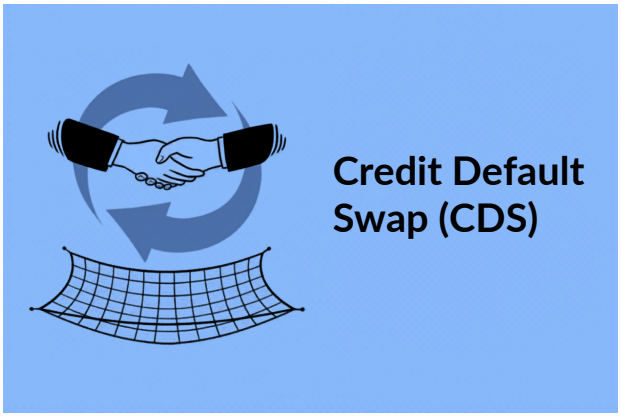
Credit Default Swaps (CDS)



The Reserve Bank of India notified limits for investment in debt and sale of Credit Default Swaps by Foreign Portfolio Investors (FPIs) for FY 2026-27.

- The limits for FPI investment in Government Securities (G-Secs), State Government Securities (SGSs) and corporate bonds remain unchanged.

About Credit Default Swaps

- **Definition:** It is a **financial derivative** instrument that allows an investor to **swap or offset their credit risk** with that of another investor.
- **Working Mechanism:** It works like an **insurance** on bonds, where the buyer pays regular premiums and the seller pays if a default or restructuring occurs.
- **Uses:** Used for **hedging, speculation, and arbitrage**, credit risk management.
- **Risks:** Counterparty risk, complexity.

New Income Tax Act 2025 comes into effect



Income Tax Act, 2025 replaces the six-decades-old Income Tax Act, 1961 with objective to enhance predictability, transparency, reduce compliance burden, and offer taxpayers a streamlined and simplified tax filing process.

Key provisions of the Act

- **Simpler language and Framework:** Act has been condensed from 819 to 536 Sections, and 390 to 190 Forms.
  - Provisions of **Minimum Alternate Tax (MAT)** and **Alternate Minimum Tax (AMT)** have been separated into two sub-sections.
    - **MAT** bring into the tax net "zero tax companies" which in spite of having earned substantial book profits and having paid handsome dividends, do not pay any tax due to various tax concessions and incentives provided under the Income-tax Law.
    - **AMT** has similar provisions as MAT which is applicable to non-corporate tax payers.
    - The provisions of MAT are applicable to a corporate taxpayer only.
- **"Tax Year" Concept:** The traditionally separate concepts of Financial Year (FY) and Assessment Year (AY) have been merged into a single, unified term: "Tax Year".
- **Stability in Core Tax Elements**
  - Tax rates and regimes for **individuals and corporations remain unchanged**.
  - There are no changes in offences and penalties.
  - Most definitions have also been retained.
  - Faceless collection of information and assessment of tax cases.
- **Undisclosed Income:** The definition of undisclosed income for assessing search cases, which previously included money, bullion, jewellery, or other valuable articles, is expanded to include **virtual digital assets.**
- **Virtual Digital Space Access:** Income tax authorities are now allowed to gain access to a virtual digital space during search and seizure proceedings.
  - A "virtual digital space" is **defined broadly to include email servers, social media accounts**, online investment and trading accounts, and websites for storing details of asset ownership.

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Special Economic Zones



The Central Board of Indirect Taxes and Customs has introduced a one-time relief measure allowing eligible manufacturing units in SEZs to sell goods in the Domestic Tariff Area (Indian markets domestically) at concessional customs duty rates.

- The relief will be effective from April 1, 2026, to March 31, 2027 to help SEZ manufacturers cope with global trade disruptions.

About SEZs:

- **Overview:** They are specifically delineated, duty-free enclaves treated as foreign territory for trade operations and customs duties.
- **Current Status:** India has **368 notified SEZs** (Feb 2026).
- **Legal Provisions:** SEZs are governed by the **SEZ Act of 2005** and **SEZ Rules of 2006**, which provide a simplified regulatory framework.

Significance of SEZs

- **Export Growth: Generating ₹11.70 lakh crore** by December 2025.
- **Investment Hubs:** Attracted **₹7.86 lakh crore** in combined domestic and foreign investments as of December 2025.
- **Job Creation:** Over **31.73 lakh jobs** by December 2025.
- **Infrastructure Development:** Including Mundra Port, Kandla Port, Sri City, and GIFT City.
- **Tech & Innovation:** Accelerated high-value manufacturing, research, and technological adoption, particularly in the electronics and semiconductor sectors.
- **Global Competitiveness:** Established India as a stable and reliable destination for international trade and investment.

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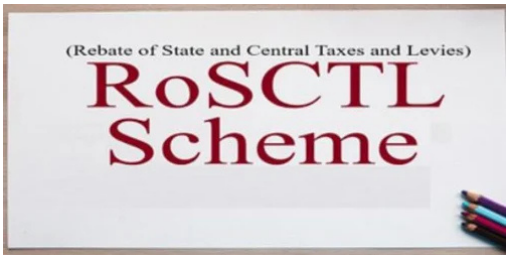
Census-2027

The first phase of Census-2027 begins on 1st April, 2026.

About Census-2027

- It is the **16th Census** in the series and the **8th since Independence**.
  - The last Census was conducted in **2011**.
- It is the **world's largest and first digitallly conducted Census** with the option of **Self-Enumeration**.
  - **Self-Enumeration** is a secure web-based facility for entering information online in 16 languages before the door-to-door survey.
- To be conducted in **two phases**, House Listing (HLO) and Population Enumeration (PE).
- It will include the **first nationwide caste enumeration in independent India** (last done in 1931) for all communities (beyond Scheduled Castes and Scheduled Tribes).
- **Conducted by**: Office of the Registrar General and Census Commissioner, Ministry of Home Affairs (decennially)
- **Legal Backing**: Census Act, 1948 and Census Rules, 1990.

Rebate of State and Central Taxes and Levies Scheme



Government notifies extension of RoSCTL Scheme up to 30th September 2026.

About the scheme

- **Launched:** In 2019 by the **Ministry of Textiles.**
- **Aim:** to **zero-rate textile exports** by **rebating all embedded State and Central taxes and levies,** not covered under any other scheme.
- **Mechanism**: Rebates are issued as **Duty Credit Scrips** which can be sold or used to pay custom duty.
- **Benefits**: Flexibility, enhanced export competitiveness, cost reduction etc.

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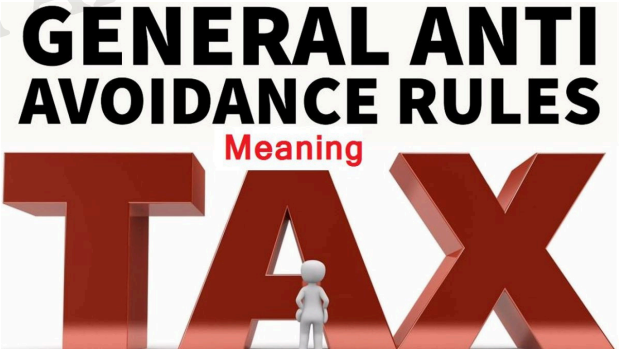
General anti-avoidance rules (GAAR).



Recently, India amended Income Tax Rules, 2026, under Income Tax Act, 2025, to exclude investments made before 1 April 2017,from GAAR

- This removed ambiguity around grandfathering.
  - **Grandfathering lets investments made before a specified date enjoy old tax rules** despite later changes.

About GAAR (effective from April 2017)

- Introduced via **Finance Act 2012.**
- Aim to **address aggressive tax avoidance.**
- Recommended by Parthasarathi Shome Committee.
- **Implementation**: Tax authorities can trigger GAAR if an arrangement
  - Lacks Commercial Substance
  - Shows Abuse of Law
  - Transactions between related parties doesn't reflect market prices.
  - creates rights that wouldn't normally exist
- **GAAR applies only if annual tax benefit exceeds ₹3 crore.**

Purchasing Managers' Index



HSBC India Manufacturing PMI fell to 53.9 in March 2026, near a 4-year low due to the West Asia crisis.

- The report noted that **new orders and output** for manufacturing firms rose at their slowest rates since mid-2022.

About Purchasing Managers' Index (PMI)

- It is a **survey-based indicator** measuring business conditions using data on orders, output, employment etc.
- PMI above **50 shows expansion** and **below 50 indicates contraction**.
- **Types:** Manufacturing PMI and Service PMI.
- **Significance:** Reflects vulnerability of manufacturing to global shocks.

Non Deliverable Derivatives (NDD)



Reserve Bank of India (RBI) has directed to bar banks from NDD contracts in rupee.

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About NDD

- **Derivative contract** where two parties agree on future exchange rate for rupee, but settle the difference in **cash**, usually in US dollars.
- These trades **take place offshore, outside the control** of **RBI.**
- They were developed in **response to restrictions that constrained access to onshore markets** and are widely used by foreign investors, hedge funds and global banks who cannot freely access the Indian rupee market.

RBI's Two-factor Authentication



Based on RBI's rules, from 1 April, all digital transactions must be verified using at least Two-factor Authentication with at least one factor being dynamic.

About RBI's Two-factor Authentication(2FA)

- **Aim**: To plug **gaps in PIN- and OTP-based systems**, reducing vulnerabilities and strengthening **safeguards in digital payments**.
  - Current OTP-only approach is vulnerable to **phishing and SIM-swap attacks**.
- It applies across payment modes, including **cards, UPI and wallets.**
- **Independent authentication factors** include personal identification number (PIN), a one-time password (OTP), biometric or device-based authentication.

India's Defence Exports



ndia's Defence Exports Reached an All-time High of Rs. 38,424 crore in FY 2025-26: Ministry of Defence

Key Achievements

- **Export growth:** 62.66% increase over previous fiscal year.
  - Exports have **steadily increased** from 2021-22 to 2025-26
- **Sectoral Contribution:**
  - **Defence Public Sector Undertakings (DPSUs):** 54.84%
  - **Private Sector:** 45.16%.
- **Global Reach:** India's defence exports have expanded to 80+ countries as of FY 2025-26.

Significance

- **Strategic:** Positions India as a **global manufacturing hub for defence equipment.**
- **Diplomatic:** Defence exports build trust, interoperability and long-term partnerships.
- **Promote Indigenization:** India's indigenous defence production hit a record high in FY 2023-24.
- **Realising Atmanirbhar goal:** India targets ₹3 lakh crore defence production and ₹50,000 crore exports by 2029.
- **Others:** Employment Generation, Increasing private sector participation etc.

Persisting Challenges: High import dependence, global disruption vulnerabilities, Competition from global players, regulatory delays etc.

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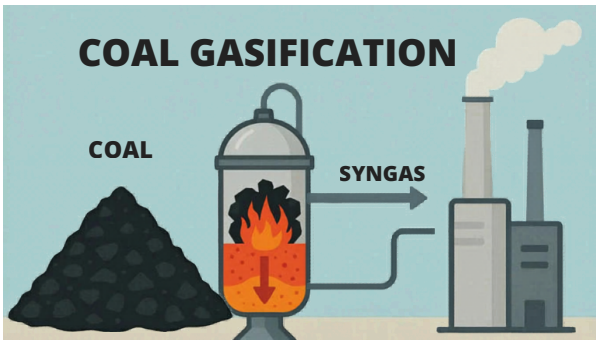
IMPORTANT NOTE!

KEY INITIATIVES TO PROMOTE DEFENCE EXPORTS

- Innovations for Defence Excellence (iDEX) Framework: Promotion of innovation through startups and MSMEs.
- Defence Acquisition Procedure 2020: Increased indigenous content in defence procurement.
- Research, Development and Innovation (RDI) Scheme: For fostering collaboration among DPSUs, private companies, MSMEs, and startups
- FDI Liberalisation: 74% FDI under automatic route for technology inflow.
- Defence Industrial Corridors (DICs): Industrial ecosystems in Uttar Pradesh and Tamil Nadu.

Coal Gasification Incentive Scheme



Union Minister unveils India's roadmap to reduce dependency on imported petroleum, ammonia, and fertilizers, highlighting the coal gasification incentive scheme.

bout Coal Gasification Incentive Scheme

- **Approved:** in **2024** with an **outlay of ₹8,500 crore** to promote coal and lignite gasification projects in public and private sectors.
- **Objective:** To **reduce dependence on imported petroleum, ammonia and fertilisers** by promoting **production of syngas and value-added products from coal.**
- **Categories:**
  - **Category I:** PSU-led projects
  - **Category II**: Private and PSU projects
  - **Category III:** Demonstration and small-scale projects

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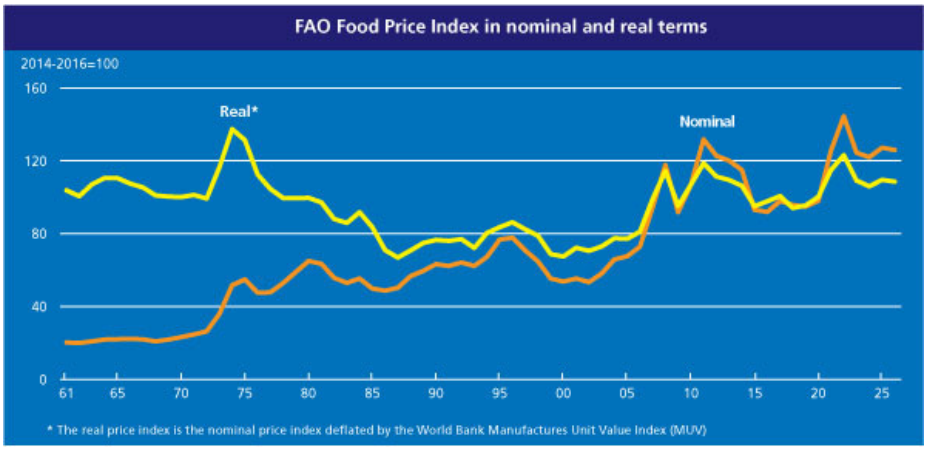
FAO Food Price Index

Food and Agriculture Organization (FAO) Food Price Index rose to 128.5 points in March 2026, driven by higher energy costs amid Middle East tensions.

FAO Food Price Index

- A measure published by the Food and Agriculture Organisation (FAO) **tracking monthly changes in international prices** of a basket of food commodities.
- **Base year**: 2014–16.
- **Composition**: Includes **five major commodity groups**—cereals, vegetable oils, dairy, meat and sugar.



Labour Migration



Rising Fuel Costs Strain Migrant Workers, Raising Risk of Reverse Migration Industry associations warn of rising stress in MSMEs and potential migrant labour exodus due to issues linked to the West Asia conflict.

Migrant labourers in India

- **Total number of Inter-State migrant workers:** 4.14 Crore (Census 2011)
- **Migration rate:** 28.9%, with 26.5% from rural areas (2020-21 Migration report)

Problems Faced by Migrant Labourers

- **Informalisation:** About 90% of workers are informal leading to low wages, irregular payments, etc. during crises like **COVID-19 pandemic.**
- **Lack of Affordable Housing:** Migrants as the largest group requiring housing in cities (Ministry of Housing and Urban Affairs).
- **Risk of Exclusion from Welfare:** E.g., Public Distribution System excludes individuals without Aadhaar linkage.
- **Others:** Limited access to Health and Education, Discrimination, lack of political representation etc.

Way Forward

- **Immediate Food Support for Migrants:** E.g., **Community kitchens and temporary canteens** in MSME clusters.
- **Direct Benefit Transfer based subsidy delivery:** Enables better **targeting to protect vulnerable groups**.
- **Establish an inter-ministerial coordination system:** With **industry participation** for **real-time monitoring and faster policy response.**
- **Credit & Interest Relief:** To ease financial stress on enterprises employing migrant labour.

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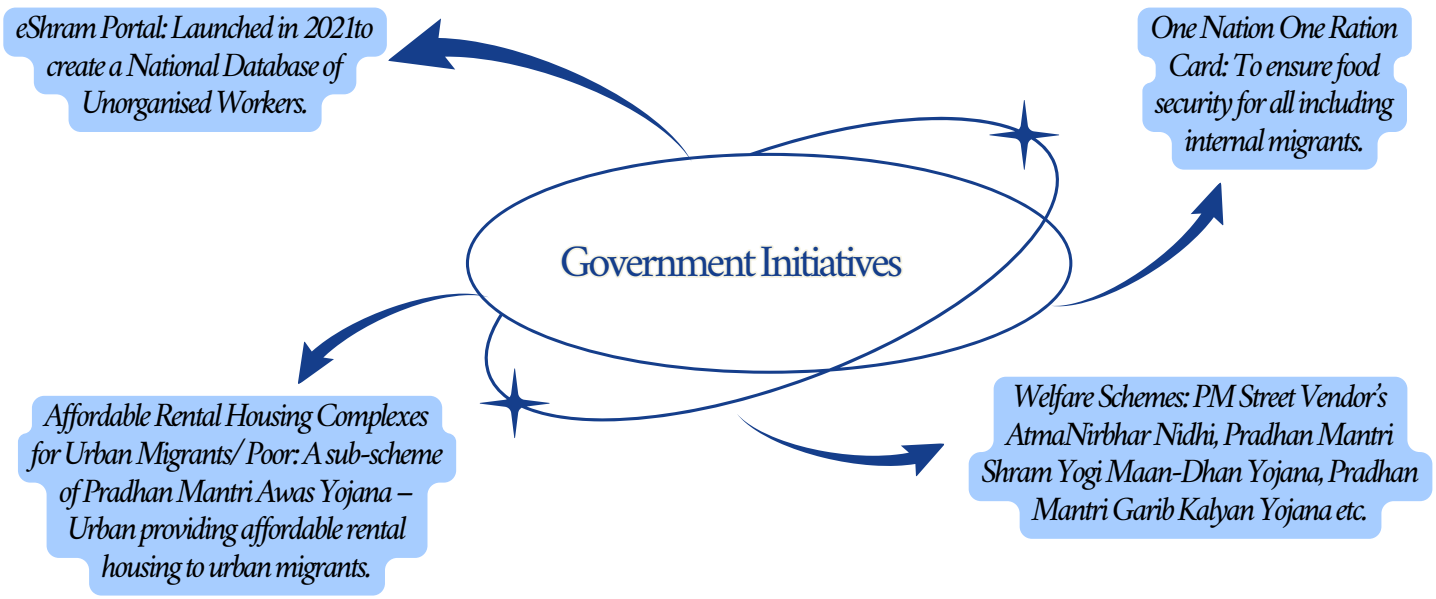
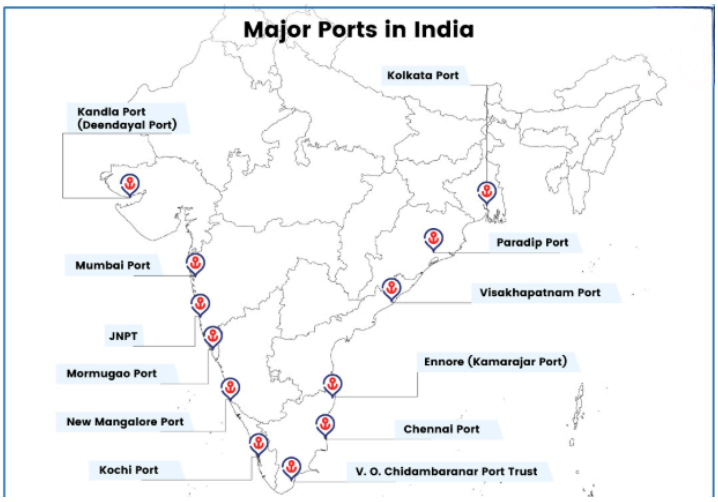


Major Ports demonstrated remarkable progress



India's Major Ports demonstrated remarkable progress in FY 2025–26 Progress has been primarily driven by sustained capacity expansion, modernization of port infrastructure, and improved turnaround efficiency.

Key Progress

- **Cargo handling:** Major ports handled **915.17 million tonnes** in FY 2025–26, surpassing target of 904 MT with **7.06% growth**.
- **Top performers: Deendayal (160.11 MT)** followed by **Paradip** and **Jawaharlal Nehru Port Authority (JNPA)**

Which initiatives have played a pivotal role in this progress?

- **Legislative measures: Major Port Authorities Act, 2021** provides greater autonomy and promotes PPP participation, while the **Indian Ports Act, 2025** (replaced **Indian Ports Act of 1908**) aims to modernise port regulation.
  - Government promotes private participation with **100% FDI under automatic route** in port and harbour development and maintenance.
- **Sagarmala Programme**: Flagship initiative launched in **2015** for port modernization, connectivity enhancement, new port development and coastal community development.
- **Maritime India Vision 2030:** Outlines 150 initiatives for propelling India to global maritime leadership. It includes spheres such as port infrastructure development, enhancing logistics efficiency, etc.
- **Others:** National Logistics Portal (Marine)- SAGAR-SETU; Real-time performance Monitoring Dashboard, Sagar Manthan, etc.

The progress reinforces the vision of **port-led development** envisaged under **Maritime Amrit Kaal Vision 2047**.

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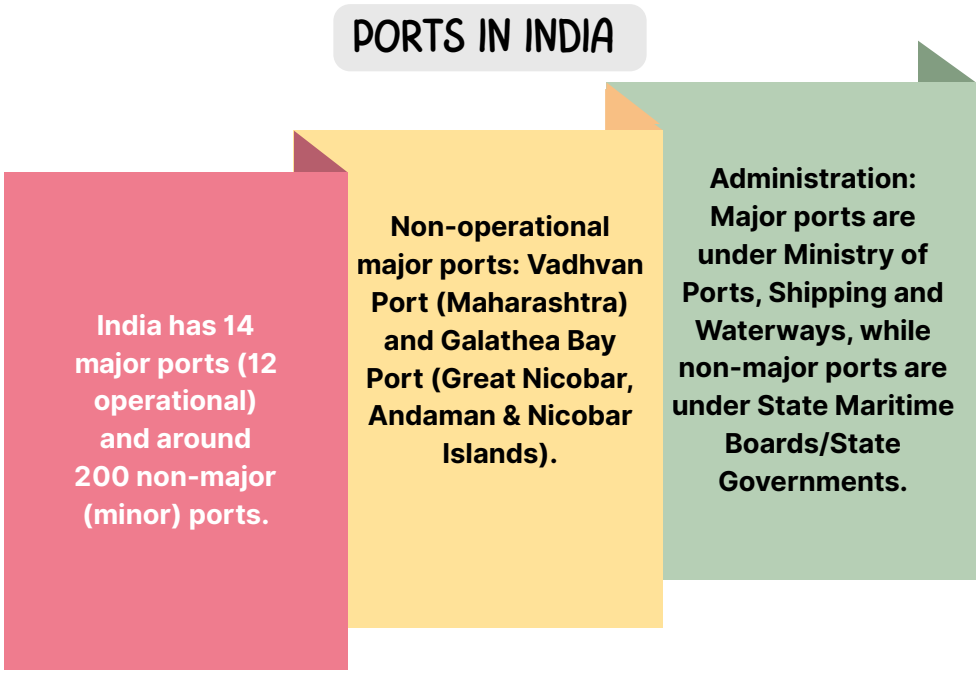
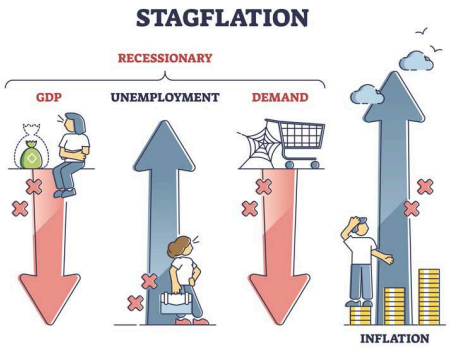


Stagflation



The energy supply and price shock from the ongoing Iran war can lead to Stagflation.

About Stagflation

- It is an economic condition characterized by **slowing economic growth, recession** or **high unemployment,** and **rising prices** (inflation) simultaneously.
- It is challenging for central banks to control through monetary policy.
  - E.g., if central banks raise interest rates to combat high inflation, stagflation could risk further increasing unemployment.
- **Other types of inflation:**
  - **Skewflation**: Uneven inflation across sectors, with some goods or services rising much faster than others.
  - **Hyperinflation:** Extremely high and accelerating inflation, often exceeding 50% per month.
  - **Creeping Inflation:** Occurs when prices rise slowly over time.
  - **Galloping Inflation**: Happens when inflation accelerates rapidly, with prices increasing 20% or more in a year.

Annual Survey of Incorporated Services Sector Enterprises

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National Statistics Office (NSO), Ministry of Statistics and Programme Implementation (MoSPI), launched Annual Survey of Incorporated Services Sector Enterprises (ASISSE).

About ASISSE

- **First** annual survey covering **incorporated service enterprises** across all States/UTs (FY 2024-25 reference).
- **Coverage**: Incorporated service sector enterprises registered under the Companies Act, 1956, or Companies Act, 2013, or Limited Liability Partnership Act, 2008.
  - Covers sectors like **trade, transport, IT, health, education, hospitality.**
- **Aim:** To build a **reliable database** for policymaking and economic analysis.
- Uses Goods and Services Tax Network **(GSTN) database;** ~1.21 lakh enterprises surveyed.
- Complements **ASI (Annual Survey of Industries)** and **ASUSE (Annual Survey of Unincorporated Sector Enterprises)** for holistic non-agricultural economy data.

Record Wind Energy Addition



India achieves Highest-ever Annual Wind Energy Addition of 6.05 GW in 2025–26 The milestone reflects a 46% year-on-year growth, strengthening India's position as a leading global wind energy market.

- It is a step towards achieving the national target of **500 GW of non-fossil fuel-based energy capacity by 2030.**

Status of Wind Energy

- **Global Status: 4th in Wind Power capacity (IRENA RE Statistics 2025)**
- **Installed Capacity:** Increased from 21.04 GW (2014) to over **56 GW (2026)**
- **Role in Energy Mix:** Second largest renewable source after solar in India.
- **Leading States:** Gujarat, Karnataka, and Maharashtra are key contributors to capacity addition.

Government Initiatives

- **Centralized Data Collection and Coordination (CCDC) Wind Initiative:** It aims to improve wind resource assessment through accurate data collection and research.
- **National Wind-Solar Hybrid Policy 2018:** To provide a framework for promotion of large grid connected wind-solar photovoltaic hybrid systems for optimal and efficient utilization.
- **Viability Gap Funding (VGF) scheme for offshore wind energy projects:** In line with the National Offshore Wind Energy Policy, 2015.
- **Other:** Green Energy Open Access Rules (2022), Renewable Energy Purchase Obligation (RPO), concessional customs duty on wind turbine components, waiver of Inter-State Transmission System (ISTS) charges until 2028, etc.

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Issues

01

Infrastructure Constraints: Limited grid capacity, weak transmission networks, and approval delays hinder integration and timely evacuation of wind power.

02

Economic Challenges: High capital costs, large project size requirements, and policy uncertainty increase financial risks and limit participation.

03

Others: Technical issues (logistics, complex installation), Land Acquisition Issues etc.

Food Processing Industry in India



Sales of PLISFPI products increased by 10.58%: Joint Secretary of MoFPI The Production Linked Incentive Scheme for Food Processing Industry (PLISFPI), implemented in 2021-22 by Ministry of Food Processing Industries (MoFPI), has shown strong performance.

About PLISFPI

- **Type**: Central Sector Scheme
- **Ministry**: MOFPI
- **Total outlay:** ₹10,900 crore
- **Duration: 6** years (2021-22 to 2026-27)
- **Objectives:** Create global f**ood manufacturing champion**s, Promote **Indian food brands internationally,** Generate **off-farm employment**, Ensure **better prices to farmers & higher income.**

About Food Processing Sector In India

- It involves the **transformation of raw agricultural products into consumable food items** through various **physical, chemical, and mechanical processes.**
- This sector plays a crucial role in enhancing the **shelf life, safety, and quality of food, thus meeting the demands of a growing global population.**
- **According to Annual Survey of Industries (ASI) report,**
  - Gross Value Added (GVA) increased from **₹1.61 lakh crore (2015-16) to ₹1.92 lakh crore (2022-23).**
  - The sector recorded an **Average Annual Growth Rate (AAGR) of ~5.35% over the last 8 years.**
  - Employment rose from **17.73 lakh (2014-15) to 20.68 lakh (2021-22).**
- **Other Key Government initiatives:** PM Kisan SAMPADA Yojana (PMKSY), Pradhan Mantri Formalisation of Micro Food Processing Enterprises (PMFME), Mega Food Parks Scheme, etc.

GULSMITH AKASH

Business Correspondent



RBI proposed revised Banking Correspondent (BC) classification, based on three types of delivery points — bank branches, Business Correspondent-Banking Outlet (BC-BO) and Business Correspondent-Banking Touchpoint (BC-BT).

- **BC-BO:** It is a fixed-point service delivery unit, operated by a BC / BC sub-agent,
- **BC-BT:** It is a service delivery point working **exclusively for one bank,** offering limited services, and having flexible hours of operations.

About Business Correspondents

- **BC** means as an **entity (juridical person) or individual** (other than its own employee) who has been **engaged by a bank** to provide banking and other **financial services, on behalf of the bank.**
- **Role:** Assigned in **remote areas** to perform **retail banking operations,** expanding the reach of banks and helping in **financial inclusion.**

Indian Council of Agricultural Research

ICAR Constitutes Special Task Force to Strategize Agricultural Resilience Amid Global Geopolitical Shifts

About ICAR (HQ: New Delhi)

- **Origin: Established** registered society under Societies Registration Act, 1860 as Imperial Council of Agricultural Research
  - based Royal Commission on Agriculture report (under Lord Linlithgow)
- **Ministry:** under **Ministry of Agriculture and Farmers Welfare**
  - **Ex-officio President :** Union Minister of Agriculture
- **Role**: Apex body for coordinating and guiding agricultural research and education (including horticulture, fisheries, animal sciences).
  - Eg. research related to Green revolution technologies
- **Key initiatives**
  - **Krishi Vigyan Kendras** linking agricultural research and farmers at district level
  - **National Innovations in Climate Resilient Agriculture(NICRA)** to enhance the resilience of Indian agriculture to climate change

CIVILS WITH AKASH

India Ranks Third Globally in Renewable Energy Installed Capacity

According to the IRENA Renewable Energy Statistics 2026, India ranks behind China and the United States, in renewable energy capacity.

Status of Renewable Energy in India

- **Total:** 274.68 GW Renewable Energy (as of March 2026)
- **Solar Energy:** It leads with **150.26 GW** installed capacity (53.28 times increase since 2014).
- **Wind Energy:** Second largest contributor, with over **56 GW capacity.**
- **Other:** Large Hydro Power (51.41 GW)> Bioenergy (11.75 GW)> Nuclear Energy (8.78 GW)>Small Hydro Power (5.17 GW).

What makes India a leading Renewable Energy (RE) player?

- **Major Sector-Specific Programs:** E.g., National Solar Mission, PM KUSUM, National Green Hydrogen Mission, National Bioenergy Programme, and small hydro schemes.
- **Financial and Tax Incentives:** E.g., GST reduction on RE equipment, Basic Custom Duty exemptions, etc.
- **Policy and Regulatory Reforms:** E.g., Renewable Purchase Obligation framework, Virtual Power Purchase Agreements, and ease of doing business for solar energy.
- **Infrastructure Support:** E.g., Green Energy Corridor, wind site mapping, etc.
- **Promoting Domestic Manufacturing & R&D:** E.g., MNRE Quality Control Orders norms, skill development (e.g. Vayumitra program), etc.
- **Other:** Favorable Geography (e.g., vast wind corridors in states like Tamil Nadu, Gujarat,), Decentralized Renewable Energy Initiatives, etc.

