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OFFICERS' PULSE



October 2026 (Digest)

CURRENT AFFAIRS MONTHLY

The PULSE of UPSC at your fingertips.

Foreword

Officers Pulse Digest is a comprehensive monthly current affairs magazine that serves as a complete resource for UPSC CSE Prelims. It includes significant topics from sources like The Hindu, Indian Express, Business Standard, Yojana, Kurukshetra, Down to Earth, and more.

Although "Officers Pulse- Digest" is primarily oriented towards Prelims, reading "Officers Pulse- In depth" along with it is crucial for effectively tackling the Prelims examination.

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POLITY

SUPREME COURT ON OBC RESERVATION AFTER RELIGIOUS CONVERSION

Why in News?

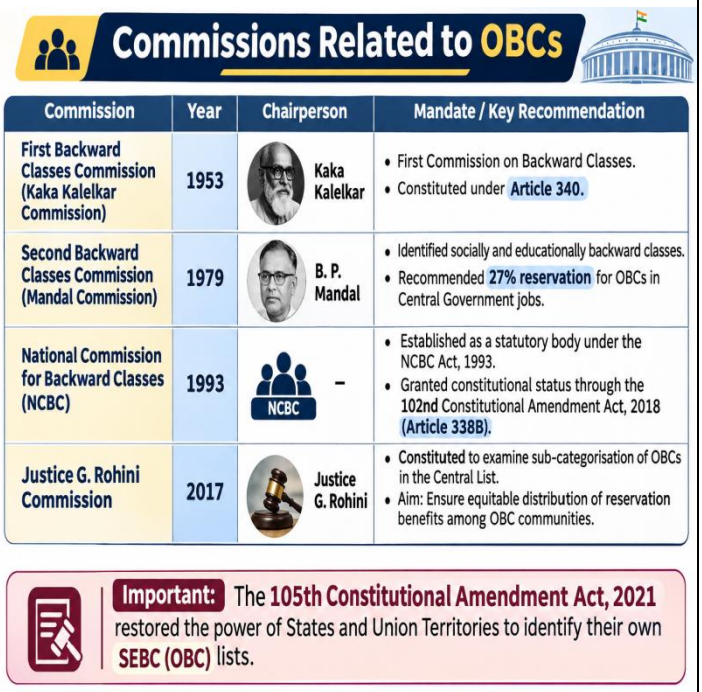
The Supreme Court upheld the Madras High Court's decision striking down a Tamil Nadu Government Order that allowed persons converting to Islam to obtain Backward Class Muslim certificates without establishing eligibility for the notified backward communities.

About the Judgement

- The case concerned the eligibility of a person who converted to Islam for inclusion in one of the notified Backward Class Muslim communities in Tamil Nadu.
- The Court held that conversion to Islam does not automatically confer membership of a particular notified Backward Class Muslim community.
- A person's earlier caste or community identity cannot automatically be transferred to a different religious community for claiming reservation.
- A community certificate only recognises an existing legal status; it does not independently create eligibility.
- Membership of a notified backward community must be established according to the applicable legal and social criteria.
- A religious organisation or private body cannot conclusively determine statutory eligibility for reservation.

Constitutional Framework for OBC Reservation

- Article 15(4): Special provisions for the advancement of Socially and Educationally Backward Classes (SEBCs).
- Article 15(5): Reservation in educational institutions, including private aided and unaided institutions, except minority institutions.
- Article 16(4): Reservation in public employment for inadequately represented backward classes.
- Article 340: Appointment of a commission to investigate the conditions of backward classes.
- Article 338B: Constitutional status and functions of the National Commission for Backward Classes (NCBC).
- Article 342A: Identification of SEBCs; provides for separate Central and State/UT lists.
- Article 366(26C): Defines Socially and Educationally Backward Classes.



PREVENTIVE DETENTION

Why in News?

-The Delhi Government authorised the Commissioner of Police to exercise powers under the National Security Act (NSA), 1980, amid protests in the capital over the NEET examination paper leak.

About

- Preventive detention means keeping a person in custody without a trial or conviction to prevent them from doing something that may threaten national security, public order or public safety.
- It is allowed under Article 22 of the Indian Constitution, but the government must follow the constitutional safeguards..

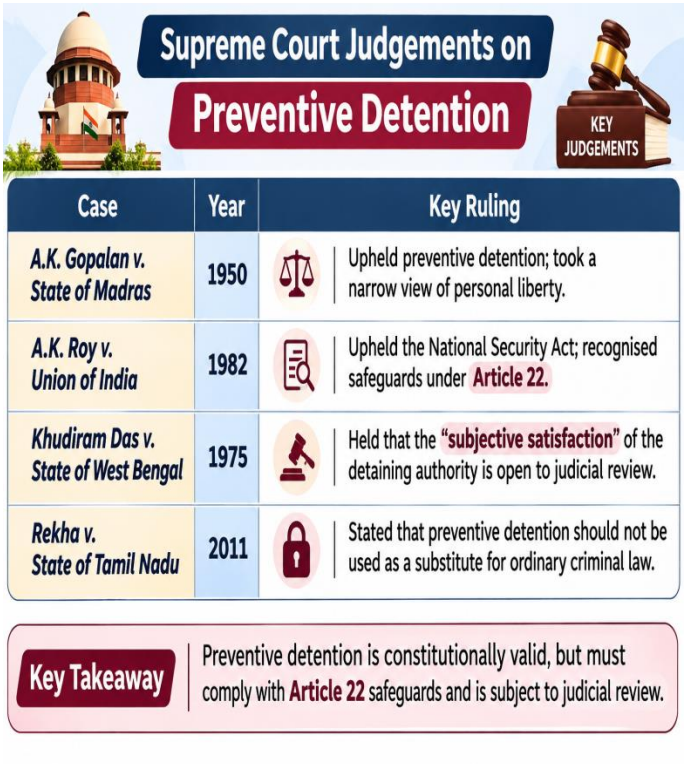
Preventive Detention: Constitutional Provisions

Article 22 – Protection against Arrest and Detention

- Article 22(1): Right to know the grounds of arrest and consult a lawyer.
- Article 22(2): Must be produced before a magistrate within 24 hours.
- Article 22(3): These safeguards do not apply to enemy aliens and persons under preventive detention.
- Article 22(4): Detention beyond 3 months generally requires approval of an Advisory Board.
- Article 22(5): Detention grounds must be communicated, and the person must be given an opportunity to make a representation.
- Article 22(6): Certain facts may be withheld in public interest.
- Article 22(7): Parliament can prescribe the maximum detention period and related procedures.

Major Preventive Detention Laws in India

- **National Security Act (NSA), 1980:** Prevents acts threatening national security, public order, and essential supplies.
- **COFEPOSA Act, 1974:** Prevents smuggling and foreign-exchange violations.
- **PITNDPS Act, 1988:** Prevents illicit trafficking in narcotic drugs and psychotropic substances.
- **Prevention of Blackmarketing and Maintenance of Supplies of Essential Commodities Act, 1980:** Prevents black-marketing and disruption of essential supplies.
- **State laws:** States also have specific preventive detention laws, such as Tamil Nadu's Goondas Act, 1982.



ARTICLE 194

Why in News?

The Supreme Court examined the scope of legislative privileges under Article 194(3) and their relationship with freedom of speech and expression under Article 19(1)(a).

About

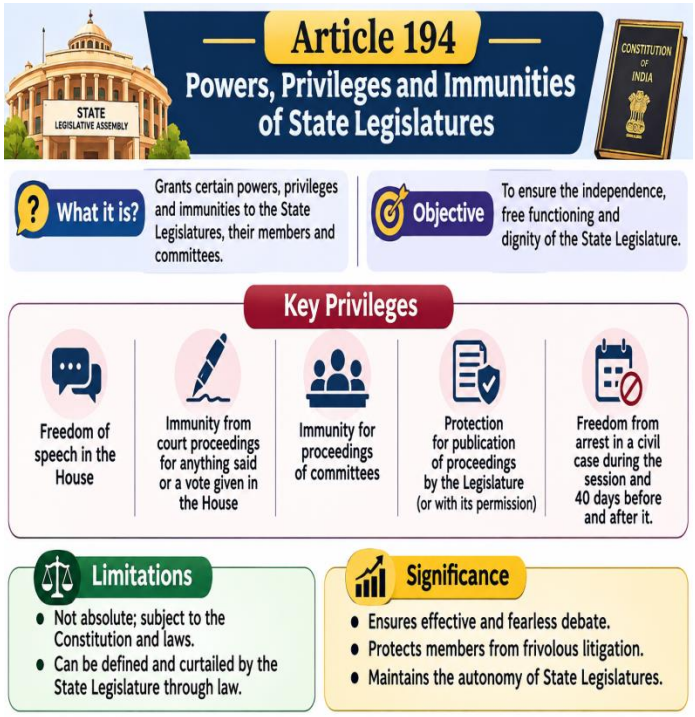
Article 194:

- Article 194 deals with the powers, privileges and immunities of State Legislatures, their members and committees.
- It is provided under Part VI (The States) of the Constitution.
- It is similar to Article 105, which deals with privileges of Parliament and its members.

- Its objective is to ensure the independence and effective functioning of State Legislatures.

Constitutional Provisions under Article 194

- **Article 194(1) – Freedom of Speech:** Guarantees freedom of speech inside the State Legislature, subject to the Constitution and House rules.
- **Article 194(2) – Legal Immunity:** Protects members from court proceedings for anything said or any vote given in the Legislature or its committees, as well as for authorised publications.
- **Article 194(3) – Other Privileges:** Covers other powers and immunities of the Legislature and its members, which are defined by law (or continue as existing privileges until defined).
- **Article 194(4) – Extension of Privileges:** Extends these protections to non-members (such as the Advocate General or Ministers) who have a constitutional right to speak or participate in legislative proceedings



INTER-PARLIAMENTARY UNION (IPU)

Why in News?

An Indian Parliamentary Delegation, led by the Deputy Chairman of the Rajya Sabha, participated in the 153rd Assembly of the Inter-Parliamentary Union (IPU) in Arusha, Tanzania.

About

- Established in 1889 in Paris, France.
- It is the global organisation of national parliaments.
- Aims to promote representative democracy, parliamentary cooperation and world peace.
- Headquarters: Geneva, Switzerland (since 1921).
- Membership:
  - 183 member parliaments.
  - 15 associate members.
- Funded primarily through contributions from its member parliaments.

Objectives of IPU

- Promote democratic governance and parliamentary institutions.
- Encourage international peace and security.
- Protect human rights and gender equality.
- Promote youth empowerment and climate action.
- Support sustainable development through parliamentary cooperation.

Governance Structure of IPU

- IPU Assembly: Principal statutory body; discusses international issues and adopts recommendations.
- Governing Council: Main policymaking body, comprising three representatives from each member parliament.
- Executive Committee: Consists of the IPU President and elected representatives; oversees organisational activities.
- Standing Committees: Three committees assist the Assembly in its work.

CHIEF JUSTICES OF HIGH COURTS APPOINTED AS SUPREME COURT JUDGES

Why in News?

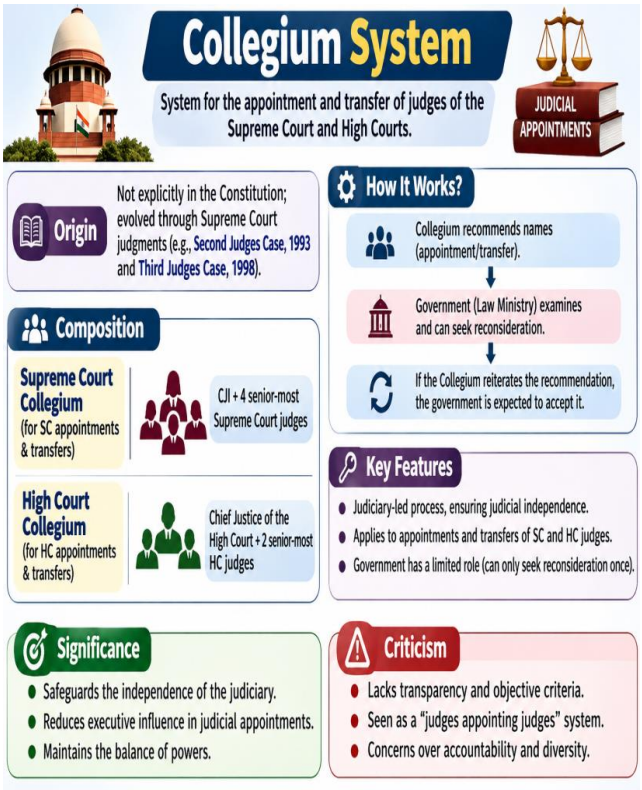
On 5 October 2026, the President appointed three Chief Justices of High Courts as judges of the Supreme Court, following the Supreme Court Collegium's recommendations dated 28 September 2026.

About

- A High Court Chief Justice may be elevated to the Supreme Court based on judicial experience, merit, seniority and suitability.
- Such appointments are made through the Collegium System, in which the Chief Justice of India and senior-most Supreme Court judges recommend names to the government.
- The Constitution does not specifically require a person to have served as a High Court Chief Justice to become a Supreme Court judge.

Constitutional Provisions for Judicial Appointments

- Article 124: Appointment of Supreme Court judges by the President.
- Article 217: Appointment of High Court judges by the President after consultation with the CJI, Governor and Chief Justice of the concerned High Court.
- Article 222: Transfer of High Court judges by the President after consultation with the CJI.



Evolution of the Collegium System – Three Judges Cases

First Judges Case (1981) – S.P. Gupta v. Union of India

- The Supreme Court held that consultation with the Chief Justice of India (CJI) does not mean concurrence.
- The CJI's opinion was not binding on the government.
- Therefore, the Executive had primacy in the appointment and transfer of judges.

Second Judges Case (1993) – Supreme Court Advocates-on-Record Association v. Union of India

- Overruled the First Judges Case and gave primacy to the Judiciary in judicial appointments.
- Established the Collegium System.
- The CJI's recommendation had to be based on consultation with the two senior-most Supreme Court judges, making it an institutional decision rather than an individual opinion.

Third Judges Case (1998) – Presidential Reference

- Clarified the composition and functioning of the Collegium.
- For Supreme Court appointments, the Collegium consists of the CJI and four senior-most Supreme Court judges.
- If two members give adverse opinions, the recommendation should not be sent to the government.
- The government may seek reconsideration, but a reiterated recommendation is generally binding.

National Judicial Appointments Commission (NJAC)

- Introduced through the 99th Constitutional Amendment Act, 2014.
- Intended to replace the Collegium System with a broader appointment mechanism.

SUPREME COURT ON ED POWERS

Why in News?

In October 2026, the Supreme Court cautioned the ED against exceeding its powers and interfering with other agencies while hearing the CMRL–Exalogic case

involving Kerala Chief Minister Pinarayi Vijayan and others.

About the Enforcement Directorate (ED)

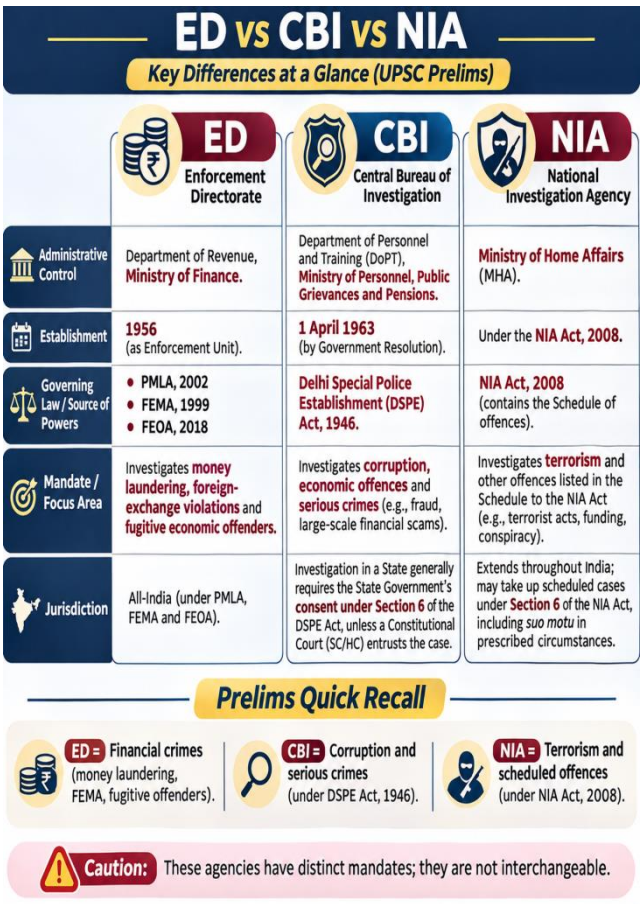
- Nature: A specialised financial investigation agency that investigates money laundering and foreign-exchange violations.
- Established: 1 May 1956 as the Enforcement Unit; renamed the Directorate of Enforcement in 1957.
- Administrative control: Department of Revenue, Ministry of Finance.
- Headquarters: New Delhi.

Major Acts administered by the ED

1. **Prevention of Money Laundering Act (PMLA), 2002:** Investigates money laundering and attaches proceeds of crime.
2. **Foreign Exchange Management Act (FEMA), 1999:** Investigates contraventions of foreign exchange laws.
3. **Fugitive Economic Offenders Act (FEOA), 2018:** Provides for confiscation of properties of fugitive economic offenders.

Major Powers under PMLA

- Section 5 – Attachment: Allows provisional attachment of property believed to be proceeds of crime.
- Section 17 – Search and Seizure: Empowers authorised officers to search premises and seize relevant property or documents.
- Section 19 – Arrest: Allows authorised officers to arrest a person when statutory conditions are satisfied.
- Section 50 – Summons: Empowers the ED to summon individuals, record statements and require documents.
- Section 44 – Trial: Provides for trial of money-laundering offences before Special Courts.



APPOINTMENT OF GOVERNORS

Why in News?

The President of India appointed new Governors in six States, involving the transfer of two serving Governors and the appointment of four new Governors.

Appointment of the Governor

- The Governor is appointed by the President of India.
- The appointment is made on the aid and advice of the Union Council of Ministers.
- The Governor is not directly elected by the people or indirectly elected by the State Legislature.
- The Constitution does not prescribe consultation with the Chief Minister before appointment.

Qualifications

As per Article 157, a person must:

1. Be a citizen of India.
2. Have completed 35 years of age.

Conditions of Office (Article 158)

- The Governor cannot be a member of either House of Parliament or a State Legislature.
- If a member of Parliament or a State Legislature is appointed Governor, their seat is deemed vacant from the date they enter office.
- The Governor cannot hold any other office of profit.
- The Governor is entitled to official residence, emoluments, allowances and privileges as determined by Parliament.
- The emoluments and allowances of the Governor cannot be diminished during their term of office.

Term of Office and Removal

- The Governor normally holds office for a term of five years.
- However, the Governor holds office during the pleasure of the President.
- The Governor may resign by submitting a resignation to the President.
- The Governor can continue in office even after the expiry of five years until their successor enters office.
- The Constitution does not prescribe an impeachment procedure for the removal of a Governor.
- The Governor can be transferred from one State to another by the President.





UPSC CENTENARY CELEBRATIONS



Why in News?

The two-day centenary celebrations, titled 'Shatabdi Samaroh – Manthan', were held at Bharat Mandapam, New Delhi.

Constitutional Provisions

- UPSC is a constitutional body established under Article 315 of the Indian Constitution.
- Its constitutional provisions are contained in Part XIV (Articles 315–323).
- Article 315 provides for:
  - Union Public Service Commission.

- State Public Service Commissions.
- Joint State Public Service Commissions.

Composition and Appointment

- The UPSC consists of a Chairman and other members appointed by the President of India.
- The Constitution does not specify the exact number of members.
- Nearly half of the members should have held office for at least 10 years under the Government of India or a State Government.
- The Chairman and members hold office for a term of six years or until attaining 65 years of age, whichever is earlier.

Removal of Chairman and Members

- The Chairman or any member can be removed by the President of India.
- In cases of misbehaviour, the President must refer the matter to the Supreme Court for an inquiry.
- The President can remove the member if the Supreme Court, after inquiry, reports that the member ought to be removed.
- The President can also remove a member on certain other grounds, including insolvency, engaging in paid employment outside official duties, or being unfit due to infirmity of mind or body.

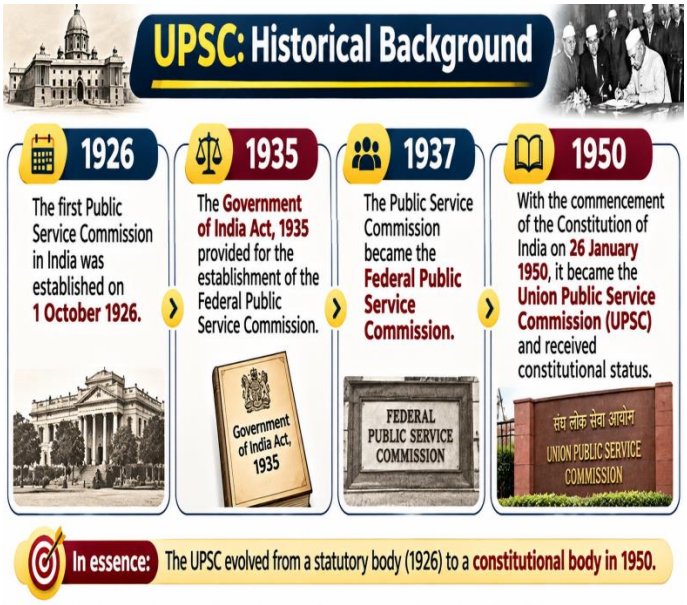
Functions of UPSC (Article 320)

- Conducts examinations for appointments to the services of the Union.
- Advises on methods of recruitment to civil services and civil posts.
- Advises on principles to be followed in appointments, promotions and transfers.
- Advises on disciplinary matters affecting civil servants.
- Advises on claims relating to legal proceedings and injuries sustained by government servants in the course of duty.
- Assists two or more States, when requested, in framing and operating schemes of joint recruitment.

Independence of UPSC

The Constitution provides safeguards to ensure the independent functioning of UPSC:

- The Chairman and members can be removed only through the constitutionally prescribed procedure.
- Their conditions of service cannot be varied to their disadvantage after appointment.
- Their expenses are charged on the Consolidated Fund of India.
- The Chairman is not eligible for further employment under the Government of India or a State Government after retirement.
- Other members are eligible for appointment as Chairman of UPSC or a State Public Service Commission, but not for other government employment.



APPOINTMENT OF DIRECTOR GENERAL OF POLICE

Why in News?

The Supreme Court of India (November 2026) expanded its scrutiny of laws and rules governing the appointment of Directors General of Police (DGPs) across all States following a dispute over Jharkhand's DGP appointment.

About

- The Supreme Court issued directions to reform the police administration to ensure police autonomy, accountability and operational independence.
- The judgment aimed to reduce political interference in police functioning.
- It laid down seven major directives for police reforms, including reforms relating to the appointment and tenure of the DGP.

Appointment of DGP – Supreme Court Guidelines

- The State Government should select the DGP from a panel of three senior-most eligible IPS officers prepared by the Union Public Service Commission (UPSC).
- The UPSC should prepare the panel based on:
  - Length of service.
  - Very good record.
  - Range of experience for heading the police force.
- The selected DGP should have a minimum tenure of two years, irrespective of the date of superannuation.
- The DGP should be appointed through a transparent selection process.
- States should not appoint an acting DGP as a substitute for the regular selection process.

ANTI-DEFECTION LAW

Why in News?

Speaker Om Birla stated that he would expedite disqualification petitions against 20 rebel Trinamool Congress MPs after receiving their responses.

