Indian Polity

CIVILS WITH AKASH



Right To Be Forgotten



Delhi High court in 'Laksh Vir Singh Yadav V. Union Of India & Ors' recognized an individual's 'Right To Be Forgotten' as an integral facet of the fundamental right to privacy under Article 21.

- **Right to be forgotten:** Right to seek removal or restricted access to personal information from public accessibility that no longer serves legitimate purpose.

Key Highlights of Judgement

- Sets out detailed principles for when **names can be de-indexed or masked in court records**.
  - **De-indexing** (to be operated globally): Removes a person's **name as a searchable key** without deleting the record, limiting access through name-based searches.
    - **Application**: Cases ending in acquittal, discharge, etc.
    - **Exceptions**: It can't be applied in **cases against women, children or breach of public trust.**
  - **Masking**: Replaces names and personal identifiers in judicial records with neutral labels (e.g. XYZ).

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Right to privacy



SC balances child's right to know paternity and alleged father's right to privacy.

- The court has held that **DNA tests should not be ordered** routinely; however, when paternity is disputed, **courts may direct a DNA test**.

About Right to Privacy

- **The right to privacy** in India is a **fundamental right** protected under **Article 21** of the Constitution. **(Justice K.S. Puttaswamy Judgment)**
- **Article 12** of the **Universal Declaration of Human Rights, 1948** and **Article 17** of the **International Covenant on Civil and Political Rights (ICCPR), 1966**, legally protect persons against "arbitrary interference" with one's privacy.
  - India signed and ratified **the ICCPR** on April 10, 1979, without reservation.

AI Use in Indian Judiciary



Supreme Court Publishes Draft Regulations on AI Use in Judiciary Prepared by the Supreme Court AI committee, 'Draft Regulations for Use of Artificial Intelligence (AI) in Courts, 2026' outlines the framework for the responsible adoption of AI in the Indian judiciary.

- **Application:** All judicial, adjudicatory, and administrative functions of **the Supreme Court, High Courts, other courts, tribunals, and statutory commissions** performing adjudicatory roles in India.

Key Highlights of Draft

- **Objectives:** To demonstrably improve **access to justice, reduce delays, and enhance administrative efficiency.**
- **Guiding Principles**: AI deployment must **strictly adhere to human primacy, fairness, transparency, and data privacy** (under **Digital Personal Data Protection Act, 2023) and Indian Constitution.**
  - **Judicial officers remain entirely accountable** for all decisions.
- **Permitted Uses**: AI is **strictly an assistive tool** allowed for **administrative tasks, scheduling, legal research, translation, transcription, and accessibility services**, subject to human verification.
- **Absolute Bans**: AI is strictly prohibited from **deciding verdicts, evaluating bail or recidivism (risk scoring), predicting human behavior and surveillance** (of judges, lawyers, litigants, or stakeholders, unless legally authorized).
- **Administration**: AI adoption, standards, and policy development will be regulated by a **permanent national Apex Body**, a **research center (CoRE-AI)**, and **dedicated AI Committees at every High Court**.
- **Compliance & Oversight**: AI tools require **pre-deployment impact assessments** and **annual internal audits**.
  - Furthermore, **lawyers and litigants must explicitly disclose any use of AI** in preparing court documents.
- **Digital Inclusion:** AI tools **must be accessible** and **should not widen digital divides**.

IMPORTANT NOTE!

AI ADOPTION IN INDIAN JUDICIARY

- **Courtroom Transcription:** AI-enabled Automatic Speech Recognition (ASR) provides near real-time transcription of court proceedings.
- **Multilingual Justice:** AI-based SUVAS translates Supreme Court judgments into 18 Indian languages.
- **Filing & Registry Operations:** AI tools using Machine Learning and Optical Character Recognition automatically detect defects in e-filings.
- **Legal Research Assistance:**
  - **LegRAA (Legal Research Analysis Assistant)** analyzes documents and extracts relevant legal references.
  - **SUPACE (Supreme Court Portal for Assistance in Court Efficiency)** identifies precedents and clarifies case facts.
- **Voice-to-Text Dictation:** ASR-SHRUTI converts judges' speech into text for drafting orders and judgments.

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E-governance in India



Recently the E-Jagriti platform of the Department of Consumer Affairs won the National Awards for e-Governance 2026.

- E- Jagriti is a **digital platform that computerizes and** connects Consumer Commissions nationwide to ensure transparent, efficient, and speedy consumer dispute resolution.

About E-Governance

- It refers to the use of **Information and Communication Technology (ICT)** in governance and public administration.
- It aims to improve **efficiency, transparency, accountability, responsiveness**, and citizen participation.

Transformative Role of E-Governance in India

- **Improved Service Delivery**: Faster and anytime access to government services. E.g., UMANG – single platform for multiple government services.
- **Transparency & Accountability**: Reduces corruption through digital and auditable processes. E.g., Government e-Marketplace (GeM) – **transparent public procurement.**
- **Financial Inclusion**: Expands access to digital payments and banking. E.g., **UPI – instant, cashless digital transactions**.
- **Citizen Empowerment**: Easier grievance **redressal and consumer protection.** E.g., **e-Jagriti** – online consumer complaint filing and tracking.
- **Last-Mile Connectivity**: Extends governance to remote areas. E.g., **Common Service Centres (CSCs).**
- **Capacity Building of Government Officials:** E.g., iGOT Karmayogi platform **for training and efficiency improvement of civil servants.**
- **Citizen Participation**: Encourages **public engagement** in policymaking. E.g., **MyGov platform.**

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EVOLUTION OF E-GOVERNANCE IN INDIA

Phase	Year/Period	Key Feature
Initiation Phase	1976	Creation of the National Informatics Centre (NIC) to promote the use of computers in government administration.
Administrative Modernization Phase	Early 1990s	Introduction of digital systems and automation across government offices to improve operational effectiveness and openness.
Framework Development Phase	1999	Formulation of a national e-governance strategy to facilitate coordinated digital governance initiatives.
Implementation & Expansion Phase (NeGP)	2006	Launch of the National e-Governance Plan (NeGP) to enhance service delivery and strengthen transparency through Information and Communication Technology (ICT).
Digital Empowerment Phase (Digital India)	2015	Rollout of the Digital India Programme aimed at expanding digital infrastructure, promoting digital inclusion, and enabling online public services.
Integrated Citizen-Centric Phase	Present	Focus on seamless, inclusive, and citizen-oriented governance through interconnected digital platforms and services.

Social Media and Judiciary



The Delhi High Court in a contempt petition in Delhi High Court Bar Association v. Dr. Kapil Kakar & Ors. (2026) held that social media cannot be used to undermine Constitutional Institutions like the Judiciary.

Key Observations

- **Judicial criticism:** Judicial decisions may be **fairly criticized**, but baseless allegations of corruption, collusion, or criminality against judges are impermissible.
  - **Re: Arundhati Roy (2002):** Fair criticism of courts is permissible, but statements **undermining judicial authority may amount to contempt.**
  - **Amish Devgan v. Union of India (2021):** Free speech cannot be used to create public disorder; constitutional institutions deserve protection.
- **Safe Harbour & Intermediary Obligations:** Social media intermediaries cannot remain **"silent spectators"** and must promptly remove unlawful content **upon actual knowledge,** without waiting for specific court orders.
  - Under **Section 79(3)(b) of the IT Act, 2000,** failure to do so may results in the loss of safe harbour protection.

Social Media and Free Speech

- **Democratization vs Misuse:** Social media democratizes public discourse but enables hate speech, cyberbullying, and misinformation.
- **Constitutional Boundaries: Art. 19(1)(a)** guarantees free speech, subject to reasonable restrictions **Article 19(2)**, including defamation and contempt of court.
- **Risk of Media Trials:** Social media campaigns may prejudice public opinion, undermine the presumption of innocence, and affect investigations.
- **Scandalizing the Judiciary:** Baseless allegations against judicial institutions erode public confidence and obstruct justice delivery.

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Prime Minister of India

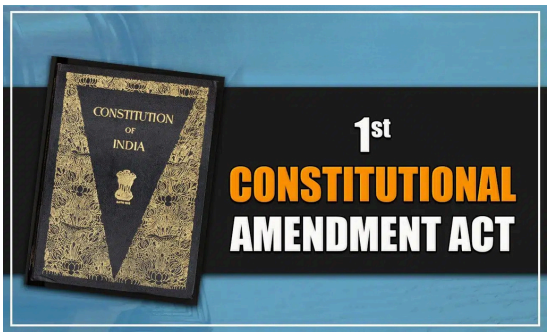


Prime Minister Narendra Modi surpassed Jawaharlal Nehru to become India's longest-serving continuously elected Prime Minister.

Prime Minister:

- **Appointment & Role (Article 75):** Appointed by the President, the PM serves as the **real (*de facto*) executive** and **head of the government.**
- **Advisory Duties (Article 74):** Heads of the Council of Ministers (CoM) to aid and advise the President on various matters.
- **Link:** Acts as the **principal communication channel** between the President and CoM, advising on crucial appointments, Parliament sessions, and Lok Sabha dissolution.
- **Chairmanships:** Serves as chairman of NITI Aayog, National Integration Council, Interstate Council, etc.

First Constitutional Amendment Act



2026 marks 75 years of passage of The Constitution (First Amendment) Act, 1951, amending the constitution for the first time.

About the First Amendment

- **Freedom of Speech (Article 19):** Expanded Article 19(2) to allow the State to impose "reasonable restrictions" on free speech on new grounds, specifically **"public order" and "friendly relations with foreign states."**
- **Affirmative Action & Equality (Article 15):** Enabled the **insertion of Article 15(4)**, allowing the State to make special provisions for the advancement of socially and educationally backward classes.
- **The Ninth Schedule:** Created a unique constitutional mechanism **(the Ninth Schedule)** to protect land reform laws from being challenged or struck down by courts on the grounds of violating fundamental rights.

Fundamental Right to Walk



The Supreme Court in Maniyar Iliyaz @ Shaik Riyaz v. P. Ayyappan & Ors. held that the right to walk on safe, demarcated footpaths is a Fundamental Right under Part III of the Constitution.

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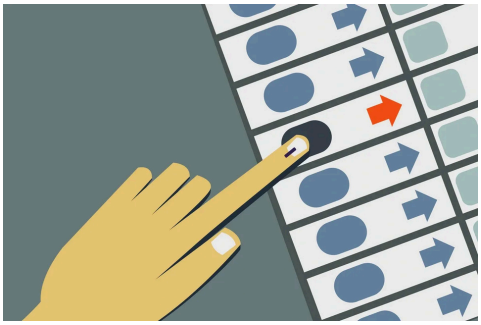
About the Judgement

- **The Court held that the Right to Walk flows from,**
  - **Article 19(1)(d): Freedom of Movement**: Right to **move freely throughout India.**
  - **Article 21: Right to life and personal liberty:** Guarantees protection of life and personal liberty, **ensuring a life with dignity, safety.**
- **It is also linked to:**
  - **Article 19(1)(a): Freedom of Speech and Expression**
  - **Article 19(1)(b): Freedom of Peaceful Assembly** and without arms
  - **Article 19(1)(c): Freedom to form Associations**, unions, co-operative societies.

Article 329



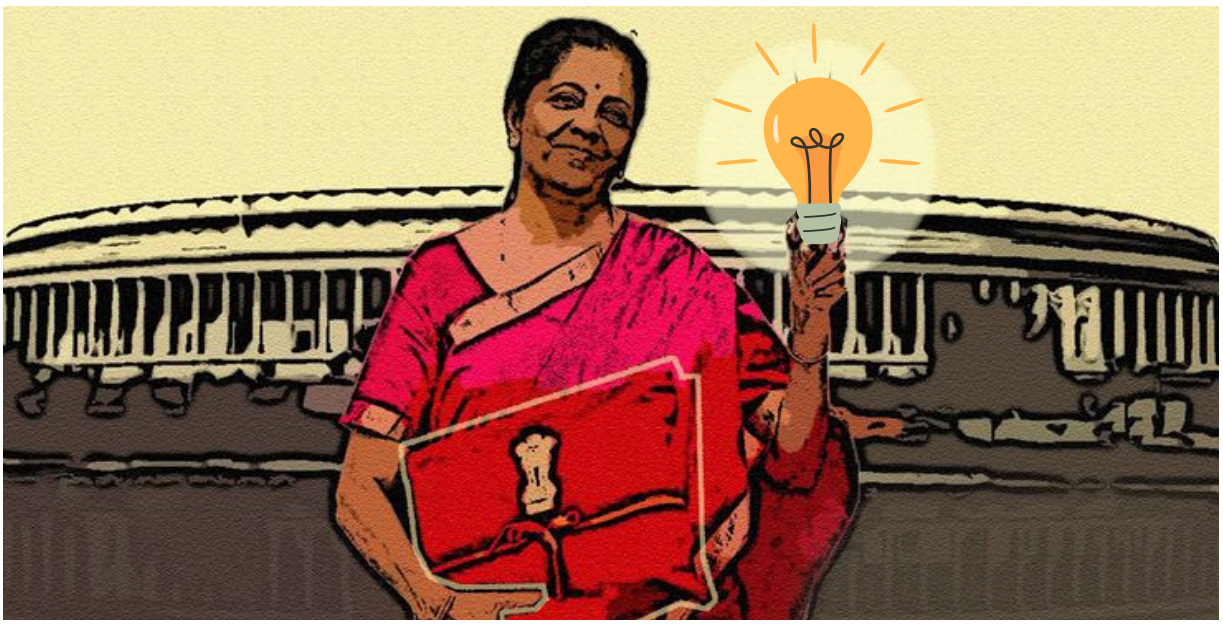
The Supreme Court dismissed the writ petition filed by Congress members against Rajya Sabha Nomination Rejection, citing the Constitutional bar on judiciary as per Article 329.

About Article 329

- It **prohibits the interference by courts** in **following electoral matters**:
  - Laws related to **delimitation of constituencies** or **allocation of seats** in Parliament and State Legislatures.
  - An election can be challenged only through an **election petition after the election is completed.**



CIVILS WITH AKASH



Cotton



Centre has temporarily exempted customs duty on cotton imports from 1 June–31 October 2026 to improve availability for the textile sector.

Cotton

- It is also termed as **"White-Gold".**
- A soft, fluffy natural fibre grown around seeds in a boll; a shrub (**semi-xerophytic)** crop of **tropical and subtropical regions.**
- In India it is grown in the kharif season **in semi-arid regions of India.**
- **Temperature:** Minimum 15°C for germination; 21–27°C optimal for growth.
  - It can tolerate temperature to 43°C but temperature below 21°C is detrimental to the crop.
- **Soil:** Well-drained alluvial, black, and red soils; sensitive to waterlogging.
- **Species of cotton**: There are **four cultivated species of cotton** and India is the **only country cultivating all four cotton species** on commercial scale.
- India has the **largest area under cotton cultivation** and **second largest producer** of cotton after China.

ATF Price Stabilisation Fund



Cabinet approves Price Stabilisation Fund for Scheduled Indian Airlines towards ATF pricing.

About the Fund

- **Corpus:** Up to ₹10,000 crore.
- **Purpose:** Stabilise Aviation Turbine Fuel (ATF) prices amid global fuel price volatility.
- **Support Mechanism:** Interest-free advance to Oil Marketing Companies (OMCs) to compensate from losses from elevated global prices.
- **Other:Fixed ATF Price Arrangement** for domestic and international operations, **Exclusive rights of ATF supply to OMCs.**
- **Duration: 36 months** (subject to annual review).
- **ATF Significance:** Accounts for nearly **40% of airline operating costs.**

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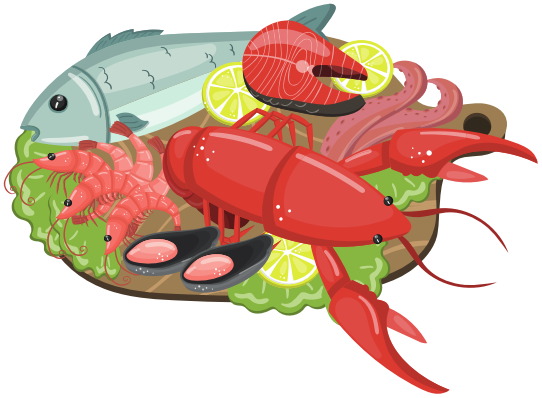
India's Seafood Exports



India's Seafood Exports Reach Record High in FY 2025–26 Spanning a wide and diversified basket, the sector is a major contributor to food security, employment, export earnings and sustainable livelihoods.

Key Highlights

- **All Time High Exports (Both Volume and Value):** India exported 19,72,018 metric tonnes (MT) of seafood **valued at USD 8.46 billion** during FY 2025–26.
- **Leading Export Item: Frozen shrimp** remained leading export item accounting for **40.19% of total export quantity** and **66.52% of total export earnings** in US dollar terms.
  - It was followed by **Frozen fish** and **Dried Seafood.**
- **Top Export Destinations:** United States and China.

Key Policy Recommendations to enhance Sector Competitiveness

- **Central Scheme for Development of Indigenous Broodstock:** To reduce reliance on expensive and pathogen-prone imported broodstock.
- **Central Scheme for Meeting Global Quality Standards for Seafood Products:** To ensure that Indian seafood meets global quality standards.
- **Ease of Export:** Managing country-specific export bans and mitigating freight costs.
- **Umbrella Body for Sector:** E.g. **Seafood Sector Governing Council (SSGC)** for collaboration, infrastructure support and development, etc.

Key Measures taken

- **Marine Products Export Development Authority (MPEDA):** Dedicated agency to facilitate seafood export under **Ministry of Commerce and Industry.**
- **Flagship Scheme:** Pradhan Mantri Matsya Sampada Yojana (PMMSY); Fisheries and Aquaculture Infrastructure Development Fund (FIDF), etc.
- **Others:** Enhanced duty-free import limit of specified inputs used in seafood processing; **SHAPHARI** certification, etc.

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India's New Middle Class



India's middle class is growing rapidly, driven by rising incomes, urbanisation, and economic growth.

- India's middle class expanded at **6.3% annually (1995–2021)** and constitutes **~31% of the population.**
- **India will surpass China** in middle-class population by **2030–35. (OECD)**

Economic contribution of Middle class

- **Driver of Domestic Consumption:** By **2036**, India's middle class will account for **93% of all spending (up from 80% in 2026). (WEF)**
- **Human Capital:** Investment in **education, healthcare** to enhance workforce productivity.
- **Entrepreneurship Driver:** Supports **startups, MSMEs, and innovation.**
- **Tax Contribution: Income tax, GST, investments** support government **revenues and capital formation.**
- **Social Stabiliser: P**romotes social mobility, **economic stability.**

Challenges

- **Stagnant Income:Weak real wage growth** despite overall economic expansion.
- **Rising Cost of Living**: Expensive **housing, healthcare, education**, and food.
- **Job Insecurity**: Automation, AI, gig work are **increasing employment uncertainty.**
- **Consumption-led Financial Stress:** Lifestyle inflation and consumerism are **encouraging debt-financed spending, reducing savings.**
- **Inadequate Social Security**: Lack of health insurance, pension, and unemployment protection.

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Initiatives for Middle Class

- **Financial Security:** Zero Tax on earnings up to ₹12 lakh annually, GST Reforms etc.
- **Financial Inclusion & Entrepreneurship:** PM Jan Dhan Yojana (PMJDY), JAM Trinity etc.
- **Housing:** PM Awas Yojana–Urban, **SWAMIH (Special Window for Affordable and Mid-Income Housing) fund.**
- **Connectivity:** Metro Rail Expansion, UDAN Scheme etc.
- **Healthcare: Eat Right India,** Ayushman Bharat–PMJAY etc.

Drop Shipping

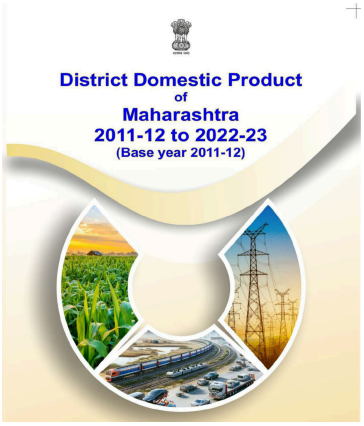


Drop Shipping faces threats from creation of entire shop fronts and e-commerce websites in minutes with cheap domains and a few AI coding prompts.

About Drop Shipping

- **An e-commerce business model** where the **seller does not keep products in stock.**
- The **seller receives customer orders** and **forwards them** to a manufacturer, wholesaler, or supplier.
  - **The supplier stores, packs, and ships** the product directly to the customer.
  - The drop shipper acts as a **middleman** between the buyer and the actual seller.
  - **One or more intermediaries** may exist between the customer and the original producer.
- **Advantages:** Low startup cost, no inventory management, and minimal warehousing requirements.

District Domestic Product (DDP)



National Statistics Office (NSO) released Guideline for Compilation of Estimates of District Domestic Product (DDP) with Base Year 2022-23.

About District Domestic Product (DDP)

- District Domestic Product (DDP) measures the **total value of goods and services produced within a district** during a given period.
  - It is the district-level counterpart of **Gross State Domestic Product (GSDP)** and **Gross Domestic Product (GDP)**.
- **Significance:** Useful for comparing economic performance between districts, identifying backward regions, planning local development programs, and assessing regional human development for computing Human Development Index.
- **Components:** Includes estimates of **Gross District Domestic Product (GDDP)**, **Net District Domestic Product (NDDP)** and **Per Capita Income**.
- **Approaches:** Income originating and Income accruing.

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FCNR(B) Accounts



The RBI has announced that the full hedging cost will be borne until 30 September 2026 for Authorised Dealer (AD) banks on fresh 3–5 year Foreign Currency Non-Resident Bank (FCNR(B)) deposits.

- This will help in attracting foreign currency into India's banking system

Foreign Currency Non-Resident Bank (FCNR(B)) deposits

- These are fixed deposits that allow Non-Resident Indians (NRIs) to hold their money in foreign currencies with Indian banks.
- Unlike standard non-resident external (NRE) or non-resident ordinary (NRO) accounts, which are maintained in Indian rupees, FCNR(B) accounts can be held in currencies such as the US dollar, British pound, etc.
- Interest is also paid in that foreign currency.
- **Benefits for NRIs**: Protects the depositor from currency depreciation risks.

White Paper on Kerala's Debt Crisis

Kerala faces an outstanding liability of ₹5.07 lakh crore (35.5% of GSDP) with committed expenditures (salaries, pensions, interest) absorbing 77% of revenue expenditure, compressing capital expenditure to just 1.3% of GSDP.

KERALA'S FISCAL HEALTH

A Status Report

Debt Crisis of Indian States

- State debt now accounts for **nearly one-third of India's general government debt (**NITI Aayog's Fiscal Health Index**)**.
  - States like **Punjab, West Bengal, Kerala, and Andhra Pradesh** face persistent revenue and fiscal deficits, elevated debt levels (35–45% of GSDP), and high interest burdens.
- According to RBI, Indian States' consolidated **gross fiscal deficit increased to 3.3% of GDP** (2024-25) and the **outstanding liabilities to ~28% of GDP** (March 2024).

Key Drivers of Rising State Debt

- **Populist measures**: High spending on subsidies, welfare, and freebies strains budgets.
- **Committed expenditure**: Salaries, pensions, and interest consume 50–60%+ of revenue receipts (e.g., over 70–80% in Punjab/Kerala), **crowding out capital investment**.
  - States like Kerala face **ageing populations** (>15% over 60), raising pension and healthcare costs.
- **Revenue weaknesses**: Heavy reliance on **central GST devolution**; sluggish growth in own-tax revenues.
- **Other factors**: **Off-budget borrowings** to bypass FRBM limits, **COVID-era emergency loans**, and **escalating borrowing costs** (higher premiums).

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Way Forward

- **Enforcing Macro-Prudential Caps:** Stricter enforcement of **FRBM targets** and **state-specific debt ceilings** linked closely to realistic GSDP metrics.
- **Broadening Own Revenue Streams:** Expanding local tax bases, ensuring higher GST compliance, and optimizing non-tax revenue collections.
- **Rationalizing Public Utility Tariffs:** Imposing user charges on state utilities like electricity and water to fully recover operation and maintenance expenses.
- **Refining Welfare Delivery**: Utilizing advanced **Direct Benefit Transfer** (DBT) models to tightly target beneficiaries, erase identity duplication, and minimize leakage.

Reforms in FPI Investment and G-Secs

Government Announces Reforms to Deepen G-Sec Market and Facilitate FPI in Equity Segment The reforms aim to reduce operational complexities, simplify market access, and expand the investor base for Indian equities and Government Securities.

Key Measures

Liberalisation of investment by individual Persons Resident Outside India (PROIs)

- PROIs permitted to invest in equity instruments of listed Indian companies through the **Portfolio Investment Scheme (PIS).** (as announced in **Union Budget FY2026-27)**
  - Earlier, only **NRIs/OCIs** were allowed to invest in PIS.
- Individual investment limit for a PROI in a company doubled from 5% to 10% (aggregate Limit raised to 24%).

Tax Exemption for Foreign Portfolio Investments (FPIs) Investing in G-Secs

- **Income Tax on Interest and Capital Gain Tax** waived on FPIs and investments by **Bank for International Settlements** in G-Secs.

Reforms in FPI Investment in Government Securities (G-Secs)

- **Fully Accessible Route (FAR):** expanded to include 15-, 30-, and 40-year tenor G-secs and Sovereign Green Bonds**.**
  - **FAR** allows non-residents to invest in "specified securities" without any quantitative restrictions
- Removed three restrictions under General Route, viz. short-term investment limit, concentration limit and the security-wise limit.

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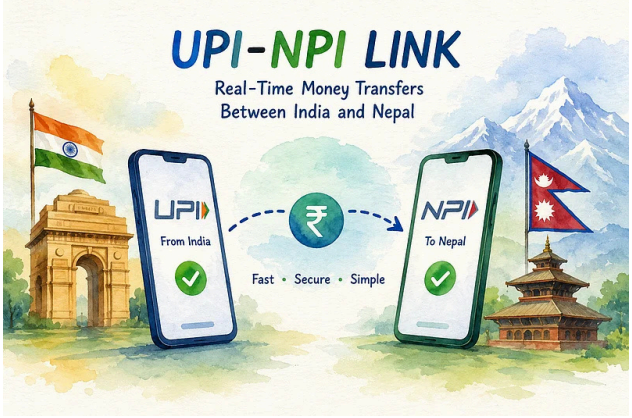
KEY TERMS

FPI: Involves investors holding financial assets, such as stocks and bonds in another country. It does not provide direct ownership of company's assets and is relatively liquid, depending on volatility.

- Investment by a single FPI (or investor group) in any Indian company must **not exceed 10%** of total paid-up equity capital.

G-Sec: It is a tradeable instrument issued by Central or State Governments. It acknowledges the government's debt obligation.

UPI Linkage with Nepal



Launch of linkage between Unified Payments Interface (UPI) of India and National Payments Interface (NPI) of Nepal for facilitating remittances; took place during the External Affairs Minister of Nepal visit to India.

