

UPSC



CURRENT AFFAIRS

August 2026

Year 03 | Issue 08



- ◆ UN's First Scientific Report on AI
- ◆ 3rd India–Australia Annual Summit
- ◆ OECD-FAO Agricultural Outlook 2026-2035
- ◆ All India Survey on Higher Education 2023-24
- ◆ The WHO Global Status Report on Cancer 2026
- ◆ Population status report on Great Indian Bustard (GIB)



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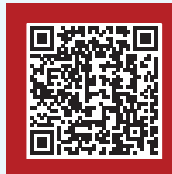


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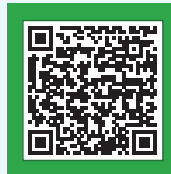


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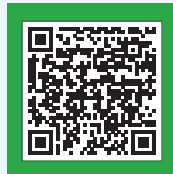


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POLITY AND GOVERNANCE

1.1. Haryana-Rajasthan Yamuna Water Agreement

SYLLABUS

GS-2: Functions and responsibilities of the Union and the States, issues and challenges pertaining to the federal structure; Separation of powers between various organs dispute redressal mechanisms and institutions.

Context

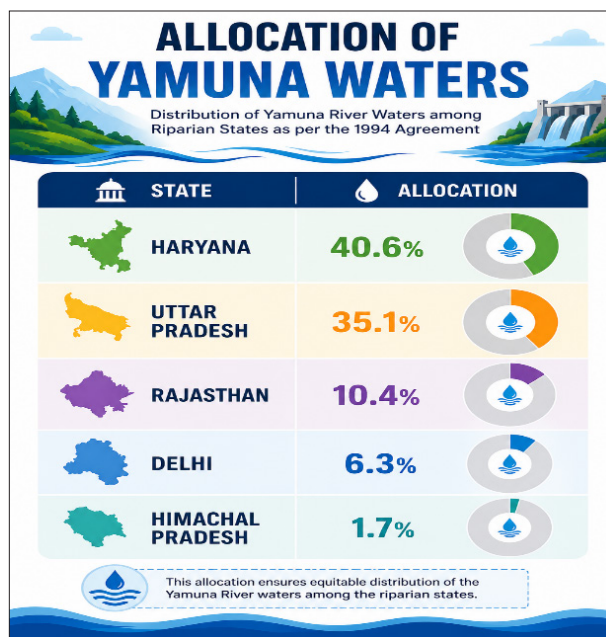
Haryana and Rajasthan signed a Memorandum of Agreement (MoA) to operationalise the long-pending 1994 Upper Yamuna Water Sharing Agreement, enabling Rajasthan to receive its allocated share of Yamuna water through dedicated infrastructure after nearly 32 years.

Key Highlights of the Agreement

- Under the agreement, **approximately 580 million Cubic Metres (MCM)** of **surplus Yamuna water** available during the **monsoon season (July–October)** will be supplied annually to Rajasthan.
- Water will be released from the **Hathnikund Barrage (Haryana)** and conveyed through **three underground pipelines** (over **3.6 m** in diameter) routed along the **Western Yamuna Canal System**.
- Around **300 km of underground pipeline** infrastructure will be constructed between Hathnikund Barrage and Rajasthan at an estimated cost of **₹3,900 crore**.
- The project will ensure a reliable drinking water supply to the **water-stressed districts of Churu, Sikar and Jhunjhunu (Shekhawati region) in Rajasthan**, besides benefiting **Bhiwani and Fatehabad districts of Haryana**.
- The agreement is also expected to accelerate the implementation of the **Renuka, Kishau and Lakhwar Multipurpose Dam Projects** envisaged under **the 1994 Upper Yamuna Water Sharing Agreement**.

About the 1994 Upper Yamuna Water Sharing Agreement

- The **Upper Yamuna Water Sharing Agreement** was signed on **12 May 1994** for the allocation of the **utilisable surface waters of the Upper Yamuna Basin** among the basin States.
- The agreement was signed by the Governments of **Haryana, Uttar Pradesh, Rajasthan, Himachal Pradesh, and National Capital Territory (NCT) of Delhi**.
- Following the creation of **Uttarakhand in 2000**, it also became a party to the agreement.



Objectives of the Agreement:

- ✓ To ensure **equitable sharing** of the utilisable surface waters of the Upper Yamuna Basin.
- ✓ To establish a scientific mechanism for regulating seasonal water releases.
- ✓ To facilitate coordinated development of storage reservoirs and water infrastructure.
- ✓ To improve drinking water supply, irrigation and overall basin management through inter-State cooperation.

UPPER YAMUNA RIVER BOARD (UYRB)



The Upper Yamuna River Board (UYRB) was constituted in 1995 following the implementation of the 1994 Upper Yamuna Water Sharing Agreement.



ADMINISTRATIVE MINISTRY



Ministry of Jal Shakti
(Department of Water Resources, River Development and Ganga Rejuvenation)



HEADQUARTERS



New Delhi



COMPOSITION

The Board consists of representatives from:



Haryana



Uttar Pradesh



Rajasthan



Himachal Pradesh



Delhi



Uttarakhand



Central Government agencies, including the Central Water Commission (CWC).



FUNCTIONS



Implement the provisions of the 1994 Water Sharing Agreement.



Regulate the allocation and seasonal distribution of Yamuna waters among basin States.



Monitor water releases from major control structures, including the Hathnikund Barrage.



Coordinate reservoir operations and water management.



Facilitate dispute resolution among basin States.



Promote coordinated planning for storage projects in the Upper Yamuna Basin.



MAJOR PROJECTS ASSOCIATED WITH UYRB



Hathnikund Barrage



Western Yamuna Canal



Renuka Multipurpose Dam



Kishau Multipurpose Dam



Lakhwar Multipurpose Dam

Reasons Behind the 32-Year Delay

- **Lack of Water Conveyance Infrastructure:** No dedicated canal or underground pipeline existed to transport Rajasthan's allocated Yamuna water from the Hathnikund Barrage.
- **Delay in Project Planning:** Preparation of the Detailed Project Report (DPR) and finalisation of the underground pipeline design were significantly delayed.
- **Inter-State Administrative Differences:** Haryana and Rajasthan took years to reach consensus on cost sharing, financial responsibilities, land acquisition, water release protocols, operation and maintenance, and monitoring arrangements.
- **Delay in Upstream Dam Projects:** The slow implementation of the Renuka, Kishau, and Lakhwar Dam projects delayed augmentation of water availability in the Upper Yamuna Basin.
- **Prolonged Administrative Processes:** Extended inter-governmental consultations and administrative delays postponed the implementation of the 1994 agreement.

Significance of the Agreement

- **Long-Pending Implementation of the 1994 Agreement:** Operationalises a water-sharing arrangement that remained pending for nearly **32 years**, enabling Rajasthan to utilise its allocated share of Yamuna waters.
- **Strengthening Water Security:** Provides a long-term solution to the drinking water needs of the **water-stressed Shekhawati region (Churu, Sikar and Jhunjhunu)** while also benefiting parts of Haryana.
- **Efficient Utilisation of Monsoon Surplus:** Enables productive use of surplus monsoon flows that previously went downstream unused, while also supporting **groundwater recharge** through storage in ponds.
- **Boost to Cooperative Federalism:** Demonstrates successful resolution of a long-pending inter-State water issue through dialogue and consensus, **strengthening cooperative federalism and institutional coordination**.
- **Catalysing Basin Infrastructure Development:** Accelerates the implementation of the **Renuka, Kishau and Lakhwar Multipurpose Dam Projects**, enhancing water storage, improving basin management, and ensuring long-term water availability.

1.2. Constitution (130th Amendment) Bill

SYLLABUS

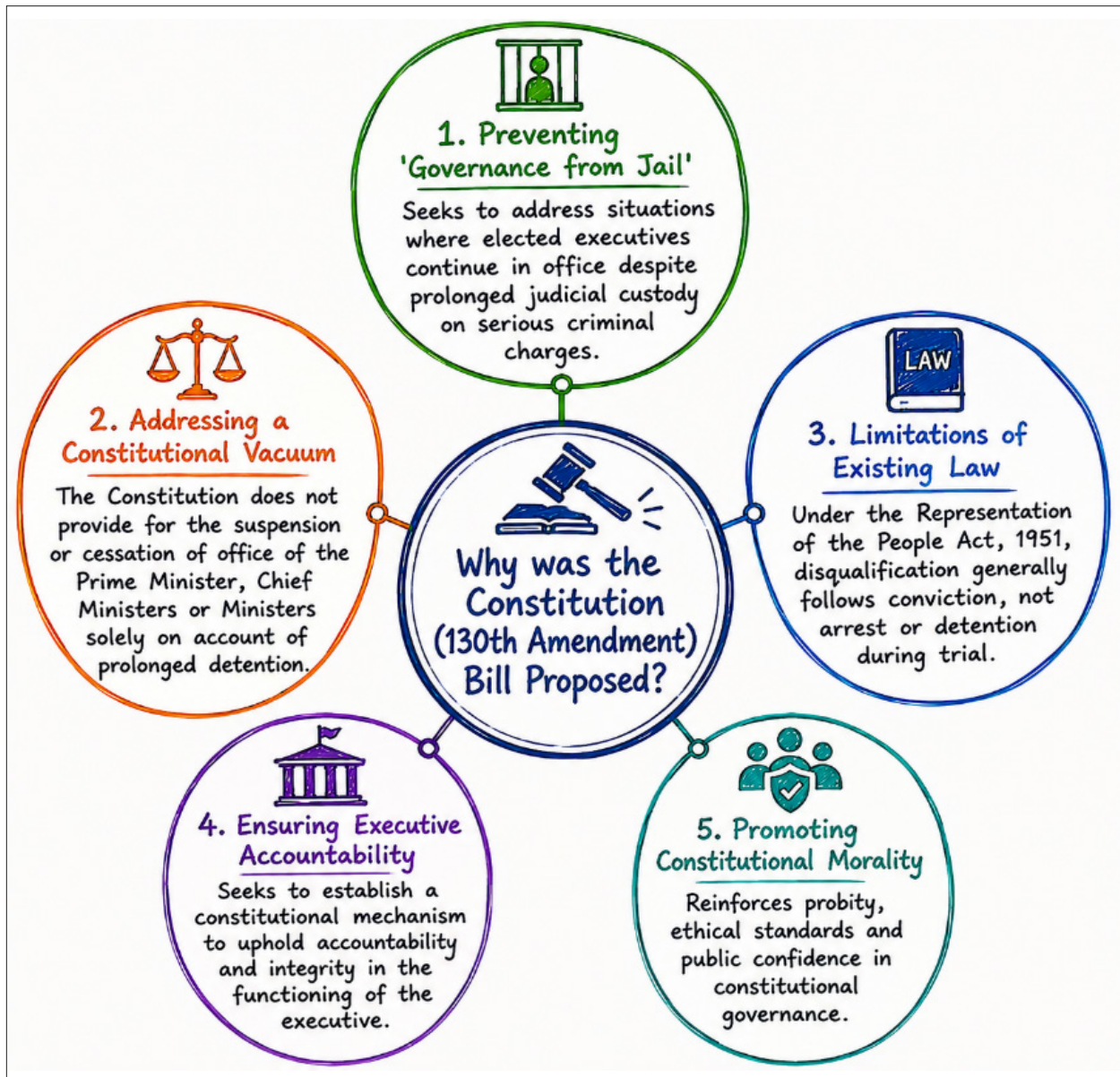
GS2: *Amendments to Indian Constitution; Important Aspects of Governance, Transparency and Accountability.*

Context

The Joint Parliamentary Committee (JPC) examining the Constitution (One Hundred and Thirtieth Amendment) Bill has deferred the adoption of its draft report to allow further deliberations on the proposed framework for the removal of the Prime Minister, Chief Ministers and Ministers.

Key Provisions of Constitution (130th Amendment) Bill, 2025

- **Cover Constitutional Functionaries:** Apply to the **Prime Minister, Union Ministers, Chief Ministers and State Ministers**.
✓ Complementary amendments have also been proposed to the **Government of Union Territories Act, 1963** and the **Jammu and Kashmir Reorganisation Act, 2019**.
- **Provide for Cessation of Office:** A Prime Minister, Chief Minister or Minister shall cease to hold office upon completing **30 consecutive days of judicial custody** for offences punishable with **five years or more**.
- **Specify the Removal Process:** Ministers would be removed by the **President/Governor** on the advice of the Prime Minister/Chief Minister, while the Prime Minister or Chief Minister would automatically cease to hold office after the prescribed period of detention.
- **Provide an Opportunity to Seek Bail:** The proposed framework effectively provides a **30-day window** to obtain bail before the cessation provisions become operative.
- **Allow Reappointment:** A person ceasing to hold office may be reappointed **after release from judicial custody**, subject to the applicable constitutional and legal provisions.
- **Amend Constitutional Provisions:** Amend **Articles 75, 164 and 239AA** to establish the proposed constitutional framework.



Significance of the Proposed Bill

- **Curbing Criminalisation of Politics:** Prevents persons facing serious criminal charges from continuing in executive office during prolonged detention.
- **Strengthening Constitutional Morality:** Reinforces accountability, probity and ethical standards expected from holders of constitutional offices.
- **Upholding Rule of Law:** Affirms that high constitutional offices are subject to the same legal

standards as other citizens.

- **Enhancing Public Confidence:** Promotes transparency and accountability, thereby strengthening citizens' trust in democratic institutions.

Concerns & Challenges

- **Presumption of Innocence:** Cessation from office before conviction may conflict with the principle that an accused is innocent until proven guilty.
- **Risk of Political Misuse:** The provisions could be

exploited through politically motivated arrests against elected executives.

- **Democratic and Federal Concerns:** Automatic cessation of office may disrupt governance and undermine the electoral mandate, particularly in States.
- **Judicial Delays:** Prolonged investigations and trials could unfairly affect constitutional functionaries before guilt is established.

Judicial Perspective

- **B.R. Kapur v. State of Tamil Nadu (2001):** Held that a person disqualified from being a legislator cannot be appointed as Chief Minister.
- **Manoj Narula v. Union of India (2014):** Declined to prohibit the appointment of persons with criminal charges as Ministers, while stressing constitutional morality in ministerial appointments.
- **Public Interest Foundation v. Union of India (2018):** Refused to disqualify candidates merely on pending criminal cases, holding that such reforms fall within Parliament's domain, while directing greater disclosure of criminal antecedents by political parties.

JPC's Draft Recommendations

- **Suspend Instead of Remove:** Replace **automatic removal** with **temporary suspension** after 30 consecutive days of judicial custody.
- **Fast-track Adjudication:** Cases involving suspended constitutional functionaries should be decided by **designated fast-track courts within one year**, wherever feasible.
- **Revoke Suspension:** Suspension should cease upon **release from judicial custody**, allowing the individual to resume office in accordance with the law.
- **Define 'Serious Criminal Offences':** Clearly define "serious criminal offences" as offences **punishable with imprisonment of five years or more** to ensure clarity and uniform application of the proposed law.

1.3. Horizontal Application of Fundamental Rights

SYLLABUS

GS-2: Indian Constitution—Historical Underpinnings, Evolution, Features, Amendments, Significant Provisions and Basic Structure.

Context

The Delhi High Court recently held that a private media house performing a public function may be subjected to writ jurisdiction under Article 226 for an alleged violation of the right to privacy, bringing renewed attention to the doctrine of horizontal application of Fundamental Rights.

Key Highlights of the Delhi High Court Judgment

- The Court observed that a **private media organisation** may be amenable to writ jurisdiction under **Article 226** if it performs functions that significantly affect public rights and interests.
- It emphasized that **freedom of the press** is not absolute and must be balanced against an individual's **right to privacy**, recognized as a Fundamental Right under Article 21.
- The Court rejected the argument that writ remedies are available only against the State, noting that Article 226 has a wider scope than Article 32 and may extend to private bodies performing public functions.
- In arriving at its conclusion, the Court referred to the Supreme Court's observations in **Kaushal Kishor v. State of Uttar Pradesh (2023)**, which had discussed the horizontal application of Fundamental Rights.

Understanding the Horizontal Application of Fundamental Rights

- **Meaning of Horizontal Application**
 - ✓ Traditionally, Fundamental Rights operate **vertically**, i.e., against the State. Horizontal application refers to their operation against **private individuals or entities** in certain circumstances.
 - ✓ It may be **direct** (rights enforceable against private actors) or **indirect** (courts interpreting laws and constitutional values to protect rights in private relationships).
- **Constitutional Basis**
 - ✓ While Fundamental Rights are generally enforceable against the State under Articles **12 and 13**, the Constitution itself envisages limited horizontal application.

- ✓ Examples include **Article 15(2)** (non-discrimination in access to public spaces), **Article 17** (abolition of untouchability), **Article 23** (prohibition of trafficking and forced labour), and **Article 24** (prohibition of child labour).

• Judicial Evolution

- ✓ **Vishaka v. State of Rajasthan (1997)**: The Supreme Court framed guidelines against workplace sexual harassment, including for private establishments, thereby extending constitutional protections beyond direct State action.
- ✓ **Justice K.S. Puttaswamy v. Union of India (2017)**: The Court recognized privacy as a Fundamental Right and observed that threats to privacy may arise not only from the State but also from private actors.
- ✓ **Kaushal Kishor v. State of Uttar Pradesh (2023)**: The Constitution Bench recognized that certain Fundamental Rights may, in appropriate circumstances, operate horizontally against non-State actors.

Significance of the Doctrine

- **Protecting Rights in the Digital Age**: Ensures constitutional safeguards against rights violations by powerful private actors such as digital platforms, media organisations, and corporations.
- **Strengthening Privacy and Human Dignity**: The doctrine provides constitutional safeguards against privacy violations, discrimination, exploitation, and other harms caused by non-State actors.
- **Enhancing Accountability of Public-Function Entities**: It ensures that private bodies performing functions affecting public rights and democratic processes remain accountable to constitutional norms and values.
- **Making Fundamental Rights More Effective**: Horizontal application helps adapt constitutional protections to contemporary socio-economic realities where private power can sometimes rival or exceed State power.

Concerns and Challenges

- **Defining the Scope of 'Public Function'**: Determining when a private entity performs a sufficiently public

role remains a complex legal question and may lead to inconsistent judicial outcomes.

- **Balancing Competing Fundamental Rights**: Courts must carefully reconcile rights such as **privacy**, **freedom of speech**, and **freedom of the press**, particularly in media-related disputes.
- **Constitutional Ambiguity**: Articles such as **19** and **21** were originally conceived primarily as protections against State action, making the extent of their horizontal application a continuing area of constitutional debate.
- **Risk of Judicial Overreach**: Excessive expansion of horizontal rights may blur the distinction between public and private domains and increase judicial intervention in private affairs.

Way Forward

- **Develop Clear Judicial Standards**: Courts should evolve objective criteria for identifying private entities performing public functions and determining the extent of constitutional obligations.
- **Balance Competing Fundamental Rights**: A contextual approach is needed to reconcile privacy, dignity, free speech, and press freedom without disproportionately privileging one right over another.
- **Strengthen Statutory Safeguards**: Robust data protection, privacy, labour, and anti-discrimination laws can complement constitutional remedies and reduce dependence on judicial intervention.
- **Adopt a Calibrated Approach**: Horizontal application should evolve incrementally, ensuring constitutional accountability while preserving the legitimate autonomy of private actors.

1.4. Madhya Pradesh Uniform Civil Code

SYLABUS

GS 2: *Indian Constitution- historical underpinnings, evolution, features, amendments, significant provisions and basic structure; Government policies and interventions for development in various sectors and issues arising out of their design and implementation.*

Context

Recently, the Madhya Pradesh Cabinet approved the draft Uniform Civil Code (UCC) Bill, 2026, paving the way for the State to become the fourth state after Uttarakhand, Gujarat and Assam to implement a Uniform Civil Code.

Key Provisions of the Madhya Pradesh UCC, 2026

- **Common Civil Law:** Establishes a *uniform civil law* for all citizens in matters relating to **marriage, divorce, inheritance, succession, maintenance and live-in relationships**.
 - ✓ The Code **exempts Scheduled Tribes** covered under **Articles 342 and 366(25)** and communities protected under **Part XXI** of the Constitution.
- **Marriage: Monogamy** made mandatory and **polygamy prohibited** across all communities.
 - ✓ The minimum marriage age is **21 years for men and 18 years for women**, and **marriage registration** has been made compulsory.
- **Divorce: Oral divorce, triple talaq and nikah halala** have been declared illegal.
 - ✓ Marriage can be dissolved **only through statutory legal grounds**, and **divorce registration** has been made compulsory.
- **Live-in Relationships:** Live-in couples must register their relationship **within one month**.
 - ✓ Both partners must be **18 years or above**; if either partner is **below 21 years**, the Registrar will inform their parents/guardians and the local police.
- **Penalties for Live-in Violations:** Failure to register may attract **up to three months' imprisonment or a ₹10,000 fine**.
 - ✓ Providing false information or failing to comply with the Registrar's notice may result in **imprisonment and a fine of up to ₹25,000**.
- **Children and Family Rights:** Removes the term **"illegitimate"** and grants **equal legal status** to all children, including those born through **adoption, surrogacy and Assisted Reproductive Technology (ART)**.
 - ✓ Children born out of live-in relationships will have **full inheritance rights**.
- **Inheritance and Succession: Sons and daughters**

will have **equal inheritance rights**, while **widows, widowers, surviving mothers and fathers** will enjoy equal rights as **Class-I heirs**.