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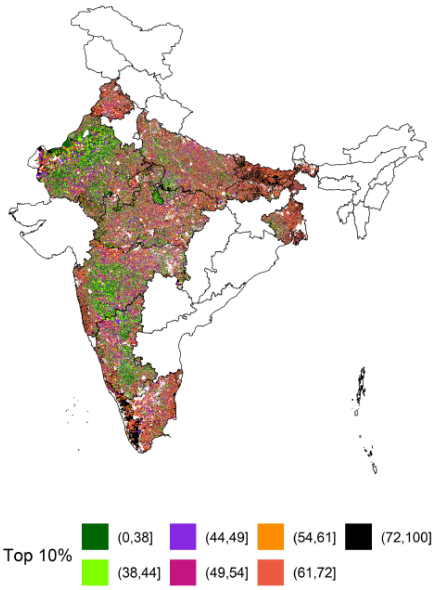
Aspect	Reworded Explanation
Lower Carbon Emissions	Expansion of Renewable Energy (RE) has helped decrease emission intensity in the power sector, which fell from **61.45 to 40.52 tonnes per ₹ crore between 2015 and 2023**.
Improved Energy Security	Greater use of renewable sources lowers reliance on imported fossil fuels and helps maintain energy stability during geopolitical disruptions, including crises in West Asia.
National and Global Importance	Renewable Energy contributes to achieving India's **NDC commitments**, promotes **SDG 7 (Affordable and Clean Energy)**, and enhances the country's position as a leader in clean energy development.

Report on Land Inequality in India



World Inequality Lab Released Report on Land Inequality in India Report titled "Land inequality in India: Nature, history, and markets," encompasses data from ten major Indian states (~ 75% of rural population).

Key Findings of the Report

- **Extreme Wealth Concentration:Top 10% of rural households own 44%** of the total land area.
- **Widespread Landlessness:Nearly 46%** of rural Indian households are entirely landless.
- **Village-levelland Gini Coefficients:** extremely high at **71.1.**
- **Dominant Landlords:** In an average village, the **single largest landholder** controls roughly **12.4% of the land.**
- **Regional Disparities**:
  - **Highest Inequality: Kerala** (Land Gini coefficient at 90).
  - **Lowest Inequality: Karnataka** and **Rajasthan** (Land Gini coefficients below 65).
  - **Rates of Landlessness: Punjab** highest at 73%.

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Key Drivers of Land Inequality in India

- **Nature:High productivity facilitates** the expansion of large landholdings and drives up landlessness.
- **History:**
  - **Colonial Tenure:** Regions formerly under the **Britishzamindari (landlord) system exhibit higher inequality**, **vis-à-vis** "princely states".
  - **Social Stratification:** Villages with a higher proportion of **Scheduled Caste (SC) populations face higher inequality**, due to historical landlessness.
- **Markets (Economic Integration):** Proximity to economic hubs, such as **towns, major highways, railways, banks, and agricultural markets (mandis)** is associated with higher land inequality.
  - Economic integration **alters the profitability of farming** relative to non-agricultural activities, **incentivizing smallholders to sell their non-viable plots to larger landowners**.

IMPORTANT NOTE!

STEPS TAKEN TO REDUCE LAND INEQUALITY IN INDIA

- **Land Reforms Post Independence**: Abolition of Intermediaries (Zamindari System), introduction of Land Ceiling Acts, Tenancy Reforms (ownership rights to actual cultivators), etc.
- **Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation & Resettlement Act, 2013:** Established fairer practices for acquiring.
- **Digital India Land Records Modernization Programme (DILRMP):** Modernizing land records, such as the Bhoomi Project in Karnataka.
- **Forest Rights Act, 2006**: Recognized the land rights of forest-dwelling communities and tribal populations.
- **Bhoodan and Gramdan Movements**: Led by **Vinoba Bhave in 1951**, sought voluntary donation of land from landowners.

India's Solar Energy Capacity Addition



India records Highest-Ever Annual Solar Capacity Addition: Union Minister India added 45 GW of Solar Energy Capacity in 2025-26, with Rajasthan, Gujarat and Tamil Nadu emerging as top contributing states.

Solar Energy in India

- **Solar Power (Cumulative) : 150.26 GW** as on **31st March, 2026** (Increased by 147.44 GW from **2.82 GW in 2014).**
- **Global Rank: India ranks 3rd** (as per IRENA Renewable Energy Statistics 2025).

Reasons for Significant Progress in India's Solar Energy

- **Regional Suitability:** Most parts of India **have 300 - 330 sunny days** annually with average solar incidence stands at around 4 - 7 kWh/sq. meter/day.
- **Favourable Government Schemes:**
  - **PM Surya Ghar:** Launched in 2024 to provide **rooftop solar systems** to **one crore households** (As of December 2025, **23.9 lakh households** have already installed it).
  - **Others:** PM-KUSUM,National Solar Mission, Solar Parks & Ultra-Mega Solar Power Projects, etc.
- **Boosting Domestic Manufacturing Capacity: Production-Linked Incentive (PLI) Scheme for Solar PV** to achieve Giga Watt (GW)-scale manufacturing capacity in **high-efficiency solar PV modules** attracted ₹52,900 crore investment (as on September 2025).
- **Global Leadership:** India is **founding member of International Solar Alliance** (headquartered in Gurugram); Initiated **One Sun, One World, One Grid (OSOWOG)** in 2018 focussing on interconnecting renewable energy grids.

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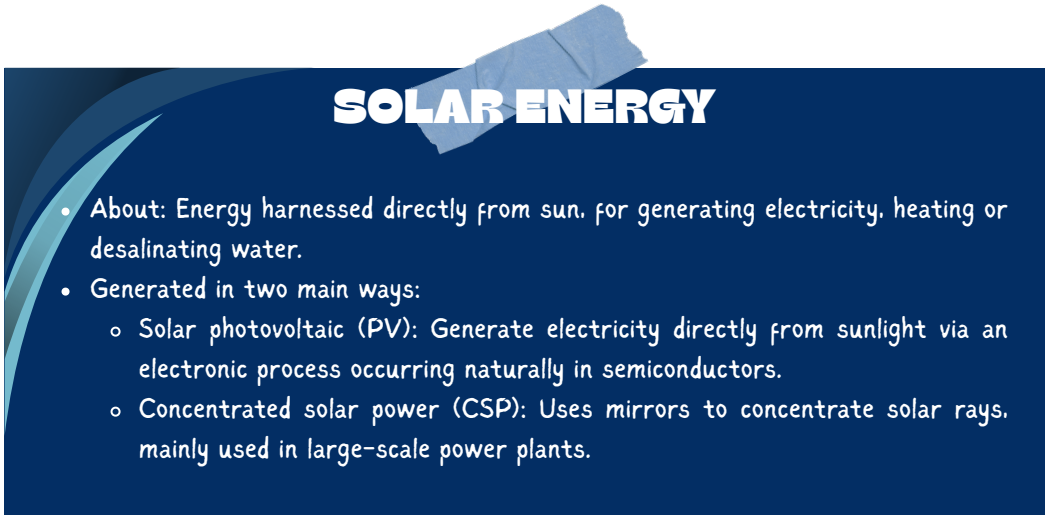

Financing for Sustainable Development

Financing for Sustainable Development

Released by UN Department of Economic and Social Affairs (DESA), it highlights role of Sevilla Commitment to reverse current trends in financing for development.

Key Issues Highlighted

- **Fragility in global economy:** Challenging macroeconomic situation with **significant downside risks.**
  - **Low per capita income** (one in four developing countries have it below 2019 level); **protected conflict in Middle East** causing impact on energy prices, trade, etc.
- **Financing Squeeze:** Many developing countries face **high borrowing costs** and **heightened rollover risk;** Only **Marginal increase in Tax revenue** in developing countries in past two decades, etc.
- **More Fragmented World:** Affecting international financial and development cooperation architecture in **cross-border payment system,** e.g., **emergence of alternatives** to Society for Worldwide Interbank Financial Telecommunication (SWIFT), etc.

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Priority Actions and Recommendations

- **Scaling Financing:** Close **estimated $4 trillion SDG financing** and investment gap through strengthening domestic private sectors, supporting diversification, etc.
- **Aligning finance with Sustainable Development Outcomes:** Ensuring quality, impact, and alignment with country-owned strategies on both private and public finances.
- **Strengthening Resilience:** Building stronger domestic institutions and integrating climate and disaster risk considerations into financial instruments.
- **Multi-layered approach to Cooperation:** Stronger linkages between national development banks, regional and multilateral institutions, etc.
- **Role of Multilateralism: Predictable, rules-based international system** to lower risks, foster investment, etc.

ABOUT SEVILLA COMMITMENT

Adoption: Fourth International Conference on Financing for Development (FfD4), held in Sevilla, Spain in 2025 to close $4 trillion annual SDG financing gap in developing countries.

Key Features: Commitment contains 280 actions across global financing framework.

Sevilla Platform for Action (SPA): Launched at FFD4 as voluntary, multi-stakeholder mechanism for early implementation of Sevilla Commitment.

Digital Frauds



RBI proposes new safeguards to curb rising digital payment frauds It has released a Discussion Paper on "Exploring Safeguards in Digital Payments to Curb Frauds".

Status of Digital Frauds

- **Rising digital frauds:** According to National Cyber Crime Reporting Portal Data, cyber fraud cases have risen from 2.6 lakh in 2021 to around **28 lakhs in 2025** - amounting to **22,931 crore rupees.**
- **Fraud Techniques:** Use of bogus call centres, deepfake-driven impersonation scams, social engineering and mule account networks.
  - Victims are manipulated using social engineering and they themselves initiate and authenticate transactions, leading to **'Authorised' Push-Payment (APP) frauds**.
- **Victim Profile:** Disproportionate impact on **vulnerable groups, especially senior citizens.**

RBI's Suggested Measures

- **Time lag:** 1-hour delay for transfers above ₹10,000 and payer can cancel payment within this window.
  - A whitelisting mechanism will ensure that such time lag is bypassed for authentic transactions.
- **Additional authentication for vulnerable users:** High-value payments by senior citizens/divyang need approval from a trusted person.
- **User control features:** Option to switch on/off payment modes and set transaction limits.
- **Curb mule accounts:** Large credits allowed only after additional scrutiny of accounts.

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IMPORTANT NOTE!

RBI INITIATIVES TO CURB DIGITAL FRAUDS

- **Payment Authentication: Two Factor Authentication mandated in digital payment transactions.**
- **Removing Mule Accounts: Mulehunter.AI**, developed by Reserve Bank Innovation Hub (RBIH), to enable quick and effective detection of mule bank accounts.
- **Card Controls: Device Tokenisation**, Card-on-file Tokenisation, and Customer induced control in cards.
- **Digital Payment Intelligence Platform (DPIP):** Development of DPIP prototype by harnessing advanced technologies (AI/ML) to mitigate payment fraud risks.

Identification of Upper Layer NBFCs



RBI proposes new methodology for identification of Upper Layer NBFCs As per the current Scale Based Regulatory (SBR) framework, NBFCs are classified into four layers – Base, Middle, Upper and Top Layers (refer infographic).

Proposed amendments by the RBI

- **New Criterion for Upper Layer NBFCs:** A simple **asset size of ₹1 lakh crore or more**, replacing the current complex scoring model that identifies only top-ten NBFCs based on asset size.
  - This threshold will be **reviewed every five years.**
- **Inclusion of Government NBFCs:** State-owned entities (like **NABARD, Exim Bank, and SIDBI**) will no longer be exempt and will face the **same strict regulations as private NBFC-ULs**.
- **Unlimited State Guarantees:** Upper-layer NBFCs to be permitted to **use state government guarantees as a credit risk transfer mechanism** without any quantitative caps.

What is a Non-Banking Financial Company (NBFC)?

- **Definition:** NBFC is a company registered under the Companies Act, 1956 or Companies Act, 2013, and engaged in the business of loans and advances, acquisition of shares, stocks, bonds, debentures, and securities.
- **Regulation:** primarily by the **Reserve Bank of India (RBI)**, under **Chapter III B of the Reserve Bank of India Act, 1934**.
- However, some **specific types of non-banking financial entities** fall under the **jurisdiction of other regulatory bodies** to avoid overlap.
  - For e.g. **Insurance Companies -** IRDA; **Stock Broking & Merchant Banking** – SEBI, etc.

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IMPORTANT NOTE!

DIFFERENCE BETWEEN BANKS AND NBFCS

- NBFCs cannot accept demand deposits;
- NBFCs do not form part of the payment and settlement system and cannot issue cheques drawn on itself;
- Deposit insurance facility of Deposit Insurance and Credit Guarantee Corporation (DICGC) is not available to depositors of deposit taking NBFCs.
- Standalone Primary Dealers, registered as NBFCs with the RBI, can access the Liquidity Adjustment Facility window of the RBI.
- Exception: Only those NBFCs holding a specific deposit-accepting Certificate of Registration and a minimum investment-grade credit rating of 'BBB-' are permitted to accept deposits.

Climate Change and Poverty



NISER study finds that climate shocks are increasingly intensifying poverty in India Based on analysis of 593 districts across 21 states, the study shows poverty in India is increasingly climate-linked, requiring urgent policy response.

- The National Institute of Science Education and Research (NISER) is an autonomous research institute under the **Department of Atomic Energy.**

Relationship between Climate Change and Poverty

- **Climate Induced Economic Stress:**
  - **Recurring floods:** They damage crops, infrastructure, and homes, pushing vulnerable populations into cycles of loss and recovery.
  - **Drought Trap:** Agriculture dependent drought prone regions face higher poverty due to **crop failures and debt cycles.**
- **Economic diversification as a buffer:** Service-oriented economies are less directly exposed to weather disruptions and offer more stable income opportunities.
  - 1 unit increase of service sector in its GSDP lowers poverty probability by ~1.9%.
- **Tribal Vulnerability:** ST populations are more vulnerable to climate shocks, due to dependence on natural resources, and show a greater likelihood of poverty.

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Way Forward

- **Region-Specific Policies:** Move beyond one size fits all to district-level targeted strategies based on local vulnerabilities.
- **Strengthen Implementation**: Improve execution of National Action Plan on Climate Change (NAPCC), State Action Plans (SAPCC) and SDG India Index.
- **Climate Resilient Agriculture:** Promote drought-resistant crops, efficient irrigation systems etc.
- **Others:** Expanding non-farm employments, Integrated policymaking, investments in disaster resilient infrastructures etc.

Standing Deposit Facility (SDF)

What is SDF Rate? (Standing Deposit Facility Rate)



Indian lenders have parked a record amount of funds in the RBI's Standing Deposit Facility (SDF).

About SDF

- **Introduced:** in **2022**, as a **financial stability tool** in addition to its role in **liquidity management**.
- It is the **rate** at which the Reserve Bank accepts **Collateral-Free deposits**, on an overnight basis, from all Liquidity Adjustment Facility (LAF) participants.
- It is placed at **25 basis points below** the policy **repo rate,** making it the **floor rate** of the **interest rate corridor** (SDF < Repo Rate < Marginal Standing Facility).
- SDF rate **replaced the fixed Reverse Repo Rate** as the floor of the LAF corridor.

Startup India Fund of Funds 2.0



Startup India Fund of Funds 2.0 (FoF 2.0) Scheme Notified FoF2.0 builds upon FoF for Startups (FFS 1.0) launched in 2016 under Startup India Action Plan enabling access to venture capital for startups across stages and sectors.

- **Venture Capital** (VC) is an early-stage equity funding that comes with active guidance for startups with high growth expectations.

Key Highlights of the Scheme

- **Total corpus:** ₹10,000 crore
- **Ministry**: Ministry of Commerce and Industry.
- **Eligibility: Alternative Investment Funds (AIFs)** spread across 16th and 17th Finance Commission cycles.
  - AIF refers to **privately pooled investment vehicle** which collects funds from sophisticated investors (Indian/foreign) for investing as per defined investment policy.
- **Structure:** Scheme will contribute to corpus of **SEBI-registered AIFs** for investing in equity and equity-linked instruments of **'startups'**.
- **Selection process for AIFs:** Involves screening by **Venture Capital Investment Committee (VCIC)** comprising of veterans from startup ecosystem.
- **Monitoring and Governance: 'Empowered Committee (EC)'** chaired by Secretary, DPIIT (Department for Promotion of Industry and Internal Trade).
- **Implementation: Small Industries Development Bank of India (SIDBI)** [also the implementing agency of FFS 1.0]
  - In addition, another domestic IA(s) will be selected for implementation.
- **Segmented approach:**
  - **AIFs supporting deep tech:** Startups engaged in **developing novel solutions** addressing complex problems involving longer R&D cycles, higher costs.
  - **Smaller AIFs (Micro VCs):** Supporting early growth stage startups.
  - **AIFs supporting tech-driven innovative manufacturing startups:** Manufacturing-oriented champion sectors under "Make in India".
  - AIFs supporting **sector/stage agnostic startups.**

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National Floor Level Minimum Wage



Recent unrest amongst factory workers has expedited efforts to finalize a NFLMW

About NFLMW

- **Origin:** Concept dates back to **1991** concerning **National Commission on Rural Labour (NCRL)** chaired by **Shri Jhinabhai Darjee** recommendations.
  - **Mooted on a voluntary basis** as a step to move towards uniform wage structure and reduce disparity in minimum wages across country.
- **Currently,** The **Code on wages (2019)** empowers Centre to fix a **floor wage.**
- Hence, Government (centre and state) should fix **minimum wage above this level** based on skills, areas, occupation, or other local factors.
- It stood at **Rs. 20 (1991)** and **Rs. 176 (2017).**

Rising Middle Class Vulnerability



Despite strong GDP growth, a middle-class crisis threatens demand, stability, and India's demographic dividend as it drives nearly 60% of domestic consumption.

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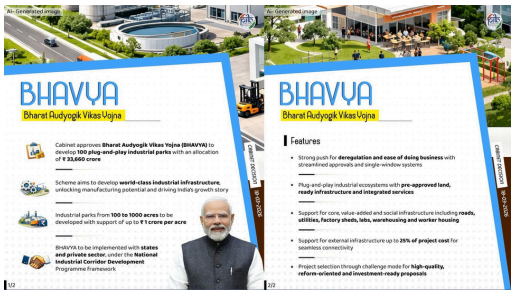
Middle-Class Economic Crisis

- **Income Stagnation**
  - **Stagnation:** Stagnation in financial growth in key sectors like Information Technology eroding real purchasing power amid inflation.
  - **Technological Displacement:** The rapid adoption of artificial intelligence and automation limits career progression.
  - **Traditional Sector Bottlenecks:** Traditional middle-class havens like banking and government offer secure but limited income growth.
- **Cost Inflation**
  - **Soaring Housing Costs** especially in urban areas and metropolitan cities Mumbai, Delhi, Bangalore etc.
  - **Escalating Education Expenses** driven by hyper-competitive academic environments.
  - **Unaffordable Healthcare:** Outside public healthcare eligibility but find private healthcare unaffordable.
- **Infrastructure Deficit**
  - **Hidden Costs of Living:** Frequent power outages, erratic water supply and poor digital connectivity necessitate costly private backups.
  - **Productivity Losses:** Poor road infrastructure, public transit limitations, and traffic congestion result in lost productive hours.

Way Forward

- **The ADAPT framework**
  - **Assessment:** Analyzing cash flow patterns, debt service ratios, and insurance gaps.
  - **Diversification:** of income source.
  - **Automation:** Utilizing automated financial processes to reduce management burden.
  - **Planning for Skill Evolution:** Investing in continuous learning.
  - **Tracking and Adjustment:** of budget performance, expense trends and investment returns.
- **Policy Interventions:** Targeted Tax Relief, Healthcare and Education Subsidies, and Structural Economic Reforms like skills-based hiring, entrepreneurship support etc.

BHAVYA Scheme



Government notifies Bharat Audyogik Vikas Yojna (BHAVYA) Scheme

Features of the Scheme

- **Nodal Ministry**: Ministry of Commerce & Industry via DPIIT.
- **Objective:** to develop **100 investment-ready plug-and-play industrial parks** in partnership with States, Central Public Sector Undertakings and private sector.
  - **Plug-and-play industrial parks** are ready-to-use manufacturing sites offering **pre-built infrastructure such as roads, power, water, and approvals**, enabling immediate operational setup.
- **Duration:** for **six years** (2026-27 to 2031-32) with an outlay of **Rs 33,660 crore.**
- **Mode of Implementation:**
  - **Sponsoring agency**: State/UT government or the Central PSU.
  - **Special Purpose Vehicle (SPV)**: formed between **National Industrial Corridor Developmentand Implementation Trust** (NICDIT) under DPIIT and the **state nodal agency**.
    - The **SPV shall be the owner of assets** created under the scheme, and shall be responsible for **planning, construction, operation and maintenance** of the industrial park to be developed.
- **Financial Support:** Funding up to **₹ 1 crore per acre** in **equity mode** shall be provided for each project **(₹50 Lakh for private developer led parks)** for-
  - **Core infrastructure** (roads, utilities, drainage, ICT),
  - **Value-added infrastructure** (factory sheds, labs, warehousing),
  - **Social infrastructure** (worker housing, amenities).
- **Additional support:** Up to **25% of project cost for external infrastructure** (connectivity and integration with existing networks) for last mile connectivity.

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IMPORTANT NOTE!

SIGNIFICANCE OF BHAVYA SCHEME

- **Ease of Doing Business:** With pre-approved land, ready infrastructure and single window system.
- **Employment Generation:** Creating lakhs of direct and indirect employment across manufacturing, logistics and services.
- **Regional Industrial Growth:** Through cluster-based development and enabling co-location of industries, suppliers and service providers.
- **Sustainable and Future-Ready Industrial Park Design**- Alignment with PM GatiShakti for multimodal connectivity, Focus on green energy, etc.

RELIEF Scheme



Government expands coverage of Resilience & Logistics Intervention for Export Facilitation (RELIEF) Scheme amid West Asia crisis.

About RELIEF Scheme

- It is **a time-bound intervention** under the **Export Promotion Mission (EPM).**
- **Objective:** Help Indian exporters deal with high **freight costs, rising insurance premiums and war related export risks.**
- **Nodal and Implementing Agency:** ECGC Ltd. (Formerly Export Credit Guarantee Corporation of India Ltd.), wholly owned by Government of India (Ministry of Commerce & Industry).
- **Key Features**
- **MSME-Focused Assistance**: Ensuring **reimbursement support** for High logistics costs and surcharges.
- **Export Cycle Coverage**: For **End-to-end support for shipment planning**, Insurance etc.

Market Intervention Scheme



Government approves potatoes procurement under MIS to prevent distress sales.

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About Market Intervention Scheme (MIS)

- **Overview**: Component of **PM-AASHA** for perishable crops (like Tomato, Onion, and Potato) not covered under MSP/PSS.
  - Originally MIS was **launched in 1983**, and later **subsumed under PM-AASHA in 2024.**
- **Implementation:** By **Department of Agriculture and Farmers Welfare** on request of States.
- **Objective:** To **prevent distress sales** during bumper production and price fall.
- **Conditions:** Activated **when production rises ≥10%** or **prices fall ≥10%** from previous normal levels.
- **Loss Sharing:** Centre and State (50:50); 75:25 for NE states.

E-mandate framework, 2026



Reserve Bank of India issued the 'Digital Payments – E-mandate Framework, 2026,' under the Payment and Settlement Systems (PSS) Act, 2007.

- E-Mandate is a **digital standing instruction that authorizes automatic debits** from a bank account for recurring payments, facilitating **seamless and automated transactions.**

About Framework

- A one-time registration process with validation of **additional factor of authentication (AFA)** is required for e-mandate.
- Every e-mandate shall specify the **validity period of the e-mandate** which can be modified or withdrawn by customer at any time.
- All recurring transactions may be authorised without **AFA up to ₹15,000/-** per transaction.

Palm Oil





India's Palm Oil import demand may rise amid global supply crunch.

- India is the **largest importer of palm oil** in the world.

About Palm Oil

- Palm oil is derived from the fruit of the **African oil palm tree (Elaeis guineensis).**
- **Types:**
  - **Crude palm oil** (extract from fruit pulp): It is primarily used for **cooking.**
  - **Palm kernel oil** (extract from seed): It is used for **non-edible purposes** (Cosmetics, pharmaceuticals etc.)
- **Cultivation:**
  - Oil palm trees are **native to Africa.**
  - Currently, **Indonesia and Malaysia** make up over **85% of global supply.**
  - In India, **Andhra Pradesh, Telangana and Kerala** are the major Oil palm growing States and account for **98% of the total production.**
    - Indian oil palm initiatives include **National Mission for Edible Oils - Oil Palm** etc.

Non-Deliverable Forwards

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The RBI partially reversed curbs on rupee derivative deals, allowing authorized dealers to offer NDF again.

About Non-Deliverable Forwards (NDF)

- It is a cash-settled, over-the-counter (OTC) **foreign exchange derivative**, with **no physical exchange** of currencies **at maturity.**
- **Key features:**
  - **Traded offshore,** primarily in hubs like Singapore, Dubai, London, and New York.
  - **Used** to **hedge** or **speculate** on currencies from emerging markets that have **capital controls or restricted liquidity**.
    - **Examples:** Indian rupee (INR), Chinese yuan (CNY), Brazilian real (BRL) etc.
  - **Settled** in **cash** at the contract's **maturity**, based on the difference between the **contract rate and the spot rate.**

India's Foodgrain Production



India has food grain stock three times the existing buffer norms: Government India currently has around 222 Lakh Metric Tonnes (LMT) of wheat and approximately 380 LMT of rice, taking the total food stock to about 602 LMT.

India's Foodgrain Production

- Agricultural exports rose **from USD 34.5 billion (FY20) to USD 51.1 billion (FY25),** with processed food share increasing to **20.4%, signalling value-added growth.**
- Horticulture production reached **362.08 million tonnes, surpassing foodgrain output and** indicating a **structural shift towards high-value crops.**
- India ranks among the **top producers** globally, being **largest producer of pulses (25.68 MT) and millets, 2nd largest producer of rice, wheat and fruits and vegetables.**
- Leadership in **High-Value Crops** with **1st in spices and coconut** production and 2nd in **sugarcane, cotton, and tea production.**

About Buffer Stock

- It is the **quantity of foodgrains procured, stored, and maintained by the government** to meet emergency **requirements, stabilize prices, and ensure supply** through welfare schemes.
- These norms are fixed by the **Cabinet Committee on Economic Affairs (CCEA)** on a quarterly basis.
- **Purpose of Buffer Stock**
  - **Food Security**: Ensures availability of **food during droughts, floods, or crop failure.**
  - **Price Stabilisation:** Prevents **sharp rise or fall** in food prices.
  - **Public Distribution System (PDS)**: Supplies **subsidised foodgrains** to the poor.
  - **Emergency Reserve**: Acts as a **cushion during crises.**

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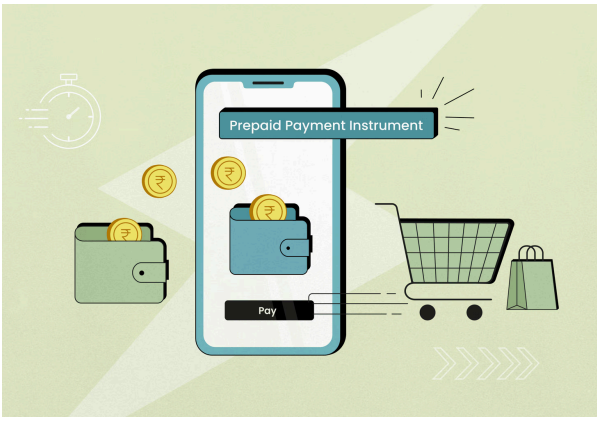
Focus Area	Government Measures / Schemes	Intended Impact
Target-driven agricultural missions	Initiatives such as the National Food Security & Nutrition Mission, self-reliance programs for pulses, and the National Mission on Edible Oils	Increase domestic farm production and decrease dependence on imports
Agricultural inputs and efficiency	Programs related to quality seeds, Soil Health Card initiatives, and irrigation support under PMKSY	Improve farm productivity and encourage efficient use of resources
Financial access and mechanisation	Kisan Credit Card facilities and Custom Hiring Centres for equipment access	Support farmers with easier credit and affordable machinery services
Eco-friendly farming practices	Encouragement of natural farming and sustainable resource management techniques	Strengthen environmental sustainability and long-term farm resilience
Farmer assistance and crop risk protection	Measures including MSP support, PM-KISAN income assistance, and crop insurance schemes	Improve farmers' income security and minimize cultivation-related risks

Prepaid Payment Instruments (PPIs)



Reserve Bank of India (RBI) has issued a draft paper proposing the introduction of prepaid wallets for special use cases such as foreign nationals or non-resident Indians (NRIs) in India.

About Prepaid Payment Instruments (PPIs)

- **PPIs** are instruments that facilitate purchase of goods and services, conduct of financial services, enable remittance facilities, etc., against the value stored therein.
  - E.g. Digital Wallet
- **Issuers**: It can be issued by banks and non-banks.

The Fund for responding to Loss and Damage

Several international organisations have warned that the Loss and Damage Fund may run dry without fresh financial contributions.

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About FRLD

- **Establishment**: Created under **United Nations Framework Convention on Climate Change (UNFCCC)** at **COP27** (Sharm el-Sheikh 2022) and operationalized at COP28 (Dubai 2023).
- **Mandate**: Assist vulnerable developing countries in addressing economic and non-economic loss and damage from climate change.
  - It supports Finance recovery, rebuilding and adaptation from climate-induced impacts like extreme and slow-onset events.
- **Functioning**: Promotes country-led, locally driven solutions
- **Financing**: Mobilizes funds via government contributions, private sector and innovative mechanisms.
- Its Secretariat is hosted by the **World Bank**, which also serves as the fund trustee.

Online Gaming Rules, 2026



Government notifies 'Promotion and Regulation of Online Gaming Rules, 2026' The Rules, prepared by the Ministry of Electronics and Information Technology (MeitY), provide for the operational architecture of the Promotion and Regulation of Online Gaming (PROG) Act, 2025.

Key Highlights of Rules

- **Online Gaming Authority of India:** Constituted as an **attached office of MeitY**.
  - **Head office:** NCT of Delhi
  - **Composition**: **six members**, chaired by the Additional Secretary of MeitY.
  - **Functions:** inquiring into complaints, issuing compliance orders, and **publishing a list of determined online money games.**
- **Determination of an Online Game:** Rules prescribe a **determination test** to classify whether an online game constitutes an online money game. **E.g.** whether game involves **payment of fees, expectation of winning monetary enrichment,** etc.
- **Registration of Online Games:** Not universally required; **mandatory only for notified online games** based on risk, scale, transactions, origin **andfor all e-sports offerings**.
- **User Safety Features:** technical, procedural, operational, behavioural or system-related safeguards introduced **to protect vulnerable users** (especially children).
- **Two-Tier Grievance Redressal Mechanism:** Aggrieved users can appeal to the **internal grievance redressal systems** (est. by service providers).
  - And further to the **Appellate Authority (Secretary, MeitY),** with each level aiming to resolve the matter within 30 days.
- **Penalties and Enforcement:** Proceedings are conducted digitally (unless physical presence is needed) and must be **completed within 90 days** of receiving a complaint.