About UPI

- **Launched:** on 11 April 2016 by the National Payments Corporation of India (NPCI).
- **Development:** UPI is an **instant payment system** developed by **NPCI,** under the regulatory oversight of the Reserve Bank of India (RBI).
- **Boost to digital economy**: UPI captures nearly 85% in India's **Digital Payments** and 49% of global real-time payments p**romotes financial inclusion.**
- **Features:**
  - **Two-Factor Authentication:** Secure transactions using a linked mobile number and UPI PIN as dual authentication factors.
  - **24/7 and Direct Transfers:** Enables instant fund transfers anytime, including weekends and bank holidays. Allows direct payments without beneficiary registration.
  - **Multiple Bank Accounts:** Supports linking and managing multiple bank accounts through a single UPI app.
  - **Supports Bill and QR Code-Based Payments:** Facilitates utility bills, recharges, EMIs, subscriptions, and recurring payments via AutoPay.
  - **Interoperability:** Enables seamless transactions across different banks and UPI-enabled apps.
  - **Record:** UPI transactions are recorded by banks and reflected in bank statements.
  - UPI is built over the **IMPS (Immediate Payment Service) infrastructure.**
- **Other Countries UPI is linked:** UAE, Singapore, Bhutan, Sri Lanka, France, Mauritius, and Qatar.
  - Recently India Launches UPI Payments in Cambodia partially.

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Other India-Nepal Initiatives Launched

01 Earthquake Reconstruction Assistance: India handed over 72 health facilities and 12 cultural heritage sector projects.

02 MoU between Digital India Bhashini and Kathmandu University: For co-creating National Digital Infrastructure for "Voice First" Language Translation platform.

03 India-Nepal Mutual Legal Assistance Agreement (MLAA): Welcomed the implementation of MLAA in Criminal Matters.

State Finance Commissions



Report on Datasets for State Finance Commissions (SFCs) Released by The Ministry of Panchayati Raj The report calls for establishing a strong information architecture that enables data-driven fiscal decentralisation via SFCs and strengthens grassroots governance.

About State Finance Commissions (SFCs):

- **Mandate:** SFCs are **constitutional bodies** established under **Article 243-I** of the Indian Constitution.
- **Function:** Recommend the **distribution of state revenues** between the state government and local bodies.

Key Challenges Faced by State Finance Commission:

- **Data Fragmentation and Silos**: Preventing SFCs from accessing a holistic view performance of local bodies.
- **Lack of Disaggregated Data:** Absence of Panchayat level and sector-wise expenditure tracking limits performance-based fiscal analysis.
- **Non-Standard Accounts:** Across states and a lack of consolidated financial statements complicate cross-state comparisons.
- **Local Capacity Gaps:** Shortage of trained staff at the grassroots level hinders proper digital record-keeping.
- **Others:** Delays in setting up SFCs, lack of devolution, etc

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Key Recommendations:

- **Performance Audit:** The CAG should audit the implementation of **73rd Constitutional Amendment** across states to evaluate the actual extent of local devolution.
- **Permanent SFC Cells:** States should set up **dedicated cells** to continuously maintain and update financial data.
- **Standardized Accounting:** Introduce uniform accounting heads for local transfers and adopt a common reporting template to ensure consistency and cross-state comparability.
- **Structured Performance Indicators:** Classify **Panchayat Advancement Index** metrics into "needs," "performance," and "equity" to help refine fiscal devolution formulas.

IMI-Resistant Mustard Hybrids





India is set to begin the wide-scale cultivation of Imidazolinone-Resistant (IMI-resistant) mustard hybrids.

- Mustard is a **major oilseed crop**. India imported around 16 million tonnes of edible oil, worth nearly ₹1.6 lakh crore in 2024-25.

About IMI Resistant Mustard Hybrids

- It is developed througha process called **mutation breeding,** in which scientists breed crops to preserve certain natural mutations.
- **Basis:** The process is based on an enzyme called **acetolactate synthase (ALS)**, which is essential for plant growth.
  - **Normal Plants:** IMI herbicides inhibit the ALS enzyme, disrupting growth and causing plant death.
  - **IMI-resistant Hybrids:** A mutation alters the ALS enzyme, preventing herbicide binding.
- **Advantages of IMI-Resistant Mustard Hybrids**
  - **Orobanche** is a **parasitic weed** that attaches to mustard roots and draws water and nutrients from the host plant.
- **Weed Management:** Enables efficient control of Orobanche/Phelipanche.
- **Lower Labour Dependence:** Minimizes need for labour-intensive manual weeding operations.
- **Other:** Enhanced Productivity, etc.

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How are Hybrids different from Genetically Modified Crops?

Hybrids: Developed by cross-breeding genetically distinct parent plants to combine desirable traits.

GM Crops: Developed by directly **inserting** or **modifying genes** using **genetic engineering techniques**. E.g., Bt cotton (gene from Bacillus thuringiensis), GM mustard

- These are highly regulated due to biosafety and environmental concerns.

Crude Oil and Natural Gas in India



Union Government signs Tripartite Memorandum of Understanding (MoU) with Assam and Nagaland The MoU aims to facilitate exploration and production of crude oil and natural gas in the two states.

Crude Oil in India

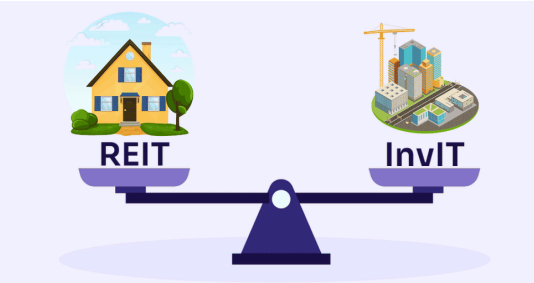
- **Distribution In India (**India has **672.07 million tonnes** of estimated Reserves)
  - **Primarily concentrated** in: western offshore regions (31%) e.g. **Mumbai High field**
  - **State with the largest reserves**: Assam (21.5%), followed by Rajasthan, Gujarat
    - **Assam's** prominent oil fields: Digboi (oldest), Naharkatiya, Rudrasagar, Lakwa, and Lakhmani
    - **Rajasthan**: Barmer, etc.
    - **Gujarat**: Ankleshwar, khambat or Lunej field, Kalol, Mehsana, Aliabet etc.
- **Consumption**: India is the world's 3rd largest consumer of oil, 4th largest refiner, 3rd largest importer

Natural Gas (NG)

- **Domestic Production:** 51.4% of the total gas supply is produced domestically (gross production was 36.11 BCM in 2024)
- **Composition**: Mainly composed of **methane** (CH_4) with smaller amounts of natural gas liquids and nonhydrocarbon gases, like CO2 and water vapor
- **Estimated reserves**: ~1,000 billion cubic meters
  - The largest reserves are in the **Western Offshore** region, followed by the Eastern Offshore.
  - **State with the largest estimated reserves**: Assam

CHANAKYA IAS ACADEMY

REITs and InvITs



The Reserve Bank of India allowed banks to lend directly to REITs and InvITs.

About REITs (Real Estate Investment Trusts)

- **Definition:** Companies that own, operate, or finance income-generating real estate and raise capital by issuing shares to investors.
- **Purpose:** Enable investors to earn from real estate without directly buying or managing properties.
- **Types:** Equity REITs (rental income from owned properties), Mortgage REITs (interest income from mortgages/securities), and Hybrid REITs (combination).

About Infrastructure Investment Trusts (InvITs)

- **Definition:** Collective investment vehicles that finance, own, operate and maintain infrastructure assets while pooling capital from investors.
- **Purpose:** Enable investors to earn income from infrastructure projects without directly owning or managing assets.
- **Investment Areas:** Roads, highways, telecom towers, airports, etc.

Community Seed Banks



The Bureau of Indian Standards (BIS) has released IS 20201:2026, a voluntary standard providing guidelines for the establishment and management of Community Seed Banks (CSBs).

- BIS is India's **national standards body responsible for formulating standards, certifying quality, accrediting laboratories, and promoting consumer protection.**

About Community Seed Banks

- They are **community-managed repositories** that **conserve, regenerate, and distribute local seed varieties.**
- Act as an **in-situ conservation mechanism for agrobiodiversity.**
- Improve **climate resilience and support sustainable agriculture.**

Significance

- Helps conserve **indigenous and traditional crop varieties.**
- Enhances **resilience against climate change** impacts such as **droughts, heat stress,** and **erratic rainfall.**

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New Series Of Wholesale Price Index



The Ministry of Commerce and Industry released the new series of the Wholesale Price Index (WPI) with an updated base year of 2022-23.

- It has also **released the first editions of Output Producer Price Index (OPPI), Trial Input Producer Price Index (IPPI), and Service Producer Price Index (Service PPI) of seven services-** Banking, Securities Transaction, Insurance, Management of Pension Funds, Railways, Passenger Air, and Telecom.
- **Producer Price Index (PPI) will replace the WPI in five years**.

About WPI

- It is a **measure of the average change of prices of a fixed set of goods at the first point of bulk sale** in a commercial transaction in the domestic market over a given period of time.
- The **new series also includes new and renewable energy under electricity**.
- **Composition of Basket**: Comprises 957 items categorized into **three major groups**:
  - Primary Articles
  - Fuel and Power
  - Manufactured Products (highest weight).

ILO Convention on Gig Works

ILO adopts First Global Treaty to set Binding Labor Standards for Gig Work The ILO Convention No. 193 'Concerning Decent Work in the Platform Economy' was adopted at the 114th session of International Labour Organization (ILO) in Geneva.



- **Enforcement**: The convention will take effect 12 months **after at least two member states ratify** it, **requiring governments** to establish **effective dispute resolution** and **enforcement mechanisms**.

Key Features of the Convention

- **Comprehensive Coverage:** The protections **apply to all formal and informal platform workers** (both **online** or **location-based** such as delivery, taxi).
- **Worker Classification & Fair Pay:** Governments must ensure gig workers are **correctly classifiedbased on how their work** is performed, preventing misclassification.
  - Workers must receive **timely pay** and, **if considered employees, at least theminimum wage**.
- **Fundamental Rights & Safety:** Guarantees core rights such as **freedom of association, non-discrimination, and access to social security**. It also ensures a **safe working environment**, allowing workers to refuse dangerous tasks without penalty.
- **Algorithmic Transparency:** Platforms must be transparent **about automated systems used to monitor workers.**
  - Workers have the **right to request a human review** of significant automated decisions, such as account deactivations or withheld pay.
- **Data & Vulnerable Groups:** The treaty mandates **strict safeguards for personal data privacy** and includes **specific measures to protect migrant and refugee platform workers** from recruitment and employment abuses.

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IMPORTANT NOTE!

ABOUT ILO

- **Establishment:** In **1919 under Treaty of Versailles**; became the **first specialized agency of the UN in 1946.**
- **Members:** 187; **India is a founding Member** and has been a permanent member of the ILO Governing Body since 1922.
- **Mandate:** Promotes **social justice, decent work, and internationally recognized labour rights,** based on the principle that lasting peace rests on social justice.
- **Global Recognition:** Awarded the **1969 Nobel Peace Prize** for advancing workers' rights, social justice, and international cooperation.
- **Key Reports: World Employment and Social Outlook (WESO), Global Wage Report, World Social Protection Report,** etc.
- **ILO Conventions**: India has **ratified six out of the eight** core/fundamental ILO Conventions, **except** -
  - **Freedom of Association and Protection of the Right to Organise Convention, 1948** (No. 87).
  - **Right to Organise and Collective Bargaining Convention, 1949** (No. 98).

Ethanol Blending



India gives full legal recognition to E100 (100% ethanol blend) fuel The move paves the way for the launch of flex-fuel vehicles (FFVs) by companies.

- FFVs are capable of operating on ethanol blends from **E20 to E100,** without restricting consumers to a single blend.

About Ethanol Blending

- Ethanol blending refers to the process of mixing ethanol with petrol to create a more sustainable and cleaner burning fuel.
- **Types:** E10 (10% Ethanol by Volume), E20 (20% Ethanol), E85 fuel (80-85% ethanol by volume), E100.
- **India's targets: 20% ethanol blending (E20) in petrol by 2025-26** (under the Ethanol Blended Petrol (EBP) Programme and National Policy on Biofuels, 2018 amended in 2022).
- **Achievements:**
  - **E20 target** achieved **in 2025** (5 years ahead of initial schedule).
  - **E85 rolled out** across several retail outlets of Public Sector OMCs.

Benefits of higher ethanol blends

- **Reduce Crude Oil Import Dependence:** EBP program saved India ₹1.84 lakh crore in foreign exchange since ESY 2014-15.
- **Boost Farmers' Income:** Additional income opportunities through ethanol production from **sugarcane, maize, damaged food grains, and agricultural residues**.
- **Cleaner Fuel:**
  - FFVs operating on E85 can **reduce lifecycle greenhouse gas emissions by around 61%** compared to conventional petrol vehicles.
  - Higher ethanol blends promote more complete combustion, resulting in **near-zero particulate matter emissions.**
- **High-Octane Fuel:** With an octane rating of **100–105,** ethanol offers **better combustion efficiency and is suitable for high-performance engines.**
- **Cheaper alternative:** E.g., E85 is priced nearly ₹20 per litre lower than conventional petrol.

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FSSAI

FSSAI, citing Food Safety and Standards (Packaging) Regulations, 2018, directed to discontinue newspapers for packing food items.

- It warned that printing inks contain harmful chemicals, e.g lead and other heavy metals, which pose long-term health risks.

About FSSAI (HQ: New Delhi)

- **Established**: Under Food Safety and Standards Act, 2006 as an independent **statutory Authority.**
- **Ministry**: Ministry of Health and Family Welfare.
- **Role**: Laying down science based standards for articles of food and to regulate their manufacture, storage, distribution, sale and import.
- It is also responsible for licensing and Registration of Food Business Operators and Monitoring safety
- **Composition**: One chairman and 22 members (one-third must be women).

GI Tag Products from Jharkhand



Jharkhand's Bhagaiya silk, Kuchai silk, Munda jewellery and bamboo craft received Geographical Indication (GI) tag.

- GI Tag is granted under the **Geographical Indications of Goods (Registration and Protection) Act, 1999**, to protect products whose quality, reputation or characteristics are linked to a specific geographical origin.

About Products

- **Bhagaiya Silk**
  - Traditional **hand-spun silk textile of Santhal Pargana**, woven mainly by Santhal tribal women.
  - Known for **tribal motifs and indigenous weaving techniques**.
- **Kuchai Silk**
  - Produced in **Kuchai (Saraikela-Kharsawan district)** from **Tasar (Tussar) silk**.
  - Famous for its **natural golden sheen and high durability**.
- **Munda Jewellery**
  - Traditional jewellery of the **Munda tribe**, reflecting tribal identity and culture.
  - Crafted mainly from **silver, brass and beads** with distinctive ethnic designs.
- **Jharkhand Bamboo Craft**
  - Traditional bamboo handicraft made by rural and tribal artisans using locally available bamboo.
  - Includes **utility and decorative products**, supporting sustainable livelihoods.

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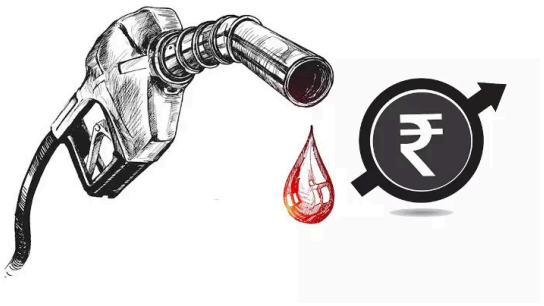
Special additional excise duty

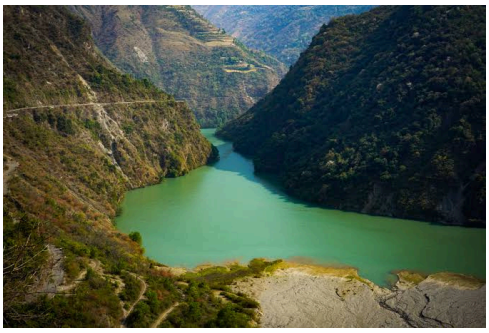


Recently, Finance ministry imposed SAED on export of diesel and Aviation turbine fuel (ATF) in the backdrop of West Asian crisis.

About SAED

- It is a **flexible tax imposed on select products, mainly domestic crude oil and exported petroleum fuels** such as petrol, diesel and ATF.
- **Aim**: to ensure domestic availability of petroleum products by disincentivizing exports
- **Statutory backing**: Central Excise Act 1944 (Petroleum products like crude oil, petrol, diesel, and ATF are currently kept outside GST)
- **Also Known as Windfall tax** (a tax imposed by governments on certain industries experiencing above-average profits due to favourable conditions and not because of their efforts.

Kishau Multi-Purpose Dam



Six states i.e. Himachal Pradesh, Uttarakhand, Delhi, Uttar Pradesh, Haryana and Rajasthan agreed to sign MoU for Kishau Multi-Purpose Dam Project implementation.

About Kishau Multipurpose Dam Project

- **Location:** Along **Uttarakhand-Himachal Pradesh border** on **River Tons** (tributary of Yamuna).
- **Dam Type:** 236 m high **Roller Compacted Concrete gravity dam.**
- **Power Generation: 660 MW** installed capacity.
- **Funding: Centre to provide 90% assistance** for water component and remaining **10% to be shared by six states.**
- **Benefits:** Drinking water, irrigation, flood control, and enhanced downstream hydropower generation.
- **Note**: **Himachal Pradesh's share of water** to be supplied **to Delhi and Rajasthan** in return for sharing cost of Himachal Pradesh's portion of power component of project.

Significance: Expected to **improve clean water flow in River Yamuna**

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Impact of Climate Change on Economy

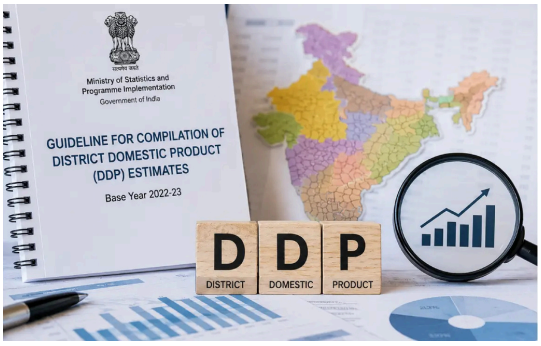


Based on analysis of data from 29 Indian states (1980–2019), a study found a statistically significant negative relationship between rising temperatures and economic growth.

Key highlights of Study

- **Major Economic Impact:** A **1°C rise in annual temperature could reduce India's economic growth by 3.89%**, nearly double earlier estimates.
- **Transmission Channels:** Higher temperatures affect growth through:
  - Reduced **labour productivity** (heat stress).
  - Lower **capital productivity** (damage to infrastructure and assets).
  - Degradation of **ecosystem services** supporting economic activity.
- **Sector-Wide Effects:** Climate risks affect not only agriculture but also **industry, construction, and services**, making climate change an economy-wide challenge.
- **Regional Disparities:** Hotter and southern states are likely to face greater economic losses, potentially widening existing regional inequalities.

District Domestic Product (DDP)



Prime Minister asked states to come up with District Domestic Product (DDP) estimates District Domestic Product (DDP) represents the total value of all goods and services produced within the geographical boundaries of a district over a specific timeframe.

- They serve as a **disaggregated counterpart** to the Gross State Domestic Product (GSDP) at State level and the GDP at the national level, providing granular insights into the local economic structure and performance of districts.
- **Methodology:** It follows **two approaches**:
  - **Income originating**: Measurement corresponds to income originates with reference to the factors of production located within a district.
  - **Income accruing**: Measures the income received by the normal residents of a district (includes income originated outside the region).
- **Estimation Approaches:**
  - **Top-Down Approach:** State-level aggregates are first estimated and then distributed among districts using suitable indicators.
  - **Bottom-Up Approach:** Direct estimation at the district level by collecting data from households, enterprises/establishments and administrative records within each district.
  - **Mixed Approach:** Combination of top-down and bottom-up methods.
- **Status:** Currently, 26 States/UTs are preparing DDP estimates **mainly using Top-down Approach.** However, the indicators used vary across States and across sectors, which limits the comparability of DDP estimates.
  - Due to difficulty of tracking cross-district income flows, most states currently follow originating approach.

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IMPORTANT NOTE!

NEED OF DISTRICT DOMESTIC PRODUCT (DDP)

- **Identifying Intra-State Disparities:** e.g. Mumbai, Thane, and Pune contribute over half of Maharashtra's output.
- **Targeted Planning:** Allows programs tailored to local bottlenecks and opportunities e.g. boosting agro-processing in high-agriculture districts like Chandauli UP.
- **Capturing Informal Economy**: A pilot study finds that top-down method underestimates unincorporated manufacturing gross value added by 57%–148%.
- **Effective Fiscal Devolution:** Reliable DDP data enables targeted fiscal transfers by Finance commission and states with measurable local impact.
- **Responsiveness to Local Shocks:** DDP data captures district-level impacts of droughts, factory closures, etc., enabling timely and targeted policy responses.

CAG releases State Finances 2024-25



Report provides a consolidated fiscal overview of all 28 States, enabling an inter-State and intertemporal analysis over 10 years from 2015-16 to 2024-25.

Key Highlights of the Report

- **Public Debt and Total Liabilities:** Outstanding combined **public debt stood** at **₹75.52 lakh crore (23.27% of GSDP)**, while total liabilities reached **27.89% of GSDP**.
  - **Public debt** receipts constituted over 99% of total capital receipts, indicating heavy dependence on borrowings for financing expenditure.
  - **Public debt** includes Internal Debt and Loans and Advances from the Union government.
- **Fiscal Deficit:** As against the **Fifteenth Finance Commission's benchmark** of **3% of GSDP**, **18 States recorded fiscal deficits above** the **prescribed threshold** in FY 2024-25.
  - Fiscal responsibility indicators for the period 2015-16 to 2024-25 reveal that all States together remained in revenue and fiscal deficit.

- **Low Capital Expenditure:** Revenue expenditure constituted **83.41% of total expenditure**, while capital expenditure accounted for **16.59%** in FY 2024-25.
- **Share in Union Taxes and Duties**: Share of the States in devolution of taxes and duties, as percentage of the total combined revenue receipts, increased from 27.73 % in FY 2015-16 to 31.76 %.
- **Subsidies:** During the period **2015–16 to 2024–25**, subsidy expenditure remained largely in the range of **8–10% of the total revenue expenditure** of all States combined.
  - Subsidies are mainly directed toward energy utilities and the agriculture related activities.

The report highlights the need for **prudent debt management** and **fiscal discipline** to ensure sustainable State finances.

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Insolvency and Bankruptcy Code , 2016



Supreme Court held that in case of conflict between the Insolvency and Bankruptcy Code, 2016 (IBC) and the Supreme Court Rules (SCR), the provisions of the IBC will prevail.

About the Insolvency and Bankruptcy Code, 2016 (IBC)

- It was enacted to **consolidate laws relating to reorganisation and insolvency resolution** of corporate persons, partnership firms and individuals in a time-bound manner.
- **Four Pillars of IBC Code: Insolvency and Bankruptcy Board of India** (regulator), **Insolvency Professionals** (manage resolution process), **Information Utilities** (store and authenticate financial data), and **Adjudicating Authorities** - NCLT (companies/LLPs) and DRT (individuals/partnerships).

Kharif Preparedness Amid El Niño Concerns



With the possibility of El Niño conditions and a significantly delayed southwest monsoon (rainfall about 43% below normal), the Centre reviewed Kharif preparedness of the country.

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Vulnerability of Indian agriculture to monsoon

- **High Dependence on Rain-fed Agriculture:** More than **60% of agricultural land is rain-fed, making monsoon rainfall the primary source** of water for farming.
- **Kharif Crop Dependence:** The monsoon is crucial for **major Kharif crops such as rice, cotton, maize, pulses and oilseeds**.
- **Water Security Concerns:** Weak monsoons reduce **water availability, affecting both Kharif and Rabi crops.**
- **Food Security Risks:** Poor monsoon performance can **lower agricultural production, resulting in food shortages, rising food prices and threats** to national food security.

Measures Taken

- **Water Conservation and Irrigation:** Repair of **ponds, reservoirs, check dams and farm ponds, along with rainwater harvesting and watershed development**, **Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) and the Rainfed Area Development (RAD).**
- **Crop Diversification**: Promotion of **climate-resilient crops, intercropping and mixed farming, with emphasis on pulses, millets and oilseeds.**
- **Weather Forecasting and Advisories**: Timely advisories through **731 Krishi Vikas Kendras, Agro-Met services and Mission Mausam.**
- **Dryland Agriculture & Preparedness**: Promotion of moisture-conservation practices, **District Agriculture Contingency Plans (DACPs) and an El Niño Monitoring Cell for continuous monitoring and response.**

Asset Reconstruction Companies



Supreme Court (SC) flagged deep-rooted nexus between borrowers, ARCs and bankers. Hearing a PIL, SC held that there was a dire need to look into the functioning of ARCs (Asset Reconstruction Companies).

ASSET RECONSTRUCTION COMPANY

- The PIL alleged that debt of 1,537 crore rupee owed to public sector banks was settled through two **ARCs** for a mere 73 crore 50 lakh rupees showing **misutilisation of public money.**

About ARCs

- **Meaning: Specialised financial institution** to acquire **financial assets (loans) of banks and financial institutions** seeking to **recover or re-construct them** in an effort to combat the **issue of non-performing assets in banking.**
  - Registered as a company under Section 3 of SARFAESI (**Securitization and Reconstruction of Financial Assets and Enforcement of Security Interest**) Act, 2002.
- **Regulation: Reserve Bank of India (RBI)** has extensive regulatory control over ARCs
  - Twenty-seven ARCs are currently registered with RBI.



Challenges associated with ARCs

- **Low Recovery Rates**: Due to litigation delays, valuation disputes, and borrower insolvency.
- **Limited Restructuring Expertise:** Determining the **fair value of distressed assets** is inherently complex and may result in disagreements.
- **Delayed Process:** Recovery proceedings often **involve prolonged litigation** before tribunals and courts, affecting the overall efficiency.
- **Recovery Focussed:** Activities of ARC have been mainly **recovery-focused as opposed to revival-focused.**

Ways to Reform ARCs

- Constitute a **key advisory group** with all stakeholders to **review the functioning of ARC sector** and suggest time-bound measures.
- **Enhancing transparency** in asset valuation and sale processes.
- Aligning **incentives toward faster resolution** rather than asset accumulation.

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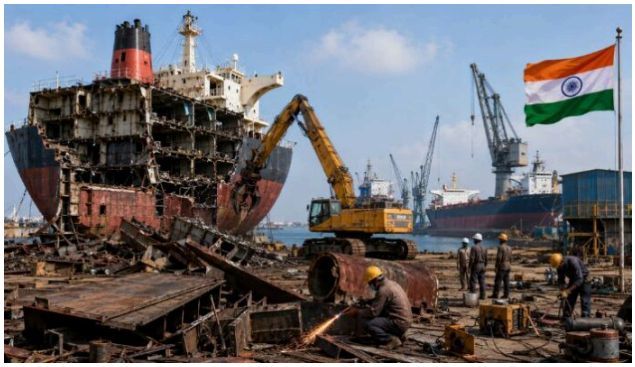
India as leading ship-recycling nation



According to United Nations Conference on Trade and Development (UNCTAD) report, India ranked first globally in ship recycling.

Ship recycling in India

- **Market Share:** India's global market share rose to 35.4% (2025), from 30.1% (2024).
- **Volume:** Reached 2.99 million gross tons (GT) in 2025, a ~60% increase over 2024, achieving the **Maritime India Vision (MIV) 2030** target 5 years ahead.
- **Geographical Hub**: The **Alang-Sosiya cluster**, **Gujarat,** largest ship recycling hub in the world, accounts for ~ 97% of India's recycling activity.
    - **Other clusters with limited capacity**: Kolkata, Kerala, and Mumbai.