About

The Anti-Defection Law was introduced to prevent elected representatives from changing political parties for personal or political gains. It aims to curb political defections, prevent horse-trading and maintain stability in elected governments.

Constitutional Provisions

- The Tenth Schedule was added through the 52nd Constitutional Amendment Act, 1985.
- Articles 102(2) and 191(2) provide for disqualification of MPs and State legislators under the Tenth Schedule.
- The law applies to both Houses of Parliament and State Legislatures.

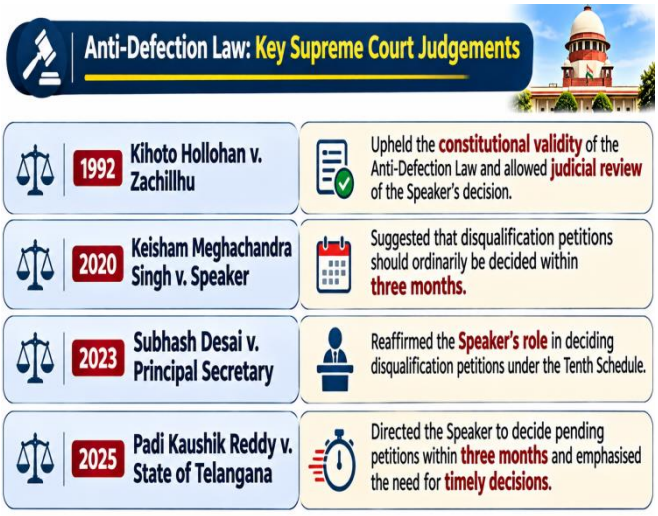
Grounds for Disqualification

A legislator can be disqualified under the Tenth Schedule if:

- Voluntarily gives up party membership: Even without formally resigning, a member's conduct may indicate that they have left the political party.
- Violates the party whip: Votes or abstains against the party's direction without prior permission and the party does not condone the action within 15 days.
- Independent members: Join any political party after being elected.
- Nominated members: Join a political party after six months from the date they take their seat.

Exceptions to Disqualification

- Merger : Disqualification does not apply when at least two-thirds of the members of the legislature party agree to merge with another political party.
- Presiding Officers: A member elected as Speaker or Chairman may give up party membership without attracting disqualification, subject to the conditions specified in the Tenth Schedule.



CONTROLLER GENERAL OF ACCOUNTS (CGA)

Why in the News?

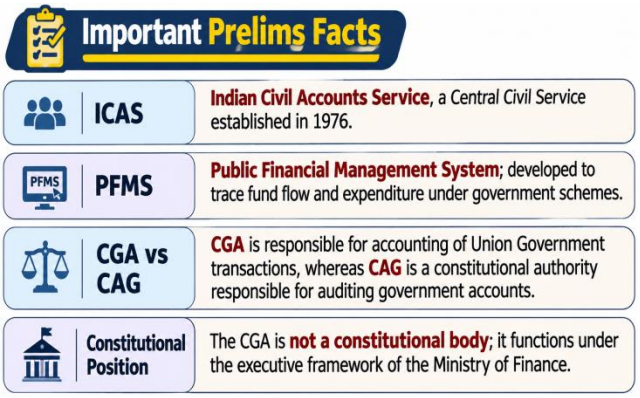
In October 2026, the CGA introduced a Uniform Format of Accounts for Central Autonomous Bodies to standardise their accounting and financial reporting.

About the Controller General of Accounts

- The CGA is the principal accounting adviser to the Government of India.
- It functions under the Department of Expenditure, Ministry of Finance.
- It heads the Indian Civil Accounts Service (ICAS).
- The office was established in 1976 following the separation of accounting functions from audit.
- It is responsible for maintaining and compiling the accounts of the Union Government.

Major Functions

- Government Accounting: Prepares and consolidates the monthly and annual accounts of the Union Government.
- Financial Reporting: Provides information on government receipts, expenditure and fiscal operations.
- Internal Audit: Conducts internal audit of civil ministries and departments.
- PFMS: Oversees the Public Financial Management System, which facilitates tracking of fund utilisation and electronic payments.
- Accounting Standards: Prescribes accounting policies and procedures for Union Government transactions.



CENTRAL BUREAU OF NARCOTICS (CBN)

Why in the News?

In October 2026, the Central Bureau of Narcotics (CBN) introduced the Opium Licensing Policy for 2026–27, prescribing conditions for the licensed cultivation of opium poppy.

About the Central Bureau of Narcotics

- The CBN is a subordinate office under the Department of Revenue, Ministry of Finance.
- Its headquarters is located at Gwalior, Madhya Pradesh.
- It functions under the leadership of the Narcotics Commissioner.
- It regulates the illicit cultivation of opium poppy and performs enforcement functions under the NDPS Act, 1985.
- India is among the few countries that legally cultivate opium poppy and is the only country that legally produces opium gum.

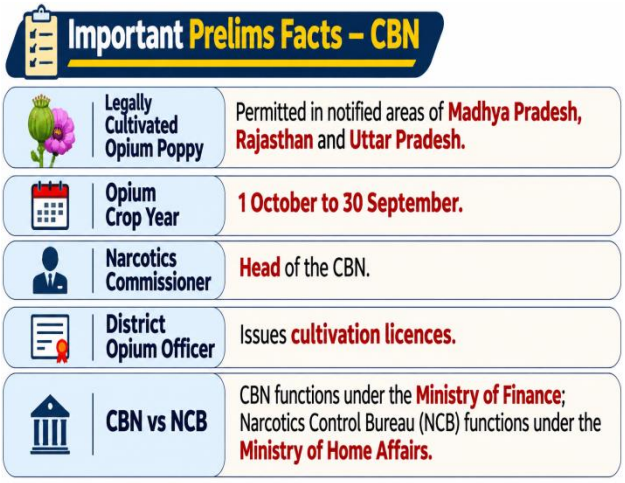
Major Functions

- Licensing: Issues licences to farmers for the legal cultivation of opium poppy.
- Supervision: Monitors and regulates licensed opium cultivation.
- Procurement: Procures opium produced by licensed cultivators on behalf of the Central Government.
- Drug Enforcement: Takes action against illicit cultivation and narcotics-related violations.
- Import and Export: Issues authorisations for the import and export of narcotic drugs and psychotropic substances.

- International Obligations: Performs India's obligations under international drug-control conventions.

Legal Framework

- NDPS Act, 1985: Provides the legal framework for controlling narcotic drugs and psychotropic substances.
- Section 5(2): Empowers the Narcotics Commissioner to supervise opium poppy cultivation and production of opium.
- NDPS Rules, 1985: Regulate licensing, manufacture, import and export of narcotic drugs and psychotropic substances.
- Section 8: Prohibits specified narcotic operations except for medical or scientific purposes and in accordance with legal authorisation.



NATIONAL MEDICAL COMMISSION (NMC)

Why in the News?

In October 2026, the National Medical Commission issued several important directions concerning medical education and professional conduct:

About the National Medical Commission

- The NMC is a statutory body established under the National Medical Commission Act, 2019.
- It replaced the Medical Council of India (MCI).
- It became operational on 25 September 2020.
- It functions under the Ministry of Health and Family Welfare.
- Its primary objective is to improve the quality of medical education, regulate medical institutions and maintain professional standards.

Composition and Structure

The NMC consists of a Chairperson and members appointed under the NMC Act, 2019.
It has four autonomous boards:

- Undergraduate Medical Education Board (UGMEB): Regulates undergraduate medical education.
- Postgraduate Medical Education Board (PGMEB): Regulates postgraduate medical education.
- Medical Assessment and Rating Board (MARB): Assesses and rates medical institutions and grants permissions for establishing medical colleges.
- Ethics and Medical Registration Board (EMRB): Regulates professional ethics and maintains the National Medical Register.

Major Functions

- Regulates medical education and medical institutions.
- Prescribes standards for undergraduate and postgraduate medical education.
- Assesses and rates medical colleges.
- Maintains professional and ethical standards among doctors.
- Regulates medical qualifications and registration.
- Promotes affordable and accessible healthcare.

Important Provisions of the NMC Act, 2019

- Section 10: Provides for the constitution and functions of the NMC.
- Section 15: Provides for the National Eligibility-cum-Entrance Test (NEET).
- Section 32: Provides for limited licences to certain community health providers to practise medicine at the mid-level.
- Section 35: Deals with the establishment and permission requirements for medical institutions.
- Section 37: Deals with recognition of medical qualification.

ECONOMY

SHIPPING CORPORATION OF INDIA

Why in News?

Union Minister for Ports, Shipping and Waterways highlighted the pivotal role of the **Shipping Corporation of India (SCI)** during the PSU's 65th-anniversary celebrations in Mumbai.

About the Shipping Corporation of India (SCI)

- **Established:** 2 October 1961, through the merger of Eastern and Western Shipping Corporations.
- **Headquarters:** Mumbai, Maharashtra.
- **Administrative Control:** Ministry of Ports, Shipping and Waterways.
- **Status:** Granted Navratna status on 1 August 2008.
- **Government Ownership:** 63.75% shareholding by the Government of India..

Key Features and Operations

- India's largest shipping enterprise, engaged in domestic and international maritime transportation.
- Operates a diversified fleet comprising:
- Crude and product tankers – Petroleum transportation.
- Bulk carriers – Coal, iron ore and other cargo.
- Container ships – Containerised goods.
- LPG/LNG carriers – Liquefied gas transportation.
- Offshore supply vessels – Support for offshore oil and gas operations.
- **Strategic Significance:** Plays an important role in India's maritime trade, energy security and overseas cargo transportation.
- **Unique Feature:** Identified in the source as the sole Indian operator in LNG transportation.

MANUFACTURING PMI

Why in News?

India's manufacturing sector rebounded significantly, with the **HSBC India Manufacturing Purchasing Managers' Index (PMI)** rising to **55.1** in September (bouncing back from a multi-month low of 52.8 in August).

About

- PMI is a economic indicator designed to provide a timely snapshot of business conditions and economic health in both the manufacturing and services sectors.
- **The Threshold (50-mark):**
- A reading **above 50** indicates an **expansion** compared to the previous month.
- A reading **below 50** indicates a **contraction**.
- A reading at **50** denotes no change.

Features

- PMI is derived from monthly questionnaires sent to purchasing executives in over 400–500 representative manufacturing companies.
- The index tracks 5 core economic variables with varying weights:
  1. **New Orders** (New export and domestic sales)
  2. **Output / Production**
  3. **Employment / Job Creation**
  4. **Suppliers' Delivery Times** (Vendor performance)
  5. **Stock of Items Purchased / Inventories**

Significance for Economy & Policymakers

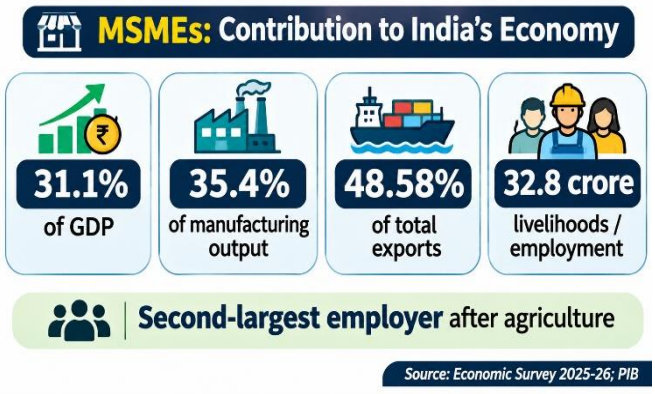
- **Leading Indicator:** Unlike GDP data (which is released quarterly with a lag), PMI is published on the first working day of every month, making it a crucial **leading indicator** of economic turning points.
- **Macroeconomic Health:** A rising PMI signals robust industrial activity, boosting corporate earnings prospects, driving employment

growth, and reflecting strong domestic and global confidence

SME GROWTH FUND

Why in News?

The Union Cabinet approved a ₹10,000-crore commitment towards establishing the SME Growth Fund to provide equity capital to high-potential Small and Medium Enterprises (SMEs) and help them become globally competitive.



Key Features

1. **Financial Support:** The Government will commit ₹10,000 crore to an Alternative Investment Fund (AIF) established under the SME Growth Fund framework.
2. **Equity Financing:** It will provide long-term growth capital to SMEs with proven business viability and potential to expand.
3. **Sectoral Focus:** A majority of the fund's allocation will be directed towards manufacturing-focused SMEs. It will also support enterprises in services, technology and innovation-driven sectors.
4. **Regional Development:** SMEs operating in industrial clusters in Tier-II and Tier-III cities will also be considered for investment.
5. **Business Expansion:** The fund will help enterprises expand operations, adopt advanced technologies, increase manufacturing capacity and enter international markets.
6. **Global Competitiveness:** It aims to help Indian SMEs integrate into global value chains and emerge as competitive industry leaders.

Significance

- **Employment Generation:** Encourages business expansion and creates quality employment opportunities.
- **Export Promotion:** Improves productivity and strengthens India's export competitiveness.
- **Industrial Development:** Strengthens domestic manufacturing and local supply chains.
- **Atmanirbhar Bharat:** Reduces dependence on imports by promoting domestic enterprises.
- **Viksit Bharat @ 2047:** Supports innovation-led industrialisation and the emergence of globally competitive Indian companies.

CONTAINER MANUFACTURING PROMOTION SCHEME (CMPS)

Why in News?

The Union Cabinet **approved the Container Manufacturing Promotion Scheme (CMPS) with an outlay of ₹10,000 crore** up to FY 2039–40 to boost domestic shipping container manufacturing capacity by ten times to 7.5 lakh TEUs.

About

- The scheme was launched by the **Union Government** under the Ministry of Ports, Shipping and Waterways.
- It has a total financial outlay of **₹10,000 crore** and will be implemented from **FY 2027–28 to FY 2039–40**.
- Its primary objective is to develop a globally competitive domestic shipping container manufacturing industry and reduce India's dependence on imports.

Key Features of the Scheme

The scheme provides three major forms of assistance:

1. **Interest Subvention Assistance (₹859 crore):**
   - Provides 3% annual interest subsidy on eligible term loans.

- Supports setting up of new manufacturing facilities (Greenfield) and expansion of existing facilities (Brownfield).

2. **Operational Expenditure Assistance (₹8,891 crore):**

- Provides financial assistance for containers manufactured according to global shipping standards and sold by eligible manufacturers.
- Aims to reduce the cost gap between domestic and imported containers.
- Minimum domestic content requirement will increase from 70% to 90% from FY 2032–33.

3. **Testing and Certification Assistance (₹150 crore):**

- Supports common testing and certification facilities.
- Includes facilities for dynamic longitudinal impact testing.

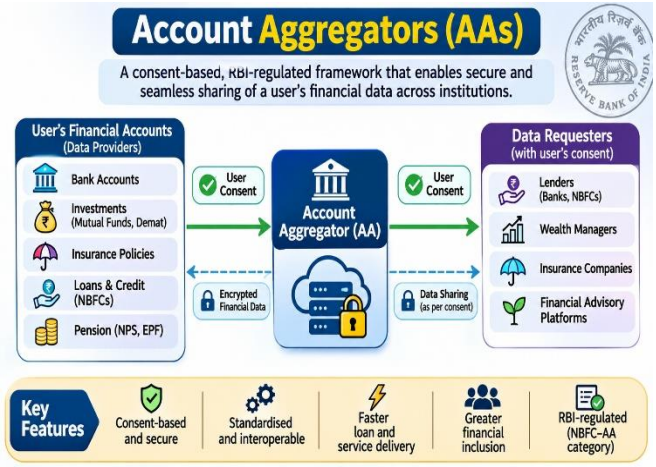
Expected Benefits

- **Increase manufacturing capacity:** Raise annual domestic container manufacturing capacity nearly ten-fold to 7.5 lakh TEUs.
- **Reduce import dependence:** Strengthen domestic production and supply-chain resilience.
- **Employment generation:** Create around 3,000 direct and over 50,000 indirect jobs.
- **Promote ancillary industries:** Support specialised steel, corner castings, wooden frames and paints.
- **Boost exports:** Develop India as a globally competitive manufacturing and export hub for shipping containers.

NBFC–ACCOUNT AGGREGATOR INTEROPERABILITY

Why in News?

The Reserve Bank of India (RBI) plans to introduce interoperability among NBFC–Account Aggregators (AAs) to enable seamless and secure sharing of financial information across different Account Aggregator platforms.



About Account Aggregators (AAs)

- Account Aggregators are **RBI-regulated Non-Banking Financial Companies (NBFCs)** that facilitate the secure sharing of customers' financial information.
- They act as intermediaries between financial institutions and customers.
- They enable financial data sharing only with the customer's consent.
- They do not own or hold customers' financial assets.

What is Interoperability?

- It allows different Account Aggregators to share and aggregate financial information across their platforms.
- Earlier, different AAs operated separately, resulting in fragmented financial information.
- RBI's reform aims to create a more integrated system for accessing financial data.

Key Changes Introduced by RBI

- Around 17 Account Aggregators operate under the RBI's NBFC-AA framework.
- Interoperability will enable financial information to be aggregated across different AAs.
- SEBI-regulated depositories can also include bank deposit information in their Consolidated Account Statements (CAS).
- The measures are to be implemented by **December 31, 2026**.

Benefits / Significance

- **Unified Financial View:** Investors can view bank deposits, fixed deposits, stocks, mutual funds and bonds through a consolidated statement.
- **Better Credit Assessment:** Lenders can access verified financial information to assess borrowers' repayment capacity and cash flows.
- **MSME Credit Access:** Helps small businesses obtain loans by reducing information gaps between borrowers and lenders.
- **Faster Loan Processing:** Reduces the time required for loan assessment and credit underwriting.

INDIA'S BILATERAL INVESTMENT TREATY

Why in News?

India is **revising its Model Bilateral Investment Treaty (BIT)** nearly a decade after the 2015 model, in response to changes in international investment rules and India's treaty practices.

About

- **Bilateral Investment Treaty (BIT)** is a reciprocal agreement between two countries aimed at promoting and protecting foreign private investments in each other's territories.
- BITs establish minimum standards for treatment, including:
  - **National Treatment:** Treating foreign investors at par with domestic companies.
  - **Fair and Equitable Treatment (FET):** Ensuring predictable and non-arbitrary legal treatment.
  - **Protection against Expropriation:** Limiting state seizure of assets without adequate compensation.
  - **Investor-State Dispute Settlement (ISDS):** Allowing investors to directly challenge host governments through international arbitration if rights are violated.

Evolution of India's Model BIT

- **1993 Model:** Formed the basis for early BITs with over 80 countries, heavily favoring investor-state arbitration without forcing local court exhaustion first.
- **2015/2016 Model:** Overhauled drastically following major international disputes. It mandated that foreign investors exhaust domestic legal remedies (initially up to five years) before approaching international tribunals, excluded taxation matters, and omitted ambiguous Most-Favored-Nation (MFN) clauses.
- **Current Push for Flexibility:** The ongoing review targets a more pragmatic approach—such as shortening the local remedy timeline (e.g., to two years) and tailoring clauses contextually to revive investment flows and safeguard outward-bound Indian conglomerates.

GST COLLECTIONS

Why in News?

India's gross GST revenue rose **14.7% to ₹2.03 lakh crore in September 2026**. However, the share of GST from imports increased to a record **32.2%**, while domestic GST's share fell to 67.8%.

About

- **Nature:** GST is an indirect, destination-based tax levied on the supply of goods and services.
- **Introduction:** Implemented on **1 July 2017** through the 101st Constitutional Amendment Act, 2016.
- **Objective:** Replaced multiple Central and State indirect taxes to create a unified national market.
- **Tax Model:** India follows a **dual GST model**, with both Centre and States levying taxes.
- **Multi-stage Tax:** Levied at different stages of the supply chain, with credit for taxes paid at previous stages.
- **Destination-based Principle:** Tax revenue accrues to the State where goods or services are consumed rather than produced.
- **Components:** CGST (Central), SGST (State), IGST (Integrated) and UTGST (Union Territory).

- **GST Rate Structure (GST 2.0):** Following the 56th GST Council meeting in September 2025, the principal rates were rationalised:
- **5%:** Merit rate.
- **18%:** Standard rate.
- **40%:** Special rate for select luxury and sin goods.

DEARNESS ALLOWANCE HIKE

Why in news?

The Union Cabinet approved a **3% DA/DR hike** (to **63%**) w.e.f. July 1, 2026, under 7th Pay Commission norms. The move counters price rise for **48.54 lakh employees** and **68.71 lakh pensioners**, with an annual exchequer cost of **₹10,016.10 crore**.

About

- **Dearness Allowance (DA)** is a cost-of-living adjustment paid by the government to public sector employees and pensioners to neutralize the impact of inflation on their purchasing power.
- It is calculated as a specific percentage of an employee's **basic pay**.
- For pensioners, the equivalent allowance is termed **Dearness Relief (DR)**.

Key Features & Mechanism

- **Applicability:** Granted primarily to central government employees, state government staff, and pensioners. Private sector employees generally receive a Cost-of-Living Adjustment (COLA) instead of government DA.
- **Revision Frequency:** Revised **bi-annually** (twice a year), effective from **January 1** and **July 1**.
- **Underlying Index:** Calculated using the 12-month average of the **All India Consumer Price Index for Industrial Workers (AICPI-IW)** published by the Labour Bureau (Ministry of Labour & Employment).
- **Taxability:** DA is **100% taxable** under the head "Salaries" as per the Income Tax Act, 1961 (unlike HRA, which offers exemptions under Section 10).

Types of Dearness Allowance

1. **Industrial Dearness Allowance (IDA):**
    - Applies to employees of Central Public Sector Undertakings (PSUs).
    - Revised quarterly based on variations in the Consumer Price Index.
2. **Variable Dearness Allowance (VDA):**
    - Applies to central government employees and certain minimum wage sectors.
    - Revised semi-annually based on CPI movement.

DA Calculation Formulas

A. For Central Government Employees (7th Pay Commission Framework)

$$\text{DA \%} = \left[\frac{\text{Average of AICPI-IW (Base Year 2001 = 100) for last 12 months} - 261.42}{261.42}\right] \times 100$$

(Note: If utilizing AICPI-IW with Base Year 2016=100, a conversion/linking factor of 2.88 is applied).

B. For Central Public Sector Employees

$$\text{DA \%} = \left[\frac{\text{Average of AICPI-IW (Base Year 2001 = 100) for last 3 months} - 126.33}{126.33}\right] \times 100$$

INDIA'S FIRST BLUE BOND

Why in news?

Sagarmala Finance Corporation Limited (SMFCL), a state-owned maritime NBFC under the Ministry of Ports, Shipping and Waterways, launched India's maiden blue bond under the PM GatiShakti framework.

About

- **Blue Bonds** are Specialized debt instruments (a sub-category of green bonds) whose capital is exclusively earmarked for protecting, conserving, and sustainably using marine and water ecosystems.

- **Core Requirements:** Issuers must establish clear investment frameworks, implement impact measurement mechanisms, and ensure periodic reporting to prevent "bluewashing" (false environmental claims).
- **Regulatory Recognition:** Formally recognized by the **Securities and Exchange Board of India (SEBI)** within its sustainable finance framework.



Implementation Framework & Key Details

- **Issuance Mechanics:** Managed by lead arranger **SBI Capital Markets**, the issue carries an **AA+** credit rating (ICRA/CARE) to target institutional investors like insurance companies and pension funds.
- **Financial Strategy:** Corrects SMFCL's **asset-liability mismatch** by replacing short-term borrowings with long-duration 10-year capital aligned with 12-year infrastructure loans, while reducing reliance on commercial bank loans and direct central budgetary support.
- **Targeted Allocations:**
  - ***Port Operations:*** Funding greenfield ports, energy-efficient cargo handling, port electrification, and shore power facilities.
  - ***Water Transport:*** Supporting Ro-Ro/Ro-Pax ferries, inland terminals, coastal cargo movement, and cruise hubs (Mumbai, Kochi, Chennai).
  - ***Coastal Logistics & Infrastructure:*** Directing capital to coastal road networks, fishing harbor upgrades, water recycling systems, and coastal mapping.