✓ A person convicted of murdering the deceased will be **disqualified from inheritance**.

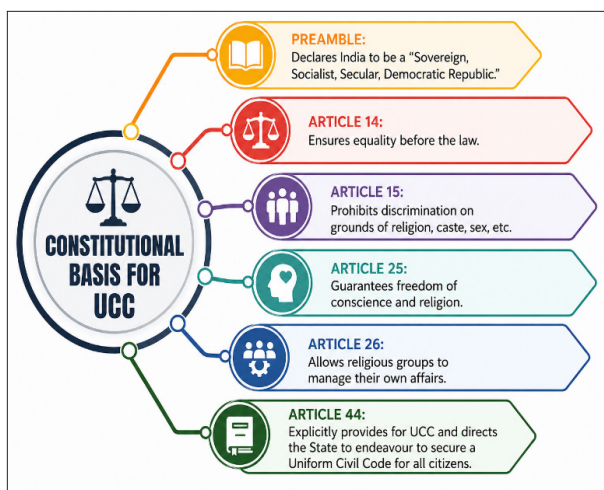
- **Preparation of the Bill:** Drafted by a committee headed by **Justice (Retd.) Ranjana Prasad Desai** after public consultations and based on the UCCs of Uttarakhand, Gujarat and Assam.

What are Personal Laws?

- **Personal laws** are laws applicable to specific communities based on **religion, customs and traditions**.
- They govern matters such as **marriage, divorce, inheritance, succession, adoption, guardianship and maintenance**.
- **Example:** The **Hindu Marriage Act** governs divorce among Hindus, while the **Muslim Personal Law (Shariat) Act, 1937** governs family matters among Muslims.

About Uniform Civil Code (UCC)

- It is a **common set of civil laws** that replaces personal laws based on religious customs and traditions and applies uniformly to all citizens.
- It provides **a single law for all citizens in matters such as Marriage, Divorce, Inheritance, Adoption, Succession, and Maintenance**.



- It is regarded as a measure to promote a **more secular, equitable and gender-just social order**, consistent with constitutional values.

- **Article 44** of the Constitution, under the **Directive Principles of State Policy (DPSP)**, directs the State to endeavour to secure a Uniform Civil Code for all citizens.

Objectives of the Uniform Civil Code (UCC)

- **Equality Before Law:** Ensures equal treatment of all citizens irrespective of religion through a common civil law.
- **Gender Justice:** Removes discriminatory provisions in personal laws and promotes equal rights for women in marriage, divorce and inheritance.
- **Secularism:** Reinforces secular governance by separating civil laws from religion.
- **National Integration:** Promotes unity and a common legal identity among citizens.
- **Simplification of Laws:** Replaces multiple personal laws with a single, coherent civil framework.
- **Modernisation of Society:** Aligns personal laws with constitutional values and changing social norms.

Origin of the Uniform Civil Code (UCC)

- **Colonial Period:** The concept of the **UCC** originated during British rule, and the **1835 Report** recommended uniform codification of laws relating to **crimes, evidence and contracts**, while excluding personal laws.
- **B. N. Rau Committee (1941):** The **B. N. Rau Committee (1941)** was constituted to examine the reform of Hindu personal laws and submitted its report in **1947**, recommending their codification and reform.
- **After Independence:** After Independence, Parliament enacted the **Hindu Code Bills (1955–56)** to codify Hindu personal laws, while the **Shah Bano case (1985)** revived the debate on implementing a UCC.

Important Judicial Pronouncements on UCC

- **Shah Bano Case (1985):** The Supreme Court granted maintenance to a divorced Muslim woman under **Section 125 CrPC** and emphasised the need for a **Uniform Civil Code** to promote **gender justice and national integration**.
- **Sarla Mudgal Case (1995):** The Court held that

conversion to Islam solely to contract a second marriage without dissolving the first is invalid and reiterated the need for a **Uniform Civil Code** to prevent misuse of personal laws.

- **John Vallamattom Case (2003):** The Court struck down discriminatory provisions in Christian personal law relating to property and observed that a **Uniform Civil Code** would help remove such inequalities.
- **Shayara Bano Case (2017):** The Supreme Court declared **instant triple talaq (talaq-e-biddat)** unconstitutional, strengthening the principle of **gender justice** and reforms in personal laws.
- **Indian Young Lawyers Association v. State of Kerala (2018):** The Court held that **constitutional morality prevails over religious customs** and affirmed that religious practices must conform to **Articles 14 and 15**, indirectly supporting the objectives of the **Uniform Civil Code**.

1.5. Parliamentary Panel Raises Concerns over Higher Education Regulator Proposed in VBSA Bill

SYLLABUS

GS-2: *Statutory, Regulatory and various Quasi-judicial Bodies; Issues Relating to Development and Management of Social Sector/Services relating to Health, Education, Human Resources.*

Context

The Joint Parliamentary Committee (JPC) examining the Viksit Bharat Shiksha Adhishthan (VBSA) Bill, 2025 has raised concerns that the proposed single higher education regulator could lead to excessive concentration of powers and undermine institutional autonomy.

About the Viksit Bharat Shiksha Adhishthan (VBSA) Bill, 2025

- **Objective:** Seeks to implement the **National Education Policy (NEP), 2020** by establishing a unified, transparent and outcome-oriented regulatory framework for higher education.
- **Apex Regulatory Body:** Establishes the **Viksit Bharat Shiksha Adhishthan (VBSA)** as the apex regulator by

replacing the **University Grants Commission (UGC)**, **All India Council for Technical Education (AICTE)** and **National Council for Teacher Education (NCTE)**.

✓ The Commission will function through three specialised Councils—**Regulatory, Accreditation and Standards Councils**.

- **Composition:** The Commission will comprise a **Chairperson and up to 12 members**, including the Presidents of the three Councils, the Higher Education Secretary, eminent experts and representatives from State Higher Education Institutions.
- **Functions of the Councils:** The **Regulatory Council** will regulate Higher Education Institutions (HEIs) and facilitate institutional autonomy; the **Standards Council** will prescribe learning outcomes and minimum academic standards; while the **Accreditation Council** will develop the accreditation framework for HEIs.
- **Scope:** Covers higher education, including **technical, teacher-training and architecture education**, while excluding **medical, legal and certain other professional institutions**.
✓ It also applies to **Institutions of National Importance (INIs)**, Central and State universities, and deemed universities.
- **Degree-awarding Powers:** Degrees may be conferred only by universities established under law, institutions empowered by a Central Act, or other HEIs authorised by the **Regulatory Council** with prior approval of the Central Government.

Significance of the Bill

- **Unified Regulatory Architecture:** Replaces multiple regulators with a single framework, reducing regulatory overlap and improving coordination.
- **Alignment with NEP 2020:** Advances the NEP's vision of simplified governance, multidisciplinary education and improved quality of higher education.
- **Functional Specialisation:** Separate Regulatory, Accreditation and Standards Councils enable specialised oversight within a common institutional framework.
- **Reduced Conflict of Interest:** Separating regulation from funding promotes greater transparency and objective oversight of higher education institutions.

Key Concerns Raised by the Parliamentary Panel

- **Excessive Concentration of Powers:** Vesting regulatory, accreditation, standards-setting and enforcement powers in a single body may weaken institutional checks and balances.
- **Need for Stronger Safeguards for INIs:** While retaining IITs, IIMs and other Institutions of National Importance within the proposed framework, the Committee sought stronger statutory safeguards to protect their autonomy.
- **Centralisation of Decision-making:** Greater control by the Union Government over appointments and policy decisions may weaken the federal character of higher education governance.
- **Wide Penalty Powers:** Broad powers to impose penalties and take regulatory action could result in arbitrary or excessive intervention in institutional functioning.
- **Limited Independent Appellate Mechanism:** Appeals against decisions of the Councils lie with the **Central Government**, raising concerns over the absence of an independent appellate authority.

Recommendations of the Committee

- **Protect Institutional Autonomy:** Incorporate stronger statutory safeguards to preserve the autonomy of **Institutions of National Importance (INIs)** under the VBSA framework.
- **Strengthen Federal Representation:** Ensure greater representation of **States and State universities** in the governance structure of the Commission.
- **Prevent Arbitrary Penalties:** Clearly define the scope and application of the graded penalty framework and ensure transparent procedures before imposing penalties.
- **Ensure Timely Appointments:** Frame rules to initiate the process of filling predictable vacancies at least **six months in advance** and complete appointments **within 90 days**.
- **Strengthen Accountability:** Introduce adequate institutional checks and oversight mechanisms to ensure that the Commission functions in a fair, transparent and consultative manner.

1.6. Supreme Court Mandates Uniform Policy for Release of Elderly and Terminally Ill Prisoners

SYLLABUS

GS-2: Structure, Organization, and Functioning of the Executive and the Judiciary; Government Policies and Interventions for Development in various sectors and issues arising out of their Design and Implementation.

Context

The Supreme Court has directed all States and Union Territories to formulate, within three months, a uniform policy for the premature release of elderly and terminally ill prisoners.

More on the News

- The directions were issued by a division bench while deciding a Public Interest Litigation (PIL) filed by the **National Legal Services Authority (NALSA)** seeking a uniform mechanism for the release of elderly, infirm, and terminally ill prisoners.
- Invoking its **extraordinary powers under Article 142**, the Supreme Court stepped in due to the absence of a uniform national framework governing the premature release of such vulnerable prisoners across States and UTs.
- The Court observed that prisoners do not lose their fundamental rights upon incarceration and emphasised that the constitutional guarantee of dignity and humane treatment under **Article 21** extends even to elderly and terminally ill inmates.

Key Directives of the Supreme Court

- **Formulation of a Comprehensive Policy:** All States and UTs have been directed to formulate and notify, within **three months**, a comprehensive policy for the premature release of elderly, infirm, and terminally ill prisoners.
- **Uniform Definition of Terminal Illness:** The Supreme Court directed States and UTs to adopt a clear and uniform definition of “**terminal illness**” and allowed them to draw upon the definition contained in the **UNODC Handbook on Prisoners with Special Needs, 2009**.

✓ It defines terminal illness as a medical condition with no reasonable possibility of improvement, leading to continuous degeneration and eventual death.

- **Objective Eligibility Criteria:** The policy must prescribe transparent and objective eligibility criteria, including age, medical condition, nature of illness, and other relevant humanitarian considerations.
- **Consultation with Legal Services Authorities:** States and UTs have been directed to frame the policy in consultation with the **State Legal Services Authorities (SLSAs)** to facilitate identification of eligible prisoners and ensure effective implementation.
- **Independent Medical Boards:** States and UTs must constitute independent medical boards at divisional and State levels to assess the health condition of prisoners and provide objective recommendations regarding eligibility for premature release.
- **Technology-Driven Processing:** Applications for premature release are to be processed through the **e-Prisons portal**, with the **National Informatics Centre (NIC)** and the **Union Government** providing technological support to ensure effective monitoring and timely processing of cases.

Understanding the Premature Release of Prisoners in India

- Premature release refers to the release of a convicted prisoner before the completion of the full sentence on grounds such as age, health condition, good conduct, humanitarian considerations, or public interest.
- Unlike **parole** and **furlough**, which provide temporary release from prison, premature release permanently shortens the period of incarceration through remission, commutation, or government release policies.
- **Constitutional and Statutory Framework**
 - ✓ The President and Governors exercise clemency powers under **Articles 72 and 161** of the Constitution, respectively.
 - ✓ In addition, **Sections 473–475 of the Bharatiya Nagarik Suraksha Sanhita (BNSS), 2023** deal

with suspension, remission, and commutation of sentences and provide the statutory basis for premature release policies implemented by State Governments.

Significance of the Judgment

- **Strengthening the Right to Dignity:** The judgment reinforces the principle that the right to life and dignity survives incarceration, particularly for elderly and terminally ill prisoners.
- **Advancing Reformatory Justice:** It promotes a shift from a purely punitive approach towards a more humane and reformatory criminal justice system.
- **Humane Treatment of Vulnerable Prisoners:** The decision recognises the special healthcare, palliative care, and end-of-life needs of elderly, infirm, and terminally ill inmates.
- **Promoting Uniformity Across States:** A common policy framework can reduce disparities in premature-release practices and ensure more consistent treatment of similarly placed prisoners.
- **Addressing Prison Overcrowding:** The release of prisoners who pose minimal security risks and require specialised medical care can contribute to broader prison-reform efforts and help ease overcrowding in prisons.

1.7. National Study Report on Low Participation in Gram Sabha Across States/UTs

SYLLABUS

GS-2: *Issues and Challenges Pertaining to the Federal Structure, Devolution of Powers and Finances up to Local Levels and Challenges Therein; Important Aspects of Governance, Transparency and Accountability.*

Context

The Ministry of Panchayati Raj recently released the National Study Report on Low Participation in Gram Sabha Across States and Union Territories, highlighting the key barriers affecting citizen participation and suggesting measures to strengthen grassroots democracy.

More on the News

- The study was conducted by the **National Institute of Rural Development and Panchayati Raj (NIRDPR), Hyderabad**, on the request of the Ministry of Panchayati Raj.
- It is one of the largest field-based assessments of Gram Sabha participation, covering **26 States/UTs, 213 districts, nearly 400 Gram Panchayats and around 7,800 respondents**. The study also included **50 PESA Gram Panchayats** and **130 Women-Friendly Gram Panchayats**.
- The study examined factors influencing participation, inclusiveness, governance practices, communication systems, infrastructure, accessibility and citizen perceptions regarding Gram Sabha functioning.

Key Findings of the Report

- **Multidimensional Nature of Low Participation:** The study found that low participation in Gram Sabhas is **multidimensional**, shaped by socio-economic, institutional, governance and behavioural factors rather than any single cause.
- **Livelihood and Time-Related Constraints**
 - ✓ **Livelihood and time-related constraints** emerged as the single largest barrier (**55.5%**), followed by **awareness and communication issues (16.2%)**.
 - ✓ **Busy work schedules (41.74%)** and **agricultural activities (30.26%)** were identified as the most significant occupational constraints affecting attendance.
- **Awareness and Procedural Literacy Deficit**
 - ✓ The study revealed an important distinction between awareness of Gram Sabha meetings and understanding of Gram Sabha processes.
 - ✓ While awareness regarding meetings was generally high, knowledge of **citizen rights, quorum requirements, decision-making processes and the institutional role of Gram Sabha** was comparatively lower.
- **Participation Gaps among Social Groups:** **Migrant households (17.61%), youth (16.73%), elderly citizens (15.80%)** and **women (13.40%)** were identified among the least represented groups in Gram Sabha processes.

GRAM SABHA

THE FOUNDATION OF GRASSROOTS DEMOCRACY

Empowering Citizens. Strengthening Local Governance.



CONSTITUTIONAL BASIS

Envisaged under **Article 243A** of **Part IX** of the Constitution of India.



COMPOSITION

It consists of **all registered voters** within the area of a Gram Panchayat.



KEY FUNCTIONS



DELIBERATE

Discuss and deliberate on local issues and development priorities.



APPROVE PLANS

Approve local plans, programmes and activities for village development.



IDENTIFY BENEFICIARIES

Identify and recommend beneficiaries for welfare schemes and programmes.



ENSURE ACCOUNTABILITY

Ensure social accountability, transparency and community oversight.



PROMOTE PARTICIPATION

Strengthen citizen participation in planning, decision-making and monitoring.



SIGNIFICANCE

Gram Sabha is the cornerstone of democratic decentralisation. It promotes transparency, accountability, inclusion and citizen-led decision-making, ensuring that development is people-centric and responsive to local needs.

- ✓ Strengthens local democracy
- ✓ Empowers communities
- ✓ Builds trust and social cohesion
- ✓ Drives sustainable local development



A strong Gram Sabha leads to a strong, self-reliant and inclusive village.



- **Emergence of “Gram Sabha Participation Fatigue”**

- ✓ The study identified an emerging phenomenon termed “Gram Sabha Participation Fatigue”, where repeated meetings without visible outcomes, unresolved grievances, repetitive discussions and limited follow-up gradually reduce public enthusiasm for participation.
- ✓ Participation fatigue was found to be driven by **transparency concerns (45.46%)**, **lack of relevance of discussions (42.0%)**, **repetitive discussions (33.4%)**, **trust deficit (32.7%)**, **political interference (27.9%)** and **weak grievance resolution (16.2%)**.

Major Policy Recommendations

- **National Gram Sabha Awareness and Mobilisation Mission:** Launch a National Gram Sabha Awareness, Procedural Literacy and Mobilisation Mission to strengthen citizen awareness, procedural understanding and democratic participation.
- **Strengthen Community Mobilisation:** Institutionalise structured pre-Gram Sabha mobilisation through Ward Members, Self-Help Groups, frontline workers, youth groups and community institutions to ensure wider citizen outreach.
- **Livelihood-Sensitive Scheduling:** Schedule Gram Sabha meetings by considering agricultural cycles, local work patterns, migration realities and community preferences.
- **Improve Transparency and Accountability:** Institutionalise Action Taken Reports (ATRs), grievance-tracking systems, public review mechanisms and advance disclosure of agendas, beneficiary lists and budgets to build public trust.
- **Leverage Technology and Convergence:** Strengthen convergence between Panchayati Raj Institutions and line departments and use digital tools such as SMS alerts, WhatsApp groups, IVRS and eGramSwaraj-linked communication systems to enhance citizen engagement.

Significance of the Report

- **Strengthening Participatory Democracy:** The report provides an evidence-based roadmap for revitalising Gram Sabha as the foundation of

grassroots democracy and citizen-led governance.

- **Improving Accountability and Public Trust:** Its recommendations seek to improve transparency, grievance redressal, responsiveness and visible governance outcomes, thereby strengthening citizens’ trust in local institutions.
- **Advancing Inclusive Rural Governance:** By addressing participation gaps among women, youth, migrants and vulnerable groups, the report promotes more inclusive and representative local governance.
- **Enhancing Community-Led Development:** Stronger Gram Sabhas can improve local planning, monitoring of public services and community ownership of development processes.

1.8. All India Survey on Higher Education (AISHE) 2023-24

SYLLABUS

GS-2: *Issues relating to development and management of Social Sector/Services relating to Health, Education, Human Resources.*

Context

The Union Ministry of Education released the All-India Survey on Higher Education (AISHE) Reports for 2022-23 and 2023-24, highlighting continued growth in enrolment, Gross Enrolment Ratio (GER), gender parity, and social inclusion in India’s higher education sector.

About the All-India Survey on Higher Education (AISHE)

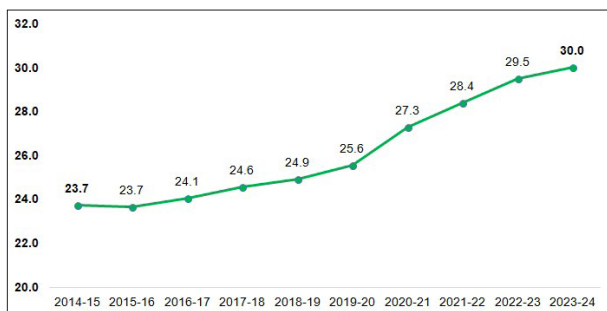
- It is an annual survey launched by the Ministry of Education in **2010–11** to collect comprehensive institution-level data on **India’s higher education sector**, serving as the primary source of official statistics for policy formulation, planning and monitoring.
- Data is collected through a **web-based Data Capture Format (DCF)** developed by the Department of Higher Education and the National Informatics Centre (NIC), covering student enrolment, faculty and staff, infrastructure, examination results, research and institutional profile.
- Institutions **voluntarily upload self-reported data**,

which is validated and scrutinised by the Ministry before publication.

- AISHE also generates key indicators such as the **Gross Enrolment Ratio (GER)**, **Gender Parity Index (GPI)** and **Pupil-Teacher Ratio (PTR)**, and supports the implementation and monitoring of the **National Education Policy (NEP) 2020**.

Key Findings of AISHE 2023-24

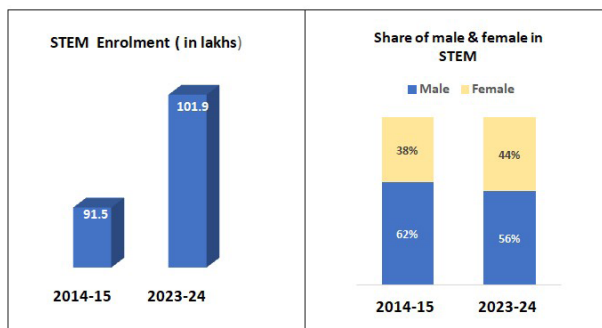
- **Institutional Coverage:** A total of **59,553 Higher Education Institutions (HEIs)** participated out of **64,756** registered institutions, recording a participation rate of around **92%**.
✓ These included **1,278 universities, 46,468 colleges and 11,787 standalone institutions**.
- **Gross Enrolment Ratio (GER):** The **Gross Enrolment Ratio (GER)** increased to **30.0** in 2023-24 from **29.5 in 2022-23** and **23.7 in 2014-15**.
✓ Female GER reached **31.2**, remaining higher than male GER for the **seventh consecutive year**, while GER for **SCs (27.8)** and **STs (22.8)** also improved.