Initiatives taken by government

- **Recycling of Ships Act, 2019:** Aims to develop a ship recycling ecosystem aligned with the Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships (HKC).
- **Ship-breaking Credit Note Scheme:** Ship owners receive a credit note worth 40% of the scrap value, redeemable for up to 5% of the cost of a new vessel built at Indian shipyard.
- **Maritime India Vision (MIV) 2030:** Aims to make India world's top-ranked ship-recycling nation and a hub for safe and environmentally friendly ship dismantling
- **Expansion of Alang Ship Recycling Yard:** To nearly double its ship recycling capacity to about 9 million light displacement tons (LDT).
- **Inclusion Under European Union Ship Recycling Regulations**: Government is actively engaging for inclusion of Indian shipyards under EU's approved list.

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Trade Receivables Discounting System



RBI revises process to onboard MSMEs on Trade Receivables Discounting System (TReDS) platforms.

About TReDS

- It is an **electronic platform designed to facilitate the financing of trade receivables of Micro, Small, and Medium Enterprises** (MSMEs).
- It enables **MSME sellers to receive early payment for their invoices by getting them discounted** through multiple financiers such as banks and NBFCs.
- The **Government e-Marketplace (GeM) has integrated TReDS** as an additional payment mechanism to address delays in payments to MSME vendors.

Foreign Contribution Regulation Act 2010



The Ministry of Home Affairs (MHA) has proposed stricter FCRA rules.

Key Changes in FCRA Rules

- **Activity-Based Regulation:** Foreign funds restricted to approved activities under specified categories.
- **Geography-Based Compliance:** NGOs can operate only in declared States/UTs.
- **Enhanced Transparency:** Mandatory disclosure of social media accounts, websites, publications, and key functionaries.
- **Religious activities:** allowed, but proselytisation (religious conversion-related activities) explicitly prohibited.
- **Other:**
  - **Expanded 'Key Functionary' Definition** (includes trustees, partners, governing body members, directors, etc.)
  - **Foreign nationals as key functionaries** generally ine**ligible for FCRA registration** (except by government exemption).

About Foreign Contribution (Regulation) Act (FCRA), 2010

- It **regulates the receipt and utilisation of foreign contributions** and hospitality by individuals, associations, and NGOs.
- It aims to ensure that foreign funding does not adversely affect **India's sovereignty, integrity, security, public interest, or democratic institutions**.
- **FCRA (Amendment) Act, 2020** strengthened regulation of foreign funding by **banning sub-granting**, reducing the **administrative expense cap to 20%,** and mandating a **designated SBI account** for foreign contributions.

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FCNR(B) Deposit



RBI allows banks to lend against FCNR(B) (Foreign Currency Non-Resident (Bank) deposits.

About FCNR(B) Deposit

- **FCNR(B) (Foreign Currency Non-Resident (Bank) Deposit** is **a term deposit account** to maintain deposits in **designated foreign currencies** with Indian banks, insulating them from exchange rate risk.
- **Eligibility:** Can be opened by **NRIs/OCIs** with authorised Indian banks.
- **Tenure:** Term deposits with maturity ranging from **1 to 5 years**.
- **Repatriability:** Both **principal and interest are fully repatriable**.
- **Regulator:** Governed by the **Reserve Bank of India (RBI)**.

International Relations



CIVILS WITH AKASH

Shangri-La Dialogue



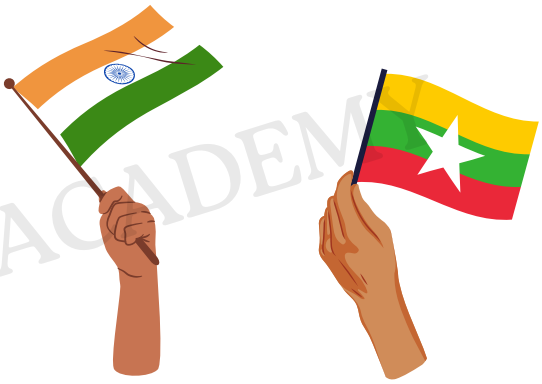
India has signed a deal with Vietnam for supply of BrahMos at the Shangri-La Dialogue in Singapore.

- **BrahMos is a supersonic "Fire and Forget" cruise missile with Mach 2.8 speed**, stealth capability and a 290 km range.

About Shangri-La Dialogue

- It is recognised as **Asia's premier defence summit, held annually in Singapore** and organised by **International Institute for Strategic Studies** (IISS).
- It brings together **global defence leaders to discuss major security challenges**.
- It serves as a platform for strategic debates, bilateral talks and defence cooperation.

India-Myanmar Relations



The Prime Minister of India and the President of Myanmar reviewed bilateral, regional and global issues of mutual interest including AI and Space.

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- Both nations also welcomed the steady growth of the **Rupee-Kyat settlement mechanism** (operationalized in 2024) to facilitate easier bilateral trade.

Significance of India-Myanmar Relations:

- **Geo-strategic:** Myanmar lies at the confluence of India's **Neighbourhood First, Act East and MAHASAGAR** policies.
- **Connectivity: India-Myanmar-Thailand Trilateral Highway** and the **Kaladan Multi-Modal Project** to boost regional economic integration.
- **Security:** to manage **ethnic cross-border insurgencies (along 1,643 km long border),** check arms and narcotics smuggling (Golden Triangle) into northeastern states.
- **Cultural Soft Power:** Deep-rooted historical ties built around shared Theravada Buddhist heritage.

India-Nepal Disputed Border Areas



The Prime Minister of Nepal acknowledged encroaching on certain Indian territories.

About India-Nepal Border

- **Length:** The India–Nepal border stretches 1,751 km.
- **Boundary:** With 5 states (Sikkim, West Bengal, Uttar Pradesh, Uttarakhand and Bihar).
- **Mechi bridge** connect Panitanki Bypass(West Bengal) in India with Kakarvitta in Nepal.

Disputed Border Areas

- **West:** Kalapani-Limpiyadhura-Lipulekh tri-junction (Uttarakhand)
  - **Kalapani** is located near the India-Nepal-China tri-junction, giving it strategic importance.
  - **Limpiyadhura:** Northwest of Kalapani, claimed by Nepal as the true source of the Kali (Mahakali) River under the Treaty of Sugauli.
  - **Lipulekh** is also an important mountain pass. Used by Indian pilgrims travelling to Kailash Mansarovar in Tibet.
- **East:** Susta area (Bihar).

India–Oman CEPA



India–Oman CEPA recently entered into force.

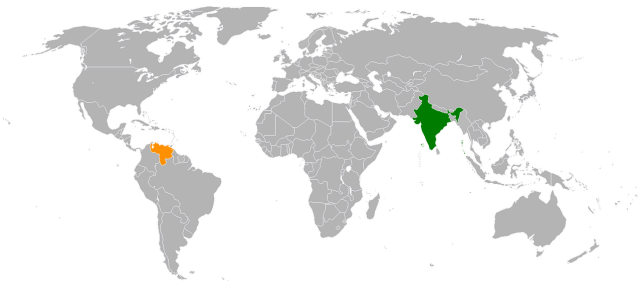
About India- Oman CEPA

- **Oman's offer: 99.38%** of India's exports (by value) will receive immediate zero-duty access to Oman.
  - **100% FDI for Indian companies** in major **services sector** in Oman.
- **India's offer**: Tariff liberalisation on 77.79% of tariff lines covering 94.81% of imports from Oman, while protecting sensitive sectors like dairy, oilseeds and cereals.

About India-Oman Trade Relations

- Oman is **India's second-largest trading partner in Gulf** with **~$11 bn bilateral trade.**
- Oman's logistics hubs at **Sohar, Duqm and Salalah** provide access to India to wider Gulf Cooperation Council and East African markets.

India- Venezuela Relations



Indian Prime Minister held talks with the Acting President of Venezuela in New Delhi and reviewed the full spectrum of bilateral relations and emphasizing cooperation within the Global South.

About India- Venezuela Relations

- **Bilateral trade: US$ 678.94 million** (FY 2025-26) with Indian exports of US$ 210 million
  - **India's exports**: Mineral fuels & oils, pharmaceuticals, cotton, and nuclear reactors/machinery.
  - **India's imports**: Crude oil, mineral waxes, iron & steel, aluminium, vegetables, copper, lead, and zinc.
- **Energy Partnership:** Venezuela possesses one of the **world's largest proven oil reserves**, and has **emerged as the 3rd largest oil supplier to India in May 2026.**
- **Cultural & People-to-People Ties:** Several spiritual organizations such as Sathya Sai Organization, Brahma Kumaris, and Radha Soami Satsang have established centres in Venezuela.

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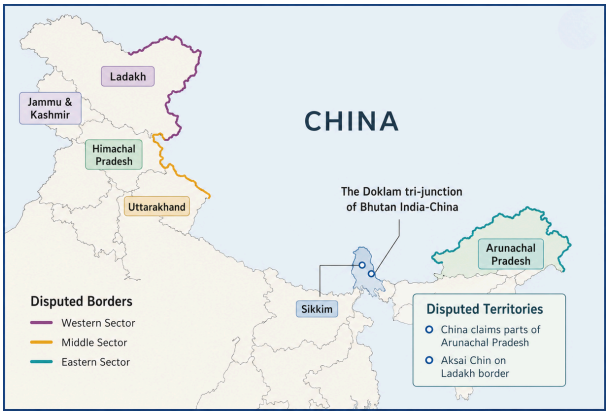
India–China Boundary Dispute



The 35th meeting of the Working Mechanism for Consultation & Coordination on India-China Border Affairs (WMCC) reviewed the situation in the India-China border areas.

About India-China Border Dispute

- **Origin:** Different perceptions of the Line of Actual Control **as** India shares second longest land boundary with China (3488 km) only after Bangladesh (4096.7 km).
  - **In 1865, when WH Johnson,** a civil servant with the Survey of India, proposed the 'Johnson Line', which placed Aksai Chin within Jammu and Kashmir which Chinese dynasty refused.
  - **In Simla meeting, 1914,** between British India,Tibet and, China; proposed line from Bhutan to Burma (now Myanmar) (McMahon Line) but opposed by China.
- **Conflict: 1962 India–China War** when China attacked India.
- **Disputed Areas:** (Along three sectors)
  - **Western Sector (Ladakh–Aksai Chin):** China controls Aksai Chin, which India claims as part of Ladakh.
  - **Middle Sector:** Kauirik Lahaul and Spiti Valley (Himachal Pradesh), Bara Hoti and Nelang Valley (Uttarakhand).
  - **Eastern Sector (Mainly Arunachal Pradesh):** China claims Arunachal Pradesh, especially the Tawang region, as "South Tibet" (Zàng Nán).
    - **Sikkim Sector:** Nathu La pass, the Naku La sector, Cho La, Mount Gipmochi, Batang La, and the Doklam Plateau (Situated at the crucial tri-junction of India, China, and Bhutan) and adjoining Jampheri Ridge.

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PRINCIPLES INDIA SHOULD FOLLOW FOR DISPUTE SETTLEMENT

Preserve the 2005 Framework: A package settlement through a three-step process: political parameters, a settlement framework, and final delineation and demarcation of the boundary

Focus on LAC Stability: Make peace and tranquility on the LAC a precondition for progress; oppose unilateral changes and persistent buffer zones.

Seek a Comprehensive Political Settlement: Push for meaningful political negotiations on the entire boundary issue.

India-Middle East-Europe Economic Corridor

Future of India-Middle East-Europe Economic Corridor (IMEC) amid the Middle Eastern War
The Iran conflict strengthens the case for the IMEC while simultaneously complicating its execution.

About India-Middle East-Europe Economic Corridor (IMEC)

- **IMEC is a multi-modal connectivity project** aimed at developing infrastructure of ports, railways, roads, sea lines and pipelines to enhance trade **between India, the Arabian Peninsula, the Mediterranean region and Europe.**
- **Announcement:** During the G20 Summit 2023, held under the presidency of India.
- **Signatories:** India, the United States, Saudi Arabia, the United Arab Emirates, France, Germany, Italy, and the European Union.
- **Two Key Corridors:**
  - The **East Corridor** connects India to the Arabian Gulf (linking South Asia and the Middle East).
  - **The North Corridor** extends from the Gulf to European markets.
- **Significance for India**: Estimated to **reduce transportation time by 40% and logistics costs by 30%**, providing an **alternative to congested routes (such as the Suez Canal)**.

Current Vulnerabilities in IMEC:

- **Escalation of Iran- Israel War:** have intensified into a broader regional war, threatening IMEC's proposed transport corridors.
- **Trade Route Disruption: Strategic chokepoints (Strait of Hormuz)** have triggered spikes in oil prices and shipping risks, **undermining IMEC's economic feasibility**.
- **Breakdown of Regional Cooperation:** Strained critical diplomatic ties between Israel and Arab nations, stalling coordinated infrastructure development.
- **Execution Challenges:** Diverse stakeholder interests (between UAE and Saudi Arabia) further complicate the funding and timely execution of IMEC projects.

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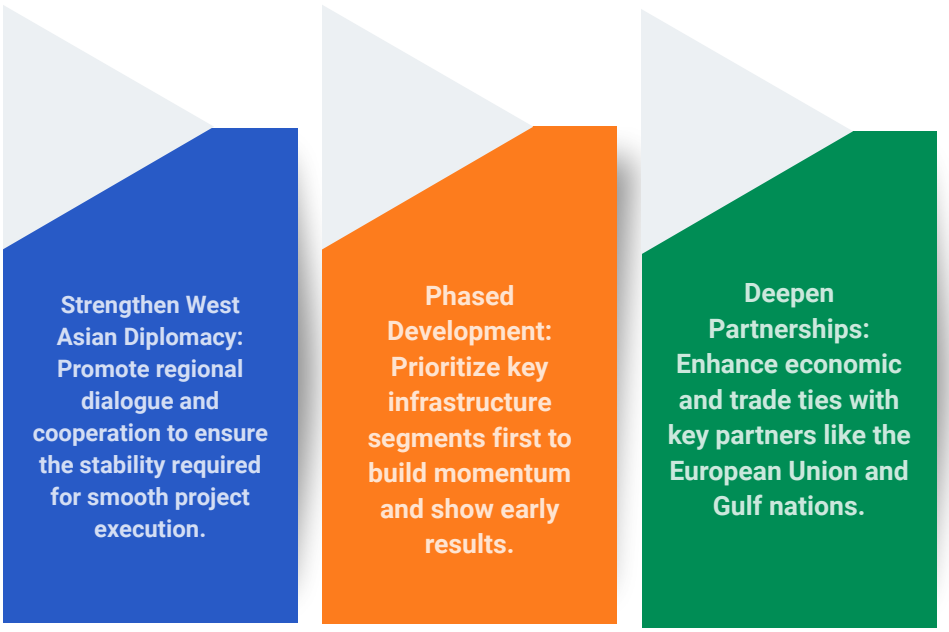
Way Forward



Indus Water Treaty



Pakistan has accused India of violating the Indus Water Treaty (IWT) as India plans to divert Chenab river water to the Beas river.

- India put the IWT in **"abeyance"** after the Pahalgam terror attack.

About IWT

- **Origin:** Signed in 1960 between India and Pakistan mediated by the World Bank.
- **Governs sharing of Indus Basin rivers**: Sutlej, Beas, and Ravi (Eastern Rivers), and Indus, Jhelum, and Chenab (Western Rivers).
  - **India has unrestricted rights over the Eastern Rivers**, while the Western Rivers are largely reserved for Pakistan, subject to limited uses by India.
- **Three-tier mechanism for Dispute resolution:** Permanent Indus Commission (PIC), Neutral Expert, and Court of Arbitration for unresolved disputes.

Queshm island



The US attacked surveillance facilities on Queshm Island.

About Queshm Island

- **Location:** Southern edge of the Zagros Mountain range, along sides the south coastline (Hormozgan) of the Iranian mainland.
- It is the biggest island in the **Persian Gulf near the straits of Hormoz.**
- It is also known as the **"island of seven wonders".**

Cambodia



NPCI partnered with ACLEDA Bank to launch Unified Payments Interface (UPI) acceptance in Cambodia.

- **Political Features**
  - **Location:** It is located in the **southern portion of the Indo China Peninsula in Southeast Asia.**
  - **Bordering Countries**: Vietnam (east and southeast), Laos and Thailand (North).
  - **Bordering Water Body**: Gulf of Thailand.
- **Geographical Features**
  - **Major rivers:** Mekong and Tonle Sap.
  - **Major mountains**: Dangrek Mountains, Krâvanh (Cardamom) and Dâmrei Mountains.
  - **Highest Point:** Phnom Aural.
  - **World Heritage Sites:** Angkor (including Temple of Angkor Wat), Temple of Preah Vihear (dedicated to Lord Shiva).

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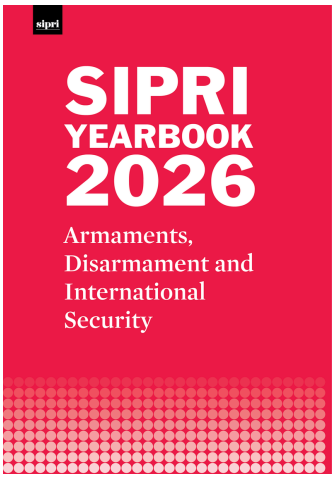
SIPRI Yearbook 2026 Released



Stockholm International Peace Research Institute (SIPRI) Yearbook 2026 Released

Key Highlights of the Report

- **Total Nuclear Weapons:** approximately **12,187 nuclear warheads** as of January 2026.
  - **India** increased its nuclear warheads to an estimated **190 (China 620**, **Pakistan 170)**, of which **12 warheads are deployed on missiles**.
- **Global Military Expenditure:** reached a record **US$ 2.9 trillion in 2025**, marking the **11th consecutive year of increase**.
  - India ranked as the **5th largest military spender globally with US$ 92.1 billion in 2025 (USA-Largest at $954 billion)**.
  - **Arms Imports:** India remained the **2nd largest arms importer (~8% share)** in the world **after Ukraine**.
  - **Arms Exports:USA (42% share),** France, Russia, Germany and China accounted **for 70%.**
- **Global Armed Conflict:** The number of interstate armed conflicts doubled from **3 in 2024 to 6 in 2025**, highlighting rising geopolitical instability.
- **Techno-Strategic Warfare:** Growing use of **AI, drone swarms, autonomous weapons, cyber tools, and weaponization of critical minerals, semiconductors and supply chains** is reshaping modern warfare and geopolitical competition.

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IMPORTANT NOTE!

GLOBAL MECHANISMS FOR NUCLEAR DISARMAMENT

- **UNODA (United Nations Office for Disarmament Affairs):** Promotes global disarmament and supports arms-control implementation.
- **CD (Conference on Disarmament, 1978):** Main multilateral forum for negotiating arms-control and disarmament agreements.
- **Major Treaties**
  - **NPT (Treaty on the Non-Proliferation of Nuclear Weapons, 1968):** Prevents nuclear weapon spread while promoting peaceful nuclear use and disarmament.
  - **CTBT (Comprehensive Nuclear-Test-Ban Treaty, 1996):** Bans all nuclear test explosions.
  - **TPNW (Treaty on the Prohibition of Nuclear Weapons, 2017):** Bans the development, possession, stockpiling and use of nuclear weapons.

India's FTA Challenges



With the India-Oman agreement taking effect on June 1, India now has 15 FTAs covering 27 countries.

- However, India's FTAs face scrutiny due to growing **trade deficits, increased imports, and domestic manufacturing strain.**

Challenges with FTAs

- **Rising Trade Deficit:** In FY2025, India recorded a **trade deficit of over $50 billion** with **UAE, Australia, Mauritius and EFTA** countries.
  - India's **average annual trade deficit** with **ASEAN, Japan and South Korea** reached **nearly $62 billion** in the last three years.
  - **South Asia remains the major exception**, where India's **trade surplus expanded from $6.7 billion to $20 billion** during the same period.
- **Tariff Asymmetry:** FTA reduces India's high import duties, making foreign goods cheaper in India, while Indian exports gains little in countries where tariffs were already low.
- **Low Utilisation by Indian Exporters:** Only **20-30% of eligible Indian exports use FTA** preferences because **compliance costs** often outweigh tariff benefits.
- **Inverted Duty Structure:** Higher duties on raw materials and lower duties on finished goods **increase costs for domestic manufacturers.**
- **Shift of Manufacturing Abroad:** Firms increasingly prefer **Make in ASEAN, Sell in India** due to cheaper production and duty-free access to Indian markets.

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Indian Ideas Across Southeast Asia

Ancient Maritime trade connections between the two witnessed not only the establishment of key trading settlements in ports like Funan (present-day Cambodia), Srivijaya (Sumatra), but also led to exchange of ideas between 500 AD to 1500 AD.

- Inscriptions like **Veal Kantel (Cambodia); Yupa (Indonesia); Devanika (Laos)** bear a testimony to it.

Impact of Indian Ideas in Southeast Asia in Key areas

- **Language and Literature:** Many Southeast Asian languages, including **Thai, Khmer, Malay, Javanese, and Balinese,** borrowed extensively from Sanskrit.
  - Indian epics like **Ramayana and Mahabharata** were translated and adapted into local literary traditions.
- **Religious Adaptations:**
  - Temple complexes built by **Cham Civilization (Vietnam) like My Son Sanctuary** was dedicated primarily to **Shiva** with **Sanskrit Inscriptions** and **Linga worship.**
  - **Angkor Wat Temple Complex (Cambodia)** was originally dedicated to Vishnu; **Angkor Thom and the Bayon temple** later expressed Buddhist influence.
  - Sites like **Dvaravati in Thailand** reflected **strong Buddhist presence.**
  - Plains of **Baganin Burma (Mynamar)** contained thousands of temples and stupas.
  - **Borobudur**, a massive **Buddhist monument** built by **Sailendra dynasty of Java,** Indonesia.
- **Political Adaptations:** Religion legitimised kingship where king was seen as **devaraja, or god-king,** echoing Indian ideas adapted to local political needs.
- **Performing Arts:** Graceful movements, intricate hand gestures, and storytelling aspects of Indian dance were incorporated into dance forms like **Thai and Cambodian classical dance (Apsara dance).**
  - Music and musical instruments, including **sitar, tabla, and mridangam,** also found way into **Southeast Asian musical traditions.**
- **Architecture:** Sites like Angkor Wat, Borobudur, and My Son temples, focused on **Indic iconography and sacred architecture.**



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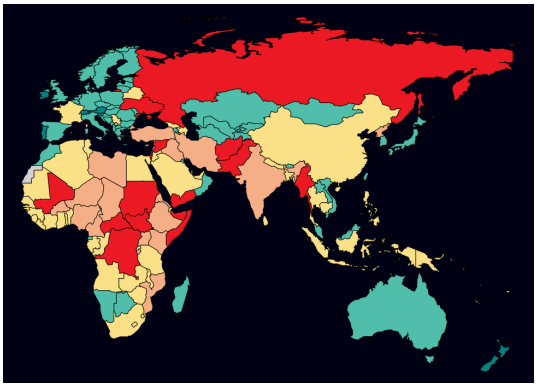
Global Peace Index



India is ranked 127th in the 2026 Global Peace Index.

About Global Peace Index (GPI) 2026

- **Published By:** The **Institute for Economics & Peace**, an independent and non-partisan think tank.
- **Coverage:** 20th edition ranking **163 countries**.
- **Purpose:** Measures global peacefulness and its economic impact.
- **Top Performers:Iceland** ranked first for the 19th consecutive year, followed by New Zealand, Switzerland, Slovenia, and Ireland.
- **Bottom Performers: Russia** ranked last, followed by Sudan, the Democratic Republic of the Congo, Ukraine, and Israel.
- **Methodology:** Based on **23 indicators** across three domains—**Societal Safety & Security, Ongoing Domestic & International Conflict, and Militarization**.

Global Economic Prospects Report



According to the latest Global Economic Prospects (GEP) report, India's 2026-27 growth forecast raised to 6.6% from 6.5%.

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- India is projected to remain the world's fastest-growing major economy.

About the Global Economic Prospects Report

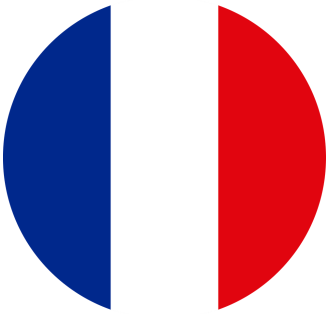
- **Published by the** World Bank Group on a **semiannual basis (in January and June).**
- **Purpose:** Comprehensively examines global economic developments and prospects.

Report key highlights

- **Global Forecast:** Downgraded to 2.5% (from 2.9% in 2025), marking the weakest economic expansion since the Covid-19 pandemic.
- **Rising Fiscal & External Pressures:** South Asian economies, including India may face wider fiscal deficits due to higher energy subsidies and weaker external balances.

India-France Relations





India-France adopt Innovation Roadmap 2030 Roadmap aimed at strengthening bilateral cooperation and support India's Viksit Bharat 2047 vision and France 2030 ambitions was adopted during the Indian Prime Minister's official visit to France.

Four Pillars of the Roadmap

- **Trusted AI Partnership:** Built on the **India–France Declaration on Artificial Intelligence of 2025**. It will cover,
  - Safe, secure and trustworthy AI systems
  - Cooperation on child safety online and
  - Centrality of privacy-preserving data sharing frameworks.
- **Enhanced people-to-people cooperation via academic mobility:** In accordance with Horizon 2047 framework. It will cover,
  - **Mutual Recognition of Qualifications (MRQ):** France became the first country to conclude MRQ agreement with India in 2018.
  - Support France's goal of hosting **30,000 Indian students by 2030.**
- **Technological sovereignty and innovation led growth through industry-academia linkages:** Covering initiatives such as,
  - Promote innovation through **CEFIPRA** (Indo-French Centre for the Promotion of Advanced Research), India-France Innovation Network **(IFIN), etc.**
  - **Franco-Indian Campus for Aeronautics Training and Careers:** France and India will establish an aeronautical training campus in Kanpur.
  - **India–France InnoXchange Bridge:** Provide structured and reciprocal access to research laboratories, technology platforms etc.
- **Building AI and research-based solutions for global challenges in health:**
  - **Consent based data sharing:** Building on ongoing collaborations such as the pilot project involving India's ICMR and France's Health Data Hub (HDH).

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Other outcomes

01 Bharat Innovates 2026: Prime Minister of India and President of the France inaugurated Bharat Innovates 2026 which will showcase India's deep tech innovators and start-ups to the global industry.

02 Trade: Agreed to establish a High-Level Mechanism to double bilateral trade within five years.

03 Education: India invited French universities to establish campuses in India.

BRICS Indore Declaration



The 16th BRICS Agriculture Ministers' Meeting adopted the BRICS Indore Declaration The meeting was held in Indore under India's Presidency with the theme "Building for Resilience, Innovation, Cooperation and Sustainability" (BRICS).

- BRICS countries represent **nearly half of the world's population,** possess **about 42% of global agricultural land** and **contribute nearly 42%** to **world foodgrain production.**

About the Priority Areas of the Indore Declaration

- **Food Security, Nutrition and Livelihoods:**
  - Recognition of **farmers as custodians of traditional knowledge, biodiversity and seed heritage.**
  - Launch of the **Global Forum on Farmers' Rights in Seed Systems** to protect seed rights and indigenous knowledge.
    - The Forum will function primarily through virtual modalities coordinated by the **Protection of Plant Varieties and Farmers' Rights Authority (PPV&FRA)** in New Delhi.
- **Agriculture Trade and Cooperation**
  - Support for the **proposed BRICS Grain Exchange.**
  - Launch of **BRICS AGRIN (Agro-Inputs, Genetic Resources and Information Network) for cooperation in seeds, genetic resources and agricultural inputs.**
  - Utilization of the **BRICS Basic Agricultural Information Exchange System (BAIES)** as a cooperation platform.
- **Regenerative Farming, Climate Resilient and Sustainable Agriculture**
  - Establishment of a **BRICS Network of Centres of Excellence on Agroecology and Regenerative Agriculture** for Climate Resilience & Productivity, as a collaborative, platform initially coordinated by ICAR–Indian Institute of Farming System Research (IIFSR), Modipuram.
- **Future-Ready Agriculture**
  - Expansion of **Digital Public Infrastructure (DPI)** in agriculture.
  - Establishment of a **BRICS Network on Digital Agriculture** coordinated initially by IIT Delhi.