WORLD BANK'S INDIA POVERTY & EQUITY BRIEF

Why in news?

The World Bank released its **India Poverty and Equity Brief (October 2026)**, recording a massive drop in national poverty between 2011 and 2023.

About

- **India Poverty and Equity Brief** report is published by World Bank (issued bi-annually during World Bank/IMF meetings).
- Assesses monetary poverty across global income thresholds, consumption inequality via the Gini index, and non-monetary welfare using the Multidimensional Poverty Index (MPI).
- **Key Benchmarks (2021 PPP):** Evaluates poverty using global benchmarks set at **$3.00** (extreme poverty), **$4.20** (lower middle-income), and **$8.30** (upper middle-income) per day.

Key Data & Findings

- Lower middle-income poverty fell sharply from **57.7% in 2011 to 16.1% in 2023**, lifting an estimated **496 million** people out of poverty.
- Extreme poverty dropped significantly from **27.1% in 2011 to 2.6% in 2023**.
- Upper middle-income threshold leaves **80.0%** of the population below this level in 2023, highlighting vulnerability to income shocks.
- Future poverty at the $4.20 line is projected to decline further to **12.1% by 2028**.

Inequality & Multidimensional Progress:

- The consumption Gini index stood at **23.0 in 2023**, reflecting relatively low and narrowing consumption disparities.
- The World Bank's internal Multidimensional Poverty Index (MPI) estimate for India reached **15.5%**.

Structural & Regional Disparities:

- **Geographic Concentration:** A contiguous belt stretching from Uttar Pradesh to West Bengal accounts for about **57% of India's remaining poor**.
- **Rural-Urban Divide:** Rural poverty remains notably higher at **19.3%**, compared to **8.6%** in urban areas, due to agrarian productivity constraints and limited non-farm jobs.
- **Educational Deprivation:** Poverty incidence is significantly higher among individuals with no formal education compared to those with tertiary education.

MULE BANK ACCOUNTS

Why in news?

Delhi Police busted a cyber fraud network involving 37 suspected mule bank accounts that received ₹7.36 crore linked to 99 complaints.



About

- Mule Bank accounts are accounts or digital wallets used by cybercriminals, knowingly or unknowingly, to receive, layer, and transfer illicit proceeds of financial fraud.
- Serves as an intermediary bridge in financial crime pipelines (such as digital arrests, phishing, fake job schemes, and investment scams) to obscure the money trail.
- Operates via voluntary commission schemes ("mule-as-a-service") or involuntariness through identity theft, fake employment offers, or exploited KYC documents of low-income individuals.
- **Legal Framework:** Accounts are monitored under the **Prevention of Money Laundering Act (PMLA), 2002**, RBI's **KYC Directions**, and the **Banking Regulation Act, 1949**.

Regulatory Framework & Key Initiatives

I. **RBI Standard Operating Procedure (SOP):**
   - **Temporary Debit Hold:** Empowers banks to place automated debit holds on suspected transaction amounts (≥ ₹1,000) or whole accounts flagged by AI/ML algorithms.
   - **Exempted Accounts:** Excludes special-purpose accounts like escrow, nodal, dividend, and pool accounts.
   - **Timeline & Resolution:** Grants 20 days for account holders to explain flagged transactions. Unsubstantiated accounts face reporting to Law Enforcement Agencies (LEAs) with a maximum total hold duration capped at 60 days.

II. **Institutional Coordination:** Integrates reporting mechanics with the Ministry of Home Affairs' **National Cybercrime Reporting Portal (NCRP-CFCFRMS)** and mandatory filing of Suspicious Transaction Reports (STRs) to **FIU-IND**.

III. **Targeted Monitoring:** Mandates continuous monitoring of sudden volume spikes, rapid transfers, and dormant accounts becoming suddenly active.

ENVIRONMENT

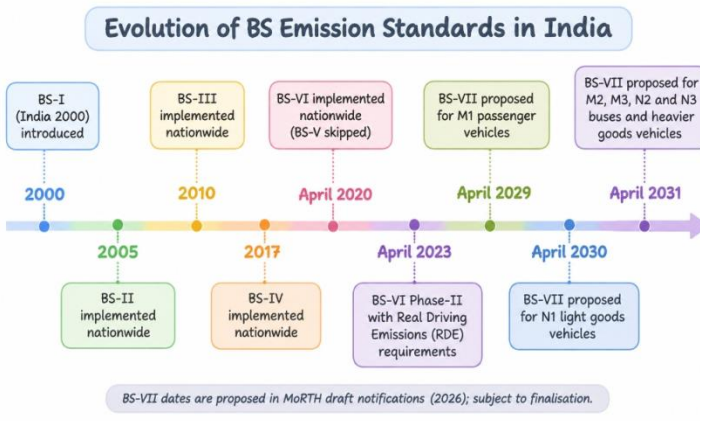
BHARAT STAGE VII (BS-VII) EMISSION NORMS

Why in News?

The Ministry of Road Transport and Highways (MoRTH) published **draft Bharat Stage VII (BS-VII) notifications** in October 2026, proposing **phased implementation** from April 2029.

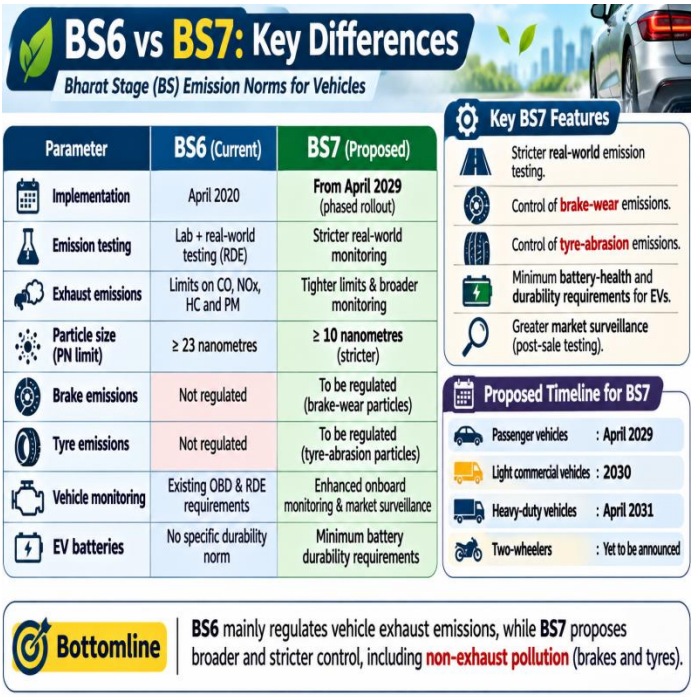
About Bharat Stage (BS) Emission Standards

- Bharat Stage (BS) emission standards are **regulatory standards** prescribed by the Government of India **to control the emission of air pollutants** from motor vehicles.
- They specify **permissible limits for pollutants** emitted by vehicles, including:
  - Carbon Monoxide (CO).
  - Hydrocarbons (HC).
  - Oxides of Nitrogen (NOx).
  - Particulate Matter (PM).
  - Particulate Number (PN).
- The **Ministry of Road Transport and Highways (MoRTH) is the nodal ministry** for notifying BS emission standards under the **Central Motor Vehicles Rules, 1989.**
- They are based on the **European emission standards** (Euro norms), with modifications to suit Indian conditions.
- The standards apply to vehicles manufactured and sold in India and **progressively tighten** the permissible emission limits.



MAJOR FEATURES OF BS-VII

- **Real Driving Emissions (RDE)**: Emissions testing under actual road-driving conditions, beyond laboratory tests.
- **Anti-tampering and Cybersecurity**: Safeguards against manipulation of emission-control systems and cyber threats, including over-the-air (OTA) updates.
- **Fuel Compatibility:** Covers petrol, diesel, CNG, LPG, hydrogen, ethanol and biodiesel blends.
- **Particle Number (PN):** Lowers the particle-size threshold from 23 nm to 10 nm (PN10), covering ultrafine particles.
- **Additional Gaseous Pollutants:** Adds limits for **ammonia (NH_3), methane (CH_4) and nitrous oxide (N_2O)**, particularly for heavy-duty vehicles.
- **Non-Exhaust Emissions**: Covers particulate emissions from brake wear and tyre abrasion.
- **On-Board Monitoring (OBM):** Monitors actual exhaust emissions and detects emission-limit exceedances.
- **On-Board Fuel and Electric Energy Consumption Monitoring (OBFCM):** Tracks real-world fuel and electric-energy consumption.
- **Environmental Vehicle Passport (EVP):** Provides information on emissions, fuel consumption and traction-battery health.
- **EV Battery Durability:** Requires battery energy retention of 75% after 5 years/1,00,000 km and 67% after 8 years/1,60,000 km, whichever comes first.
- **Fuel Specifications:** Focuses on vehicle emission-control technology; major refinery changes are not envisaged, unlike the BS-IV to BS-VI transition that reduced fuel sulphur from 50 ppm to 10 ppm.



CORPORATE AVERAGE FUEL EFFICIENCY (CAFE)

Why in News?

The Ministry of Power notified the new CAFE-III norms. It will apply to passenger vehicles from April 2027 to March 2032.

About CAFE Norms

- CAFE standards regulate the average fuel consumption and carbon dioxide (CO_2) emissions of a manufacturer's entire passenger-vehicle fleet.
- They aim to **improve fuel efficiency, reduce fossil-fuel consumption** and lower CO_2 emissions.
- India introduced CAFE norms **in 2017 under the Energy Conservation Act, 2001.**
- They apply to M1 category passenger vehicles manufactured or imported for sale in India.

Institutional Framework

- **Ministry of Power:** Notifies the CAFE regulations under the **Energy Conservation Act, 2001**.
- **Bureau of Energy Efficiency (BEE):** A statutory body under the Ministry of Power that formulates standards, maintains the manufacturer passbook, processes compliance data, and manages carbon credit trading options.
- **Ministry of Road Transport and Highways (MoRTH):** Enforces testing, calculations, reporting, and certification provisions for vehicles

Key Features of CAFE-III Norms (2027–2032)

- **Stricter Targets:** Fuel-consumption benchmark declines from 3.996 litres/100 km (2027–28) to 3.3273 litres/100 km (2031–32), an **improvement of about 16.7%.**
- **Weight-based Targets:** Targets are linked to the average unladen weight of a manufacturer's fleet, with a revised reference weight of 1,229 kg (earlier 1,082 kg).
- **Carbon Neutrality Factor (CNF)**: Recognises renewable and low-carbon fuels such as ethanol blends, biofuels and Compressed Biogas (CBG).
- **Fuel-saving Technologies:** Recognises 12 technologies, allowing concessions of 1 g CO_2/km per technology, up to a maximum of 9 g CO_2/km.
- **Super Credits:** Provides additional weightage to Battery Electric Vehicles (BEVs), Range-Extended Electric Vehicles (REEVs), Plug-in Hybrid Electric Vehicles (PHEVs), Strong Hybrid Electric Vehicles (SHEVs), Flex-Fuel Vehicles.
- **Credit-Debit Mechanism:** Manufacturers exceeding targets earn credits, while those failing to meet them incur debits. Credits may be carried forward or traded.
- **Compliance Period:** Allows compliance through specified two-year or three-year blocks.
- **Testing Standards:** Uses both the Modified Indian Driving Cycle (MIDC) and Worldwide Harmonized Light Vehicles Test Procedure (WLTP).
- **Exemption:** Manufacturers selling **fewer than 1,000 vehicles** annually are exempt from fleet-average obligations.

CAFE Norms vs Bharat Stage (BS) Emission Standards

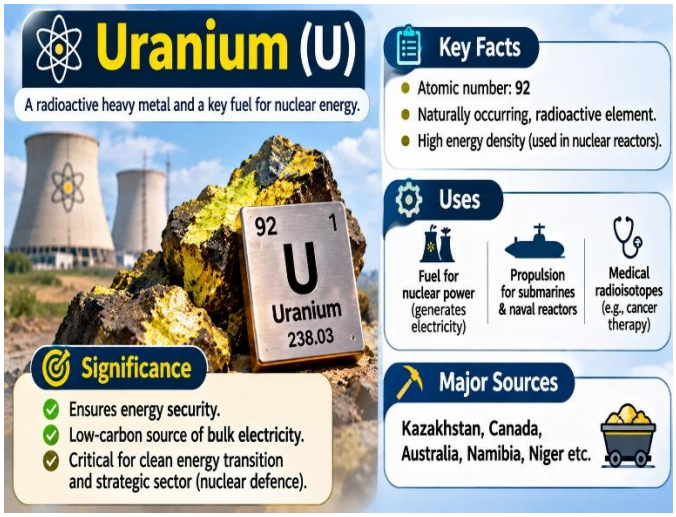
- **CAFE Norms:** Regulate the fleet-average fuel consumption and CO_2 emissions of manufacturers.
- **Bharat Stage (BS) Norms:** Regulate permissible levels of vehicular air pollutants such as nitrogen oxides (NOx), particulate matter (PM), carbon monoxide (CO) and hydrocarbons (HC).

URANIUM RESERVES IN INDIA

Why in news?

Uranium Corporation of India Limited (UCIL) has celebrated its Diamond Jubilee, marking six decades of India's uranium mining and processing capability.

About Uranium



- Uranium is a **naturally occurring radioactive**, heavy metal used as nuclear fuel.
- It occurs mainly in three isotopes:
  - **Uranium-238 (U-238):** Fertile isotope.
  - **Uranium-235 (U-235):** Fissile isotope; supports a sustained nuclear chain reaction.
  - **Uranium-234 (U-234):** Present in small quantities as part of the natural uranium decay series.
- Natural uranium contains approximately 99.3% U-238 and 0.7% U-235.
- Uranium is used in nuclear reactors to generate electricity through nuclear fission.

Uranium vs Thorium

- **Uranium:** Naturally occurring radioactive element; U-235 is fissile, while U-238 is fertile.
- **Thorium:** Naturally occurring radioactive element; Thorium-232 is fertile but not fissile.
- Thorium-232 absorbs a neutron and is converted into Uranium-233, which is fissile.
- India has **substantial thorium** resources, mainly associated with **monazite deposits** in coastal and inland placer sands.

Uranium and India's Three-Stage Nuclear Power Programme

India's three-stage nuclear programme, proposed by Dr. Homi J. Bhabha, aims to utilise limited domestic uranium resources and abundant thorium reserves through a closed nuclear fuel cycle.

- **First Stage** – Pressurised Heavy Water Reactors (PHWRs): Use natural uranium as fuel and produce plutonium in the spent fuel.
- **Second Stage** – Fast Breeder Reactors (FBRs): Use plutonium-based fuel to generate electricity and breed additional fissile material, including Uranium-233 from thorium.
- **Third Stage** – Thorium-based Reactors: Aim to use Uranium-233 bred from Thorium-232 as fuel, enabling large-scale utilisation of India's thorium resources.

Did you know?

Major Uranium Mining and Processing Areas
According to data from the Department of Atomic Energy and the Atomic Minerals Directorate for Exploration and Research (AMD), the top states with uranium reserves and deposits in India are:

1. Andhra Pradesh
2. Jharkhand
3. Meghalaya
4. Rajasthan
5. Karnataka

LIQUEFIED NATURAL GAS (LNG)

Why in News?

The **National Mineral Development Corporation (NMDC)** signed a Gas Sales Agreement with GAIL Gas Limited for the supply of **re-gasified LNG (RLNG)** to its pellet plant at Nagarnar, Chhattisgarh, replacing furnace oil.

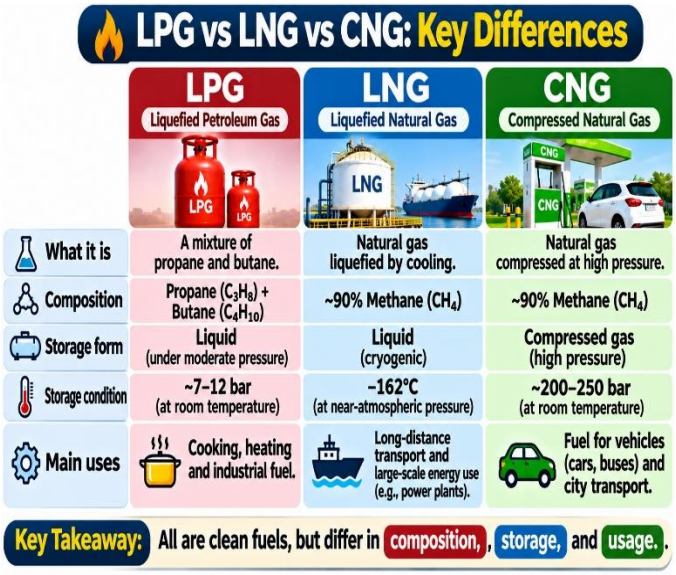
About Liquefied Natural Gas (LNG)

- LNG is a **colourless, odourless and non-toxic liquid** under normal storage conditions.
- It is a fossil fuel, not a renewable source of energy.
- LNG is natural gas converted into liquid form by **cooling it to approximately −161°C (−259°F)** at atmospheric pressure.
- It consists primarily of **methane (CH_4)**, with small quantities of other hydrocarbons.
- Liquefaction **reduces its volume to approximately 1/600th of its gaseous volume,** facilitating storage and transportation over long distances.
- Natural gas is considered a transition fuel because it generally **emits less carbon dioxide** and fewer air pollutants than coal and some petroleum fuels when combusted.

Difference Between LNG, CNG and LPG

- **LNG (Liquefied Natural Gas):** Natural gas **converted into liquid form** by cooling it to approximately **−161°C.**
- **CNG (Compressed Natural Gas):** Natural gas **compressed to high pressure and stored in gaseous form**; commonly used as an automobile fuel.
- **LPG (Liquefied Petroleum Gas):** Mainly a mixture of **propane and butane**, obtained during petroleum refining and natural gas processing.

Petroleum and Natural Gas Regulatory Board (PNGRB): Regulates the establishment and operation of LNG terminals and prescribes relevant technical and safety standards.



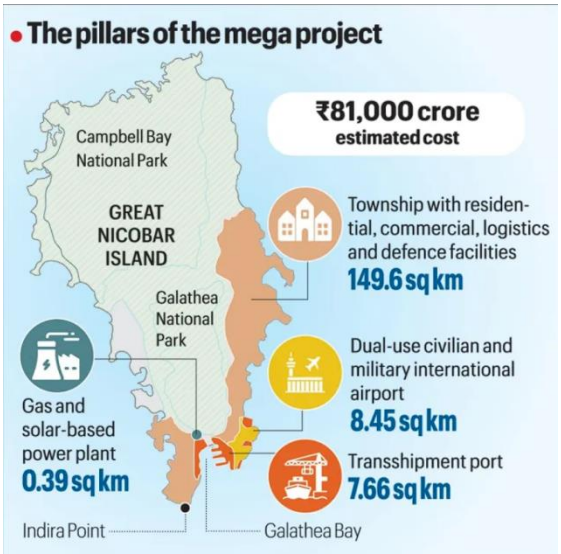
Did you know?

Regasification: Conversion of LNG back into gaseous natural gas by warming.
RLNG: Re-gasified Liquefied Natural Gas; LNG converted back into its gaseous state for supply and use.

GREAT NICOBAR ISLAND PROJECT

Why in News?

In October 2026, the Supreme Court **declined to interfere with proceedings** before the Calcutta High Court concerning alleged violations of the Forest Rights Act, 2006, in the Great Nicobar Island Project; it asked the High Court to hear the matter expeditiously.



About the Great Nicobar Island Project

- It is an **integrated infrastructure and development project** aimed at developing Great Nicobar as a strategic maritime, economic and logistics hub.
- It is part of the Government's **Holistic Development of Great Nicobar Island initiative** under the Island Development programme.
- The project covers approximately 166.10 sq. km (16,610 hectares).
- It is being implemented by the **Andaman and Nicobar Islands Integrated Development Corporation (ANIIDCO).**

Major Components of the Project

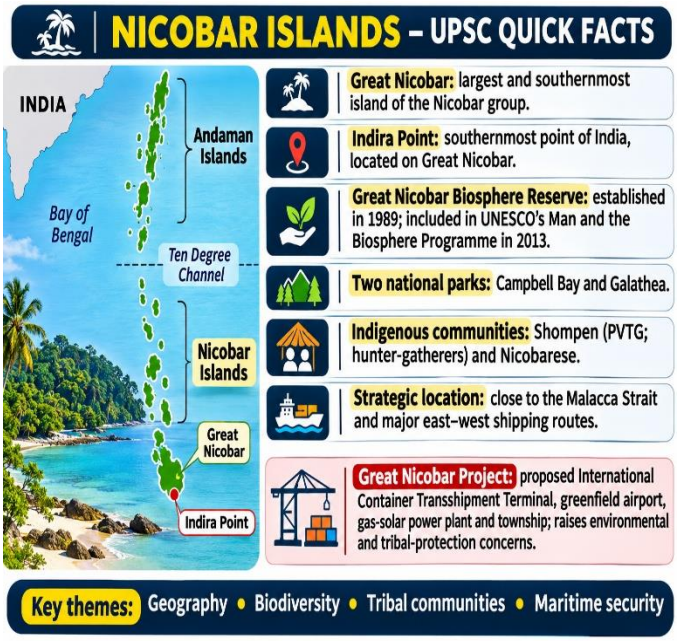
1. **International Container Transshipment Terminal (ICTT):** Proposed at Galathea Bay, with a planned capacity of 14.2 million TEUs (Twenty-foot Equivalent Units).
2. **Greenfield International Airport:** Proposed as a dual-use civil and military airport, with a design capacity of 4,000 Peak Hour Passengers (PHP).
3. **Power Plant:** A proposed 450 MVA gas- and solar-based power plant to provide electricity to the island's infrastructure.
4. **Township and Area Development:** An integrated township to support residential, commercial, tourism, logistics and other activities.

Environmental Significance of the Island

- **Great Nicobar Biosphere Reserve:** The island forms part of this biosphere reserve, recognised under UNESCO's Man and the Biosphere (MAB) Programme.
- **National Parks:** It contains the Campbell Bay National Park and Galathea National Park.
- **Marine Biodiversity:** Galathea Bay is an important nesting habitat of the Leatherback Sea Turtle (Dermochelys coriacea).
- The island's tropical evergreen forests, coastal ecosystems and endemic biodiversity make it ecologically sensitive.

Indigenous Communities and Tribal Rights

- The island is home to two major indigenous communities:
  - **Shompen:** A Particularly Vulnerable Tribal Group (PVTG), traditionally dependent on hunting and gathering.
  - **Nicobarese:** Traditionally associated with coastal settlements, fishing and horticulture.
- **The Shompen Policy, 2015** and **Jarawa Policy, 2004** provide policy frameworks for protecting indigenous communities.



BUXA TIGER RESERVE



Why in News?

A tigress was translocated **from Valmiki Tiger Reserve (Bihar) to Buxa Tiger Reserve** (West Bengal) as part of efforts to restore its tiger population.

About Buxa Tiger Reserve

- Buxa Tiger Reserve is located in West Bengal, and established in **1983 under Project Tiger.**

- It lies in the **Indo-Malayan biogeographic region**.