- **Gender Parity:** The **Gender Parity Index (GPI)** stood at **1.08** and has remained above **1.0** since **2017-18**, indicating higher female participation than males in higher education.
- **Student Enrolment:** Total student enrolment reached a **record 4.50 crore**, an increase of **31.5%** since 2014-15.
✓ Female enrolment rose to **2.24 crore (up 42.2%)**, while **Undergraduate programmes accounted for 76.8%** of enrolment, followed by **Postgraduate programmes (12.9%)**.
- **Social Inclusion:** Enrolment of disadvantaged groups increased to **69.72 lakh (SC)**, **28.83 lakh (ST)** and **1.80 crore (OBC)**.

- ✓ Minority enrolment reached **33.3 lakh**, female minority enrolment increased by **62.9%** since 2014-15, and the **North-East recorded 13.2 lakh enrolments**, with female enrolment exceeding male enrolment.

- **STEM Education:** **STEM enrolment** increased to **1.02 crore**, accounting for **22.5%** of total enrolment.
✓ Women constituted **44%** of STEM students, up from **38.4%** in 2014-15.
- **Faculty and Teaching Workforce:** Total faculty strength increased to **17.32 lakh**, with women accounting for **44.9%** of faculty members.
✓ Female faculty rose from **5.69 lakh in 2014-15 to 7.78 lakh in 2023-24**, while the **Pupil-Teacher Ratio (PTR)** stood at **22** in regular mode and **19** in universities and constituent units.
- **Institutional Profile:** India has **1,289 registered universities and 48,246 registered colleges**, including **18 women's universities and 19 open universities**.
✓ Around **70% of colleges are private unaided**.
- **Foreign Students:** India hosted **58,134 foreign students from 173 countries**.
✓ The top source countries were **Nepal, UAE, the United States, Bangladesh, Nigeria and Zimbabwe**.
- **Out-turn (Graduates):** Total pass-outs exceeded **1.1 crore**.
✓ The highest undergraduate out-turn was in **B.A., B.Sc., B.Com. and B.E./B.Tech.**, while the highest postgraduate out-turn was in **M.A., M.Sc., MBA and M.Com.**



Significance

- **Expansion of Higher Education:** Reflects the sustained growth and increasing reach of India's higher education system over the past decade.
- **NEP 2020 Implementation:** Demonstrates progress

towards the National Education Policy (NEP) 2020 goals of improving access, equity and quality in higher education.

- **Inclusive Growth:** Rising GER and enrolment among women, SCs and STs indicate greater educational inclusion and social equity.
- **Gender Empowerment:** Higher female participation and a Gender Parity Index (GPI) above 1 highlight improved gender representation in higher education.
- **STEM Workforce:** Increasing STEM enrolment, particularly among women, strengthens India's future scientific, technological and innovation ecosystem.
- **Evidence-based Governance:** AISHE provides reliable data for policy formulation, resource allocation, institutional planning and monitoring of the higher education sector.

1.9. CCEA Approves Better-Quality Rice under PMGKAY

SYLLABUS

GS-2: Government policies and interventions for development in various sectors and issues arising out of their design and implementation; Issues relating to poverty and hunger.

Context

The Cabinet Committee on Economic Affairs (CCEA) has approved revised rice quality specifications under the Pradhan Mantri Garib Kalyan Anna Yojana (PMGKAY) and other welfare schemes to provide better-quality rice to over 80 crore beneficiaries.

More on the News

- The Cabinet has revised rice quality standards under the Public Distribution System (PDS) for the first time in nearly three decades.
- The permissible broken grain content has been reduced from **25% to 10% for raw rice** and from **16% to 5% for parboiled rice**, while beneficiaries' foodgrain entitlements remain unchanged.
- Procurement of improved-quality rice will begin immediately and will be implemented across procuring States in a phased manner by the **Kharif Marketing Season (KMS) 2027–28**.
- Distribution under PMGKAY and other welfare

schemes will also be phased.

- The reform includes **QR code tagging of rice bags** for end-to-end traceability, productive utilisation of separated broken rice, and is expected to generate annual savings of about **₹2,161 crore** through lower logistics, storage and packaging costs.

Raw Rice (White Rice)

- Raw rice is polished white rice obtained after milling, in which the husk, bran, and germ are removed.
- It has a soft texture, mild taste, and is the most commonly consumed type of rice.

Parboiled Rice

- Parboiled rice is rice that is soaked, steamed, and dried while still in the husk before milling.
- This process helps retain more nutrients and produces firmer, non-sticky grains after cooking.

About the Pradhan Mantri Garib Kalyan Anna Yojana (PMGKAY)

ABOUT THE PRADHAN MANTRI GARIB KALYAN ANNA YOJANA (PMGKAY)		
	Launched	26 March 2020 during the COVID-19 pandemic
	Ministry	Ministry of Consumer Affairs, Food & Public Distribution (Department of Food & Public Distribution)
	Objective	To ensure food security by providing free foodgrains to eligible households covered under the National Food Security Act (NFSA), 2013.
	Coverage	Around 81.35 crore beneficiaries comprising Antyodaya Anna Yojana (AAY) households and Priority Households (PHH).
	Implementation	Through the Targeted Public Distribution System (TPDS) by States/UTs.
	Entitlement	• AAY: 35 kg of foodgrains per family per month. • PHH: 5 kg of foodgrains per person per month.
	Cost to Beneficiaries	Foodgrains are provided free of cost since 1 January 2023.
	Extension	Extended for five years (1 January 2024–31 December 2028).
	Financial Outlay	Approximately ₹11.80 lakh crore over five years.
	Major Feature	Supports portability through One Nation One Ration Card (ONORC).

Significance

- **Improves Food Quality:** Ensures beneficiaries receive rice with better grain integrity, appearance and consumer acceptability without reducing their entitlement.
- **Strengthens Food Security:** Moves beyond ensuring food availability to delivering higher-quality food grains under the NFSA framework.
- **Enhances Efficiency:** Productive utilisation of separated broken rice and direct auction from millers' premises reduce wastage and improve resource utilisation.
- **Reduces Fiscal Burden:** Expected annual savings of about ₹2,161 crore through lower transportation, storage and packaging costs, along with additional revenue from the sale of broken rice.
- **Promotes Transparency:** QR-code tagging enables end-to-end traceability of rice bags, improving inventory management and reducing leakages in the Public Distribution System.

1.10. Academic Bank of Credits and APAAR

SYLLABUS

GS-2: Government Policies and Interventions for Development in various sectors and Issues arising out of their Design and Implementation; Important Aspects of Governance.

Context

The University Grants Commission (UGC) has directed Higher Educational Institutions (HEIs) to upload students' academic credit data to the National Academic Depository–Academic Bank of Credits (NAD-ABC) portal by June 30, 2026, bringing renewed attention to the ABC and APAAR as key pillars of India's digital education ecosystem.

More on the News

- As of July 2026, over **26.35 crore verified APAAR IDs** have been generated, making it one of the world's largest student digital identity initiatives.
- As per official data, **2,963 institutions** have registered on the platform, while more than **110.65 crore educational records** have been uploaded

- APAAR and ABC are increasingly integrating records across **school education, higher education, and skill development**, while APAAR IDs can also be generated through **Common Service Centres (CSCs)** to enhance accessibility in remote areas.

Understanding the Digital Architecture: ABC and APAAR

- **APAAR (Automated Permanent Academic Account Registry)** is a unique lifelong student identifier developed under the **"One Nation, One Student ID"** initiative. It creates a unified digital academic identity for learners and enables the integration of records across school education, higher education, skill development, and lifelong learning pathways.
- **Academic Bank of Credits (ABC)**, introduced under the **National Education Policy (NEP) 2020**, is a digital repository that enables students to **accumulate, store, transfer, and redeem academic credits** earned from recognized institutions. It functions as a virtual academic credit bank, allowing learners to retain and utilize credits across different programmes and institutions.
- The ecosystem operates through the **NAD-ABC platform**, which links learners, Higher Educational Institutions (HEIs), Skill Awarding Bodies, and regulatory authorities. Academic credits, marksheets, certificates, and degrees are uploaded by authorized institutions and mapped to a learner's APAAR-linked profile.
- By integrating with platforms such as **DigiLocker** and leveraging interoperable digital infrastructure, APAAR and ABC create a secure, portable, and verifiable academic record system. This supports the **Multiple Entry and Exit (MEE)** framework and the **National Credit Framework (NCrF)**, enabling learners to pursue flexible educational pathways without losing previously earned credits.

Significance for India's Education System

- **Enhanced Academic Mobility:** Students can transfer credits across institutions and programmes, reducing barriers to mobility and promoting a more flexible higher education ecosystem.



ABC-APAAR

India's Digital Academic Ecosystem

One Student ID. Flexible Learning. Lifelong Opportunities.



WHAT ARE ABC & APAAR?



APAAR

(Automated Permanent Academic Account Registry)

A unique, lifelong 12-digit student ID under "One Nation, One Student ID" that creates a unified digital academic profile for every learner.



ABC

(Academic Bank of Credits)

A digital repository that allows students to accumulate, store, transfer and redeem academic credits from recognised institutions.

BY THE NUMBERS (July 2026)



26.35+
CRORE

Verified APAAR IDs



110.65+
CRORE

Educational Records
Uploaded



2,963

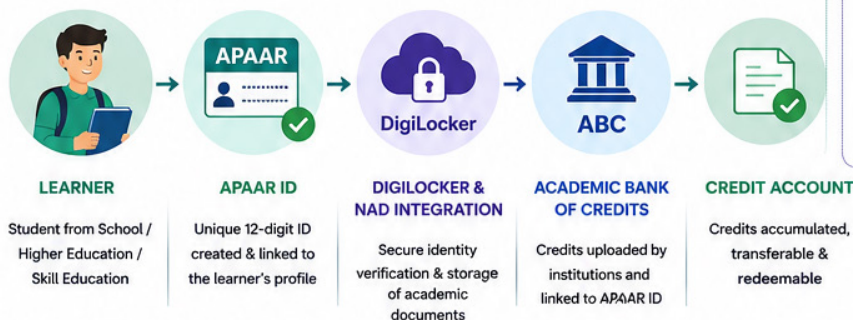
Registered Institutions
on ABC Platform



CSC-enabled Access

APAAR IDs available
through Common Service
Centres for wider reach

HOW IT WORKS



WHO PARTICIPATES?



Higher Educational Institutions
(Universities, Colleges, etc.)



Skill Awarding Bodies
(Recognised Skill Institutions)



Award Granting Institutions
(Upload degrees, certificates,
marksheets & credit records)

WHAT CAN STUDENTS DO?



Earn Credits

From different
institutions &
programmes



Transfer Credits

Across institutions
anytime,
anywhere



Redeem Credits

Towards a certificate,
diploma, degree
or qualification



Pause & Resume

Take a break and
return without
losing progress



Flexible Learning Pathways

Design your own
academic journey

- **Operationalising Multiple Entry and Exit:** The system enables learners to pause and resume their educational journey while preserving earned credits, a key reform envisaged under NEP 2020.

- **Integrated Lifelong Learning Ecosystem:** By linking records from school education, higher education, and skill development, the platform supports continuous learning, reskilling, and upskilling

throughout an individual's life.

- **Greater Transparency and Credibility:** Digitally verified academic records reduce document fraud, simplify credential verification, and enhance trust in educational qualifications.
- **Improved Digital Governance:** A unified digital academic architecture streamlines record management, reduces administrative burdens, and promotes efficient service delivery across educational institutions.

Future Implications/Challenges

- **Data Privacy and Security:** Protecting sensitive student information and ensuring robust

consent-based data sharing mechanisms will be critical for sustaining public trust.

- **Institutional Readiness and Standardisation:** Effective implementation requires timely uploading of records, interoperable systems, and standardised credit frameworks across institutions.
- **Awareness and Adoption:** Wider awareness among students and proactive participation by educational institutions are necessary to fully realise the benefits of the ecosystem.
- **Bridging the Digital Divide:** Ensuring equitable access to digital infrastructure and services, particularly in remote and underserved regions, remains essential for inclusive implementation.



2.1. State Visit of the Prime Minister to Seychelles

SYLLABUS

GS-2: Bilateral, regional and global groupings and agreements involving India and/or affecting India's interests.

Context

Recently, Prime Minister Narendra Modi paid a three-day State Visit to Seychelles, marking 50 years of India–Seychelles diplomatic relations and reaffirming the two countries' Special Strategic Partnership.

More on the News

- India and Seychelles unveiled **19 key outcomes**, including development assistance, new agreements and strategic announcements, while Seychelles also joined the **Coalition for Disaster Resilient Infrastructure (CDRI)**.
- Prime Minister Modi became the **first Indian Prime Minister to address the National Assembly of Seychelles** and attended the country's National Day celebrations as the **Guest of Honour**.



Key Outcomes of the Visit

- Defence & Maritime Security:** India gifted **one Fast Patrol Vessel** to Seychelles.
 - ✓ Handed over **10 utility vehicles** and **5 Laser Radial class boats** to the Seychelles Defence Force.
 - ✓ Completed the **refit of PS Zoroaster** for the Seychelles Coast Guard.
 - ✓ Announced the **upgradation of a Dornier aircraft with a glass cockpit**.
 - ✓ Both sides agreed to strengthen cooperation in maritime security and address challenges such as **illegal fishing, piracy and drug trafficking**.
- Development Assistance:** India extended an **Umbrella Line of Credit (LoC) worth ₹1,250 crore** through EXIM Bank to support projects under the **Special Economic Package (SEP)** announced in February 2026.
- Key Agreements (9 MoUs/Treaties)**
 - ✓ **Capacity Building:** MoU between SSIFS and Seychelles' Ministry of Foreign Affairs for diplomatic training.
 - ✓ **Digital Payments:** MoU between **NPCI International Payments Ltd.** and the Central Bank of Seychelles for deployment of **UPI**.
 - ✓ **Health:** Agreement under the **Jan Aushadhi Scheme** for the supply of affordable Indian generic medicines.
 - ✓ **Agriculture:** MoU between **ICAR and Seychelles** for agricultural research, education and a **2026–2031 Work Plan**.
 - ✓ **Extradition Treaty** to strengthen cooperation against transnational crime.
 - ✓ **Shipping:** Recognition of Indian seafarers' training and certification on Seychelles-flagged vessels.
 - ✓ **Space:** MoU on cooperation in the peaceful uses of outer space.
 - ✓ **Infrastructure:** MoU for preliminary preparations of the **New Seychelles National Hospital**.
- Education, Health & Capacity Building:** Virtual ground-breaking ceremony for the **Professional and Technical Education Centre**.



INDIA – SEYCHELLES BILATERAL RELATIONS



PARTNERS IN PROGRESS, UNITED FOR A SUSTAINABLE FUTURE

1. HISTORICAL RELATIONS

-  1770: First group of five Indians arrived as plantation workers.
-  Diplomatic relations established after Seychelles' independence in 1976.
-  India opened Mission in Victoria (1979); Seychelles opened Mission in New Delhi (2008).
-  PM Narendra Modi first Indian PM to visit Seychelles in 34 years (2015).
-  Feb 2026: Adopted SESEL Joint Vision for Sustainability, Economic Growth & Security through Enhanced Linkages.
-  India announced USD 175 million Special Economic Package (SEP).



2. ECONOMIC RELATIONS

2023–24 Bilateral Trade

- India's exports: USD 76.19 million
- India's imports: USD 8.69 million

2024–25 (April 2024–February 2025)

- Total trade: USD 72.92 million
- Exports: USD 68.64 million
- Imports: USD 4.28 million

Bank of Baroda has operated in Victoria since 1978.



3. DEFENCE RELATIONS

-  Strong cooperation in maritime security, anti-piracy, EEZ surveillance & capacity building.
-  India has gifted Seychelles 2 Dornier aircraft, patrol vessels, 6 Coastal Surveillance Radar Systems & other defence equipment.
-  Enhanced maritime security with Dornier aircraft, patrol vessels, radar systems & defence equipment.
-  Joint Military Exercise "LAMITYE" held biennially.
-  Seychelles participates in Indian Navy exercises like MILAN.



4. ENERGY RELATIONS

-  MoU on Renewable Energy Cooperation signed in 2015.
-  Joined International Solar Alliance (ISA) in 2015.
-  ISA Framework Agreement ratified in 2017.
-  Under ISA, India supports:
 - Solar-powered cold storage (Praslin Island)
 - Solar chillers
 - Solar rooftop systems
 - Solar dryers
 - Solar pumps



5. INDIAN DIASPORA

-  Around 6,000 Persons of Indian Origin (PIOs) residing in Seychelles (~5% of population).
-  Mahatma Gandhi statue at Peace Park, Victoria (2022).
-  Two Seychellois-origin personalities honoured with Pravasi Bharatiya Samman Award (PBSA):
 - Dr. V. Ramadoss (2006)
 - Justice D. Karunakaran (2015)



Sources: MEA, PIB, PMO

- **Commemorative & Strategic Announcements:** Joint launch of a **commemorative logo** celebrating **50 years of diplomatic relations**.
 - ✓ **Seychelles joined the Coalition for Disaster Resilient Infrastructure (CDRI).**
 - ✓ Both leaders reaffirmed commitment to a stronger partnership based on democracy, rule of law and people-centric governance.
 - ✓ Prime Minister Modi called for enhanced **parliamentary exchanges** between the two democracies.

2.2. 16th India-Japan Annual Summit

SYLLABUS

GS-2: *Bilateral, regional and global groupings and agreements involving India and/or affecting India's interests.*

Context

Prime Minister Narendra Modi and Japanese Prime Minister Sanae Takaichi held the 16th India-Japan Annual Summit in New Delhi, adopting several agreements to deepen the Special Strategic and Global Partnership.

About the 16th India-Japan Annual Summit

- It was held during Japanese Prime Minister **Sanae Takaichi's** first official visit to India from **1–3 July 2026**.
- Both leaders reviewed the progress made since the **15th India-Japan Annual Summit (2025)** and reaffirmed their commitment to strengthening the **Special Strategic and Global Partnership**.
- The Summit identified **three priority pillars for future cooperation**:
 - ✓ Defence & Security Cooperation
 - ✓ Economic Partnership (including Economic Security, Energy Resilience, Technology & Innovation)

- ✓ People-to-People Exchanges
- India welcomed Japan's updated **Free and Open Indo-Pacific (FOIP)** vision, which aligns with India's **Indo-Pacific Oceans' Initiative (IPOI)** and **MAHASAGAR** vision.



Key Outcomes of the 16th India-Japan Annual Summit

- **Defence & Security:** Agreed to hold the **4th India-Japan 2+2 Ministerial Meeting** in Tokyo in 2026.
- **Economic Security & Trade:** Adopted the **India-Japan Joint Declaration on Economic Security** covering cooperation in **semiconductors, critical minerals, ICT (including AI), clean energy and pharmaceuticals**.
- ✓ Agreed to strengthen resilient supply chains, accelerate the review of the **India-Japan CEPA**, and continue progress towards the **10 trillion Yen investment target**.
- ✓ Launched the **India-Japan SME Forum** and expanded startup and MSME cooperation under **Japan-India Startup Support Initiative (JISSI)**.
- ✓ **Exchange of Letters between the International Financial Services Centres Authority (IFSCA) and Japan's Financial Services Agency (JFSA)** to strengthen cooperation in financial regulation, supervision, FinTech, RegTech and exchange of financial market best practices.
- ✓ Decided to expand maritime security cooperation through exercises, Maritime Domain Awareness (MDA), MRO and defence technology collaboration under **Make in India**.
- ✓ Reached an agreement in principle on the **UNICORN (Unified Complex Radio Antenna)** project.

INDIA-JAPAN

BILATERAL RELATIONS

A Partnership for Peace, Prosperity and a Free and Open Indo-Pacific

1. HISTORICAL RELATIONS • 752 AD: Indian monk Bodhisena consecrated the Great Buddha at Todaiji Temple, Nara. • India-Japan Association (1903) – Japan's oldest international friendship body. • Peace Treaty signed on 28 April 1952, marking diplomatic relations. • Evolution: Global Partnership (2000) → Strategic & Global Partnership (2006) → Special Strategic & Global Partnership (2014). • Strategic convergence: India's Act East Policy & MAHASAGAR with Japan's vision of a Free and Open Indo-Pacific (FOIP).	2. ECONOMIC RELATIONS • CEPA in force from 1 Aug 2011. • Bilateral trade (FY 2025–26): US\$27.48 billion (Exports: US\$6.04 bn; Imports: US\$21.44 bn). • Japan is India's 5th largest source of FDI; cumulative FDI (Apr 2000–Mar 2026): US\$48.14 billion. • Japanese ODA (since 1958): Largest bilateral donor supporting infrastructure, transport, power, etc. • Mumbai–Ahmedabad High-Speed Rail (Shinkansen): India's first bullet train corridor with Japanese tech & financial support. • India-Japan Act East Forum (2017): Promotes connectivity & infrastructure in India's Northeast.	3. TECHNOLOGY & INNOVATION PARTNERSHIP • Space Cooperation: ISRO–JAXA MoU (2016); LUPEX (Chandrayaan-5) cooperation; space situational awareness; satellite navigation. • Science & Technology: Year of Science, Technology & Innovation (2025–26); joint R&D; IIT Bombay–Tohoku University Joint Institute of Excellence; KEK–India Beamline. • Digital Partnership 2.0: AI • Semiconductors • IoT • Digital Public Infrastructure • Digital talent. • Economic Security Initiative: Semiconductors • Critical minerals • Telecom • Clean energy • Supply chain resilience.
4. DEFENCE & SECURITY RELATIONS Memorandum on Defence Cooperation & Exchanges (2014). Key Defence Agreements: • Transfer of Defence Equipment & Technology (2015) • Protection of Classified Military Information (2015) • Navy Implementing Arrangement (2018) • Reciprocal Provision of Supplies and Services (RPSS) (2020) 2+2 Foreign & Defence Ministerial Meetings (regular). Joint Exercises: Dharma Guardian (Army), JIMEX (Navy), Veer Guardian (Air Force), Malabar, MILAN. Co-development of UNICORN (Unified Complex Radio Antenna) masts for Indian Navy—first defence co-development project. 2025 Joint Declaration on Security Cooperation to deepen cooperation against emerging challenges.	5. ENERGY & SUSTAINABILITY PARTNERSHIP • India-Japan Clean Energy Partnership (CEP) launched in 2022. • Asia Zero Emission Community (AZEC) framework. • Cooperation in renewables, hydrogen, energy efficiency, storage & grid resilience. • Multiple MoUs signed on clean energy, critical minerals & environment during 2025 Annual Summit.	6. PEOPLE-TO-PEOPLE & CULTURAL RELATIONS • Indian community in Japan: Around 59,000 Indians reside in Japan. • Civilizational & cultural bond: Buddhism has been a historic bridge; deep cultural affinity continues. • Education: LOTUS Programme; Sakura Science Programme; academic & researcher exchanges; IIT–University partnerships. • Tourism & culture: India–Japan Year of Tourism Exchange (2023–24); Cultural Exchange MoU (2025); promotion of art, language & heritage.