CIVILS WITH AKASH

IMPORTANT NOTE!

ABOUT PROG ACT, 2025

- Establishes a strong **legal framework to curb harmful online money gaming** and protect users from the **financial, psychological, and social distress** caused by predatory gaming platforms.
- Promotes a **regulated, growth-oriented ecosystem** for **e-sports and online social games.**
- Aligns with India's vision to become a **global gaming and innovation hub** while safeguarding society from financial and psychological risks.

Extreme heat and agriculture Report



The Report warns that extreme heat is pushing global and Indian agrifood systems to the brink.

Key highlights of Report regarding Indian agriculture

- **Food Security Risk:** Heatwaves are a major threat to **Indian rice and wheat production**, with the **Ganges and Indus River basins** facing the most intense risks.
  - Also, the yield for **fruits, vegetables, dairy and poultry** are projected to decline rapidly due to increased **insect pests, diseases outbreaks, rainfall deficit**, etc. with the rising heatwaves.
- **Threats to Agricultural Workers:** by the end of 21st century under high-emission scenarios, **wet bulb temperature extremes** could lead to **40% fall in work capacity**.
  - **Wet-bulb temperature** is the lowest temperature air can reach by evaporating water into it. It is a combined measure of **heat and humidity** that represents how effectively sweating can cool a person down.

Recommendations and Adaptation Strategies

- **On-Farm Adaptation and Innovations**: such as **heat-tolerant crops and livestock breeds**, adjusting planting schedules, and altering management practices like improved irrigation and shading.
- **Early Warning Systems:** such as **seasonal outlooks**, are vital to help farmers anticipate risks and implement protective measures.
- **Access to financial services**: such as **cash transfers, risk insurance and shock-responsive social protection** to vulnerable farmers are essential to recover from extreme heat damages and avoid poverty spirals.
- **Climate Change Mitigation:** protecting global food security requires a **decisive transition away from a high-emissions future**.

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Food and Agriculture Organization (FAO)

- Established in 1945, FAO is a specialized agency of the UN that leads international efforts to defeat hunger.
- HQ: Rome, Italy.
- Members: 194 members (193 countries and the European Union). India is a founding Member.
- Key Reports: The State of World's Forests, The State of Food and Agriculture, etc.

World Meteorological Organization (WMO)

- Established in 1950, WMO is the specialized agency of UN responsible for international cooperation in meteorology (weather and climate), operational hydrology, and related geophysical sciences.
  - WMO originated from the International Meteorological Organization (IMO), founded in 1873.
- Secretariat: Geneva.
- Members: 193 (187 Member States and 6 Territories), including India.
- Major Initiative: Co-founded the Intergovernmental Panel on Climate Change (IPCC) in 1988 with the UN Environment Programme (UNEP).

Ethanol production through Sugar Sector Reforms



The Ministry of Consumer Affairs, Food & Public Distribution has released the draft Sugarcane (Control) Order 2026.

- It seeks to replace the **1966 order** and modernise regulations in the **sugar sector.**

Key Features of the Draft Order

- **Provisions for Ethanol**
  - The draft expands the definition of a sugar factory to cover **ethanol production** from sugarcane juice, syrup, sugar, and molasses.
  - Factories established exclusively to produce are exempt from the requirement to submit the ₹2 crore performance bank guarantee
  - **Formula for a Conversion Rate:** It will be calculated by treating every **600 liters of ethanol** as equivalent to **one tonne of sugar production**.
- **Timely payment of Fair and Remunerative Price (FRP):**
  - Sugar producers must pay farmers and cooperatives **within 14 days** of **sugarcane delivery.**
  - Failure to do so will attract an **interest penalty of 15% per annum** for the period of delay.
- **Khandsari Sugar regulation:** It is brought under FRP regime and made subject to mandatory licensing.

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ABOUT FAIR AND REMUNERATIVE PRICE

- Price declared by the central government, at which mills are bound to procure sugarcane from farmers.
- It is fixed based on the cost of production, returns from alternative crops, sugar recovery rate, by-product value, consumer affordability, and reasonable farmer margins.
- Decided based on the recommendations of the Commission for Agricultural Costs and Prices (CACP) and approved by the Cabinet Committee on Economic Affairs.
- Some States (Uttar Pradesh, Punjab, Haryana & Uttarakhand) determine their own State Advised Price (SAP), which is generally higher than FRP.

Status of Sugar Sector in India

- India is the world's second-largest sugar producer after Brazil.
- Major Sugarcane Producing States: Uttar Pradesh (largest), followed by Maharashtra and Karnataka.

AI in Finance



While AI could reshape how financial institutions serve customers, monitor risks, and strengthen oversight, its adoption without adequate safeguards can amplify existing weaknesses.

Significance of AI in Finance

- **Convenient Customer Interaction:** Simpler, more intuitive and responsive through multi-lingual chatbots.
- **Improve Credit Delivery:** AI can **supplement traditional finance method**s (collateral, financial statements, etc.) by drawing insights from a wider set of patterns in transaction behaviour, repayment flows and business activity.
- **Fraud detection and Risk Management:** Identify unusual patterns, flag suspicious activity and support faster intervention.
- **Compliance and Supervision:** Analysing large volumes of information, identifying patterns and drawing attention to anomalies.

Associated Concerns

- **Bias and unfair Outcomes:** While AI systems learn from data, data could carry imprints of past behaviour, existing inequalities and structural exclusions.
- **Black Box nature:** Opaque nature of systems can produce outcomes not always acceptable to customer, manager or regulator.
- **Data privacy**: Financial data are amongst most sensitive forms of personal information.
- **Model and Concentration risk**: If multiple institutions rely on similar AI models, a flawed model can impact billions of customers.
- **Cyber risk:** Fraudsters and bad actors can use AI to craft more convincing phishing attempts, create deepfakes, etc.

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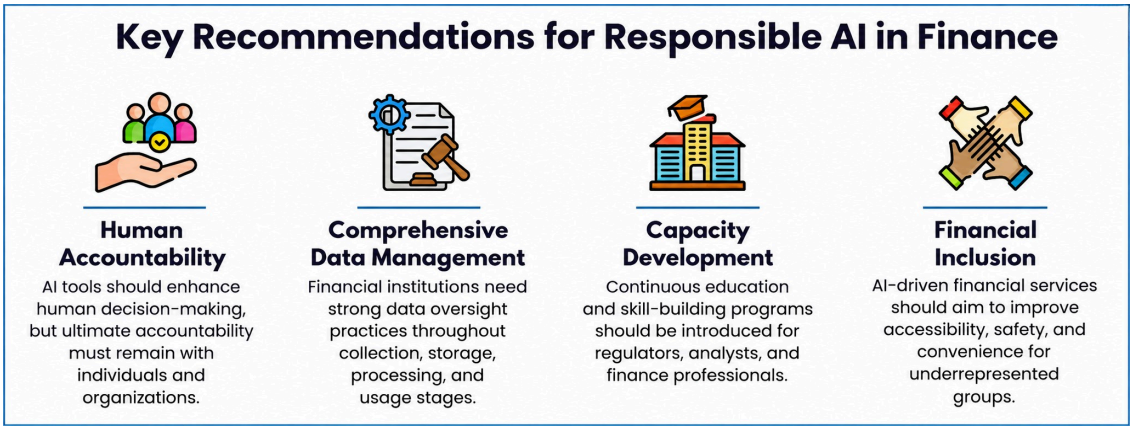


Key Applications of AI in Indian Banking

- **Chatbots:** SBI Intelligent Assistant; Baroda Brainy (Bank of Baroda); etc.
- **Fraud Detection: SBI's YONO** platform incorporates AI for fraud prevention, etc.
- **Fast Customer Delivery: HDFC Bank's Eva** (AI chatbot) addressed multiple customer queries in few months of adoption, etc.

Mission for Aatmanirbharta in Pulses



Bihar's first-ever structured pulse procurement initiative under Mission for Aatmanirbharta in Pulses launched.

About Mission for Aatmanirbharta in Pulses

- **Objective:** Achieve self-sufficiency in pulses by enhancing domestic production, reducing import dependence, and sustainably improving farmers' incomes.
- **Target:** Scale up domestic pulses production to **350 lakh tonnes** and expand **cultivation area to 310 lakh hectares** by **2030–31.**
- **Genesis:** Announced in **Union Budget 2025–26,** approved **on 1st Oct 2025**.
- **Time Period:** 6 Years (2025-26 to 2030-31).
- **Ministry:** Ministry of Agriculture & Farmers' Welfare.
- **Focus Crops: Tur/Arhar** (pigeon pea); **Urad** (black gram) & **Masoor** (red lentil).

CIVILS WITH AKASH

Index of Service Production



Ministry of Statistics & Programme Implementation (MoSPI) released an approach paper to compilation of ISP.

- Unlike Index of Industrial Production (IIP) which tracks manufacturing, there has been no index to capture **short-term movements in services sector**, creating a data gap in overall economic performance assessment.

Key Features of Proposed ISP

- **Proposed Base Year: 2024-25.**
- **Data Sources: Goods and Services Tax (GST)** data, **administrative data from sectoral ministries** and the **Annual Survey of Incorporated Services Sector Enterprises.**
- **Coverage:** Index is exclusively designed to track **formal sector**, including sub- sectors like wholesale and retail trade, transport, banking, insurance, real estate, communication, etc.

Ethanol Blending in India



It has issued a draft to amend Central Motor Vehicles Rules, 1989 to include E85, E100 ethanol fuels and B100 biodiesel for vehicle certification and use.

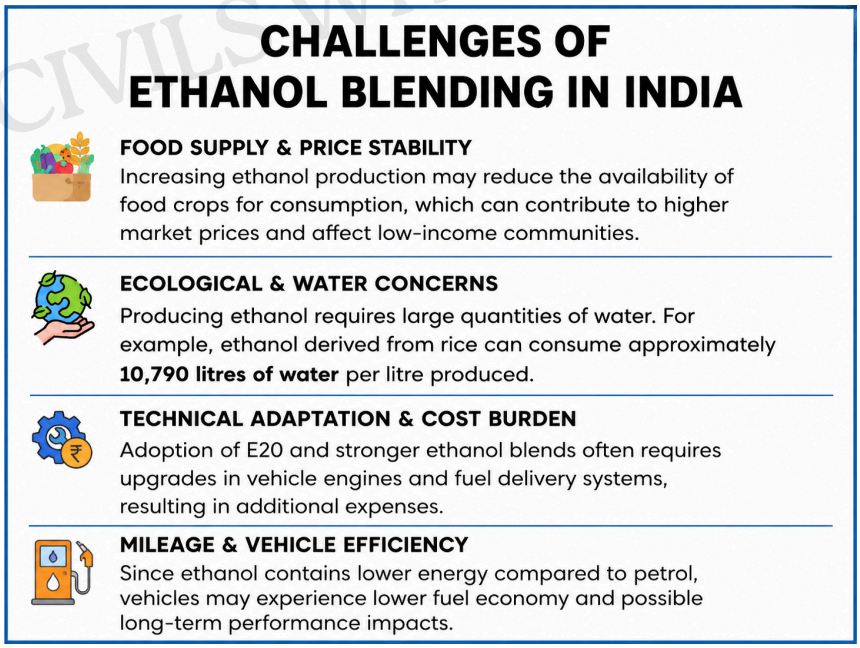
About Ethanol Blending

- This involves blending different percentages of **ethanol with petrol** to produce a fuel that burns **cleaner and is more sustainable.**
- **Types:** E10 (10% Ethanol by Volume), E20 (20% Ethanol), E85 fuel (85% Ethanol) etc.
  - The use of E-20 gives better acceleration, better ride quality and **lowered carbon emissions** by approximately 30% as compared to E10 fuel.

Significance of Ethanol Blending

- **Reduced Carbon Emissions: Sugarcane and maize-based ethanol** reduce GHG emissions by **65% and 50%**, respectively, compared to petrol (NITI Aayog Study).
- **Reduce Imports: Ethanol blending programme** has saved about **₹1.08 trillion in foreign exchange** since 2014 (till 2024), reducing dependence on fuel imports.
- **Energy Security:** India's heavy dependence on imported crude makes it vulnerable, and ethanol blending reduces this risk.
- **Others:** Economic growth, Crop diversification, Fuel Efficiency, Rural Development etc.

CIVILS WITH AKASH



Initiatives

- **Ethanol Blended Petrol (EBP) Programme:** Launched in **2003** to promote blending of ethanol in petrol.
- **The National Policy on Biofuels (2022 Amendment):** It advanced the deadline to reach the blending target of 20% bioethanol in petrol, from 2030 to **2025-26.**
- **Pradhan Mantri JI-VAN (Jaiv Indhan- Vatavaran Anukool fasal awashesh Nivaran) Yojana**: Provides financial support to integrated bio-ethanol projects for setting up Second Generation (2G) ethanol projects.

International Relations



Global Chokepoints

Significance and Vulnerability of Global Chokepoints amidst the West Asia War According to a report, over two-thirds of seaborne energy trade depends on a few key chokepoints. E.g. Strait of Hormuz, Strait of Malacca etc.

- These chokepoints are **shaping conflict escalation, energy prices and global financial stability** outside the battlefield.

What are Chokepoints?

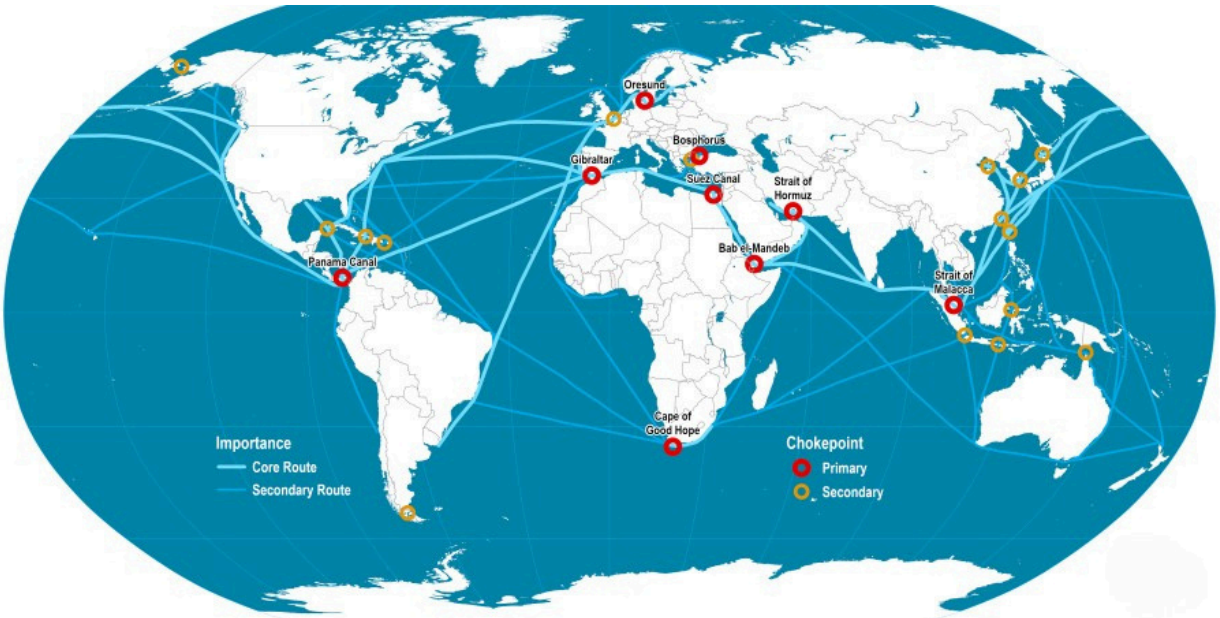
- Chokepoints are narrow, strategically important maritime passages crucial for global trade.

Significance of chokepoints

- **Trade and Energy Arteries**: Chokepoints are critical for international maritime trade of oil and gas and other commodities (e.g. fertilizers), acting as potential bottlenecks for **global supply chains**.
- **Economic Impact**: Disruptions at chokepoints **inflate freight costs, extend transit times, and raise insurance premiums,** directly fueling global **inflation** and disrupting **import-dependent economies.**
- **Geopolitical Flashpoints:** Strategic significance makes them vulnerable to **military blockades, regional conflicts, and piracy**, influencing diplomacy and naval strategies worldwide.
- **Climate Change Risks:** Environmental shifts are creating new bottlenecks. E.g. **Drought in Panama Canal** disrupting global supply chains.
- **Industrial and Digital risks: Chokepoints now include concentrated industrial and digital systems.**
  - **E.g. rare mineral** processing chains rely on concentrated refining capacity of **China**
  - E.g. More than **90%** of Europe-Asia **subsea cable** capacity runs through the **Red Sea cable corridor,** making it a chokepoint for digital services.

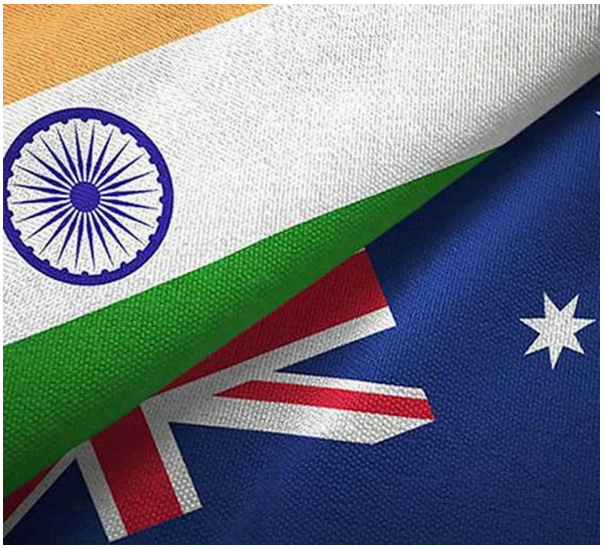
Potential Solutions for India

- **Diversifying** energy sources and supply chains, scaling up renewable energy, exploring **alternative transportation routes**. E.g. India-Middle East–Europe Economic Corridor (IMEC)
- Strengthening **military capabilities** to ensure freedom and openness of Sea Lines of Communication (SLOC) in line with India's **MAHASAGAR vision**.



CLICS WITH AKASH

Four years to India–Australia ECTA



Signed in 2022, Agreement played a pivotal role in enhancing trade flows, fostering industry linkages, and creating new opportunities for businesses, entrepreneurs, and employment.

Key Benefits accrued from the ECTA

- **India's Exports to Australia Doubled:** From USD 4 billion in FY 2020–21 to **USD 8.5 billion in FY 2024–25.**
  - In FY 2025–26 (up to February), India's **total trade with Australia stood at USD 19.3 billion.**
- **Preferential Market Access:** India granted preferential market access on 70.3% of its tariff lines while Australia granted the same **on 100% of its tariff lines**, corresponding to 100% of imports from India.
  - From 1 January 2026, all Indian exports are **eligible for zero-duty market access into Australia.**
- **Broad Based Sectoral Gains:** Notable growth witnessed in exports across textiles, pharmaceuticals, chemicals, and agricultural products.
- **Signing of Mutual Recognition Arrangement (MRA) in organic sector:** Strengthening Organic Trade.

Significance of Australia for India

- **Strategic Alignment towards Indo-Pacific:** Both share commitment to **transparent, open, secure, inclusive, and rules based** order in Indo-Pacific, as seen in:
  - Australia is a key partner in **Quadrilateral Security Dialogue (QUAD)**, alongside **United States and Japan.**
  - **Australia-India Indo-Pacific Oceans Initiative Partnership (AIIPOIP)**.
  - **2+2 dialogue framework between defence and foreign ministers** launched in 2019.
- **Defence Engagement:** Regular joint naval exercise (AUSINDEX); signed **Mutual Logistics Support Agreement in 2021** for closer defence cooperation.
- **Energy and Resources:** Development of New supply chains under **India-Australia Critical Minerals Investment Partnership**; cooperation in Renewable Energy including Green Hydrogen, etc.

CIVILS WITH AKASH

Arab League



Arab League held an emergency session in Cairo over Al-Aqsa closure and prisoner execution law.

About Arab League (League of Arab States)

- An Intergovernmental organisation encompassing **all Arab states in Middle East and North Africa.**
- **Mandate:** strengthening relations between its member states, coordination of their policies and co-operation **while safeguarding independence and sovereignty of each member.**
- **Established:** March 22, **1945**, following adoption of **Alexandria Protocol in 1944.**
- **Members:** 22.
- **Founding Members:** Egypt, Iraq, Lebanon, Saudi Arabia, Syria, Jordan, Yemen.
- **Headquarters: Cairo, Egypt.**

Qeshm Island



Iran's Qeshm Island desalination plant out of service since early March strike.

Qeshm Island (Iran)

- **Location:** Lies near Bandar Abbas, separated by Khuran (Clarence) Strait.
  - **Largest island in the Persian Gulf**.
- **Strategic Importance:** Close to Strait of Hormuz , critical global oil shipping route, provides Iran **strategic leverage over maritime traffic**.
- **Terrain:** Rocky coastline with sandy bays & mudflats

US- Iran ceasefire



Recently US and Iran announced a 2 week ceasefire.

- As part of the deal Iran agreed to temporarily reopen the strait of Hormuz
- Iran has finalised a 10 point plan for acceptance of war's conclusion
  - Eg. continued Iranian control on Strait of Hormuz, US withdrawal from middle east etc.

About strait of Hormuz

- **Connects** Persian Gulf with Gulf of Oman and Arabian Sea.
- **Energy transit hub:** 20% of the world's oil passes through it.
  - About 40% of India's crude oil imports, over 50% of its LNG imports, and 90% of its LPG imports transit through the strait

United Nations Development Partnership Fund

India-UN Development Partnership Fund

India and United Nations conducted review of UN Development Partnership Fund operations.

About UNDPF

- **Overview:** Launched in **2017** with **$150 million**, led by Government of India.
- **Objective:** Supports **Global South** in achi**eving Sustainable Development Goals** and shared prosperity.
- **Approach:** supports Southern-owned and led, demand-driven and country-led sustainable development projects.
- **Focus Areas:** Least Developed Countries (LDCs) and Small Island Developing States (SIDS).
- **Implementation:** managed by the **United Nations Office for South-South Cooperation (UNOSSC)** and executed by UN agencies with partner governments.

CIVILSWITHAKASH

9th Indian Ocean Conference



9th Indian Ocean Conference (IOC) Concludes in Mauritius At the conference, India highlighted the need to address evolving chokepoint anxieties and emphasized building trusted partnerships to enhance resilience and ensure stable, cooperative regional growth.

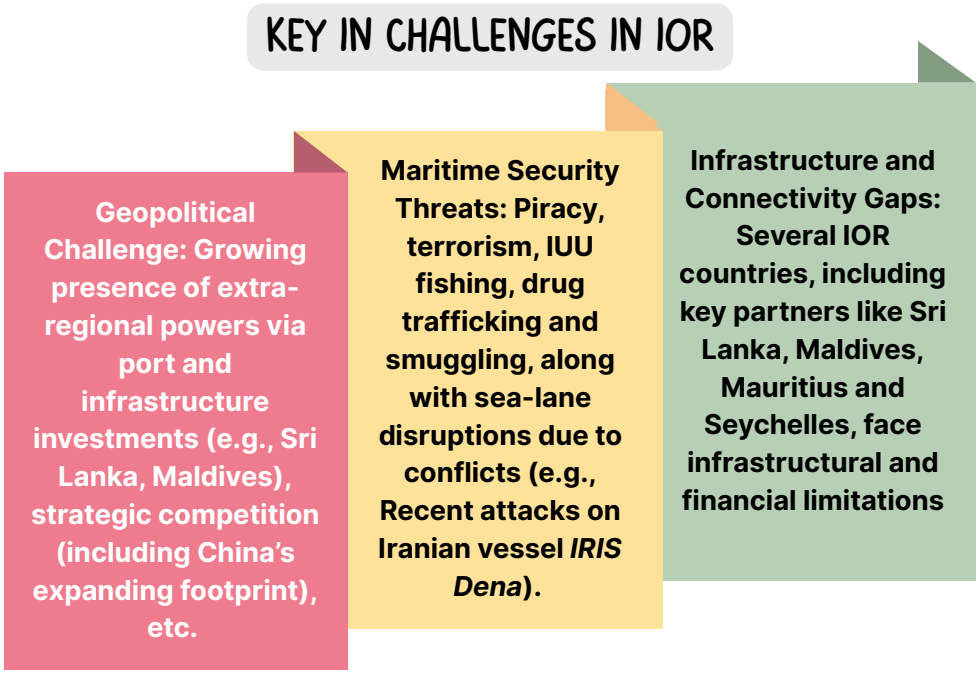
About IOC

- The IOC was started in 2016 by **India Foundation** in association with regional think tanks and institutions.
- It witnessed participation from **40+ countries**.
- It has emerged as a flagship consultative forum for countries in the **Indian Ocean Region (IOR)** over regional affairs and deliberates upon regional cooperation for **Security and Growth for All in the Region (SAGAR)**.

Indian Ocean Region (IOR) and its Significance

- It encompasses 70+ million sq km, connects 35+ littoral states, and hosts ~40% of the global population.
- **Significance**:
  - **Economic & Trade Importance**: Handles ~50% of global container traffic, **1/3** bulk cargo, and **2/3 oil shipments**.
  - **Strategic & Geopolitical Value**: Vital due to critical sea lanes and chokepoints (e.g., Strait of Hormuz); central to India's security architecture with its 11,098.81 Kms coastline and 1,300+ islands at key maritime crossroads.
  - **Blue Economy Potential**: Large EEZs (e.g., India's EEZ is 2.4 million sq km) offer opportunities in sustainable fisheries, renewable ocean energy, eco-tourism, and marine biodiversity conservation
  - **Ecological & Environmental**: Warmest of the world's oceans, thus ecologically dynamic and biologically productive space.
- **India's Role in IOR:** Net Security Provider (e.g., Ensures maritime security through anti-piracy and anti-narcotics operations), First Responder (HADR) (e.g., Provides rapid disaster relief), etc.

CIVILS WITH AKASH



Economic Impact of West Asia Conflict on India



Report titled 'Military Escalation In The Middle East: Human Development Impacts Across Asia And The Pacific' noted that the South Asia bears the largest absolute and relative economic losses.

Impact of conflict on India

- **Human Development:** The crisis could push nearly **2.5 million Indians into poverty**.
- **Energy & Finance:** Rising gas prices have led to **weakening of Indian Rupee** and forced a **shift to coal**, elevating **pollution and health risks**.
  - India gets over **40% of its oil imports and 90% of all LPG imports from West Asia**.
- **Trade & Health:** Disruptions (such as stranded air cargo) threaten **~ US$48 billion non-oil exports to West Asia**.
- **Agriculture & Food:** West Asia supplies **over 45% of India's fertilizer imports**, and 85% of domestic urea production relies on **imported liquefied natural gas**.
  - A prolonged disruption threatens the vital upcoming **Kharif (monsoon) season**.
- **Labour & Remittances:** About **9.37 million Indians in the Gulf** are exposed to labour disruptions, threatening **the 38 to 40% of inward remittances** they generate.

CIVILS WITH AKASH

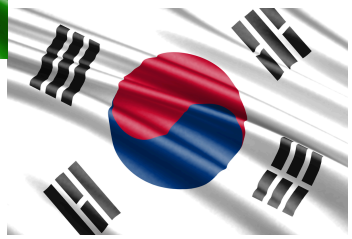
Policy priorities to build long-term resilience



1. **Strengthen Shock-Responsive Social Protection:** Transition from blanket subsidies to **targeted cash transfers** that reach informal workers, migrants, and women.
2. **Protect Livelihoods and MSME Resilience:** Provide **concessional credit, guarantee mechanisms, and business continuity support** for small firms.
3. **Reduce Structural Exposure:** Invest in **renewable energy, diversify input sources, and strengthen domestic food systems** to break the cycle of vulnerability to external global shocks.
4. **Deepen Regional Cooperation:** The report recommends establishing **joint approaches to energy and food security** (such as diversified supply and stock management).

India- South Korea Relations





South Korean President visited India marking a milestone Special Strategic Partnership It resulted in Joint Strategic Vision (2026-2030) along with other agreements.

Key outcomes of the visit

- **Strengthening Foundation:** Annual leader-level meeting institutionalised for continuous guidance to the partnership.
- **Indo-Pacific Alignment:** S. Korea joined **Indo-Pacific Oceans Initiative**, a non-treaty-based voluntary arrangement launched by India.
- **Economic cooperation:** Bilateral Trade to be doubled to $54 billion by 2030.
  - **Economic Security Dialogue**: Launched for supply chain resilience and technological cooperation.
- **Climate cooperation:** S. Korea joined International Solar Alliance, while India joined the Global Green Growth Institute (GGGI).
  - Headquartered at Seoul, S. Korea, **GGGI** is a Treaty-based international, inter-governmental organization established at RIO+20 Conference in 2012.
- **People-to-People Ties:** 2028-29 designated as Year of India-ROK Friendship.
  - **Mumbai Korea Centre** to be launched to foster K-pop–Bollywood cultural collaboration.
- **Maritime and shipbuilding:** Comprehensive Partnership in Shipbuilding, Shipping and Maritime Logistics with shared **Vision for Operation of Yard Assisted Growth with Efficiency and Scale (VOYAGES).**
- **Technological cooperation: India-Korea Digital Bridge** launched for cooperation in AI, semiconductors, and IT sectors.

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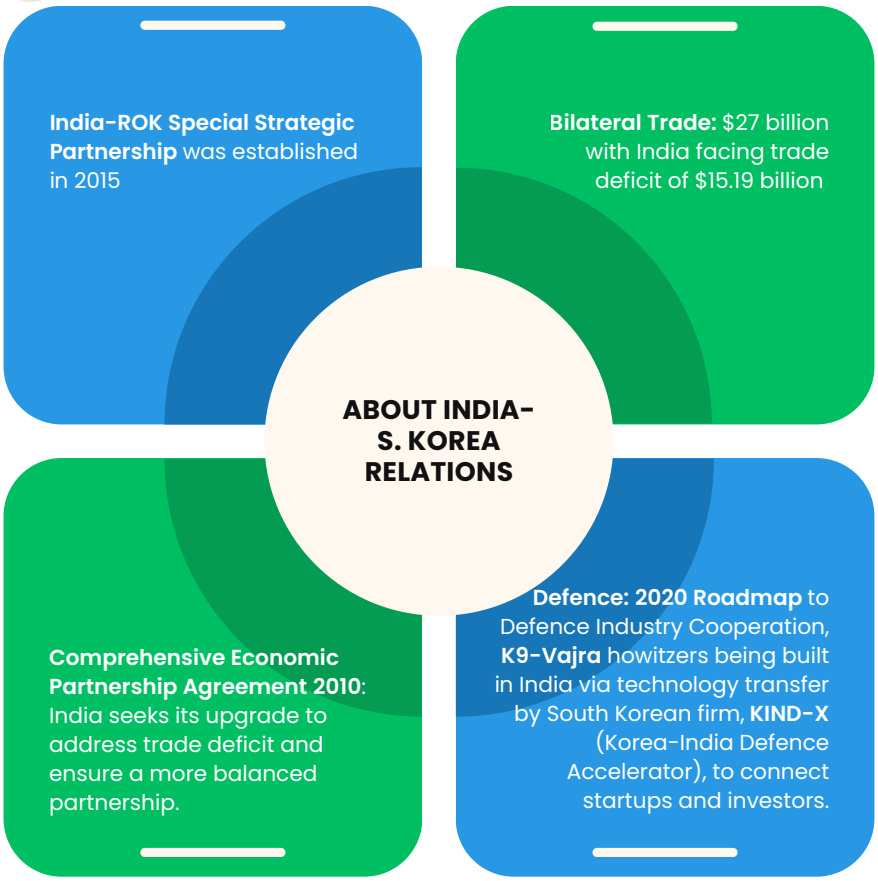


Regional Cooperation in Changing World



Relevance of ASEAN's Partnership Model for Global Cooperation Mounting volatility of global system has underscored the growing importance of regional cooperation and integration, with ASEAN leading as an example.