Geographical Features

- It shares its northern boundary with **Bhutan**.
- Its eastern boundary is marked by the **Sankosh River,** separating West Bengal from Assam.
- It extends from the **Terai and Bhabar plains** to the sub-Himalayan foothills, with elevations ranging from approximately 60 m to 1,750 m.
- The rivers **Sankosh, Raidak, Jayanti, Churnia, Turturi, Phashkhawa, Dima, and Nonani** flow through Buxa National Park.
- Major rivers include **Sankosh, Raidak and Jayanti,** originating in Bhutan.
- It has predominantly the **Moist Tropical Forests.**

Biodiversity

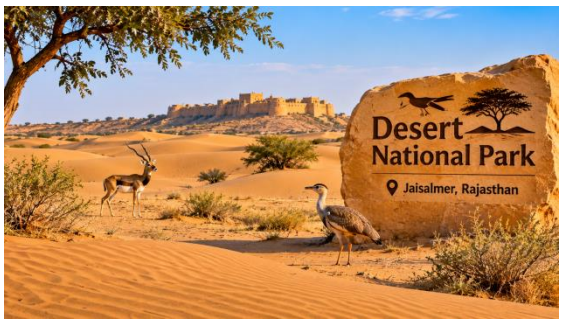
- **Flora:** Supports diverse vegetation, including tropical moist deciduous and evergreen forest types, bamboo, grasses and orchids.
- **Important Fauna:**
  - **Mammals:** Bengal tiger, Asian elephant, Indian leopard, gaur, clouded leopard and Chinese pangolin.
  - **Birds:** Bengal florican, great hornbill and other forest birds.
  - Other species: Reticulated python and hispid hare.

Ecological Connectivity

- Buxa forms part of an important **transboundary forest landscape** connecting North Bengal, Assam and Bhutan.
- Important wildlife corridors include:
  - **Buxa–Titi Corridor**
  - **Buxa–Chilapata Corridor**
  - **Buxa–Ripu Corridor (at Sankosh)**
- These corridors facilitate wildlife movement and dispersal between Buxa, Manas Tiger Reserve (Assam) and protected areas of Bhutan.

DESERT NATIONAL PARK

Why in News?



The two **captive-bred male Great Indian Bustards (GIBs)** were released into the wild at Sam in Desert National Park, Jaisalmer, Rajasthan, marking a major milestone in the species' conservation programme.

About Desert National Park

- It is situated in the Thar Desert of western Rajasthan, covering parts of Jaisalmer and Barmer districts.
- It was **declared a National Park on 4 August 1980** by the Rajasthan Government.
- It represents an important example of **India's hot-arid desert ecosystem.**

Geographical Features

- The landscape is characterised by:
  - **Sand dunes** (covering approximately 20% of the park).
  - **Rocky and craggy terrain.**
  - **Compact salt-lake beds** and interdunal areas.
  - **Thorny scrublands** and open grasslands.
- It experiences extreme **arid climate** with annual rainfall generally below 100 mm.
- Three important lakes located inside in this sanctuary:
  - **Rajbaugh Lake**
  - **Malik Talao**
  - **Padam Talao**

Vegetation

- It predominantly consists of **tropical thorn forest vegetation.**

- Important plant species include – Khejri (Prosopis cineraria), Dhok, Ronj, Salai, Sewan grass, Aak shrub

Faunal Diversity

- **Mammals:** Chinkara (Indian gazelle), Blackbuck, Indian wolf, Desert fox, Bengal fox and Desert cat.
- **Birds:** Great Indian Bustard (Godawan), Laggar falcon, vultures, eagles, harriers and migratory birds.
- **Reptiles:** Spiny-tailed lizard, monitor lizard and saw-scaled viper.

Ecological Significance

- **Great Indian Bustard Habitat:** Important habitat of the critically endangered Great Indian Bustard (Ardeotis nigriceps), the state bird of Rajasthan.
- **Grassland Ecosystem:** Provides breeding and feeding grounds for the Great Indian Bustard.
- **Fossil Deposits:** Contains plant and animal fossils dating back approximately 180 million years.
- **Desert Conservation:** Protects the fragile Thar Desert ecosystem and its biodiversity.

Great Indian Bustard Conservation

- The programme is implemented collaboratively by:
  - Ministry of Environment, Forest and Climate Change (MoEFCC).
  - Rajasthan Forest Department.
  - Wildlife Institute of India (WII).
- The programme receives funding support from the **National Compensatory Afforestation Fund Management and Planning Authority (National CAMPA).**

VALMIKI TIGER RESERVE

Why in News?



In October 2026, a **three-year-old tigress (T138) was translocated** from Valmiki Tiger Reserve, Bihar, to Buxa Tiger Reserve, West Bengal, as part of the tiger reintroduction programme.

About Valmiki Tiger Reserve

- It is located in Bihar, along the **India–Nepal international border.**
- It was **declared a Tiger Reserve in 1994** under Project Tiger.
- It is the **only Tiger Reserve in Bihar.**
- It forms part of the **Terai Arc Landscape (TAL)**, an important transboundary tiger conservation landscape.
- The reserve is **contiguous with Chitwan National Park of Nepal,** facilitating wildlife movement across the international boundary.

Geographical Features

- **Landscape:** Comprises the Terai and Bhabar regions, with foothills of the Himalayas.
- **Rivers:** Gandak, Pandai, Masan, Harha and Manor.
- **Gandak River:** Forms part of the western boundary of the reserve.
- **Forests:** Predominantly moist deciduous forests, with sal forests, grasslands and riverine vegetation.

Biodiversity

- **Mammals:** Bengal tiger, Indian leopard, Asian elephant, sloth bear, fishing cat, leopard cat and dhole.
- **Important prey species:** Chital, sambar, hog deer, nilgai, wild boar and gaur.

- **Other fauna:** Various species of reptiles and birds.
- **Tiger Population:** According to the 2022 All India Tiger Estimation, 54 individual tigers were identified in the reserve.

Ecological Significance

- **Transboundary Landscape:** Forms part of the Chitwan–Parsa–Valmiki transboundary tiger landscape involving India and Nepal.
- **Terai Arc Landscape:** An important component of the Terai Arc Landscape, which supports tiger conservation across the Himalayan foothills.
- **Wildlife Connectivity:** Contiguous with Chitwan National Park (Nepal) and connected with Suhelwa Wildlife Sanctuary (Uttar Pradesh).
- **Elephant Movement:** Asian elephants occasionally migrate from Chitwan National Park into the reserve.

SUKHNA WETLAND AND SAUJ JHEEL

Why in News

The **Sukhna Wetland** and **Sauj Jheel** are designated as Wetlands of International Importance under the Ramsar Convention, taking India's total tally of Ramsar sites to **103**.

Ramsar Convention

- Wetlands serve as crucial ecological transition zones between terrestrial and aquatic ecosystems.
- **The Ramsar Convention was** adopted on 2 February 1971 at Ramsar, Iran; it came into force in 1975.
- **India** became a contracting party in 1982.
- The **Ministry of Environment, Forest and Climate Change**, responsible for implementing the Ramsar Convention and designating wetlands of international importance

Sukhna Wetland



- It is situated at the **foothills of the Shivalik Range** (Outer Himalayas) in the Union Territory of **Chandigarh**.
- Sukhna Lake, associated with the wetland, is a **human-made reservoir** created in 1958 by damming the **seasonal stream Sukhna Choe**, originating in the Shivalik Hills.
- It is a **peri-urban freshwater wetland** comprising open-water areas, littoral vegetation, scrub and forest habitats, with seasonal fluctuations in water levels.
- It provides feeding, breeding, roosting and wintering habitats for resident and migratory waterbirds along the **Central Asian Flyway (CAF)**.
- Supports threatened species such as the
  - **Common Pochard** – Vulnerable
  - **Pallas's Fish Eagle** – Endangered
  - **Black Pond Turtle** – Endangered.
- Its upper catchment is associated with the **Sukhna Wildlife Sanctuary**, which helps protect the lake's catchment and reduce soil erosion.
- It is the **first Ramsar Site in the Union Territory of Chandigarh**

Sauj Jheel



- It is a **natural, shallow freshwater lake** surrounded by agricultural land.
- It is located in Mainpuri district, Uttar Pradesh, **within the Gangetic floodplain,** close to **Saman Bird Sanctuary,** another Ramsar Site in the district.
- It regularly supports **more than 30,000 waterbirds.**
- It is recognised as an **Important Bird and Biodiversity Area (IBA)** by BirdLife International.
- It provides habitat for resident and migratory birds, including the
  - **Sarus Crane** (State bird of U.P) – Vulnerable
  - **The Greater Spotted Eagle** – Vulnerable.
- It supports aquatic and wetland-associated vegetation such as **Sacred Lotus** and **Wild Sugarcane**.
- With its addition, **Uttar Pradesh's Ramsar Site count increased to 14**. Mainpuri became the only district in India to have two Ramsar Sites.

ZOOPHARMACOGNOSY

Why in News?

A study published in **Scientific Reports** documenting **possible self-medication** by **African elephants** in Kenya, which reportedly use 35 plant species and four types of soil for potential medicinal purposes, with medicinal knowledge possibly transmitted across generations.

About

- Zoopharmacognosy is the study of **how animals self-medicate** by selecting and using natural substances to prevent or treat illnesses.
- Animals may **use plants, soil, minerals, insects and other natural materials** for health-related purposes.
- Such behaviour may help animals **manage infections, wounds, parasitic infestations** and digestive problems, or maintain general health.
- It reflects the **interaction between animal behaviour and the natural environment**, particularly the use of medicinal plants and other biologically active substances.

Examples of Zoopharmacognosy

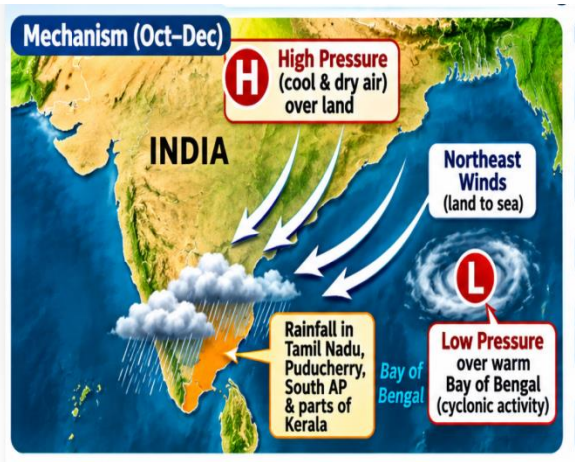
- **Sumatran Orangutans**: Observed chewing and applying medicinal **plant sap** (*Fibraurea tinctoria*) directly onto facial wounds to reduce inflammation and infection.
- **Chimpanzees**: Swallow bitter leaves (*Vernonia amygdalina*) whole to flush out intestinal parasites, or chew *Desmodium gangeticum* for skin parasites.
- **Elephants**: Consume specific plants, tree barks (such as *Terminalia crenulata* to aid labor), or mineral-rich clays (geophagy) to detoxify their systems.
- **Pregnant Lemurs**: Nibble on tamarind leaves to stimulate milk production.
- **Domestic Pets**: Dogs and cats commonly eat grass to induce vomiting or clear minor stomach irritation.

GEOGRAPHY

NORTHEAST MONSOON

Why in News

In October 2026, the India Meteorological Department (IMD) declared the onset of the Northeast Monsoon (Retreating Monsoon) over southern peninsular India following the withdrawal of the Southwest Monsoon.



About Northeast Monsoon

- The Northeast Monsoon (NEM), also known as the **Retreating Monsoon or Winter Monsoon,** occurs during **October–December.**
- It is associated with the **seasonal withdrawal of the Southwest Monsoon** and reversal of wind direction.
- Unlike the Southwest Monsoon, the Northeast Monsoon involves predominantly **northeasterly winds** blowing from the Indian landmass towards the surrounding seas.
- It is the **principal rainy season for Tamil Nadu**, contributing approximately 48% of its annual rainfall.
- It contributes approximately **30% of the annual rainfall of southern peninsular India.**

Mechanism and Formation

- **Seasonal Wind Reversal:** During October, the Indian landmass cools faster than the surrounding seas, resulting in a reversal of pressure conditions.
- **Southward Migration of ITCZ:** The Inter-Tropical Convergence Zone (ITCZ) shifts southwards with the apparent southward movement of the Sun, influencing the development of low-pressure conditions over the southern Bay of Bengal.
- **Northeasterly Winds:** Winds blow from the Indian subcontinent towards the Bay of Bengal.
- **Moisture Absorption:** Initially dry continental winds absorb moisture while crossing the warm Bay of Bengal.
- **Rainfall Formation:** Moisture-laden winds, atmospheric convergence and cyclonic disturbances produce rainfall over southeastern India.

Onset Criteria

The India Meteorological Department (IMD) considers the following conditions for declaring the onset:

- Withdrawal of Southwest Monsoon up to 15°N latitude.
- **Establishment of persistent surface easterly winds** over the Tamil Nadu coast.
- **Easterly winds extend** vertically up to the 850 hPa pressure level.
- Fairly widespread rainfall over coastal Tamil Nadu, south coastal Andhra Pradesh and adjoining regions.

Forecasting

- **Nodal Agency:** India Meteorological Department (IMD).
- IMD issues seasonal rainfall forecasts for southern peninsular India.
- It uses statistical models and **Multi-Model Ensemble (MME)**-based forecasting.

- The **Monsoon Mission Climate Forecast System (MMCFS)** is among the models used for seasonal forecasting.
- The **Monsoon Mission Climate Forecast System (MMCFS)** is among the models used for seasonal forecasting.

YAMUNA RIVER POLLUTION

Why in News?

The **Union Home Minister** attended the inauguration and foundation-stone laying ceremony of **Yamuna rejuvenation projects** worth **8,941 crore rupees** in **Delhi**..

About Yamuna River Pollution

- Pollution is driven by **untreated dirty water**, **unconnected household sewage**, and **2,000 tonnes of daily dairy cow dung**.
- Waste load is compounded by **industrial wastewater from Haryana** and **untreated dirty water from Uttar Pradesh**.
- Massive urban landfill mounds at **Okhla**, **Bhalswa**, and **Ghazipur** contribute heavily to regional environmental degradation.

Key Measures and Objectives

- The **8,941 crore rupees** package comprises **10 inaugurated projects** and **33 newly initiated projects** for **Sewage Treatment Plants (STPs)** and sewerage networks across **Delhi**.
- A **three-year action plan** has been prepared to provide **sewerage connections to every household in Delhi** so dirty water can be drained out and pure drinking water reaches every home.
- Requires joint coordination across governments in **Delhi**, **Haryana**, **Uttar Pradesh**, and the **Centre** to stop untreated waste influx and achieve river cleaning targets by **May 2029**.

Yamuna River

- *Yamuna River originates at Yamunotri Glacier (Bandarpunch Peak, Uttarkashi, Uttarakhand).*
- *Traverses 1,376 km across Uttarakhand, Himachal Pradesh, Haryana, Delhi, and Uttar Pradesh before joining Ganga River at Triveni Sangam (Prayagraj).*
- *Largest tributary of the Ganga with a basin covering 3,66,223 km^2 (~40% of Ganges Basin).*

Tributaries

Himalayan (Left-Bank):

- *Tons: Largest Himalayan tributary, exceeding Yamuna's volume before confluence at Kalsi.*
- *Giri: Rises near Shimla and drains Sirmaur region (HP).*
- *Hindon: Rain-fed stream from Upper Shiwaliks, merging near Noida.*

Peninsular (Right-Bank):

- *Chambal: Originates in Janapav Hills (Vindhyas), forms badland ravines, and hosts Gandhi Sagar, Rana Pratap Sagar, Jawahar Sagar, and Kota Barrage.*
- *Sind: Rises on Malwa Plateau (MP) and merges at Etawah.*
- *Betwa: Rises in Vindhyas (MP) and feeds Rajghat and Matatila dams.*
- *Ken: Rises in Kaimur Range (MP), traverses Panna Tiger Reserve, and merges near Banda.*

CYCLONE ARNAB

Why in news?

Cyclonic Storm **Arnab** developed over the **Bay of Bengal** and made landfall along the **Andhra Pradesh coast** near **Yanam** and **Narsapur** as a **Very Severe Cyclonic Storm (VSCS)**, bringing heavy rainfall and strong coastal winds across **Andhra Pradesh** and southern **Odisha** before weakening into a **deep depression**.

About Tropical Cyclones

- Rapidly rotating atmospheric systems originating over warm tropical oceans, defined by a calm central low-pressure eye surrounded by a dense convective eyewall producing peak winds and rainbands.
- **Pressure Deficit**: Driven by a sharp central pressure drop typically **20 to 30 hPa** below normal sea level pressure.

Genesis:

- Sea Surface Temperatures (SSTs) exceed **28°C**, evaporating thermal energy into the lower atmosphere.
- Surface low-pressure draws air inward, driving upward convective currents.
- **Coriolis effect** deflects rising air, spinning the system counterclockwise in the Northern Hemisphere.
- Ascending moisture condenses into convective clouds, releasing latent heat that fuels vertical motion.
- High-altitude divergence evacuates exhaust air, maintaining low central surface pressure.

Classification Framework: Categorized by the **India Meteorological Department (IMD)** in the North Indian Ocean based on maximum sustained surface wind speeds:

Category	Maximum Sustained Wind Speed (km/h)
Depression	31 to 49
Deep Depression	50 to 61
Cyclonic Storm (CS)	62 to 87
Severe Cyclonic Storm (SCS)	88 to 117
Very Severe Cyclonic Storm (VSCS)	118 to 166
Extremely Severe Cyclonic Storm (ESCS)	167 to 221
Super Cyclonic Storm (SuCS)	≥ 222

Institutional Protocols & Operational Warnings

- **Monitoring Framework**: Monitored by the **IMD** as the **Regional Specialised Meteorological Centre (RSMC) New Delhi**.
- **Early Warning Mechanism**: Four-stage warning protocol comprising **Pre-Cyclone Watch**, **Cyclone Alert**, **Cyclone Warning**, and **Post-Landfall Outlook**.
- **Statutory Execution**: Governed under the **Disaster Management Act, 2005** for coordinated preemptive actions by disaster response forces.

VICTORIA MODE

Why in news?

A recent study published in **MAUSAM** by the **India Meteorological Department (IMD)** and **Indian Institute of Tropical Meteorology (IITM)** highlights how **rising temperatures and declining rainfall** are increasing aridity in northern India, with **Victoria Mode** playing an important role.

Key Findings

- **Northwest India: Hot semi-arid steppe zone** expanded from **25.7% (1951–80) to 33.1% (1991–2020)**, while **temperate zones** declined from **25.8% to 18.7%**.

- **Climatic shift:** The eastern boundary of the **steppe zone** moved towards **Uttar Pradesh**.
- **Northeast India: Tropical savannah** declined from **18.4% to 11.8%**, while **temperate zones** increased from **74.8% to 82.5%**, with **Gangetic West Bengal** shifting towards a temperate classification.
- **Implications:** Changes in **climatic and vegetation patterns** threaten **agriculture, food security and livelihoods**, potentially increasing **migration pressure**.

About

- Victoria Mode is a recurring **ocean–atmosphere climate pattern** associated with **Sea Surface Temperature (SST) variations** in the **North Pacific Ocean (north of 20°N)**.
- It is the **second-leading mode of North Pacific SST variability**, distinct from the **Pacific Decadal Oscillation (PDO)**.
- Characterised by a **northeast–southwest dipole** of warm and cold SST anomalies.

Phases of Victoria Mode

- **Negative Phase: Colder-than-normal SST** in the central and western North Pacific (towards Asia) and **warmer-than-normal SST** from the west coast of North America towards the western Bering Sea.
- **Positive Phase:** The **reverse pattern**, with warmer SST in the northeastern Pacific and colder SST in the central and western North Pacific.

Connection with the Indian Monsoon

- North Pacific SST variations influence **atmospheric pressure gradients** and **wind circulation**.
- These changes alter **low-level wind patterns** and **moisture transport** towards South Asia.
- During the **negative phase**, reduced moisture transport towards India can contribute to **rainfall deficits, prolonged dry conditions and expansion of semi-arid zones** in northwest India.

TUMMIDIHATTI BARRAGE

Why in news?

Maharashtra agreed to review Telangana's proposal to increase the **Tummidihatti Barrage** height from **148 metres** (set in a 2016 pact) to **152 metres** across the **Pranahita River**, forming a **joint technical committee** to examine feasibility and submergence.



About

- **Tummidihatti Barrage is** proposed across the **Pranahita River** (a major **Godavari River** tributary) near Tummidihetti village in **Komaram Bheem Asifabad district**, on the **Telangana-Maharashtra border**.
- Designed as a multi-purpose project to maximize **gravity-based conveyance**, lowering heavy pumping and energy costs.
- Governed under the technical purview of the **Central Water Commission (CWC)**.

Key Contentions:

- **Height Dispute**: Telangana seeks a **152-metre** Full Reservoir Level

(FRL) for gravity flow, while a **148-metre** FRL was previously fixed to curb disputes.

- **Submergence Concern**: Maharashtra raises objections over potential land submergence in border districts like **Gadchiroli and Chandrapur**, with Telangana offering compensation per Maharashtra's guidelines

Significance of Tummidihatti Barrage

- **Irrigation:** Augments irrigation potential in northern Telangana.
- **Drinking Water:** Improves drinking water availability in the region.
- **Hydropower:** Supports hydroelectric power generation.
- **River Linking:** Supports Telangana's river-linking and irrigation expansion initiatives.

SCIENCE AND TECHNOLOGY

BHARATNET



Why in the News?

The Digital Bharat Nidhi (DBN), Department of Telecommunications (DoT), Government of Tamil Nadu and Tamil Nadu FibreNet Corporation (TANFINET) signed an agreement to strengthen rural broadband connectivity in Tamil Nadu under the Amended BharatNet Programme (ABP).

About BharatNet

- **BharatNet** is one of the world's largest rural broadband connectivity projects, aimed at providing high-speed broadband connectivity to **all Gram Panchayats (GPs)** across India.
- Initially launched as the **National Optical Fibre Network (NOFN) in 2011**, it was renamed BharatNet in 2015.
- Implemented under the **Ministry of Communications**, it aims to bridge the digital divide between rural and urban India.
- It provides non-discriminatory access to broadband infrastructure for telecom service providers, ISPs and other service providers.

Phases of BharatNet

- Phase I: Connected 1 lakh Gram Panchayats using existing infrastructure and optical fibre; completed in December 2017.
- Phase II: Expanded connectivity to an additional 1.5 lakh GPs using optical fibre, radio and satellite technologies.
- Phase III: Focuses on upgrading the network, increasing bandwidth, integrating 5G technologies and improving last-mile connectivity.

Key Features

- **Ring Topology:** Circular network providing alternative data routes and reliability.
- **IP-MPLS:** Efficient data routing using routers at block and GP levels.
- **RFMS:** Remote monitoring and fault detection in optical fibre networks.
- **Operation & Maintenance:** 10-year maintenance with power backup.

BITCHAT



Why in News?

- Apple removed **Bitchat**, an offline messaging application developed by **Jack Dorsey (Twitter co-founder)**, from India's App Store following a government order under Section 69A of the IT Act, 2000.

About Bitchat

- A **decentralised, peer-to-peer messaging application** that works without internet or mobile networks.

- Uses **Bluetooth Low Energy (BLE) mesh networking** to transmit messages between nearby devices.
- Each device can relay messages to other devices, extending communication beyond the range of a single Bluetooth connection.
- Open-source; does not require a phone number or central server.
- Supports end-to-end encrypted messaging.

Key Concerns

- Enables communication during internet shutdowns, making it difficult for authorities to monitor or restrict communication.
- May be misused for coordinating unlawful activities and spreading misinformation.
- Raises concerns about balancing **national security and public order** with **freedom of speech and expression**.