* Data source: Ministry of External Affairs (MEA), Government of India (June 2026)

- **Energy Cooperation:** Adopted the *Joint Statement on Energy Resilience* and agreed to cooperate on strategic petroleum reserves, maritime energy transport and energy supply chains.
 - ✓ Launched the *India-Japan Cooperative Biogas for Growth (CBG) Initiative* to support India's target of establishing **1,000 biogas and organic fertilizer plants**.
 - ✓ Signed MoUs on *Batteries* and reaffirmed cooperation in *green hydrogen, clean ammonia, solar PV and nuclear energy*.
- **Technology & Innovation:** Adopted the *India-Japan Joint Statement on AI Cooperation* and held the inaugural *India-Japan AI Strategic Dialogue*.
 - ✓ Signed MoUs on *IndiaAI Mission–METI, LLMs, internet governance (NIXI–JPNIC), pharmaceuticals & medical devices, geology & critical minerals, and life sciences research (RIKEN partnerships)*.
 - ✓ Welcomed cooperation in *Quantum Technologies* and the *LUPEX Mission*.
- **Infrastructure & Connectivity:** Reaffirmed commitment to the *Mumbai-Ahmedabad High-Speed Rail Project* and India's *7,000-km High-Speed Rail Network* vision.
 - ✓ Signed the *Next Generation Mobility Partnership (NGMP)* covering railways, automobiles, aviation, shipbuilding, ports, logistics and urban development.
 - ✓ Welcomed progress in Japan-supported metro, healthcare, education and horticulture projects.
- **People-to-People & Regional Cooperation:** Declared *2027 as the India-Japan Year of Shared Horizons* to celebrate **75 years of diplomatic relations**.
 - ✓ Expanded cooperation in education, tourism, Japanese language, science exchanges and State–Prefecture partnerships.
 - ✓ Reaffirmed cooperation through the *Quad, ASEAN, BIMSTEC, supported UNSC reforms*, and condemned terrorism in all its forms.

2.3. Indian Prime Minister's State Visit to Indonesia

SYLLABUS

GS-2: *Bilateral, regional and global groupings and agreements involving India and/or affecting India's interests.*

Context

Prime Minister Narendra Modi's State Visit to Indonesia resulted in 20 major outcomes, including 14 MoUs/agreements and six major announcements, further strengthening the India–Indonesia Comprehensive Strategic Partnership (CSP) established in 2018.

More on the News

- PM Modi held bilateral talks with President Prabowo Subianto, received *Indonesia's highest civilian honour – Bintang Adipurna (34th International award)*, addressed the Indonesian Parliament and inaugurated the India-supported conservation project at the *UNESCO-listed Prambanan Temple*.
- The visit marked PM Modi's *first bilateral visit to Indonesia since the establishment of the Comprehensive Strategic Partnership in 2018*.
- It reflected the shared vision of both countries for a *free, open, inclusive and rules-based Indo-Pacific*, aligned with India's *Act East Policy* and *MAHASAGAR Vision*.



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INDIA-INDONESIA BILATERAL RELATIONS



Partners for Peace, Prosperity & a Shared Indo-Pacific Future

1 HISTORICAL & STRATEGIC FOUNDATIONS

- Over 2,000 years of cultural and commercial ties.
- Hinduism, Buddhism and later Islam reached Indonesia from India.
- Champions of Asian-African solidarity: Bandung Conference (1955) and Non-Aligned Movement (1961).
- Comprehensive Strategic Partnership established in 2018.
- Shared Vision on Maritime Cooperation in the Indo-Pacific (2018).
- 1950-2025: 75 years of diplomatic relations.

2 ECONOMIC & COMMERCIAL PARTNERSHIP

Bilateral trade (2024-25):
US\$28.15 billion.

Local Currency Settlement (LCS) Framework signed in 2024.

Investments:

- Indian investment in Indonesia in key sectors.
- Indonesian investment in India steadily rising.

Tourism & Connectivity:
Air India expanded operations (Delhi-Bali direct flight); India is among Bali's top tourist markets.

Trade Profile

India's major imports:

- Coal
- Palm oil
- Crude oil
- Natural rubber

India's major exports:

- Petroleum products
- Vehicles
- Telecom equipment
- Pharmaceuticals

3 DEFENCE & MARITIME SECURITY

- Defence cooperation agreement (2001); ties further strengthened under CSP (2018).
- Regular exercises: Garuda Shakti (Army), Samudra Shakti (Navy), IND-INDO CORPAT.
- Indian Coast Guard & BAKAMLA cooperation for maritime safety and security.
- Defence industry cooperation; annual Defence Industry Exhibition.
- Regular JDCC meetings and Defence Ministers' Dialogue (3rd Dialogue held in Nov 2025).
- Cooperation anchored in SAGAR (Security and Growth for All in the Region).

4 TECHNOLOGY & INNOVATION COOPERATION

- ISRO-BRIN cooperation: satellite tracking, space technology and applications.
- Biak Telemetry, Tracking & Command (TTC) Facility operational agreement.
- S&T Cooperation MoU (2018); joint research and innovation initiatives.
- First India-Indonesia Joint Committee on Science & Technology held in 2025.



5 PEOPLE-TO-PEOPLE & CULTURAL RELATIONS

- Indian community:** Around 15,000 NRIs and over 1.2 lakh Persons of Indian Origin (PIOs) in Indonesia.
- Cultural Centres:** Jawaharlal Nehru Indian Cultural Centre (Jakarta) and Swami Vivekananda Cultural Centre (Bali).
- Nalanda-Muarajambi link:** Handover of Nalanda Copper Plate replica (2025) symbolising shared Buddhist heritage.
- Prambanan Temple:** 9th-century Hindu temple in Java—an enduring symbol of ancient civilisational and cultural ties between India and Indonesia.



Prambanan Temple, Indonesia (UNESCO World Heritage Site)

Key Outcomes

Defence & Maritime Cooperation:

- ✓ Indonesia agreed in principle to procure **two batteries of the BrahMos supersonic cruise missile system valued at \$200 million** and **Astra Mk-1 Beyond Visual Range Air-to-Air Missiles** for its Su-30 fighter aircraft.
- ✓ Indonesia **became the third foreign country** to procure BrahMos after the Philippines and Vietnam.
- ✓ Extension of MoU and Implementation **Agreement on Maritime Safety and Security Cooperation**.
- ✓ Deployment of an **Indonesian Liaison Officer at the Information Fusion Centre-Indian Ocean Region (IFC-IOR)**.

Critical Minerals & Industrial Supply Chains:

- ✓ MoU on **Minerals and Steel Supply Chains**.
- ✓ Collaboration on **rare earth magnets** between India's NFTDC, Midwest Ltd. and Indonesia's PT PERMINAS.

- ✓ Strengthening resilient supply chains for **critical minerals**, steel and advanced manufacturing.

- ✓ Strategic Joint Venture between Steel Authority of India (SAIL) and PT Krakatau Steel for establishment of a **Stainless-Steel Slab manufacturing facility in Indonesia**.

Space Cooperation:

- ✓ Extension of the **Framework Agreement on Peaceful Uses of Outer Space**.
- ✓ Promotion of joint research, technology sharing and capacity building.

Technology & Digital Partnership:

- ✓ MoU on **Telecommunication Technologies and Services**.
- ✓ MoU on **Research, Technology and Innovation**.
- ✓ Launch of **Indonesia Open Network (ION)** based on India's **Open Network for Digital Commerce (ONDC)** architecture.

Healthcare & Pharmaceuticals:

- ✓ MoU between **CDSO (India)** and **BPOM**

(Indonesia) on medical products regulation.

- ✓ Implementation Agreement on **Health Workforce Collaboration**.
- **Agriculture & Food Security:**
 - ✓ MoU on **Agriculture and Allied Sectors**.
 - ✓ India announced the supply of **100 tonnes of DWR-162 wheat seeds** to Indonesia.
- **Disaster Management:**
 - ✓ MoU between **India's NDMA** and Indonesia's National agency for disaster management.
- **Education & Skill Development:**
 - ✓ **Indian Institute of Management (IIM) Bangalore** to establish its branch campus at **Singhasari Special Economic Zone**, Indonesia.
- **Cultural & People-to-People Cooperation:**
 - ✓ India to assist in the **conservation and restoration of the UNESCO World Heritage Prambanan Temple Complex** in Yogyakarta.
 - ✓ Commemoration of **2026–27 as the "Tagore–Dewantara Year of Cultural and Educational Diplomacy"** marking the centenary of Rabindranath Tagore's 1927 visit to Indonesia.
- **Democratic & Institutional Cooperation:**
 - ✓ MoU between the **Election Commission of India (ECI)** and Indonesia's **General Elections Commission (KPU)**.

2.4. 3rd India–Australia Annual Summit

SYLLABUS

GS-2: Bilateral, regional and global groupings and agreements involving India and/or affecting India's interests.

Context

Prime Minister Narendra Modi visited Australia at the invitation of Australian Prime Minister Anthony Albanese to attend the Third India–Australia Annual Summit in Melbourne, where both countries agreed to significantly deepen their Comprehensive Strategic Partnership (CSP).

Key Outcomes

- **Joint Declaration on Defence and Security Cooperation (JDDSC):** Replaces the **2009 Joint**

Declaration on Security.

- ✓ Establishes an **Annual Defence Ministers' Dialogue**.
- ✓ Expands cooperation in defence interoperability, maritime security, defence industrial collaboration, cyber security and emerging technologies, counter-terrorism, Humanitarian Assistance and Disaster Relief (HADR), capacity building, and cooperation through **UNCLOS, ASEAN, Pacific Islands Forum (PIF), Indian Ocean Rim Association (IORA)** and other regional mechanisms.



- **Maritime Security Collaboration Roadmap (MSCR):** Strengthens maritime cooperation through information sharing, maritime domain awareness, capability development, capacity building and operational coordination.
- **India–Australia Joint Statement on Energy Security:** Reaffirms cooperation for secure, reliable, affordable and sustainable energy supplies.
- **Administrative Arrangement under the Civil Nuclear Agreement:** Operationalises the 2014 India–Australia Civil Nuclear Agreement to enable Australian uranium exports to India for peaceful purposes under IAEA safeguards.
- **Australia–India Partnership on Cyber, Critical Technologies and Supply Chains (PACTS):** Builds upon the **2020 Framework Arrangement on Cyber**

and Cyber Enabled Critical Technology Cooperation.

- ✓ Promotes collaboration in critical technologies, cyber security, digital resilience, supply chain diversification, defence research, and regional and national security.
- **India–Australia Sports Collaboration Roadmap:** Promotes cooperation in high-performance sports,

para sports, sports science, coach development, major sporting events, sports industry, women in sports annual **Big Bash League (BBL)** matches in India.

- ✓ Collaborates for the **2030 Commonwealth Games (Ahmedabad)** and **Brisbane 2032 Olympic and Paralympic Games**.



INDIA – AUSTRALIA BILATERAL RELATIONS



Comprehensive Strategic Partners

1 HISTORICAL & STRATEGIC RELATIONS

- Relations date back to **1788**, when trade with the penal colony of New South Wales was conducted through the British East India Company via Kolkata.
- India Trade Office established in Sydney in **1941**, leading to diplomatic relations even before Independence.
- Bilateral ties elevated from Strategic Partnership (**2009**) to Comprehensive Strategic Partnership (CSP) in **2020**.
- First hoisting of the Indian National Flag took place at India House, Canberra on **15 August 1947**.

2 ECONOMIC & COMMERCIAL PARTNERSHIP

- Bilateral trade in goods & services (2025): **AUD 50.21 billion**. India is Australia's 5th largest trading partner.
- India–Australia ECTA operational since 29 Dec 2022; negotiations continue for CECA.
- Growing bilateral investments in both directions.
- Work & Holiday Visa Programme operational under ECTA.
- Supply Chain Resilience Initiative (SCRI) with Japan to strengthen resilient supply chains.

TRADE PROFILE (2025)

India's Imports from Australia

- Coal
- Gold
- LNG
- Copper ores
- Wool

India's Exports to Australia

- Petroleum products
- Pharmaceuticals
- Engineering goods
- Textiles
- Machinery

3 DEFENCE & SECURITY COOPERATION

- Defence cooperation agreement (2001); ties further strengthened under CSP (2020).
- Institutional mechanisms: 2+2 Ministerial Dialogue, Defence Ministerial Dialogue, Defence Policy Talks and Maritime Dialogue.
- Regular joint exercises: AUSINDEX (Navy), AUSTRALIND (Army), Malabar, Milan, Pitch Black and Talisman Sabre.
- Cooperation spans service-to-service talks, logistics arrangements and capability interoperability.

4 SCIENCE, TECHNOLOGY & SPACE COOPERATION

- Australia–India Strategic Research Fund (AISRF) in operation since 2005.
- Indo–Australia Biotechnology Fund (IABF) supports collaborative research in life sciences.
- ISRO and Australian Space Agency (ASA) cooperate on space projects; Australia supports India's Gaganyaan programme through the **Cocos (Keeling) Islands** thrcking facility.
- Joint Science & Technology Committee (JSTC) guides bilateral S&T cooperation.

5 ENERGY, CLIMATE & CRITICAL MINERALS

- India–Australia Energy Dialogue established in 2012; 5th Dialogue held in Oct 2025.
- India–Australia Solar Taskforce and Green Hydrogen Task Force promote clean energy solutions.
- Renewable Energy Partnership (REP) launched in 2024 to expand cooperation in renewables and energy transition.
- India–Australia Critical Minerals Working Group (2023) to secure resilient and diversified supply chains.
- Australia is a member of ISA and CDRI; both countries cooperate on renewable energy in the Indo-Pacific.

6 PEOPLE-TO-PEOPLE & EDUCATION TIES

- Indian-origin community in Australia is around **9.76 lakh** (2021 Census), the second-largest migrant community after the UK.
- Around **1.42 lakh+** Indian students (2025) are enrolled in Australian institutions.
- Australian universities operating in India: Deakin University, University of Wollongong, Western Sydney University, Victoria University and La Trobe University.
- Mobility Arrangement for Talented Early Professionals Scheme (MATES) enables professional mobility.
- Strong sporting links, especially in Cricket and Hockey.

- **Indian Military Instructor at Australian Defence College:** Australia invited an Indian military instructor to serve at the **Australian Defence College during 2028–29**.
- **Centre of Excellence in Mining and Mining Equipment, Technology and Services (METS):** MoU between **MSDE and TAFE, Government of Western Australia** establishes a **National Centre of Excellence at NSTI, Bhubaneswar**.
- **Letter of Intent to Flinders University:** Enables Flinders University to establish its campus in **Bengaluru**.
- **Repatriation of Indian Cultural Artefacts:** Includes

Granite Nandi sculpture (11th–12th century), **Bronze Bhadrakali Trident** (11th century), and **Basalt Six-headed Skanda (Karttikeya)** sculpture (12th century), all from **Tamil Nadu**.

- **Operationalisation of Rooftop Solar Training Academy:** Established at **Pandit Deendayal Energy University (PDEU), Gandhinagar** through collaboration among Australia's **DCEEW, SSCGJ** and **ReNew**.
- **Australia–Canada–India Technology and Innovation (ACITI) Partnership:** Trilateral MoU promoting cooperation in emerging technologies,

innovation and trusted technology partnerships.

- **MoU between Geoscience Australia (GA) and Geological Survey of India (GSI):** Builds upon the *2015 Scientific and Technical Cooperation MoU*.
- **Traditional Knowledge Digital Library (TKDL) Access Agreement:** Grants IP Australia access to India's TKDL database to strengthen patent examination and prevent misappropriation of traditional knowledge.
- **MoU between Satyajit Ray Film and Television Institute (SRFTI) and Griffith Film School:** Establishes collaboration in film education, academic exchanges, joint projects, workshops, summer schools, and cinema and allied fields.
- **Letter of Approval to Victoria University:** Permits Victoria University to establish and operate its campus in Gurugram.

2.5. India-New Zealand

SYLLABUS

GS-2: *Bilateral, regional and global groupings and agreements involving India and/or affecting India's interests.*

Context

Prime Minister Narendra Modi visited New Zealand, the first visit by an Indian Prime Minister in 40 years, during which both countries elevated their bilateral ties to a Strategic Partnership and adopted the India–New Zealand Strategic Partnership: Roadmap to 2030.

Key Outcomes

- **Strategic Partnership:** India and New Zealand elevated bilateral relations to a *Strategic Partnership* and adopted the *roadmap to 2030* to guide cooperation over the next four years.
- **Trade and Economic Cooperation:** Both countries concluded the *India–New Zealand Free Trade Agreement (FTA)*.
 - ✓ Set a target to *double bilateral trade to NZ\$7 billion (≈₹35,000 crore) by 2030*.
- **Defence and Maritime Cooperation:** Signed three major maritime agreements covering *maritime cooperation, hydrography & nautical cartography, and mutual logistics support*.

- ✓ Agreed to establish an *Annual Maritime Security Dialogue*.
- ✓ New Zealand joined the *Maritime Security Pillar* of India's *Indo-Pacific Oceans Initiative (IPOI)*.
- ✓ Both countries welcomed cooperation under *Combined Task Force-150 (CTF-150)* in 2025, with New Zealand in command and India as Deputy Commander, supporting efforts against narcotics smuggling, terrorism and illicit maritime activities.
- **Counter-Terrorism and Security:** Established a *Joint Working Group on Counter-Terrorism (JWG-CT)*.
 - ✓ Agreed to strengthen cooperation against terrorism, cyber threats, organised crime and narcotics trafficking.



- **Agriculture and Dairy:** Signed a *Memorandum of Cooperation on Animal Husbandry and Dairying*.
 - ✓ Launched the *Kiwifruit Action Plan* and announced *Centres of Excellence in Nagaland and Uttarakhand* under the Agricultural Productivity Partnership.
- **Tourism and Connectivity:** Signed a *Memorandum of Arrangement on Tourism*.
 - ✓ Encouraged commencement of *direct non-stop flights* between India and New Zealand.

- **Education, Research and Innovation:** Strengthened cooperation in education, science, innovation and climate-resilient agriculture.
 - ✓ Signed MoUs between **NCPOR–University of Canterbury** (Antarctic research) and **NIFTEM–Massey University** (food technology and academic collaboration).
- **Disaster Management and Climate:** Signed an MoU between **NDMA (India)** and **NEMA (New Zealand)** on disaster management.
 - ✓ New Zealand joined the **Global Biofuels Alliance**, while both countries agreed to deepen cooperation through the **International Solar Alliance (ISA)** and **Coalition for Disaster Resilient Infrastructure (CDRI)**.
- **Culture and People-to-People Relations:** Signed agreements on **Cultural Cooperation**, **National Maritime Heritage Complex–New Zealand Maritime Museum collaboration**, and adopted the **India–New Zealand Joint Action Plan on Sport**.
- **Regional and Multilateral Cooperation:** Reaffirmed commitment to a **free, open and rules-based Indo-Pacific**.
 - ✓ New Zealand reiterated support for **India's permanent membership of a reformed UN Security Council** and India's membership of the **Nuclear Suppliers Group (NSG)**.



INDIA – NEW ZEALAND BILATERAL RELATIONS



Warm Partners | Shared Values | Stronger Together

1 HISTORICAL & STRATEGIC RELATIONS

- Diplomatic relations established in 1952.
- Both are Commonwealth members, share common law traditions and uphold democratic governance.
- New Zealand identified India as a priority country under the “Opening Doors to India” Policy (2011).
- NZ Inc. India Strategy (2011) and India–NZ 2025: Investing in the Relationship (2020) envision an enduring strategic relationship.

2 ECONOMIC & COMMERCIAL PARTNERSHIP

TOTAL TRADE (Year ending March 2026)

US\$ 2.24 BILLION

INDIA IMPORTS FROM NZ

- Fruits & Nuts
- Aluminium
- Wood
- Wool

INDIA EXPORTS TO NZ

- Pharmaceuticals
- Made-up Textile Articles
- Mechanical Machinery
- Electrical Machinery & Equipment

- India is NZ's 11th largest trading partner.
- FTA concluded on **22 Dec 2025** and signed on **27 Apr 2026**.
- NZ to remove duty on **100%** of Indian exports from day one.
- NZ committed **US\$20 billion** investment over 15 years.
- Customs Cooperative Arrangement signed in Aug 2024.
- Authorised Economic Operator – Mutual Recognition Agreement signed in Mar 2025.
- Rakon NZ** chips, manufactured in Bengaluru, were used in Chandrayaan-3.