ASEAN's Key Achievements Re-enforcing Regional Cooperation

- **Commitment to Core Beliefs:** Despite significant differences in culture, political models and socio-economic indicators, ASEAN functioned as cohesive, viable economic and political bloc for almost 60 years.
- **Mutual Support and Trust: Accession of Timor Leste** to ASEAN in 2025 is an example how members (in this case Indonesia) can put aside years of enmity for mutual support and growth for entire bloc.
- **Wider Integration:** E.g., Digital Economy Framework Agreement (DEFA) represents an example of **"coalitions of smaller economies",** to accelerate digital transformation throughout the region.

Other Key Benefits of Regional Integration

- **Regional Financial Stability:** E.g., Chiang Mai Initiative Multilateralisation (CMIM), established due to Asian Financial Crisis, provided ASEAN+3 (China, Japan, and Republic of Korea (ROK)) economies with a crucial safety net.
- **Expands Markets and Input Sources:** Ensuring better allocation of resources and accelerating economic growth.
- **Reduce Inequality between countries:** Freer trade and factor mobility from integration allow less-developed members to grow faster.
- **Political Stability and Collective Bargaining:** Strengthens diplomatic relationships and Increases the influence of member states in global trade negotiations.

CIVILS WITH AKASH

Indus Water Treaty



Pakistan has widened its objections to include Kiru and Kawar Hydel projects on the Chenab, even though they are not under formal Indus Water Treaty (IWT) arbitration.

About IWT

- It was signed in **1960 between India and Pakistan** mediated by the **World Bank.**
- **Eastern Rivers (Ravi, Beas, Sutlej):** Full control granted to India for unrestricted use.
- **Western Rivers (Indus, Jhelum, Chenab)**: Primarily allocated to Pakistan, with limited rights for India.

Dispute Resolution Mechanism (Three Level Graded Mechanism) under IWT

- **Permanent Indus Commission**: First-level body where India and Pakistan **exchange data** and **resolve questions on treaty interpretation** or possible breaches.
- **Neutral Expert:** Appointed(by World Bank or jointly by the Governments of India and Pakistan) to decide technical disputes when PIC fails to agree.
- **Court of Arbitration:** A 7-member tribunal set up to **legally adjudicate disputes unresolved at PIC/Neutral Expert stages.**

UN ESCAP

Economic and Social Survey of Asia and the Pacific 2026 report released by UN ESCAP

Key highlights

- **Projections:** India's economy is projected to grow at 6.4% (following 7.4% in 2025) this year and 6.6% in 2027

About UN ESCAP (HQ: Bangkok, Thailand).

- It is an **intergovernmental platform** in the Asia-Pacific region.
- **Origin :** established in **1947** as Economic Commission for Asia and Far East (ECAFE)
- **Parent Body**: One of the 5 regional commissions of the United Nations and reports to Economic and Social Council (**ECOSOC**)
- **Membership:** 53 Member States and 9 Associate Members.
  - Includes **countries from outside the Asia-Pacific** region, such as, UK, France, etc.
  - **India** is a **founding member**

Artemis Accords



Jordan became the 63rd nation to sign the Artemis Accords.

About Artemis Accords

- **Launched:** In **2020** under the **Artemis space exploration program**.
- Artemis Accords are a **set of international principles** led by the United States (NASA) for peaceful and cooperative exploration of the **Moon, Mars, and other celestial bodies**.
  - To reinforce the **principles of the Outer Space Treaty** (1967).
- **Aim:**
  - To ensure safe, transparent, and sustainable space activities.
  - Promote peaceful use of outer space and prevent conflicts.
  - Encourage sharing of scientific data among partner countries.
  - Support interoperability and emergency assistance in space missions.
- **India is also a signatory.**

SAARC

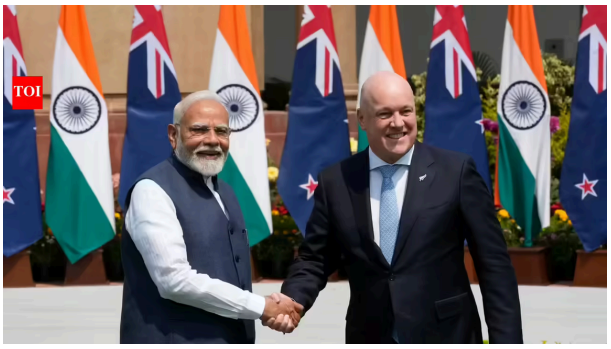
India approves the first withdrawal of 30 billion rupees for the Maldives under the SAARC Currency Swap Framework.

- This framework introduced an **INR Swap Window** worth ₹25,000 crore, supplementing the USD/Euro Swap Window, and aimed to promote the **internationalization of the Indian Rupee**.

About SAARC

- It is a **regional organization** aimed at building a **connected and integrated South Asia** and promoting development and progress of member countries.
- **Established: Formed in 1985** during the **first summit in Dhaka.**
- **Members:** 8 members - **India, Pakistan, Bangladesh, Sri Lanka, Nepal, Bhutan, Maldives, Afghanistan.**
- **Secretariat:** Located in **Kathmandu.**

India–New Zealand Free Trade Agreement



FTA aligns with India's "Viksit Bharat 2047" vision to integrate into global value chains and empower MSMEs, farmers, women, and youth.

Key Details of FTA

- **100% Duty-Free Access:** New Zealand eliminated duties on **all Indian exports**, providing a major boost to **labour-intensive sectors** like MSMEs, textiles, leather, footwear, and gems etc.
- **FDI Commitment:** New Zealand committed to a **USD 20 billion investment** in India over the next 15 years.
- **Protection of Sensitive Sectors: India has offered market access** in 70% of the tariff lines, covering 95% of New Zealand's Bilateral Trade.
  - ~30% of tariff lines are in the **exclusion category**, **to shield farmers and domestic industries.** E.g. dairy, sugar, vegetable products like onions, aluminium etc.
- **Rules of Origin:** A robust framework of **Product Specific Rules of Origin (PSRs)** established to effectively prevent misuse of trade benefits.
- **Talent & Mobility:Student Mobility and Post Study Work Visa** for STEM Graduates, Skilled Professionals; an annual quota of 5,000 **Temporary Employment Visas** for skilled Indians.
- **Globalizing AYUSH:First-time** provision by New Zealand to recognize and facilitate trade in India's **traditional medicine** systems, including Ayurveda and Yoga.
- **Others: Agricultural Productivity Partnership;** Market Access across 118 **services** sectors, with Most-Favoured Nation (**MFN**) treatment in 139 sectors.

SNAP WITH AKASH

India-New Zealand Relations

01 Market: New Zealand is India's second-largest trading partner in the Oceania region.

02 Trade Volume: Bilateral merchandise trade grew by 49% to reach USD 1.3 billion in 2024–25.

03 Positive Trade Balance: India exports more to New Zealand than it imports.

04 Diaspora: ~300,000-strong Indian diaspora (~5% of New Zealand's population) acting as a cultural and economic bridge.

OPEC and OPEC+

UAE quit Organisation of the Petroleum Exporting Countries (OPEC) and OPEC+.

About OPEC

- It is a permanent **intergovernmental organization of oil-exporting** developing nations.
- **Genesis**: Created at the Baghdad Conference in **1960,** by **Iran, Iraq, Kuwait, Saudi Arabia and Venezuela.**
  - Other members include **Algeria, Congo, Equatorial Guinea, Gabon, Libya** and **Nigeria.**
- **HQ:** Vienna (Austria)
- **Objective**: To **coordinate and unify petroleum policies** among Member Countries, to secure fair and stable prices for petroleum producers.
- **OPEC+:** In **response to falling oil prices** driven by a significant increase in U.S. shale oil output, OPEC signed an agreement with **10 other oil-producing countries in 2016 to create OPEC+.**
  - Other than OPEC countries it has **Russia, Azerbaijan, Bahrain, Brunei, Kazakhstan, Mexico, Malaysia, Oman, South Sudan,** and **Sudan.**

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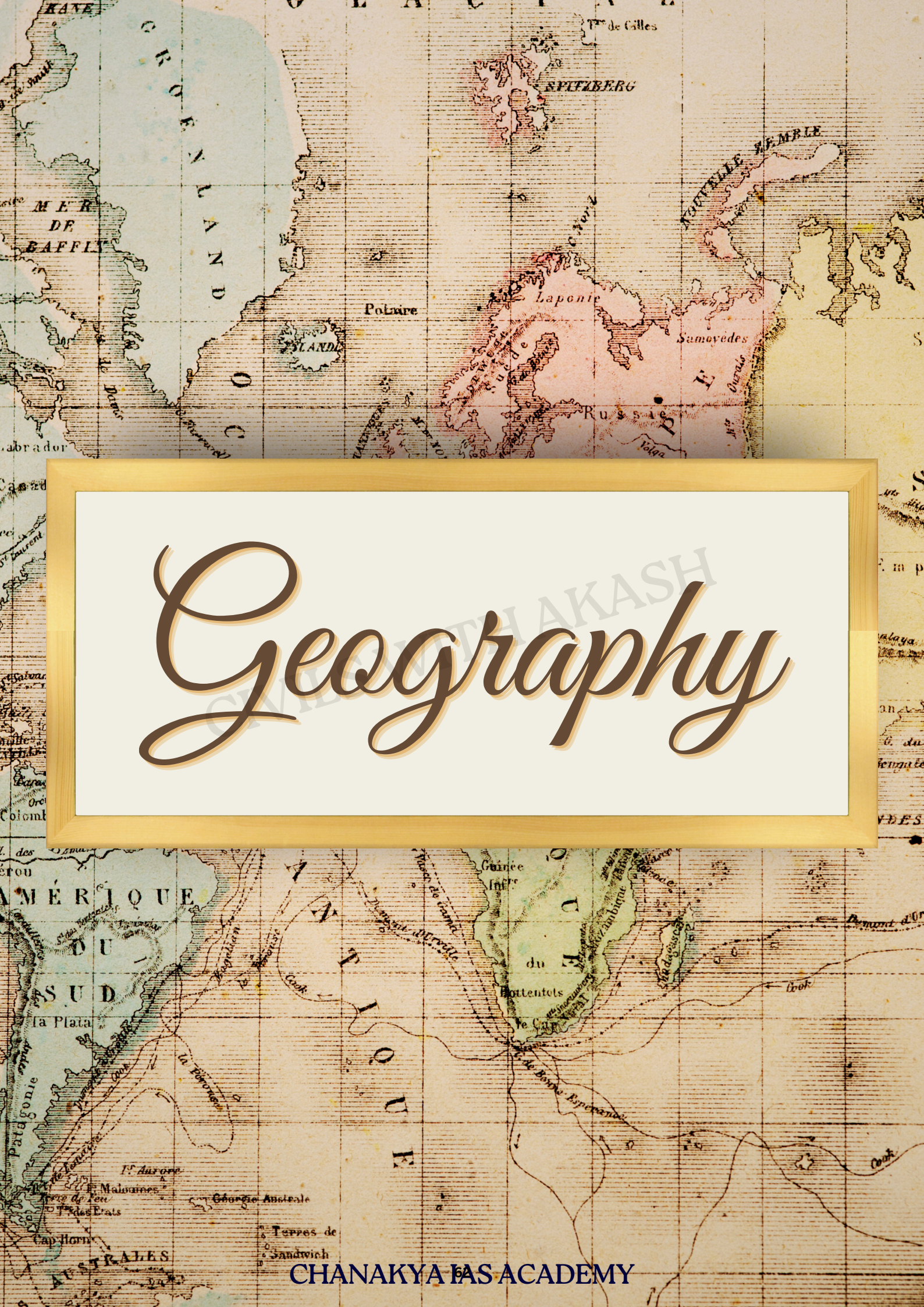
UN World Food Programme

A new food alert platform, the World Food Programme's AI-assisted Hunger Map, enhances real-time monitoring to support humanitarian efforts in combating global hunger.

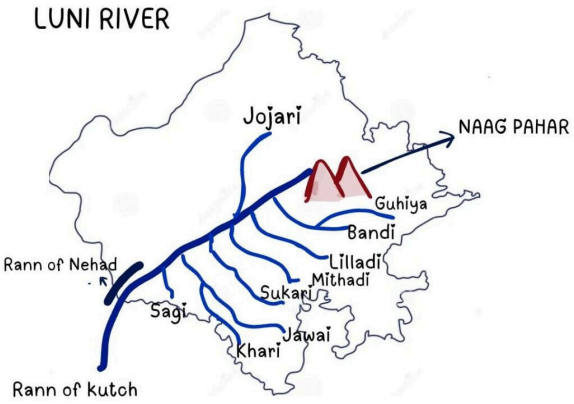
About WFP (HQ: Rome)

- The WFP is the **largest humanitarian agency saving lives** in emergencies & using assistance to help communities become self-sufficient and resilient to shocks.
- WFP was established in **1961 by United Nations General Assembly & Food and Agriculture Organization (FAO).**
- It has a presence in **over 120 countries.**
- **Funding**: **Voluntary donations** from governments, corporates and private donors.
- WFP was awarded **Nobel Peace Prize in 2020**.



CHANAKYA IAS ACADEMY

Jojari-Luni-Bandi River System

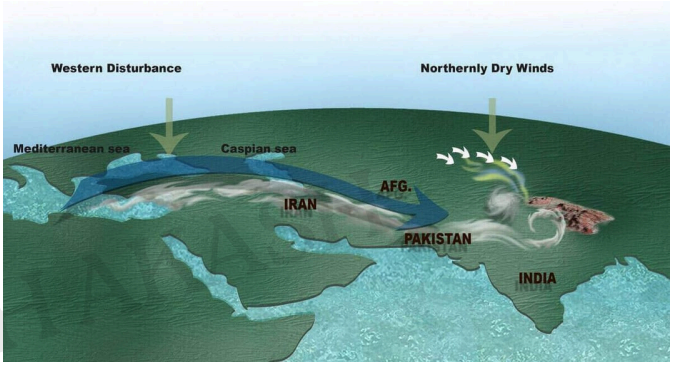


Supreme Court appointed high level committee highlighted that industrial pollution has turned the Jojari-Luni-Bandi River system into a toxic mix of sludge, untreated effluents and municipal waste.

About Jojari-Luni-Bandi River System

- Luni River originates from **western slopes of the Aravalli ranges** near Ajmer.
- Traversing a course of 511 km in Rajasthan, it finally **flows into Rann of Kachchh**.
- Its **Tributaries** include Jojari, Bandi, Mithri, Lilari, Sukri, Jawai etc.

Western Disturbances



Two successive western disturbances are likely to affect northwest India.

About Western Disturbances (WDs)

- **Origin and Formation:** WDs forms over the Mediterranean Sea region due to interactions between contrasting air masses.
- WDs are embedded within the mid-latitude **Subtropical Westerly Jet (SWJ)**, which guides their eastward movement.
- **Season and Area of Impact: Boreal winter** (December to March), impacting western Himalaya, as well as to surrounding areas of north India, Pakistan, and the Tibetan Plateau.
- **Significance for India**: Crucial for Rabi crops (e.g., wheat, mustard), replenishing glaciers in the Himalayan region, etc.
- **Associated Weather hazards**: Heavy snowfall, hailstorms, fog, cloudbursts, avalanches, frost, and cold waves.

Supernova



Scientists find evidence for pair instability supernovas which leave nothing behind after exploding.

- A supernova — the **explosive death of a star** — is always violent, blasting material into space while typically **leaving behind a compact stellar remnant like a neutron star or black hole.**
  - They are incredibly energetic and can **outshine their entire host galaxies**, making them visible across the universe.
- But some supernovas involving the largest stars may be so immensely powerful they **leave absolutely nothing behind**.

Lakes of Jammu and Kashmir



Comptroller and Auditor General of India highlighted severe ecological decline in lakes of Jammu and Kashmir over past decade.

- Out of total 697 lakes, 315 have disappeared, **203 lakes have shrunk**, and total **518 lakes degraded.**

Lakes of Jammu and Kashmir

- **Dal Lake:** Urban lake in Srinagar, having floating gardens called Raad.
- **Wular Lake:** Second largest freshwater lake of Asia with Jhelum River as its main source. Situated on foothills of Haramuk Mountain.
- **Hokersar Lake:** Known as Queen of Wetlands, it is a sanctuary for migratory birds.
- **Manasbal Lake:** Mughal Garden called the Jaroka, built by Nur Jahan overlooks the lake.

Hubble Tension



The study by the H0 Distance Ladder Network Collaboration reports a highly precise value of the Hubble constant, offering new insight into the "Hubble tension."

CIVILS WITH A

- **Hubble Constant** measures the current expansion rate of the universe, typically expressed in km/s/Mpc (kilometers per second per megaparsec).
- A **megaparsec equals** about **3.26 million light-years.**

About Hubble Tension

- It is the **disagreement** between the Universe's **expansion rate measured** in the **nearby Universe** and the **value predicted from observations** of the early Universe.
  - The **nearby Universe** constitutes galaxies close to us seen in recent cosmic time.
  - **The early Universe** measurement constitutes the Universe in its infancy observed through the Cosmic Microwave Background (ancient light from shortly after the Big Bang).

Project Him Sarovar

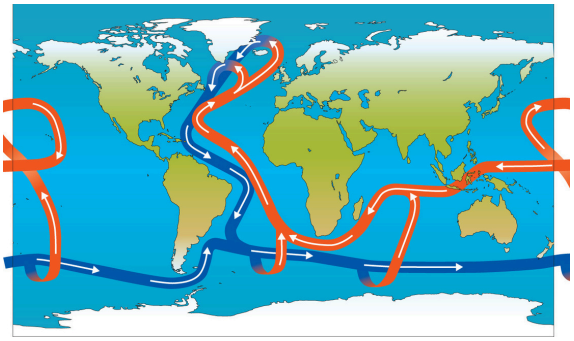


Centre pushes Project HIM SAROVAR to ensure year-round water security in Ladakh.

About Project Him Sarovar

- The initiative aims to conserve snowmelt and rainwater through creation of water bodies to address water scarcity in Ladakh.
- **Targets:** Development of 50 water bodies based on ground-level experience to ensure year-round water availability and support irrigation for farmers.

Atlantic Meridional Overturning Circulation



Atlantic Meridional Overturning Circulation (AMOC) is Weakening: Study. The study warns of a potential collapse of AMOC, having profound impact on global climates.

What is Atlantic Meridional Overturning Circulation (AMOC)?

- It is a system of **ocean currents** that circulates water within the Atlantic Ocean, bringing warm water north and cold water south.
- This circulation is driven by **differences in temperature and salinity**, which create differences in water density, a process known as **thermohaline circulation**.
- **Process**:
  - AMOC brings **warm, salty water** from the **Gulf of Mexico** to the **north Atlantic**, keeping temperatures in **western Europe milder** than in Canada or Russia.
  - The **dense water** then **cools and sinks**, moving **south** on the seafloor along the western Atlantic.
  - It eventually **rises** again through **upwelling**, **warms** up, and restarts the cycle.
- **Significance**: Part of the large **"global conveyor belt,"** it circulates **water, heat, and nutrients** throughout the Atlantic Ocean.

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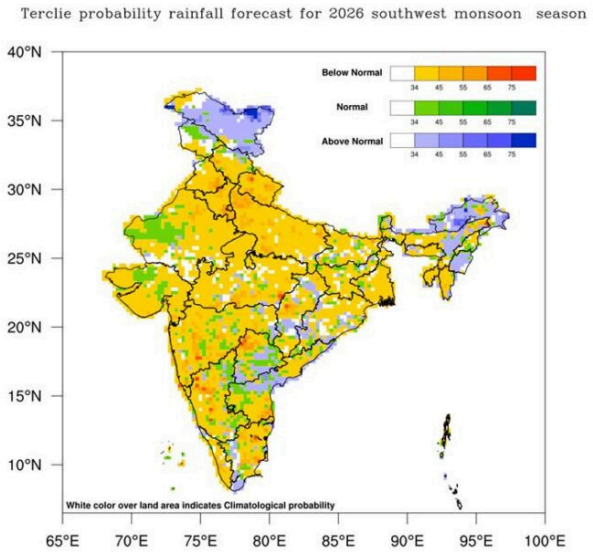
Why is AMOC Collapsing?

- **Climate Change induced Freshwater influx**: **Greenland's melting ice sheet** has added ~5,000 km³ of freshwater into the subpolar North Atlantic Ocean.
  - Freshwater **reduces the ocean's salinity and density**, which **slows sinking** of water, resulting in **weakening AMOC**.

WHAT ARE THE POTENTIAL IMPLICATIONS OF COLLAPSE OF AMOC?

- Climate Disruption: A weakening or collapse of AMOC could become a climate tipping point, with global consequences-
  - Change Global Temperatures: Extreme Cooling of Europe, leading to severe winters and agricultural failure. E.g. AMOC collapse could cool Arctic region by ~7 °C.
    - It may turn the Southern Ocean from a carbon sink into a source, causing additional global warming.
  - Change precipitation patterns: AMOC helps balance heat between the hemispheres. A collapse would shift the tropical rain belt southward, potentially causing:
    - Droughts in the Sahel (Africa) and parts of South Asia.
    - Disruption of Monsoons in India, which are vital for food security.
- Marine Ecosystem Collapse: Fewer nutrients reach surface waters, harming marine food chains.

Long Range Forecast for Southwest Monsoon



India Meteorological Department released a Long Range Forecast for the Southwest Monsoon Season of 2026.

Key Highlights

- Likely **below normal 2026 southwest monsoon** (June to September) rainfall (only **92% of the Long Period Average (LPA)** of 87 cm for the period of 1971-2020).
  - **LPA** is the rainfall recorded over a particular region for a given interval (like month or season) average over a long period like 30years, 50-years etc.
- Suggests **development of El Niño conditions**.
  - **El Niño** refers to a warming of the ocean surface, or above-average sea surface temperatures, in the central and eastern tropical Pacific Ocean.
- Likely **Positive Indian Ocean Dipole (IOD)** conditions towards the end of monsoon season.
  - Positive IOD means **warmer-than-average sea surface temperatures** in the western Indian Ocean, which typically boosts the Monsoon.

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Ghaggar River

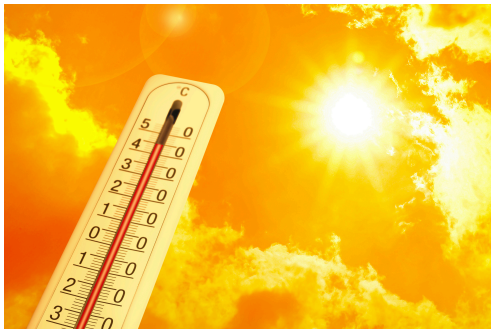


Cancer cases rise in villages along Ghaggar River in Haryana and are reportedly being linked to the polluted river water.

About Ghaggar River

- **Overview:** It is an **intermittent river** in India and Pakistan that flows only during the monsoon season.
  - The river is known as **Ghaggar before the Ottu barrage** and as the **Hakra downstream** of the barrage.
- **Origin:** It originates in the village of **Dagshai in the Shivalik Hills of Himachal Pradesh**.
  - It flows through the states of Punjab, Haryana and Rajasthan.
- **Tributaries:** Kaushalya, Jhajra.
- **Significance:** Many archaeologists identify Ghaggar with the **Vedic Saraswati River** while **Harappan sites** such as Kalibangan, Cholistan are found along the bed of the River.

Heatwave



The India Meteorological Department (IMD) has forecast heatwave conditions over multiple states.

About Heatwave

- **IMD declares** a **heatwave** when the temperature of a place crosses 40 degrees Celsius (°C) in the plains, 37°C in the coastal areas and 30°C in the hills. Further, it uses following criterion:
- Based on departure from Normal Temperature
  - **Heat Wave:** Between 4.5°C to 6.4°C from normal
  - **Severe Heat Wave:** >6.4°C
- Based on departure from Actual Maximum Temperature (for plains only)
  - **Heat Wave:** ≥ 45°C
  - **Severe Heat Wave:** ≥47°C

Amazon Rainforests



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According to a recent study, back-to-back Amazon droughts have altered ecological functioning of Amazon rainforests.

About Amazon Rainforests

- It is the **world's largest rainforest** located in South America in the Amazon River Basin.
- It spans across **Brazil, Bolivia, Peru, Ecuador, Colombia, Venezuela, Guyana, Suriname and French Guiana** (an overseas territory of France).
- Often called the **'Lungs of the Earth',** it is the most biologically diverse place on Earth, holding over 10% of all known plant and animal species.

Salween River

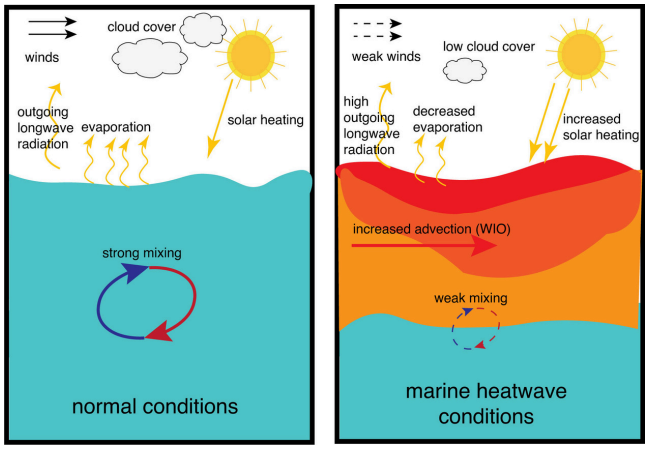


Alarming Arsenic contamination has been found in the Salween River.

About Salween River

- Also known as **Nu (China)** and **Thanlwin (Myanmar)**, it is the **second longest river in Southeast Asia** after the Mekong River.
- It is the **longest waterway without a dam** in Southeast Asia.
- **Origin:** Mountain Tangula on the **Tibetan plateau**
- **Empties in:** Gulf of Martaban in the **Andaman Sea**
- **Basin:** China (53%), Myanmar (42%) and Thailand (5%)
- **Tributaries:** Moei, Pang, Teng, Pawn, Hka, and Hsim

Marine Heat waves Impact on Tropical Cyclones



Tropical Cyclones over Oceans Experiencing Marine Heatwaves far more Destructive: Study Such a scenario resulted in 60% more billion-dollar disasters compared to those without heatwave influence.

- MHWs enhance **maximum sustained wind speeds (up to 20% higher** compared to non-MHW Tropical Cyclones (TCs)) and **promote heavy precipitation** (up to 12% higher) causing **rapid intensification.**

About Marine Heat Waves

- **Meaning:** Occurs when **surface temperature** of particular region of sea rises **to 3 or 4 degree Celsius above average temperature** for at **least five days.**
  - Can last for weeks, months or even years.
  - Number of MHWs has **doubled** since 1982.
- **Impact of MHWs: Shift in population of marine species** (disruption in fish ecosystem); **Impact on Non-mobile species** (coral, algae and sponges are more prone to extreme stress); Exacerbation of **harmful algal blooms; Increased likelihood** of extreme Weather events.

About Tropical Cyclones

- **Meaning:** Violent storms originating over oceans in tropical areas and move to coastal areas bringing about large scale destruction by **violent winds, heavy rainfall and storm surges.**
- **Known By Different Names: Cyclones** (Indian Ocean), **Hurricanes** (Atlantic), **Typhoons** (Western Pacific and South China Sea), and **Willy-willies** (Western Australia).
- **Favourable Conditions for Formation:**
  - **Large sea surface** with temperature **higher than 27° C.**
  - Presence of the **Coriolis force.**
  - **Small variations** in vertical wind speed.
  - A **pre-existing weak low-pressure area** or low-level-cyclonic circulation.
  - **Upper divergence** above sea level system.

Major Causes of MHWs



Surface Heat Transfer:

Extended atmospheric warming caused by persistent **high-pressure** conditions over ocean surfaces increases sea temperature over time.

Could be **shallower and shorter in duration.**



Oceanic Advection:

Movement of **warmer ocean waters** into a region through circulating currents raises local sea temperatures.

Could become **deeper and longer-lasting.**



Global Climate Change:

Increasing global temperatures are driving marine heatwaves to occur more often and with greater severity.

Causes MHWs to become more **frequent, intense, and prolonged.**

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Bauxite



Clashes were reported in Odisha's Rayagada district triggered by the construction of a 3-km approach road to the Sijimali bauxite mine

- The conflict is part of a **broader "Mali" (hill) protection movement** and local tribal communities allege that **Gram Sabha consents** were obtained fraudulently.

About Bauxite

- It is an **ore of aluminium** that contains **hydrated aluminium oxide** as main constituent and **iron oxide, silica & titania** as minor constituents.
- **Major Bauxite Reserves in India:** Odisha (41%), Chhattisgarh (20%), Andhra Pradesh (12%), Gujarat (8%), Jharkhand (6%), etc.
- **Top Bauxite producing nations**: Australia, Guinea, China, Brazil and India (5th largest).

Hanging Glaciers



A new research study has identified 219 hanging glaciers in Uttarakhand's Alaknanda basin with unstable ice volumes and avalanche potential.

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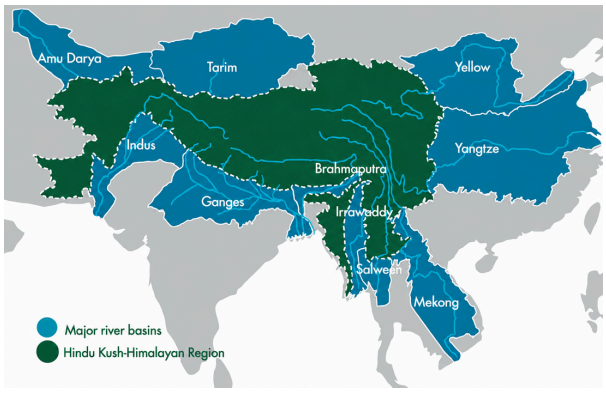
About Hanging Glaciers:

- A **hanging glacier** is a glacier that terminates at the edge of a cliff or a steep slope, rather than extending into a valley floor.
- **Mechanism of Transfer:** Unlike valley glaciers that flow slowly, hanging glaciers "feed" the ice below primarily through **icefalls** and **avalanches**.
- **Hazard**: They are **inherently unstable**, and may produce **catastrophic break-off events**, hit glacial lakes (triggering GLOFs) or block rivers.

Hindu Kush Himalaya



According to ICIMOD Report, snow persistence in the Hindu Kush Himalaya (HKH) declines sharply for fourth consecutive year.

- The International Centre for Integrated Mountain Development (ICIMOD) is an **intergovernmental body** leading efforts to protect the HKH region and its people, resources and culture.