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BRICS

Genesis

- *The term BRIC was coined by British economist Jim O'Neill in 2001.*
- *BRIC was formally recognized during the G8 Outreach Summit (2006).*
- *The 1st BRIC Summit was held in Russia in 2009.*

Members

***Original Members (5)** :- Brazil, Russia, India, China, South Africa.*

***New Members :-** Egypt, Ethiopia, Iran, United Arab Emirates (UAE), Indonesia.*

- *Indonesia became the first Southeast Asian country to join BRICS.*
- *Saudi Arabia had not yet taken a formal decision regarding membership.*

BRICS Partner Countries

- *Belarus, Bolivia, Cuba, Kazakhstan, Malaysia, Thailand, Uganda, Uzbekistan, Nigeria.*

Secretariat

- *BRICS does not have a permanent secretariat or headquarters/office.*

2026 G7 Leaders' Summit



Indian Prime Minister attends 2026 G7 Leaders' Summit held in Évian, France India is invited as a partner country. Indian PM emphasized that world faces a "shortage of trust" rather than resources, aggravated by the misuse of trade and technology.

- He opined that the world should move from **donor-recipient paradigm to partnerships based on solidarity and equality**.
- Reiterated that India's vision of international partnership is rooted in the philosophy of **'Vasudhaiva Kutumbakam' and a 'humanity first' approach.**

Key Declarations adopted

- **Development Finance:** Called for reforms in global development finance and debt management, including strengthening the IMF–World Bank 3-Pillar Approach and mobilizing private capital.
  - **IMF–World Bank 3-Pillar Approach** helps vulnerable countries address liquidity challenges through structural reforms, external financial support, and reducing their debt servicing burdens.
- **Ebola Response:** Urged coordinated international action to contain the Bundibugyo Ebola outbreak in the DRC and Uganda.
- **Cancer Action:** Committed to advancing research on cancers, reducing lung cancer mortality, and improving global access to paediatric cancer data.
- **Geopolitics:** Welcomed the US-Iran nuclear agreement, promoted a free and open Indo-Pacific, and expressed concern over North Korea's nuclear programme etc.
- **Migrant Smuggling:** Pledged stronger action against human trafficking and migrant smuggling networks, including cooperation with online platforms.
- **Drug Trafficking:** Announced a **G7+ Ports Network** to combat maritime drug trafficking and disrupt related illicit financial flows.

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IMPORTANT NOTE!

ABOUT GROUP OF SEVEN (G7)

- **Genesis:**1975 as an informal forum for economic and financial cooperation following 1973 energy crisis.
- **Members:** Seven advanced democracies - **Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States**, along with the **European Union**.
  - Expanded to **G8 (1998–2014)** with Russia's inclusion; Russia was suspended in 2014 following its annexation of **Crimea**.
- **Structure:** No permanent secretariat; annual rotating presidency.
- **Focus Areas:** Global economic governance, international security, energy policy, etc.

World Gold Council

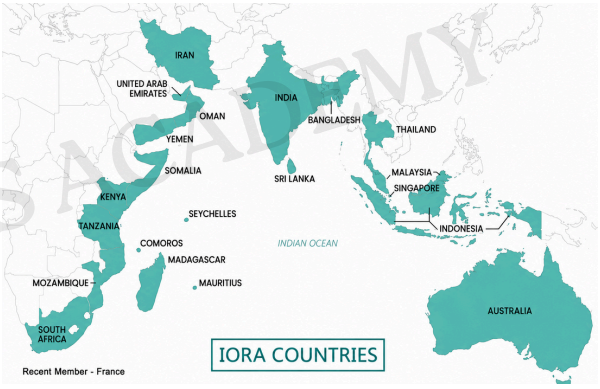


World Gold Council's survey indicatesCentral banks would increase gold reserves over next 12 months.

About World Gold Council

- It is an **international membership organization** representing the **global gold mining industry**.
- **Objective**: To promote gold as a **strategic asset** and support the development of a responsible, transparent, and sustainable gold market.
- **Founded:** 1987
- **Created by**: leading global gold mining companies.
- **HQ**: London.
- **Membership**: 29 major gold mining companies

Indian Ocean Rim Association



India hosted 28th Meeting of Committee of Senior Officials (CSO) of IORA in New Delhi reaffirming commitment towards peaceful, stable, and prosperous Indian Ocean Region and regional cooperation.

About IORA (Hq: Mauritius)

- It is an **inter-governmental organisation** established on **7 March 1997** based on the **vision of Nelson Mandela.**
- **Objective:** Facilitate and promote regional cooperation in **Indian Ocean Region.**
- **Members:** 23 (Including India) and 12 Dialogue Partners.
- **Six Priority Areas:** Maritime Safety & Security, Trade & Investment Facilitation, Fisheries Management, Disaster Risk Management, Tourism & Cultural Exchanges, Academic, Science & Technology.
- **Two Cross-Cutting Issues:** Blue Economy and Women's Economic Empowerment.

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India and UK CETA



Simultaneously, Agreement on Social Security or Double Contribution Convention (DCC) will also be enforced establishing a benchmark of India's economic diplomacy.

About India- UK (United Kingdom) CETA

- **Background:** Groundwork was laid in **2021** through adoption of **India–UK Roadmap 2030**, that dealt with **elevating bilateral ties** to Comprehensive Strategic Partnership and doubling trade to **USD 100 billion by 2030.**
  - CETA was **officially signed in July 2025.**

Key Benefits for India

- **Enhances Competitiveness for India's exports:** Secures immediate duty-free access on 99% tariff lines.
- **Comprehensive Services Commitments:** Covers all **major services sectors and 137 sub-sectors of export interest to India** offering greater regulatory certainty to financial services, professional services, etc.
- **Social Security:** Exempts Indian workers and employers **from making dual social security contributions** in UK during temporary assignments; **increases period of exemption from 3 to 5 years.**
- **Next-Generation Framework:** Embeds **forward-looking chapters** on innovation, sustainability, **securing critical supply chains, accelerating technological collaboration**, etc.
- **People Centric:** Benefits **farmers, fisherfolk, women, entrepreneurs, startups, MSMEs**, etc., with increased access to global value chains.

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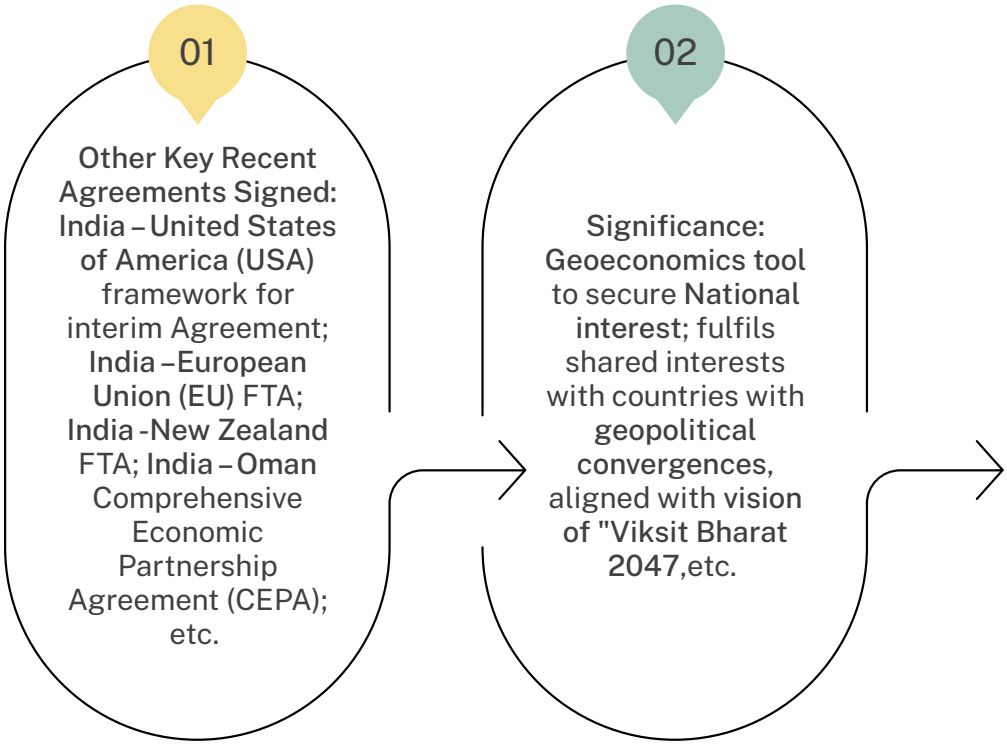
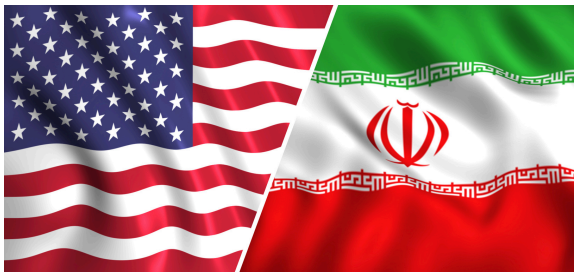
INDIA'S RISING ECONOMIC DIPLOMACY



MoU between Iran and US



14-point "Memorandum of Understanding between the United States of America and the Islamic Republic of Iran" was signed virtually by the US President and Iranian President.

- US President signed the document at Palace of Versailles where The Treaty of Versailles (1919) was signed between **Germany** and the **Allied Powers after 1st World War**.

Key Highlights of Agreement

- **Permanent Ceasefire:** Immediate and lasting end to military operations on **all fronts,** including Lebanon.
- **Respect for 'internal affairs':** US and Iran will respect each other's **territorial integrity** and avoid interference in internal affairs.
- **60-Day Negotiation Window:** A final agreement is to be **negotiated within 60 days**, extendable by mutual consent.
- **End of Blockade:** The US will gradually lift its naval blockade and restrictions on Iranian ports within 30 days.
- **Strait of Hormuz Reopened:** Iran will facilitate **free and safe commercial navigation** through the Strait.
- **Reconstruction Plan:** A minimum **$300 billion** economic development and reconstruction framework for Iran.
- **Sanctions Relief:** The US commits to **ending economic sanctions,** including those included in UN Security Council resolutions, under a mutually agreed timeline and **Release of Frozen Assets.**
- **No Nuclear Weapons:** Iran agrees **not to develop or acquire nuclear weapons**.
  - Both sides have agreed to deal with the enriched uranium Tehran already has through a mutually agreed upon mechanism under the supervision of the IAEA.
- **Issuance of Waivers:** For the export of Iranian crude oil, petroleum products and derivatives and all associated services including banking, transactions, insurances, transportation, etc.
- **Monitoring & UN Backing: Final deal to be endorsed** by a binding **UN Security Council resolution.**

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India–UK Critical Minerals GSCO



The India–UK Critical Minerals Global Supply Chain Observatory (GSCO) was formally launched.

- It was announced during the **India–UK Prime Ministers' bilateral engagement** in 2025 and formalized through a Research Collaboration Agreement signed in March 2026.

About Critical Minerals GSCO

- It is a **joint initiative of TEXMiN (TTRP, DST), IIT (ISM) Dhanbad, and the University of Cambridge.**
- **Aim**: To create a **data-driven platform** for monitoring and analysing global critical mineral supply chains.
- **Significance:** Identify supply risks and disruptions; generate market intelligence; support informed decision-making; and advance the goals of the National Critical Mineral Mission (NCMM).

Development Policy Financing



World Bank approved a $1.5 billion financing package for India under its DPF operation to boost growth and jobs.

About DPF

- **Objective:** Rapidly disbursing financing to help a borrower **address actual or anticipated development financing requirements**.
  - Supports borrowers in achieving **poverty reduction, climate-friendly sustainable and inclusive growth** through program of policy and institutional actions.
  - DPF can be extended as **loans, credits/grants, or guarantees**.
- **Funds are made available based on:**
  - Maintenance of **adequate macroeconomic policy framework.**
  - Satisfactory implementation of **overall reform program.**
  - Completion of a set of **critical policy and institutional actions**.
  - Alignment with the **Goals of Paris Agreement.**

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International Maritime Organisation

IMO, Oman announces plan to evacuate ships, 11,000 seafarers stranded in Persian Gulf

About IMO(HQ: London,UK)

- **Genesis:** Established in 1948 as the Inter-Governmental Maritime Consultative Organization (IMCO); renamed International Maritime Organization (IMO) in 1982.
- **Membership:** 176 Member States and 3 Associate Members.
  - India became a member **in 1959** and is a member of its Council in **Category B**
- **Status:** Specialized agency of the United Nations.
- **Role:** Responsible for the safety, security, and environmental performance of international shipping.

Global Chemicals Monitoring Programme



GCMP has been launched by the UN Environment Programme (UNEP) and the Global Environment Facility (GEF) to support the evaluation of the effectiveness of the Stockholm Convention on Persistent Organic Pollutants (POPs) and the Minamata Convention on Mercury.

About GCMP

- **Aim:** Reduce global pollution while strengthening developing countries' capacity to monitor hazardous chemicals and support evidence-based policy making.
- **Financing:** US$ 23.5 million initiative financed by GEF (backed by US$ 50 million in co-financing).
  - **GEF** was established during 1992 Rio Earth Summit and serves as financial mechanism for **five international environmental conventions:**
    - Minamata Convention, Stockholm Convention, UN Convention on Biological Diversity, UN Convention to Combat Desertification, and UNFCCC.
- **Projects:** Its six projects will generate robust scientific evidence on chemical pollution, improve data to inform policy development, strengthen cooperation, and support the long-term monitoring of POPs and mercury.
  - WHO places POPs and Mercury under **top 10 chemicals and group of chemicals of major public health concern.**
    - **POPs** are toxic, carbon-based synthetic chemical substances that resist environmental degradation, bioaccumulate in food chain, and travel long distances, posing health threats.
    - **Mercury** is a naturally occurring element having toxic effects on the nervous, digestive and immune systems, and on lungs, kidneys, skin and eyes.

Stockholm Convention on POPs

- It is a legally binding treaty which requires its parties to eliminate or reduce release of POPs in environment.
- Adopted: In Stockholm, Sweden (2001), entered in force in 2004.
- India ratified in 2006 but utilized Opt-Out Clause, meaning any new amendment (or new POP added) does not automatically bind India.

Minamata convention on Mercury

- Legally binding treaty to protect from the adverse effects of mercury. It targets the entire lifecycle of mercury, from mining to waste disposal.
- Adopted: In 2013 in Kumamoto, Japan and entered in force in 2017.
- India ratified it in 2018.

CHANAKYA IAS ACADEMY

Bangladesh joined IBCA

Bangladesh joined the International Big Cat Alliance (IBCA) as its 27th member country Big cats are apex predators that maintain ecological balance by regulating prey populations and preserving healthy ecosystems.

IBCA

- **Genesis:** It is a multi-country, multi-agency coalition of 95 big cat range countries, non-range countries launched by India in 2023 to commemorate 50 years of India's Project Tiger.
- **Species Covered:** Global conservation of 7 big cats namely Tiger, Lion, Leopard, Snow Leopard, Cheetah, Jaguar and Puma.
- **Objective:** To facilitate collaboration and synergy among stakeholders, consolidating successful conservation practices and expertise into a **centralized repository.**
- **Nodal Agency**: National Tiger Conservation Authority (NTCA) under Ministry of Environment, Forest & Climate Change (MoEFCC).
- **Headquarter:** New Delhi, India.

Conservation Status of 7 Big Cats

Big Cat	IUCN status	CITES Status	Wildlife (Protection) Amendment Act, 2022
Tiger (Panthera tigris)	Endangered	Appendix I	Schedule 1
Lion (Panthera leo)	Vulnerable	**Appendix I** (Only the populations of India); all other populations are included in **Appendix II.**	Schedule 1 and 4
Leopard (Panthera pardus)	Vulnerable	Appendix I	Schedule 1
Snow Leopard (Panthera uncia)	Vulnerable	Appendix I	Schedule 1
Cheetah (Acinonyx jubatus)	Vulnerable	Appendix I	Schedule 1
Jaguar (Panthera onca)	Near Threatened	Appendix I	Schedule 4
Puma (Puma concolor)	Least Concern	**Appendix I**(Only the populations of Costa Rica and Panama); all other populations are included in **Appendix II**	Schedule 4

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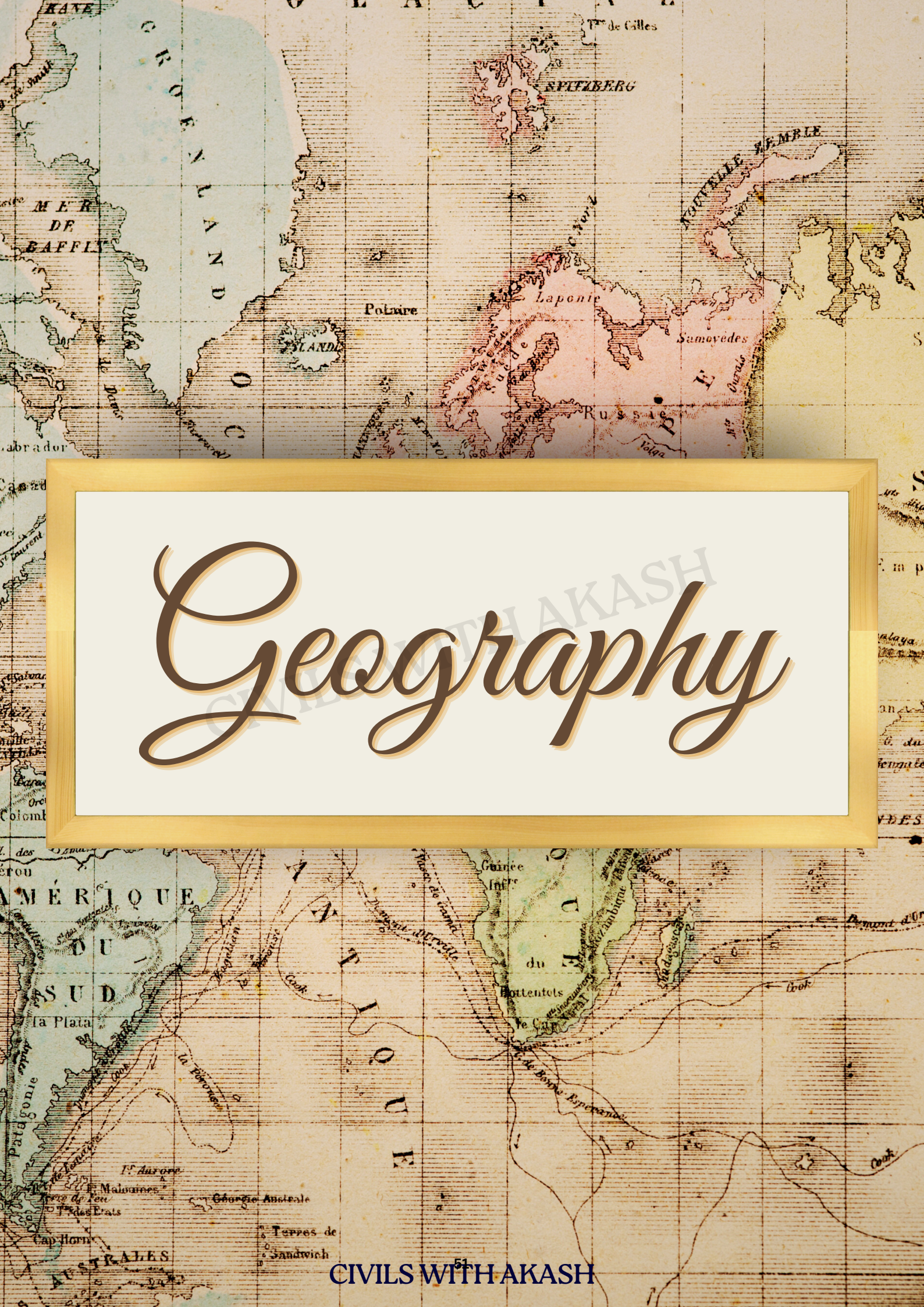
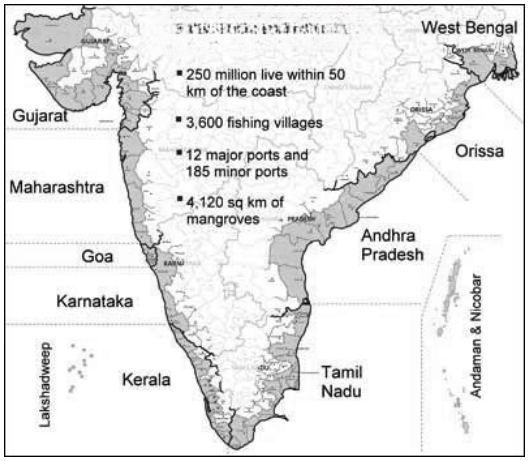


CIVILS WITH AKASH

Climate Change Impact on India's Coastal Region



Azim Premji University's recent study warns of severe, hyper-local climate shifts across India's 11,000-km coastline.

Key Highlights

- **Coastal Erosion:** A **15 cm sea-level rise by 2050** will rapidly accelerate shoreline loss.
- **Cyclones:** Rapid ocean warming (**0.27°C/decade**) is fueling more intense tropical storms.
- **Temperature Anomalies:** Around **40 districts** will see summer peaks spike by **>1°C**, approaching unsafe humidity-heat thresholds.
- **Polarized Rainfall Pattern:** While average precipitation will increase, the growth is concentrated on the western Coast.
- **Salinity**: Cyclone-driven storm surges are forcing seawater into fresh groundwater (e.g., **Sundarbans**), ruining drinking supply.

CHANAKYA IAS ACADEMY

Ground-Level Ozone (O_3)



A recent analysis highlighted that ground-level ozone is emerging as a major air pollution challenge in Delhi.

About Ground-Level Ozone (O_3)

- It is a **secondary air pollutant (found in the troposphere)** formed by reactions between **Nitrogen Oxides (NOx)** and **Volatile Organic Compounds (VOCs)** in the presence of sunlight.
  - **Formation:** NOx + VOCs + Sunlight → Ozone (O_3)
- **Major sources:** vehicles, industries and thermal power plants**.**
- Peaks **during summer** due to intense solar radiation.
- **Impact:** respiratory ailments, crop damage and photochemical smog.
- Unlike **stratospheric ozone** ("Good Ozone"), which shields Earth from UV rays, ground-level ozone is a **harmful pollutant ("Bad Ozone").**
- **Safe Limit**: **100 µg/m$_3$ for 8-hourly** monitored value and **180 µg/m$_3$ for 1-hourly** monitored value, both under **WHO Standards** as well as **National Ambient Air Quality Standard (NAAQS), 2009.**

Majuli Island



Recently a study reconstructed 4,000 years of climate history of Majuli Island using sediments from Sakali Wetland.

About Majuli Island

- World's **largest river island** located in **Assam.**
- It became **India's first river island district in 2016**.
- Bounded by **Subansiri** and its tributaries Ranganadi, Dikrong, Dubla,Chici and Tuni etc. on **North west;**
  - **Kherkatia Suli** (spill channel of Brahmaputra) in **northeast** and **Brahmaputra** on South and South west.
- **Key Features:** Region of **fluvial geomorphology**; formation of **islets locally called Chaporis,** hub of **Assamese neo-Vaishnavite culture (**known for tradition of Satras), etc.
- Included in **Tentative List of UNESCO World Heritage Sites in 2004.**

Blue Micromoon



A rare Blue Micromoon was observed globally on May 31, 2026, including in India.

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About Blue Micromoon

- **Blue Moon**: It refers to the **second full moon** within a single calendar **month**, which typically happens every 2-3 years.
- **Micromoon:** This phenomenon occurs when a **full moon coincides** with its **'apogee'** (the farthest orbital distance from Earth) making it appear **smaller and dimmer.**
- **Blue Micromoon:** The **simultaneous convergence** of a Blue Moon and a Micromoon, it is an exceptionally rare celestial event.
  - Despite its name, the Moon does not appear blue unless unusual atmospheric conditions exist.

Siyom River



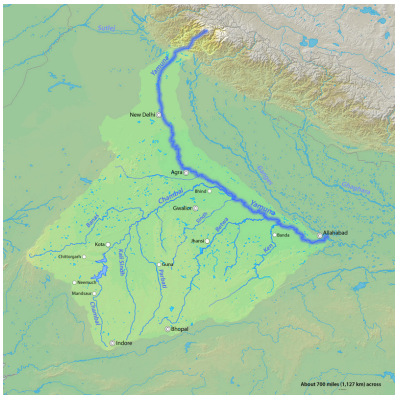
Union environment ministry's Expert Appraisal Committee deferred a proposed 1,000 MW dam on the Siyom River due to concerns related to environmental flows.

- **Environmental Flow** is quantity, timing and quality of water that must be released downstream from a dam to maintain river ecology.

About Siyom River

- **Originates** near India-China border and flows **west to east** within **Arunachal Pradesh.**
- **Drainage System:** It is a major right-bank tributary of the **Siang River** (name of Brahmaputra River before it enters Assam).

Yamuna River



Union Home Minister calls for joint action by Delhi, Haryana, and Uttar Pradesh to rejuvenate the Yamuna.

About Yamuna

- **Origin:** Yamunotri Glacier near Bandarpunch Peak in the Garhwal Himalayas, at an altitude of about 6,387 m.
- **Length: 1,376 km,** making it the **longest tributary of the Ganga**.
- **Confluence:** Joins the Ganga River at Triveni Sangam, Prayagraj (Uttar Pradesh).
- **Himalayan Tributaries:** Rishi Ganga, Hanuman Ganga, Tons and Giri.
- **Plain Tributaries:** Hindon, Chambal, Sind, Betwa and Ken.
- **Largest Tributary: Tons** River, contributing **nearly 60% of Yamuna's water flow**.
- **Basin States:** Uttarakhand, Himachal Pradesh, Haryana, Delhi, Uttar Pradesh, Rajasthan and Madhya Pradesh.
- **Unique Feature: Longest river** in India that **does not directly flow into the sea**.

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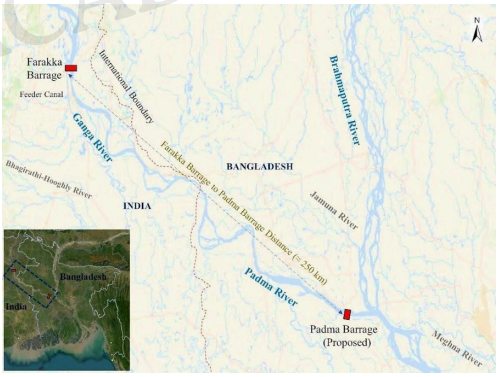
Padma Barrage



Bangladesh approved construction of Padma barrage before the 1996 Ganga Water Sharing Treaty with India approaches expiry in December 2026.