Legal Provisions

- ***Section 69A, IT Act, 2000:*** *Empowers the Central Government to block public access to online information on specified grounds, including sovereignty and integrity of India, defence, security of the State and public order.*
- ***IT (Procedure and Safeguards for Blocking for Access of Information by Public) Rules, 2009:*** *Prescribe the procedure and safeguards for blocking directions.*
- ***Article 19(1)(a):*** *Guarantees freedom of speech and expression, subject to reasonable restrictions under Article 19(2).*

DIGITAL SIGNATURE

Why in News?

eMudhra, an Indian digital certificate provider, reported a security incident involving **eight compromised intermediate Certificate Authority (CA) certificates**.

What is a Digital Signature?

- A cryptographic technique used to authenticate electronic documents and verify their integrity.
- It confirms the identity of the signer and helps detect unauthorised changes to a document.
- It is legally recognised under the **Information Technology Act, 2000**.

How does it Work?

- Uses **Public Key Cryptography (Asymmetric Cryptography)** involving two keys:
  - **Private Key:** Used by the signer to create the digital signature; must remain secret.
  - **Public Key:** Used by the recipient to verify the signature.
- A hash (digital fingerprint) of the document is generated and signed using the private key.
- The recipient uses the public key to verify the signature and checks whether the document has been altered.

Key Components

- **Digital Signature Certificate (DSC):** Electronic certificate that establishes the link between the identity of the subscriber and their public key.
- **Certifying Authority (CA):** Licensed entity that issues DSCs after verifying the applicant's identity.
- **Controller of Certifying Authorities (CCA):** Appointed under the IT Act, 2000; licenses and regulates CAs under MeitY.
- **Root Certifying Authority of India (RCAI):** Establishes the root of trust for India's PKI framework.

Concerns

- **Private Key Compromise:** Can allow unauthorised individuals to create fraudulent digital signatures.

- **Identity Theft:** Attackers may impersonate legitimate individuals, organisations or websites.
- **Man-in-the-Middle Attacks:** Fraudulent website certificates may enable interception or manipulation of communications.
- **Weak Cryptographic Randomness:** Predictable keys can be reconstructed by attackers.

Legal and Institutional Framework

- ***IT Act, 2000 – Section 3:*** *Authentication of electronic records through digital signatures using asymmetric cryptography and hash functions.*
- ***Section 17:*** *Appointment of the Controller of Certifying Authorities.*
- ***Section 35:*** *Issue of Digital Signature Certificates.*
- ***CERT-In:*** *National agency for responding to cybersecurity incidents.*

SMART GLASSES

Why in News?

- Norway is considering a temporary ban on AI-enabled smart glasses in sensitive places such as schools, healthcare facilities and changing rooms due to privacy concerns.
- AI-powered smart glasses are also being used as **assistive devices for visually impaired persons**, improving their independence.

What are Smart Glasses?



- Wearable electronic devices designed like ordinary spectacles, integrated with **cameras, microphones, sensors, speakers and AI**.
- They provide hands-free access to digital information and interact with the surrounding environment.

Key Features

- **AI Integration:** Identifies objects, people and surroundings.
- **Augmented Reality (AR):** Displays digital information over the user's real-world view.
- **Voice Assistance:** Enables hands-free commands and interaction.
- **Connectivity:** Connects with smartphones through Bluetooth or other wireless technologies.
- **Media Capture:** Captures photographs, videos and audio.

Applications

- **Assistive Technology:** Helps visually impaired persons read text, recognise faces, identify objects and navigate surroundings.
- **Navigation:** Provides directions and location-based information.
- **Communication:** Supports calls, live translation and captions.
- **Education and Healthcare:** Enables hands-free access to information and assistance.

HUMAN BRAIN ORGANOIDS AND XENOCORTICATION

Why in News?

A Stanford University study successfully transplanted human brain organoids into genetically modified mice to study human brain development and neurological disorders.

Human Brain Organoids

- **Definition:** Three-dimensional, miniaturised brain-like tissues grown in laboratories using stem cells.

- They mimic certain features of early human brain development but are not complete human brains.
- Developed using **induced pluripotent stem cells (iPSCs)** – adult cells reprogrammed into a stem-cell-like state.
- **Applications:**
  - Study brain development and neurological disorders.
  - Understand diseases such as autism and epilepsy.
  - Test drugs and potential treatments.

Xenocortication

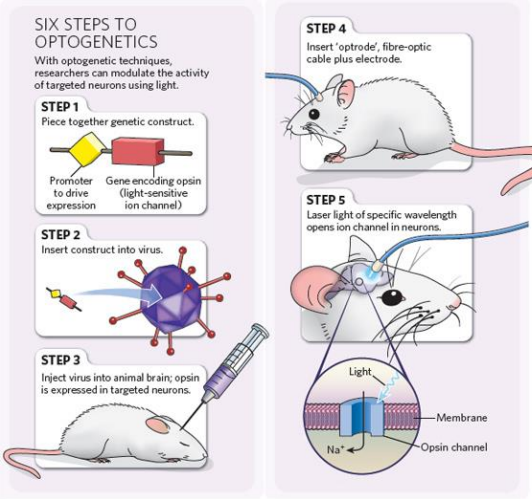
- **Definition:** Experimental technique involving transplantation of human brain cortical organoids into genetically modified animals.
- *Xeno* = foreign/other species; *Cortex* = outer layer of the brain.
- In the Stanford experiment:
  - Human brain organoids were transplanted into mice genetically modified to lack much of their cerebral cortex.
  - Mice had weakened immune systems to prevent rejection of human tissue.
  - Transplanted human cells became electrically active and connected with the mouse nervous system.

Significance

- Helps understand human-specific brain development and neurological disorders.
- Provides a model to study brain injuries caused by oxygen deprivation.
- Helps test potential drugs and treatments.

OPTOGENETICS

Why in News?



The **2026 Nobel Prize in Physiology or Medicine** was jointly awarded to **Karl Deisseroth, Peter Hegemann and Georg Nagel** for their discoveries concerning light-gated ion channels and optogenetics.

What is Optogenetics?

- A technique that combines **optics (light) and genetics** to control the activity of specific cells, particularly neurons, using light.
- Helps researchers switch individual nerve cells ON or OFF with high precision.

How does it Work?

- Genes coding for light-sensitive proteins called **opsins** are introduced into selected neurons.
- These proteins make the neurons sensitive to light.
- Light pulses activate or inhibit the neurons, allowing researchers to study their functions.

Key Discovery

- **Peter Hegemann and Georg Nagel:** Discovered and characterised *channelrhodopsin*, a light-sensitive ion channel found in single-celled algae.

- **Karl Deisseroth:** Demonstrated how these proteins could be used to control the activity of neurons using light.

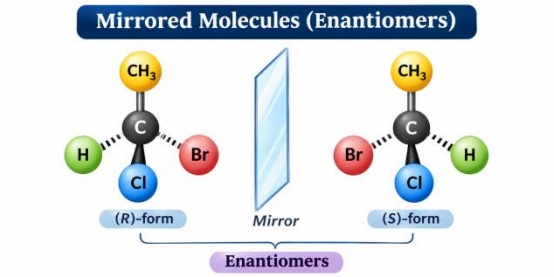
Applications

- Studies brain functions such as memory, emotions and behaviour.
- Helps understand neurological and psychiatric disorders such as Parkinson's disease, epilepsy and Alzheimer's disease.
- Supports research into restoring vision in people with certain forms of blindness.
- Helps map neural circuits and understand how different brain regions communicate.

MIRRORED MOLECULES (MOLECULAR CHIRALITY)

Why in News?

The **2026 Nobel Prize in Chemistry** was awarded to **Henri B. Kagan (France) and Kenso Soai (Japan)** for discovering nonlinear effects and autocatalysis in asymmetric organic synthesis.



What are Mirrored Molecules?

- Certain molecules exist in two forms that are mirror images of each other but cannot be superimposed, just like our left and right hands.
- This property is called **Chirality**.
- The two mirror-image forms are called **Enantiomers**.

Key Concepts

- **Chirality:** Property of a molecule whose mirror image cannot be superimposed on it.
- **Enantiomers:** Two non-superimposable mirror-image forms of the same molecule.
- **Homochirality:** Preference for only one form of a chiral molecule in biological systems.
    - Example: Most amino acids in proteins are in the L-form, while biological sugars such as those in DNA are predominantly in the D-form.

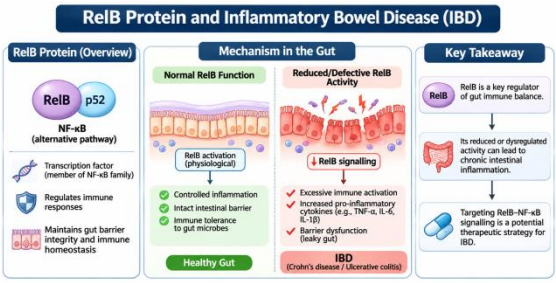
Nobel Prize – Key Discoveries

- **Henri B. Kagan:** Demonstrated *nonlinear effects* in asymmetric synthesis, showing that a small imbalance in a chiral catalyst can produce a much larger imbalance in the final products.
- **Kenso Soai:** Developed the **Soai reaction**, demonstrating autocatalysis in asymmetric synthesis.
- **Autocatalysis:** A reaction in which the product itself acts as a catalyst, promoting the formation of more of itself.
- These discoveries showed how one mirror-image form can become dominant in a chemical reaction.

Applications / Significance

- **Pharmaceuticals:** Helps produce medicines with the desired molecular form, improving effectiveness and reducing unwanted side effects.
- **Drug Development:** Enables more precise synthesis of chiral drug molecules.
- **Perfumes and Flavours:** Different enantiomers can have different smells and properties.
- **Origin of Life:** Helps understand how biological systems came to favour one molecular form over its mirror image.

RELB PROTEIN AND INFLAMMATORY BOWEL DISEASE (IBD)



Why in News?

Researchers from the **National Institute of Immunology (NII), New Delhi**, discovered the dual role of RelB protein in gut immunity.

About the study

The study, published in the journal **Proceedings of the National Academy of Sciences (PNAS)**, may help develop more targeted treatments for IBD.

What is Inflammatory Bowel Disease (IBD)?

- A group of chronic disorders involving inflammation of the digestive tract.
- Two major types:
  - **Crohn's Disease:** Can affect any part of the digestive tract.
  - **Ulcerative Colitis:** Causes inflammation and ulcers mainly in the colon and rectum.

What is RelB Protein?

- RelB is a protein involved in regulating immune responses and inflammation.
- It has a **dual role** in gut immunity:
  - **Protective role:** Helps develop specialised dendritic cells in the intestinal wall that produce IL-23, which supports defence against harmful microbes.
  - **Harmful role:** Suppresses regulatory T-cells (Tregs), which normally control excessive immune responses, thereby worsening chronic inflammation.

Key Scientific Findings

- RelB activates another protein called **RBP-J**, helping immature cells develop into specialised IL-23-producing dendritic cells.
- **IL-23:** A signalling molecule that triggers immune and inflammatory responses to protect against infections.
- Excessive IL-23 activity can contribute to chronic inflammatory diseases, including IBD.

Significance

- Helps understand how the immune system balances protection against microbes with prevention of excessive inflammation.
- May support development of targeted treatments that reduce harmful inflammation without weakening gut defence.

ROBOTICS IN MEDICINE



Why in News?

- AI-based robotic systems are increasingly being adopted for knee replacement surgeries in Chennai.
- Apollo Hospitals, Madurai, reported completing 100 robotic-assisted surgeries.

What is Robotic Surgery?

- A surgical technique in which doctors use robotic systems to assist in performing operations with greater precision and control.
- The surgeon controls the robotic instruments; the robot does **not independently perform the surgery**.

How does it Work?

- **3D Imaging:** Provides a detailed view of the patient's anatomy.
- **Surgeon Console:** Allows the surgeon to control robotic instruments.
- **Robotic Arms:** Perform precise movements based on the surgeon's commands.
- **AI Assistance:** Supports surgical planning and patient-specific guidance.

Applications

- **Orthopaedics:** Knee and hip replacement surgeries.
- **Urology:** Prostate and kidney surgeries.
- **Gynaecology:** Hysterectomy and other procedures.
- **Oncology:** Selected cancer surgeries.
- **General Surgery:** Gastrointestinal and other complex operations.

Examples of Robotic Systems

- ***Mako (Stryker):*** *Robotic-assisted knee and hip replacement.*
- ***Hugo (Medtronic):*** *Robotic-assisted surgery platform.*
- ***SSI Mantra:*** *Indian-developed robotic surgical system.*
- ***Meril CUVIS:*** *Robotic-assisted orthopaedic surgery system.*

LEPROSY (HANSEN'S DISEASE)

Why in News?

- India reported **3,832 new leprosy cases among children in 2025–26**, including 37 cases with Grade-2 disability.
- India aims to interrupt leprosy transmission at the district level by **2027** under the National Strategic Plan (2023–27).

About Leprosy

- A chronic infectious disease caused mainly by the bacterium **Mycobacterium leprae**.
- Primarily affects the **skin and peripheral nerves**; may also affect the eyes and upper respiratory tract.
- Transmission occurs mainly through prolonged, close contact with an untreated infected person, through respiratory droplets.
- It is **curable** and is not highly contagious.
- Incubation period is long, usually around 5 years.

Symptoms

- Light or reddish skin patches with loss of sensation.
- Numbness or weakness in hands and feet.
- Nerve damage, which may lead to disability if untreated.

Diagnosis and Treatment

- Diagnosed mainly through clinical examination and skin-smear tests where required.
- Treated using **Multi-Drug Therapy (MDT)**.
- Current Indian regimen uses three antibiotics:
  - Rifampicin
  - Dapsone
  - Clofazimine
- MDT is provided free of cost through public health facilities.

National Leprosy Eradication Programme (NLEP) put in box

- Launched in **1983** by the Ministry of Health and Family Welfare.
- India achieved elimination of leprosy as a public health problem at the national level in **2005** (prevalence below 1 case per 10,000 population).
- Currently focuses on early detection, treatment, prevention of disability and elimination of stigma.

National Strategic Plan (2023–27)

- Aims to achieve **interruption of transmission at the district level by 2027**.

- Focuses on:
  - Active case detection and contact tracing.
  - Free diagnosis and MDT treatment.
  - Prevention of disability.
  - Reducing stigma and discrimination.
  - Digital surveillance through Nikusth 2.0.

SMART BIOMATERIALS

Why in News?

Researchers at the **Centre for Nano and Soft Matter Sciences (CeNS), Bengaluru**, developed a method to control the self-assembly and properties of peptide-based smart biomaterials by adding a single methylene spacer (-CH_2-).

What are Smart Biomaterials?

- Advanced materials designed to respond to changes in their surrounding biological environment or external stimuli.
- They can perform specific functions such as sensing, drug delivery and tissue repair.

Key Scientific Concepts

- **Peptides:** Short chains of amino acids linked by peptide bonds.
- **Supramolecular Self-Assembly:** Spontaneous organisation of molecules into larger, ordered structures through non-covalent interactions.
- **Methylene Spacer (-CH_2-):** A single carbon atom with two hydrogen atoms inserted between molecular components to alter their arrangement.
- **Supramolecular Chirality:** Hand-like asymmetry arising from the arrangement of molecules at the nanoscale.
- **Fluorescence:** Emission of light by a substance after absorbing light or other electromagnetic radiation.

Key Findings

- Researchers inserted a single methylene spacer between a peptide backbone and a fluorescent molecule called **pyrene**.
- This changed molecular packing and produced supramolecular chirality.
- It also increased the fluorescence lifetime of the material.

Applications

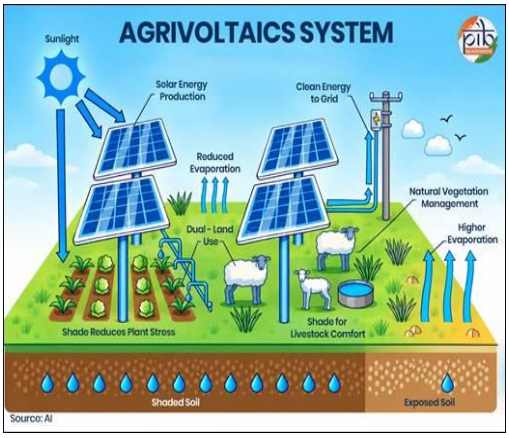
- **Biosensing:** Detection of disease-related biomarkers.
- **Bioimaging:** Tracking cells and biological processes.
- **Drug Delivery:** Stimulus-responsive materials that release medicines in response to changes such as pH or enzymes.
- **Regenerative Medicine:** Potential applications in tissue repair and engineering.

AGRIVOLTAICS (AGRIPV)

Why in News?

- Union Minister Pralhad Joshi stated that utilising just **10% of India's suitable land** for agrivoltaics could meet the country's projected electricity demand by 2050.
- A dedicated agrivoltaics component is proposed under the next phase of **PM-KUSUM**.

What is Agrivoltaics?



- Integration of **solar photovoltaic (PV) panels with crop cultivation on the same agricultural land**.

- Allows farmers to generate solar electricity while continuing agricultural activities.
- Also known as **AgriPV** – the concept of "One Land, Two Harvests".

Key Features / Benefits

- **Dual Land Use:** Simultaneous food production and solar electricity generation.
- **Additional Income:** Farmers can earn from both crops and surplus electricity.
- **Water Conservation:** Panel shading can reduce soil moisture loss and water consumption.
- **Crop Protection:** Partial shade can benefit certain crops under suitable conditions.
- **Clean Energy:** Supports renewable energy generation and reduces dependence on fossil fuels.

India's Potential

- According to TERI, around **47.5 million hectares** (approximately 30% of India's cropland) are technically suitable for agrivoltaics.
- Maharashtra, Rajasthan, Andhra Pradesh, Madhya Pradesh, Karnataka and Uttar Pradesh account for nearly 50% of the estimated potential.
- Suitable for vegetables, fruits, spices, horticulture, floriculture and fodder.

Government Initiatives

- ***PM-KUSUM:*** *Promotes solar energy in agriculture through decentralised solar power plants, standalone solar pumps and solarisation of grid-connected agricultural pumps.*
- *A dedicated agrivoltaics component is proposed under the next phase of PM-KUSUM.*
- *India hosted the* ***Agrivoltaics World Conference 2026*** *for the first time in the Global South.*

Agrivoltaics World Conference 2026

- *The* ***7th edition*** *of the AgriVoltaics World Conference was held from* ***21–23 October 2026*** *at Bharat Mandapam, New Delhi.*
- *Hosted by the* ***Ministry of New and Renewable Energy (MNRE)****, with support from Germany and other partners.*
- *Theme:* ***"Powering the Global South"****; it was the first time the conference was held in India and the Global South.*
- *It brought together policymakers, scientists and industry experts to promote the integration of* ***solar power generation with agriculture****, focusing on farmer income, food security and clean energy.*

E85/E100 FLEX-FUEL VEHICLES (FFVS)

Why in News?

MoRTH amended the **Central Motor Vehicles Rules, 1989**, to include E100 alongside E85 for flex-fuel vehicles.

What are Flex-Fuel Vehicles?

- Vehicles specially designed to run on different combinations of **petrol and ethanol** using a single fuel tank.
- Engine-control systems automatically adjust engine operation according to the fuel composition.

Types of Ethanol Fuels

- **E20:** 20% ethanol + 80% petrol.
- **E85:** Up to 85% ethanol by volume.
- **E100:** Fuel consisting predominantly of ethanol.

Key Features



- Can operate on different petrol-ethanol blends, depending on vehicle design and certification.
- Special fuel-system components are designed to handle high ethanol concentrations.
- Engine sensors and control systems adjust combustion according to fuel composition.
- **Energy Security:** Reduces dependence on imported crude oil.
- **Environmental Benefits:** Can reduce certain exhaust pollutants and lifecycle greenhouse gas emissions, depending on ethanol feedstock and production.
- **Agricultural Economy:** Creates demand for ethanol produced from **sugarcane, maize and agricultural biomass.**

DEFENCE

ADVANCED HIGH-ALTITUDE PARACHUTE (AHAP)

Why in News?

The Defence Research and Development Organisation (DRDO) conducted the maiden live jump of the indigenously developed **Advanced High-Altitude Parachute (AHAP)** at Nyoma in Ladakh, demonstrating its suitability for military operations in extremely high-altitude terrain.



About Advanced High-Altitude Parachute (AHAP)

- **Nature:** It is an indigenous static-line parachute system designed for the mass drop of paratroopers.
- **Developed by:** Aerial Delivery Research and Development Establishment (ADRDE), Agra, under the Defence Research and Development Organisation (DRDO).
- **Manufactured by:** Ordnance Parachute Factory (OPF), Kanpur.
- **Certification:** Certified by the Centre for Military Airworthiness and Certification (CEMILAC), through its Regional Centre of Military Airworthiness (RCMA), Kanpur.
- **Inspection:** Directorate General of Aeronautical Quality Assurance (DGAQA).

Important Organisations Associated with AHAP

- **Defence Research and Development Organisation (DRDO):** Overall defence research and development organisation under which AHAP was developed.
- **Aerial Delivery Research and Development Establishment (ADRDE), Agra:** Responsible for the design and development of AHAP.
- **Ordnance Parachute Factory (OPF), Kanpur:** Responsible for manufacturing the parachute system.
- **Directorate General of Aeronautical Quality Assurance (DGAQA):** Responsible for inspection and quality assurance.
- **Centre for Military Airworthiness and Certification (CEMILAC):** Responsible for certification of military aircraft and airborne systems.
- **Regional Centre of Military Airworthiness (RCMA), Kanpur:** Associated with the airworthiness certification of AHAP.

Static-Line Parachute

- A static-line parachute is a parachute system in which a line connects the parachute to the aircraft.
- When a paratrooper exits the aircraft, the static line automatically initiates parachute deployment.
- It is particularly useful for the mass deployment of paratroopers because it reduces the need for individual manual activation.

SURYA – INDIA'S FIRST INDIGENOUS FLEET SUPPORT SHIP

Why in News?

- The Defence Minister launched **'Surya' (Fleet Support Ship-1)**, India's first **indigenously designed** and built Fleet Support Ship, at Hindustan Shipyard Limited (HSL), Visakhapatnam, marking a major milestone in

India's indigenous naval shipbuilding capabilities.



About

- Surya is a Fleet Support Ship (FSS) designed **to provide logistical support and replenishment to naval vessels** while they are operating at sea.
- It is the **first of five Fleet Support Ships** being constructed for the Indian Navy. These vessels are the first of their kind to be designed and **built indigenously in India.**
- It was designed and built by **Hindustan Shipyard Limited (HSL), Visakhapatnam,** a state-owned shipbuilding enterprise under the Ministry of Defence.
- The Fleet Support Ships have more than **82% indigenous content**.
- Its primary purpose is to enhance **the operational reach, endurance and mobility of the Indian Navy,** particularly across the Indian Ocean Region (IOR).

Key Technical Features of Surya

- **Propulsion system:** Equipped with diesel propulsion using a single-shaft configuration and a Controllable Pitch Propeller (CPP).
- **Speed:** Designed to achieve a maximum speed of approximately **20 knots**.
- **Crew complement:** Designed to operate with approximately 190 personnel.
- **Double-bottom and double-hull structure:** Features a double bottom and double hull in cargo-hold areas to enhance survivability and support prolonged naval missions.
- **Helicopter operations:** Capable of handling and operating Multi-Role Helicopters (MRHs).
- **Self-defence systems:** Incorporates self-defence systems to enhance protection during naval operations.