About HKH

- HKH region extends 3,500 km over eight countries from **Afghanistan in the west to Myanmar in the east**.
  - Other countries include Bangladesh, Bhuta, China, India, Nepal, and Pakistan.
- It is the **source of ten large Asian river systems** – the Amu Darya, Indus, Ganges, Brahmaputra (Yarlungtsanpo), Irrawaddy, Salween (Nu), Mekong (Lancang), Yangtse (Jinsha), Yellow River (Huanghe), and Tarim (Dayan).

Gold



India's first private gold mining project is set for launch in Andhra Pradesh's Kurnool District (Jonnagiri Mine).

About Gold

- Gold is a **soft, ductile, corrosion-resistant metal** found in native form **(nuggets, veins, alluvial deposits).**
- Dissolves in **cyanide (used in mining) and forms amalgam with mercury.**
- **Reserves & Distribution:**
- **India:** 518.23 million tonnes of gold ore (as of 2020).
  - **Top states (Reserves):** Bihar (43%), Rajasthan (~25%) and Karnataka (~20%).
    - **Production leader**: Karnataka (~97%); Key Mine is Hutti Gold Mines.
    - **Placer deposits:** Kerala
- **World:**
  - **Top Producers:** China (10%), Russia, Australia.
  - **Top importers**: Switzerland, China, UK.
  - **Top Exporter**: Switzerland, UAE, UK.

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Marine Spatial Planning



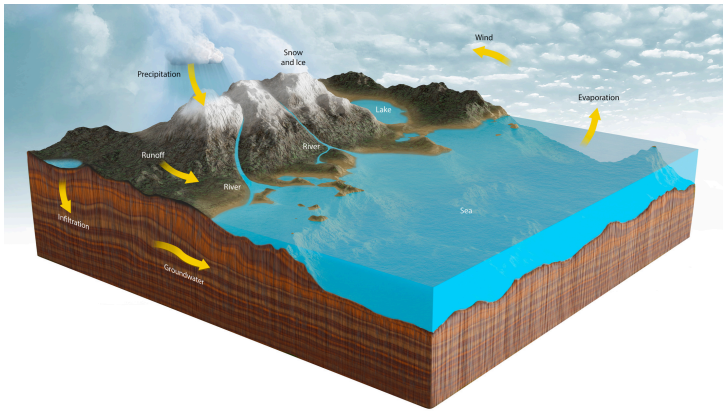
Odisha becomes first state to launch MSP.

- It signed an MoU with **National Centre for Coastal Research, Ministry of Earth Sciences**
- MSP was **earlier taken up in two UTs-** Puducherry and Lakshadweep as part of Indo-Norway Integrated Ocean Initiative (2019).

About MSP

- It is a public process of analyzing and allocating the spatial and temporal distribution of human activities in marine areas to achieve ecological, economic and social objectives.
- **Significance:**
  - **Boost Blue economy** by enabling sustainable utilization of marine resource
  - **Policy formulation**, e.g., for allocating space for offshore wind energy plants, deep sea mining etc. while avoiding conflicts with environment.
  - **Strengthens climate resilience** by enabling sustainable and integrated ocean management.
- **Intergovernmental Oceanographic Commission**, UNESCO develops key guidelines and supports implementation of MSP across countries.

Evaporative Demand



A study in the Nature Reviews Earth & Environment journal highlights that the global drought in 2025 affected nearly 30% of the land area.

- Study highlighted that droughts are increasingly driven by **high evaporative demand** rather than just rainfall deficits.

About Evaporative Demand

- **Meaning:** It can be defined as **near maximum water** that can evaporate if sufficient moisture is available.
  - It measures the **thirst** of the atmosphere.
- **Drivers:** Controlled by temperature, humidity, wind speed, and solar radiation.
- **Mechanism:** Higher temperatures raise **evapotranspiration, drying soils and vegetation** even under adequate irrigation or moderate rainfall

Twisters



Massive weather phenomena called twisters were observed in the US.

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About Twisters

- It is another name for a **tornado which is a violently rotating column of air (500 km per hour) that extends from a thunderstorm cloud** down to the ground.
- **Formation:** They develop **when moist and warm air collides with dry and cold air**, creating atmospheric instability and **strong updrafts within a thunderstorm.**
- The resulting **wind shear causes the air to spin,** and if this rotation is tilted **vertically and intensifies, a tornado (or twister) forms.**
- Highest number of tornadoes **occur in the USA's region called "Tornado Alley" (Texas, Oklahoma, Kansas, Nebraska)**

Canary Islands



INS Sudarshini makes maiden visit to Las Palmas, Canary Islands, first by any Indian naval ship.

- The visit is a strategic halt during its **transoceanic deployment, under Lokayan 26**, preceding a **trans-Atlantic voyage.**

About Canary Islands

- It is an **autonomous region of Spain**.
- **Location:** Situated in the **Atlantic Ocean,** about 100 km off the **northwest coast of Africa.**
- **Geography: A volcanic archipelago with islands like Tenerife and Gran Canaria.** It includes **Mount Teide (Spain's highest peak).**



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Plastic Waste Management



Plastic Waste Management (Amendment) Rules, 2026 notified by the Government These rules amend the Plastic Waste Management Rules, 2016, notified under the Environment (Protection) Act, 1986.

Key Changes in 2026 Amendment Rules

- **Mandatory Recycled Content: Producers, importers, and brand owners** must use **progressively higher amounts of recycled plastic in their packaging (e.g.**, Category I targets scale from 30% in 2025-26 to 60% from 2028-29 onwards).
  - **Exemptions** apply if **statutory bodies (like FSSAI or CDSCO) prohibit recycled plastic** for specific uses.
  - Unfulfilled 2025-26 targets for **food contact applications** can be **carried forward for up to three years**.
- **Clearer Definitions:** The amendment explicitly defines terms like "**end of life disposal**," "**reuse**," and "**Plastic Waste Processors**" to remove regulatory ambiguities.
- **Reuse obligations:** Minimum reuse targets for Category I rigid plastic packaging (e.g., large drinking water containers up to 85%).
- **Strict Standards:** Recycled packaging must conform to the **Indian Standard IS 14534:2023** and bear **specific labels** indicating recycled content.
- **Governance & enforcement: Decentralised enforcement by Urban Local Bodies (ULBs)** with monitoring through State committee; digital tracking and audit by Registered Environment Auditor.

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Significance of Plastic Waste Management Rules

- **Circular economy:** Promotes recycling and reuse, reducing dependence on virgin plastic and enhancing resource efficiency.
- **Environmental protection:** Reduces plastic pollution in terrestrial and marine ecosystems.
- **Public health:** Minimises risks from plastic waste, microplastics and toxic exposure.
- **Governance improvement:** Strengthens EPR, compliance and accountability in plastic waste management.

PLASTIC WASTE MANAGEMENT RULES, 2016

- Objective: To minimise plastic waste generation, promote recycling and ensure environmentally sound disposal.
- Key Features
  - Extended Producer Responsibility (EPR): Producers, Importers and Brand Owners responsible for collection, recycling and disposal of plastic waste.
  - Ban on single-use plastics (2022 Amendment): Prohibition of identified single-use plastic items to reduce plastic pollution.
    - Plastic thickness norm: minimum thickness of 120 microns to promote reuse and reduce littering.
  - Traceability (2025 Amendment): From July 1, 2025, all plastic packaging must carry a barcode or QR code to enable digital tracking from production to disposal.
  - Role of local bodies: Urban Local Bodies and Gram Panchayats responsible for collection, segregation and processing of plastic waste.

Deep-Sea Referral Centres Notified



"Bhavasagara" Referral Centre at the Centre for Marine Living Resources and Ecology (CMLRE) in Kochi, houses over 3,500 taxonomically identified and geo-referenced voucher specimens.

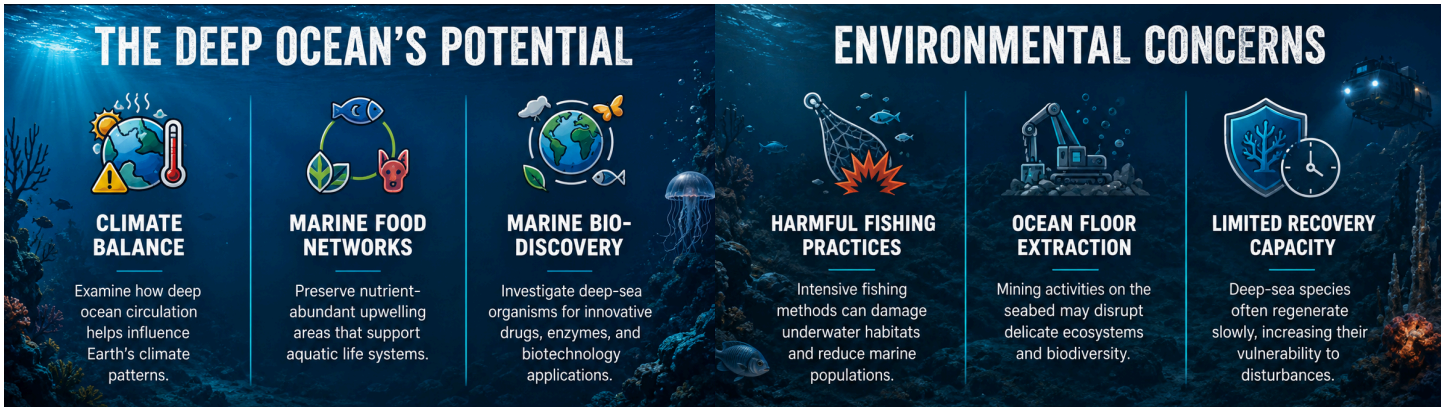
- **Agharkar Research Institute** Pune, for its collection of Microorganisms and National Fungal Culture Collection.
    - Under the **Biological Diversity Act**, the **repository** will securely preserve biological samples, act as custodian of newly discovered deep-sea species, and build expertise in deep-sea taxonomy aligned with the **UN Decade of Ocean Science (2021–2030)**.

About the Deep Sea

- **Definition:** Refers to ocean regions **below 200 meters**, extending from the twilight zone to the abyssal plains and deep seabed.
    - It is the **oldest and largest biome on Earth**, constituting nearly **90–95% of Earth's habitable space**.

Global Frameworks Protecting the Marine Environment

- **UNCLOS:** Global legal order to protect the marine environment and manage the equitable utilization of ocean resources.
- **Convention on Biological Diversity:** Promotes the conservation of biodiversity, sustainable use of its components, and equitable sharing of genetic resource benefits.
- **SDG 14:** Focuses on conserving "Life Below Water".
- **High Seas Treaty (BBNJ Agreement):Legally binding,** it protects waters outside national jurisdictions.



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Sundarbans



New study shows that Sundarbans is undergoing "critical slowing down" process due to cyclones, climate change and human pressures.

- **Critical slowing down** is a phenomenon where ecosystems take longer to recover and become more unstable over time.

About Sundarbans

- It is **world's largest area of mangrove** forests.
- **Location**: lies on the delta of the Ganges, Brahmaputra and Meghna rivers on the **Bay of Bengal** spanning India (40%) and Bangladesh (60%).
- **Protection**: **UNESCO World Heritage Site**, **Biosphere reserve** under UNESCO man and biosphere program, and **Ramsar site.**
- **Rivers:** Muriganga, Raimangal, Harinbhanga, Saptamukhi, Thakuran, Matla etc.
- **Fauna:** Supports single largest population of tigers globally (adapted to amphibious life).
- **Flora:** Salt-tolerant plants like Sundari.

Antarctic Species in News



The International Union for Conservation of Nature (IUCN) has updated the Red List of Threatened Species of certain Antarctic species.

Emperor penguin (Aptenodytes forsteri)

- **IUCN Status**: Endangered (earlier Near Threatened).
- **Reason**: Climate Change
- **Characteristics**: Largest of the 18 penguin species, excellent insulation in the form of layers of scale-like feathers, large reserves of energy-giving body fat.

Fur seal (Arctocephalus gazella)

- **IUCN Status**: Endangered (earlier Least Concern)
- **Reason**: Climate Change
- **Characteristics: S**mallest seals; Closely related to sea lions, they are able to walk on all fours; breed on land; have a thick coat for warmth (unlike other seals with fat layers).

About Southern Elephant Seal (Mirounga leonina)

- **IUCN Status**: Vulnerable (earlier Least Concern)
- **Reason**: Bird flu (Avian Influenza).
- **Characteristics: L**argest seals on the planet, the largest mammals on Earth apart from whales; have a thick layer of blubber.

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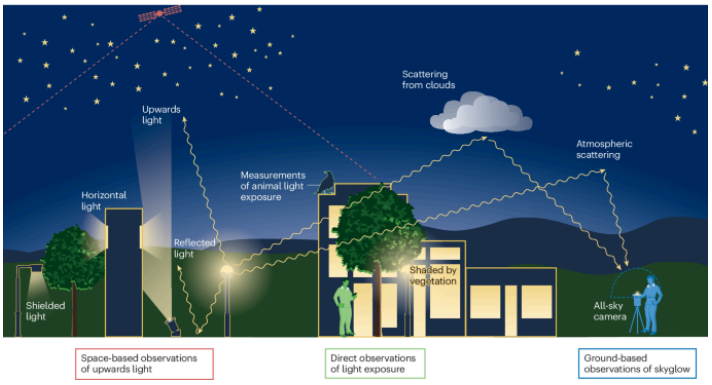
Light Pollution

Light Pollution Has Increased Earth's Night Sky Brightness: Study A study finds ~16% increase (~2% annual rate) in Artificial Light at Night (ALAN) (2014-2022), driven by urbanisation, electrification and infrastructure growth.



Key Details of the Study

- **Regional variations in brightness:** Surge in sub-Saharan Africa and Southeast Asia alongside a deliberate dimming in Europe due to Lighting Regulations.
  - **US, China, India, Canada and Brazil** are brightest nations.
- **Rebound Effect:** The transition to **energy-efficient lighting** (like LEDs) has paradoxically **increased global radiance** as the lower cost of lighting has encouraged more extensive usage.

Light Pollution

- **Definition**: The **excessive, misdirected, or obtrusive** application of artificial outdoor lighting.
- **Issues:**
  - **Health Impacts:** It disrupts **human circadian rhythms** and melatonin production, causing sleep disorders.
  - **Ecological Disruption:** It **disorients** migratory birds, **endangers** sea turtle hatchlings, and **disrupts** the feeding and breeding cycles of nocturnal wildlife.
  - **Others: Sky glow** obscures the night sky and **hinders astronomical research,** Economic cost of **energy wastage**, elevates **carbon footprints.**

CIVILS WITH AKASH

IMPORTANT NOTE!

KEY INITIATIVES: HANLE DARK SKY RESERVE

- Designated in 2022 as India's **first** Dark Sky Reserve, it protects a **22-km radius** around the **Indian Astronomical Observatory.**
- **Location: Hanle** within the **Changthang Wildlife Sanctuary, Ladakh.**
- **Aim:** To counter light pollution, conserve biodiversity, and promote sustainable astro-tourism.
- **Others: Pench** (Maharashtra) is **India's first Dark Sky Sanctuary**; Adopting **Smart lighting etc.**

Panna Tiger Reserve



The tribals have been protesting in Panna Tiger Reserve over compensation and rehabilitation related to the Ken–Betwa river-linking project.

About Panna Tiger Reserve

- It is a National Park, Tiger Reserve and a Biosphere Reserve.
- **Core constitutes:** Kenghariyal Sanctuary and Panna (Ganga) Sanctuary.
- **Location:** Panna and Chhatarpur District of Madhya Pradesh (Vindhya Hills).
- **Vegetation:** Dry deciduous forest along with grassland.
- **River Ken**: Flows from South to North.
- **Fauna:** Tiger, leopard, nilgai, chinkara, chousinga.
- **Flora:** Teak, Kardhai forestMadhuca indica etc.

Garo Hills reed snake



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New burrowing reed snake species discovered in Meghalaya's Garo Hills.

- The discovered species is named as **Calamaria garoensis (Garo Hills reed snake).**

About Garo Hills reed snake

- It is a **small, burrowing reed snake.**
  - Reed snakes are generally small with slender bodies, making them excellent burrowers.
- **Habitat:** Forested region of **West Garo Hills.**

Garo Hills

- **Location:** It is located in **western part of Meghalaya State**.
- **People and Culture:** Predominantly Inhabited by **Garos tribes.**
  - Garos tribe is a **matrilineal society** belonging to the **Bodo family** of the Tibeto-Burman race tribes.
  - These are the **second largest tribe** after the **Khasis** in Meghalaya.
- **Significance:** Garo Hills Conservation Area forms the western most limit of the **Indo Malayan Biodiversity Hotspots.**

Shahtoosh Wool and Chiru



First Wildlife Offence Prosecuted through CBI, highlighting Inter-agency Coordination In a landmark ruling, Delhi court convicted a person for illegal export of Shahtoosh shawls made from the hair of the Tibetan Antelope in violation of the Wildlife Protection Act, 1972.

- It was a joint operation by **CBI, Wildlife Crime Control Bureau, Customs and Wildlife Institute of India**.

About Shahtoosh Wool

- **Shahtoosh** is the under fleece and can only be obtained by killing the Tibetan antelope or chiru.
  - Almost all shahtoosh is spun and woven illegally in **Jammu & Kashmir.**
- **Colour**: Ranging from shades of brown, beige and grey, depends on the gender and body area of the chiru.
- **Legal Ban**: The Shahtoosh shawl trade has also been banned globally since 1975 under CITES, to which India is a signatory.

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About Chiru

- **Scientific name:** Pantholops hodgsonii.
- **Habitat:** Average annual temperature is below freezing like Tibetan plateau and in the Xinjiang and Qinghai provinces of western China.
  - The population of chiru in India are migratory.
  - There have been many attempts to breed the chiru with no success.
- **Conservation status:**
  - **WPA, 1972:** Schedule I and IV.
  - **CITES:** Appendix I.
  - **IUCN Red List:** Near Threatened.
- **Threat:** Illegal poaching, loss of habitat, harsh natural environment they live in.

CITES (Convention on International Trade in Endangered Species): A legally binding agreement regulating wildlife trade.

Wildlife Crime Initiative (WCI): WWF and TRAFFIC launched in 2014 to combat transnational organized wildlife crime.

Various initiatives to curb illegal animal trade

Wild for Life Campaign: Led by UNEP, this initiative uses social media to reduce consumer demand for illegal wildlife parts.

India: The Wildlife Crime Control Bureau has been established for control of illegal trade in wild life and its products.

Illegal sand mining in India



Supreme Court warns of strict action against illegal sand mining in the National Chambal Gharial Sanctuary The Court also directed the States of Madhya Pradesh, Rajasthan and UP to install CCTV cameras on all routes and GPS devices on all vehicles and machinery used in mining activities.

Factors contributing to illegal sand mining in India

- **Booming Construction Sector:** Sand is the second most consumed resource after water due to **rapid urbanization**.
- **Preference for River Sand:** over **modern alternatives (M-sand)** because of its grain size and texture considered **ideal for binding concrete**.
- **Regulation Issues**: Sand is a **minor mineral** under **Mines and Minerals (Development and Regulation) Act, 1957,** coming under the administrative domain of State Governments with lack of uniform national regulation.
- **Other:** Monitoring challenges at remote areas; politico-criminal nexus involving highly organized "sand mafia", etc.

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Impact of rampant sand mining in India

- **Environmental:**
  - **River Morphology**: Excessive mining alters the natural course of rivers leading to **bank collapse, scouring and river erosion.**
  - **Water Quality Deterioration: E.g.** mobilizes chemical pollutants such as heavy metals and phosphates.
  - **Biodiversity and Habitat Loss: E.g.** Disrupts fish breeding and migration.
  - **Reduced flood regulation** capacity of the rivers; more vulnerability to **storms, cyclones and tsunamis in coastal areas.**
- **Damage to Public Infrastructure:** Bed degradation destabilizes critical engineering structures such as bridges, pipelines, side protection walls etc.
- **Loss to State Exchequer:** Illegal mining leads to loss of royalty payments, taxes and environmental fees.

IMPORTANT NOTE!

NATIONAL CHAMBAL GHARIAL SANCTUARY

- It is a protected area **established in 1979.**
- **Location:** Located on the Chambal River near the tri-point of Rajasthan, Madhya Pradesh and Uttar Pradesh.
- **Important species:** Gharial (critically endangered), Crocodiles, Red-Crowned Roofed Turtle, Ganges river dolphin.

Mesothermic fishes



Rapid ocean warming is forcing mesothermic fishes to seek cooler waters with low availability of suitable prey base, delivering a double ecological blow.

About Mesothermic Fishes

- They can retain metabolic heat and keep parts of their bodies warmer than the surrounding seawater.
- **Examples:** Great White Shark, tunas, etc.

Other types of Fishes

- **Ectothermic fishes:** These are **cold-blooded creatures**, comprising the vast majority of fish species that rely on their surrounding aquatic environment to regulate their body temperature.
- **Endothermic fishes:** These are warm blooded fish species able to metabolically control their body temperature.

Jamun



Jamun has been found to have originated much earlier than previously believed, with India playing a central role in its evolutionary history, according to a new study.

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amun (Syzygium cumini)

- **Distribution:**
  - Native to the **Indian subcontinent and Southeast Asia**
  - Widely found in **India, Sri Lanka, Bangladesh, Myanmar.**
- **Climatic conditions:**
  - **Evergreen tree** that thrives in **tropical and subtropical climates.**
  - Tolerant to waterlogging and salinity.
  - Suitable for **agroforestry** and afforestation programmes.
- **Significance**: Seeds and bark used in Ayurveda, especially for **managing diabetes**

Gecko



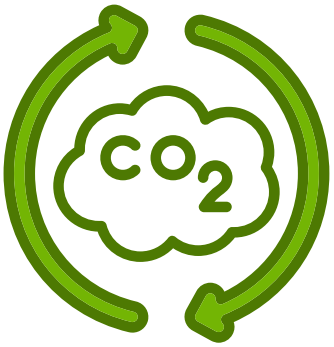
A new bent-toed gecko species, Cyrtodactylus jayadityai, has been discovered in Tripura, named after researcher's mentor, herpetologist Jayaditya Purkayastha.

- This raises the Cyrtodactylus count in Northeast India to **31 species.**
- It Showed a significant divergence from its closest relative, **C.tripuraensis.**

About Gecko

- **Small, mostly nocturnal reptiles** with soft skin and large heads.
- Possess **adhesive toe pads** enabling wall/ceiling climbing.
- **Typically insectivorous;** some adapted to human habitats.
- Found globally across deserts to tropical forests.
- Over 1,000 species under suborder Gekkota.

India's carbon storage



India's forests could nearly double their carbon storage capacity by 2100

Key Highlights of the study

- **Predicted Increase in Vegetation carbon biomass: 35%** (low-emissions) to **97%** (high-emissions) by 2100.
- **Major drivers: Elevated atmospheric CO_2** (aids photosynthesis) and **rainfall variability**.
- **Major Growth:** >60% is projected in arid and semi-arid margins (Rajasthan, Gujarat).

India's Targets and trends

- **Nationally Determined Contributions (NDCs):** As per updated targets for 2031-35, India aims to create **carbon sink** through forest and tree cover to **3.5-4.0 billion tonnes of CO_2 equivalent** by 2035 from 2005 level.
- **Trends:** As per India State of Forest Report 2023-
  - **Total forest carbon stock**: Rose from 6.94 billion tonnes in 2013 to 7.29 billion tonnes in 2023.
  - **Total forest and tree cover**: Increased to **25.17%** of India's geographical area (24.62% in 2021 assessment)

Key initiatives for increasing India's carbon storage

- **Green India Mission (GIM):** Aims to expand Forest/tree cover by 5 million hectares (mha) and improve the quality of another 5 mha of forest and non-forest land.
- **National Afforestation Programme (NAP):** Centrally sponsored scheme for ecological restoration of degraded forests and to develop the forest resources with peoples' participation.
- **Compensatory Afforestation Fund Management and Planning Authority (CAMPA):** Aims to compensate forest land due to diversion of forests for non-forest use.
- **Others:** Trees Outside Forests in India (TOFI) program; Bonn Challenge commitment (restore 26 million hectares of degraded land); Sub-Mission for Agroforestry (SMAF), Green Credit Programme (GCP), Nagar Van Yojana, etc.

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Project Cheetah



An Indian-born female cheetah at Kuno National Park has given birth to four cubs in the wild, marking a significant milestone in India's Project Cheetah.

About Project Cheetah

- Launched in **2022,** it aims to translocate African cheetahs to India.
- It operates under the umbrella of Project Tiger.
- It is **world's first intercontinental large** wild carnivore translocation initiative.
  - In 2022, 8 cheetahs from Namibia were translocated to Kuno National Park, followed by 12 from South Africa in 2023, and 9 from Botswana in 2026.
- **Implementing agency:** National Tiger Conservation Authority (NTCA).
  - NTCA is a **statutory body** under the Ministry of Environment, Forests and Climate Change constituted under enabling provisions of **Wildlife (Protection) Act, 1972**, as amended in 2006.
- **Cheetah Project Steering Committee:** Established by NTCA in 2023 to oversee, evaluate, and advise on implementation of Project Cheetah.

Methane Emissions



Two waste sites in India are listed among top methane emitters globally in the "Spotlight on the Top 25 Methane Plumes in 2025: Landfills", released by the University of California (UCLA).

- These sites include waste facility in **Telangana's Secunderabad and Maharashtra's Mumbai emits 4.9 tonnes** of methane per hour.

About Methane

- It is a **powerful greenhouse gas and the second-largest cause** of global warming, after carbon dioxide.
- Even though **methane stays in the Earth's atmosphere for a shorter time than carbon dioxide,** it is far more powerful at trapping heat.

Tadoba-Andhari



Tadoba-Andhari Tiger Reserve (TATR) serves as a model for balancing wildlife conservation with the economic needs of local communities.

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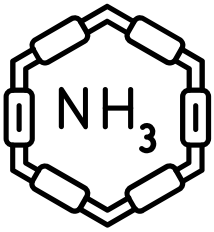
- TATR has achieved this by **strengthening co-existence** between villagers and animals.
- Local villagers benefit from tourism economy and revenue sharing, supports value-added forest produce collection and invests in zero-waste management.

About Tadoba-Andhari Tiger Reserve

- **Location:** In central plateau province of Deccan Peninsula - Chandrapur district of Maharashtra.
- **Flora:** Southern tropical dry deciduous forest with teak, bija, dhauda, hald, salai, semal, and tendu.
- **Fauna:** Tiger, Leopard, Sloth Bear, Wild Dog, Gaur etc.
- **River:** Andhari River.

Ammonia





Department of fertilizers issued an advisory restricting the sale of surplus ammonia to the fertiliser sector.

- It may **affect the pharmaceutical industry** as it relies on ammonia for production of medicines and Active Pharmaceutical Ingredients (APIs).

About Ammonia

- **Production Process:** Produced via **Haber-Bosch process**, where hydrogen and nitrogen are combined.
- **Major Uses:** Around **70% of ammonia is used in fertilizers**, while the rest is utilized in **industrial applications including plastics, explosives, and synthetic fibres.**
- **Global Production:China** is the largest producer (~30%), followed by the **US, the European Union, India** etc.

Shekha Jheel Bird Sanctuary



Shekha Jheel Bird Sanctuary becomes India's 99th Ramsar site.

- **Ramsar sites** refer to sites listed on the **List of Wetlands of International Importance** under the **Ramsar Convention (1971)**.

About Shekha Jheel Bird Sanctuary

- **Location**: Aligarh (Uttar Pradesh)
- It is a **freshwater perennial water body** that came into existence after the formation of the **Upper Ganges Canal** in 1852.
- **Notable birds**: Indian river tern (Sterna aurantia) and sarus crane (Grus antigone).
- It is designated as an **Important Bird and Biodiversity Area (IBA)** by **BirdLifeInternational**.

Limnonectes Motijheel



Scientists discover new frog species in Arunachal Pradesh, Limnonectes Motijheel.

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About the new Frog Species

- It belongs to a group commonly called **Fanged Frogs,** named for **small, fang-like projections in the lower jaw of the males.**
- These frogs are **found across South and Southeast Asia** and are known for their **unusual breeding habits.**
- The new species has been placed within the **genus Limnonectes.**
- Unlike **most frogs that lay eggs in water** or on leaves, this s**pecies builds a nest out of mud beneath leaf litter** on the **forest floor.**
  - This is a **behaviour not previously recorded** in this group from India.

Morchella (Morel) Mushroom



Scientists at SKUAST-Kashmir achieved controlled cultivation of rare morel mushrooms earlier limited to wild Himalayan forests.

About Morchella Mushroom

- **Edible fungi** genus distinguished by a **honeycomb-like cap**.
- **Properties**: Earthy flavor, high protein, antioxidants, and therapeutic medicinal properties.
- **Difficult to cultivate** due to complex life cycle and specific ecological conditions.
- **Regional Names**: Gucchi/Kanaguchhi/Kangaech/Chhatri.
- **Distribution**: Jammu & Kashmir, Himachal Pradesh, and Uttarakhand (Northern Western Himalaya).
  - It grows in **high-altitude temperate forests** during the short spring season.

Threat to terrestrial biodiversity



The study, published in Nature Ecology & Evolution journal, underscores the urgency of integrating climate mitigation with biodiversity conservation to safeguard ecosystems.

Key Findings of the Study

- **Compounding Threats: 36% of land vertebrate habitats** will be exposed **to multiple extreme climate events** (heatwaves, wildfires, droughts, and floods) by 2085.
- **Heatwaves as the Primary Threat:** Projected to expose **93% of species' geographic ranges** by 2085, followed closely by extreme wildfires.
- **Taxonomic Vulnerability: Amphibians are the most severely affected group,** particularly by droughts.
  - Furthermore, **native species** and **those with restricted geographic ranges** face heightened extinction risks due to their limited flexibility to relocate to safer areas.
- **Geographical Hotspots:** The species-rich **Amazon basin, Africa, and Southeast Asia** face the **highest exposure** to these compounding hazards.

Global Initiatives for conservation of Terrestrial Biodiversity

- **UNFCCC & Paris Agreement:** Aim to limit global warming and reduce climate-induced biodiversity risks.
- **IPCC recommendations :** Emphasize protecting 30-50% of ecosystems for resilience.**(Sixth Assessment Report)**
- **IUCN Red List & FAO's One Planet, One Health Initiative:** Guides conservation prioritisation for at-risk species facing climate-driven extinction.
- **Kunming-Montreal Global Biodiversity Framework (2022):** Under **Convention on Biological Diversity,** it targets protection of 30% of land and oceans by 2030 **(30x30 goal).**
- **UN Decade on Ecosystem Restoration (2021-2030):** Promotes restoration of degraded habitats, improving species' resilience and adaptive capacity.

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The State of India's Bats report

India's first bat assessment highlights threats and major data gaps

- The report is prepared by **Nature Conservation Foundation, Bat Conservation International**, etc.

Key Findings

- **Species Diversity: ~135 bat species** recorded, of which **16 are endemic.**
  - **Seven species** are listed under the **threatened category by IUCN.**
- **Threats:** Urbanisation, deforestation, climate change, and stigma post COVID-19.

About Bats

- Bats are **mammals** (give **birth to live young),** have **fur covered bodies, and warm blood.**
- They are the **only mammals that can undertake true powered flight.**
- **Echolocation:** Most bats use high-frequency sound waves to navigate and hunt in total darkness.
- **Significance:** Provide key ecosystem services like **pollination, pest control, and seed dispersal.**

Lakes Disappearing in Jammu and Kashmir

As per the report, 518 lakes (74% of the total) have either completely vanished or significantly shrunk since 1967. Of this, 315 lakes have disappeared entirely.