About Padma Barrage

- **Location:** Proposed on the **Padma River** (the Bangladesh stretch of the Ganga) in Rajbari District, Bangladesh.
- **Purpose:** To address **water scarcity, salinity intrusion** caused by reduced dry-season flows, often blamed to **Farakka Barrage** in Indi by Bangladesh.
- **Project Features:**
  - Length: 2.1 km
  - 113 MW hydropower generation capacity
- **Coverage:** Projected to influence about 37% of Bangladesh's land area.
- **Impact on India:** The Padma Barrage **may alter downstream hydrology and sediment dynamics of the Ganga-Padma basin.**

El Niño

The World Meteorological Organization (WMO) has warned of an 80% probability of El Niño developing in the coming months.

- El Niño and La Niña are opposite phases of the **El Niño–Southern Oscillation (ENSO)**.
- **Southern Oscillation** is a coherent inter-annual fluctuation of atmospheric pressure over the tropical Indo-Pacific region.

El Niño

- El Niño means "Little Boy" in Spanish.
- Characterized by warming of sea surface temperatures in the **central** and **eastern equatorial Pacific Ocean**.
- Occurs every 2–7 years and typically lasts 9–12 months.
- Usually develops between March and June and peaks during November–February.

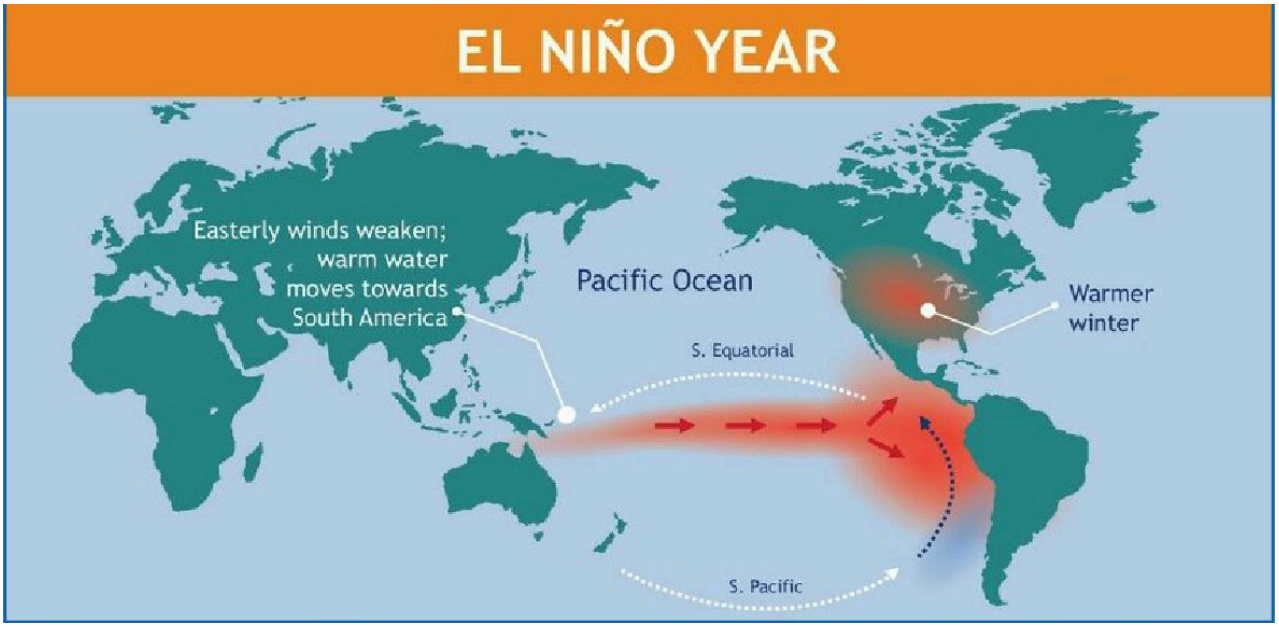
La Niña

- La Niña means "Little Girl" in Spanish.
- Characterized by cooling of sea surface temperatures in the central and east-central equatorial Pacific Ocean.

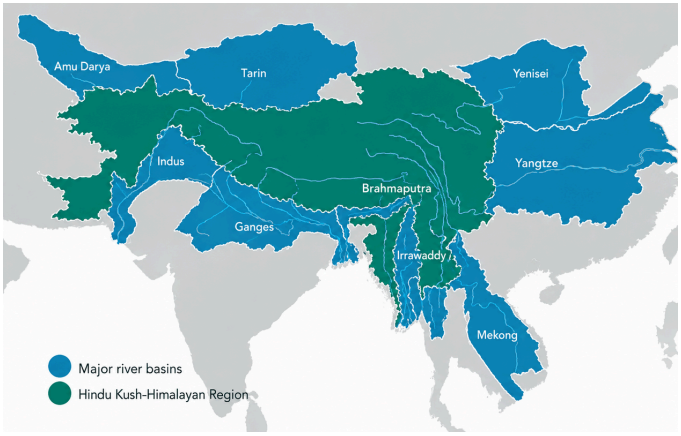
Impact of El Nino

- **Global**:
  - **Wetter conditions** in parts of southern South America, the southern United States, etc.
  - **Drier conditions** in northern South America, the Caribbean, Australia, and parts of South Asia.
  - **Weakened upwelling** (off the coast of Peru) reduces the supply of cold, nutrient-rich water, leading to lower **phytoplankton productivity** and disruption of marine food chains.
- **On India**:
  - It is associated with **below-normal southwest monsoon rainfall**, disrupting agriculture and water management.
    - On the other hand, **La Niña** strengthens the Indian monsoon, resulting in above-normal rainfall.
  - Increased risk of **extreme weather events** such as cyclones, wildfires etc., causing human and economic losses.

CHANAKYA IAS ACADEMY



Hindu Kush Himalaya region



International Centre for Integrated Mountain Development (ICIMOD) released the Climate Finance Synthesis Report (2025) Report highlights the large climate finance requirements and funding gaps in the Hindu Kush Himalaya (HKH) region.

Key Findings of the report

- The HKH region requires **USD 12.065 trillion by 2050**, for climate mitigation and adaptation, amounting to an annual average of USD 768.68 billion.
  - China and India represent over 92.41% of these needs with India alone requiring USD 101.92 billion per year of climate finance.
- **Climate Finance Gap:** Existing climate finance flows are far below requirements despite global climate finance reaching **USD 1.3 trillion annually.**
- **Underfunded Sectors:** Sectors crucial to the region, such as adaptation, agriculture, water management, and disaster risk reduction, remain significantly underfunded despite their critical importance.
- **Recommendations:** Establishing an HKH Climate Finance Network, leveraging innovative financial instruments such as green and blue bonds, debt-for-climate swaps, and voluntary carbon markets etc.

About Hindu Kush Himalaya (HKH) region

- The Hindu Kush Himalaya (HKH) is a transboundary mountain system stretching across **Afghanistan, Bangladesh, Bhutan, China, India, Myanmar, Nepal and Pakistan**.
- Often referred to as the **"Third Pole"** as it contains the **largest ice reserves outside the Arctic and Antarctic**.
- **Extent:** Spans over **3,500 km** across Asia.
- **River Systems:** Source of **10 major Asian river systems**, including the **Indus, Ganga, Brahmaputra, Yangtze, and Mekong**.

CHANAKYA IAS ACADEMY

SIGNIFICANCE OF HKH REGION	THREATS TO HKH
Water Security: Sustains major river basins supporting billions of people across Asia.	Glacier Retreat: Rising temperatures are accelerating glacier melt and snow loss, increasing risks of Glacial Lake Outburst Floods (GLOFs).
Climate Regulator: Influences regional climate patterns, including the Asian monsoon system.	Extreme Weather Events: Rising frequency of floods, droughts, landslides and heat stress.
Biodiversity Hotspot: Hosts rich biodiversity and several globally important ecosystems.	Biodiversity Loss: Habitat degradation and climate change threaten ecosystems and species.

India faces water crisis



India faces water crisis amidst harsh summer India's annual per capita water availability is projected to drop from about 1,500 cubic meters to below 1,200 cubic meters by 2050, the water scarcity threshold of 1,000 cubic meter.

Factors for Water Crisis

- **Demand-Supply Imbalance:** India's water demand will double available supply by 2030 (NITI Aayog), while groundwater depletion could triple by 2041–2080.
- **Agricultural Over-Extraction:** Particularly paddy cultivation in Punjab and Haryana has led to drastic declines in water tables.
- **Pollution of water bodies:** Central Pollution Control Board (CPCB) reports that more than 350 river stretches in the country are polluted.
- **Climate Change:** Erratic monsoons and increased frequency of floods and droughts have reduced water accessibility and availability.

Strategies for Achieving Water Resilience

- **Adopt National Circular Water Mission:** To transition from "use-and-dispose" to a circular model, focusing on four key pillars:
  - **Technology:** Building decentralized fecal sludge treatment plants in expanding peri-urban areas.
  - **Institutions:** Empowering urban local bodies to create special-purpose vehicles that run reuse projects as businesses.
  - **Finance:** Introducing market-based pricing, and preserving targeted subsidies for vulnerable groups.
  - **Behaviour:** Using behavioral nudges to normalize the public's everyday use of treated water.
- **City-Specific Reuse Plans:** Eg: Delhi/Bengaluru can prioritize peri-urban farming, Chennai can focus on lake rejuvenation, and Surat can target industrial use.

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Bitumen



West Asia Conflict Disrupts Bitumen Supply, Impacting India's Road Infrastructure Programme.

About Bitumen

- **Black or dark coloured solid or viscous cementitious substances** consists of chiefly **high molecular weight hydrocarbons.**
- **Significance:** Has **adhesive properties, soluble in carbon disulphide**, extensively used in **road construction** due to excellent binding and waterproofing characteristics at relatively low cost.
- **Production:** Obtained as **Residue or by-product** when **crude petroleum is refined.**
  - Employs a variety of refinery processes, like **straight distillation process, solvent extraction process** etc.



CIVILS WITH AKASH

Illegal Sand Mining



Illegal Sand Mining in National Chambal Sanctuary SC took suo motu cognizance and severely reprimanded states of Rajasthan, Madhya Pradesh, and Uttar Pradesh over persistent illegal sand mining in and around National Chambal Gharial Sanctuary.

About Illegal Sand Mining

- **Legal Status:** Sand is classified as a **minor mineral** under Mines and Minerals (Development and Regulation) (MMDR) Act, 1957**.**
- **Definition:** Under **Minerals Concession Rules, 2016**, **illegal mining** means reconnaissance, prospecting, or mining without the required mineral concession.
  - As per **MMDR Act**, extraction or transportation of minerals without a valid prospecting licence, mining lease, composite licence, or in violation of rules under **Section 23C (rules made by state governments)** constitutes illegal mining.
- **Implications:** Causes ecological degradation, biodiversity loss, law-and-order challenges due to mining mafias, and socio-economic costs including revenue loss etc.

Protection Against Illegal Sand Mining

- **Guidelines:** MoEFCC's **Sustainable Sand Mining Management Guidelines (2016)** and **Enforcement & Monitoring Guidelines (2020)**.
- **Technology-Based Monitoring:** The **Mining Surveillance System (MSS)** uses satellite imagery.
- **Mineral Conservation and Development Rules, 2017:** It mandates end-to-end mineral accounting.
- **Penalties:** The **MMDR Amendment Act, 2015** provides for higher fines, imprisonment up to 5 years, and special courts for speedy trials.

CHANAKYA IAS ACADEMY

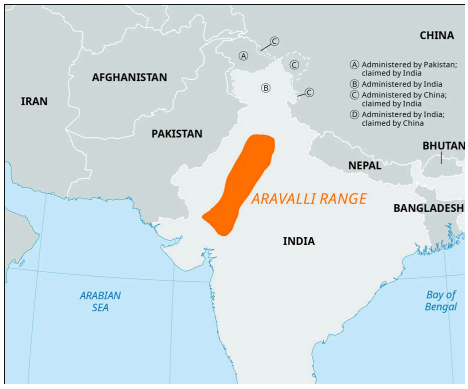
National Chambal Gharial Sanctuary

- 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.
- Other species: Red-Crowned Roofed Turtle, Ganges river dolphin etc

About Gharial (Gavialis gangeticus)

- Range: In tributaries of Ganga River – Chambal and Girwa Rivers in India and Rapti-Naryani River in Nepal.
- Conservation status: IUCN (Critically Endangered); WPA (Schedule I and IV); CITES (Appendix I).

Importance of the Aravalli



Recently, massive dust storms in parts of Rajasthan highlighted the ecological importance of the Aravalli Range.

- This storm has been caused by Western Disturbances that brought high-speed winds and upward surge of hot air due to heating in Western Rajasthan.
- The Aravallis act as a **natural barrier between the Thar Desert and the Indo-Gangetic plains whose degradation has increased intensity of such storms in Delhi and northern plains in the past.**

Importance of the Aravalli Range

- **Geographical Importance**: It is one of the **world's oldest fold mountain ranges** that extends from **Gujarat to Delhi over nearly 700 km.**
- **Barrier Against Desertification**: The Aravallis prevent the **eastward spread of the Thar Desert and reduce dust storms** in northern India.
- **Ecological Importance:** The range supports **rich biodiversity through forests, grasslands and wildlife habitats.**
- **Hydrological Importance**: The range acts as a major watershed and is the source of **rivers like Sabarmati, Luni and Banas.**
- **Economic and Cultural Importance**: They support **agriculture, livestock and mining while hosting important cultural** and religious sites.

Measures to Protect the Aravallis

- **Aravalli Green Wall Initiative:** Large-scale restoration programme by **MoEFCC focusing on Afforestation, Grassland restoration, Wetland restoration etc.**
- **Control on Mining** : Strict regulation of **illegal mining and encroachment**s along with enforcement of Supreme Court directives.
- **Soil Conservation:** Construction of **check dams, contour trenches and rainwater harvesting structures.**

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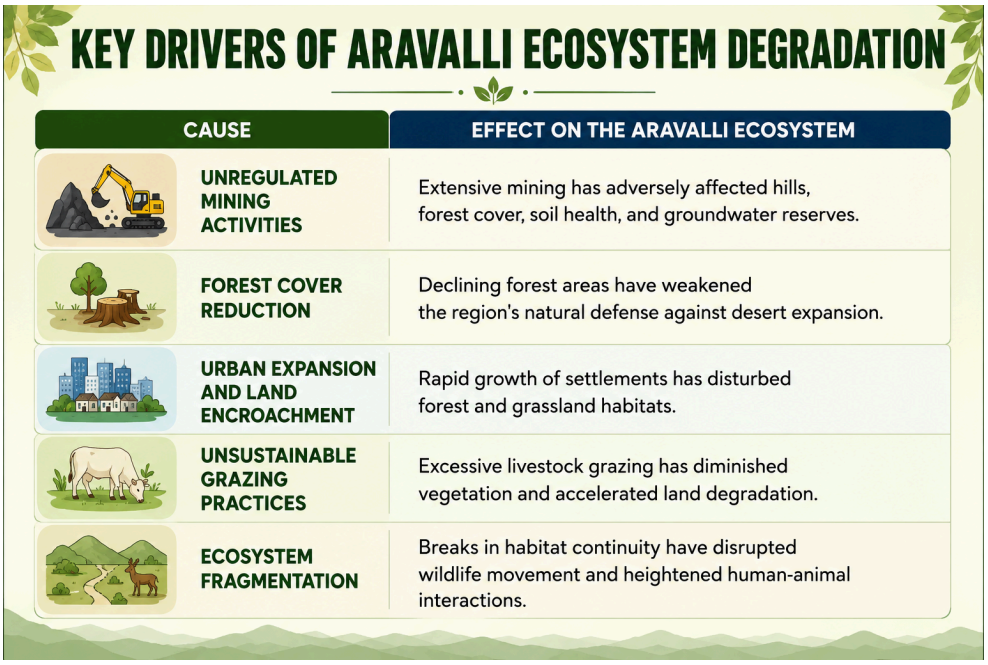
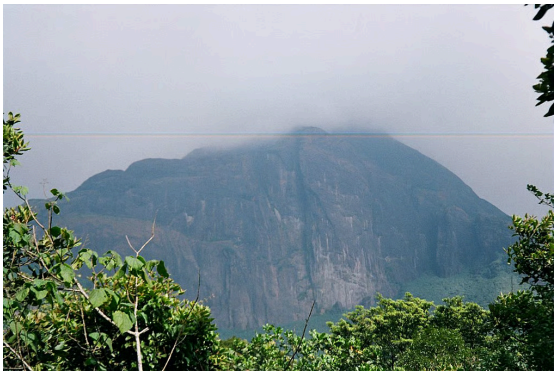


Agasthyamalai Biosphere Reserve



Supreme Court ordered immediate removal of encroachers and demolition of illegal structures across Agasthyamalai landscape comprising Agasthyamalai BR.

About Agasthyamalai Biosphere Reserve

- Located in **southern Western Ghats**, in **Tamil Nadu and Kerala.**
- Included in the **World Network of Biosphere Reserves** under UNESCO's **Man and Biosphere (MAB) Programme** (2016).
- The reserve includes **three wildlife sanctuaries, Shendurney, Peppara and Neyyar,** as well as the Kalakad Mundanthurai Tiger Reserve.

CHANAKYA IAS ACADEMY

Martens



Yellow-throated marten was recently sighted for the very first time in the Kaziranga National Park and Tiger Reserve in Assam (UNESCO World Heritage Site).

Yellow-throated Marten (*Martes flavigula*)

- It is a diurnal and arboreal member of the mustelid family, a group of carnivorous mammals.
- **Features:** Golden-yellow throat, long tail, and defensive scent glands.
- **Behaviour:** Fearless, highly social, often hunts in pairs or small groups.
- **Ecological Role:** Functions as a **mesopredator**, controls rodent populations, aids **seed dispersal**, etc.
- **Distribution:** Found across Southeast Asia, eastern Russia, China, and the Korean Peninsula; in India, occurs mainly in the **Himalayas and Northeast**.
- **Conservation Status: IUCN** (Least Concern); protected under **Schedule II of the Wildlife (Protection) Act, 1972**.
- **Threats:** Habitat fragmentation, deforestation, and human encroachment.

Peatlands



On World Peatlands Day (2 June), the Food and Agriculture Organization highlighted the critical role of peatlands.

About Peatlands

- Peatlands are **waterlogged wetland ecosystems** formed from partially decomposed organic matter (peat).
  - Include **bogs, fens, mires and swamps.**
- **Functions**:
  - Cover only **3–4% of the Earth's land surface** but store nearly **30% of global soil carbon**.
  - **Carbon sinks:** Hold twice the carbon stock of the world's entire forest biomass.
  - Regulate climate, **water flow, reduce floods and droughts**, and support biodiversity.
- Degradation of peatlands releases **significant greenhouse gas emissions** and undermines ecosystem services.

Tapanuli Orangutans



A climate change-driven cyclone in 2025 killed nearly 7% of global Tapanuli orangutan population within just four days, highlighting the species' extreme vulnerability to extreme weather events.

Tapanuli Orangutan (*Pongo tapanuliensis*)

- **Population:** World's rarest great ape, with **fewer than 800 individuals** (2019) remaining in the wild.
- **Classification:** One of the **three orangutan species**, alongside the **Bornean** and **Sumatran** orangutans.
- **Habitat & Distribution:** Endemic to the **Batang Toru Ecosystem, North Sumatra (Indonesia).**
- **Characteristics**: Tiny population, slow reproduction (6–9 years between births), and dependence on dense forest canopies.
- **Conservation Status:** Critically Endangered (IUCN).



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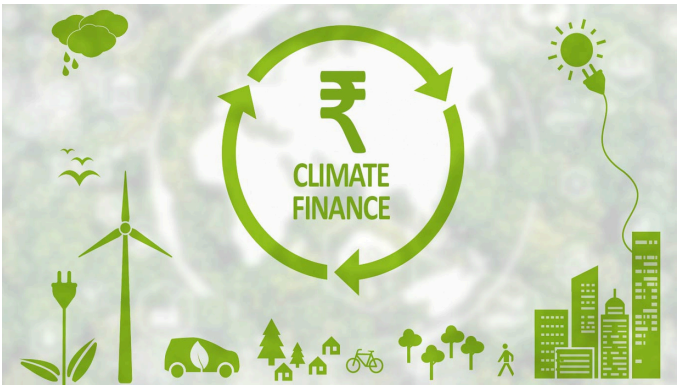
Climate Finance in India



India requires adequate climate financing for energy transition, emissions reduction, climate adaptation and sustainable development.

Government Initiatives

- **National Adaptation Fund for Climate Change (NAFCC):** To support adaptation activities in the States and Union Territories (UTs) vulnerable to the adverse effects of climate change.
- **National Clean Energy and Environment Fund (NCEEF):** Finances and promotes clean energy, renewable energy technologies and related research and innovation in India.
- **Sovereign Green Bonds (SGBs):** Issuance of **₹477 billion SGBs** to finance green projects.
- **Priority Sector Lending (PSL) framework:** Includes Green activities and sovereign green bonds.
- **Others:** Climate Finance Taxonomy and Green Steel Taxonomy; RBI's Climate Finance and Climate Risk Management Directions (2025) etc.

Challenges

- **Massive financing gap** and inadequate international climate finance commitments.
- **Lack of a comprehensive climate finance architecture** and clear green classification.
- **Limited private-sector participation** due to high risks and low profitability of green technologies.
- **Inadequate integration of climate risks** into financial decision-making.
- **Other challenges:** Risk of greenwashing; limited borrowing capacity and access to states; etc.

Conclusion

India can bridge its climate finance gap by swiftly implementing a robust Climate Finance Taxonomy, strengthening RBI's green finance regulations, expanding support for climate adaptation through PSL, establishing a dedicated State Climate Finance Facility and scaling up sovereign green bonds.

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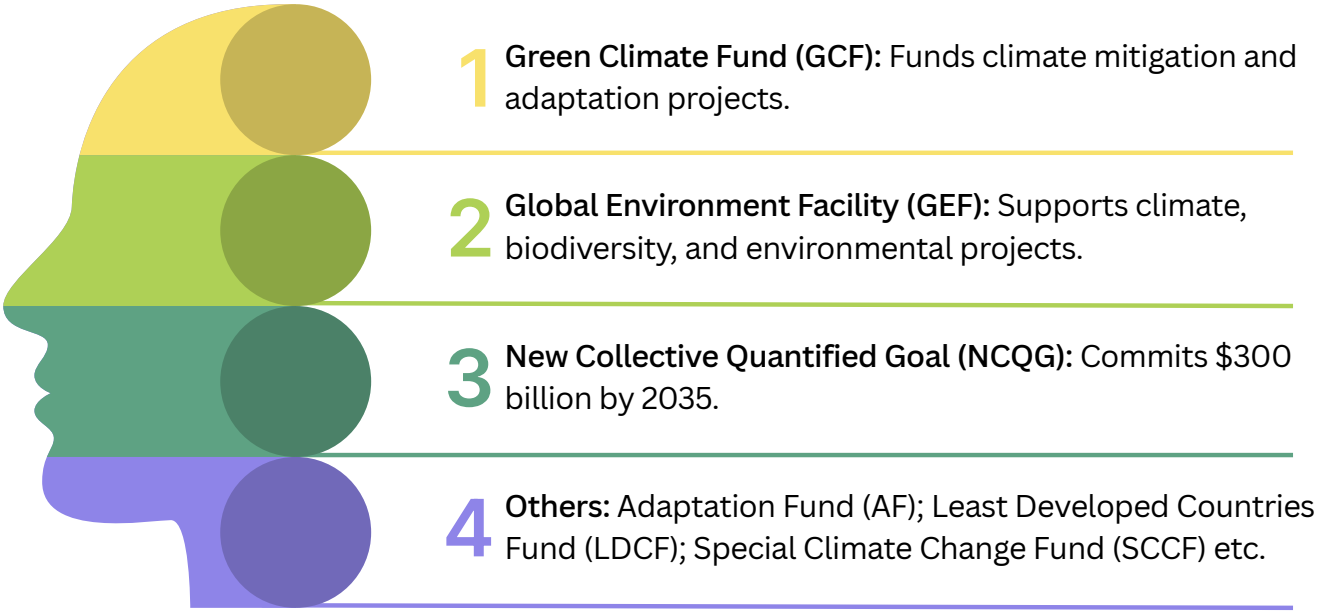
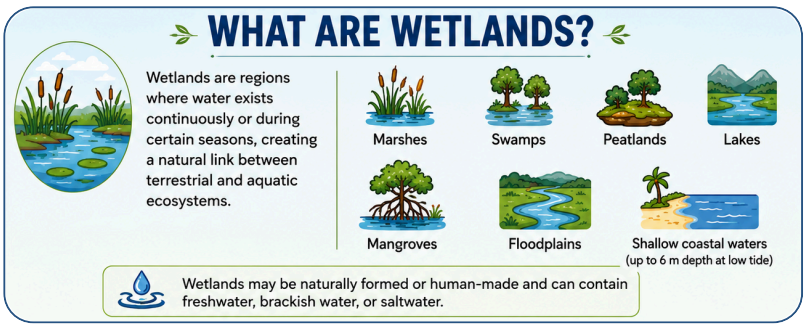
Major Global Climate Finance Mechanisms



Jai Prakash Narayan Bird Sanctuary



Jai Prakash Narayan Bird Sanctuary designated as India's 100th Ramsar site

About Jai Prakash Narain Bird Sanctuary (Surha Tal)

- It is a **natural, perennial oxbow lake** (U-shaped waterbody formed when a wide meander from a river is cut off).
- **Location: Ballia district, Uttar Pradesh**
- **Origin:** Consolidated in **1991** from the land areas of 45 villages as Surha Tal. Renamed in 2002 to honour activist and political leader, Jai Prakash Narayan.
- **Area:** ~3432 hectares which **expands to ~25,000 hectares during monsoons.**
- **Significance:**
  - **Rich avifaunal biodiversity:** Vital wintering ground for migratory birds traveling along the **Central Asian Flyway.**
    - Notable fish include the vulnerable **Wallago attu and Bagarius bagarius.**
    - The abundance of fish attracts the **vulnerable fishing cat (Prionailurus viverrinus).**
  - Major source of **irrigation and groundwater recharge.**
  - Historical, cultural, and religious value.

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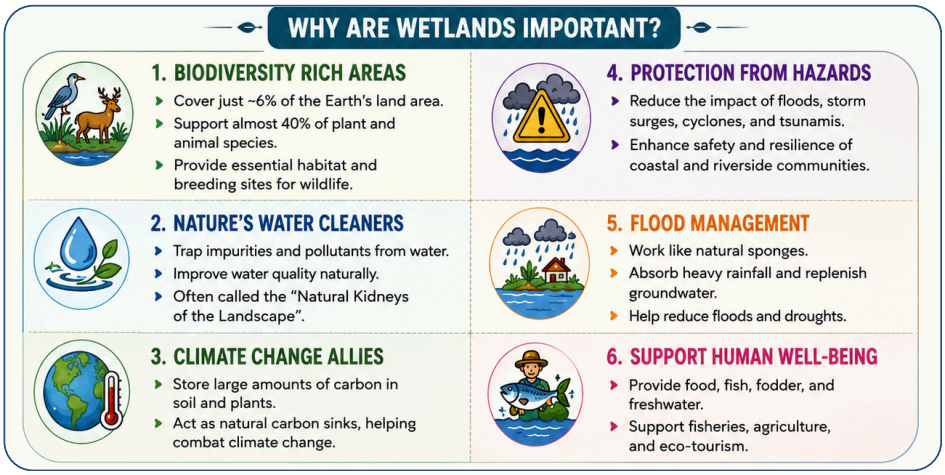
About Ramsar Convention

- It is the **intergovernmental treaty** that provides the framework for the **conservation and wise use of wetlands and their resources.**
- It was adopted in the **Iranian city of Ramsar in 1971** and came **into force in 1975.**
  - India ratified the Convention in **1982.**
- **Three Pillars**
  - Conservation of **wetlands of international importance.**
  - **Wise use** of all wetlands.
  - **International cooperation** on shared **wetlands and migratory species.**
- **Criteria**: A wetland must meet at least one of nine criteria established by the Convention.