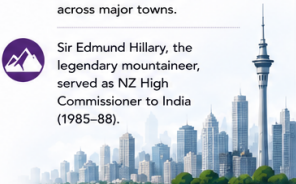
3 DEFENCE & SECURITY COOPERATION

- MoU on Defence Cooperation signed during PM Luxon's visit (March 2025).
- First Defence Strategic Dialogue held in June 2025.
- HMNZS Te Kaha, RNZN ship, visited Mumbai in October 2025.
- IASV Triveni, on Tri-Service All-Women Circumnavigation Expedition Samudra Pradakshina, made a port call at Lyttelton, Christchurch in Dec 2025.
- White Shipping Information Exchange Agreement signed during CNS visit to NZ (Sept–Oct 2022).



4 INDIAN DIASPORA & PEOPLE-TO-PEOPLE TIES

- Around 292,092 people of Indian ethnicity live in New Zealand, including about 70,000 Indian passport holders.
- Hindi is the 5th most spoken language in New Zealand.
- India is the 2nd largest source of international students in NZ with around 8,000 Indian students pursuing higher education.
- Strong people-to-people links through tourism, sports (cricket, hockey, mountaineering) and cultural connections.
- Consulate of India in Auckland operational since Sept 2024; active Indian associations across major towns.
- Sir Edmund Hillary, the legendary mountaineer, served as NZ High Commissioner to India (1985–88).



2.6. India–Oman Relations

SYLLABUS

GS-2: Bilateral, regional and global groupings and agreements involving India and/or affecting India's interests.

Context

Recently, India's External Affairs Minister met his counterpart in Muscat, Oman and reviewed the full spectrum of the India–Oman Strategic Partnership and exchanged views on regional and global issues of mutual interest.

More on the News

- Both sides reviewed progress in implementing the **India–Oman Comprehensive Economic Partnership Agreement (CEPA)**, which entered into force on **1 June 2026**.
- The visit reaffirmed the commitment of both countries to further strengthen the **India–Oman Strategic Partnership** amid evolving regional and global challenges.

Strategic Significance and Emerging Areas of Cooperation

- Strategic Maritime Partner**
 - ✓ Oman is located at the entrance of the **Strait of Hormuz**, a critical maritime chokepoint through which a significant share of global oil trade passes.
 - ✓ Access to **Duqm Port** enhances India's operational reach in the Western Indian Ocean and supports its **SAGAR/MAHASAGAR** vision.



- Economic Gateway to the Gulf**
 - ✓ The CEPA provides a framework for expanding trade, investments, services, and supply-chain integration.
 - ✓ Oman serves as a gateway to **GCC, West Asian, and East African markets** through major ports such as Duqm, Sohar, and Salalah.
- Reliable Energy and Supply-Chain Partner**
 - ✓ Oman contributes significantly to India's energy security through long-term hydrocarbon supplies.
 - ✓ Cooperation is expanding into green hydrogen,

clean energy technologies, and energy-transition initiatives.

Future-Oriented Partnership

- ✓ Growing collaboration in **digital payments, fintech, logistics, space, cybersecurity, and emerging technologies**.
- ✓ Both countries are exploring synergies between **Viksit Bharat 2047** and **Oman Vision 2040** for sustainable and innovation-driven growth.

Challenges and Areas of Concern

- Trade and Investment Below Potential:** Despite strong economic ties and the operationalisation of CEPA, bilateral trade and investments remain below their full potential.
- Regional Geopolitical Instability:** Tensions in West Asia and disruptions in key maritime corridors can affect trade, shipping, and energy supplies.

INDIA–OMAN RELATIONS

— KEY PILLARS OF COOPERATION —

1. POLITICAL & DIPLOMATIC RELATIONS	1953: Treaty of Friendship, Commerce and Navigation signed. 1955: Formal diplomatic relations established. 2008: Bilateral ties elevated to a Strategic Partnership. - Oman participated as a Guest Country during India's G20 Presidency (2023).
2. ECONOMIC & COMMERCIAL RELATIONS	- Bilateral trade stood at about US\$ 11.18 billion in FY 2025–26. - India–Oman CEPA entered into force on 1 June 2026. - More than 6,000 India–Oman joint ventures operate in Oman with investments exceeding US\$ 7.5 billion.
3. ENERGY PARTNERSHIP	- Oman is an important supplier of crude oil, LPG, and petroleum products to India. - India is among the major destinations for Oman's hydrocarbon exports. - Cooperation is expanding into green hydrogen and renewable energy.
4. DEFENCE & MARITIME COOPERATION	- Oman is India's closest defence partner in the Gulf region. - First Gulf country with which India conducts exercises involving all three services. - Strategic access to Duqm Port for logistics and naval support. - Key exercises: Al Najah (Army), Eastern Bridge (Air Force), Naseem Al Bahr (Navy).
5. DIASPORA & CULTURAL RELATIONS	- Around 6.7 lakh Indians reside in Oman, making it one of the largest expatriate communities in the country. 22 Indian schools educate over 48,000 students. - Civilisational and maritime contacts span over 5,000 years.

- **Competition from Other Major Powers:** Expanding economic and infrastructure engagement by countries such as China has intensified strategic competition in the Gulf region.
- **Energy Transition Uncertainties:** As both countries diversify their economies and move towards cleaner energy systems, adapting the traditional hydrocarbon-based partnership to new energy realities will be crucial.

Way Forward

- **Maximise Gains from CEPA:** Facilitate greater utilisation of CEPA provisions by exporters, MSMEs, startups, and service providers.
- **Strengthen Maritime and Defence Cooperation:** Expand collaboration in maritime domain awareness, naval logistics, defence manufacturing, and Indian Ocean security.
- **Leverage Connectivity and Logistics Networks:** Integrate Indian businesses with Oman's ports, logistics corridors, and supply chains to access wider GCC, West Asian, and East African markets.
- **Institutionalise Vision 2040–Viksit Bharat 2047 Synergies:** Align long-term development priorities in logistics, manufacturing, clean energy, innovation, and the digital economy.

2.7. World Artificial Intelligence Cooperation Organisation

SYLLABUS

GS-2: Important International Institutions, agencies and fora - their Structure, Mandate; Regional and Global Groupings and Agreements involving India and/or affecting India's interests.

Context

Twenty-nine countries recently signed an agreement in Shanghai, China, establishing the World Artificial Intelligence Cooperation Organisation (WAICO), a new intergovernmental body to strengthen international cooperation and global governance in Artificial Intelligence (AI).

More on the News

- WAICO was formally established during the **2026 World Artificial Intelligence Conference (WAIC)** in

Shanghai, following China's proposal to create the organisation at the 2025 edition of the conference.

- Headquartered in **Shanghai**, the organisation seeks to provide a multilateral platform for AI governance, technical cooperation and capacity building, particularly for developing countries.
- The establishment of WAICO comes amid growing international efforts to evolve institutional mechanisms for AI governance as countries seek common approaches to regulating the rapid development of AI technologies.

About WAICO

- **Nature:** An independent **intergovernmental organisation** dedicated to promoting cooperation in the **civilian domain of Artificial Intelligence**.
- **First of its Kind:** It is the **world's first** intergovernmental international organisation **dedicated exclusively to AI cooperation and governance**.
- **Headquarters:** Shanghai, China.
- **Founding Members:** Established by **29 countries** across Asia, Africa, Europe and Latin America. Notable founding members include **China, Pakistan, Malaysia, Myanmar, Laos, Indonesia, Kazakhstan, Russia, Brazil and South Africa**.
✓ India is **not** a member.
- **Core Objective:** Promote international cooperation and **global AI governance** while ensuring AI remains **beneficial, safe and fair** for humanity.
- **Key Features:**
 - ✓ **Global AI Governance:** Facilitates international coordination on AI governance, regulatory frameworks, technical standards and policy dialogue.
 - ✓ **Bridging the AI Divide:** Promotes technology sharing, capacity building and technical cooperation to help developing countries narrow the global AI capability gap.
 - ✓ **Open Membership:** The organisation is **open to all countries** and seeks cooperation with international organisations in promoting responsible AI governance.
 - ✓ **Guiding Principles:** Operates in accordance with the **purposes and principles of the UN Charter**, emphasising extensive consultation, joint contribution, shared benefits and a **people-centred approach** to AI development.

Significance

- **Institutionalising Global AI Governance:** Establishes a permanent multilateral platform for dialogue, cooperation and coordination on AI governance amid the rapid expansion of AI technologies.
- **Greater Voice for the Global South:** Seeks to enhance the participation of developing countries in shaping global AI norms, standards and capacity-building initiatives while reducing technological asymmetries.
- **Promoting Responsible AI Development:** Encourages international collaboration in AI research, innovation and governance to ensure AI develops in a safe, ethical and inclusive manner.
- **Reducing the Global AI Divide:** Supports equitable access to AI technologies, knowledge sharing and capacity building, enabling wider participation of developing countries in the global AI ecosystem.

Concerns & Challenges

- **Fragmented Global AI Governance:** Competing AI governance frameworks led by different geopolitical blocs could result in divergent standards and fragmented global regulation.
- **Balancing Innovation and Regulation:** Developing common governance standards without constraining technological innovation remains a significant challenge.
- **Divergent National Priorities:** Differences in countries' strategic interests, regulatory approaches and technological capabilities may hinder consensus-building.
- **Implementation Challenges:** The organisation's long-term effectiveness will depend on broad international participation, institutional capacity and the successful implementation of agreed governance principles.

2.8. South North Commission on Development

SYLLABUS

GS-2: Important International Institutions, agencies and fora - their Structure, Mandate; Regional and Global Groupings and Agreements involving India and/or affecting India's interests.

Context

The South North Commission on Development was launched during the Hamburg Sustainability Conference (HSC) 2026 to strengthen cooperation between the Global South and Global North and shape the global development agenda beyond 2030.

About the South North Commission on Development

- **Launch:** Established during the *Hamburg Sustainability Conference 2026* in Hamburg, Germany.
- **Co-Chairs:** Former German Chancellor **Olaf Scholz** and former President of Costa Rica **Laura Chinchilla**.
- **Composition:** An independent body of around **20 commissioners** from politics, business, labour, academia, international organisations and civil society, with a **majority representing the Global South**.
- **Need:** Constituted amid growing challenges to the rules-based multilateral order, rising debt burdens, climate change, trade tensions and increasing demand for greater representation of the Global South in global governance.
- **Objective:** Redefine North-South cooperation by moving beyond the traditional donor-recipient model and promoting an equitable partnership between the Global South and Global North.
- **Key Mandate:** Recommend reforms for a more inclusive, representative and effective international order and provide inputs for the **post-2030 global development agenda** succeeding the **Sustainable Development Goals (SDGs)**.
- **Focus Areas:** Development finance, sovereign debt, climate change, trade, industrialisation, conflict, critical minerals, artificial intelligence, and reform of multilateral institutions.
- **Working Principles:** Operates on equality through joint agenda-setting and decision-making by representatives of both the Global South and North, supported by regional consultations across Asia, Africa, Europe and Latin America.
- **Legacy:** Builds upon the **Brandt Commission (1977)**, which highlighted the North-South development divide and called for greater international cooperation.
- **Timeline:** The Commission will submit an **interim report in 2027** and a **final report by the end of 2028**, with its recommendations expected to guide future global development and cooperation frameworks.



SOCIAL ISSUES AND SOCIAL JUSTICE

3.1. Revised Operational Guidelines of Anaemia Mukh Bharat Abhiyaan

SYLLABUS

GS-2: Issues relating to development and management of Social Sector/Services relating to Health and Human Resources.

Context

The Union Ministry of Health and Family Welfare launched the Anaemia Mukh Bharat (AMB) Abhiyaan Operational Guidelines (2026), transforming the programme into a more comprehensive, technology-enabled, and community-driven initiative to accelerate India's fight against anaemia.

Key Highlights of the Anaemia Mukh Bharat (AMB) Abhiyaan Guidelines

- **Transition to Anaemia Mukh Bharat Abhiyaan:** The programme has evolved from **Anaemia Mukh Bharat (AMB)** to **Anaemia Mukh Bharat Abhiyaan**, adopting a holistic life-cycle approach.
 - ✓ Expands focus beyond iron supplementation to include **testing, therapeutic management, healthy diets, digital tracking and community participation (Jan Chetna)**.
- **7x7x7 Strategy:** The existing 6x6x6 strategy has been expanded into a 7x7x7 framework by adding:
 - ✓ **7th Beneficiary Group:** Low Birth Weight (LBW) babies (0–6 months).
 - ✓ **7th Intervention:** “Eating Right” initiative promoting regular consumption of iron-rich and diversified diets.
 - ✓ **7th Institutional Mechanism:** Strengthened Monitoring & Evaluation (M&E) supported through digital tracking.
- **Shift from T3 to T4 Strategy:** The programme replaces the **T3 approach (Test, Treat, Talk)** with **T4 (Test, Treat, Talk and Track)**.

✓ The revised strategy emphasizes regular haemoglobin testing, protocol-based treatment, systematic referral and follow-up, and counselling on healthy dietary practices.

- **Management of Severe Anaemia:** For pregnant and lactating women with severe anaemia or non-response to oral iron therapy:

✓ **Intravenous Iron Therapy** using Ferric Carboxymaltose (FCM) and Iron Sucrose.

- **Digital Monitoring Ecosystem:** The programme establishes an integrated digital ecosystem:

✓ **JANANI Portal** – Pregnant women.

✓ **RBSK Portal** – Children.

✓ **U-WIN Portal** – Child immunisation and beneficiary records.

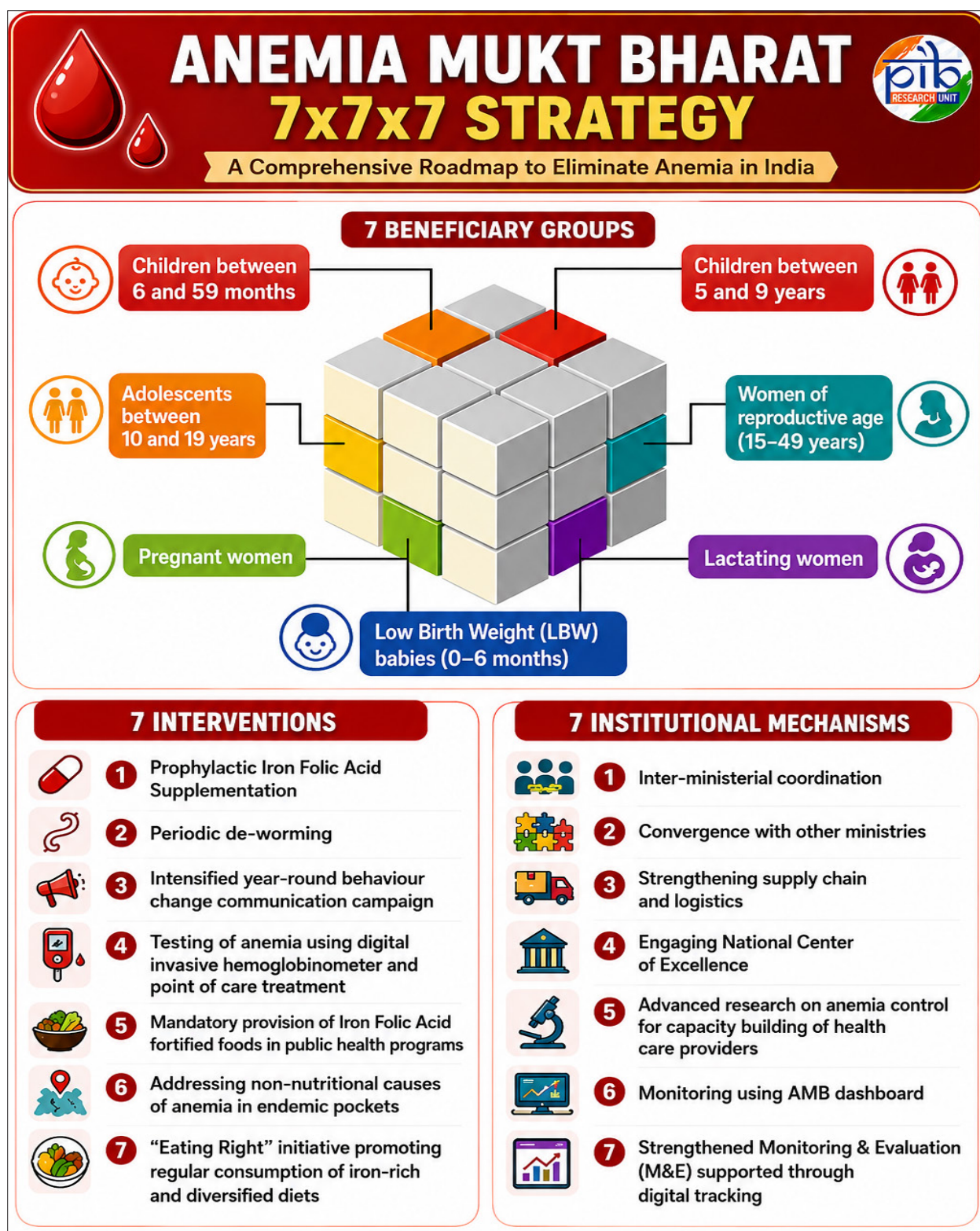
✓ These platforms will converge into a **Unified AMB Abhiyaan Portal** for monitoring, analysis, and evidence-based planning.

About Anaemia Mukh Bharat (AMB)

- Launched in **2018** under the **National Health Mission (NHM)**.
- Implemented under the **National Iron Plus Initiative (NIPI)** using a **life-cycle approach**.
- **Objective:** To reduce the prevalence of anaemia by addressing both **nutritional and non-nutritional** causes across vulnerable population groups.
- **Related Programmes:**
 - ✓ National Iron Plus Initiative (NIPI)
 - ✓ Weekly Iron and Folic Acid Supplementation (WIFS)
 - ✓ National Deworming Day (10 February & 10 August)

About Anaemia

- Anaemia is a condition in which the **haemoglobin level in the blood is lower than normal**, reducing the blood's oxygen-carrying capacity.
- **The World Health Organization (WHO)** defines **anaemia** as a condition in which the number of



red blood cells or the haemoglobin concentration within them is lower than normal. It mainly affects women and children.

- **Causes:** *Iron deficiency (most common)*, folate deficiency, *Vitamin B12 deficiency*, Vitamin A deficiency, infections, worm infestations, *genetic blood disorders (e.g., Sickle Cell Disease, Thalassemia)*, and poor dietary diversity.
- **Symptoms:** *Fatigue and weakness*, dizziness, headache, *shortness of breath*, reduced physical work capacity, and cold hands and feet.
- **Vulnerable Groups:** *Children under 5 years, Low Birth Weight (LBW) infants, adolescent girls, women of reproductive age, and pregnant and lactating women.*
- **Impact:** Impaired cognitive and motor development in children, reduced learning ability and productivity, poor maternal health, increased risk of premature birth, Low Birth Weight (LBW) babies, and higher maternal and perinatal mortality.
- **Prevention:** *Iron-rich and diversified diet, Iron-Folic Acid supplementation*, deworming, *timely haemoglobin testing*, treatment of underlying causes, and *nutrition counselling and healthy dietary practices.*

3.2. SUMAN Roadmap 2030 to Strengthen Maternal and Newborn Healthcare

SYLLABUS

GS-2: *Issues Relating to Development and Management of Social Sector/Services relating to Health, Education, Human Resources.*

Context

The Union Health Minister recently launched the SUMAN Roadmap 2030, a comprehensive strategic framework aimed at strengthening maternal and newborn healthcare and accelerating India's progress towards achieving the Sustainable Development Goal (SDG) targets by 2030.

About SUMAN Roadmap 2030

- Developed by the **Ministry of Health and Family**

Welfare under the **RMNCHA+N framework**, the roadmap adopts an evidence-based and **life-cycle approach** covering pre-pregnancy, antenatal, intrapartum and postnatal care.

- It aims to reduce the **Maternal Mortality Ratio (MMR) to below 70 per 100,000 live births by 2030**, reduce the **Neonatal Mortality Rate (NMR)** and **Infant Mortality Rate (IMR)**, and achieve the goal of **zero preventable maternal and newborn deaths**.
- A major focus of the roadmap is the implementation of targeted interventions in **130 high-priority districts across 13 States**, where maternal and newborn health challenges remain significant.
- The strategy combines health-system strengthening, digital innovation, improved referral mechanisms, community participation, high-risk pregnancy management and enhanced monitoring to improve healthcare outcomes.

About SUMAN

- **SUMAN (Surakshit Matritva Aashwasan)** was launched in **2019** to provide **assured, dignified, respectful and zero-cost healthcare services** to pregnant women, mothers, newborns and infants.
- The initiative follows a **zero-tolerance policy towards denial of healthcare services** and seeks to eliminate preventable maternal and newborn deaths through universal access to quality healthcare.

3.3. Unified District Information System for Education Plus Report 2025-26

SYLLABUS

GS-2: *Issues Relating to Development and Management of Social Sector/Services relating to Health, Education, Human Resources.*

Context

The Ministry of Education recently released the UDISE+ 2025–26 Report, providing a comprehensive picture of India's school education system.