- **Key lakes include Wular Lake (**largest freshwater lake in India), **Dal Lake, Hokersar Lake, Manasbal Lake** (deepest lake in Kashmir), **Surinsar Lake**, **Mansar Lake**, etc.

Causes of Degradation

- **Pollution & Eutrophication:** Inflow of **untreated sewage, waste, and fertilizer** runoff leading to algal blooms and oxygen depletion.
- **Encroachment & Land Use Change:** Urban **expansion** and conversion of lake areas into built-up land, reducing the water spread.
- **Catchment Degradation & Siltation:** Deforestation and **soil erosion** increase sediment load, shrinking lake depth, and capacity.
- **Institutional & Governance Gaps:** Fragmented responsibilities, absence of a **centralized authority**, and weak monitoring mechanisms**.**
- **Anthropogenic Pressures: Illegal mining, unregulated tourism**, and cultural practices are adding to ecological stress.

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Socio-ecological implications

- **Ecological**: **Loss of biodiversity** (e.g., **disappearance of native fish** like **Schizothorax richardsonii** and **Bangana diplostoma** from Wular Lake).
- **Livelihoods**: Degradation and pollution threatens **fishing communities**, those dependent on aquatic plants like lotus stems and water chestnuts, and **tourism** (houseboat operators).
- **Public Health**: Accumulation of **toxic heavy metals** (manganese, copper, lead, etc.) in fish poses risks of brain, liver, and kidney damage to consumers.

INITIATIVES TAKEN FOR LAKE CONSERVATION IN INDIA

- National Wetlands Conservation Programme (NWCP): Launched in 1985-1986 to provide financial assistance to State Governments to prevent the degradation of wetlands (including lakes).
- National Lake Conservation Programme (NLCP), 2001: to restore the ecology and water quality of degraded urban and semi-urban lakes.
    - National Programme for Conservation of Aquatic Ecosystems (NPCA), 2013: Merger of NLCP and NWCP for better synergy.
- Wetlands Rules, 2017: "Wise use" principle, regulatory framework for conservation and sustainable use, establishment of State Wetland Authorities for management and monitoring.
- Other
    - Water Act, 1974: Regulation of sewage and industrial discharge into water bodies.
    - Environment Protection Act, 1986: Umbrella law, basis for Wetlands Rules and environmental standards.
    - Ramsar Convention (1971): International recognition, conservation of wetlands of global importance.

Sikkim's organic farming



At an event marking 50 years of Sikkim's Statehood, the Prime Minister of India said that Sikkim was leading the way for India's organic food mission.

About Organic Farming

- It is a **sustainable agricultural system** that **avoids synthetic inputs like** fertilizers, pesticides, and Genetically Modified Organism (GMOs).
  - It relies on **crop rotations**, crop residues, animal manures, **off-farm organic waste** etc.
- **Advantages:** Lowers input cost for farmers; improves soil health and biodiversity; healthier, chemical-free food; reduces water pollution etc.

About Sikkim Model of Organic Farming

- It launched **Sikkim Organic mission in 2010** and became the world's first **fully organic state by 2016.**
  - Sikkim also received **Future Policy Gold Award** by UN Food and Agriculture Organization in 2018 for its leadership in organic agriculture.
- **Key Initiatives**
  - **Sikkim State Organic Certification Agency (SOCA):** Ensures monitoring and compliance.
  - **Agricultural Policies:** Supporting **organic seeds, finances (grants, subsidies), inputs, and local production systems.**
  - **Market Access:** Infrastructure and supply chains **developed to help farmers sell organic products in domestic and global markets.**

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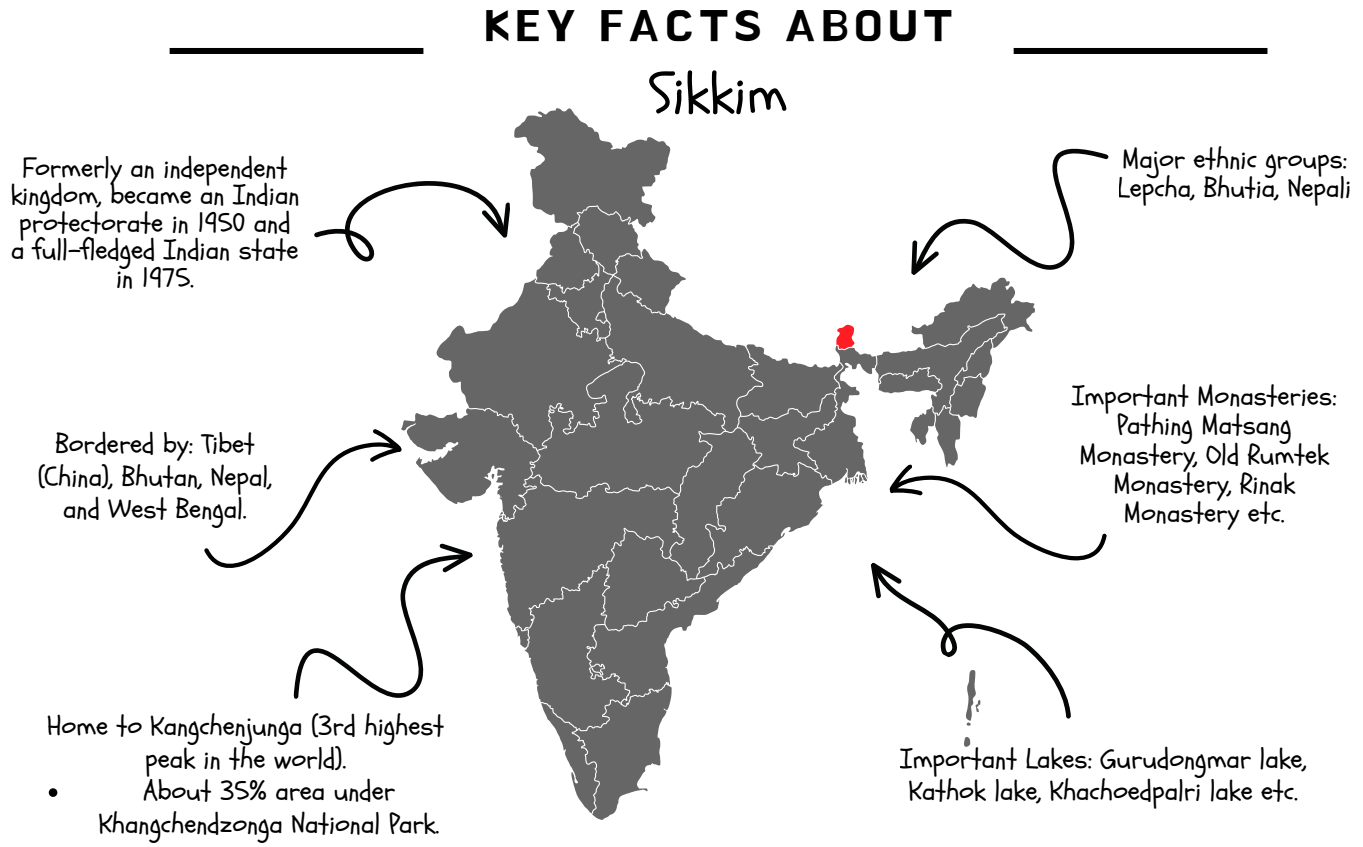

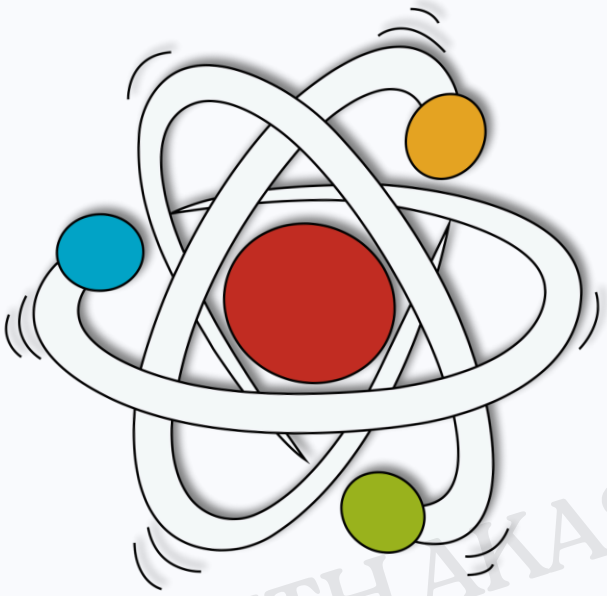

Science and Technology

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Mahi Banswara Nuclear Power Project



Approval of excavation for the construction of the Mahi Banswara Rajasthan Atomic Nuclear Power Project (MBRAPP) units one and two was given by The Atomic Energy Regulatory Board (AERB).

About Mahi Banswara Rajasthan Atomic Nuclear Power Project (MBRAPP)

- **Location:** Banswara, Rajasthan near the Mahi Dam on River Mahi.
- **Capacity:** 4 x 700 MWe PHWR (4 nuclear power units of Indigenous PHWRs (Pressurized Heavy Water Reactors)).
  - PHWRs use **natural uranium as fuel and heavy water** (deuterium oxide) as coolant and moderator.
- **Development:** By **Anushakti Vidhyut Nigam (ASHVINI),** a joint venture between Nuclear Power Corporation India Limited (NPCIL) and National Thermal Power Corporation Limited (NTPC).
- The project is part of India's **"fleet mode" initiative.**
  - **Under this Initiative,** ten identical 700 MW reactors are being built across India under uniform design and procurement plans.

Steps taken to boost nuclear energy production in India

- **Nuclear Energy Mission:** Announced in Union Budget 2025–26 focused on research and development (R&D) of Small Modular Reactors (SMRs) aiming to develop at least five indigenously designed and operational SMRs by 2033.
- **Nuclear Energy Target:** 100 GW nuclear power capacity by 2047.
- **SHANTI Act, 2025:** Consolidating and modernising India's nuclear legal framework.

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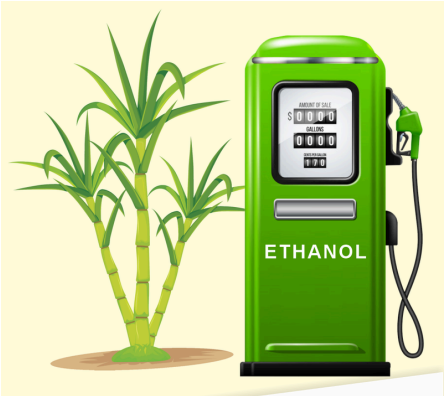
Nuclear Power Capacity in India

01 INDIA CURRENTLY HAS 24 REACTORS ACROSS 7 POWER PLANTS WITH INSTALLED NUCLEAR ENERGY CAPACITY OF 8,780 MW COMPRISING 24 NUCLEAR POWER PLANTS (EXCLUDING RAPS-1 – 100 MW). (MARCH 2026)

02 THE GOVERNMENT PLANS TO INCREASE THIS TO 22,480 MW BY 2031-32.

03 NUCLEAR POWER ACCOUNTS FOR AROUND 3.1 % OF INDIA'S TOTAL ELECTRICITY GENERATION IN, MAKING IT THE FIFTH-LARGEST NON-FOSSIL FUEL SOURCE OF ELECTRICITY. (2024-25)

E20 (Ethanol Blended Petrol)



Directive from the Ministry of Petroleum and Natural Gas force (1st April 2026), requiring to dispense E20 fuel with a minimum 95 RON octane rating in country.

- **RON (Research Octane Number)** serves as an indicator of fuel stability and indicates the level of pressure generated during fuel combustion within a vehicle's engine.

About E20 Fuel

- It is an **80:20 mix of petrol and ethanol.**
- **The National Policy on Biofuels, 2018(amended in 2022):** Advanced the target of 20% blending of ethanol in petrol to Ethanol Supply Year (ESY) 2025-26 from 2030.
- **Benefits:** Improves fuel performance, Strengthens energy security etc.
- **Concerns:** Reduced fuel efficiency in some vehicles, corrosion or damage to older vehicles, etc.

Ammonium Nitrate

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Recently, Bharat Coal Gasification and Chemicals ltd. and Mahanadi Coalfields ltd. signed an agreement for coal to Ammonium Nitrate Project.

About Ammonium Nitrate

- **Appearance**: white, crystalline, water-soluble solid.
- **Not found in nature**: made by reacting ammonia with nitric acid.
- **Explosive**: it is deemed explosive under explosive act due to its use in IEDs (if more than 45%)
  - It is an actually an Oxidizer that supplies oxygen to accelerate combustion.
  - Fire by it is difficult to put out as it provides its own oxygen.
- **Hazardous Chemicals Rules, 1989**: list it as hazardous chemicals
- **Import**: Requires prior permission for specific grades
- **Regulated by**: Petroleum & Explosives Safety Organization under DPIIT
- **Hygroscopic Nature**: absorbs moisture from the air, turning into "hard rock.
- **Thermal Decomposition**: Under High Heat it can explode releasing Nitrogen Dioxide (orange plume)
- **Applications** : fertilizers, cold packs because its dissolution in water is endothermic, medical and industrial uses, etc.

Key Naval Warships



Indian Navy received key Naval warships, a milestone for indigenous defence manufacturing.

Indian Navy received key Naval warships, a milestone for indigenous defence manufacturing.

Key Naval Warships Received

- **Malwan**: The second **Anti-Submarine Warfare Shallow Water Craft (ASW SWC)**, indigenously designed and constructed by **Cochin Shipyard Limited** at Kochi.
  - Named after the historic **coastal town of Malwan**, reflecting the rich maritime legacy associated with **Chhatrapati Shivaji Maharaj.**
  - **Capabilities**: underwater surveillance and anti-submarine and mine warfare.
- **Three frontline Naval platforms** built by **Garden Reach Shipbuilders & Engineers Ltd. (GRSE), Kolkata:**
  - **Indigenous Stealth Frigate Dunagiri**: Fifth ship of ***Nilgiri* Class (Project 17A),** it is capable of striking designated targets with missiles.
  - **Fourth Survey Vessel (Large) Sanshodhak**: Carry out **coastal and deep-water Hydrographic surveys**
  - ***Agray':*** The **fourth of eight ASW SWC,** designed to destroy enemy submarines.

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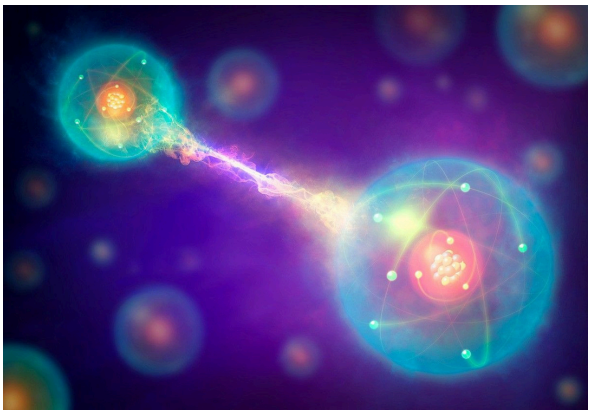
Quantum Entanglement



Scientists from Australia and the U.S. have shown that helium atoms can be entangled through their movement like quantum entanglement seen in lighter particles like electrons.

About Quantum Entanglement

- **In quantum theory** one of the phenomenon is **Quantum Entanglement** where particles of the same origin, which were once connected, always stay connected.
  - **Quantum** is the study of atoms and subatomic particles, and how they interact with each other.
- **Quantum entanglement occurs** when two particles become so deeply linked that they share a single existence.
- **In entanglement,** one atom **does not disappear and reappear** elsewhere. Instead, **teleportation involves quantum information:** when a measurement defines the first atom's state, that information effectively dictates the state of the second atom across the void.

Artemis-II Mission Launched



Artemis-II Mission Launched Astronauts into the Outer Space This historic 10-day mission is the first crewed flight to the vicinity of the Moon in over 50 years after the Apollo Mission (1969-72).

About Artemis Mission

- ARTEMIS is **NASA's flagship human space exploration program,** aimed at **returning humans to the Moon.**
  - In 2020, **Artemis Accords** were launched which are a **set of international agreements** (signed by over 60 nations, including India in 2023) to ensure peaceful and transparent cooperation in space exploration.
- **Series of Artemis Missions**:
  - **Artemis I (2022)**: Uncrewed mission that **successfully tested SLS (Space Launch System) rocket** and **Orion spacecraft around the Moon**.
  - **Artemis II (2026): First crewed mission** on a **lunar flyby without landing.**
  - **Future Phases:**
    - **Artemis III (2027):** demonstration mission in low Earth orbit to test commercial landers.
    - **Artemis IV (2028):** to target the **first Artemis lunar landing**.
    - **Artemis V (2028):** scientific research and beginning **Moon base construction** with second lunar lending.

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Why is there renewed global interest in Moon exploration?

- **Scientific & Technological Advancement**: Understand the **origin and evolution of Earth and the solar system**.
- **Economic Opportunities:** Promote **space economy** and **resource utilization** (water ice and potential Helium-3 for fuel and energy).
- **Gateway to Deep Space**: Test long-duration missions for **future Mars and other exploration**.
- **Strategic Importance:** Enhance national prestige and space dominance.

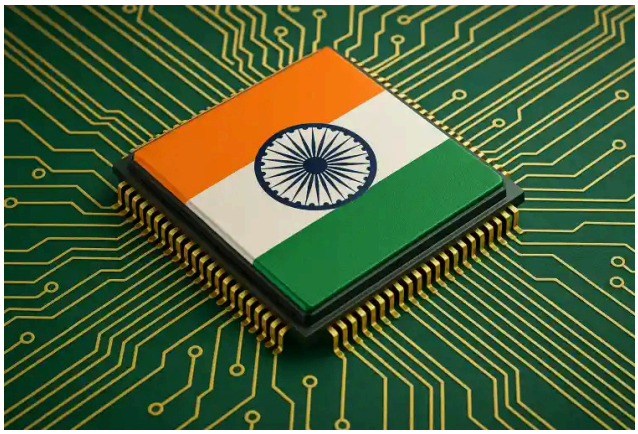
Major initiatives for moon exploration by various countries

India (Chandrayaan series): Discovered water molecules on the Moon; Successfully achieved soft landing near the Moon's south pole, making India the first to do so in that region.

China: Chang'e 6, a robotic lunar sample-return mission.

Japan: Smart Lander for Investigating Moon (SLIM) mission achieved the first high-precision, pinpoint lunar landing.

Semiconductor Industry in India



PM inaugurates Kaynes Semicon's OSAT (Outsourced Semiconductor Assembly and Test) facility in Sanand The project approved under the India Semiconductor Mission will handle the testing and packaging of semiconductor chips before market launch.

Semiconductor Industry in India: Status

- Valued at approximately **$38 billion in 2023**, and is expected to surge to **$100-$110 billion by 2030.**

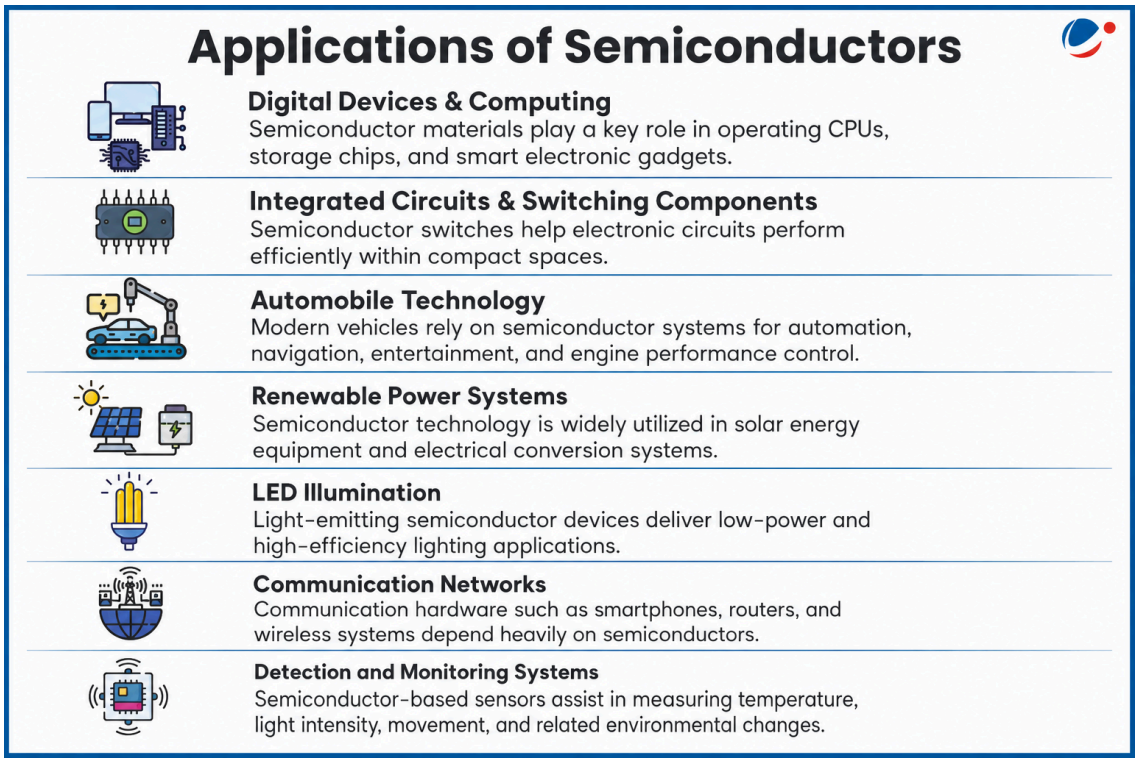
Initiatives for Semiconductor Industry:

- **India Semiconductor Mission (ISM) 2.0:** forproducing semiconductor equipment and materials in India, designing full stack Indian semiconductor intellectual property, etc.
- **Semicon India Programme:** To provide fiscal support (up to 50% of project cost) for semiconductor fabs, display fabs, and ATMP/OSAT facilities.
- **Semiconductor & Display Fabs Schemes:** Fiscal support for establishing semiconductor wafer fabrication and display manufacturing units in India.
- **Design Linked Incentive (DLI) Scheme:** Incentives for startups and MSMEs to promote indigenous chip design and innovation.

Challenges

- **Import Dependency:** India relies heavily on China for critical minerals, producing only 1% of rare earths despite holding 6% of global reserves.
- **Skill Gap:** While India has roughly 20% of the world's semiconductor design engineers, there is a shortage of workers skilled in actual fabrication.
- **High Investment & Long Gestation:** Semiconductor manufacturing is highly capital-intensive, carries high operational risks, and requires long payback periods.
- **Intense Global Competition:** India faces fierce rivalry from established manufacturing ecosystems in China, Taiwan, and South Korea.

CIVILS WITH AKASH



ISRO's (SSR)

Indian Space Research Organisation (ISRO) has developed numerous space-based applications to benefit all sections of society, thus contributing to SSR.

- SSR is **analogous to Corporate Social Responsibility (CSR).** It refers to the **moral and ethical obligation of the scientific community** in educating the public and society, besides working to generate new knowledge.

ISRO contribution to Scientific Social Responsibility

- **Tribals:** 75 "**Space Labs**" in **Eklavya Model Residential Schools** (EMRS) across 19 states to promote STEM (space science, technology, engineering, and maths).
- **Farmers:**
  - **Potential Fishing Zone (PFZ) Advisories** to help fishermen identify productive fishing areas.
  - **Crop Insurance Support:** Assists in monitoring crops and calculating insurance claims.
- **Students:** YUVIKA, Young Scientist Programme, two-week residential program for Class 9 students, tele-education services (PM e-VIDYA), etc.
- **Common citizens:** Geospatial Support aiding in **planning and monitoring flagship schemes**, access to essential services like **tele-medicine**, early disaster warning, etc.
- **Women:** The test flight for the Gaganyaan mission features a **female humanoid robot named 'Vyommitra'.**
- **Open Data Access**: ISRO makes its scientific data from missions like **AstroSat** and **Chandrayaan-2** freely available to the global scientific community and students through the **Indian Space Science Data Center (ISSDC).**
- **Training & Outreach**: Programs like **UNNATI** (Unispace Nanosatellite Assembly & Training by ISRO) and various IIRS outreach programmes build technical skills among students and professionals.

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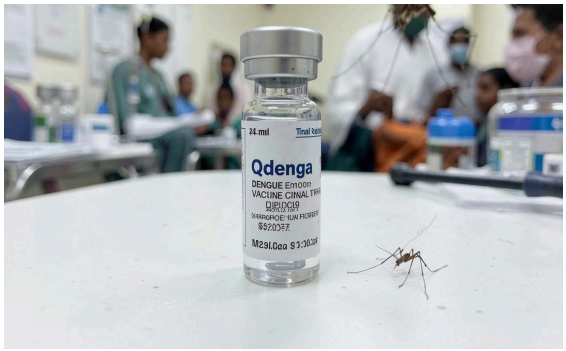
F-15 Fighter Jet



A U.S. F-15E Strike Eagle was shot down over Iran during an ongoing conflict.

- F-15E Strike Eagle is a dual-role fighter capable of both air-to-air and air-to-ground missions.
  - Unlike the **fifth-generation F-35**, the F-15E entirely lacks stealth technology,
- Other aircraft/helicopter used includes the **US's A-10 Warthog, F-18, and F-22 fighters**,**Blackhawk helicopters**, as well as **Iran's Yak-130**, among others.
- Key drones used include Iran's **Shahed-136** and the U.S.'s **LUCAS drone**, etc.

Qdenga Vaccine



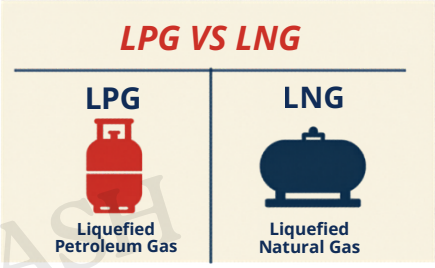
Qdenga vaccine received clearance from the Drugs Controller General of India (DCGI) for use among individuals aged 4 to 60 years against Dengue.

- Dengue is a **viral infection,** transmitted by **Aedes mosquitoes.**
- Dengue is caused by **four closely related but distinct viruses**, known as **serotypes (DENV-1 to DENV-4).**

About Qdenga Vaccine

- It is a **live-attenuated tetravalent dengue vaccine** that **protects against all four dengue strains (DENV-1, 2, 3, 4).**
- **Benefits:** It does not require pre-vaccination screening to determine prior dengue infection.

LPG vs. LNG



The Strait of Hormuz closure has hit a large chunk of India's energy supply including both LNG and LPG.

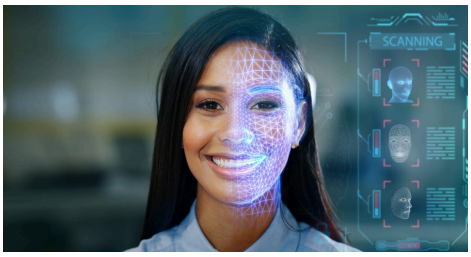
About LNG

- **LNG (Liquefied Natural Gas)** is primarily a **natural gas (mainly methane).**
- It is **cooled to below –160 degrees Celsius** and cryogenically turned into a liquid for storage or ease of transportation.
- It is regasified into natural gas and used as **PNG (piped natural gas)** for households or **CNG (compressed natural gas)** for vehicles; also used in power generation & machinery operations.
- **LNG (Natural Gas) is lighter than air:** generally considered safer in open areas.

About LPG

- **LPG (Liquefied Petroleum Gas)** primarily comprises **propane and butane**, a **byproduct of the crude oil refining process**.
- Under relatively **low temperatures or moderate pressure, LPG becomes a liquid**, allowing it to be bottled in cylinders.
- **LPG is heavier than air:** If it leaks, it settles on the ground, creating a high fire risk.

Digital Human



China issues draft rules to regulate digital humans.

- Rules mandate clear labelling and banning services that could **mislead children** or **fuel addiction.**

About Digital Human

- Digital Humans are AI-powered virtual avatars that simulate human conversation using voice, facial expressions, and body language.
- **Use Cases:** Client services, education, healthcare, and advisory roles.

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India inducts 3rd Nuclear-Powered Submarine



Part of India's Arihant-class submarines, INS Aridaman is a more advanced ballistic missile submarine (SSBN) than its predecessors INS Arihant (2016) and INS Arighaat (2024).

About India's Nuclear Powered Submarine Programme

- The **Advanced Technology Vessel (ATV) programme** was initiated more than three decades ago, involving both **private firms and the Defence Research & Development Organisation**, with help from **Russia.**
- It primarily focused on developing the **ballistic missile submarines (SSBNs),** which are **nuclear propelled**, and can carry multiple sets of submarine-launched ballistic missiles (SLBMs), tipped with single or multiple nuclear warheads.

Significance of Nuclear Powered Submarines for India

- **Nuclear Triad Completion:** The submarine cements India's position in the select group of nations (alongside the **US, Russia, China, and France**) capable of launching nuclear weapons **from land, air, and sea.**
- **Strategic Deterrence:** Carries nuclear ballistic missiles, strengthening India's deterrence against regional adversaries **China and Pakistan.**
- **Stealth & Endurance:** Nuclear propulsion allows long underwater missions, making it highly survivable and hard to detect.
- **Extension of Nuclear doctrine:** Showcases guarantee of **India's second-strike capability** with No-first Use policy.

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India's Three Nuclear-Powered Submarines

SPECIFICATION	 INS ARIDAMAN	 INS ARIHANT	 INS ARIGHAAT
APPROX. DISPLACEMENT	Around 7,000 tons	Around 6,000 tons	Around 6,000 tons
MISSILE LAUNCH CAPACITY	8 vertical launch cells	4 vertical launch cells	4 vertical launch cells
STRATEGIC WEAPONS CAPABILITY	K-15 (700 km) and K-4 (3,500 km) missiles	Equipped with K-15 missiles (700 km range)	Compatible with K-4 (3,500 km) and K-15 missiles
REACTOR INFORMATION	Details not publicly available	83 MW pressurized light-water reactor	83 MW pressurized light-water reactor

Types of Nuclear-powered submarines

Feature	SSBN (Ballistic Missile Nuclear Submarine)	SSN (Nuclear Attack Submarine)	SSGN (Guided Missile Nuclear Submarine)
Core Mission	Strategic Nuclear Defense	Offensive Operations & Monitoring	Long-range Tactical Strikes
Armament Type	Ballistic Missiles with Nuclear Capability	Standard Naval Combat Systems	Guided Missile Systems with Conventional Payloads
Operational Objective	Maintaining Nuclear Deterrence	Sea Control and Intelligence Gathering	Precision Engagement of Targets

Satellite Internet in India



Meghalaya Government Signs MOU with Starlink India to Boost Satellite Internet Meghalaya becomes the third Indian state after Maharashtra and Gujarat to partner with Starlink formally.

- Starlink was launched in 2019 by **SpaceX** and plans to have 42,000 satellites in **Low Earth Orbit (LEO)**.

About Satellite Internet

- **Definition: Satellite internet** refers to the **internet service provided through satellites** placed in **Geostationary Orbits (GSO)** or **Non-Geostationary Orbits (NGSO)**.
  - LEO and MEO (Medium Earth Orbit) are NGSO.
- Unlike **land-based internet services** such as fiber, cable, etc., it **doesn't rely on wires** to **transmit data**. improving accessibility, deployment speed, and long-distance transmission.
- **Infrastructure**: It generally includes three segments:
  - **Space Segment:** Includes network of several communication satellites.
  - **Ground segment:** Includes satellite measurement and control networks, gateway stations, etc.
  - **User segment:** Includes communication terminals used by users.