Coral Translocation in Great Nicobar



Zoological Survey of India (ZSI) Identifies Four News Sites for Coral Translocation in Great Nicobar Island These sites would include Coral colonies and giant clams that will be impacted due to transhipment port proposed at Galathea under Great Nicobar Island (GNI) mega project.

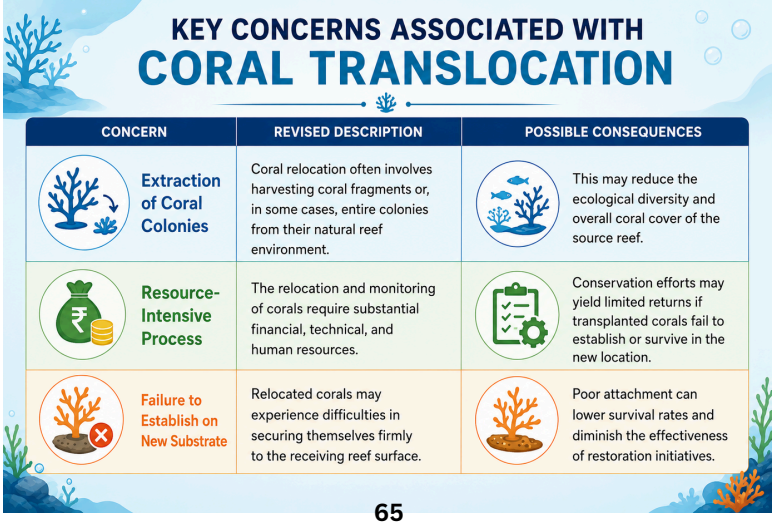
- Along with this, ZSI will maintain systematic data on translocated colonies with GPS tags to monitor their survival.
- Obtain **necessary approval** under **Wildlife Protection Act, 1972** before handling any **Schedule-I species (coral colonies and Giant Clams).**

About Coral Translocation

- **Meaning:** Physical relocation of coral **from site of inhospitable conditions** to an area where it is more **likely to thrive** to **improve reef quality, biodiversity and topographic complexity.**
  - Previously, **India's Coral Translocation project in Marine National Park, Gulf of Kachchh, Gujarat** was the first of its kind attempt to transplant and restore coral in turbid environment.

About Corals

- **Invertebrates** that belong to a large group of animals called **Cnidaria.**
- Each individual coral is made of **polyp** and obtain their colour from **microscopic algae, called zooxanthellae.** (Both having symbiotic relationship between them).
- **Significance:** Ecosystem for life underwater, protect coastal areas from storms, provide a source of income, etc.
- **Key Conditions for Corals thrive:**
  - **Warm water temperatures** between 23°C and 29°C.
  - **Sunlight penetration**, essential for symbiotic algae (zooxanthellae) living in coral tissues.
  - **Clear, shallow waters**, generally **less than 50 meters deep.**
- **Threats to Corals:** Changes in **ocean temperature and acidification,** with local pressures like **pollution, overfishing and declining water quality,** etc.



CHANAKYA IAS ACADEMY

Caracal



India's rarest wild cat Caracal spotted in Kuno National Park, Madhya Pradesh after several decades.

About Caracal

- **Coverage:** It is **widely distributed across** Africa, Central Asia, and south-west Asia into India.
- **Habitat:** Forest, Savanna, Shrubland, Grassland, Desert.
- **Characteristics:**
  - **It is naturally shy and elusive**, living in harsh landscapes that are difficult to monitor.
  - **Adults spend much of their days alone**, hunting for birds, rodents, rabbits, and gazelles.
  - **Mom caracals** (which usually have three babies in each litter) cuddle with their young.
  - Also known as the "**flying cat**" as they can **leap up to 3 meters into the air** to snatch birds.
- **Protection Status:**
  - **IUCN status:** Least Concern
  - **Wildlife Protection Act, 1972:** Schedule I

Great Indian Bustard



CHANAKYA IAS ACADEMY

Project GIB records successful hatching of three Great Indian Bustard chicks, raising the captive conservation population to 94 birds.

About Great Indian Bustard (GIB)

- **Habitat:** Ground-dwelling bird of **grasslands, scrublands and semi-arid regions**.
- **Distribution:** Endemic to the Indian subcontinent; now largely confined to **Rajasthan**, with small populations in **Gujarat, Maharashtra, Karnataka and Andhra Pradesh**.
  - Desert National Park (Rajasthan), spread across **Jaisalmer and Barmer districts** with human settlements inside, is one of its critical **natural habitats**.
- **Characteristics:** One of the **heaviest flying birds**; feeds on **grass seeds, insects, small reptiles and rodents**.
- **Major Threats:** Habitat loss and fragmentation, especially due to **infrastructure development and collision with overhead power lines**.
- **Protection Status**
- **IUCN Red List:** Critically Endangered
- **Wildlife (Protection) Act, 1972:** Schedule I
- **CITES:** Appendix I
- Covered under the **Species Recovery Programme** of the **Integrated Development of Wildlife Habitats (IDWH)** scheme.
- **State Bird of Rajasthan**, locally called **Godawan.**

Baobab tree



Khurasani Imli (fruit of the Baobab tree) from Mandu, Dhar district, Madhya Pradesh, has been granted a Geographical Indication (GI) tag.

- The fruit is rich in **Vitamin C and antioxidants** and is used in traditional medicine for digestive ailments.

About Baobab tree

- Popularly known as **Upside-down Tree.**
- **Native to Africa**.
- Characterized by a **massive water-storing trunk** and leafless branches resembling roots, **highly drought-resistant**.
- Baobabs are a **keystone species**.
  - **A keystone species** is an organism that has a disproportionately large impact on its ecosystem relative to its population size or biomass.
- Found in **Madhya Pradesh, Gujarat, Maharashtra, Karnataka etc.**

CHANAKYA IA

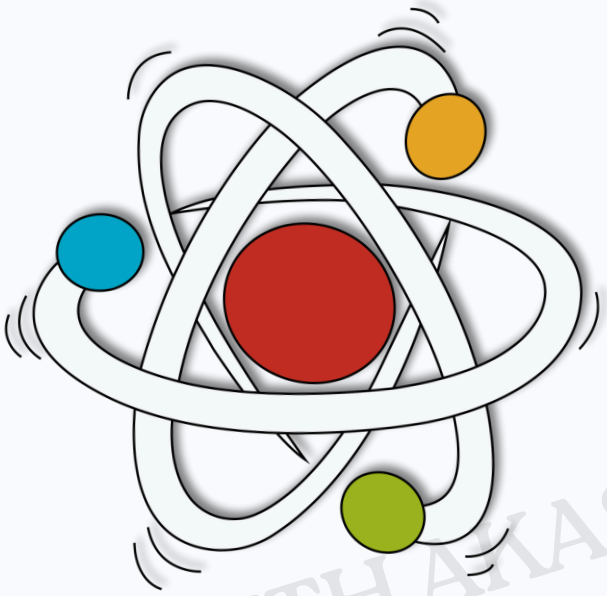
3D Printed Artificial Reef



Tamil Nadu will deploy India's first 3D-printed artificial reef under PM Matsya Sampada Yojana.

About 3D-Printed Artificial Reefs

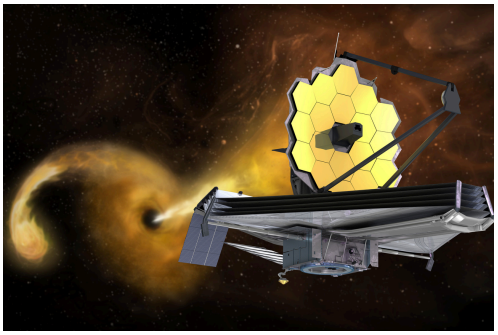
- It is a **marine habitat restoration initiative** aimed at improving **biodiversity and fish habitats**.
- **Developed by: Tvasta (IIT Madras-incubated startup)** in collaboration with **ICAR-CMFRI.**
- **Key features: Complex geometries with crevices and folds**, high porosity, species-specific habitat design, and **no iron reinforcement.**
- **Significance:** Supports **coral and marine species recovery**, strengthens **coastal resilience**, and **enhances fish stocks** for traditional fishing communities.



Science and Technology

CIVILS WITH AKASH

James Webb Space Telescope

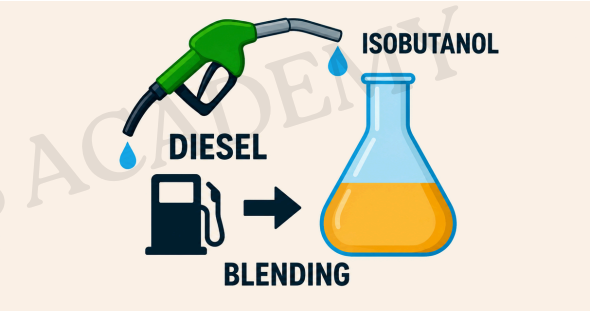


JWST Detects Weather Patterns on Exoplanet WASP-94A b Located 700 Light-Years Away

About James Webb Space Telescope (JWST)

- **JWST** is the largest, most powerful, and most advanced space telescope ever launched.
- **Partnership:** Joint mission of **NASA, European Space Agency (ESA)**, and **Canadian Space Agency (CSA)**.
- **Launch:** 25 December 2021.
- **Location:** Operates at **Lagrange Point 2 (L2)**, about **1.5 million km from Earth**.
- **Objectives:** Study the **early universe**, **galaxy evolution**, **star formation and death**, and **exoplanets/planetary systems** to understand cosmic history and the potential for life beyond Earth.

Isobutanol



India is likely to introduce blending of isobutanol with diesel.

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About Isobutanol

- Isobutanol is a **four-carbon alcohol ($C_4H_{10}O$),** making it a **higher alcohol** compared to ethanol, which contains only two carbon atoms.
- Can be produced from **renewable sources** like biomass, agricultural waste, or through **processes linked to ethanol or sugarcane production**.
- **Uses: Industrial solvents** in products like paints, coatings; **potential biofuel** for transportation, etc.
- **Suitability in Blending with diesel:** Blends **uniformly without any additional additives, higher energy content, less volatile and corrosive** offering higher compatibility with existing engines and fuel infrastructure.

Rudram II

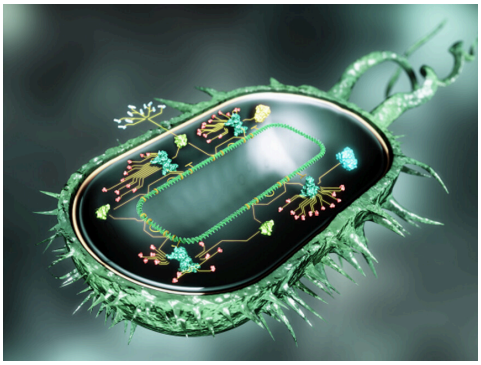


India successfully flight-tests indigenous RudraM-II Missile.

About RudraM-II

- Indigenous **air-to-surface missile** launched from an airborne platform.
- **Developed By:** Research Centre Imarat, Hyderabad a nodal laboratory of Defence Research and Development Organisation (DRDO) and other organizations.
- **Significance:** Strengthens India's indigenous defence capability and advances **Aatmanirbhar Bharat** in advanced weapon systems.

Synthetic Biology



Understanding of genes, cells, along with advances in AI have caused engineering cells and organisms on a genome-wide scale with desired properties.

About Synthetic Biology

- **Meaning:** Involves **redesigning organisms for useful purposes** by engineering them to have **new abilities.**
  - E.g. harnessing microorganisms for **bioremediation to clean pollutants**, modifying rice to **produce beta-carotene** for preventing Vitamin A deficiency, etc.
- **Comparison with Genome Editing:**
  - In synthetic biology, scientists **typically stitch together long stretches of DNA** (already found in an organism or entirely novel) and insert them into an organism's genome.
  - In genome editing, scientists **typically use tools to make smaller changes** (delete or add small stretches of DNA) to organism's own DNA.

Challenges and Concerns Associated with Synthetic Biology

- **Affordability** Personalized therapies could be **particularly expensive.**
- **Biosafety:** Potential **unintended risks of releasing genetically engineered microorganisms** into environment.
- **Biosecurity Risks:** Empower nefarious actors to **develop bioweapons** (e.g. by accelerating development of toxins).
- **Cyberbiosecurity:** Due to **growing interaction between biology and automation.**
- **Ethical challenges:** Issues regarding **engineering life, equity and distribution of risk, benefits, and access,** etc.

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MAJOR APPLICATIONS OF SYNTHETIC BIOLOGY

DOMAIN	APPLICATION AREA	BRIEF DESCRIPTION
HEALTHCARE	Precision Cell and Gene Treatments	Customized genetic and cellular interventions designed to address the fundamental causes of diseases.
	Smart Drug Delivery	Engineered microbes can transport medicines directly to affected cells, improving treatment effectiveness and specificity.
	Advanced Regenerative Therapies	Enables innovations such as biofabricated organs, tissue engineering, and cross-species organ transplantation.
AGRICULTURE & SOIL RESTORATION	Microbial Soil Enhancement	Designed microorganisms can act as biofertilizers, biological pest-control agents, and beneficial soil enhancers.
	Environmental Soil Surveillance	Biosensor technologies facilitate continuous tracking of pollutants and other critical soil indicators.
SUSTAINABILITY & EMISSION CONTROL	Biological Carbon Capture	Synthetic biological systems can improve carbon fixation through innovative metabolic pathways.
	Plastic Waste Reduction	Specialized enzymes and engineered microbes help decompose plastics and support the production of eco-friendly alternatives.
DECENTRALIZED PRODUCTION SYSTEMS	Localized Biomanufacturing	Promotes distributed production units located near biomass or raw-material sources, reducing logistical costs and emissions.

Environmental Cost of AI



UNU-INWEH report highlights threats to natural resources due to rapid growth of Artificial Intelligence (AI) use The report "Environmental Cost of AI's Energy Use: Carbon, Water and Land Footprints" was released by the United Nations University Institute for Water, Environment and Health (UNU-INWEH) on its 30th anniversary.

- **UNU-INWEH** is one of 13 institutes comprising the United Nations University (UNU), the academic arm of UN and is headquareted in Ontario, Canada.

Environmental Cost of AI

- **Electricity**: By 2030, global data centers powering AI are projected to consume 945 Terawatt-hours (TWh) of electricity.
- **Carbon Emissions**: Producing that much electricity would have a **carbon footprint of 399 million tonnes CO2e**, requiring 6.7 billion trees grown over 10 years to offset.
- **Resource Depletion:** Associated water footprint will equal the basic annual domestic water needs of all 1.3 billion people in Sub-Saharan Africa and land footprint will exceed 14,500 square kilometers.
- **E-Waste Crisis:** AI infrastructure could generate 2.5 million tonnes of e-waste annually by 2030, disproportionately affecting the Global South.
- **The Rebound Effect (Jevons Paradox):** Technological efficiency gains make AI cheaper, driving massive volume growth wiping out overall energy savings.
- **Global Digital Divide:** 90% of AI computing capacity is concentrated in just two countries (USA and China), shifting the environmental extraction burdens to developing nations.

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IMPORTANT NOTE!

WAY FORWARD

- **Holistic Metrics:** Move beyond carbon-only assessments to require joint disclosures of carbon, water, and land footprints.
- **Demand-Side Guardrails:** Implement explicit limits on tokens, resolution, and default output lengths to curb unsustainable usage volumes.
- **Equitable Governance:** Integrate AI expansion into national water and energy planning, ensuring communities affected by data centres are engaged and protected.
- **International Standards:** International institutions should support harmonized measurement standards and disclosure practices, reduce incentives for cross-border burden shifting, and support participation and capacity in regions excluded from AI compute.

S-400 air defence system to India



The delivery is part of a $5.43 billion agreement signed between India and Russia in 2018 for the acquisition of five S-400 regimental systems.

- Defence Acquisition Council (DAC) cleared proposal for procurement of five additional S-400 systems, which form a key pillar of **India's layered air defence architecture**.
- India's acquisition of S-400 systems from Russia triggered the threat of US' CAATSA sanctions but US has not yet imposed such sanctions on India.

About S-400

- **Origin:** Russian **Long-Range Surface-to-Air Missile (SAM) system** developed by Almaz-Antey and it is also known as SA-21 Growler (NATO Codename).
- **Integrated System:** Combines advanced **radars**, missile **launchers**, **command-and-control centre**, and autonomous **target detection** systems.
- **Layered Air Defence:** Employs **four missile types** with ranges of **40 km, 120 km, 250 km and 400 km.**
- **Target Spectrum:** Capable of engaging aircraft, stealth aircraft, UAVs, cruise missiles and ballistic missiles.
- **Detection Capability:** Can detect **aerial targets up to 600 km away** and track multiple targets simultaneously.
- **Mobility:** Road-mobile system capable of rapid deployment and redeployment.
- **AI enabled:** S-400 will be integrated with AI-enabled decision-support capabilities aimed at improving threat prioritisation and target selection.

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IMPORTANT NOTE!

MAJOR AIR & MISSILE DEFENCE SYSTEMS

- **S-500 Prometey (Russia):** Next-generation air and missile defence system capable of intercepting ballistic missiles and hypersonic weapons, etc.
- **THAAD (USA):** Terminal High Altitude Area Defence system designed to intercept ballistic missiles during their terminal phase.
- **Iron Dome (Israel):** Short-range air defence system for intercepting rockets, artillery shells and drones.
- **Patriot PAC-3 (USA):** Air and missile defence system capable of engaging aircraft, cruise missiles and ballistic missiles.
- **HQ-9 (China):** Long-range surface-to-air missile system for air and missile defence, often compared to the S-300/S-400 family.

Flex fuel Vehicles

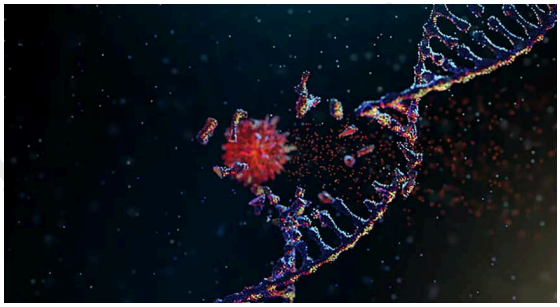


Hero MotoCorp launched its first flex-fuel motorcycle and Maruti Suzuki launched first flex fuel passenger vehicle.

About Flex Fuel Vehicles (FFV)

- FFVs feature upgraded internal combustion engines running on petrol-ethanol blends ranging from E20 to **E85 (85% ethanol).**
- Flex-fuel technology can reduce carbon monoxide emissions by 77% and save ₹1.44 lakh crore in forex.
- **Since 2014-15,** India's ethanol blending programme has saved ₹1.84 lakh crore in forex, substituted 302 lakh metric tonnes of crude oil, and reduced CO_2 emissions by 909 lakh metric tonnes.

Gene silencing and Nanomedicine



Researchers have developed a targeted gene-silencing nanomedicine that can effectively inhibit breast cancer tumours.

CHANAKYA IAS A

About Gene silencing Technique

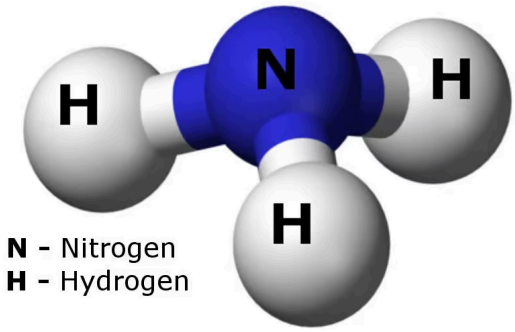
- It is a biological process where a **cell specifically reduces or prevents** the expression of a **particular gene.**
- This mechanism **functions by intercepting the genetic instructions encoded in DNA**, thereby stopping the **production of the corresponding protein.**
  - It is a **natural form of cellular regulation** used by organisms to manage their internal functions.

About Nanomedicine

- It is the application of n**anotechnology in medicine,** where **nanoparticles** (typically 1–100 nanometres in size).
- **Use**: Diagnose, monitor, prevent, and treat diseases with improved precision, reducing side effects.

Ammonia

Tamil Nadu has witnessed its deadliest industrial ammonia gas leak tragedy at a private seafood processing unit in Tiruvallur district.



About Ammonia (NH3)

- It is composed of nitrogen and hydrogen.
- **Key properties**: Colorless gas with a pungent smell, highly reactive inorganic, highly soluble in water, etc.
- **Formation of Ammonia:**
  - **Natural Process:** Produced during the **nitrogen cycle** through the decomposition of organic matter, animal waste, and dead plants by **nitrogen-fixing soil bacteria**.
  - **Industrial Synthesis (Haber–Bosch Process):** Produced by reacting atmospheric nitrogen (N_2) with hydrogen (H_2), in the presence of an iron catalyst.
- **Applications:**
  - Serves as the **primary raw material for nitrogen-based fertilizers** such as urea, ammonium nitrate.
  - Used as a **refrigerant** in cold storage facilities, ice plants, and food processing industries

5th Generation Su-57



The Russian President has offered India Russia's fifth-generation stealth aircraft Sukhoi Su-57 and proposed its joint production in India.

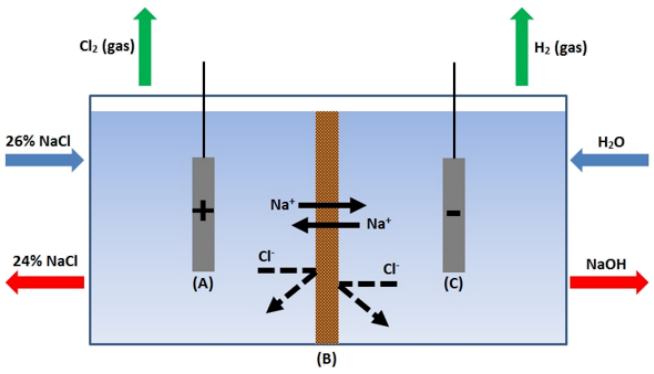
About 5th Generation Su-57

- **Key features:**
  - **Capable of acting as an airborne command centre:** including for unmanned aerial vehicles.
  - **Stealth Capabilities:** Reduces radar, infrared, and visual signatures to evade detection.
  - **Supercruise:** Sustains supersonic speeds without afterburners, improving range and fuel efficiency.
  - **Integrated Avionics:** Fuses data from multiple sensors for superior situational awareness.
  - **Advanced Networking**: Enables secure, resilient, and real-time communication with allied platforms.
- **Other 5th Gen Jets:** US F-22 Raptor and F-35 Lightning II, China's Chengdu J-20 and Shenyang J-35, India's AMCA (Advanced Medium Combat Aircraft) in pipeline.

CHANAKYA IAS ACADEMY

Membrane Cell Technology

Environment (Protection) Second Amendment Rules, 2025 require caustic soda plants using MCT to pass a fish-survival test for wastewater toxicity during laboratory-based bioassay testing.



- A **bioassay test** is intended to measure the **combined toxicity of wastewater.**

About Membrane Cell Technology (MCT)

- **MCT** uses a **special membrane** to control the **chemical process** and is considered less polluting than older mercury-based processes.

About Caustic Soda

- **Caustic soda,** also known as **sodium hydroxide**, is one of India's most widely used industrial chemicals.
- It is used in industries such as soap, detergents, paper, textiles, aluminium, petrochemicals and water purification.

E85 fuel



The Union Minister for Petroleum and Natural Gas launched E85 fuel.

About E85 fuel

- E85 is a fuel blend containing **80–85% ethanol and 15–20% petrol.**
- It is designed specifically for **Flex-Fuel Vehicles (FFVs).**
  - FFVs are vehicles whose engines can operate on varying **ethanol-petrol blends, from E20 up to E100 (100% ethanol).**
- **Significance:**
  - Reduces **greenhouse gas emissions**.
  - Enhances **energy security by lowering crude oil imports.**
  - Supports **ethanol production fromagricultural feedstock,** boosting farmers' incomes.

Abhilasha Biofuels



The Technology Development Board under the Department of Science and Technology has supported a project to establish a commercial-scale facility for producing Abhilasha Biofuels (ABF).

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About ABF

- It is a **2nd Generation (2G)** diesel-equivalent biofuel and renewable **naphtha alternative.**
- 2G biofuels are biofuels produced from **non-food biomass, such as agricultural residues, forestry waste, crop stubble, sugarcane bagasse,** rice straw, and other lignocellulosic materials.
- Also, it is a drop-in fuel that can directly replace conventional diesel without requiring any modification to existing engines, fuel systems, or fuel distribution infrastructure.

Chloramphenicol and nitrofurans



India's shrimp exports faced export rejections in US, European Union and Japan markets due to presence of Chloramphenicol and nitrofurans.

- Both drugs are **banned in all food-producing animal rearing systems.**

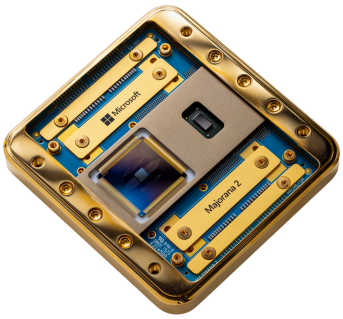
About Chloramphenicol

- **Antibiotic** used in the treatment of bacterial infections.
- **Threats**: Can cause **aplastic anaemia** in humans (even if in small concentrations).

About Nitrofurans

- **Antibiotics** used for antibacterial and anti-inflammatory purposes.
- **Threat:** Banned due to **persistence** of their metabolites in animal **tissue** and their potential **carcinogenicity.**

Microsoft unveiled Majorana 2



Majorana 2 is Microsoft's next-generation topological quantum chip, developed with assistance from its Microsoft Discovery agentic AI platform.

- The chip marks a significant leap forward in quantum computing, **overcoming key barriers related to reliability, speed,** and **size.**
- **Agenetic AI** is a system that can **independently plan, make decisions, perform tasks, and improve its actions** with **minimal human intervention.**

Key features of Majorana 2

- **High reliability:** ~1,000× more reliable than Majorana 1
- **Long coherence:** ~20 seconds average qubit lifetime; up to 1+ minute
- **Advanced Materials Stack:** Lead-based topological superconductor replaces aluminum for better stability and error resistance

What is a Quantum Chip?

- A quantum computing chip is the **hardware component at the heart of a quantum computer,** designed to **process and manipulate** quantum information.
- Unlike classical computing chips, **which use bits as the basic unit of information (representing either 0 or 1),** quantum computing chips use **quantum bits or qubits,** which can represent both 0 and 1 simultaneously.
- **Other Major Quantum Chips**: Google (Willow), IBM (Condor/Heron), Intel (Tunnel Falls), Amazon Web Services (AWS) (Ocelot), etc.

CHANAKYA IAS ACADEMY

Epichlorohydrin



Bureau of Indian Standards (BIS) has for the first time set norms for tea bags prohibiting harmful chemicals like epichlorohydrin.