Hindustan Shipyard Limited (HSL)

About HSL:

- It is a government-owned shipbuilding company located in **Visakhapatnam, Andhra Pradesh**.
- It operates under the Ministry of Defence.
- It undertakes shipbuilding, ship **repair and submarine refit-related activities.**
- It attained **Miniratna Category-I status in 2025**, following its administrative transfer under the Ministry of Defence.
- HSL launched **'Jala Usha' in 1948**, the first ship built in independent India, at Visakhapatnam.

Blue-Water Navy

- A navy capable of conducting sustained military operations in deep and distant waters, far beyond its coastal regions.
- Requires advanced warships, aircraft carriers, submarines, logistics vessels and replenishment capabilities.
- Fleet Support Ships are important for maintaining the operational endurance of a Blue-Water Navy.

MANGROL – ANTI-SUBMARINE WARFARE SHALLOW WATER CRAFT

Why in News?

The Indian Navy will commission Mangrol, the third Anti-Submarine Warfare Shallow Water Craft (ASW-SWC) built by Cochin Shipyard Limited (CSL), at the Naval Dockyard in Mumbai

About

- It is the third Anti-Submarine Warfare Shallow Water Craft (ASW-SWC) built by Cochin Shipyard Limited (CSL), Kochi.
- It is named after **Mangrol**, a coastal town and prominent fishing harbour in Gujarat's Junagadh district.
- It is designed to detect and counter underwater threats in coastal and shallow waters.



Features of Mangrol

- It is equipped with modern weapons and sensors, including the **Abhay Hull-Mounted Sonar**, lightweight torpedoes, an indigenous anti-submarine rocket launcher and the **Maareech Advanced Torpedo Decoy System**.
- The ship is powered by **three diesel engines coupled with waterjet propulsion**, providing high manoeuvrability for operations in shallow waters.
- It is capable of undertaking **underwater surveillance, Low-Intensity Maritime Operations (LIMO) and mine warfare-related tasks**.
- It can operate in coordination with maritime patrol aircraft, helicopters and other warships to detect, track and counter submarine threats.

INS SHREYAS

Why in News?

The Indian Navy recently launched INS Shreyas, built by Garden Reach Shipbuilders and Engineers Ltd. (GRSE), marking a milestone in India's indigenous warship-building programme.

About

- It is the third of four next-generation offshore patrol vessels.
- These ships derive their names from India's rich heritage, with this ship being named as '**Shreyas**', meaning 'Best' or 'Most Excellent' in Sanskrit.
- It is being built by defence PSU Garden Reach Shipbuilders and Engineers (GRSE) Ltd for the Indian Navy.

Features of INS Shreyas

- The **Next Generation Offshore Patrol Vessel (NGOPV)** measures approximately **113 metres in length and 14.6 metres in width**.
- It is designed to achieve a maximum speed of **23 knots** and has an operational endurance of approximately **8,500 nautical miles**.
- The vessel is designed to undertake diverse maritime operations, including **coastal and offshore asset protection, maritime interdiction, surveillance, mine warfare and special operations**.

INS SAMARTHAK

Why in the News ?

The Indian Navy commissioned INS Samarthak, its **first indigenous Multi-Purpose Vessel (MPV),** at Karwar Naval Base, Karnataka, on 16 October 2026.



About

- INS Samarthak is the Indian Navy's **first indigenous Multi-Purpose Vessel (MPV)** and the first of two such vessels being inducted into the Navy.
- It was designed and constructed by **Larsen & Toubro (L&T) Ltd.** at its Kattupalli Shipyard, Tamil Nadu, under the Government of India's Make in India initiative.
- It was commissioned into the Indian Navy on **16 October 2026 at Naval Base, Karwar, Karnataka.**
- It has more than **75% indigenous content,** reflecting India's efforts towards Aatmanirbhar Bharat in defence manufacturing.
- It is designed as a versatile utility, trial and evaluation platform for testing and assessing indigenous weapons, sensors and emerging naval technologies.
- It is primarily intended for maritime surveillance and patrolling and can undertake multiple roles, including:
    - **Maritime surveillance and reconnaissance.**
    - **Low Intensity Maritime Operations (LIMO).**
    - **Target deployment and trials of weapons and sensors.**
    - **Launch and recovery of aerial and underwater targets.**
    - **Serving as a mothership for unmanned and autonomous systems.**
    - **Humanitarian Assistance and Disaster Relief (HADR) operations.**
    - **Conversion into a limited hospital ship.**
    - **Salvage operations.**
- Its integrated combat suite combines indigenous sensors, weapons and electronic systems, designed for operations in challenging maritime environments.
- It is equipped with a Dynamic Positioning System for precise manoeuvring during complex maritime operations.
- It strengthens cooperation between the Indian Navy, private shipyards and the domestic defence industry, contributing to indigenous shipbuilding capabilities.

INS TARKASH

Why in the News ?

The Indian Navy's INS Tarkash made a port call at Port Louis, Mauritius.

About

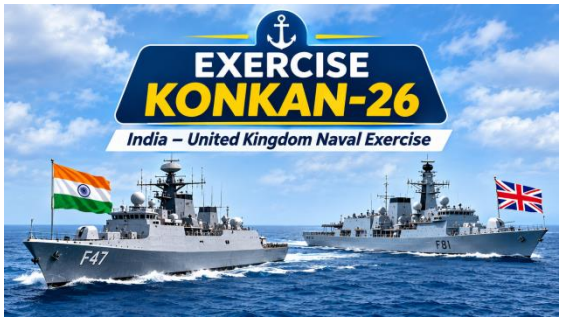


- INS Tarkash is a frontline **guided-missile stealth frigate** of the Indian Navy and belongs to the Talwar-class of frigates.
- It was built by the Yantar Shipyard, Kaliningrad, Russia, and commissioned into the Indian Navy on **9 November 2012.**
- It is designed for multi-dimensional naval warfare, including anti-surface, anti-air and anti-submarine operations.
- It is equipped with advanced weapons, sensors and stealth features, along with an integral **Chetak helicopter.**
- It undertakes overseas operational deployments to strengthen India's maritime presence and cooperation in the Indian Ocean Region (IOR).

- It supports maritime surveillance, anti-piracy operations, protection of Sea Lines of Communication (SLOCs) and regional maritime security.
- It contributes to India's maritime diplomacy through joint exercises, port calls and operational cooperation with friendly countries.

EXERCISE KONKAN-26

Why in News?



The **India-UK bilateral maritime exercise KONKAN-26** concluded off Plymouth, United Kingdom, in October 2026, involving the Indian Navy and the Royal Navy.

About:

- It is a **bilateral maritime exercise** conducted between the **Indian Navy and the Royal Navy of the United Kingdom** to strengthen maritime cooperation.
- Its objective is to enhance interoperability, operational coordination and mutual understanding between the two navies.
- The 2026 edition was conducted off **Plymouth, United Kingdom,** from 8–15 October 2026.
- **Participating Ships:** India was represented by **INS Trishul** (guided-missile stealth frigate), while the UK was represented by **HMS Sutherland** (Duke-class frigate).
- **The exercise comprised two phases: Harbour Phase,** involving professional interactions and cross-deck visits, and **Sea Phase,** involving operational maritime drills.
- Major activities included anti-submarine warfare, anti-surface warfare, air defence exercises, advanced seamanship manoeuvres and weapon firings.
- It strengthens the **India-UK Comprehensive Strategic Partnership** and promotes maritime security and cooperation in **maintaining free, open and secure seas.**

EXERCISE VARUNA-2026

Why in News?



The Indian Navy's **INS Trishul arrived at Toulon, France**, to participate in the 24th edition of Exercise VARUNA, the annual bilateral maritime exercise between India and France.

About:

- It is an **annual bilateral maritime** exercise conducted between the **Indian Navy and the French Navy (Marine Nationale)** to strengthen naval cooperation.
- India-France naval cooperation began in **1983**, and the exercise was formally named **VARUNA in 2001.**
- The **24th edition (2026)** was hosted by **France at Toulon Naval Base**, located on the Mediterranean coast.
- The Indian Navy participated with **INS Trishul, a Talwar-class guided-missile stealth frigate.**
- The exercise comprised two phases: **Harbour Phase, i**nvolving professional interactions and cross-deck visits, and **Sea Phase,** involving joint operational drills.
- Major activities included anti-submarine warfare, anti-surface warfare, live-firing exercises, tactical manoeuvres and cross-deck helicopter operations.

- It enhances **interoperability, maritime security and operational coordination** between the two navies and strengthens the India-France strategic partnership in the **Indo-Pacific region.**

NATIONAL SECURITY GUARD (NSG)

Why in the news?

The Prime Minister extended greetings to National Security Guard personnel, recognising their role in counter-terrorism and national security.



About

- NSG is MHA's **Nodal National Counter Terror Force** to **deal with anti-terrorist activities** in all its manifestation.
- The NSG is a Force specially equipped and trained to deal with specific situations and is therefore, to be used only in exceptional circumstances to thwart serious acts of terrorism.
- Its basic operational philosophy is **swift strike and immediate withdrawal.**
- The **NSG Act, 1986** provides its statutory framework.
- The force is popularly called the **Black Cats**.
- NSG is a **deputation-based force.** Personnel are drawn from the Indian Army, Central Armed Police Forces (CAPFs) and State Police Forces.
- The NSG operates as a two-tier composite force divided into distinct operational wings.
    - Comprising roughly half the force, the **Special Action Group (SAG)** serves as its primary offensive strike arm and is staffed exclusively by personnel deputed from the Indian Army.
    - The **Special Ranger Group (SRG)**—drawn on deputation from the Central Armed Police Forces (CRPF, BSF, ITBP, CISF) and state police forces—manages logistics, perimeter security, tactical support, and VIP protection.
- It is headed by a **Director General.**

Major functions

- **Counter-terrorism**: Neutralising terrorist threats and conducting specialised anti-terror operations.
- **Counter-hijacking**: Handling aircraft hijacking situations.
- **Hostage rescue**: Rescuing hostages during terrorist incidents.
- **Bomb disposal**: Explosive detection, bomb disposal and post-blast analysis.
- **Close protection**: Providing specialised security to designated high-risk protectees.
- **Sky Marshals**: Deployment on selected sensitive domestic and international flights.
- **Capacity building**: Training and conducting joint exercises with State Police and counter-terrorism units.

Important Operations and Initiatives (NSG)

- **Operation Black Tornado:** Counter-terrorist operation conducted during the 2008 **(26/11) Mumbai terror attacks**.
- **Operation COMET:** Deployment of National Security Guard (NSG) commandos as Sky Marshals on selected flights to prevent hijacking.
- **Immediate Backup Security Operations (IBUS):** Provision of high-level security arrangements and rapid backup during important national events.
- **Post-Blast Operation and Analysis:** Technical examination of bomb blast sites and analysis of explosive evidence (handled by the National Bomb Data Centre).

CENTRAL INDUSTRIAL SECURITY FORCE (CISF)

Why in the news?

The Ministry of Home Affairs approved the CISF's administrative and operational restructuring, effective November 1, to strengthen sector-specific security management across critical infrastructure, including power, coal, steel, petroleum and natural gas, ports, airports, and government buildings.



About

- CISF is a **Central Armed Police Force** under the Ministry of Home Affairs.
- Its statutory foundation is the **CISF Act, 1968.**
- Its principal responsibility is **industrial and critical infrastructure security.**
- It provides **security to selected private-sector establishments as well as public-sector units**..
- It has a **dedicated Fire Wing.**
- It is headed by an Indian Police Service officer with the rank of **Director-General**, assisted by an IPS officer in the rank of Addl. Director-General.
    - CISF deployment is generally on a **cost-reimbursement basis.**

Major functions

- The CISF safeguards India's vital infrastructure, including nuclear facilities, space establishments, airports, seaports, and power plants.
- Beyond industrial and strategic hubs, it secures key government complexes like the Parliament House, major transit networks such as the Delhi Metro, and iconic heritage monuments.
- Equipped with specialized disaster management training, CISF personnel actively assist in relief and rescue operations during natural calamities like floods, cyclones, and earthquakes.
- Standing as one of India's largest fire protection service providers, the CISF is uniquely distinguished as the only force maintaining a dedicated, customized fire wing.

Core Forces of CAPF and Their Specialized Wings

- **CRPF:** India's **largest internal security force**, featuring specialized wings like RAF, CoBRA, and PDG.
- **BSF:** Guards the **India–Pakistan and India–Bangladesh borders**; operates air, water, camel, and tear smoke units.
- **CISF:** Secures critical infrastructure, PSUs, nuclear/space centers, historical monuments, and metro networks.
- **ITBP:** Specialized mountain force **guarding the India–China border** and acting as first responders for high-altitude disasters.
- **SSB:** Guards the **open Indo-Nepal and Indo-Bhutan borders**, focusing on intelligence and civic action in remote areas.

INTERNATIONAL RELATIONS

INDIA - EFTA TRADE AND ECONOMIC PARTNERSHIP AGREEMENT

Why in the News?

The Commerce Secretary called for greater utilisation of opportunities under the India–European Free Trade Association Trade and Economic Partnership Agreement (TEPA).

About

It is a free trade and economic partnership agreement signed between India and the European Free Trade Association (EFTA) to promote trade, investment, economic cooperation and employment generation.

Important Provisions of India – EFTA TEPA

Investment commitment

- **US$100 billion FDI** over 15 years.
- Target of **1 million direct jobs**.
- FPI is excluded from the investment commitment

Trade in goods

- EFTA offers **tariff concessions on 100% of non-agricultural product**s.
- India has protected sensitive sectors, including dairy, soya and coal.
- India has also protected selected agricultural products.
- **Gold imports** have special protection under India's offer.

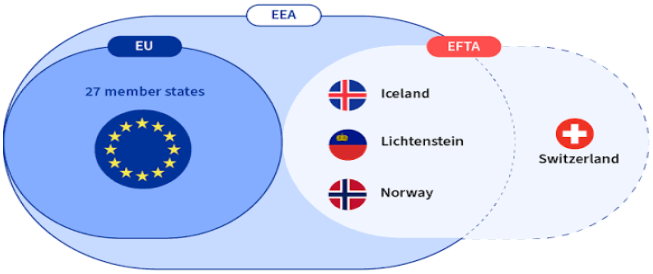
Trade in services

- India has offered commitments in 105 services sub-sectors.
- Covers areas such as IT, business services and professional services.
- Provides a framework for **Mutual Recognition Agreements (MRAs)**.

Intellectual Property Rights

- Includes **provisions on patents and other intellectual property**.
- Relevant to pharmaceuticals and generic medicines.
- Addresses concerns relating to evergreening.

EFTA vs European Union vs European Economic Area



EFTA

- The **European Free Trade Association** is an intergovernmental organization established in **1960** for the promotion of free trade and economic integration.
- It consists of **4 non-EU member states**: **Switzerland, Norway, Iceland, and Liechtenstein**.
- EFTA is not a part of the European Union (EU). However, all four EFTA countries participate in the European Economic Area (EEA), except Switzerland.

INDIA NETHERLANDS AGRICULTURAL COOPERATION

Why in the News?

India and the **Netherlands discussed strengthening agricultural cooperation**, including Centres of Excellence, seed-sector cooperation, market access and agricultural innovation.

About

- The India–Netherlands Agricultural Cooperation is a **bilateral partnership** that

combines India's vast agricultural scale with the Netherlands' global expertise in farming technology, innovation, and sustainable food systems
- India and the Netherlands cooperate in agriculture through a **Joint Working Group (JWG)** on Agriculture.
- **Agriculture, water and health** are important priority areas of bilateral cooperation.
- The partnership focuses on combining India's agricultural resources with Dutch expertise in agricultural technology.

Major areas of cooperation

- **Centres of Excellence (CoEs):** Establishing 25 CoEs across India to demonstrate modern agricultural technologies.
- **Clean Plant Programme (CPCs):** Setting up Clean Plant Centres to supply disease-free horticultural planting material, boosting plant health, productivity, and exports.
- **Dairy & Animal Husbandry:** Operating the Indo-Dutch Centre of Excellence (CEAH) in Bengaluru and advancing collaboration via the May 2026 Joint Declaration.
- **Protected Cultivation:** Utilizing Dutch expertise in polyhouses, greenhouses, hydroponics, drip irrigation, and climate-controlled farming.
- **Seed Sector:** Exploring bilateral cooperation for improved seed quality, technology exchange, and innovation.
- **Food Processing & Safety:** Collaborating in dairy, poultry, and food processing to cut post-harvest losses and upgrade safety standards.

Important Organisations

- **India – FSSAI** (Food Safety and Standards Authority of India).
- **Netherlands – NVWA** (Netherlands Food and Consumer Product Safety Authority).
- Both organisations have an MoU on food safety cooperation.

Netherlands

- **Amsterdam** is the constitutional capital, while **The Hague** is the seat of government and Parliament.
- Located in Western Europe, bordering Germany, Belgium and the North Sea.
- It is a member of the European Union (EU), Eurozone, Schengen Area and NATO but not a member of EFTA. Its currency is the Euro (€).
- Known for advanced greenhouse farming, precision agriculture, horticulture, floriculture and agricultural exports.

INDIA - BANGLADESH RELATIONS

Why in the news?

Bangladesh indicated that activities of former PM Sheikh Hasina and her team remain a major challenge for planning the Bangladesh PM's visit to India.

Background

- India and Bangladesh share historical, cultural, linguistic and geographical ties.
- India played an important role in the **Bangladesh Liberation War** of 1971.
- Bangladesh is important to India's:
  - Neighbourhood First Policy.
  - Act East Policy.
  - Indo-Pacific strategy.
  - Regional connectivity and security.

Major areas of cooperation

- **Trade & Economic Relations:** Largest South Asian trading partner; cooperates in textiles, pharma, and engineering goods, backed by SAFTA duty-free access and INR trade settlement (July 2023).
- **Connectivity & Infrastructure:** Anchored by the Akhaura–Agartala rail link, Petrapole–Benapole land port, and passenger trains (**Maitri**, **Bandhan**, and **Mitali Express**).
- **Inland Waterways:** Facilitated by the 1972 Protocol on Inland Waterways Trade and

Transit (PIWTT), including the Sonamura–Daudkandi route on the Gomati River.
- **Energy Cooperation:** Features the India–Bangladesh Friendship Pipeline, Maitree Super Thermal Power Plant (Rampal), Indian power exports, and 40 MW trilateral hydropower transit from Nepal.
- **River Water Sharing:** Shares 54 transboundary rivers managed via the Joint Rivers Commission (1972), governed by the Ganga Water Treaty (1996), Kushiyara and Feni MoUs, and ongoing Teesta negotiations

Border Management and Security Cooperation

- Border management is coordinated by:
  - **BSF**: Border Security Force (India).
  - **BGB**: Border Guard Bangladesh.
- Both countries conduct Director General-level border coordination conferences.

Important Agreements and Initiatives

- **Land Boundary Agreement (1974):** Settlement of boundary-related issues between India and Bangladesh.
- **2011 Protocol:** Implementation framework for unresolved land boundary issues under the 1974 LBA.
- **Protocol on Inland Water Transit and Trade (PIWTT), 1972:** Framework governing inland waterways trade and transit between the two nations.
- **Ganga Water Treaty (1996):** 30-year agreement regulating the sharing of Ganga waters at the Farakka Barrage.
- **South Asian Free Trade Area (SAFTA):** Regional free trade arrangement promoting duty-free and concessional trade.
- **BBIN Initiative:** Sub-regional connectivity framework targeting seamless motor vehicle transit, transport, and energy interconnection.
- **India–Bangladesh Friendship Pipeline (IBFP):** High-speed diesel pipeline facilitating cross-border petroleum transportation.
- **India–Bangladesh Startup Bridge:** Digital platform driving joint startup ecosystems and entrepreneurial cooperation.

Common Groupings

India and Bangladesh share common membership in BIMSTEC, BBIN, SAARC, IORA, Colombo Security Conclave (CSC), Commonwealth of Nations, Non-Aligned Movement (NAM), G-77, and the United Nations (UN).

Geographical significance

- It is **India's longest land border** with any neighbouring country.
- India shares borders with Bangladesh through **five Indian states**: West Bengal, Assam, Meghalaya, Tripura and Mizoram.
- Bangladesh is surrounded by Indian territory on its west, north and east, with the Bay of Bengal to its south.
- India and Bangladesh **share 54 transboundary rivers.**

INDIA KAZAKHSTAN RELATIONS

What's in the news?

The Prime Minister expressed gratitude to the President of Kazakhstan for his wishes on completing 25 years of service as Head of Government.

Background

- India and Kazakhstan established diplomatic relations on 22 February 1992, following the dissolution of the Soviet Union.
- India and Kazakhstan established a **Strategic Partnership in 2009**.
- Cooperation is driven by shared interests across energy security, trade and investment, defence and counter-terrorism, connectivity, critical minerals, and science and technology.

Major areas of India–Kazakhstan cooperation

- **Energy Cooperation:** Key uranium supplier for India's civilian nuclear program; collaborates in oil, natural gas, and renewables.
- **Defence and Security:** Cooperates in military training, counter-terrorism, and the joint military exercise **KAZIND**.
- **Trade and Economy:** Major Central Asian trade partner, guided by the 1993 India–Kazakhstan Intergovernmental Commission (IGC).
- **Science, Technology and Space:** Joint research and institutional collaboration across IT, space, biotechnology, and pharmaceuticals.
- **Traditional Medicine:** November 2025 MoU between India's Ministry of AYUSH and Kazakhstan's Ministry of Health to promote Ayurveda.

Connectivity and Transport

- Kazakhstan is important for India's **connectivity with Central Asia** and Eurasia.
- India is interested in developing alternative transport routes to access Central Asian markets.
- Important initiatives:
  - **International North-South Transport Corridor (INSTC)**: A multimodal transport corridor connecting India with Iran, the Caspian region, Russia and Europe.
  - **Chabahar Port:** Provides India with an alternative route to Afghanistan and Central Asia.
  - **Ashgabat Agreement**: Facilitates international transport and transit corridors between Central Asia and the Persian Gulf.
  - **Trans-Caspian International Transport Route (Middle Corridor)**: Connects Central Asia with Europe through the Caspian Sea and the South Caucasus.

Common groupings

Shanghai Cooperation Organisation (SCO), Conference on Interaction and Confidence-Building Measures in Asia (CICA), United Nations (UN), BRICS Plus, India-Central Asia Dialogue.

Kazakhstan

- Largest landlocked country in the world and largest country in Central Asia.
- It shares borders with Russia, China, Kyrgyzstan, Uzbekistan and Turkmenistan.
- Water bodies: Caspian Sea and Aral Sea.
- Natural resources: Uranium, petroleum, natural gas, coal and critical minerals.

INDIA UAE RELATIONS

Why in the news?

External Affairs Minister S. Jaishankar welcomed UAE Foreign Minister Sheikh Abdullah bin Zayed Al Nahyan in Mumbai to discuss bilateral relations and strengthen India–UAE cooperation.

Background

- India and the United Arab Emirates (UAE) share historically **strong trade, cultural and maritime relations.**
- Diplomatic relations were established in 1972.
- The UAE is a member of the **Gulf Cooperation Council (GCC), OPEC and OPEC+**..

Important Agreements and Partnerships – India–UAE

- **Comprehensive Strategic Partnership (CSP)2017**: Strengthened cooperation in defence, trade, energy and technology.
- **Comprehensive Economic Partnership Agreement (CEPA)2022**: Aims to reduce/eliminate customs duties and enhance bilateral trade in goods and services.
- **Local Currency Settlement System (LCSS)**:Enables bilateral trade settlements using Indian Rupee (INR) and UAE Dirham (AED). Reduces dependence on third-country currencies.