More on the News

- UDISE+ (Unified District Information System for Education Plus) serves as India's integrated digital

database for school education, covering **14.67 lakh schools, 24.72 crore students and 1.03 crore teachers**, making it one of the world's largest educational databases.

- With effect from **2025–26**, educational indicators have been restructured according to the **NEP 2020-recommended 5+3+3+4 system**—Foundational, Preparatory, Middle and Secondary—replacing the earlier 10+2 reporting framework.
- The report is the **fourth edition based on the student registry system** introduced in 2022–23.

Key Findings of UDISE+ 2025–26

- **NEP 2020-Aligned Educational Framework**
 - ✓ This is the first UDISE+ report presenting educational indicators under the **5+3+3+4 structure** of NEP 2020.
 - ✓ Student distribution across stages stands at **22% Foundational, 25% Preparatory, 26% Middle and 27% Secondary**.
- **Improved Access and Student Progression**
 - ✓ Gross Enrolment Ratio (GER) remained robust across stages, with **Secondary GER reaching 71.7%**, indicating continued progress toward universal school participation.
 - ✓ The report also records improved transition and participation across educational stages, reflecting better student progression through the schooling system.
- **Better Retention and Lower Dropout Rates**
 - ✓ National dropout rates remain relatively low at **1.8% (Preparatory), 3.6% (Middle) and 7.0% (Secondary)**.
 - ✓ Retention rates stand at **98.5% (Foundational), 91.1% (Preparatory), 83.7% (Middle) and 51.9% (Secondary)**, indicating improved student retention but persistent challenges at higher grades.
- **Strengthening Teacher Availability**
 - ✓ The number of teachers increased to **1.03 crore**, reflecting continued expansion of the teaching workforce.
 - ✓ National **Pupil-Teacher Ratio (PTR)** stands at **24**, while stage-wise PTR is **10 (Foundational), 12 (Preparatory), 17 (Middle) and 21 (Secondary)**, remaining within NEP-recommended levels.

• Governance and Infrastructure Improvements

- ✓ Access to basic facilities remains high, with **99.5% schools having drinking water, 98.5% girls' toilets, 97.2% boys' toilets and 95% electricity connectivity**.
- ✓ Availability of digital infrastructure continues to improve, with **69.9% schools having computer facilities and 67.4% internet access**.

• Inclusive Participation in Education

- ✓ Girls constitute **48.4% of total enrolment**, reflecting near gender parity in school education.
- ✓ The **Gender Parity Index (GPI) exceeds 1 at all educational stages**, indicating proportionately higher participation of girls compared to boys.

Key Concerns Emerging from the Report

- **Declining Government School Enrolment:** Government schools have witnessed a continued decline in enrolment in recent years, suggesting growing preference for private schooling in several regions.
- **Secondary Education Gap:** Despite improvements, Secondary GER (71.7%), higher dropout rates and lower retention levels indicate that universal participation at the secondary stage remains a challenge.
- **Regional Imbalances in Schooling Infrastructure:** Several States continue to face disparities in the distribution of schools, teachers and students, resulting in underutilisation in some regions and higher student concentration in others.
- **Digital and Inclusive Infrastructure Deficits:** Although digital infrastructure has improved, internet connectivity, computer access, CWSN-friendly toilets and accessibility facilities remain inadequate in many schools.

Way Forward

- Strengthen interventions to improve retention and transition at the secondary stage in line with NEP 2020 goals.
- Expand digital infrastructure, assistive facilities and inclusive education measures, particularly in underserved regions.
- Enhance teacher deployment and school rationalisation to address regional disparities in resource utilisation.

- Leverage UDISE+ data analytics for targeted policy interventions, evidence-based planning and efficient implementation of educational schemes.
- Accelerate efforts toward achieving universal school participation and 100% GER up to secondary level by 2030, as envisaged under NEP 2020.

3.4. Uttarakhand Becomes India's Sixth Fully Literate State

SYLLABUS

GS-2: Government policies and interventions for development in various sectors and issues arising out of their design and implementation. Issues relating to development and management of Social Sector/ Services relating to Education.

Context

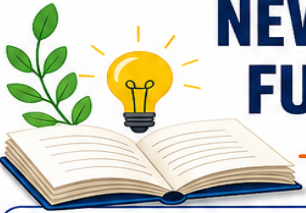
Uttarakhand has become the sixth fully literate State in India after achieving the prescribed adult literacy benchmarks under the National Education Policy (NEP) 2020 and the ULLAS – New India Literacy Programme.

More on the News

- The State has a literacy rate of **over 98%**, exceeding the Government of India's criterion of **95% literacy** required for full literacy under the revised definition introduced in **August 2024**.
- With this achievement, Uttarakhand joins **Mizoram, Goa, Tripura, Himachal Pradesh, and Sikkim** among India's fully literate States.
✓ **Ladakh, Chandigarh and Andaman & Nicobar Islands** have also achieved fully literate UT status.
- The achievement reflects coordinated efforts of the State Government, School Education Department, Samagra Shiksha, district administrations, volunteer teachers, local bodies and public participation under the ULLAS programme, while supporting the vision of **Viksit Bharat 2047**.

About the Understanding of Lifelong Learning for All in Society (ULLAS) – New India Literacy Programme

- ULLAS also known as the **New India Literacy Programme (NILP)**, is a **Centrally Sponsored Scheme** implemented by the **Ministry of Education**.



NEW LITERACY CRITERIA AND FULL LITERACY MILESTONES



under ULLAS



On **7 August 2024**, the Department of School Education & Literacy (DoSEL), Ministry of Education notified a new definition of literacy aligned with NEP 2020 and prescribed the criteria for declaring a State/UT as fully literate.





NEW DEFINITION OF LITERACY

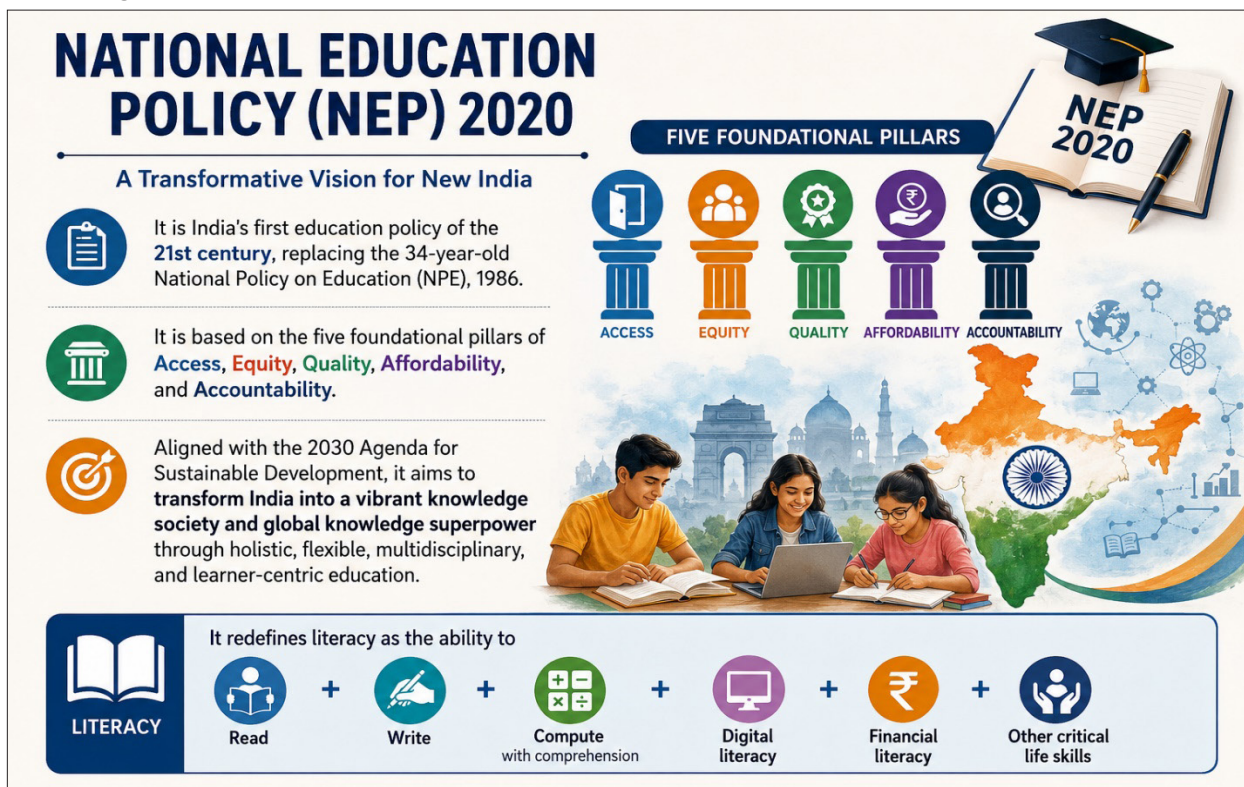
Literacy is now defined as the ability to read, write, and compute with comprehension, including the capacity to identify, understand, interpret and create, along with critical life skills such as **digital literacy and financial literacy**.

95%

CRITERIA FOR FULL LITERACY

A State/UT is considered fully literate when it achieves a literacy rate of **95% or above**, recognising that 100% literacy is not practically attainable due to factors such as advanced age and intellectual disabilities.

- The scheme is being implemented during **FY 2022–2027** and is aligned with **NEP 2020**.
- **Vision:** To make “*Jan Jan Saakshar Bharat*” through volunteerism based on the spirit of *Kartavya Bodh* (sense of duty).
- **Target Group:** Non-literate adults aged **15 years and above** who missed formal schooling.
- **Target:** Achieve **foundational literacy and numeracy for 5 crore learners** during 2022–27 (1 crore learners annually).
- **The scheme has a financial outlay of ₹1,037.90 crore** (Central share: ₹700 crore; State share: ₹337.90 crore).
- **Objectives:**
 - ✓ Provide **Foundational Literacy and Numeracy (FLN)**.
 - ✓ Promote **critical life skills**, including digital, financial, legal and health literacy.
 - ✓ Support **vocational skills** and livelihood opportunities.
 - ✓ Facilitate **basic education equivalency**.
 - ✓ Encourage **continuing and lifelong education**.
- **Salient Features:**
 - ✓ Implemented in **hybrid mode** (online and offline) through **volunteerism**.
 - ✓ Learners and volunteer teachers are registered through the **ULLAS Mobile App/Portal**, with learning material available in **27 languages**.
 - ✓ Schools function as **Samajik Chetna Kendras**, while community halls, Panchayat offices, libraries and higher education institutions can also be used as learning centres.
 - ✓ Literacy is assessed through the **Foundational Literacy and Numeracy Assessment Test (FLNAT)**, conducted **twice a year**, with certificates jointly issued by **NIOS** and the Department of School Education & Literacy.
- **Progress:**
 - ✓ More than **2.72 crore learners** and over **43 lakh volunteer teachers** have registered on the ULLAS platform.
 - ✓ More than **1.7 crore learners** have appeared in the **FLNAT**.
 - ✓ ULLAS Literacy Week participation increased from **3.5 crore (2023) to 4.84 crore (2024) and 6.23 crore (2025)**.



3.5. Performance Grading Index (PGI) 2.0 for States/UTs & Performance Grading Index for Districts (PGI-D) 2025–26

SYLLABUS

GS-2: Issues relating to development and management of Social Sector/Services relating to education.

Context

The Union Ministry of Education released the Performance Grading Index 2.0 for States/UTs (PGI-S) and the Performance Grading Index for Districts (PGI-D) for 2025–26 to assess school education performance across States/UTs and districts.

About the Performance Grading Index 2.0 for States/UTs (PGI-S)

- The **Department of School Education & Literacy, Ministry of Education**, developed the **PGI 2.0** to evaluate the performance of **States and Union Territories** in school education.
- It follows a **grading system instead of ranking**, allowing multiple States/UTs to be placed in the same performance band.
- PGI 2.0 is the revised version of the earlier Performance Grading Index framework.
- The framework carries a **total weightage of 1,000 points across 70 indicators**.
- **The indicators are grouped under 2 categories:** Outcome and Governance & Management.
- **These cover 6 domains:**
 - ✓ Learning Outcomes and Quality
 - ✓ Access
 - ✓ Infrastructure & Facilities
 - ✓ Equity
 - ✓ Governance Processes
 - ✓ Teachers Education & Training
- **The framework is aligned with data from:**
 - ✓ Unified District Information System for Education Plus (UDISE+)
 - ✓ PARAKH Rashtriya Sarvekshan 2024
 - ✓ PM POSHAN Portal
 - ✓ PRABAND Portal
 - ✓ Vidyanjali Portal

Key Findings of PGI-S 2025–26

- **No State/UT** achieved the top three grades, **Utkarsh, Uttam-1 or Uttam-2**, indicating significant scope for improvement.
- **Chandigarh** was the **only State/UT** to attain **Uttam-3 (761–820)**.
- **Four States/UTs attained Prachesta-1:** Dadra & Nagar Haveli and Daman & Diu, Punjab, Kerala and Delhi.
- **Five States/UTs attained Prachesta-2:** Lakshadweep, Himachal Pradesh, Goa, Maharashtra and Odisha.
- **Thirteen States/UTs** were placed in **Prachesta-3**, while another **thirteen States/UTs** were placed in **Akanshi-1**.
- No State/UT fell under **Akanshi-2 or Akanshi-3**.

About the Performance Grading Index for Districts (PGI-D) 2025–26

- The **Department of School Education & Literacy, Ministry of Education** extended the Performance Grading Index to the **district level** through **PGI-D**.
- PGI-D assesses districts on a **common parameter**, with greater emphasis on measuring the outcomes of educational policies.
- The framework has a **total weightage of 600 points across 70 indicators**.
- **The indicators are grouped into 6 categories:**
 - ✓ Outcomes
 - ✓ Effective Classroom Transaction
 - ✓ Infrastructure Facilities & Student Entitlements
 - ✓ School Safety & Child Protection
 - ✓ Digital Learning
 - ✓ Governance Process
- **These are further divided into 11 domains:**
 - ✓ Learning Outcomes and Quality (LOQ)
 - ✓ Access Outcomes (AO)
 - ✓ Teacher Availability and Professional Development Outcomes (TAPDO)
 - ✓ Learning Management (LM)
 - ✓ Learning Enrichment Activities (LEA)
 - ✓ Infrastructure, Facilities & Student Entitlements (IF&SE)
 - ✓ School Safety & Child Protection (SS&CP)
 - ✓ Digital Learning (DL)
 - ✓ Funds Convergence & Utilisation (FCU)

- ✓ Attendance Monitoring Systems (AMS)
- ✓ School Leadership Development (SLD)
- **The framework uses data from:**
 - ✓ Unified District Information System for Education Plus (UDISE+)
 - ✓ PARAKH Rashtriya Sarvekshan 2024
 - ✓ PRABANDH Portal

Key Findings of PGI-D 2025–26

- **No district** attained the highest grades of **Utkarsh** or **Uttam-1** in either **2024–25** or **2025–26**.
- **19 districts** reached **Uttam-2** in **2025–26**, compared with **16 districts** in **2024–25**.
- The number of districts in **Uttam-3** increased from **75 to 97**.
- Districts in **Prachesta-1** decreased from **332 to 325**, indicating improvement in overall performance.
- **473 districts** improved their PGI score in **2025–26** compared with **2024–25**.
- **89 districts** achieved **grade-level improvement**.
- **664 districts** remained in the same grade in both years.
- **29 districts** slipped by **one grade** in **2025–26** compared with **2024–25**.

3.6. The WHO Global Status Report on Cancer 2026

SYLLABUS

GS-2: *Issues Relating to Development and Management of Social Sector/Services relating to Health; Welfare Schemes for Vulnerable Sections of the Population by the Centre and States.*

Context

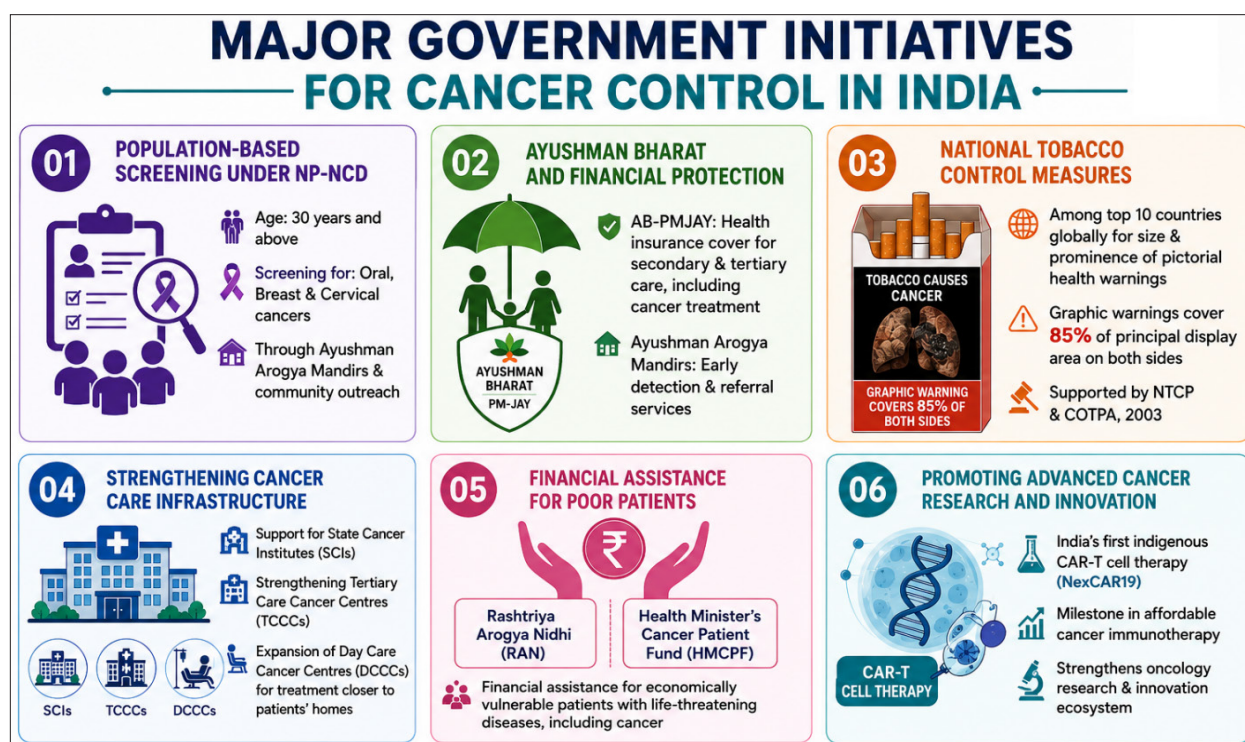
The World Health Organization (WHO) and the International Agency for Research on Cancer (IARC) recently released the Global Status Report on Cancer 2026, providing a comprehensive assessment of global progress and gaps in cancer prevention, diagnosis, and treatment.

More on the News

- The report is jointly produced by **WHO** and **IARC** and reviews global progress in cancer control since 2010 across prevention, early detection, diagnosis, treatment, survivorship, and palliative care.
 - It incorporates findings from **WHO's first-ever global survey of people affected by cancer**, bringing patient and caregiver experiences into cancer policy discussions.
 - The report seeks to support countries in strengthening national cancer control strategies through a more equitable and people-centred approach aligned with Universal Health Coverage (UHC).
- ### Key Findings of the Report
- **Global Cancer Burden Continues to Rise:** Cancer remains the **second leading cause of death globally**, with **20.6 million new cases** and **nearly 10 million deaths annually**. Annual cases are projected to rise to **nearly 35 million by 2050**.
 - **Significant Regional Disparities:** In 2024, **Asia accounted for 50.7% of global cancer cases** and **56.5% of deaths**, while **Europe contributed 21% of cases** and **20% of deaths** despite having only **9% of the world's population**.
 - **Cancer Outcomes Remain Highly Unequal:** Five-year breast cancer survival is **87% in high-income countries** compared to **42% in low-income countries**, highlighting major disparities in access to care.
 - **Lung Cancer Remains the Deadliest Cancer:** Lung cancer is the leading cause of cancer deaths worldwide.
 - ✓ Among men, **lung, prostate and colorectal cancers** are the most common, while among women, **breast, lung and colorectal cancers** account for a major share of cases.
 - **Policy and Research Efforts Have Expanded:** Countries with **National Cancer Control Plans** increased from **50% in 2010 to 82% in 2026**, while registered cancer clinical trials grew by **7.3% annually between 2005 and 2021**.
 - **Limited Integration into Universal Health Coverage:** Fewer than **one-third of countries** include comprehensive cancer care in their **UHC packages**, leaving many without access to essential services.
 - **Heavy Social and Economic Costs:** 45% of affected individuals face financial hardship, more than half experience mental-health challenges, and nearly all caregivers report significant strain.