About Epichlorohydrin

- **Meaning:** An **epoxide** in which one of methyl hydrogens is substituted by chlorine.
- **Applications:** Manufacture of **epoxy resins, synthetic glycerine, elastomers, etc.**
- **Physical Characteristics:** Volatile and flammable, clear, colourless, liquid, chlorinated cyclic ether, **chloroform-like odor** that emits toxic fumes of hydrochloric acid and other chlorinated compounds
- **Health Risks:** Classified as **probable human carcinogen**; can cause eye, skin, and respiratory, blood and reproductive issues.

Kodaikanal Solar Observatory



Kodaikanal Solar Observatory provides valuable insights into the Solar Cycle It uncovered how supergranulations respond to solar cycles, aiding cycle prediction.

- **Supergranulations** are giant **convection** cells (or patterns) that form a vast network structure on the surface of the Sun.

About Solar Cycle

- The solar cycle is a periodic rhythm of magnetic activity that Sun undergoes every **~11 years.**
  - **Mechanism:** The Sun is composed of electrically charged gas (**plasma**) that generates a massive magnetic field.
  - Every **11 years,** this field undergoes a flip (north-south poles switch)
- This periodic cycle undergoes distinct phases:
  - **Solar Minimum**: Cycle begins at solar minimum (low activity and few sunspots)
    - **Sunspots**: Dark, cooler regions on the Sun caused by strong magnetic activity.
    - Despite being cooler, more sunspots correlate with the Sun emitting more total energy.
- **Solar Maximum:** As activity builds toward solar maximum, Sun becomes "stormy," featuring the highest number of sunspots and frequent eruptions.
- **Impact on Space Weather**: During the more active phases, the Sun also experiences an increase in giant eruptions, such as **solar flares** and **coronal mass ejections (CMEs)**.
  - **Solar Flares:** Sudden bursts of X-rays and radiation (travelling at speed of light) caused by release of magnetic energy in sunspot regions.
  - **CMEs**: Massive bubbles of plasma and magnetic fields flung into space
  - **Impact**: They can disrupt power grids, navigation systems, radio communications, and satellite operations, affect astronauts, induce geomagnetic storms affecting magnetic fields and events like Auroras etc.

CHANAKYA IAS ACADEMY

ABOUT KODAIKANAL SOLAR OBSERVATORY

- Established in 1899 and subsumed then Madras Observatory.
- Aim: to obtain data on how Sun heats up Earth's atmosphere and to understand monsoon patterns.
- Location: under Indian Institute of Astrophysics and is located in Palani range (Tamil Nadu)
  - Chosen for its proximity to equator and its dust-free high-altitude location.

Global Navigation Satellite System



The Ministry of Defence has signed a contract for the procurement of 20 Enhanced Capability Global Navigation Satellite System Jammers for the Indian Navy with minimum 75% indigenous content.

About Global Navigation Satellite System (GNSS)

- It refers to any **satellite constellation** that provides **global positioning, navigation, and timing services**.
- **Types of GNSS:**
  - GPS (Global Positioning System) of the USA,
  - GLONASS of Russia, Galileo of Europe,
  - BeiDou of China,
  - Indian Regional Navigation Satellite System (IRNSS) and
  - Japan's Quasi-Zenith Satellite System (QZSS) (4-satellite regional)

IRNSS-Navigation with Indian Constellation (NavIC)

- It is an independent regional navigation satellite system developed by ISRO.
- To provide accurate Position, Velocity and Timing (PVT) service in India and regions extending about 1500 km beyond Indian land mass

CHANAKYA IAS ACADEMY

Varya

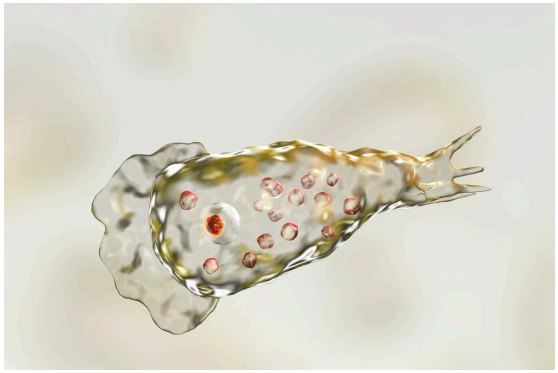


India AI Mission launched the Indigenous Varya.

About Varya

- **Distilled video model** built to make frontier video AI **affordable, accessible and relevant.**
- Developed with support from **IndiaAI Mission** by the company **Avataar.**
- **Features:**
  - Varya uses **distillation technique** that **reduces video generation from 50 steps to 4 steps,** while maintaining comparable output quality.
    - **Distilled video generation** is a **model compression technique** from machine learning where a compact "student" model replicates outputs of larger, slower "teacher" model transferring capabilities while **eliminating redundant computation.**
  - Can generate video at **₹0.48 per second**, upto 10x more cost-efficient.
  - Product experience is designed around: **Idea → Video → Story**.

Brain-eating Amoeba



Kerala seeing surge in 'brain-eating amoeba' cases mainly due to Acanthamoeba, a free-living amoeba found mainly in contaminated water.

About Brain-eating Amoeba

- **Nature:** A free-living, single-celled amoeba found in **warm freshwater bodies** (lakes, rivers, hot springs) and soil.
- **Types:** Although there are several types of free-living amoebas, **three are known to cause severe disease** in people are
  - **Acanthamoeba** causes Granulomatous Amoebic Encephalitis (GAE).
  - **Naegleriafowleri**causes **Primary Amoebic Meningoencephalitis (PAM)**.
  - **&Balamuthiamandrillaris.**
- **Transmission:** Can enter the body through the **nose, skin, inhalation, etc.** and can infect the brain.
- **Why Called "Brain-eating Amoeba":** It destroys brain tissue, leading to severe brain infection.

Fatality: PAM is **rare but almost always fatal**

Floating Solar Power Potential



The Ministry of New and Renewable Energy (MNRE) released the Floating Solar Potential Assessment Report 2026.

Floating Solar Energy in India

- Floating Solar Photovoltaic (FSPV) systems are **solar panels installed on water bodies** such as reservoirs, lakes, ponds and dams instead of land.
- **Total Floating Solar Potential:** India has an estimated **102.18 GWp floating solar potential.**
- Total Solar Potential: India's total assessed solar potential has increased to **3,445 GWp.**
  - India's installed solar power capacity increased from 2.8 GW in 2014 to 155 GW in 2026.
- **Highest Potential State: Maharashtra with 16.28 GW potential**, followed by Madhya Pradesh (14.89 GW) and Karnataka (13.69 GW).

Airbus C295 Aircraft



India conducted the maiden test-flight of the country's first "Made in India" Airbus C295 military transport aircraft in Vadodara.

- The **C295 India programme** is the first instance of a military aircraft being **manufactured in India by the private sector.**
- 40 C295 aircraft to be build in India under partnership between **Airbus and Tata Advanced Systems Limited** for the Indian Air Force.

About Airbus C295 Aircraft

- It is a robust, reliable and highly **versatile tactical transport aircraft.**
- It is designed to meet the diverse needs of modern militaries, including t**actical support, cargo support, surveillance, humanitarian aid and other tasks.**

CHANAKYA IAS ACA

Ballistic Missile Defence



India demonstrate Multi-layered Ballistic Missile Defence (BMD) capability This places India among an elite group of nations (United States, Russia, China, and Israel) with advanced BMD capabilities including defence against Intercontinental Ballistic Missiles (ICBMs).

- India also carried out Flight-test of the Naval Anti-Ship Missile-Medium Range (NASM-MR) successfully.

About Ballistic Missile Defence Programme

- **Definition:** A BMD system is an advanced network of radars, command centers, and interceptor missiles designed to detect, track, and destroy incoming ballistic missiles.
- **Launch:** Initiated in 1999 by **DRDO** in response to Pakistan nuclear tests and China's assertiveness.
- **Two-tier Defence:**
  - **Endo-atmospheric interception:** Within Earth's atmosphere.
  - **Exo-atmospheric interception:** Outside Earth's atmosphere.
- **Three Phases:**
  - **Phase-I:** Includes **Prithvi Defence Vehicle (PDV), Advanced Air Defence (AAD)** interceptors to counter short- and medium-range ballistic missiles (Range of 2000 kms).
  - **Phase-II:** Features AD-1 and AD-2 interceptors (Range of 5000 kms).
    - **AD-1** is a long-range interceptor missile designed for both low **exo-atmospheric and endo-atmospheric interception**.
    - **AD-2** missile is meant to **intercept intermediate-range ballistic missile** (3000-5500 km).
- **Phase-III:** Developing AD-AH and AD-AM interceptors.
- **AD-AH (Anti-Hypersonic):** Hypersonic glide vehicle, which travels above Mach 5 and changes trajectory mid-flight to dodge interception.
- **AD-AM (Anti-Missile):** Missile carrying Multiple Independently Targetable Re-entry Vehicles (MIRVs), where a single launch releases several nuclear warheads, each programmed to strike a separate target.
- **Key Components:** Interceptor missiles, Swordfish radar, Launch Control Centres (LCC), Mission Control Centre (MCC), and secure communication networks.

IMPORTANT NOTE!

ABOUT BALLISTIC MISSILES

- **Ballistic missiles** are powered by rockets initially but then they follow an unpowered, free-falling trajectory toward their targets. E.g. Agni-V.
- Classification:
  - **Short-Range Ballistic Missile (SRBM):** Range below 1,000 km
  - **Medium-Range Ballistic Missile (MRBM):** Range 1,000–3,000 km
  - **Intermediate-Range Ballistic Missile (IRBM):** Range 3,000–5,500 km
  - **ICBM:** Range above 5,500 km

CHANAKYA IAS ACADEMY

GRAPES-3 (Gamma Ray Astronomy PeV EnergieS)



Scientists from India and Japan used the GRAPES-3 muon telescope to analyse 22 years of cosmic-ray data to monitor Earth's upper atmosphere and Sun's magnetic field.

- Muons are **secondary subatomic particles** produced when cosmic rays collide with atmospheric oxygen and nitrogen.

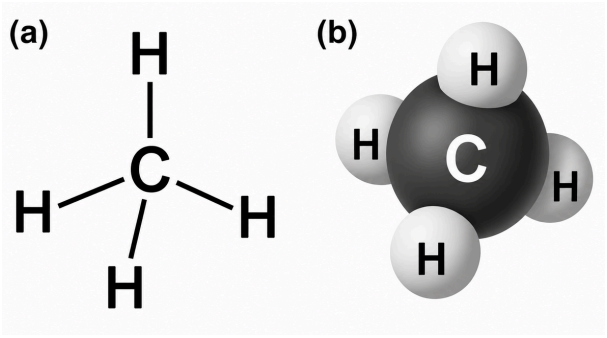
About GRAPES-3

- It is a high-energy **cosmic ray observatory** located at **Ooty, Tamil Nadu**, at an altitude of about 2200 metres above sea level.
- **Working:** When **high-energy cosmic rays or gamma rays enter Earth's atmosphere,** they interact with atmospheric molecules and generate cascades of secondary **particles called Extensive Air Showers (EAS).**
  - **GRAPES-3 detects** these air showers and analyses them to understand the **properties of the original cosmic particles.**

GRAPES-3 array is the **highest density conventional EAS array in the world**

CHANAKYA IAS ACADEMY

Non-Methane Hydrocarbons



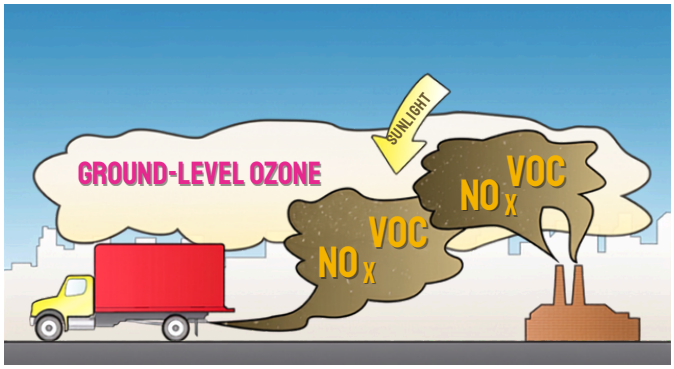
Researchers from Aryabhatta Research Institute of Observational Sciences (ARIES) undertook observation of NMHCs in Munsyari, a high-altitude Himalayan tourist destination.

- NMHC levels exhibited **clear seasonal patterns** with greater concentration during spring and autumn.

About NMHCs

- **Trace atmospheric** constituents, including compounds like ethane, ethene, propane, propene, and isoprene.
- **Primary air pollutants** having adverse effects on both **atmospheric environment and human health.**
- **Vital precursors** for photochemical formation of **tropospheric ozone and secondary organic aerosols (SOA).**
- **Production:** Primarily from **terrestrial sources,** with some contribution from **marine environments**, exhibit distinct production processes influenced by environmental factors.

Ground-level Ozone



Ground-level ozone pollution is emerging as a major public health challenge in Delhi.

About Ground-Level Ozone (O_3)

- A **secondary air** pollutant formed by reactions between **Nitrogen Oxides (NOx)** and **Volatile Organic Compounds (VOCs)** in the presence of sunlight.
- Unlike **stratospheric ozone** (Good Ozone), which shields Earth from UV rays, ground-level ozone is a harmful pollutant (Bad Ozone).
- Found in the troposphere (lowest atmospheric layer).
- Major precursor sources include vehicles, industries and thermal power plants.
- Peaks during summer due to intense solar radiation.
- Causes respiratory ailments, crop damage and photochemical smog.

Green Hydrogen Certification Scheme

CHANAKYA IAS ACADEMY



The Ministry of New and Renewable Energy has launched the Green Hydrogen Certification Portal of India (GHCI).

About Green Hydrogen Certification Scheme

- **Mission:** Launched under the National Green Hydrogen Mission.
- **Goal:** To establish a transparent framework for measuring, monitoring and certifying Green Hydrogen production.
- **Nodal Ministry:** Ministry of New and Renewable Energy.
- **Emission Standard:** To qualify as "Green", the hydrogen produced must have a GHG emission intensity of **2.0 kgCO2eq/kg H2 or less**.
- **Eligible Pathways:** Applies to hydrogen produced via **Electrolysis** and the **Conversion of Biomass** (e.g., gasification, pyrolysis, dark fermentation).
- **Mandatory Certification:** Obtaining the certificate is compulsory if the producer receives any Central or State government incentives/subsidies
- **Exemptions:** Facilities producing **10 tons or less annually**, and **100% export-oriented units** that do not avail of any government incentives.

Smart Seed Coating Technology



ICAR–Indian Institute of Oilseeds Research (ICAR-IIOR) has developed and demonstrated an innovative biopolymer-based Smart Seed Coating Technology.

About Smart Seed Coating Technology

- The technology utilizes **biodegradable biopolymeric materials** to form a multifunctional protective coating around the seeds.
  - This coating acts as a **carrier platform that delivers beneficial microorganisms, nutrients, micronutrients, crop protection agents, and plant growth-promoting compounds directly to the seed-soil interface**.
- **Significance:**
  - Promotes **rapid germination** and enhanced **root development.**
  - Improved **tolerance to both biotic (pests and diseases) and abiotic (temperature extremes and droughts) stresses**.

CHANAKYA IAS ACADEMY

Long Range Land Attack Cruise Missile

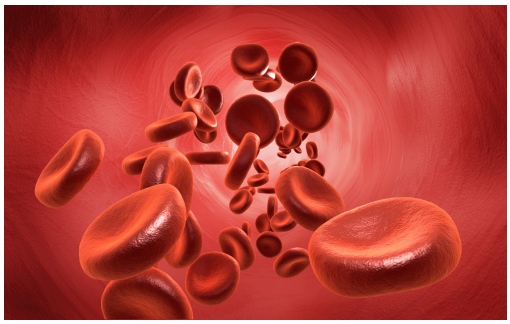


Defence Research & Development Organisation (DRDO) conducted a successful flight-test of LRLACM.

About LRLACM

- LRLACM is an **indigenously developed missile,** as the successor to the Nirbhay programme.
- Nodal Laboratory - Aeronautical Development Establishment, Bengaluru.
- **Features:**
  - Terrain-hugging flight, using hills and valleys to avoid radar detection
  - Reported range of 1,000 km.

Red Blood Cells



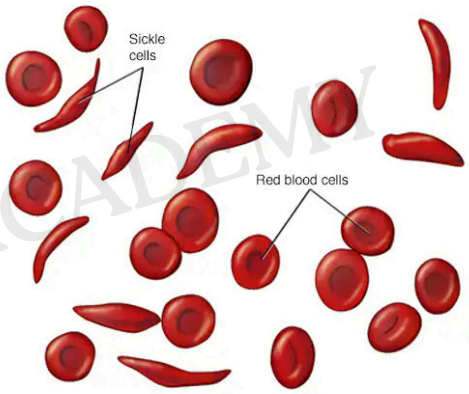
Researchers discovered a new mechanism in Red Blood cells (RBCs) by which malaria parasites evade the effects of artemisinin, the world's most widely used antimalarial drug.

- Research showed that **young RBCs (reticulocytes)**, which are not mature create a protective biochemical environment helping malaria parasites withstand drug-induced stress.
  - **Malaria** is a life-threatening disease spread to humans by *Anopheles* mosquitoes and caused by a parasite.

About Red Blood Cells

- **Primary Function:** To transport oxygen from the lungs to tissues and carbon-dioxide back to the lungs.
- **Abundance**: They are most common type of blood cell.
- **Pigment**: They contain **haemoglobin**, an iron-rich protein that binds to oxygen and gives blood red color.

Sickle Cell Anaemia



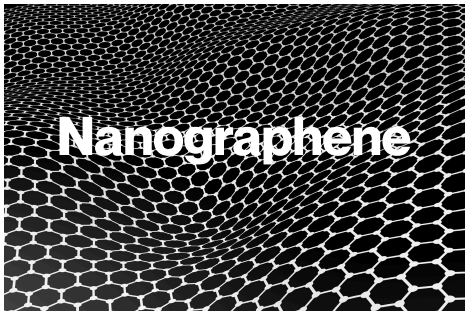
Indian President held that country would eradicate sickle cell anaemia well before the target of 2047.

CHANAKYA IAS ACADEMY

About Sickle Cell Anaemia

- Most severe form of **Sickle Cell Disease (SCD).**
- SCD is a **genetic disorder** affecting **haemoglobin,** molecule in red blood cells responsible for carrying oxygen.
- It causes red blood cells to **become rigid and sickle-shaped**, leading to blockages in blood flow and subsequent pain and organ damage.
- **Interventions:National Sickle Cell Anaemia Elimination Program** executed as part of **National Health Mission (NHM),** aims to **eliminate sickle cell genetic transmission by 2047.**
  - Programme Targets screening approximately **7.0 crore people over 2023-24 to 2025-26.** (already achieved).

Nanographene



Scientists have found a new way to build highly porous materials using nanographene.

About nanographene

- It is a **molecule-sized or nanoscale piece** of graphene.
- Unlike large **graphene sheets, its edges and limited size strongly** change its **electronic, optical, and chemical behavior.**
- **Distinctive Properties:** Tunable Band Gap enabling semiconductor behaviour, Photoluminescence, etc.
- **Major Applications:** Optoelectronics (Light–electronics interaction), Biomedical Applications, Quantum technologies etc.

Deuterated Compounds and Prototype Sodium Cell



Department of Atomic Energy Inaugurates Deuterated Compounds Production Plant and Commissions Prototype Sodium Cell.

About Deuterated Compounds

- Deuterated compounds are molecules where specific hydrogen atoms are replaced by **deuterium (D or ^2H)**, a stable, non-radioactive isotope of hydrogen containing one proton and one neutron.
- Deuterium contains one neutron and one proton in its nucleus, which makes it twice as heavy as protium (hydrogen), which contains only one proton.
- Used in **advanced scientific research, strategic applications and frontier technologies**.

24 kA Prototype Sodium Cell

- An electrochemical device developed for the indigenous production of **nuclear-grade sodium**.
- Critical for India's **Fast Breeder Reactor Programme** and the **second stage of the three-stage nuclear power programme**.

CHANAKYA IAS ACADEMY

Fibre-Optic Drones

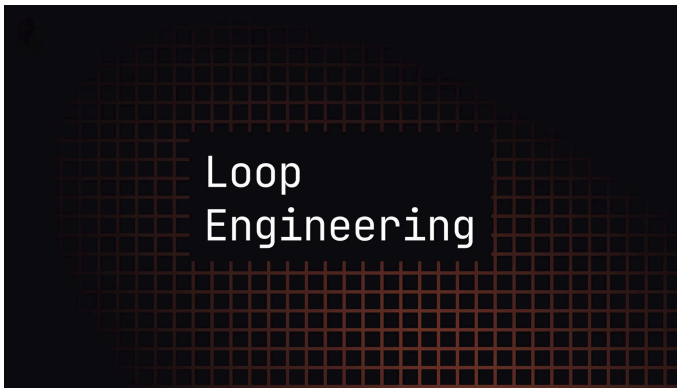


Fibre-Optic Drones (Invisible drones) are being used in the wars recently.

About Fibre-Optic Drones

- They are **electronic warfare-resistant drones** that use **physical fibre links** instead of radio signals, making them **difficult to detect and jam.**
- They are **FPV (First-Person View) drones** connected to the operator through a thin **fibre-optic cable,** transmitting **commands and live video as pulses of light.**
  - **Fibre optics** uses very thin glass or plastic threads through which light can travel to carry information. It works on the principle of **total internal reflection.**
- **Features**: Immune to Electronic Warfare, Difficult Detection, more accurate navigation in difficult terrains.
- **Challenges**: Limited Reaction Time and range etc.

Loop Engineering



Loop engineering could change how humans interact with AI by replacing manual prompting.

About Loop Engineering

- It is the **design of recurring AI-agent workflows (loops)** that **automate tasks** with minimal human prompting.
- It enables **AI agents to plan, execute, review, and coordinate tasks independently.**
- **ReAct Pattern:** Reason, act, observe, repeat is the core of loop engineering.
- **Uses:** Software development, code maintenance, workflow automation, and continuous monitoring.
- **Challenges:** High token consumption and costs, security and oversight risks, lack of clear end-points, dependency on external memory, need for human supervision to prevent errors or unintended actions.

CHANAKYA IAS ACADEMY

Digital Sovereignty



Government of India asks Internet Corporation for Assigned Names and Numbers (ICANN) to set up a root server in India to push towards Digital Sovereignty.

- **ICANN** is a global not-for-profit partnership formed in 1998 to keep the Internet secure, stable, and interoperable by coordinating its unique identifiers.
- **Root server** is the core part of the internet that connects users to websites.
  - User search on the internet goes to root servers, which, like an exchange, search the location of a website or URL on world wide web and then connect the user with them.

About Digital Sovereignty

- It is the ability of a nation to govern its digital space, retaining meaningful control over its data, digital infrastructure, networks, and online narratives, free from external influence.
- **Significance of Digital Sovereignty for India**
  - **National Security:** Dependence on foreign technology can compromise defence capabilities and strategic autonomy, as seen during the **1999 Kargil conflict** when GPS access was restricted.
  - **Economic Resilience:** Reliance on imported semiconductors, operating systems, cloud services, and security infrastructure creates vulnerabilities that can disrupt business, manufacturing, and trade.
  - **Data Sovereignty:** Local control over data protects **privacy**, prevents data exploitation by foreign entities, and retains the economic value of data within the country.
  - **Strategic Autonomy:** As a rising power, India requires an independent technological ecosystem to reduce external leverage and maintain policy freedom.

Coal Gasification

PM to lay foundation stone of India's First Commercial-Scale Coal-to-Ammonium Nitrate Project in Odisha Project is being developed by Bharat Coal Gasification and Chemicals Limited (BCGCL), a joint venture of Bharat Heavy Electricals Limited (BHEL) and Coal India Limited (CIL).

- It will produce **2,000 tonnes per day of ammonium nitrate** using indigenously developed **coal gasification technology** by BHEL.

About Coal Gasification

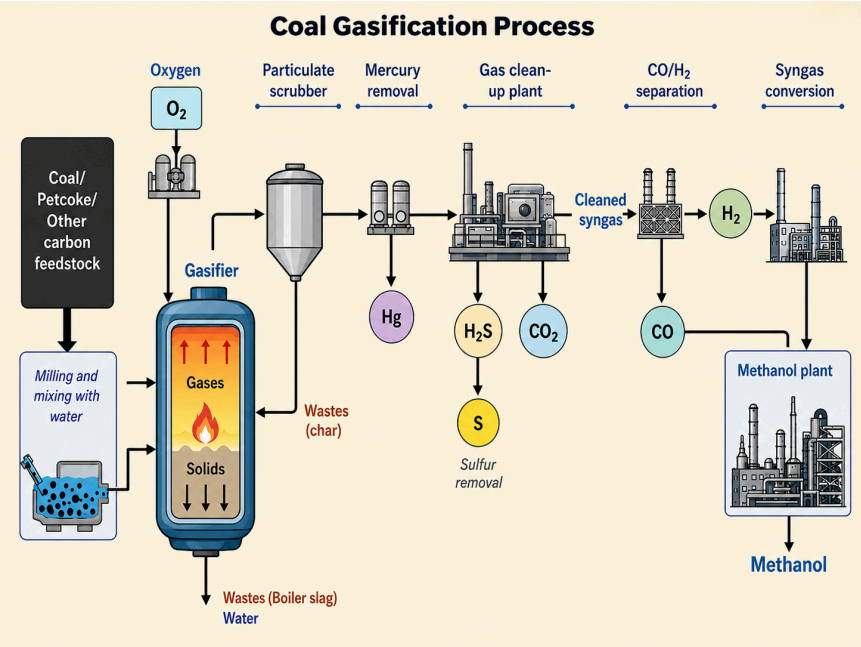
- **Meaning:** Process that converts coal into **synthesis gas (syngas),** to be used to produce a wide range of value-added products like **methanol, urea, ammonium nitrate, synthetic natural gas, and other chemical feedstocks.**

Significance of Coal Gasification

- **Reduce Imports:** India currently **imports end-use and intermediate chemical products** worth ~ Rs 2.7 lakh crore annually.
- **Catalyse Investments:** Gasification would **catalyse investment worth Rs 2.5 to 3 lakh crore** and create around **50,000 direct/indirect employment across 25 projects** in coal-bearing regions.
- **Huge Potential:** India is **world's second largest producer and consumer of coal**; is endowed with **world's fifth-largest coal reserves of over 400 billion tonnes**.
- **Ensure Optimal utilization of indigenous natural resources:** For long term economic growth and competitive advantages like Shale gas revolution in USA, Coal to Chemicals in China, etc.

Key Initiatives towards promoting Coal Gasification in India

- **National Coal Gasification Mission:** Aims to gasify **100 million tonnes of coal by 2030.**
- **Scheme for Promotion of Surface Coal/Lignite Gasification Projects.**
- **Incentive scheme for promotion of coal and lignite gasification projects (2024)** for PSUs and private sector with an outlay of ₹ 8,500 crore.
- India's First Ever Pilot project for **Underground Coal Gasification** in Jharkhand (2024).



CHANAKYA IAS ACADEMY

HISTORY



CIVILS WITH AKASH

Lokmata Ahilyabai Holkar



Prime Minister pays tribute to Lokmata Ahilyabai Holkar on her birth anniversary.

About Ahilya Bai Holkar (1725 - 1795)

- She was the visionary queen of the **Holkar dynasty who ruled Malwa in the 18th century**.
- Known as the **"Philosopher Queen".**

Early Life:

- Born in village of **Chondi, Ahmednagar (Maharashtra).**
- Married to Malhar Rao Holkar**.**
- After the deaths of her husband, father-in-law and son, **she took charge of Malwa in 1767 (Indore was one of the major cities).**

Key Contributions

- She promoted **trade, textile industries, education and public welfare.**
- Established a textile industry in **Maheshwar, famous for Maheshwari Sarees.**
- **Restored major temples like: Kashi Vishwanath Temple,**Somnath Temple.
- **Architectural Legacy:** Build Maheshwar Fort (Ahilya Fort) on the banks of Narmada River.