- **UPI–AANI Linkage**: Connects India's Unified Payments Interface (UPI) with UAE's AANI payment platform. Facilitates cross-border digital payments.
- **Bilateral Investment Treaty (BIT)2024**: Aims to promote and protect investments between the two countries.
- **India–UAE Virtual Trade Corridor**: Promotes digitalisation of trade documentation and logistics. Aims to improve supply-chain efficiency and facilitate paperless trade.

Major areas of India–UAE cooperation

- **Economic & Trade Relations:** Major trading partner and foreign investor; India exports gems, machinery, textiles, and pharma while importing crude oil, gold, and diamonds, alongside reciprocal infrastructure investments.
- **Energy Cooperation:** Key crude oil supplier collaborating on solar power, green hydrogen, nuclear energy, and energy security.
- **Defence & Security:** Joint exercises (**Desert Cyclone** and **Desert Eagle**) alongside maritime security, counter-terrorism, and anti-money laundering cooperation.
- **Science, Tech & Space:** IN-SPACe and UAE Space Agency space collaboration, plus a G42–C-DAC partnership to build an 8-exaflop supercomputer under India's AI Mission.

Common Groupings:

BRICS, I2U2, India–Middle East–Europe Economic Corridor (IMEC), International Solar Alliance (ISA), World Trade Organization (WTO), International Monetary Fund (IMF) and United Nations (UN).

Important Places

- **Abu Dhabi**: Capital of UAE.
- **Dubai**: Major commercial and financial centre.
- **Fujairah**: Located on the Gulf of Oman. Important oil storage and bunkering centre. Provides access to the Indian Ocean outside the Strait of Hormuz.
- **Jebel Ali Port**: Located in Dubai. One of the largest ports in the Middle East.

INDIA–POLAND RELATIONS

Why in News:

India and Poland issued a joint statement and a list of outcomes following the official visit of the Prime Minister of Poland to India.

Background

- Diplomatic relations established on 30 March 1954.
- 2024 marked the 70th anniversary of diplomatic relations.
- Both countries adopted a **Five-Year Joint Action Plan (2024–2028).**

Important Agreements and Partnerships

- **Strategic Partnership (2024)**: Elevated bilateral relations to the level of Strategic Partnership. Covers political, economic, defence, technology and cultural cooperation.
- **Joint Action Plan (2024–2028)**: Provides a framework for implementing the Strategic Partnership. Focuses on security, defence, trade, energy, technology and people-to-people relations.
- **Agreement on Social Security:** Aims to strengthen social security cooperation and address issues relating to workers in both countries.
- **Foreign Office Consultations (FOC)**: Institutional mechanism for bilateral diplomatic discussions. Regular consultations have been held since 1996.

- **India–Poland Policy Planning Dialogue**: Provides a platform for discussing strategic and international developments. First dialogue held in 2021.

Major areas of India–Poland cooperation

- **Economic & Trade Relations:** Key Central European partner across IT, pharma, mining, and automotive sectors; hosts Indian firms (TCS, Infosys, Wipro, HCL, Uflex) with Polish investments in Indian manufacturing and packaging.
- **Defence & Security:** Cooperates in defence manufacturing, cybersecurity, counter-terrorism, and space security, anchored by the **Defence Industry Dialogue** proposed in October 2026.
- **Education, Science & Tech:** Collaborates in AI, semiconductors, space research, and critical minerals, supported by academic links like Sanskrit and Indology studies at **Jagiellonian University**.

Common Groupings and Organisations

- United Nations (UN), World Trade Organization (WTO), International Monetary Fund (IMF), World Bank and World Health Organization (WHO).
- **V4+India:** Poland, Hungary, Czech Republic and Slovakia constitute the **Visegrad Group (V4)**; India participates in the V4+India format.

Important Geographical Facts about Poland

- Capital: **Warsaw**.
- **Borders:** Germany, the Czech Republic, Slovakia, Ukraine, Belarus, Lithuania, Russia (Kaliningrad) and the Baltic Sea.
- Important river: **Vistula.**
- Poland is a member of the **European Union (EU) and NATO.**

OPEC'S REVISION OF INDIA'S 2026 OIL DEMAND GROWTH FORECAST

Why in the News?

OPEC revised India's projected oil demand growth for 2026 downward to 40,000 barrels per day (bpd), drawing attention to India's energy demand outlook, crude oil import dependence and exposure to fluctuations in global oil markets.

Key Details of the Revision

- **2026 Oil Demand Growth Forecast:** Lowered to **40,000 barrels per day (bpd)**, down from the **60,000 bpd** projected in the previous September report.
- **Overall India Oil Demand:** With this revision, India's total oil demand is expected to reach approximately **5.7 million barrels per day (mb/d)** for 2026.
- **Driving Factors:** Despite the slower growth pace, demand continues to be supported by consumption of gasoline and diesel driven by steady vehicle sales, manufacturing, and agricultural activities.
- **2027 Outlook:** OPEC's projection for India's oil demand growth into 2027 remains **unchanged**.
- **Global Context:** The revision for India aligns with OPEC's broader trim of global oil demand growth for 2026 down to **0.2 mb/d** (from 0.4 mb/d previously), while global demand growth for 2027 is projected to rebound to **2.6 mb/d**

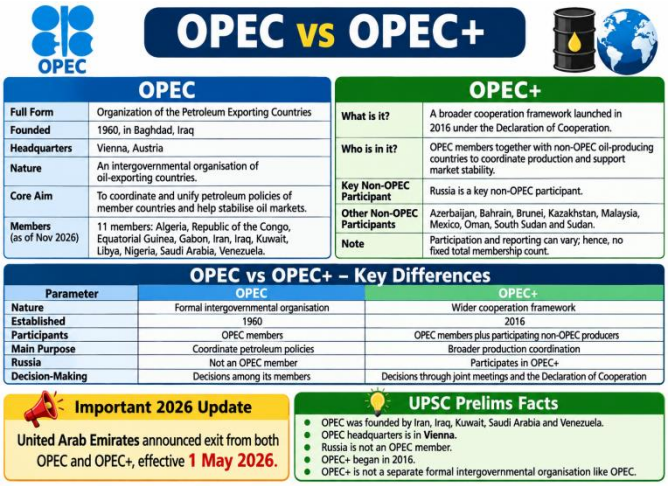
Significance for the Indian Economy

- **Import dependence**: India imports a substantial share of its crude oil requirements.
- **Current Account Deficit (CAD)**: Higher crude oil import expenditure can widen the CAD.
- **Inflation**: Rising crude prices increase transportation and production costs.
- **Fiscal implications**: Higher oil prices can increase subsidy and fiscal pressures.
- **Energy security**: Highlights the need for diversification of energy sources and suppliers.

- **Foreign exchange**: Higher oil import bills increase demand for foreign currency, particularly US dollars.

OPEC

- **Organization of the Petroleum Exporting Countries (OPEC)** is a permanent **intergovernmental organisation** established in 1960 at the Baghdad Conference in Iraq, headquartered in Vienna, Austria.
- **Founding Members**: Iran, Iraq, Kuwait, Saudi Arabia and Venezuela.
- **Objective**: Coordinate petroleum policies of member countries and stabilise international oil markets.
- **Total members (12)**: Algeria, Republic of the Congo, Equatorial Guinea, Gabon, Iran, Iraq, Kuwait, Libya, Nigeria, Saudi Arabia, UAE, and Venezuela
- **OPEC Fund for International Development (OFID)**: Provides development finance to developing countries; headquartered in Vienna.
- **OPEC Membership**: Membership is open to countries that are substantial net exporters of crude petroleum and share the organisation's interests, subject to approval.



PLACES IN NEWS

KALININGRAD

Why in the news?

Russia has warned NATO it would be ready to resort to nuclear weapons if the Western alliance attempted to cut off **Kaliningrad**, a Russian exclave that borders the Baltic Sea.

About

- Kaliningrad is a **Russian semi-exclave** on the Baltic Sea
- It is Russia's **westernmost federal subject** (Oblast).
- It is bordered by **Poland** to the south, **Lithuania** to the north and east, and the **Baltic Sea** to the west.
- It was historically part of **East Prussia** and was known as **Konigsberg**.
- Following the Second World War, the region was transferred to the Soviet Union within the Russian SFSR and its German population was largely displaced, but the 1991 dissolution of the Soviet Union left it geographically isolated as an exclave separated from mainland Russia by the newly independent nations of Lithuania and Belarus.



Exclave & Semi-exclave

- An exclave is a portion of a state or district that is geographically separated from the main part and completely surrounded by one or more foreign territories (on land).
- A semi-exclave is similar, except it also possesses a border with a body of water (such as a sea or ocean) that allows direct access to international waters or the main territory.

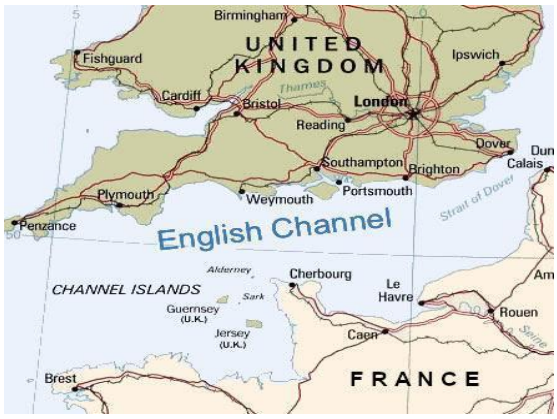
ENGLISH CHANNEL

Why in the news?

A Paris court sentenced 13 members of a migrant smuggling network to prison terms of up to 10 years for their roles in the November 2021 English Channel disaster.

About

- A narrow arm of the Atlantic Ocean **separating southern England (Great Britain) from northern France,** connected to the North Sea via the Strait of Dover.
- Approximately 563 km long, 246 km wide at its widest point, and spanning an area of roughly 75,000 sq. km (making it Europe's smallest shallow shelf sea).
- **Strait of Dover:** The narrowest section of the Channel, measuring just 34 km across.
- Features a temperate maritime climate characterized by cool-to-cold winters and warm summers.
- Major Islands includes the **Isle of Wight and the Channel Islands**, which consist of Jersey, Guernsey, Alderney, and Sark
- It is **one of the world's busiest shipping areas**. It accounts for up to 20% of the global maritime trade and connects the Atlantic Ocean to the North Sea.
- **Major Ports**:
  - United Kingdom: Dover, Portsmouth, Southampton
  - France: Calais, Cherbourg, Le Havre



Channel Tunnel

- A 50 km **rail tunnel beneath the English Channel** connects England to France.
- Consists of **three parallel tubes**—two dedicated to rail traffic and a central tunnel designated for services and security operations.
- It has the **longest undersea portion of any tunnel in the world** (37.8 km).
- Serves as the sole permanent, continuous connection linking the island of Great Britain directly with the European mainland.

LIECHTENSTEIN

Why in the News?

The President of India hosted Hereditary Prince Alois and Princess Sophie of Liechtenstein, while the Prime Minister also met the Hereditary Prince to strengthen bilateral relations.

About

- A small, alpine, and **"doubly landlocked"** nation situated along the banks of the **Rhine River** in Central Europe.
- **Bordering Countries:** Bound by **Austria** to its north and east, and by **Switzerland** to its south and west.
- **Capital:** Vaduz.
- The country's terrain features the Alpine mountains across its eastern region, while the western half is defined by the Rhine River valley.
- **Vorder Grauspitz** serves as Liechtenstein's peak elevation, rising to 8,526 feet (2,599 meters).
- **Lake Gampriner Seele** is the nation's sole lake.
- The two primary rivers coursing through the territory are the **Rhine** and the **Samina**.
- Liechtenstein **disbanded its military** in 1868 following the Austro-Prussian War and has not maintained a standing army since and **relying on national police for internal security**. Its constitution also prohibits a permanent army

Double-landlocked country

- A **double-landlocked country** is a nation that is not only landlocked itself, but is also completely surrounded by other landlocked countries.
- There are only **two** double-landlocked countries in the world:
    - **Liechtenstein** (Central Europe): This Alpine microstate is completely surrounded by **Switzerland** and **Austria**, both of which are also landlocked.
    - **Uzbekistan** (Central Asia): This former Soviet republic is completely surrounded by **Kazakhstan, Kyrgyzstan, Tajikistan, Afghanistan, and Turkmenistan**, all of which are landlocked.

SCHEMES

NATIONAL SOCIAL ASSISTANCE PROGRAMME (NSAP)

Why in the News?

The Union Cabinet has approved the continuation of the National Social Assistance Programme (NSAP) for five years, from 2026–27 to 2030–31.

About

- The **National Social Assistance Programme (NSAP)** was launched on **15 August 1995** to provide social assistance to poor and vulnerable households.
- It is a **Centrally Sponsored Scheme (CSS)** implemented by the **Ministry of Rural Development**, supporting eligible elderly persons, widows, persons with disabilities and bereaved families.
- It gives effect to **Article 41 of the DPSP**, which provides for public assistance in cases of unemployment, old age, sickness and disablement.
- It comprises five components:
  - **Indira Gandhi National Old Age Pension Scheme (IGNOAPS)**
  - **Indira Gandhi National Widow Pension Scheme (IGNWPS)**
  - **Indira Gandhi National Disability Pension Scheme (IGNDPS)**
  - **National Family Benefit Scheme (NFBS)**
  - **Annapurna Scheme**
- The Union Cabinet approved its continuation for **2026–27 to 2030–31**, with an outlay of **₹53,428 crore**, under the name ***Pradhan Mantri Samajik Sahayata Yojana***.
- The revised disability pension provisions reduce the benchmark disability criterion from **80% to 40%** and remove the minimum age limit.
- Disability pension assistance is **₹375 per month for beneficiaries aged 0–79 years** and **₹625 per month for those aged 80 years and above**.
- The approval is expected to benefit **3.20 crore beneficiaries across all 36 States and Union Territories**.
- The revised disability eligibility criteria align with the **Rights of Persons with Disabilities Act, 2016**.

RASHTRIYA VAYOSHRI YOJANA (RVY)

Why in the News?

The Ministry of Social Justice and Empowerment distributed **662 assistive devices worth over ₹10 lakh to 114 senior citizens** in Delhi-NCR under the Rashtriya Vayoshri Yojana.

About

- The **Rashtriya Vayoshri Yojana (RVY)** was launched on **1 April 2017** by the Ministry of Social Justice and Empowerment.
- It is a **Central Sector Scheme** under the **Atal Vayo Abhyuday Yojana (AVYAY)**.
- The scheme aims to provide **free assistive-living devices** to senior citizens suffering from age-related disabilities and infirmities.
- **Eligibility:** Senior citizens aged **60 years and above** belonging to eligible low-income groups, as per scheme guidelines.

- **Assistive devices:** Walking sticks, walkers, hearing aids, wheelchairs, spectacles and artificial dentures.
- **Implementing agency:** Artificial Limbs Manufacturing Corporation of India (**ALIMCO**), under the Ministry of Social Justice and Empowerment.
- The scheme promotes **independent living, mobility and dignity** among senior citizens.

VB-G RAM G

Why in the News?

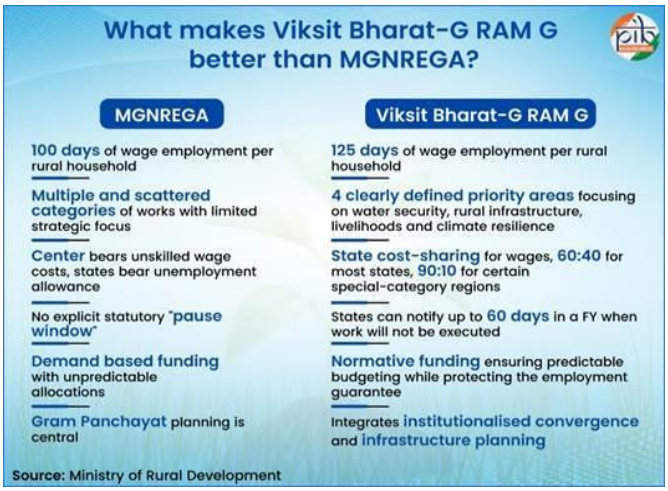
The VB-G RAM G Act, 2025, generated **31.69 crore person-days of employment**, benefiting over **2.81 crore workers**, with **61.65% women's participation** as of 24 September 2026, replacing MGNREGA from 1 July 2026.

About

- **Viksit Bharat–Guarantee for Rozgar and Ajeevika Mission (Gramin) (VB-G RAM G)** aims to strengthen rural livelihood security, reduce poverty and promote sustainable rural development through guaranteed wage employment.
- It is implemented by the **Ministry of Rural Development**.
- The Act guarantees **125 days of wage employment per financial year** to every eligible rural household whose adult members volunteer for unskilled manual work.
- It focuses on **water security, core rural infrastructure, livelihood-related infrastructure and mitigation of extreme weather events**.
- It promotes **Viksit Gram Panchayat Plans (VGPPs)** through participatory, bottom-up planning by Gram Panchayats and Gram Sabhas.

Key Features

- **Employment Guarantee:** Increases the statutory employment guarantee from 100 to 125 days per rural household annually.
- **Planning:** Integrates Gram Panchayat-level plans into broader rural development planning.
- **Digital Monitoring:** Uses technology, geo-tagging and digital tools to enhance transparency and accountability.
- **Unemployment Allowance:** Provides an allowance if employment is not provided within the prescribed period.
- **Funding Pattern:** 90:10 for North-Eastern and specified Himalayan States and 60:40 for other States and Union Territories with legislatures.



JAL JEEVAN MISSION 2.0

Why in the News?

The Department of Drinking Water and Sanitation organised a national-level Training of Trainers programme on 23 October 2026 to strengthen community-led management of rural drinking water systems under Jal Jeevan Mission 2.0.

About

- **Jal Jeevan Mission (JJM)** aims to provide safe and adequate drinking water through household tap connections to rural households.
- The mission is implemented by the **Department of Drinking Water and Sanitation, Ministry of Jal Shakti**.
- JJM 2.0 emphasises the sustainability of rural drinking water systems through community participation and effective local management.

- It strengthens the role of **Gram Panchayats, Village Water and Sanitation Committees (VWSCs)** and community institutions in managing village water supply systems.
- It promotes community participation in water distribution, operation and maintenance, water quality monitoring and source protection.
- A capacity-building package titled *The Story of Panipur* comprises **eight modules** to train grassroots institutions in rural drinking water management.
- The mission promotes convergence with Gram Panchayat Development Plans (GPDPs), Panchayati Raj Institutions and other rural development programmes.
- It emphasises financial sustainability through user charges, water conservation and community ownership to ensure the long-term functionality of rural drinking water infrastructure.

DEEN DAYAL UPADHYAYA GRAMEEN KAUSHALYA YOJANA (DDU-GKY)

Why in the News?

The Ministry of Rural Development signed an MoU with the National Academy of RUDSETI on **12 October 2026** to strengthen rural skill training and entrepreneurship through Rural Self Employment Training Institutes (RSETIs).

About

- DDU-GKY is a **Centrally Sponsored Scheme** launched on **25 September 2014** under the Deendayal Antyodaya Yojana–National Rural Livelihoods Mission (DAY-NRLM).
- It aims to provide **placement-linked skill training and wage employment** to poor rural youth.
- The scheme is implemented by the **Ministry of Rural Development**.
- It primarily targets rural youth aged **15–35 years** from poor households.
- **DDU-GKY 2.0**, introduced through revised guidelines in May 2025, emphasises industry-aligned training, sustainable employment and post-placement support.
- It promotes social inclusion through mandatory coverage of **50% SC/ST candidates, 33% women and 5% persons with disabilities**.
- Training is offered in sectors such as healthcare, agriculture, aviation, textiles and green jobs, based on industry requirements.
- As of September 2026, the scheme had trained **over 18.47 lakh candidates**, with **over 12.43 lakh placed** in employment.

PM-DAKSH SCHEME

Why in the News?

PM-DAKSH was highlighted following the release of its evaluation findings, which reported positive skill development outcomes, and its merger with PMKVY from 2024–25 to avoid duplication.

About

- Pradhan Mantri Dakshta Aur Kushalta Sampann Hitgrahi (PM-DAKSH) is a Central Sector Scheme launched in 2020–21 to provide skill training to disadvantaged sections.
- It aims to improve employability, promote self-employment and support the socio-economic development of marginalised communities.
- It targets SCs, OBCs, EWSs, De-notified Tribes (DNTs) and Safai Karamcharis, including waste pickers.
- It was implemented by the Ministry of Social Justice and Empowerment through three corporations: NSFDC, NBCFDC and NSKFDC.
- Training covered short-term courses, upskilling, reskilling and entrepreneurship development.
- Training was provided free of cost through empanelled institutes, with courses aligned to industry requirements and employment opportunities.

- Institutes were required to ensure wage employment and/or self-employment for at least 70% of candidates trained under short-term course

PRADHAN MANTRI VIKSIT GRAM SWARAJ YOJANA (PM-VGSY)

Why in the News?

The Union Cabinet approved the Pradhan Mantri Viksit Gram Swaraj Yojana (PM-VGSY) to strengthen grassroots governance and improve the functioning of Panchayati Raj Institutions.

About

- The Pradhan Mantri Viksit Gram Swaraj Yojana (PM-VGSY) aims to strengthen Gram Panchayats as empowered, self-reliant and accountable institutions through participatory planning, digital governance and efficient resource utilisation.
- It is implemented by the Ministry of Panchayati Raj as a Centrally Sponsored Scheme (CSS) for 2026–27 to 2030–31.
- It has a total outlay of ₹7,395.55 crore, comprising a Central share of ₹4,869.48 crore and a State share of ₹2,526.07 crore.
- It covers all States and Union Territories, including over 2.55 lakh Panchayats and Traditional Local Bodies.
- It promotes Gram Panchayat Development Plans (GPDPs) by integrating local priorities, government schemes and available resources.
- It strengthens digital governance through eGramSwaraj and AuditOnline for improved planning, accounting, auditing and transparency.
- It promotes capacity building for elected representatives and Panchayat functionaries and encourages Own Source Revenue (OSR) mobilisation.
- It encourages citizen participation through Gram Sabhas and digital tools, including PANCHAM, an AI-enabled multilingual platform supporting 17 Indian languages.
- It is expected to benefit around 32 lakh elected representatives, Panchayat functionaries and other stakeholders.

TERMS AND INITIATIVES

RELIEF SCHEME

Why in News?

The Ministry of Commerce and Industry extended the operational timelines of Component II of the RELIEF Scheme until 31 March 2027 to support Indian exporters facing continued geopolitical disruptions in West Asia and their impact on maritime logistics.

About

- RELIEF (Resilience & Logistics Intervention for Export Facilitation) scheme was launched by the Ministry of Commerce & Industry.
- It is a time-bound and targeted measure aimed at mitigating the impact of rising logistics costs, higher insurance premiums, and war-related risks affecting export consignments moving to or through the Gulf region.
- It was launched under the Export Promotion Mission (EPM).
- The scheme comprises three key components
- Enhanced insurance coverage: Exporters with existing ECGC insurance will receive up to 100% risk coverage for eligible consignments shipped between February 14 and March 15, 2026, without additional cost.
- Support for upcoming shipments: Exporters planning shipments between March 16 and June 15, 2026, can avail up to 95% risk coverage with government support, helping sustain trade flows.
- Relief for MSMEs: Small exporters without ECGC cover during the disruption period will be eligible for partial reimbursement of up to 50% of increased freight and insurance costs, subject to a ceiling of ₹50 lakh per exporter.
- Geographical Coverage: The scheme will cover shipments destined for countries including the United Arab Emirates, Saudi Arabia, Qatar, Oman, Kuwait, Bahrain, Iraq, Iran, Israel and Yemen.
- Implementing Agency: The Export Credit Guarantee Corporation of India has been designated as the nodal implementing agency responsible for verification, claim processing, disbursement, and monitoring.