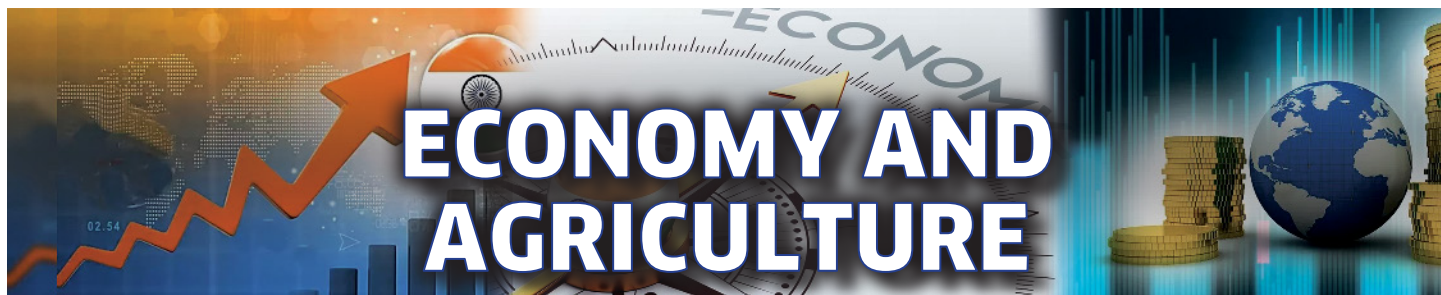
Implications for India

- **Rising Cancer Burden:** As Asia accounts for over half of global cancer cases and deaths, India is likely to witness a significant increase in cancer burden due to population ageing, urbanisation, and lifestyle changes.
- **Strengthening Prevention Efforts:** With nearly **four in ten cancers being preventable**, India needs to scale up tobacco control, HPV vaccination, Hepatitis-B immunisation, and healthy lifestyle interventions.
- **Bridging Healthcare Inequities:** Persistent gaps in access to screening, diagnostics, radiotherapy, oncology specialists, and essential medicines call for more equitable cancer-care infrastructure across regions.
- **Enhancing Financial Protection:** The finding that **45% of affected individuals face financial hardship** underscores the need to reduce out-of-pocket expenditure and strengthen financial support for cancer patients.



Key Recommendations

- **Prioritize Prevention:** Scale up tobacco control, HPV and Hepatitis-B vaccination, healthy lifestyle promotion, and measures to reduce environmental risk factors.
- **Strengthen Early Detection and Treatment:** Expand screening, diagnostic services, radiotherapy facilities, and access to essential cancer medicines, especially in underserved areas.
- **Ensure Equitable and Affordable Care:** Integrate comprehensive cancer services into Universal Health Coverage frameworks and reduce financial barriers to treatment.
- **Adopt a People-Centred Approach:** Incorporate patient and caregiver perspectives while strengthening survivorship, rehabilitation, mental-health, and palliative-care services.
- **Promote Collaboration and Innovation:** Foster public-private partnerships, international cooperation, and investments in cancer research, innovation, and health-system capacity.



4.1. Index of Services Production

SYLLABUS

GS-3: Indian Economy and issues relating to planning, mobilization of resources, growth, development and employment.

Context

The Ministry of Statistics and Programme Implementation (MoSPI) has released India's first trial Index of Services Production (ISP) for 19 sub-sectors with 2024–25 as the base year, introducing the country's first monthly indicator to measure short-term activity in the formal services sector.

Key Findings

- The inaugural **ISP for April 2026** covers **19 services sub-sectors**, representing about **60% of India's services sector**, with **14 sub-sectors recording double-digit year-on-year growth** and almost all others registering positive growth.
- **Accommodation & Food Services (37.2%), Retail Trade (30.8%), Administrative & Support Services (28.7%), and Real Estate Activities (27.7%)** emerged as the top-performing sectors.
- Other major contributors included **Telecommunications (22.8%), Repair Services (19.2%), Road Transport (18.5%), Warehousing & Support Activities for Transportation (18.2%)**, along with double-digit growth in **Professional, Scientific & Technical Services, Arts & Entertainment, Insurance, Wholesale Trade, IT & Computer Related Services, and Banking**.
- **Air Transport** was the weakest-performing sector, contracting by **13.9%**, while **Railway Transport** recorded a marginal decline of **0.4%**.
- MoSPI plans to expand the ISP by adding **Health, Education, and Ownership of Dwellings**, increasing coverage to **85–90% of the formal services sector**, before releasing a **composite overall Index of Services Production** after evaluating the trial series.

About the Index of Services Production (ISP)

- It is a **monthly high-frequency macroeconomic** indicator that measures short-term changes in the **volume of output (services produced) by India's formal services sector**.
- It tracks short-term changes in the volume of output produced by the formal services sector relative to a specified base year.
- It is the **services-sector counterpart of the Index of Industrial Production (IIP)**, which measures production in manufacturing, mining and electricity.
- **Objective:** The ISP has been introduced to provide a **timely monthly measure of services-sector activity**, thereby strengthening India's macroeconomic statistical framework.
 - ✓ It enables policymakers, businesses and researchers to monitor short-term movements in the country's largest economic sector.



- **Base Year: 2024–25.**
- **Coverage:** The present trial ISP covers **19 formal services sub-sectors**, accounting for nearly **60% of India's services sector**.
- **Scope:** The ISP covers **formal sector enterprises only**, based primarily on GST and administrative datasets.
 - ✓ Services related to **core government functions; non-market activities and the informal sector** are presently excluded.

- **Data Sources:** The ISP is compiled using *GST data*, *Administrative Data*, and the *Annual Survey of Incorporated Services Sector Enterprises (ASISSE)*.
- The ISP will be released **every month on the 29th**.
- Initially, it is being published as an **experimental (trial) series** to assess data quality, test methodology, and incorporate stakeholder feedback.

Significance of the ISP

- **Addresses a Major Statistical Gap:** Fills the long-standing absence of a monthly production indicator for the services sector, which contributes about **56.4% of India's Gross Value Added (FY26 First Advance Estimates)**.
- **Strengthens Macroeconomic Indicators:** Complements the *Index of Industrial Production (IIP)* by providing a regular high-frequency measure of services-sector output.
- **Supports Evidence-Based Policymaking:** Enables policymakers, businesses, investors and researchers to monitor monthly trends and make timely decisions.
- **Improves GDP Estimation:** Provides a reliable high-frequency indicator for estimating services-sector *Gross Value Added (GVA)*, improving quarterly and annual GDP estimates.
- **Supports Employment and Exports:** The sector accounts for **~30% of total employment across India** and generated **~40 million jobs over the past six years**.
✓ India's services exports maintained strong momentum in **FY2026–27**, and the Government aims to achieve a **10% share in global services exports by 2047**.
- **Promotes Data-Driven Governance:** Integrates GST records, administrative databases and enterprise survey data to improve data quality while reducing reporting burden.
- **Aligns India with Global Best Practices:** Brings India in line with economies such as **Japan, China, South Korea and the European Union**, which already publish similar services production indices.

4.2. Viksit Bharat – Guarantee for Rozgar and Aajeevika Mission (Gramin) Act, 2025

SYLLABUS

GS-2: Government policies and interventions for development in various sectors and issues arising out of their design and implementation.

GS-3: Indian Economy and issues relating to planning, mobilization of resources, growth, development and employment.

Context

The Viksit Bharat – Guarantee for Rozgar and Aajeevika Mission (Gramin) [VB-G RAM G] Act, 2025 came into force across India on 1 July 2026, replacing MGNREGA and expanding the statutory rural employment guarantee from 100 days to 125 days.

Key Features of the Act

- **Enhanced Employment Guarantee:** Statutory wage employment increased from **100 days to 125 days** for every eligible rural household.
✓ Employment must be provided within **15 days of demand**, failing which workers are entitled to unemployment allowance.
- **Wage Payment and Compensation:** Wages will continue through **Direct Benefit Transfer (DBT)** into bank or post office accounts.
✓ Payments must be made weekly or within 15 days after closure of the muster roll.
✓ Workers will receive **delay compensation** if wages are not paid on time.
- **Unemployment Allowance:** If employment is not provided within the stipulated period:
✓ Workers receive at least **one-fourth of the wage rate** for the first 30 days.
✓ At least **one-half of the wage rate** for the remaining period.
- **National Wage Floor Introduced:** A **minimum wage of ₹300 per day** has been notified across all States and UTs.
✓ National average wage increased to **₹327.4/day** from **₹298.8/day**.

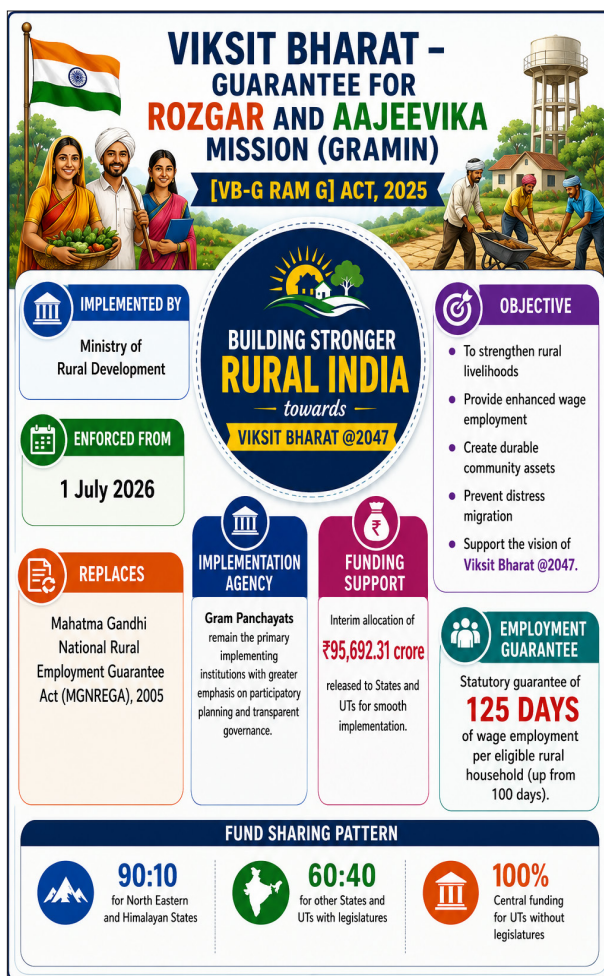
- **State-wise Wage Revision:** Significant wage hikes (15–25%) in several historically low-wage States such as **Uttar Pradesh, Bihar, Jharkhand, West Bengal, Assam, Arunachal Pradesh and Himachal Pradesh**.
 - ✓ Highest notified wage: ₹450/day in selected high-altitude Gram Panchayats of **Sikkim** and **Haryana (₹409), Goa (₹406) and Kerala (₹401)** among major States.
- **Seamless Transition:** Existing e-KYC verified job cards remain valid until new **Gramin Rozgar Guarantee Cards** are issued.
 - ✓ Ongoing works continue without interruption.
- **Timely Employment & Wage Payment:** Employment to be provided within the prescribed period after demand.
 - ✓ Transparent and technology-enabled wage payments.
 - ✓ Face-recognition/mobile-based attendance continues for greater accountability.
- **Gram Panchayat-Centric Implementation: Greater focus on:**
 - ✓ Natural resource management
 - ✓ Water conservation
 - ✓ Agriculture and allied activities
 - ✓ Rural infrastructure
 - ✓ Women's empowerment through Self-Help Groups (SHGs)
 - ✓ Convergence with flagship rural development programmes
- **Technology-enabled Governance:** Digital implementation through the **VB-G RAM G software platform**.
 - ✓ Greater transparency through digital monitoring, e-KYC, and electronic records.
- **Agriculture-friendly Design:** Provision for identifying **peak agricultural seasons (crop holidays)** to avoid labour shortages during sowing and harvesting periods.

Significance of the Act

- **Strengthens rural livelihood security** by increasing the statutory employment guarantee to 125 days.
- **Raises rural incomes** through higher wage rates and

a nationwide minimum wage floor of ₹300 per day.

- **Creates durable rural assets** by focusing on water conservation, natural resource management, agriculture, and rural infrastructure.
- **Promotes women-led rural development** through stronger integration of Self-Help Groups and livelihood initiatives.
- **Improves transparency and efficiency** through digital governance, e-KYC, software-based monitoring, and technology-enabled implementation.
- **Supports sustainable rural development** by encouraging participatory planning and convergence with other flagship programmes.
- **Contributes to the vision of Viksit Bharat @2047** by fostering self-reliant, resilient, and prosperous rural communities.



4.3. Prime Minister Launches the Next Phase of UDAN - Viksit UDAN

SYLLABUS

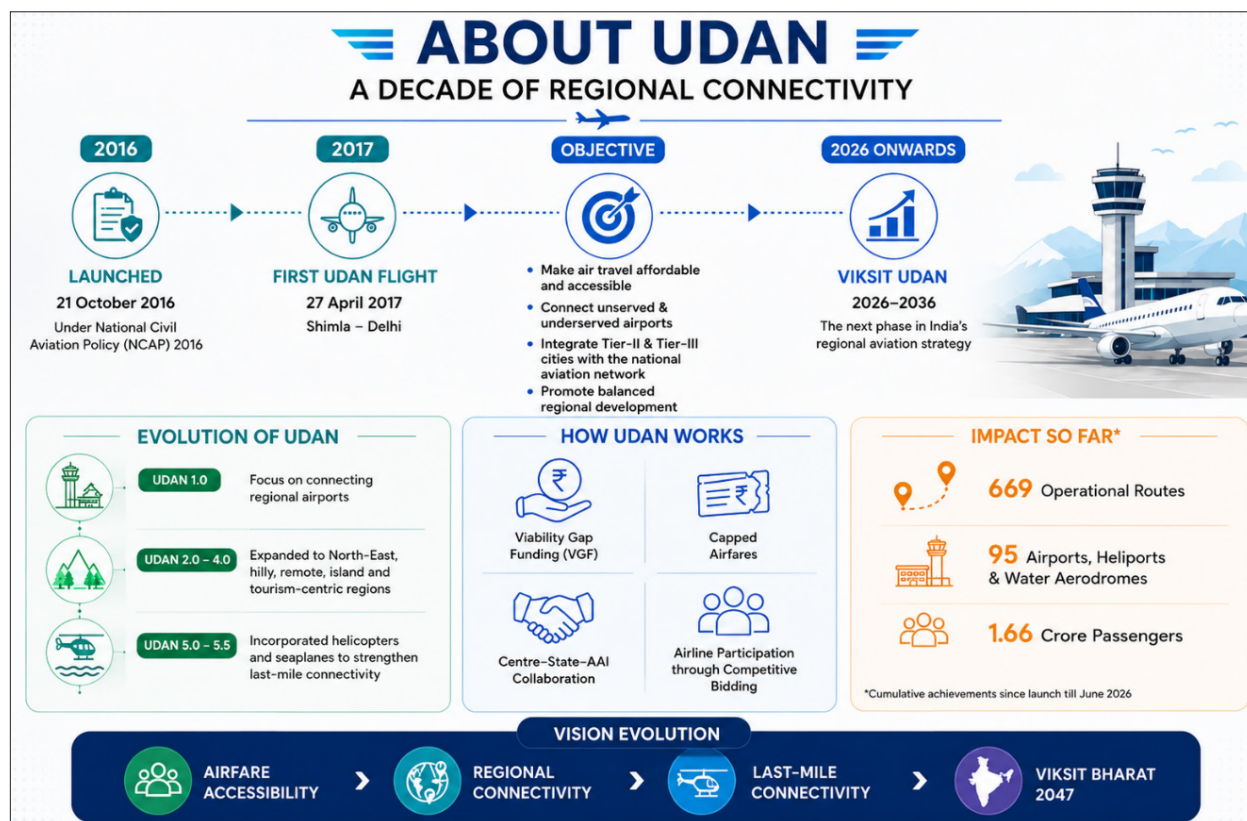
GS-3: Infrastructure: Airports, etc.; Indian Economy and issues relating to planning, mobilization of resources, growth, development, and employment.

Context

The Prime Minister launched Viksit UDAN, the next phase of the Regional Connectivity Scheme (RCS)-UDAN, aimed at expanding regional air connectivity and strengthening India's aviation ecosystem in line with the vision of Viksit Bharat 2047.

- The launch of Viksit UDAN follows the Union Cabinet's approval of the **Modified UDAN Scheme** in March 2026, with an **outlay of ₹28,840 crore for the period 2026–2036** to expand regional connectivity and strengthen aviation infrastructure.
- Under Viksit UDAN, the government aims to develop **100 new airports from existing unserved airstrips** through a challenge-based approach.
- The scheme places special emphasis on **remote, hilly, North-Eastern, island and aspirational regions**, while also enhancing connectivity to tourism destinations.
- Since its launch, UDAN has operationalised **669 routes**, connecting **95 airports, heliports and water aerodromes**, and facilitating air travel for over **1.66 crore passengers**.

More on the News



Key Features of Viksit UDAN

- **Development of 100 New Airports:** An outlay of ₹12,159 crore has been earmarked for developing

100 airports from existing unserved airstrips over the next eight years, significantly expanding regional aviation infrastructure.

- **Enhanced Last-Mile Connectivity:** The scheme proposes the development of **200 helipads** in hilly, remote, island and aspirational regions with an outlay of **₹3,661 crore** to improve accessibility and emergency response capabilities.
- **Operational Support for Aerodromes:** Operation and Maintenance (O&M) support worth **₹2,577 crore** will be provided to RCS-only aerodromes, heliports and water aerodromes to improve their long-term sustainability.
- **Strengthened Viability Gap Funding:** The scheme allocates **₹10,043 crore** towards VGF for airline operators for a 10-year period. Unlike the earlier framework, airlines will receive support for **five years**, with funding gradually tapering from the third year onwards.
- **Promoting Atmanirbhar Bharat:** The scheme promotes the induction of indigenous aircraft and helicopters, including **HAL Dhruv** and **Dornier platforms**, for operations in underserved and remote regions to further the vision of Atmanirbhar Bharat.

Significance for India's Aviation Sector

- **Bridging India's Connectivity Deficit:** By developing **100 new airports** and expanding air access to remote, hilly and aspirational regions, Viksit UDAN seeks to address persistent gaps in regional aviation infrastructure.
- **Strengthening Regional Economic Hubs:** Improved air connectivity can integrate smaller cities into national and global value chains, boosting tourism, trade, logistics and investment flows.
- **Enhancing Aviation Accessibility:** Continued fare support and expansion of regional routes can deepen the democratization of air travel, making aviation more accessible beyond metropolitan centres.
- **Building a Future-Ready Aviation Ecosystem:** Investments in airports, helipads, route sustainability and indigenous aircraft procurement can strengthen India's long-term aviation capacity under the Viksit Bharat 2047 vision.

Implementation Challenges

- **Commercial Viability:** A significant proportion of UDAN routes struggled to remain operational after the withdrawal of Viability Gap Funding (VGF).
✓ A formal audit by the **Comptroller and Auditor General (CAG)** revealed that only **7% to 10% of the flight routes** successfully remained commercially sustainable once the initial three-year government subsidy window ended.
- **Infrastructure Readiness:** While UDAN has operationalised **669 routes**, India still has a large number of unserved and underutilised airstrips.
- **Airline Participation:** Regional routes often witness lower passenger loads and higher operating costs, particularly in hilly, remote and island regions.
- **Environmental Sustainability:** India is among the world's fastest-growing aviation markets, and the planned expansion of airports, flights and regional connectivity could increase aviation-related emissions. Thus, ensuring growth while promoting **Sustainable Aviation Fuel (SAF)**, **energy-efficient airports** and **cleaner aviation technologies** will remain a key policy challenge.

Way Forward

- **Shift from Connectivity to Viability:** Alongside infrastructure creation, greater focus is needed on generating sustainable passenger demand and ensuring long-term route profitability.
- **Leverage Regional Growth Drivers:** Align regional air connectivity with tourism circuits, industrial corridors, logistics hubs and aspirational districts to maximize economic returns.
- **Strengthen Integrated Transport Networks:** Develop seamless linkages between airports and road, rail, waterways and public transport systems to improve last-mile connectivity.
- **Promote Sustainable Regional Aviation:** Scale up the adoption of Sustainable Aviation Fuel (SAF), green airport infrastructure and cleaner technologies to ensure environmentally responsible growth.

4.4. Govt Approves Pan-India Rollout of PM-SETU

SYLLABUS

GS-2: *Issues Relating to Development and Management of Social Sector/Services relating to Health, Education, Human Resources.*

GS-3: *Indian Economy and issues relating to Planning, Mobilization of Resources, Growth, Development and Employment.*

Context

The Government has approved the pan-India rollout of PM-SETU (Pradhan Mantri Skilling and Employability Transformation through Upgraded ITIs) across all 200 identified ITI clusters.

More on the News

- The decision was taken at the **4th National Steering Committee (NSC)** meeting under the Ministry of Skill Development and Entrepreneurship (MSDE).
- PM-SETU has now entered a **full-scale national implementation phase**, enabling rollout across all 200 identified ITI clusters.
- The 4th NSC meeting also approved **Strategic Investment Plans (SIPs) worth ₹1,237.58 crore** for **five ITI clusters**—one each in Odisha and Gujarat, and three in Telangana—with participation of Anchor Industry Partners.
- States and Union Territories can now proceed with implementation based on **industry readiness, cluster preparedness and execution capacity**.
- Earlier, **Andhra Pradesh became the first State** to secure approval of a Strategic Investment Plan under PM-SETU, marking the operationalisation of the industry-led ITI transformation model.

About PM-SETU

- **Pradhan Mantri Skilling and Employability Transformation through Upgraded ITIs (PM-SETU)** is a Centrally Sponsored Scheme launched in **October 2025** to transform Industrial Training Institutes (ITIs) into modern, industry-aligned skill institutions.
- **Objectives**
 - ✓ Transform ITIs into **industry-led, state-of-the-art**

skill institutions aligned with labour-market needs.