CHANAKYA IAS ACADEMY

Masroor Rock Cut Temples



Called the "Ellora of the Himalayas", Masroor Rock-Cut complex of temples are lesser known architectural gems of India.

About Masroor Rock Cut Temples

- **Location:** Kangra Valley of Beas River in **Himachal Pradesh.**
- **Period:** Early **8th-century.**
- **Architectural Features**
  - **Style:** Version of **North Indian Nagara style.**
    - Example of **temple mountain-style** embodying earth and mountains around it (faces northeast, towards Dhauladhar range).
  - Carved out of **monolithic rock** with **shikhara**, **sacred pool of water**; **has three entrances** (two incomplete);
  - Entire complex is **symmetrically laid out on square grid,** where main temple is surrounded by smaller temples in **mandala pattern.**
  - Features **reliefs of major Vedic and Puranic gods and goddesses.**
  - Dedicated to **Shiva, Vishnu, Devi and Saura** traditions of Hinduism.
  - First reported by **Henry Shuttleworth in 1913.**

Jagannath temple secures Trademarks



Jagannath temple secures Trademarks for Nilachakra logo and two key terms In a first for any Indian shrine, the Shree Jagannath Temple Administration (SJTA) has obtained trademark protection for important terms and symbols.

- **Wordmarks secured (Protects specific words): Patitapabana** (Savior of the Fallen) **and Ananda Bajara** (the sacred Mahaprasad dining area within the temple)
- **Logomark secured (Protects visual symbols/ designs): Neelachakra (**sacred **eight-spoked metal disc atop the temple spire)**

Shree Jagannath Temple, Puri, Odisha (White Pagoda)

- **Architecture style:** Kalinga Architecture (sub-style of the **Nagara (North Indian) temple architecture)**
- **Deities:** Lord Jagannath (incarnation of Lord Vishnu), Sister Devi Subhadra and elder brother Lord Balabhadra (holy trinity).
- **Historical Background:** Believed to have been built in the **12th century CE by Anantavarman Chodaganga Deva** of the Eastern Ganga Dynasty.
- **Unique Feature:** Popularly believed that the temple is designed such that its main structure does not cast a visible shadow on the ground at any time of the day.
  - The idols of the holy trinity are carved out of wood rather than stone or metal idols.
- **Religious Significance**: One of the four **Char Dhams (Dwarika, Badrinath, & Rameswaram).**
- **Cultural Significance:** The temple is the center of the world-famous Ratha Yatra, attracting millions of devotees every year.

CHANAKYA IAS ACADEMY

IMPORTANT NOTE!

ABOUT TRADEMARK

- A trademark is an **Intellectual Property Right (IPR)** that protects a **distinctive word, logo, symbol, phrase, or sign used to identify and distinguish the goods or services** of an entity from others.
- **The Trade Marks Registry** administers the **Trade Marks Act, 1999** and **Trade Marks Rules, 2017.**
  - It **facilitates international trademark registration** through the Madrid Protocol of which India is a member.
  - It functions under the **Controller General of Patents, Designs and Trade Marks (CGPDTM),** which is attached to the DPIIT, Ministry of Commerce and Industry.
- **Time Period**: 10 years (can be renewed again)

Battle of Haldighati



450 years to the Battle of Haldighati in the Aravalli hills (present-day Rajsamand, Rajasthan), fought on 18 June 1576.

- Maharana Pratap, led **Mewar's** forces against the army of **Mughal emperor Akbar, led byAsaf Khan I** and **Man Singh I** of Amber.
- **Chetak**, Maharana Pratap's trusted horse, delivered him to safe grounds before breathing his last.

About Maharana Pratap (1540 -1597)

- Renowned **Rajput warrior** and the **king of Mewar, Rajasthan.**
- He was born in **Kumbhalgarh Fort** into the Sisodiya clan to**JaiwantaBai**and **Udai Singh II.**
- He refused to **submit to the Mughals** (during the reign of Akbar), leading to **the Battle of Haldighati**(1576).
- **Strategic Brilliance:** From the Aravalli hills, Maharana Pratap employed **guerrilla warfare** and swift cavalry tactics against the Mughals, with crucial support from the **Bhil community** in intelligence, archery, and terrain navigation.
- **Successor**: Amar Singh I

Values: Bravery, courage, resilience, compassion, leadership, high moral standards, etc.

CHANAKYA IAS ACADEMY

Dancing Girl of Mohenjo-daro



NCERT has taken the decision to restore the original image of the Harappan "Dancing Girl" in its textbook.

About the Dancing Girl

- It is a famous **bronze** figurine from the **ancient city of Mohenjo-daro.**
- It belongs to the **Harappan (Indus Valley) Civilization (c. 2600–1900 BCE).**
- Discovered in **1926** during excavations led by **John Marshall.**
- The figurine is about **10.8 cm tall** and is currently housed at the **National Museum, Delhi.**
- Created using the **lost-wax casting technique.**
- **Other Artefacts from Indus valley civilization: Steatite** Priest King (Mohenjo Daro), Pashupati Seal (Mohenjo-daro), Terracotta Figurine of Mother Goddess, pottery, etc.

Indian Art and Handicraft in News



Indian Prime Minister gifted various products to foreign dignitaries during recent visits to France and Slovakia, showcasing Indian Heritage.

About Indian Art and Handicraft in News

- **Kalamkari Painting (Andhra Pradesh):** Traditional hand-painted textile artwork that uses intricate pen-drawing techniques; depicting scenes from the Mahabharata etc.
- **Pochampally Silk (Telangana):** Handwoven Ikat textile known for distinct **Ikat resist-dyeing technique,** geometric and floral patterns.
- **Kashmiri Silk Carpet:** Exquisite handwoven silk carpet featuring floral and paisley motifs.
- **Dokra Metal Casting:** Tribal metal-craft artwork made using the ancient lost-wax casting technique. Practiced by tribal artisans across Chhattisgarh, Odisha, Jharkhand, and West Bengal.
- **Thewa Art (Rajasthan):** Traditional **Jewellery** craft combining engraved gold sheets with coloured glass.
- **Himroo Silk (Maharashtra):** Originating under historical Deccan court patronage, unique silk-cotton blend, famous for its reversible weave and floral motifs.
- **Thekua:** Traditional sweet from Bihar and Jharkhand, prepared especially during Chhath Puja.

CHANAKYA IAS ACADEMY

Rakhigarhi



Human skeletal remains excavated from Rakhigarhi have been formally handed to the Anthropological Survey of India (AnSI).

About Rakhigarhi

- It is recognized as the **largest known settlement** of the Indus-Saraswati (Harappan) Civilization.
- **Location**: Hisar district, Haryana, in the **Ghaggar-Hakra river plain.**
- **Represents** continuous habitation from Early to Mature Harappan periods.
- **Key discoveries**:
  - **Urban features**: Planned settlements with mud-brick and burnt-brick houses, drainage systems.
  - **Trade**: Cylindrical seal with a symbol of alligator.
  - **Industry**: Ceramic industry represented by red ware, craft production centres.
  - **Ritual system**: Animal sacrificial pit, triangular and circular fire alters, burial grounds.

Sahariya Tribe



The President of India interacted with Cheetah Mitras and members of the Sahariya tribe at Kuno National Park.

- **Cheetah Mitras** are **specially trained local volunteers** often drawn from indigenous communities.
- They were established as part of **Project Cheetah.**

About Sahariya Tribe

- It is one of the **Particularly Vulnerable Tribal Groups (PVTG).**
- **Other names:** Seher, Sair, Savar, Saonar, Sahra, etc.
- They are rimarily concentrated in Madhya Pradesh and Rajasthan.
- They are known for their dance, the **Saharia Swang,** which is performed during the **month of Holi.**

CHANAKYA IAS ACADEMY

OTHER NEWS

Grand Slam tournaments



125th edition of the French Open, one of the four grand slam tournaments were recently concluded

- **Men's Singles Champion**: Alexander Zverev (Germany)
- **Women's Singles Champion:** Mirra Andreeva (Russia)

About Grand Slam tournaments

- They consist of **4 major tournaments** played annually in a chronological order.
  - **Australian Open** (Hard Court), followed by **French Open** (Clay Court), **Wimbledon (Britain)** (grass), and **US open** (Hard)
- **Shared governance**: Managed through a board comprising the four Grand Slam Chairs
- **Eligibility:** Open for entry to **all internationally ranked** tennis players with a ranking of 500 or better.
  - Minors under the age of fourteen (14) are not eligible for entry.
  - **Doubles**: Uses the better of a player's individual singles or doubles ranking
  - A player **below 500 rank may still be able to compete** through wild cards.
- **Wild cards players:** Players included in a tournament drawn at the **sole discretion** of the individual Grand Slam event.
  - There is **no limit to the total number** of wild cards an individual player may receive to compete in Grand Slam Tournaments.
- **Prize:** On-site prize money based on performance of player.

CHANAKYA IAS ACADEMY

Gallantry Awards



President of India presented Gallantry Awards to Armed Forces and Police Personnel.

About Gallantry Awards

- **Objective**: Recognitions given for acts of bravery, valour and self-sacrifice during **both wartime and peacetime**.
- **Conferred By:** The President of India, who is the Supreme Commander of the Armed Forces.
  - Officially **announced twice a year** on the eve of **Republic Day** (January 26) and **Independence Day** (August 15).
- **Nodal Ministry:** The **Ministry of Defence** invites recommendations **twice a year** from the Armed Forces and the Ministry of Home Affairs.
- **Wartime Gallantry Awards**: Param Vir Chakra (Highest), Maha Vir Chakra and Vir Chakra.
  - **Instituted on 26 January 1950** (with effect from 15 August 1947).
- **Peacetime Gallantry Awards**: Ashoka Chakra (Highest), Kirti Chakra and Shaurya Chakra.
  - Originally, they were named **Ashoka Chakra Class I, Class II, and Class III** but were renamed in 1967.
  - Instituted on **4 January 1952** (with effect from 15 August 1947).

Homemakers Contribution

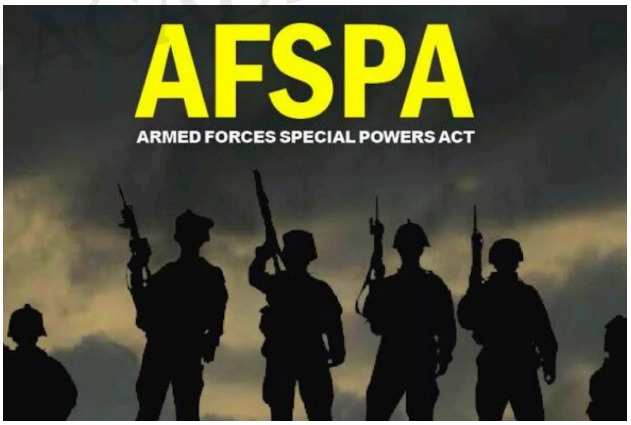


Recently Supreme court in Shish Ram and ors vs. Surjeet case quantified homemakers' contribution at Rs 30000 Per Month.

Key Highlight of Judgment

- Domestic care by a homemaker constitutes a compensable head of damages in **motor accident claims.**
- **Homemakers as nation builders:** It noted that women's unpaid caregiving work is estimated between 15%-17% of India's GDP.
- **If a homemaker is employed**, ₹30,000 for loss of domestic care is awarded in addition to their salary
- **To Maintain this value** this sum be revised by 10% cumulatively every three years.
- **Expeditious disposal**: Motor vehicle claims should not remain pending before High Courts for more than four years.

Armed Forces (Special Powers) Act (AFSPA)



Union Home Minister announced that AFSPA,1958, will be withdrawn from most of the Northeast India by next year, except in one or two states.

- In North-east, it is currently enforced in Nagaland, Assam, Manipur, and Arunachal Pradesh.

About AFSPA

- It enables **certain special powers** to be conferred upon armed forces in the **disturbed areas** to maintain law and order.
  - E.g., Arrest and enter/Search premises without warrant based on suspicion.
- **Declaration of Disturbed Area (Section 3):** Governor, Administrator, or Central Government can declare part or whole state/UT as "disturbed" if they believe the situation requires armed forces to aid civil authorities.

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UK Social Media Ban



UK announces Social Media Ban For Children Under 16 UK joins countries such as Australia (1st such country), Indonesia, Malaysia, Greece and Turkey in restricting children's access to social media through age-based regulations.

- **In India**, Karnataka and Andhra Pradesh have announced plans for such age based restrictions for social media access.

Need of banning social media for children

- **Mental Health:** Significant time invested in social media can lead to anxiety and depression, Attention Deficit Hyperactivity Disorder etc.
- **Safety:** Digital platforms can expose children to cyberbullying, grooming, and Child Sexual Abuse Material, dangerous trend e.g. Blackout Challenge (breath-holding)
- **Addiction:** algorithmic-based nature of these platforms can lead to digital addiction e.g. Hyper-Personalized Content Filtering by AI to keep user captivated
- **Others:** lower socializing skills, promotes sedentary behaviour etc.

Concerns

- **Ineffectiveness:** Due to the use of **VPNs** and other means to bypass restrictions. Furthermore, such bans may push children toward unregulated, less safe online spaces.
- **Infringement of Rights:** E.g. UN Convention on Rights of the Child's Article 12, (recognizes a child's right to be heard in decisions affecting them).
- **Democratic engagement:** Social media serves as a safe space for children from marginalised communities e.g. LGBTQ etc.
- **Others** : loss of informal learning, peer interaction, digital literacy esp. in rural areas.

Governments, social media companies, schools, and parents must work together to implement robust age-verification systems, stronger privacy protections, parental controls, digital literacy programs, and stricter regulation of harmful content.

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SHe-Box



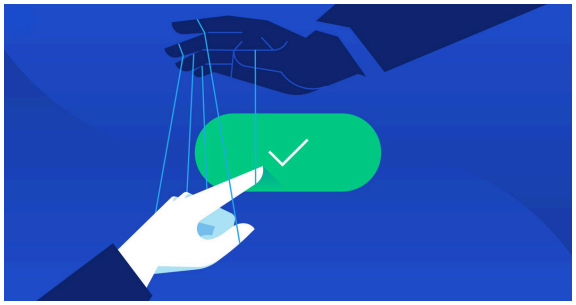
The Sexual Harassment electronic Box (SHe-Box) 2.0 portal strengthened the women's Safety Framework under the Mission Shakti Initiative.

- **Mission Shakti** aims to strengthen interventions for women's safety, security, and empowerment.
- **It comprises** two sub-schemes, 'Sambal' and 'Samarthya,' for the safety and security of women and the empowerment of women, respectively.

About SHe-Box

- SHe-Box 2.0, launched in 2024, provides a **single-window platform** for all women across organised and unorganised, public and private sectors to register complaints of sexual harassment.
- It is **developed** to **operationalise the provisions** of the **Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013**.

Dark Patterns



Reports find Indian online buyers losing huge amounts of money annually to dark patterns.

About Dark Patterns

- **Meaning: Practices or deceptive design pattern** using **user interface or user experience** on any platform designed to mislead or trick users to do something they originally did not intend or want to do.
- **Key Dark Patterns:**
  - **Basket Sneaking:** Automatic addition of a donation during checkout.
  - **Confirm Shaming:** Emotional messaging discouraging users from removing donation.
  - **Forced Action:** Requiring users to share personal information for subscription.
- **Regulation: Guidelines for Prevention and Regulation of Dark Patterns, 2023** under Consumer Protection Act, 2019 issued by Central Consumer Protection Authority (CCPA).

FIFA World Cup 2026

The biggest FIFA World Cup to begin in Mexico.

About FIFA World Cup 2026

- **Edition:** 23rd edition of the men's FIFA World Cup.
- **Historic Expanded Format**
  - **Tri-Host Countries:** For the first time in World Cup history, the tournament is co-hosted by three sovereign nations: **Canada, Mexico, and the United States.**
  - **Expanded Teams:** Features a record **48 nations** (up from 32 teams in previous editions), divided into 12 groups of four teams each.
- **Mascots:** 3 official characters representing the three hosts:
  - **Maple the Moose** (Canada)
  - **Zayu the Jaguar** (Mexico)
  - **Clutch the Bald Eagle** (United States)
- India has only qualified for the FIFA World Cup once (1950 in Brazil), but ultimately did not participate.

Pradhan Mantri Kaushal Vikas Yojana (PMKVY)

The Public Accounts Committee (PAC) pulled up the government over PMKVY mismatch between training and demand.

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Key Issues raised by the PAC

- **Demand-Training Mismatch:** disproportionately focused on **sectors with lower employment** demand, such as **apparel, electronics, and retail**.
- **Certification Gap:** Against a set target of training and certifying 1.32 crore candidates, **1.10 crore candidates** were certified.

About PMKVY:

- It is a **flagship scheme for skill certification** to help Indian youth take up industry-relevant skill training to get better livelihoods.
- **Launched: In 2015** by the **Ministry of Skill Development and Entrepreneurship.**
- **Implementing Agency**: National Skill Development Corporation (NSDC).

India's Defence Transformation



India's annual defence production has surged upwards to reach an all-time high of ₹1.78 lakh crore.

Key Achievements

- **Rise in Private Sector Participation:** The private sector's contribution to defence production has grown to **24% (around ₹42,000 crore)**.
- **Reduced Import Dependence:** Nearly **65% of defence equipment** is now produced domestically.
- **Historic Export Milestones:** Defence exports skyrocketed from just ₹686 crore in 2013–14 to a **record ₹38,424 crore in 2025–26** (5500% growth).
- **Expanding Global Footprint:** Indian defence products are now exported to **over 80 countries**.
- **Development of Indigenous Defence Technologies:**
  - **Aircraft-** Tejas Mk-1(Indigenous fighter aircraft)
  - **Missile-** Akash, Rudram, Mission Shakti (Anti- Satellite Missile), Long Range- Antiship Hypersonic Missile, etc.
  - **Helicopter:** LCH Prachand.
  - **Aircraft Carrier:** INS Vikrant
  - **Submarines:** INS Arighaat, INS Vagsheer, etc.

Initiatives/reforms paved ways for Defence Transformation

- **Expanded Defence Budget:** The overall defence budget surged from ₹2.53 lakh crore in 2013–14 to **₹7.85 lakh crore in 2026–27**.
- **Simplified Procurement:** Defence Acquisition Procedure (DAP) 2020 and the Defence Procurement Manual (DPM) 2025 simplified procurement and mandated higher indigenous content.
- **FDI Reforms:** The Foreign Direct Investment (FDI) limit in the defence sector was increased to **74% under the Automatic Route** and up to 100% via the Government Route.
- **Corporate Reforms:** The 200-year-old Ordnance Factory Board (OFB) was dissolved and reorganised into seven new Defence Public Sector Undertakings (DPSUs) to enhance efficiency.
- **Defence Industrial Corridors:** New manufacturing hubs were established in the Uttar Pradesh corridor and Tamil Nadu corridor.
- **Innovation Ecosystem:** The **Innovations for Defence Excellence (iDEX)** scheme successfully engaged 676 startups and MSMEs to develop cutting-edge indigenous technologies.

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Smart Warehousing System

Smart Warehousing System for Foodgrain Storage launched Launched by the Ministry of Consumer Affairs, Food and Public Distribution, the system represents the world's largest deployment of Artificial Intelligence (AI) and Internet of Things (IoT) based technologies in public sector foodgrain warehousing.

About Smart Warehousing System

- **Technologies:**
  - Advanced gate automation using FASTag and ANPR (Automatic Number Plate Recognition) and intelligent access control through geo-tagged smart locks;
  - AI-enabled bag counting, face recognition systems, object detection;
  - IoT-based monitoring of environmental parameters, and AI-powered surveillance for fire, smoke and rodent detection.
- **Implementation:** Implemented across 215 bag-based foodgrain warehouses of the Central Warehousing Corporation (CWC), while the Food Corporation of India (FCI) is deploying the system in an additional 150 warehouses.
- **Significance:** Expected to improve operational efficiency by reducing vehicle turnaround time (TAT), strengthening compliance monitoring, improving manpower productivity, enabling early hazard detection and providing real-time visibility of warehouse operations.

Food Grain Storage Systems in India

- **Centralized Storage:** Primarily handled by the Food Corporation of India (FCI), which procures grains directly or via State Government Agencies at the Minimum Support Price (MSP).
- **Decentralized Storage:** Carried out through rural godowns, Primary Agricultural Credit Societies (PACS), and on farm storage by farmers.
  - Around 60-70%, of food grain produced is stored at household level using various indigenous traditional storage structures.

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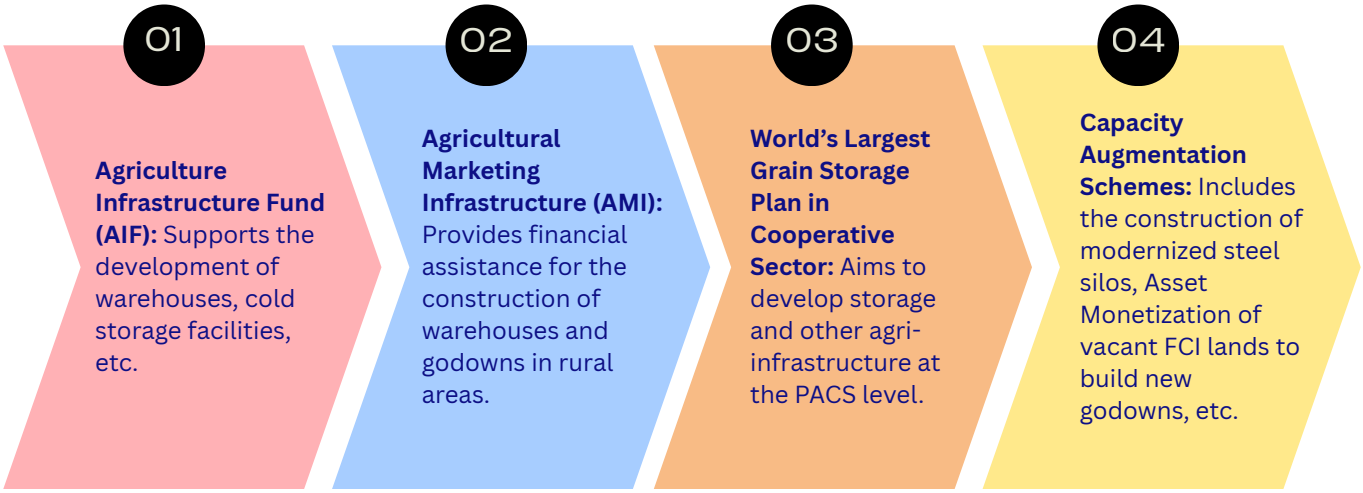
Key Government Schemes for Storage Infrastructure



India's maritime sector for security



Recently the PM commissioned three indigenously built naval vessels INS Dunagiri, INS Sanshodhak and INS Agray, highlighting the significance of maritime sector in defence and overall security.

About Naval Vessels

- **INS Dunagiri:** Fifth Project 17A (Nilgiri-class) **stealth guided missile frigate.**
  - **Designed for blue-water operations far from the coast and** strengthens India's long-range maritime combat capability.
  - **Project 17A** frigates are **versatile multi-mission platforms designed to address current and emerging challenges** in the maritime domain and follow-on ships of **Shivalik-class (Project 17) frigates.**
- **INS Sanshodhak**: Large Survey Vessel.
  - Conducts **hydrographic surveys,Seabed mapping etc.**
- **INS Agray:** Arnala-class Anti-Submarine **Warfare Shallow Water Craft (ASW-SWC).**
  - **Protects ports, naval bases and coastal approaches from** submarine threats.

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Significance of India's maritime sector for security

- **Economic security:** Maritime routes carry **95% of India's trade by volume and 70% by value, backbone of India's global trade also** Blue Economy contributes ~4% of GDP.
- **Strategic Importance:** India's **11,098 km coastline, 2.3 million sq. km Exclusive Economic Zone (EEZ), and central location in the Indian Ocean** through which over **80% of world trade by volume is transported.**
- **National Security**: Maritime capabilities safeguard **Sea Lines of Communication (SLOCs), energy imports, offshore resources, and coastal infrastructure** strengthening coastal security.
- **Net Security Provider:** Through initiatives like **SAGAR and MAHASAGAR, India promotes regional cooperation, connectivity, and collective security**.

Exercise PRAGATI

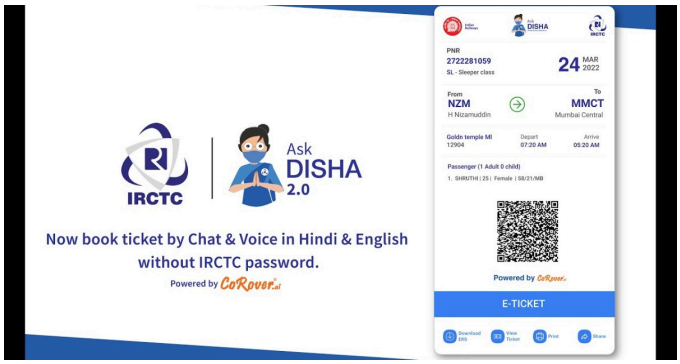


India Concludes Maiden Multilateral Exercise PRAGATI (Partnership of Regional Armies for Growth And Transformation in the Indian Ocean Region) 2026 for Indian Ocean Region Partners.

About Exercise PRAGATI

- **Duration:** Two-week exercise.
- **Participating Nations:** India, along with **12 friendly regional partners**- Bhutan, Cambodia, Indonesia, Laos, Malaysia, Maldives, Myanmar, Nepal, Philippines, Seychelles, Sri Lanka, and Vietnam.
- **Objectives:** Enhance counter-terrorism capabilities, specialized tactical skills, multinational interoperability, and intelligence-sharing among participating armies.

DISHA 2.0 approved



DISHA 2.0 seeks to expand access to justice by integrating legal aid, legal awareness and pro bono services with digital and AI-enabled delivery systems.

- DISHA 2.0 builds on the earlier DISHA scheme implemented between 2021 and 2026.
  - DISHA Scheme had achieved a cumulative outreach of over 2.37 crore beneficiaries. (May 2026)
- DISHA fulfills commitment to **Access to Justice** as outlined in the **Articles 14, 21,** and **39A** of the Constitution and supports the implementation of SDG-16, which focuses on **Peace, Justice,** and **Strong Institutions.**

About DISHA 2.0

- **Type:** Central Sector Scheme
- **Implementation Agency:** Department of Justice, Ministry of Law and Justice
- **Duration:** 5 years (1st April 2026 to 31st March 2031)
- **Financial Outlay:** Rs 255 crore
- **Components of DISHA 2.0**
  - **Tele-Law:** Provides free pre-litigation legal advice through 2.5 lakh Common Service Centres (CSCs).
  - **Nyaya Bandhu:** Promotes a **pro-bono culture** by connecting marginalised citizens eligible under the **Legal Services Authorities Act, 1987**.
  - **Legal Literacy & Awareness (LLLAP):** Spreads legal awareness and literacy through partnerships with Ministries, Departments, Civil Society Organisations (CSOs), etc.
  - **VIDHI (Vision for Integrated Delivery of Harmonized Legal Initiatives)-Sanjeevani:** A centralized digital platform introduced as a fourth component for end-to-end programme monitoring and data-driven decision-making.

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Other Digital Initiatives taken to Promote Access to Justice