CHINTAN SHIVIR 2026

Why in News?

The Ministry of Road Transport and Highways (MoRTH) organised Chintan Shivir 2026, a two-day national conclave on highway infrastructure at Ekta Nagar, Gujarat, under the theme "GatiShakti se Pragati", to strengthen Centre–State coordination and deliberate on safe, sustainable and high-quality highway development.

About

- Chintan Shivir literally means **"Contemplation Camp" or "Reflective Deliberation."**
- It is a platform where policymakers, government officials and stakeholders come together to **discuss issues, exchange ideas and develop practical solutions.**
- **Objective:** To promote collaborative decision-making, policy improvement and effective implementation by identifying challenges, sharing best practices and developing actionable solutions.

PERM (PROGRAM ELECTRONIC REVIEW MANAGEMENT)

Why in News?

The US Department of Labor suspended eight major technology and IT companies, including Infosys, TCS, Wipro, HCL, Cognizant, Microsoft and Adobe, from the PERM programme over alleged fraud and misuse of foreign-worker hiring provisions

About

- PERM is an **employer-driven process** in which the US employer files the labour

certification application on behalf of the foreign worker.

- Before filing the PERM application, the **employer must obtain a prevailing wage** determination for the concerned position.
- The employer must **undertake prescribed recruitment** to demonstrate that employing a foreign worker will not adversely affect the employment opportunities of US workers.
- Once the US Department of Labor certifies the application, the employer can proceed to the subsequent **stages of the employment-based Green Card process**.
- The date on which the Labour Department accepts the labour certification application generally becomes the worker's priority date, which determines their position in the Green Card queue.
- The priority date is particularly important for Indian workers because demand for employment-based Green Cards from India is much higher than their availability.

Difference between PERM and H-1B

- *The H-1B is **a temporary, non-immigrant work** visa that allows US employers to employ foreign professionals in speciality occupations.*
- *PERM, in contrast, **is part of the process through which an employer seeks permanent residency** for a foreign worker.*
- *The H-1B therefore **provides a temporary employment pathway,** whereas PERM facilitates the transition towards an employment-based Green Card.*
- *The **two processes can operate simultaneously** because an Indian professional may work in the US on an H-1B visa while their **employer separately sponsors them for a Green Card through PERM.***
- *A suspension of PERM filings by itself **does not cancel an employee's existing** H-1B status or an already-issued Green Card.*

BHASHINI

Why in News?

The Digital India BHASHINI Division, under the Ministry of Electronics and Information Technology (MeitY), enabled real-time multilingual communication through its Shrutlekh platform at the National Centre for Good Governance (NCGG) programme for international civil servants in Mussoorie, facilitating English–Spanish translation.

About

- **BHASHINI (BHASHa INterface for India) is an AI-powered language translation platform** developed by the Ministry of Electronics and Information Technology (MeitY) under the National Language Translation Mission (NLTM).
- It aims to **bridge language barriers and promote digital inclusion by making digital content and government services accessible in Indian languages,** particularly in governance, science and technology.
- It uses Artificial Intelligence (AI) and Natural Language Processing (NLP) to provide services such as text translation, speech recognition, text-to-speech conversion, Optical Character Recognition (OCR), and video and document translation across more than 22 Indian languages.
- Implemented by the **Digital India BHASHINI Division under Digital India Corporation,** it also provides APIs for startups to integrate multilingual services into their platforms.
- Its Bhashadaan initiative enables citizens to contribute language datasets through crowdsourcing. Further, its collaboration with **NPCI facilitates conversational UPI payments in Indian languages.**

SUVIKALP – MINE REPURPOSING TOOL

Why in News?

The Coal Controller Organisation (CCO), under the Ministry of Coal, developed SUVIKALP – Mine Repurposing Tool, a specialized digital decision-support platform to convert closed and abandoned

coal and lignite mines into productive, sustainable assets.

About

- SUVIKALP is an indigenous digital decision-support platform developed by the **Coal Controller Organisation (CCO)** under the **Ministry of Coal** to identify and rank sustainable land-use options for abandoned or exhausted coal and lignite mines.
- It **aims to promote scientific, transparent and participatory mine closure**, balancing environmental restoration, technical feasibility and community livelihoods.
- It integrates **geological, mining, infrastructure, environmental and financial data** to assess alternative uses such as eco-parks, floating solar projects, afforestation, agriculture and industrial hubs.
- The **platform uses the TOPSIS-based Multi-Criteria Decision-Making (MCDM)** method to evaluate and rank alternative land-use options. Its five-stage assessment includes factor selection, option generation, community priorities, suitability analysis and final ranking.
- It incorporates the RECLAIM Framework to consider community preferences and livelihood needs, while its PRISM module supports implementation through model Detailed Project Reports (DPRs), concept notes, case studies and tender documents.

WEB CRAWLING

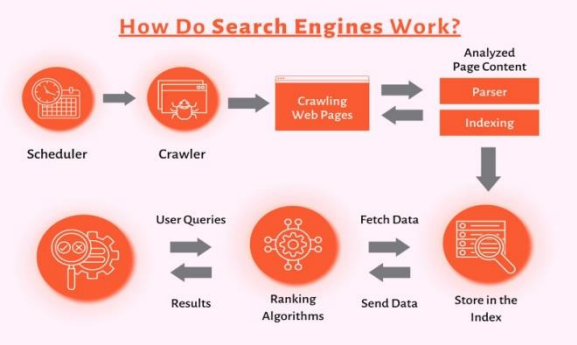
Why in News?

Web crawling gained attention amid growing concerns over the use of automated bots by AI companies to collect online content for training generative AI models, raising issues relating to copyright infringement, data privacy and fair compensation for digital publishers. The issue has also featured in the legal dispute between ANI and OpenAI before the Delhi High Court.

About

Web Crawling is the automated process of systematically **exploring the World Wide Web** using software programmes called **web crawlers, spiders or bots to discover, access and retrieve information from webpages.**

- It involves automatically visiting webpages and following hyperlinks to discover new or updated content.
- The collected information helps search engines organise webpages and make them accessible through search results.
- **Examples**: Googlebot (Google) and Bingbot (Microsoft Bing).



Applications of Web Crawling

- **Search Engines:** Helps Google and Bing discover new webpages and update their search indexes.
- **Artificial Intelligence:** Helps AI systems access publicly available online information for specified purposes, subject to applicable access restrictions.
- **E-commerce:** Enables monitoring of product availability and prices.
- **Research and Data Analysis:** Helps collect large volumes of online information for research.
- **News Monitoring:** Helps identify new articles, reports and developments.
- **Cybersecurity:** Can help identify exposed webpages, suspicious links and website vulnerabilities.

SOCIAL ISSUES

PC&PNDT ACT

Why in the News?

The **Ministry of Health and Family Welfare** held a workshop on **1 October 2026** to strengthen PC&PNDT Act enforcement and prevent sex selection. India's sex ratio at birth rose from **898 to 918 females per 1,000 males** (2014–16 to 2022–24).

About

- The **Pre-Conception and Pre-Natal Diagnostic Techniques (Prohibition of Sex Selection) Act, 1994** aims to prevent sex selection and misuse of prenatal diagnostic techniques for sex determination.
- Enacted in **1994**, it came into force in **1996** and was amended in **2003** to include pre-conception sex selection and strengthen regulation.
- It regulates prenatal diagnostic techniques for detecting specified genetic and congenital abnormalities.
- It is implemented by the **Ministry of Health and Family Welfare** through Appropriate Authorities and supervisory bodies at the Central and State levels.

Key Provisions

- **Prohibition of Sex Selection:** Bans sex selection before and after conception.
- **Registration:** Requires genetic counselling centres, laboratories and clinics to register under the Act.
- **Regulation of Techniques:** Permits prenatal diagnostic techniques only for specified medical purposes.
- **Prohibition of Sex Determination:** Bans disclosure of the fetus's sex to pregnant women or their relatives.
- **Ban on Advertisements:** Section 22 prohibits advertisements relating to sex selection or sex determination, including online content.
- **Appropriate Authorities:** Empowered to enforce the Act, investigate violations and suspend or cancel registrations.
- **Penalties:** Prescribes imprisonment and fines; medical professionals may also face action against their professional registration.
- **Digital Monitoring:** Includes monitoring prohibited online content, coordinating with digital intermediaries and using the **Sahyog Portal** to address violations.

PROTECTION OF CIVIL RIGHTS (PCR) ACT AND SC/ST (PREVENTION OF ATROCITIES) ACT

Why in the News?

The **Ministry of Social Justice and Empowerment** reported the release of **₹1,423.30 crore** to States and UTs during **2022–23 to 2024–25** to strengthen implementation of both Acts through special courts, victim relief and awareness initiatives.

About

- **Protection of Civil Rights (PCR) Act, 1955:** Enacted to enforce the abolition of untouchability under **Article 17 of the Constitution** and penalise its practice.
- **SC/ST (Prevention of Atrocities) Act, 1989:** Prevents atrocities against SCs and STs and provides legal protection, relief and rehabilitation to victims.
- Both Acts are implemented by **State Governments and UT Administrations**, with Central assistance through a **Centrally Sponsored Scheme**.
- The scheme is supported by the **Ministry of Social Justice and Empowerment**.

Key Features

- **Special Courts:** 217 Exclusive Special Courts established in 15 States and UTs for speedy trials.

- **Central Assistance:** ₹1,423.30 crore released during 2022–23 to 2024–25.
- **Victim Relief:** Provides financial assistance, relief and rehabilitation to victims.
- **Protection Mechanisms:** Supports SC/ST Protection Cells, Special Police Stations and judicial infrastructure.
- **SAMBAL Helpline:** National Helpline Against Atrocities enables grievance registration and tracking. Helpline numbers: **14566 and 1800-202-1989**.
- **Awareness:** Supports campaigns, workshops and training on legal rights and safeguards.
- **Inter-caste Marriage Incentives:** Provides financial incentives for marriages involving one SC spouse to promote social integration.

DIGITAL PAYMENTS & CYBERCRIME – SPIR 2026

Why in the News?

The **Status of Policing in India Report (SPIR) 2026**, released by **Common Cause and Lokniti–CSDS**, highlighted rising cybercrime risks associated with digital payments and gaps in police response, complaint reporting and fund recovery.

About

- **SPIR 2026** examines citizens' experiences with cybercrime, digital fraud and police response.
- It surveyed **8,306 people across 16 States**.
- It highlights scams such as **fake bank calls, phishing, fraudulent investments, impersonation and digital arrest**.
- Cybercrime includes online financial fraud, identity theft and digital cheating.
- **Police and public order are State subjects**; State and UT agencies investigate cybercrime with Central support.

Key Findings in the Report

- **Rising Cybercrime:** Cases increased by **17.9%**, from 86,420 (2023) to 1,01,928 (2024), according to NCRB data.
- **Common Scams:** 33% received fake delivery calls, 31% encountered investment offers and 27% received fake bank calls.
- **Victimisation:** 13% experienced cybercrime; among them, 54% faced financial fraud and 23% lost over ₹20,000.
- **Digital Exposure:** 46% of frequent internet users reported moderate-to-high scam exposure, compared with 19% of non-users.
- **Under-reporting:** Only 49% lodged police complaints, while 39% did not report incidents.
- **Police Corruption:** 27% of complainants paid bribes, rising to 51% among poor victims and 12% among affluent victims.
- **Trust Paradox:** Frequent UPI users and those with greater trust in digital payments reported higher cybercrime victimisation.

Initiatives Taken So Far

- **Indian Cyber Crime Coordination Centre (I4C):** Established by the Ministry of Home Affairs to coordinate cybercrime prevention, investigation and response.
- **National Cyber Crime Reporting Portal (NCRP):** Enables citizens to report cybercrime online.
- **Helpline 1930:** Provides immediate assistance in reporting financial cyber fraud.
- **Citizen Financial Cyber Fraud Reporting and Management System (CFCFRMS):** Facilitates coordination with banks and financial institutions to help prevent fraudulent funds from being withdrawn.
- **Cyber Fraud Mitigation Centre (CFMC):** Promotes coordination among banks, payment intermediaries, telecom providers and law-enforcement agencies.
- **Suspect Registry:** Helps banks and financial institutions identify suspicious identifiers and mule accounts linked to cybercrime.
- **Sanchar Saathi Portal:** Helps identify fraudulent connections and block stolen mobile devices.
- **Cybercrime Capacity Building:** Includes cyber forensic laboratories, specialised training and the **CyTrain portal** for police and judicial personnel.

ART AND CULTURE

SENGOL

Why in News?

The newly released NCERT Class 9 Social Science textbook included the Sengol as a symbol of righteous governance and linked its tradition to the Chola dynasty.

About

- The **Sengol is associated with the royal traditions of the Imperial Chola Dynasty**, symbolising the legitimate transfer of political authority and the principles of Dharma and righteous governance.
- According to traditional accounts, the king's spiritual preceptor (Guru) or religious head of an Adheenam **presented the sacred sceptre to the incoming ruler during the coronation ceremony,** reminding the monarch of his duty to uphold justice, fairness and public welfare.

Sengol in Parliament: Key Features

- The Sengol is made of silver coated with gold plating, with a solid wooden staff encased inside it.
- It measures approximately **five feet (1.5 metres) in height,** with a diameter of around three inches at the top, tapering to nearly one inch at the bottom.
- A seated Nandi bull is placed at the top, **symbolising justice, righteousness and vigilance.** Its steady gaze represents Nyaya (fairness) and reminds rulers of their moral accountability.
- The recipient of the Sengol receives an Aanai, meaning a moral command to govern with justice, impartiality and responsibility.
- In the new Parliament building, the Sengol is displayed in a glass enclosure near the Speaker's chair, giving it national visibility.
- It symbolises Amrit Kaal, representing governance rooted in India's civilisational values, democratic responsibility and the principles of justice.
- The Sengol serves as a reminder that political authority must be guided by Dharma, constitutional values and public welfare.



RAMAPPA TEMPLE

Why in News?

Heritage conservationists raised concerns that the proposed PVNR open-cast coal mining project of SCCL, located about 5 km from the Ramappa Temple, could threaten the UNESCO World Heritage Site and adjoining Ramappa Lake through blasting, vibrations and groundwater disturbances.

About

- The Ramappa Temple, a 13th-century Kakatiya temple dedicated to Lord Shiva (Ramalingeswara), is located in Palampet, **Mulugu district, Telangana. Inscribed as a UNESCO World Heritage Site** it became India's 39th such site.
- The temple was constructed in **1213 CE during the reign of Kakatiya ruler Ganapati Deva**, under the supervision of his military commander Recharla Rudra.
- It is named after its chief sculptor and architect, Ramappa.
- The temple features an **earthquake-resistant sandbox foundation**, consisting of a sand-filled foundation designed to absorb seismic vibrations and improve structural stability.
- Its Vimana (temple tower) uses lightweight, porous floating bricks, which reduce the structural load on the walls and pillars.

- The temple is renowned for its intricate Dolerite and basalt sculptures, particularly the Madanikas (female dancers) and Yalis (mythical creatures), depicting elaborate jewellery, graceful postures and Kakatiya dance traditions.
- Its location near Ramappa Lake reflects the Kakatiya approach to integrating temple architecture with reservoirs, forests and the surrounding landscape.
- The Rangamandapa contains intricately carved pillars associated with resonant sounds, along with elaborate ceiling panels depicting Puranic and celestial themes.



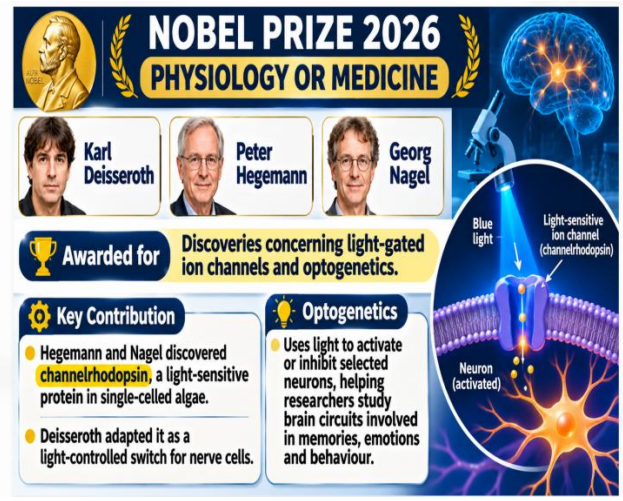
NOBEL PRIZE WINNERS 2026

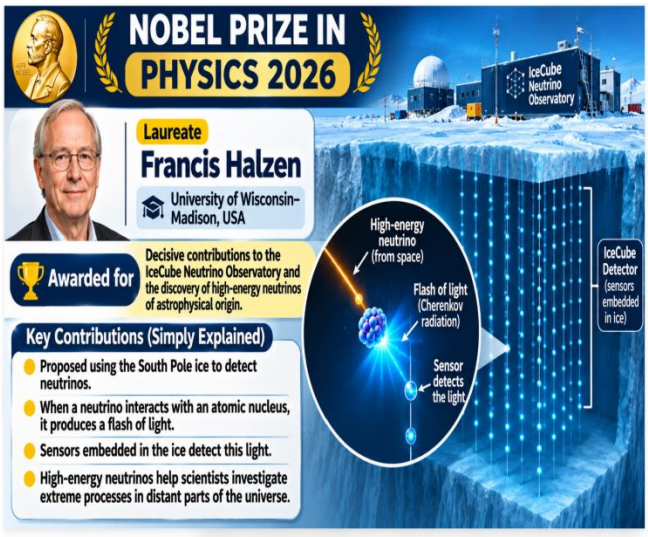
Why in News?

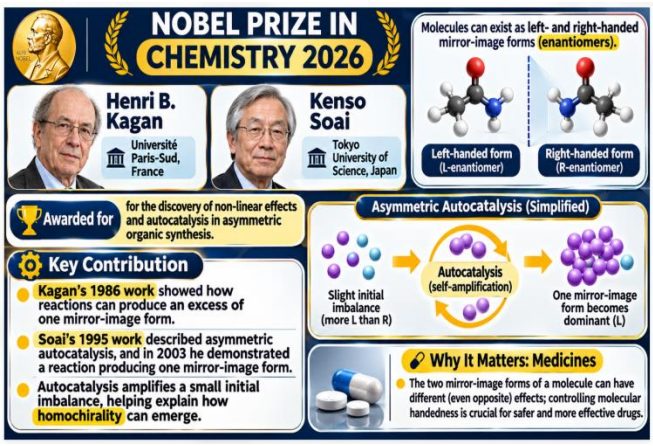
The 2026 Nobel Prize winners were announced across six categories, recognising outstanding contributions in science, literature, peace and economic sciences.

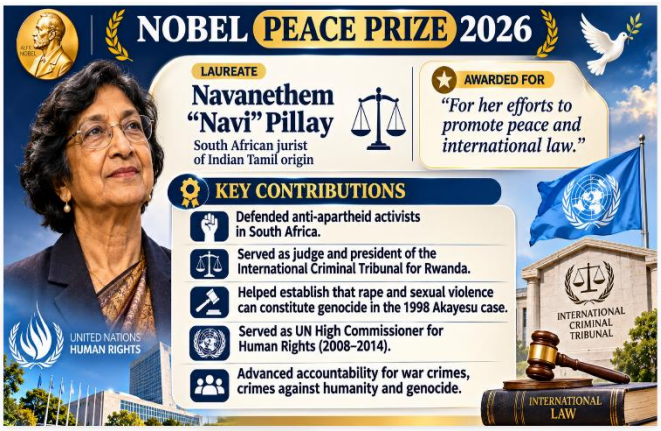
About

- The Nobel Prize, established by Swedish inventor and philanthropist Alfred Nobel, is the world's most prestigious recognition of excellence in fields that advance human progress, which are Physics, Chemistry, Physiology or Medicine, Literature, Peace, and Economic Sciences.
- Prizes may be given only to individuals, except the Peace Prize, which may also be conferred upon an institution. However, **3 individuals at max, can share a prize**.
- All the Nobel Prizes are given in Stockholm, **Sweden except for the Nobel Peace Prize which is awarded in Oslo, Norway.**
- Each Nobel Prize consists of a gold medal, a diploma bearing a citation, and a sum of money.
- First presented in 1901, the Nobel Prizes symbolise intellectual achievement, humanitarian service, and the pursuit of global peace.
- The six prizes awarded are given by four organisations:
  - **Royal Swedish Academy of Sciences –** Chemistry; Physics; Economic Science
  - **Nobel Assembly at the Karolinska Institute –** Physiology / Medicine
  - **Swedish Academy –** Literature
  - **Norwegian Nobel Committee –** Peace.





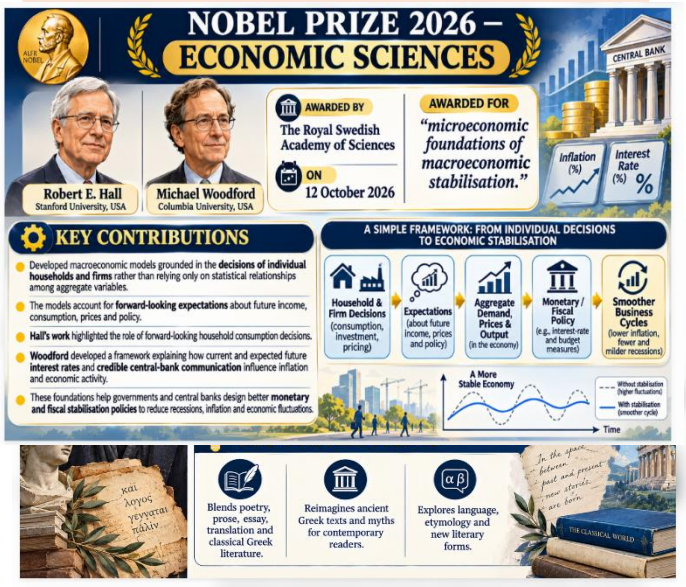




Did you know?

Nobel Prize and India

- *Poet and writer **Rabindranath Tagore** was the **first non-European and Indian** to get a Nobel Prize in 1913 in literature.*
- *India received its first Nobel Prize in physics in 1930 when scientist **Sir Chandrasekhara Venkata Raman** was awarded "for his work on the scattering*



SPORTS

ASIAN GAMES

Why in the news?

The Prime Minister complimented the **Indian contingent** for its performance at the **Asian Games 2026**, highlighting India's achievements across sporting disciplines.

About

- The Asian Games Federation was **established in 1949 in New Delhi**, India.
- The first Asian Games were held in New Delhi in 1951.
- The Asian Games Federation was renamed the **Olympic Council of Asia** in 1981.
- Headquarters: Kuwait City, Kuwait.
- It has **45 member** National Olympic Committees.
- OCA is responsible for promoting the Olympic Movement and organising the Asian Games in Asia.
- The Asian Games are also known as the **Asiad** and are **organised once every four years**.

Asian games 2026

- The 20th Asian Games were held in 2026 in **Aichi-Nagoya, Japan**.
- Official slogan – Imagine One Asia.
- Official mascot – HONOHON.
- Number of participating countries and regions – 45.
- Number of sports – 43.

India - Asian games 2026

- India finished **4th** in the medal tally with **85 medals** (21 gold, 27 silver, and 37 bronze). This follows India's historic 107-medal haul at the 19th Asian Games in Hangzhou (2023).
- India won **21 Gold medals** across 9 sports, consisting of **5 in Archery, 3 in Shooting, 3 in Boxing, 2 each in Wrestling, Cricket** (Men and Women)**, Hockey** (Men and Women)**, and Kabaddi** (Men and Women)**, and 1 each in Athletics(Women's 4x400m Relay) and Golf.**