Advantages over existing land-based internet services:

- **Global reach:** Connects remote and underserved regions lacking fiber or cellular infrastructure.
- **Rapid deployment:** Requires **only power** and **clear sky**, avoiding costly and time-consuming civil works.
- **Disaster resilience:** Restores communication quickly and acts as **backup** when terrestrial networks fail.

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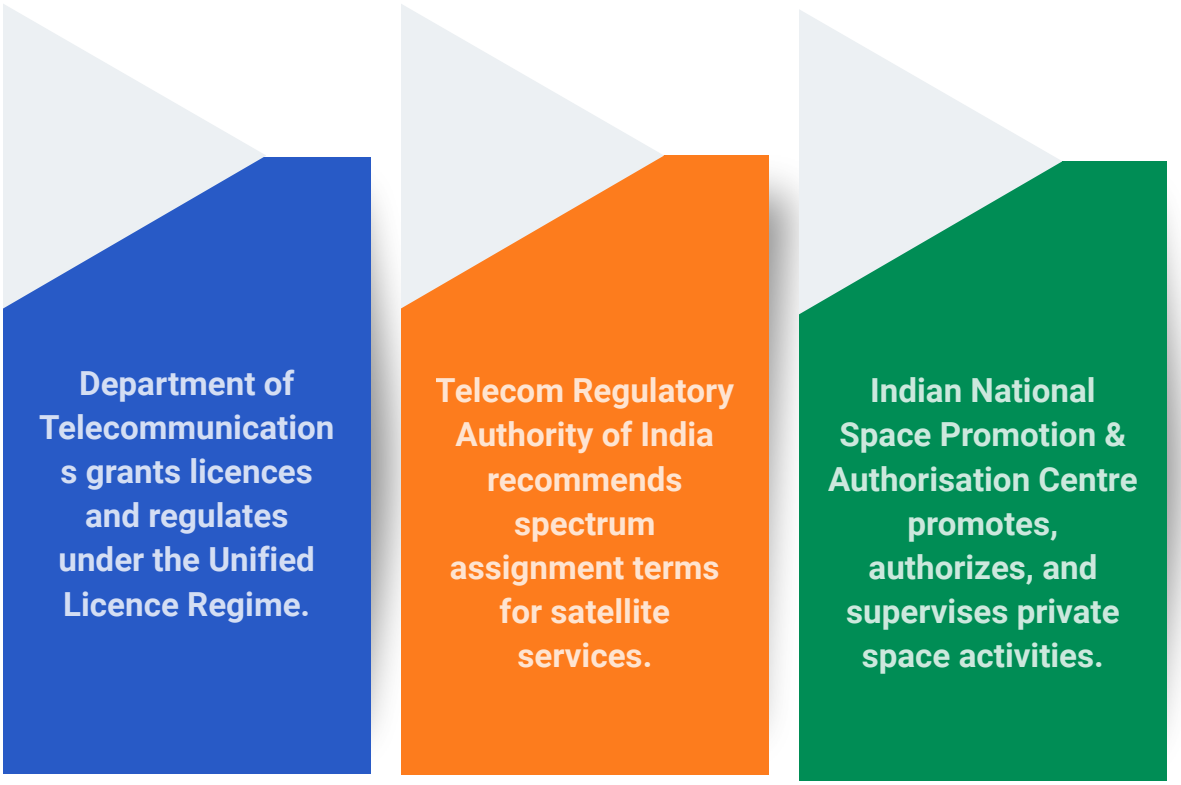
Regulatory Landscape for Satellite Internet Services



Mission MITRA



ISRO launched Mission MITRA to test Gaganyaan crew for mental, physical and crew operability strengths

About Mission MITRA (Mapping of Interoperable Traits and Response Assessment)

- It is a behavioural study by ISRO for human spaceflight missions, conducted in partnership with **Indian Air Force's (IAF) Institute of Aerospace Medicine (IAM).**
- **Objective:** To assess physiological, psychological and operational performance of Gaganyaan crew under stress.
    - It was conducted at Leh, Ladakh simulating extreme conditions such as **hypoxia, low temperature and isolation**

Tar-balls Management Rules, 2026.



The Centre notified the draft Tar-balls Management Rules, 2026, to combat marine pollution caused by toxic oil leak residue.

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Key Provisions

- **Covers Lifecycle: generation, collection, storage, transport, treatment and disposal.**
- **'Polluter pays' principle:** Fixes responsibility on oil operators, environmental compensation provision**.**
- **States Stakeholder Responsibilities:** E.g. CPCB, Coast Guard etc.
- Mandates monitoring, reporting and declaration of **'State disaster'** for severe cases.

About Tar balls

- Sticky lumps created due to **weathering of oil** following leaks, spills, and marine accidents.
- They form through various **physical, chemical, and biological** processes when oil mixes with water and other contaminants.
- Classified as **hazardous waste** requiring safe handling and disposal.

Fast Breeder Reactor



Indigenously developed Prototype Fast Breeder Reactor (PFBR) at Kalpakkam attains Criticality This marks a significant progress in the second stage of India's Nuclear programme.

This marks a significant progress in the **second stage** of India's Nuclear programme.

- **Criticality** refers to a situation when each fission event r**eleases a sufficient number of neutron to sustain an ongoing series of reactions**, in other words, it is point when nuclear reactor achieves a **self-sustaining chain reaction.**

About Fast Breeder Reactor (FBR)

- **Meaning:** Nuclear reactor that uses fast neutrons to **generate more nuclear fuels** than they consume while generating power.
- **India's FBR**
  - **Location:** Kalpakkam, Tamil Nadu
  - **Operated by: Bharatiya Nabhikiya Vidyut Nigam Ltd (BHAVINI)**
  - **Power Capacity:** 500 Megawatt.
    - Once fully operational, India will become the **second country after Russia** to have a commercial fast breeder reactor
  - **Features:** Uses indigenously produced **Uranium-Plutonium Mixed Oxide (MOX) fuel** and utilizes **liquid sodium as a coolant.**
    - **Uranium-238 "blanket"** surrounding fuel core will undergo nuclear transmutation **to produce more fuel,** hence **name 'Breeder'.**

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Significance of FBR

- **Stepping stone for third stage:** Paving way for eventual utilization of India's abundant **thorium reserves.**
- **Inherent Passive Safety Features:** Ensuring a prompt and **safe shut down** during emergency.
- **Reduction of nuclear waste:** As it uses spent fuel from the first stage.

India's Three Stage Nuclear Programme

- **Genesis:** It was presented in **1954 by Dr. Homi J. Bhabha.**

IMPORTANT NOTE!

REGULATORY LANDSCAPE FOR SATELLITE INTERNET SERVICES

- **Department of Telecommunications** grants licences and regulates under the Unified Licence Regime.
- **Telecom Regulatory Authority of India** recommends spectrum assignment terms for satellite services.
- **Indian National Space Promotion & Authorisation Centre** promotes, authorizes, and supervises private space activities.

Non-Communicable Diseases



2026 Partnership for Healthy Cities (PHC) Summit renew commitment to accelerate life-saving action in cities Held in Rio de Janeiro, PHC Summit brought together health officials, urban planners and global experts from 55 cities.

- PHC is a **global network of 74 cities** committed to **prevent Non-Communicable Diseases (NCDs)** and injuries.
  - Indian cities of **Mumbai, Ahmedabad and Bengaluru** are part of the PHC network.
- As part of their work with the Partnership, each city selects **one of 15 interventions** proven to prevent NCDs and injuries.

About NCDs

- **NCDs (chronic diseases)** are long-term conditions not directly transmissible between people.
- **Risk Factors:**
  - **Behavioural** – Tobacco use, unhealthy diets including excess salt, sugar and fats, harmful use of alcohol and insufficient physical activity
  - **Metabolic** – hypertension, overweight/obesity, diabetes, high cholesterol
  - **Environmental** – Air pollution, chemical exposure, noise pollution.
- Over 80% (over 47 million) of all deaths worldwide are attributed to NCDs and injuries.
  - **Four main NCDs** responsible for the majority of these deaths are cardiovascular diseases (heart attacks/stroke), cancers, chronic respiratory diseases, and diabetes.
- Over 80% of premature NCD deaths now occur in low- and middle-income countries.

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INDIA'S INITIATIVES TO TACKLE NCDS

- **National Program for Prevention and Control of NCDs:** Strengthens healthcare infrastructure, trains personnel, ensures early diagnosis, and spreads awareness.
- **Sugar Boards:** Mandated by CBSE in all schools to recommended daily sugar intake, display sugar content in commonly consumed foods.
- **Lifestyle Promotion:** Campaigns like Eat Right India, Fit India Movement, and Yoga initiatives encourage citizens to adopt healthier routines.
- **Strengthening of Tertiary Cancer Care Centres Facilities Scheme:** Financial assistance is provided as a one-time grant of up to ₹120 crore for State Cancer Institutes (SCIs) and up to ₹45 crore for Tertiary Cancer Care Centres (TCCCs)

Post-Quantum Cryptography



Department of Science & Technology has released a national roadmap for Post-Quantum Cryptography (PQC) Migration It aims to develop cryptography techniques that are secured against attacks from advanced quantum computers for ensuring future cryptographic security and digital sovereignty.

- It was necessitated as **advancements in quantum computing have potential to break existing cryptography algorithms** which form the backbone of today's IT systems, online communications, financial transactions, and other sensitive digital information.
  - These algorithms include benchmark **RSA (Rivest–Shamir–Adleman) and ECC (Elliptic Curve Cryptography) public-key encryption.**

Risks of Quantum Computing to Cybersecurity

- **Breaking of Existing Encryption:** Quantum computers can break **public-key cryptography, compromising banking, emails, and government communications.**
- **Harvest Now, Decrypt Later:** Encrypted data collected today can **be decrypted in the future**, exposing long-term sensitive information.
- **Systemic Risk:** Breaking cryptography can disrupt **critical sectors like power, telecom, finance, and governance.**
- **Threat to National Security**: Exposure of **defence and intelligence data can weaken** national security and create strategic risks.

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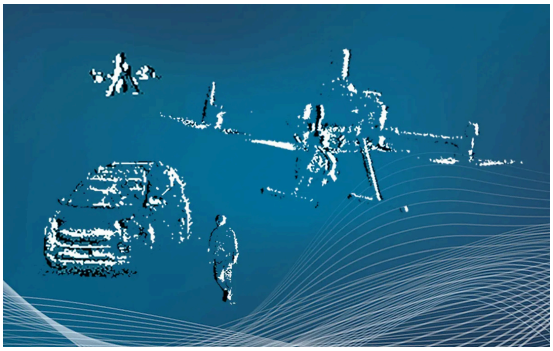
India's Efforts for Developing Secure Quantum Computing

- **National Quantum mission:** Aims to develop comprehensive indigenous quantum technology ecosystem with establishment of four thematic hubs.
- **DST's Quantum-Enabled Science and Technology (QuEST) program:** To groom young researchers in quantum technology.
- **State-Level Initiatives:** Amaravati Quantum Valley (AQV) Initiative (Andhra Pradesh), Quantum Mission (Karnataka), Telangana Quantum Strategy etc.

Neuromorphic Sensor



Researchers developed a humidity-responsive neuromorphic sensor to enable smart environmental monitoring systems.

About Neuromorphic Sensor

- It **mimics response of the brain** to environmental changes, primarily **humidity.**
  - They emulate the biological neural systems by integrating **sensing, memory, and processing** into a single device.
- **Significance:** Providing **Neuromorphic sensors** to perform sensing and signal processing simultaneously in single device reduces **energy consumption and data-processing requirements** compared to conventional electronics.

National Quantum Mission

National Quantum Mission achieves 1,000-km secure communication The milestone represents one of the longest Quantum key distribution (QKD) deployments globally, a landmark advancement in secure quantum communication.

- The development is expected to strengthen India's **secure communication capabilities** across **defence, financial systems and critical infrastructure**.

What is Quantum Communication?

- **Definition:** Quantum communication is the **study of encoding and transmitting information** between distant quantum systems.
- **Physical Basis:** It takes advantage of peculiar quantum properties such as **Quantum key distribution (QKD)**.
  - QKD is a method for creating and sharing **secret encryption keys** using the principles of quantum mechanics.
    - It relies on **quantum states that change when observed,** allowing any interception attempt to be detected.
- **Medium:** similar to classical communication, quantum communication **primarily uses light (single photons)** to encode information, enabling fast and low-error transmission.

About National Quantum Mission

- **Launched:** For a period from **2023-24 to 2030-31** by **Department of Science and Technology (DST).**
- **Key Objectives:**
  - Develop intermediate-scale **quantum computers**.
  - Establish **2000 km satellite-based quantum-secure communication**.
  - Design highly sensitive **quantum devices** including magnetometers, gravity sensors and atomic clocks.
  - Develop and synthesize **next-generation quantum materials** such as superconductors, novel semiconductor structures and topological materials.

Difference between Quantum Communication and Classical Communication

Classical Communication	Quantum Communication
Information is carried by **classical bits**, which exist in definite values of either 0 or 1 (e.g., a high or low electrical voltage).	Information is carried by quantum bits, or qubits which can exist in a state of superposition (simultaneous combination of 0 and 1).
It can be read and copied endlessly without being destroyed.	It is governed by the **no cloning theorem**, which forbids copying an unknown quantum state; hence, quantum signals cannot be amplified using traditionalrepeaters.
Observing the system does not change the information.	The act of measuring a qubit permanently alters its state.

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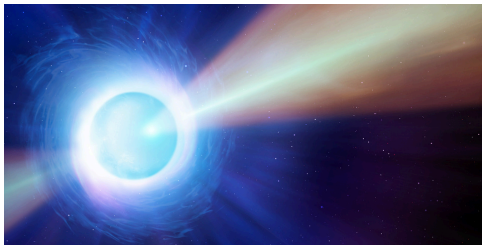
Pulsars



Indian scientists find new way to measure distances in deep space

- They developed a new method **combining dispersion measure** (earlier method) and **scatter broadening** of **pulsar signals** to improve the accuracy of **distance measurement in space.**
  - **Dispersion Measure**: Estimates distance by measuring the **delay in pulsar signals** caused by free electrons in space.
  - **Scatter Broadening**: Measures how pulsar signals **spread and distort** due to turbulence in interstellar plasma.
- The technique overcomes **limitations of existing models** and enables more reliable estimation of cosmic distances.

About Pulsars

- Pulsars are highly magnetized, **rapidly rotating neutron stars formed** after **supernova explosions** that emit narrow beams of electromagnetic radiation from their magnetic poles.
- Due to their **highly stable rotation**, they act as **cosmic clocks** and are used in astrophysical measurements.

Methanol



CIVILS WITH AKASH

Kandla Port Advances Methanol Bunkering marking step toward Green Maritime Transition.

- **Methanol bunkering** is the process of transferring Methanol fuel to a ship from a bunkering facility.
- **Kandla Port** (also called Deendayal Port), located in Gujarat's Kutch district, was the first major port developed in India after Independence.

About Methanol (CH_3OH)

- Methanol is **water-soluble** and readily **biodegradable**, and is the simplest member of a group of organic chemicals called **alcohols**.
- Also known as **wood alcohol**, as an **engine fuel**, methanol has chemical and physical fuel properties similar to ethanol.
- **Uses**: Chemical building block for production of paints, carpets, fabrics, building materials, and health and pharmaceutical products.

Transition Metals



New research shows aluminium can mimic the catalytic behaviour of transition metals.

About Transition Metals

- Theay are the metallic elements that **serve as a bridge, or transition**, between the two sides of the periodic table.
  - They are **d-block elements** that can easily gain or lose electrons.
  - E.g., titanium, iron, nickel, copper.
- **General Properties**: Most of them are hard, strong, and lustrous, have high melting and boiling points, and are good conductors of heat and electricity
- **Application:** Used as catalysts (e.g., palladium, platinum, rhodium) in industrial processes like **drug synthesis (Heck and Suzuki reactions)**

Project Glasswing and AI in cybersecurity



Anthropic announced Project Glasswing to use AI to find to detect cybersecurity vulnerabilities It is a pivotal initiative in the context of global shortage of skilled cybersecurity professionals and a rising volume of cyberattacks.

About Project Glasswing

- It is a **multi-company coalition** including firms like Amazon Web Services, Apple, Google, Microsoft, etc.
- **Aim**: Securing **critical global software infrastructure** using their most advanced AI model like **Claude Mythos Preview**.
  - **Claude Mythos Preview** is an unreleased frontier AI model that showcased capability that could **potentially surpass skilled humans** in finding software vulnerabilities.
- **Function:** To autonomously discover **'zero-day vulnerabilities'** and generate the necessary code to patch them.
  - **Zero-day vulnerabilities** are hard-to-detect critical software glitches that remain undiscovered. E.g. WannaCry attack (2017) exploited a zero-day vulnerability

Applications of AI in Cybersecurity

- **Advanced Threat Detection:** Use machine learning to identify **zero-day attacks and cyberthreats** by analyzing behavioral patterns in real-time. E.g. **Phishing & Spam Detection**
- **Predictive Defence & Malware Analysis:** Detects hidden/encrypted malware. E.g. **DDoS Attack Prevention**
- **Others**: Simplified reporting of threats, aids **skill enhancement** of analysts, improves **accuracy** of threat detection, enhances **scalability** in cybersecurity by automating tasks.

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Challenges of AI in Cybersecurity

01 Adversarial Attacks: High risks from AI-augmented cyberattacks, exploiting AI models to conduct cyberattacks.

02 Data Privacy Concerns: For AI to accurately detect threats, it requires access to vast amounts of user data and logs. This raises significant surveillance, privacy, and regulatory compliance concerns.

03 Ethical & Legal Issues: Weak legal frameworks and difficulty in fixing accountability; lack of optimum safeguards to ensure ethical use of AI.

04 Model Poisoning: Attacks that manipulate the training data of AI security tools to make them blind to certain threats.

Gaganyaan mission



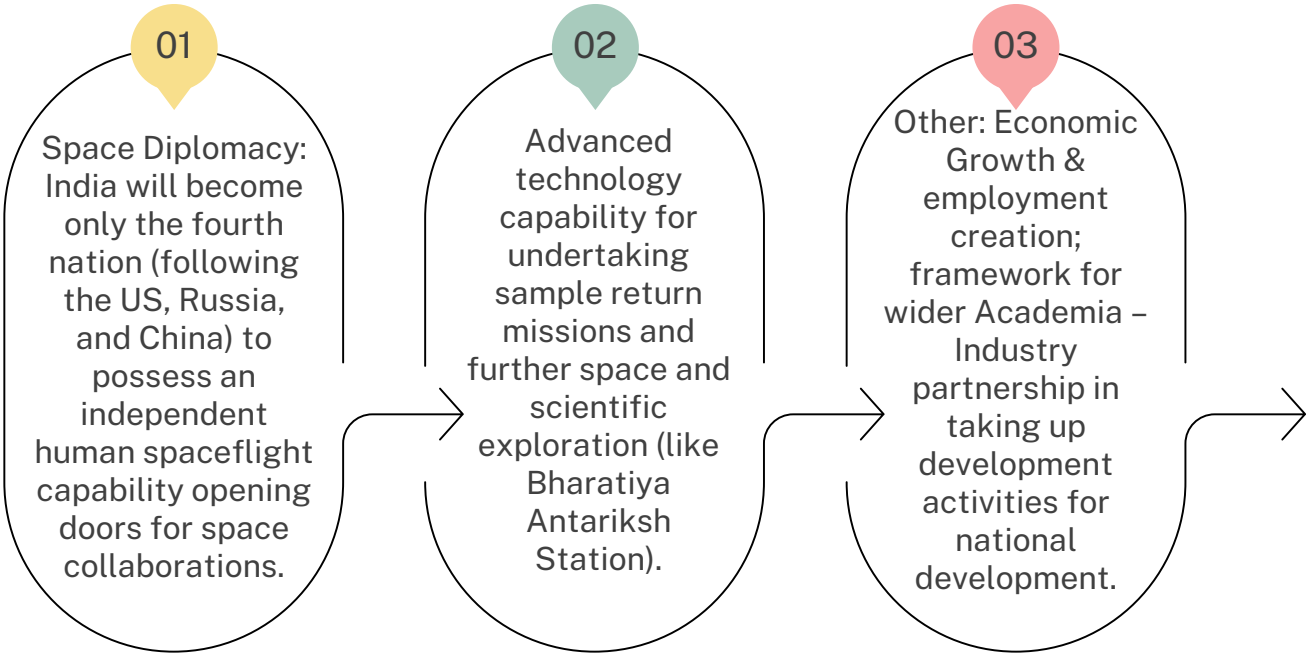
ISRO successfully conducted the second Integrated Air Drop Test for the Gaganyaan mission The test validates the safe descent and landing systems of the Crew Module, specifically testing the parachute deployment sequences under simulated flight conditions.

About Gaganyaan Mission

- **Objective:** Demonstration **of human spaceflight capability** by launching **a crew of 3 members** to a **Low Earth Orbit (LEO) of 400 km** for a 3 days mission and bringing them back safely to earth, by landing in Indian sea waters.
  - **Two unmanned missions** and **one manned mission** will be undertaken by ISRO.
- **Three Components of the Mission**
  - **Human Rated Launch Vehicle (HLVM-3):** ISRO's reliable heavy-lift launcher, **LVM3, has been re-configured** to meet **human rating** requirements. It is a **three-stage rocket**:
    - **First stage:** Two **solid-fuel boosters** strapped to the rocket core.
    - **Second stage:** Powered by **two liquid-fuelled**, clustered **Vikas 2 engines**.
    - **Third stage:** Equipped with the **CE-20 indigenous cryogenic engine,** using liquid hydrogen and liquid oxygen as fuel and oxidiser, respectively.
- **Orbital Module:** A habitable space with Earth like environment in space for the crew that will be orbiting Earth comprises of
  - **Crew module:** Include environmental control and life support systems (ECLSS), parachutes.
  - **Service module:** An unpressurised bus carrying propulsion, power, thermal radiators, and water and oxygen tanks.
- **Crew Escape System (CES):** CES is a **safety mechanism** designed to save the astronauts' lives if something goes wrong during launch.

CIVILS WITH AKASH

SIGNIFICANCE OF THE GAGANYAAN MISSION FOR INDIA



ISSAR 2025 Released



Indian Space Situational Awareness Report for 2025 (ISSAR 2025) Report offers an annual assessment of prevailing space situation released by Indian Space Research Organisation (ISRO)

Key Highlights of the Report

- **Record Launches:** Year 2025 witnessed 315 out of 328 successful launch attempts placing 4198 known **operational satellites.**
- **Interest in Lunar Explorations:** Four lunar missions in 2025, all by private players.
  - **Blue Ghost Mission 1** became **first privately owned spacecraft** to successfully **soft land on Moon.**
- **Space congestion and risk:** High **close approach alerts (~1,60,000)** indicate congestion especially in **Low-Earth orbit (LEO).**

Indian Space Scenario (by End of 2025)

- **Spacecraft:** 144 including those from private operators/academic institutions launched.
  - GSLV-F15/NVS-02 (marked 100th launch of an Indian Launch Vehicle from **Satish Dhawan Space Centre, Sriharikota**).
  - Number of operational satellites owned by Government was **22 in Low Earth Orbit (LEO)** and **31 in Geo-synchronous Earth Orbit (GEO).**
- **Active Deep Space Missions: Chandrayaan-2 Orbiter (CH2O)** and **Aditya-L1**.
- **Key Milestones: SpaDeX mission**; Voyage of Indian astronaut, Group Captain Shubhanshu Shukla commanding private Axiom 4 crewed mission to International Space Station.

CIVILS WITH AKASH

ISRO'S EFFORTS TO PRESERVE SPACE SUSTAINABILITY

Commitment to Debris Free Space Mission (DFSM): Declared in 2024 for debris free space missions by all space actors by 2030.

Indigenous Efforts: Network for Space Objects Tracking and Analysis (NETRA), Multi-Object Tracking Radar (MOTR) at Sriharikota; Baker Nunn Schmidt Telescope (BNST), currently being refurbished at Nainital.

Particpation in Global Fora: Including Inter-Agency Space Debris Coordination Committee (IADC), IAA Space Debris Committee, etc.

India's First Chip Fabrication Plant



India's First Chip Fabrication Plant Notified at Special Economic Zone (SEZ) Dholera, Gujarat AI-enabled Semiconductor Fabrication facility is to be developed by Tata Semiconductor Manufacturing Private Limited.

- **Fabrication** is a "front-end" process where integrated circuits are etched onto silicon wafers.

Significance

- **Strategic Autonomy:** It will **reduce import dependence,** securing India's **supply chains** for defense, telecommunications, and automotive sectors etc.
- **Skilled Employment Generation:** Expected to generate **~21,000 jobs in electronic hardware, software, and IT/ITES services.**
- **Technology Leap: Moving from "Assembly, Testing, Marking, and Packaging" (ATMP) to "Fabrication"** places India in an elite club of nations with end-to-end chip-making capabilities.
  - **Previous Initiatives:** ATMP and Outsourced Semiconductor Assembly and Testing (OSAT) units at **Sanand, Gujarat etc.**

The government aims to build a **robust semiconductor ecosystem** through **SEZs** and position **India as a global hub for electronics and chip manufacturing.**

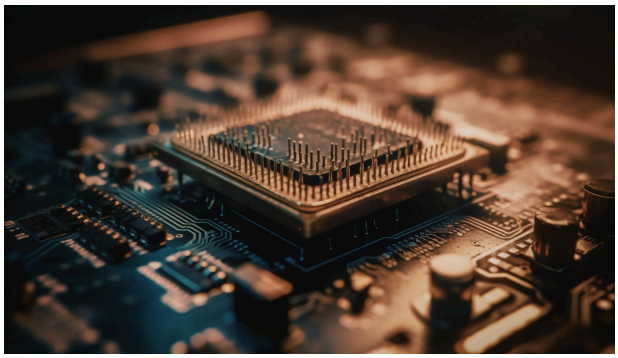
CIVILS WITH AKASH

IMPORTANT NOTE!

DEVELOPMENTAL FRAMEWORK: THE SEZ MODEL

- SEZs are designated areas within a country that operate under a distinct regulatory and fiscal framework to promote trade and investment.
- The notification follows critical amendments of 2025 to the SEZ Rules, 2006 designed to attract investments, foster innovation, and enhance ease of doing business.
- E.g. Reduced Land Requirement from 50 to 10 hectares, permitting domestic sales in the Domestic Tariff Area (DTA) on payment of duties etc.

Advanced 3D Semiconductor Packaging Unit



Foundation stone laid for India's first Advanced 3D Semiconductor Packaging Unit in Bhubaneswar The project marks a significant step towards strengthening the domestic semiconductor ecosystem and advancing the vision of Atmanirbhar Bharat.

- The facility will function as a vertically integrated ATMP (Assembly, Testing, Marking and Packaging) unit

Need and Significance of Promoting Domestic Semiconductor Manufacturing

- **Reduces Import Dependence:** Strengthens domestic semiconductor manufacturing capacity, reducing reliance on high import volumes.
  - Currently, India **imports more than 90%** of its semiconductor needs.
- **Supply Chain Diversification**: Currently, about 70% of the world's semiconductor manufacturing is concentrated in South Korea, Taiwan, China, the United States, and Japan.
- **Boost to Emerging Sectors:** Supports data centres, Artificial Intelligence, machine learning, 5G/6G communications, defence, aerospace and advanced electronics.
- **Economic Security:** Reduces risk from global chip shortages (e.g., Covid-19 and Russia–Ukraine war disruptions).

Initiatives taken to support Semiconductor Industry

- **India Semiconductor Mission (ISM) & Semicon India Programme:** Aims to build a vibrant semiconductor and display ecosystem to enable India's emergence as a global hub for electronics manufacturing and design.
- **Talent and Skill Development:** Includes **Chips to Start-up (C2S) Programme, AICTE Curriculum Updates (introduced specialised engineering programs), etc.**
- **Indigenous Technologies: Microprocessor Development** and **Digital India RISC-V** Programmes have created native processors such as **SHAKTI, VIKRAM,** and **DHRUV64.**
- **Global Collaboration:** E.g., India- U.S. Initiative on Critical and Emerging Technology (iCET), U.S.-led Pax Silica Initiative, etc.
- **State Policies:** E.g., Gujarat Semiconductor Policy 2022–27
- **Other:** Scheme for Promotion of Manufacturing of Electronic Components and Semiconductors (SPECS), Electronics Components and Manufacturing Scheme (ECMS), etc.

CIVILS WITH AKASH

Flex Fuel Vehicles

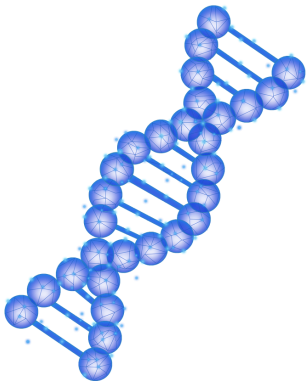


India is considering transition to FFVs to reduce dependence on imported crude.

About FFVs

- FFVs are modified vehicles, currently **capable of operating entirely on gasoline** or any blend of **gasoline and ethanol (up to 83% or E83).**
  - Modern FFVs are increasingly designed to operate on higher blends, including E100 (pure ethanol).
- They have a **conventional internal combustion engine** similar to the existing gasoline-only vehicles except for their ethanol-compatible fuel system and a different powertrain calibration.
- They display **improved acceleration performance** when operating on higher ethanol blends.

Genome India Project



Genome India Project (GIP) data reveals 44 million unique Indian genetic variants The data from the GIP was compared to existing global databases in a study.

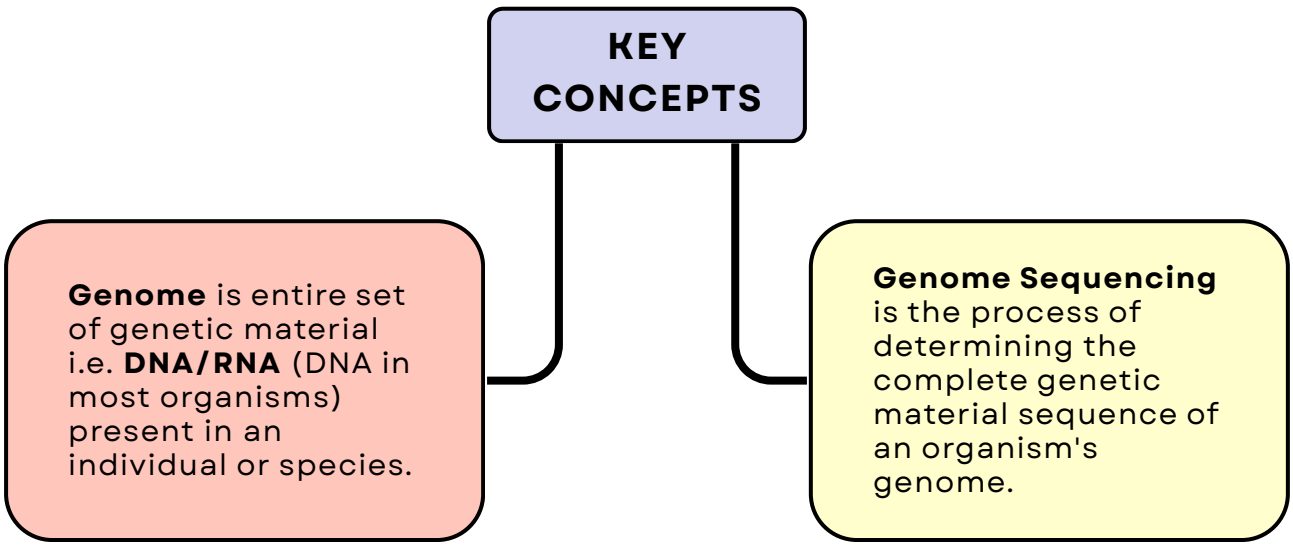
Key Findings of Study

- **Genetic Variants:** Over 129 million genetic variants were identified.
- **Endogamy (marriage within communities)**: has resulted in genetically distinct and isolated groups.
- **Contrasting Population Dynamics:**
  - **Non-tribal populations:** greater genetic mixing and population growth.
  - **Tribal populations:** low effective population size, high genetic drift, and strong founder effects (certain rare global variants become locally common due to prolonged isolation).

About Genome India Project (GIP)

- **Launched:** in **2020** by Department of Biotechnology (DBT), under the **Ministry of Science and Technology**.
  - It is an **Indian equivalent of the Human Genome Project (HGP)**, a global-level effort to map human genomes, launched in October 1990 and completed in April 2003.
- **Objective**: To build a comprehensive catalogue of genetic variations that reflects the unique diversity of the Indian population.
- **Sample Size and Diversity:** The study collected samples from **10,000 healthy and unrelated individuals**.
  - These individuals represent **83 distinct population groups** and span India's **four prominent linguistic families**: Indo-European, Dravidian, Austro-Asiatic, and Tibeto-Burman.
- **Significance**:
  - **Healthcare: Disease prediction and early diagnosis** with better disease gene discovery**, population-specific diagnostics** (e.g. impact of endogamy on diseases), etc.
  - **Reduces Bias:** as global genetic databases remain dominated by European populations.
  - **R&D:** Boosts India's and global genomic research and innovation ecosystem.

CIVILS WITH AKASH



GM Mosquitoes



New research has confirmed that Genetically Modified (GM) mosquitoes can suppress malaria parasites from real-world infections.

About GM Mosquitoes

- **Definition:**These are mosquitoes whose **DNA has been deliberately altered** using **Gene Drive technology to change specific traits** which either suppress the mosquito population or blocks disease transmission.
- **Gene Drive technology:** using tools like **CRISPR-Cas9**, the **modified gene is passed** up to ~90% of offspring.

NASA's Curiosity Rover



NASA's Curiosity rover detected organic molecules never seen before on Mars including chemicals considered building blocks of life.

- These molecules are important as they are **precursors to DNA and RNA**.

About Curiosity Rover

- It is part of **NASA's Mars Science Laboratory mission,** launched in **2011.**
- **Objective**: to study if **Mars has the right environmental conditions** to **support small life forms called microbes?**
- Curiosity explores **Gale Crater** and acquires rock, soil, and air samples for onboard analysis.

TRAWL Assembly for T-72/T-90 Tanks



The Ministry of Defence has signed contracts with Bharat Earth Movers Limited (BEML) and Electro Pneumatics and Hydraulics (India) Private Limited for the procurement of TRAWL Assembly for T-72/T-90 Tanks.

About TRAWL Assembly

- It is a **mine-clearing device** mounted on battle tanks like **T-72 and T-90** to safely **breach minefields**.

About Tanks

- **T-72 (Ajeya):** Ex-USSR main battle tank, **entering service in 1973,** with approximately **25,000 units built.**
  - T-72 possesses an **NBC (nuclear, biological, chemical) protection** system and is engineered for deep wading, including submerged river crossings.
- **T-90:** Russian main battle tank, a modernized evolution of the T-72, **entering service in 1992.**
  - India is the **largest operator of the T-90**, with the **"Bhishma" variant**.

CIVILS WITH ARJUN

Sustainable Aviation Fuel



Government allows blending ethanol and synthetic hydrocarbons into Aviation Turbine Fuel (ATF).

- ATF, widely recognised as jet fuel, is primarily produced by refining crude oil.

About Sustainable Aviation Fuel (SAF)

- SAF is a **liquid fuel** that **can be produced** from a number of sources (feedstock) including waste oil and fats, municipal waste, and non-food crops.
- **Significance**: Reduces CO2 emissions by up to 80%.
- **SAF can be blended** at different levels with limits between 10% and 50%, depending on the feedstock and how the fuel is produced.
- India is targeting to blend 1 per cent SAF into jet fuel for international flights by 2027, rising to 2 per cent by 2028 and 5 per cent by 2030 in line with the CORSIA mandate.
  - **Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)** is led by the International Civil Aviation Organisation (ICAO)
  - No targets for fuel used in domestic flights have been set so far.

CIVILS WITH AKASH

Cerium-Magnesium Changesite



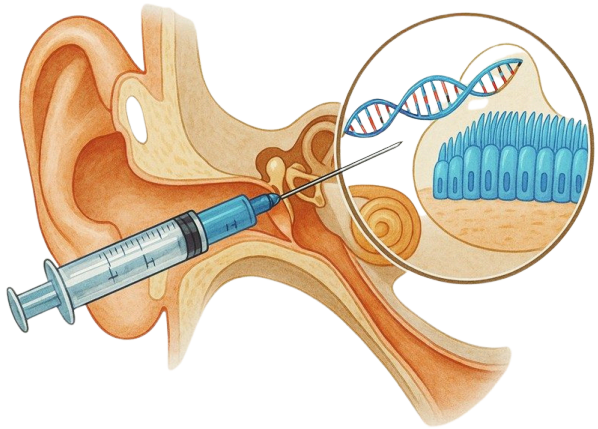
New mineral Cerium-Magnesium Changesite has been discovered in lunar meteorite named Pakepake 005 found in Taklamakan Desert, China.

- The finding raises total known **lunar minerals to 11**.

About Cerium-Magnesium Changesite

- It is a **rare earth-bearing phosphate mineral** with distinctive physical and chemical characteristics.
- **Physical Properties: Colourless, transparent, with a glass-like lustre.**
  - It is also **fragile** and shows **shell-like fracture,** and **glows under UV light.**
- **Scientific Significance:** Helps understand **volcanic processes on the Moon** and distribution of **rare earth elements.**
  - **Its fluorescence** makes it valuable in development of more efficient LEDs.

Gene Therapy for Genetic Hearing Loss



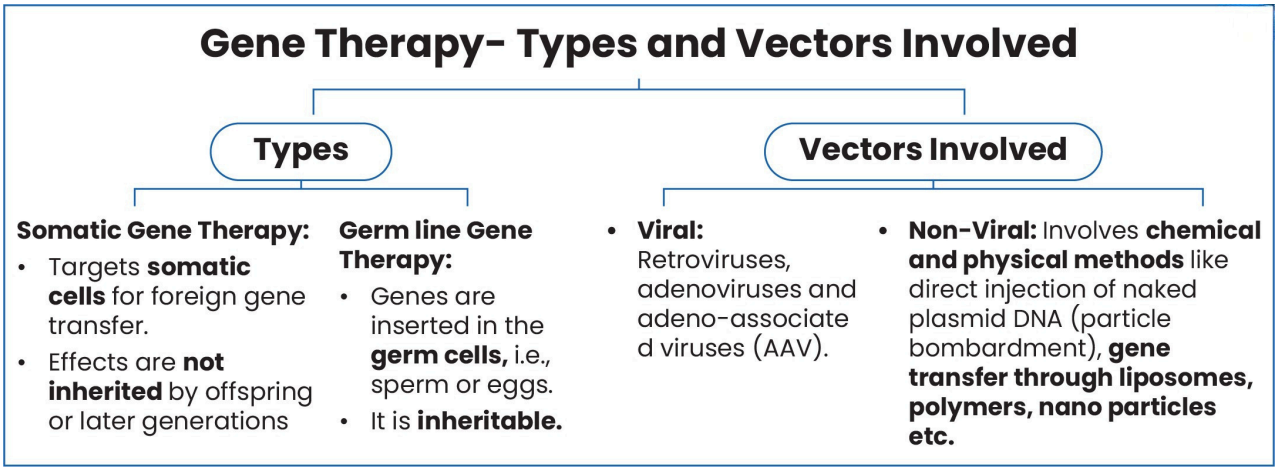
The therapy, called Otarmeni, made by Regeneron Pharmaceuticals was approved by United States Food and Drug Administration under National Priority Voucher Program.

Key Highlights of the Approved Therapy

- **OTOF Gene Mutation:** Therapy is designed to treat hearing loss caused by **OTOF gene mutations.**
  - OTOF Gene codes for a **protein called otoferlin**, needed by inner ear cells to translate vibrations into signals interpreted by brain.
  - When people carry two defective copies of this gene (one from each parent), it causes **severe-to-profound hearing loss, accounting for 2%- 8% of inherited, non-syndromic cases.**
- **Otarmeni:** Is a **one-time biologic-device combination product** including a **dual adeno-associated virus serotype 1 (AAV1) vector gene therapy.**
  - It **delivers a functional copy of OTOF gene** to inner hair cells to restore otoferlin production and auditory signalling.
  - **Dual adeno-associated virus (AAV) therapy,** involves the use of two different adeno-associated viruses (AAVs) to deliver therapeutic genes.

About Gene Therapy

- **Meaning:** Refers to a collection of methods that allows **correction of a gene defect.** It involves insertion of genes into a person's cells and tissues to treat a disease.
  - A vector is a carrier u**sed to deliver the therapeutic gene into target cells**.



India's Bioeconomy



Addressing the International conference, the Union Minister focused on bioeconomy-led growth and the sector projected to grow to $1 trillion by 2047.

- Bioeconomy is "the **production, use and conservation of biological resources**, including related **knowledge, science, technology, and innovation** to provide information, products, processes and services to all economic sectors with the aim of moving towards a sustainable economy".

Achievements of India's Bioeconomy

- **Sector Growth:** $10 billion (2014) to $195.3 billion (2025), contributing 4.8% to GDP.
  - **Increase in Start-Ups:** From 50 (2014) to 11,855 (2025).
- **Lower Current Account Deficit:** $12-14 billion savings in foreign exchange due to reduction in petrol imports.
- **Growth Drivers:** 20% blending of ethanol in petrol, consumption of GLP-1 class of drugs, opening of dozens of new Global Capability Centers (GCCs), and usage of enzymes and microbes in industrial sectors like textiles, detergents, food processing, biofuels etc.
- **Research and Innovation:** Development of world's first DNA COVID-19 vaccine (ZyCoV-D), indigenous CAR-T cell therapy, mRNA vaccine platforms, India's first indigenously developed antibiotic (Nafithromycin), establishment of a National Biobank.

CIVILS WITH AKASH

KEY INITIATIVES PROMOTING BIOECONOMY IN INDIA

- BioE3 (Biotechnology for Economy, Environment and Employment) Policy: Includes initiatives such as advanced biomanufacturing facilities, bio-foundry clusters, and bio-AI hubs.
- BioPharma SHAKTI Programme: To enhance India's capabilities in next-generation biopharmaceuticals and expand clinical research infrastructure.
- Research, Development and Innovation (RDI) Fund: ₹1 lakh crore fund to support deep-tech innovation including biotechnology.
- Biotechnology Industry Research Assistance Council (BIRAC): Not-for-profit Section 8, Schedule B, Public Sector Enterprise under Department of Biotechnology.
  - Its initiatives include National Biopharma Mission (NBM)-Innovate in India (i3), Biotechnology Ignition Grant (BIG), Small Business Innovation Research Initiative (SBIRI), Biotechnology Industry Partnership Programme (BIPP) etc.

HISTORY



CHANAKYA IAS ACADEMY

Samrat Samprati



The PM inaugurated the Samrat Samprati Museum in Koba, Gandhinagar, Gujarat on Mahavir Jayanti.

About Samrat Samprati

- A **Mauryan emperor** and the **grandson of Emperor Ashok**, born to father Kunal and mother Kanchanmala.
- Known as **Indrapalit, Sangat and Vigatashok;** his life is described in Jain scripture like **'Sampratikatha', 'Parishistaparva', and 'Prabhavakcharita'.**
- Pivotal role in **spreading Jainism** (also referred to as **'Jain Ashoka'**) and the **principle of ahimsa (non-violence)** across the subcontinent.
- He is known to have **built and repaired many Jain temples**.

Amaravati and its cultural significance



CIVILS WITH AKASH

Lok Sabha clears Bill to make Amaravati sole capital of Andhra Pradesh.

About Amaravati and its Cultural Relevance:

- **Ancient Capital**: It served as the capital of the Satavahana dynasty (3rd century BCE).
- **Major Buddhist Pilgrimage Site**:
  - It is believed to be the **place where Gautam Buddha first taught the concept and teachings of "Kalachakra**."(Vajrayana Buddhism)
  - The **Amaravati Stupa** built in the 2nd century BCE is **one of the oldest and most well-preserved Buddhist monuments** with intricate carvings and sculptures depicting scenes from Buddha's life.
- **Amareswara Temple**: Built around the 5th century, this ancient Hindu temple is dedicated to Lord Shiva
- **Traditional Crafts**: The local culture is celebrated through traditional handicrafts like the vibrant, wooden Kondapalli toys and exquisite Kalamkari textiles (hand-painted or block-printed fabrics).

Kalachuri Dynasty



Archaeological Survey of India excavation finds a sophisticated stepped reservoir on the Elephanta Islands.

- During the excavation several copper coins have been identified as belonging to ruler **Krishnaraja of the Kalachuri dynasty** of the sixth century CE.

Kalachuri Dynasty

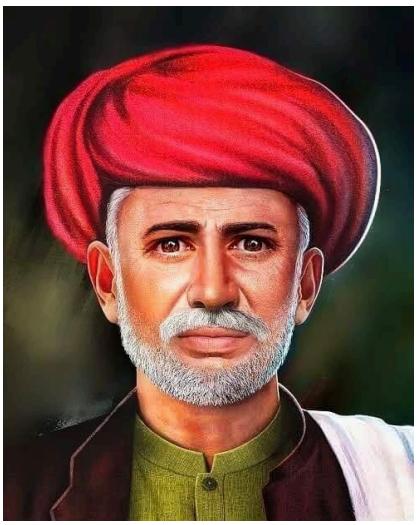
- **Origin:** They were a Kshatriya tribe mentioned in Brahmanical epics and the Puranas.
- **Major Branches and Rulers**
  - **Early Kalachuris/Kalachuries of Mahishmati (550–620 CE):** Ruled over parts of present-day Gujarat, Madhya Pradesh, and Maharashtra
    - **Important Rulers:** Krishnaraja, Shankaragana , Buddharaja
  - **Kalachuris of Chedi (or Tripuri):** Ruled from their capital at Tripuri around 9th century AD (near modern Jabalpur, Madhya Pradesh)
    - **Important Rulers:** Kokalla I, Gangeyadeva , Vijayasimha
  - **Kalachuris of Kalyani (1156–1181 CE):** Short-lived but significant branch was founded by Bijjala II in parts of Karnataka and Maharashtra
    - The **Virashaiva (or Lingayat)** movement was founded by **Basavanna**, a minister in Bijjala's court
- **Religion and Society**
  - **Kalachuris of Chedi** strongly patronized the Brahmanical religion, showing particular devotion to Shaivism and Vishnu worship.
  - **Shakti worship and the Yogini cult** were highly prevalent, leading to the construction of 64-Yogini temples in places like Khajuraho, Bheraghat and Shahdol.
- **Art and Architecture:** They made notable contributions to rock-cut architecture, excavating Caves 6 and 7 at Aurangabad and patronizing parts of Elephanta, Ellora (Cave 29), and Jogeshwari.

CIVICS WITH AKASH

ELEPHANTA ISLANDS

- Location: Traditionally known as Gharapuri, it is located off the coast of Mumbai
- The island has been under the control of numerous powers, including the Mauryas, Chalukyas, Rashtrakutas, Yadavas, the Portuguese, the Marathas, and the British
- Elephanta Caves: Located on Elephanta Islands, is a UNESCO World Heritage Site
  - The cave is famous for the exquisite and vibrant sculptures dedicated to Lord Shiva (including iconic three-headed Shiva, or Trimurti)

Mahatma Jyotirao Phule



Start of celebration of Mahatma Jyotirao Phule's 200th birth anniversary

About Jyotirao Phule (1827–1890)

- **Born:** In Maharashtra into a socially backward Mali community.
- He was given a **title of Mahatma** by **Vithalrao Krishnaji Vandekar**.
- **Father of Indian Social Revolution:** Phule worked for upliftment of backward classes, and women and wanted **abolition of caste system.**
- **Publications:** Satyashodhak (Weekly newspaper), Gulamgiri, Brahmananche Kasab, Sarvajanik Satyadharma Pustak, Shetkaryacha Asud etc.

Contribution of Phule towards upliftment of Subaltern Classes

- **Shudras and Ati-Shudras (Untouchables):** First to unite them as one oppressed group.
  - **Satyashodhak Samaj (1873):** Founded to organize lower castes against social order based on verna.
  - **Knowledge (Tritiya Ratna) as Liberation:** Opened schools for Mahar and Mang communities excluded from education.
  - **His publication "Gulamgiri" (1873)** compared caste oppression in India with American slavery to evoke global consciousness.
- **Women:** Started **first school for girls** in Pune in 1848.
- He also established **Home for the Prevention of Infanticide (1863)** (Baal Hatya Pratibandhak Griha) and **advocated widow remarriage**.
- **Peasants:** His collection of speeches **"Shetkaryacha Asud"** analysed exploitation of peasants by moneylenders and the bureaucracy.
- **Poor Classes:** Urged free, compulsory primary education before **Hunter commission (1882);** opposed 'downward filtration' theory.
  - Also proposed **inexpensive Satyashodhak marriages** without brahmin priests.

CIVILS WITH AKASH

Konyak Tribe



Recently, Researchers from Nagaland University, identified traditional herbal formulation used by the Konyak tribe for its anti-cancer potential.

- It is a five-plant polyherbal formulation including-
  - Persicaria maculosa Gray (Redshank/Lady's Thumb)
  - Acorus calamus L. (Sweet Flag)
  - Erythrina variegata L. (Tiger's Claw/Indian Coral Tree)
  - Stereospermum chelonoides (L.f.) DC. (Padri Tree)
  - Oroxylum indicum (L.) Kurz (Indian Trumpet Flower)
- Its bioactive compounds can effectively target **VEGFR2**, a key protein responsible for tumour blood vessel growth.

About Konyak Tribe

- Tribe of **Mongoloid origin,** predominantly found in **Nagaland.**
- **Largest of all Naga tribes**
- **Key festival**: Aoleang Monyu
- Governed by powerful **hereditary chiefs called 'Anghs'**
- Their language belongs to the **Tibeto-Burman family.**
- They are known as **headhunters of North East India.**

Matua community



Some people belonging to the Matua community reportedly faced voter deletions following the Special Intensive Revision in West Bengal.

About Matua community

- The **Matua** is a Dalit (Scheduled Caste) community, primarily belonging to the **Namasudra sect**, with roots in East Bengal (modern-day Bangladesh).
- The meaning of the word 'Matua' is 'NAAME PREME MATOYARA'(Fall in Love with Name).
- The Matua movement (**Matua Mahasangha**) was founded **by Harichand Thakur** in the 19th century.
- It sought to address the socio-economic, educational, and cultural challenges faced by the marginalized Namasudra community.

Adi Shankaracharya



The Prime Minister paid tribute to Adi Shankaracharya on his Jayanti.

About Adi Shankaracharya (8th Century CE)

- **Born:** He was born in 788 A.D. in Kalady, Kerala.
- He propagated the concept of **Advaita (non-dualism).**
  - He taught that the individual soul (Atman) is not separate from Brahman (the ultimate, formless reality).
  - The perceived duality in the world is an **illusion (Maya),** and **liberation (Moksha)** comes from realizing the **oneness** of the individual.
- He established **four mathas** in the four cardinal directions of India - **Sringeri (South), Dwarka (West), Puri (East), and Badrinath (North).**
- **Literary works:** Bhaja Govindam, Atma Shatakam, Saundarya Lahari, etc.

Harvest Festivals in India



President and Vice President have extended greetings on multiple harvest festivals and new year celebrations across India.

Different Harvest Festivals and New Years

- **Baisakhi** - Punjab and Haryana
- **Bohag Bihu**- Assamese New Year
- **Meshadi Puthandu**- Tamil New Year
- **Vishu** - Kerala New Year
- **Pana Sankranti**- Odia New Year
- **Cheiraoba**- Lunar new year in Manipur
- **Poila Boishakh**- Bengali New Year

Khasi and Garo Languages



Meghalaya announced the indigenous Khasi and Garo languages as official languages of state, in addition to English.

- These languages can now be used in **government communications.**
- Once necessary amendments are made to relevant acts of State, legislators will be able to **speak and debate** in these languages during assembly sessions.

About Khasi and Garo Languages

- **Khāsi:** Member of Khasian branch of **Mon-Khmer family**, which is a part of the **Austroasiatic stock.**
- **Garo:** One of the most important languages of Garo Hills districts (Meghalaya), belongs to one of Bodo groups of **Sino-Tibetan language.**
- **Note:** Both are **not currently part of Eighth Schedule** of Constitution.

Petroglyphs



The foundation stone was laid for India's first Petroglyph Conservation Park on the banks of the Indus River in Ladakh.

- **The park aims** to serve as a dedicated conservation space for centuries-old rock carvings (petroglyphs) that are increasingly under threat due to unregulated tourism, rapid infrastructure development, and a lack of awareness.

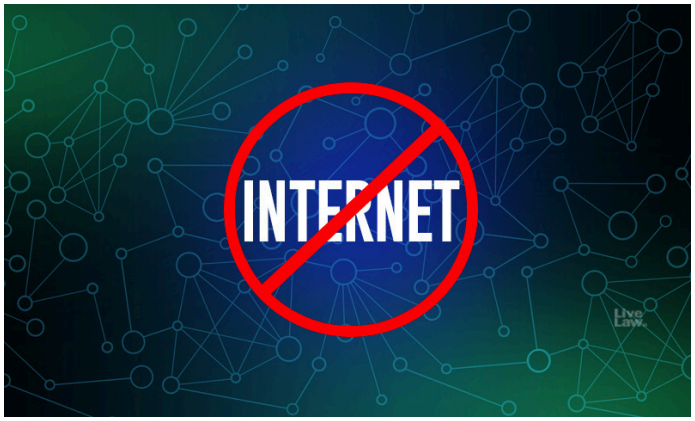
About Petroglyphs

- **Petroglyphs** are prehistoric images, symbols, or carvings etched, pecked, or engraved directly onto rock surfaces.
- These are **"open-air museums"** and **"civilisations carved on stone,"** and represent a continuous record of human history from the Palaeolithic Age to later historic periods.
- These carvings **depict ancient** trade routes, migration patterns, belief systems, and ecological histories.
- **Major Petroglyphs in India:** Bhimbetka (Madhya Pradesh), Ratnagiri (Maharashtra), Gawilgarh hills (Odisha), etc.

CIVILS WITH AK

OTHER NEWS

Internet Shutdowns



Internet Shutdowns in 2025 report by Access Now NGO released for Keepiton Coalition Keepiton coalition (by Access Now) is a global civil society alliance working to end internet shutdowns.

Key Highlights

- **Global Snapshot: 2025** saw a **record** 313 internet shutdowns (across 52 countries, continuing the rise from 2023
- **India:** recorded **65 shutdowns** (lowest since 2017 but highest in any democracy, 2nd highest overall).
  - **India Exception highlighted :** Orders are legally published, but still it deems shutdowns incompatible with democracy.

Concerns related to internet shutdown

- **Human rights abuses :** International Criminal Court linked internet shutdowns to crimes against humanity, noting they help perpetrators evade accountability.
- **Governance & Welfare**: eg. Disruption of Direct Benefit Transfers (DBT)
- **Economic Impact:** India lost ~$323 mn due to internet shut down in 2024
- **Impacts Fundamental Rights**: access to the internet is under right to education and privacy under **Article 21 (Faheema Shirin v. State of Kerala (2019)**
  - Freedom to trade and commerce via internet falls under Article 19 (Anuradha Bhasin v UoI)
- **Democratic Deficit:** Hinders press freedom, the right to information, and civil society mobilization.

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LEGAL PROVISIONS FOR INTERNET SHUTDOWN IN INDIA:

- Legal Basis: Governed by Telecommunications (Temporary Suspension of Services) Rules, 2024 under Telecommunications Act, 2023.
  - Authority: issued by Union Home Secretary or state home secretary
  - Emergency: order by joint secretary or above (to be confirmed within 24 hours by competent authority)
  - Mandating publication: including detailed justifications, geographical scope, and affected services.
  - Suspension duration cannot exceed 15 days.
- Section 163 of the Bharatiya Nagarik Suraksha Sanhita empowers magistrates to issue orders to maintain public order.

Workers' Protests in Industrial Hubs



Workers' Protests being Witnessed across Key Industrial Hubs Recent protests in Barauni (Bihar), Surat (Gujarat), Manesar (Haryana), and Noida (Uttar Pradesh) created concerns.

- Uttar Pradesh responded by retrospectively **hiking minimum wages** across worker categories.

Key Reasons for Simmering Workers' Protest

- **Recent Energy Crisis**: Leaving migrant workers grappling with **higher cost of living.**
- **Issues concerning Labor Laws:** Code on Wages creates a **National Floor Wage** and **National Minimum Wage** but offers no clear methodology for setting either.
- **Scale of informality:** Over 80% of India's workers are in informal sector, outside most labour code protections.
- **Demand for Better Facilities:** In terms of housing, safety at work, proper ventilation, lighting, regular bonuses, etc., not met by employers.
- **Issues with Trade Unions:** Existence of **multiple trade unions** in the same industry create conflict amongst them; also some labour unions are **politically motivated,** lacking workers' interest.

Key Reforms Undertaken

- **Social Security**: **Code on Social Security, 2020** covers Gig and Platform Workers with aggregators contributing 1- 2% of annual turnover (capped at 5% of payments to such workers).
- **Conditions of employment: Industrial Relations Code, 2020** offers Fixed Term Employment (FTE) to reduce excessive contractualization; recognises Trade Unions with 51% membership as the Negotiating Union.
- **Worker Rights and Safe Working Conditions: Occupational Safety, Health and Working Conditions Code 2020** provides **National Database for Unorganised Workers** along with victim compensation in case of injury or death.
- **Others: Safety at Workplace through** Initiatives like "She-Box"; **e-Shram portal** (register and support unorganised workers), etc.

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Supreme Court issues pan-India Road Safety directions



In Phalodi Accident v. National Highways Authority of India, the SC warned that expressways must not become "corridors of peril" due to administrative or infrastructural failures.

- It invoked **Article 142 of the Constitution of India** to issue **nationwide directions.**

Key Observations

- The SC held that **road safety** is part of the **right to life and dignity** under **Article 21 of the Constitution of India.**
  - It clarified that **Article 21 creates a positive duty** on the State to ensure safe roads.
- National Highways (NHs) constitute a**pproximately 2%** of **India's total road length** but account for nearly **30% of all road fatalities.**

Key Directions issued by the SC

- **District Highway Safety Task Force:** Dedicated **highway safety task forces** must be set up in relevant districts (wherever the NH passes through) for coordination.
- **Infrastructure Improvement**: Roads must have proper **lighting, signage, markings,** and **crash barriers** as per safety standards.
- **Surveillance & Patrolling**: Regular highway patrolling and an **Advanced Traffic Management System-based monitoring** must be **ensured** (e.g., CCTV cameras, speed detectors, emergency call boxes).
- **Blackspot Rectification:** Accident-prone areas **must be identified** and **fix** within a time-bound framework.
- **Institutional Coordination:** The **Ministry of Road Transport and Highways (MoRTH)** must create an **inter-state safety committee to standardise enforcement (e.g., uniform driving-hour limits, common penalty rules across states).**
- **Others**: Illegal Parking Ban, Emergency Response deployed at regular intervals, safe parking and rest facilities etc.

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Information Warfare



The Information Warfare is rapidly emerging as the fourth dimension of warfare in addition to air, land, and sea - from India's Operation Sindoor to ongoing US-Iran War.

About Information Warfare

- **Definition:** Information Warfare is a term used to describe the **collection, distribution, modification, disruption, interference withcorruption and degradation of information** in order to gain some advantage over an adversary.
  - It involves using various strategies and techniques to **manipulate and influence public opinion, political discourse, and social norms** through digital and social media platforms.
- **Tactics used: Disinformation campaign** (e.g. circulating morphed images, AI videos)**, Fake news** (masquerading as real news), **exploiting social media algorithms** to amplify selected content and control visibility and reach.
- **Features:** Low entry cost, perception management of winning or losing a war, psychological manipulation of public, etc.
  - **Traditional intelligence systems** often struggle to detect these threats.

Information Warfare and India

- **India's Shortcomings:** India's approach to information warfare is **largely reactive, focusing on deterrence, defense, and fact-checking** rather than proactive engagement.
- **Way Ahead:**
  - Enhanced inter-ministerial coordination, dedicated funding for offensive cyber and psychological operations.
  - Leverage artificial intelligence to proactively disseminate its narratives, and collaborate with social media platforms to curb disinformation.

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INITIATIVES TAKEN TO COUNTER INFORMATION WARFARE IN INDIA

01 — Digital literacy programmes: E.g. Pradhan Mantri Gramin Digital Saksharta Abhiyan and National Digital Literacy Mission.

02 — Military preparedness: E.g. creation of Director General Information Warfare Post in the Indian Army.

03 — Others: PIB fact-check unit and WhatsApp chatbot, Government social media and rapid response teams.

Bharat Stage (BS) Emission Standards



Under Delhi Air Pollution Mitigation Action Plan, 2026, entry of non-BS-VI, non-CNG and non-electric goods vehicles will be restricted from November 1 to curb vehicular pollution.

About Bharat Stage Emission Standards

- Norms set by to regulate air pollutants from **internal combustion engines,** including motor vehicles, based on **European regulations (Euro norms),** first introduced in 2000.
- **Implementation:** Standards and timelines are set by the **Central Pollution Control Board (CPCB)** under the Ministry of Environment, Forest and Climate Change.
- **BSVI**: Implemented nationwide from **April 2020** to significantly curb vehicular pollution.
  - India moved from **BS-IV to BS-VI**, skipping BS-V to adopt stricter norms directly.
  - Sulphur content reduced from **50 ppm (BS-IV) to 10 ppm**
  - Significant reduction **in PM and NOx emissions**
  - Introduction of advanced technologies like **DPF (Diesel Particulate Filter)**

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NAMASTE Scheme

National Action for Mechanised Sanitation Ecosystem (NAMASTE) Scheme marked a significant milestone by profiling around 90 thousand sewer and septic tank workers.

About NAMASTE Scheme

- **Launched in:** 2023 as Central Sector Scheme.
- **Objective:** Formalize and rehabilitate persons engaged in hazardous cleaning of sewer and septic tanks.
- **Jointly initiated:** By the **Ministry of Social Justice and Empowerment** and **Ministry of Housing and Urban Affairs.**
  - Implemented by **National Safai Karamcharis Finance and Development Corporation (NSKFDC).**
- **Target Group:** Sewer and Septic tank sanitation Workers (SSWs); Wastepickers added in 2024.