- ✓ Enhance employability through demand-driven training, modern pedagogy and stronger industry linkages.
- ✓ Modernise training infrastructure and promote sustainable industry participation in vocational education.
- ✓ Develop **five National Skill Training Institutes (NSTIs)** as premier trainer institutions for advanced skilling.
- ✓ Support the vision of **Viksit Bharat 2047** through creation of aspirational skill hubs.
- **Components of the Scheme**
 - ✓ **Component I: Upgradation of ITIs**
 - Upgrade **1,000 Government ITIs** through an industry-led **Hub-and-Spoke model**, comprising **200 Hub ITIs and 800 Spoke ITIs**.
 - ✓ **Component II: Strengthening NSTIs**
 - Capacity augmentation of **five National Skill Training Institutes (NSTIs)** and development of Centres of Excellence for advanced trainer training and specialised skilling.
- **Financing Pattern:** The Scheme has a total outlay of ₹60,000 crore over five years.
 - ✓ Central Share: ₹30,000 crore; State Share: ₹20,000 crore; Industry Share: ₹10,000 crore

Key Features of the PM-SETU

- **Industry-Led Governance:** Industry participation is institutionalised through **Anchor Industry Partners (AIPs)** and **Special Purpose Vehicles (SPVs)** to ensure demand-driven planning, governance and implementation.
- **Infrastructure and Curriculum Modernisation:** The scheme upgrades training infrastructure and introduces **new-age, industry-aligned courses** to equip learners with skills relevant to emerging technologies and labour-market needs.
- **Flexible and Innovative Learning:** It promotes **modular and blended learning**, short-term programmes and trainer development to enhance flexibility, innovation and institutional sustainability.
- **Student-Centric Services:** It strengthens employability through **apprenticeships, career support, life-skills training and placement-oriented learning opportunities**.

Significance of the Scheme

- **Bridging India's Skill Gap:** PM-SETU seeks to align vocational training with industry requirements, addressing the long-standing mismatch between skills imparted and labour-market demand.
- **Strengthening Employability:** Industry-led governance, updated curricula and practical training are expected to improve workforce readiness and employment outcomes among youth.
- **Modernising the ITI Ecosystem:** The scheme promotes large-scale infrastructure upgradation, governance reforms and technological modernisation across India's ITI network.
- **Preparing Workforce for Emerging Technologies:** Through new-age courses, modern equipment and industry-aligned training, PM-SETU aims to equip youth with skills relevant to Industry 4.0 and future growth sectors.
- ✓ Build globally competitive Indian mobile phone brands.
- ✓ Promote technological sovereignty through indigenous design, research & development (R&D), and patent creation.
- **The scheme provides:**
 - ✓ **2.25%–5% incentive** on eligible sales of mobile phones manufactured in India.
 - ✓ **Up to 1.5% additional incentive** for domestic sourcing of key components and sub-assemblies.
 - ✓ **3% additional incentive** on eligible sales for Indian brands undertaking product design and R&D.
- **During its tenure, the scheme is expected to:**
 - ✓ **Cumulative mobile phone production of about ₹39 lakh crore.**
 - ✓ **Significant increase in mobile phone exports.**
 - ✓ **Creation of around 60,000 direct jobs.**

4.5. Mobile Phone Manufacturing Scheme

SYLLABUS

GS-3: Indian Economy and issues relating to planning, mobilization of resources, growth, development and employment.

Context

The Union Cabinet has approved the Mobile Phone Manufacturing Scheme (MPMS) with a budgetary outlay of ₹62,500 crore to strengthen India's mobile phone manufacturing ecosystem and enhance its global competitiveness.

About the Mobile Phone Manufacturing Scheme (MPMS)

- It is a Central Sector Scheme with a budgetary outlay of **₹62,500 crore**.
- The scheme will be implemented for **five years**, from **FY 2026–27 to FY 2030–31**.
- **It aims to:**
 - ✓ Scale up mobile phone production.
 - ✓ Deepen domestic value addition.
 - ✓ Strengthen supply chain resilience.
 - ✓ Enhance global competitiveness in electronics manufacturing.

MOBILE PHONE MANUFACTURING SCHEME (MPMS)

- To promote Indian brands, an additional **3% incentive** on **eligible sales** is provided for **product design and R&D**
- The scheme is expected to generate cumulative mobile phone production of approximately **₹39 lakh crore** during its tenure
- It is also expected to create around **60,000 direct jobs**

- The scheme succeeds the **Production Linked Incentive Scheme for Large Scale Electronics Manufacturing (PLI-LSEM)**, whose tenure ended on **31 March 2026**.

✓ *It aims* to build on its achievements by promoting higher domestic value addition and a stronger component ecosystem.

India's Status in Mobile Manufacturing

- India is the **world's second-largest mobile phone manufacturer by volume**.
- **99.2%** of mobile phones used in India are manufactured domestically.

- Mobile phone manufacturing has become the anchor of India's electronics manufacturing ecosystem.
- **Under the *Make in India* initiative:**
 - ✓ Electronics manufacturing has grown **seven-fold** since **FY 2014–15**.
 - ✓ Electronics exports have increased **eleven-fold** during the same period.
- **Smartphones became India's largest export product category in 2025**, surpassing traditional exports such as diesel fuel and cut diamonds.
- **According to MeitY:**
 - ✓ Mobile phone production increased from **₹18,900 crore (FY 2014–15)** to **₹6.27 lakh crore (FY 2025–26)**.
 - ✓ Mobile phone exports increased from **₹1,566 crore** to **₹2.60 lakh crore** during the same period.
- Mobile phones have risen from being India's **153rd largest export item in FY 2014–15** to the **largest export product in FY 2025–26**.

Significance

- **Strengthens Manufacturing Ecosystem:** The scheme promotes a shift from **mobile phone assembly** to **higher domestic value addition** by strengthening the local manufacturing ecosystem.
- **Enhances Supply Chain Resilience:** It encourages **domestic sourcing of key components and sub-assemblies**, reducing import dependence and building resilient supply chains.
- **Promotes Investment & Innovation:** The scheme provides **long-term policy certainty** to attract fresh investments while encouraging **indigenous design, R&D and patent creation**.
- **Supports Indian Brands:** It enables **Indian mobile phone brands and Original Design Manufacturers (ODMs)** to move beyond contract manufacturing and develop globally competitive products.
- **Strengthens Global Competitiveness:** The scheme enhances India's integration into **Global Value Chains (GVCs)** by building advanced manufacturing capabilities, engineering expertise and supplier networks.
- **Boosts Economy & Employment:** It is expected to increase **exports**, generate **employment**, and contribute to **overall economic growth**.

4.6. National Investment Policy for Urea-2026

SYLLABUS

GS-3: *Issues related to Direct and Indirect Farm Subsidies; Issues of Buffer Stocks and Food Security.*

Context

The Cabinet Committee on Economic Affairs (CCEA) has approved the National Investment Policy for Urea-2026 (NIPU-2026) to encourage investment in gas-based urea manufacturing units and strengthen India's self-reliance in urea production under Atmanirbhar Bharat.

About the National Investment Policy for Urea-2026 (NIPU-2026)

- **Nodal Department:** Department of Fertilizers, Ministry of Chemicals and Fertilizers.
- **Objective:** Promote fresh investment in **gas-based urea manufacturing units** to increase indigenous urea production and reduce import dependence.
- **Coverage:** All new gas-based urea manufacturing projects under the policy.
- **Applicability:** Uniform incentives for **public sector, private sector and cooperative sector** projects.
- **Reason for the Policy:** Introduced after the investment window under **New Investment Policy (NIP)-2012 expired in October 2019**, while new proposals for urea plants continued to be received.
- **Key Features:**
 - ✓ **Separate treatment of fixed and variable costs** for greater transparency in pricing.
 - ✓ **Return on Equity (RoE) band** introduced with **Minimum (12%) and Maximum (16%)**.
 - ✓ **Foreign exchange risk mitigation** by converting fixed costs into Indian Rupees after four years based on prevailing exchange rates.
 - ✓ Expected to generate **savings of over ₹250 crore per plant** compared with projects established under NIP-2012.
- **Targets under NIPU-2026:**
 - ✓ Encourage establishment of **8–9 new gas-based urea plants**.
 - ✓ Create an additional **production capacity of about 10 million tonnes annually**.

- ✓ Achieve **self-sufficiency in urea production** and substantially reduce or eliminate imports.
- **Expected Outcomes:**
 - ✓ Narrow the gap between domestic demand and indigenous production.
 - ✓ Improve transparency and financial viability of new urea projects.
- ✓ Save **foreign exchange** by reducing fertilizer imports.
- ✓ Ensure a stable and reliable supply of urea for Indian agriculture.
- ✓ Strengthen India's fertilizer security under **Atmanirbhar Bharat**.

NEW INVESTMENT POLICY (NIP)-2012



Launched:
2012.



Purpose:
Attract investment in revamp, expansion, revival, brownfield and greenfield urea projects.



Investment Window:
Till October 2019.

NIP-2012

Driving Investment.
Strengthening Self-Reliance
in Urea Production.



MAJOR ACHIEVEMENT



6 new urea plants established.



4 plants through Joint Venture Companies (JVCs) of nominated Public Sector Undertakings (PSUs).



2 plants established by the private sector.

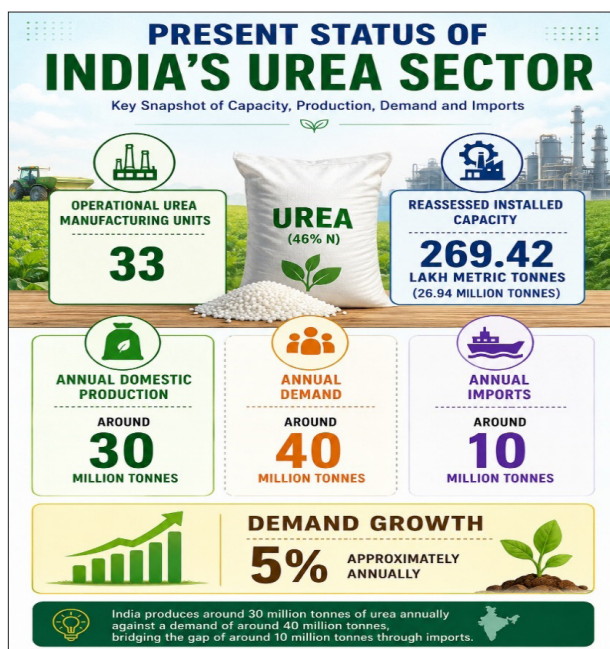


REASON FOR REPLACEMENT:
The investment period expired in 2019, while fresh proposals for new urea plants continued, necessitating the **National Investment Policy for Urea-2026 (NIPU-2026)**.



Significance

- **Strengthens Fertilizer Security:** Expands domestic urea production, reducing dependence on imports and ensuring a more reliable supply of a critical agricultural input.
- **Advances Atmanirbhar Bharat:** Promotes indigenous manufacturing capacity, making India progressively self-reliant in urea production.
- **Catalyses Private and Public Investment:** Introduces a transparent and predictable incentive framework that encourages investment by public, private and cooperative sectors in gas-based urea plants.
- **Improves Fiscal Efficiency:** The revised pricing framework and policy design are expected to reduce project costs, generating savings of **over ₹250 crore per plant** compared with NIP-2012.
- **Reduces Import Dependence and Saves Foreign Exchange:** Higher indigenous production lowers urea imports, reducing exposure to global market uncertainties and conserving valuable foreign exchange.
- **Promotes Industrial Growth and Employment:** Establishment of new urea plants will stimulate industrial activity, strengthen the domestic fertilizer manufacturing ecosystem and generate direct and indirect employment.



4.7. PMFME Scheme Crosses Two Lakh Credit-Linked Beneficiaries

SYLLABUS

GS-3: Food Processing and Related Industries in India- Scope' and Significance, Location, Upstream and Downstream Requirements, Supply Chain Management.

Context

The PM Formalisation of Micro Food Processing Enterprises (PMFME) Scheme has crossed the milestone of two lakh credit-linked beneficiaries, marking a significant achievement in formalising and strengthening India's micro food processing sector.

More on the News

- More than **2 lakh** micro food processing enterprises have received loan sanctions under the scheme, leveraging project investments of over **₹20,300 crore**.
- The scheme has generated nearly **11 lakh** direct and indirect employment opportunities.
- Around **90% beneficiaries** are first-generation entrepreneurs and **44% are women entrepreneurs**.
- More than **75,000** PMFME-supported enterprises have

entered the formal economy through registrations under **Udyam, Udyam Assist, FSSAI, and GST**.

- The Scheme's Seed Capital support has benefitted more than **4.18 lakh** Self Help Group members.

About the PMFME Scheme

- **Launch and Objective**
 - ✓ Launched in **2020** under the **Aatmanirbhar Bharat Abhiyan** and implemented by the **Ministry of Food Processing Industries (MoFPI)**.
 - ✓ Aims to formalise and enhance the competitiveness of micro food processing enterprises in the unorganised sector through financial, technical, and business support.
- **Funding Pattern and Outlay**
 - ✓ A **Centrally Sponsored Scheme** with an outlay of **₹10,000 crore** for the period **2020–21 to 2025–26**.
 - ✓ Funding pattern: **60:40** between Centre and States; **90:10** for North-Eastern and Himalayan States; **100% Central assistance** for Union Territories.
- **Key Features**
 - ✓ Adopts the **One District One Product (ODOP)** approach to promote district-specific food products and value chains.
 - ✓ Provides **35% credit-linked capital subsidy** on eligible project cost, subject to a maximum of **₹10 lakh per unit**.
 - ✓ Provides **Seed capital support of up to ₹40,000 per SHG member** for working capital and small tools.
 - ✓ Support for **common infrastructure**, branding, marketing, capacity building, and handholding.
- **Coverage**
 - ✓ Supports **individual entrepreneurs, Self-Help Groups (SHGs), Farmer Producer Organisations (FPOs), cooperatives, and producer companies** across the food-processing value chain.

Significance of the Scheme

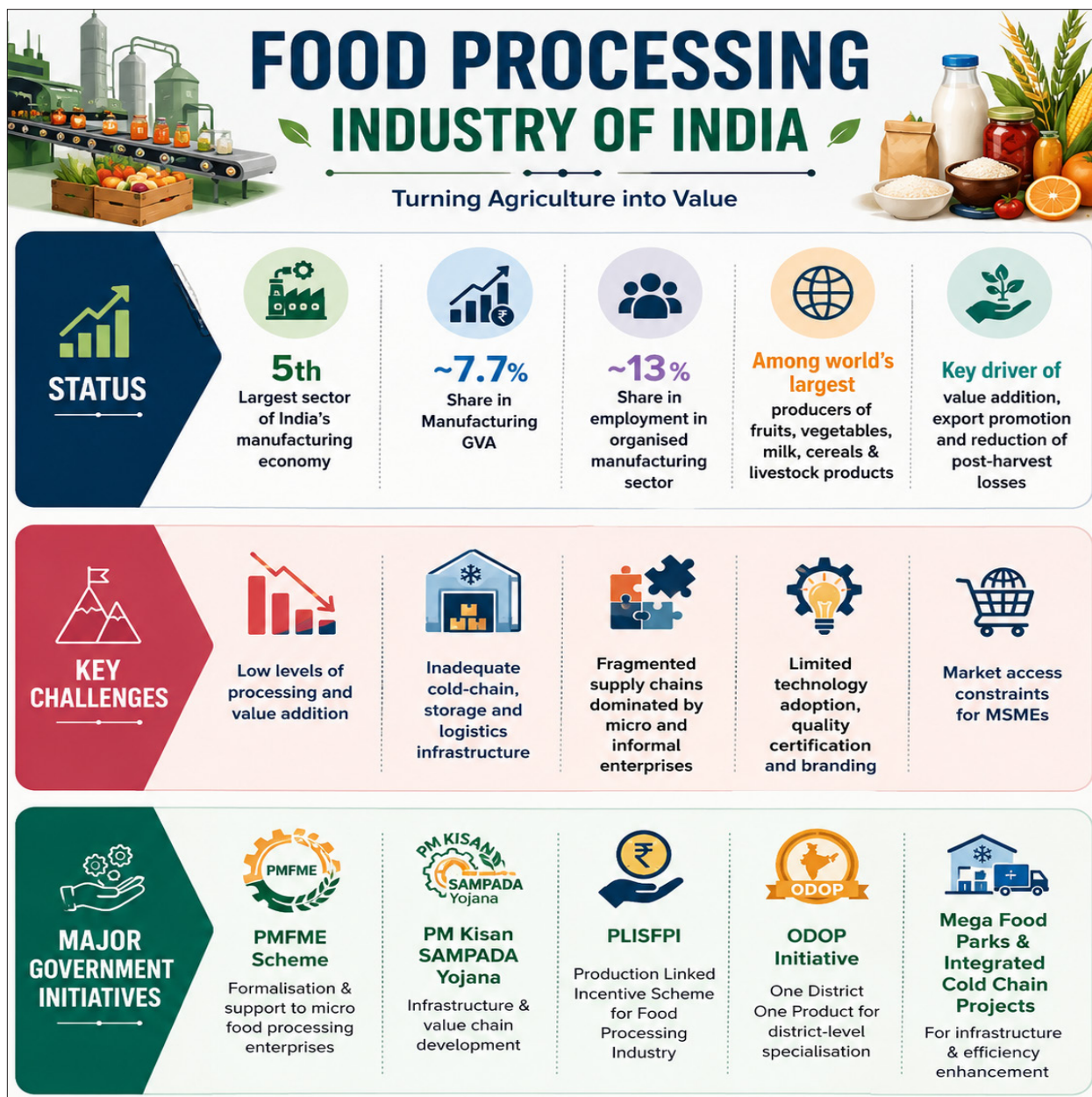
- **Formalising India's Food Processing Ecosystem:** The scheme facilitates the transition of micro food enterprises from the informal to the formal economy through access to finance, registrations, quality standards, and institutional support.
- **Promoting Rural Entrepreneurship:** By supporting

first-generation entrepreneurs and local food-processing units, the scheme strengthens rural industrialisation and local value addition.

- **Strengthening the ODOP Value Chain:** The ODOP approach promotes district-specific products, improves branding and market access, and helps build region-based food-processing clusters.
- **Women-Led and Inclusive Growth:** Significant

participation of women entrepreneurs and community institutions such as SHGs and FPOs contributes to inclusive economic development.

- **Employment Generation and Value Addition:** Expansion of local processing capacity creates employment opportunities, enhances farmer incomes, and supports agricultural value addition.



4.8. Investment Friendliness Index 2026

SYLLABUS

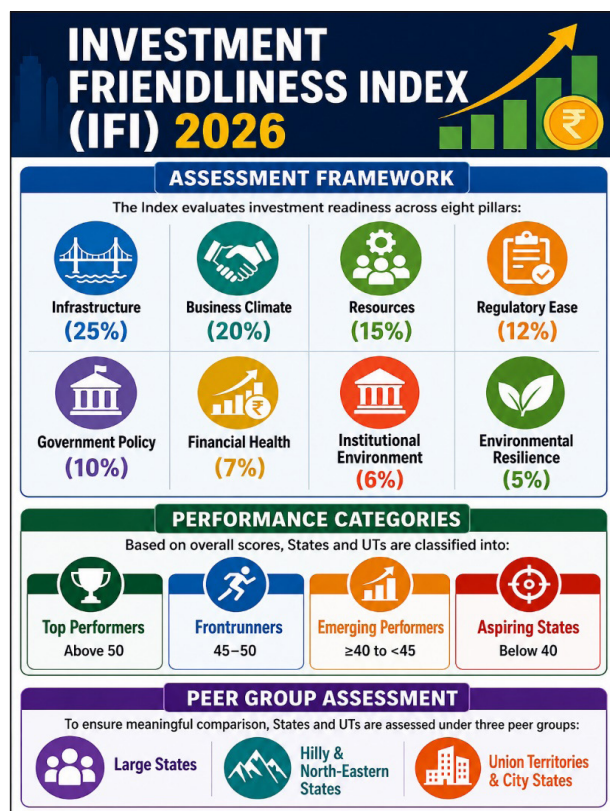
GS-3: Indian Economy and issues relating to Planning, Mobilisation of Resources, Growth, Development and Employment; Investment Models; Inclusive Growth.

Context

NITI Aayog has released the first-ever Investment Friendliness Index (IFI) 2026 to assess how effectively States and Union Territories create an enabling environment for attracting and sustaining investments in line with the vision of Viksit Bharat @2047.

About the Investment Friendliness Index (IFI)

- It is a **data-driven framework** developed by NITI Aayog to assess the investment ecosystem across all **28 States and 8 Union Territories**.
- The Index evaluates investment readiness using **84 indicators across eight assessment pillars**.



- The Index benchmarks how effectively States create an environment conducive to domestic and foreign investments.
- Objective:** To promote competitive and cooperative federalism by enabling States to benchmark performance, identify policy gaps, adopt best practices and undertake continuous reforms.
- The Index was conceptualised following the Prime Minister's direction during the **9th Governing Council Meeting of NITI Aayog (July 2024)** to prepare an Investment-Friendly Charter.
- The **Union Budget 2025-26** subsequently announced the development of the Investment Friendliness Index.

Key Findings

- Overall Performance:** Gujarat emerged as India's most investment-friendly State, followed by Maharashtra, Tamil Nadu, Goa and Odisha.
- Top Performers:** Gujarat scored **56.6**, Maharashtra **53.7**, and Tamil Nadu **53.3**, reflecting their strong infrastructure, business climate and policy support.
- Performance Categories:** The Index classified States and UTs into:
 - ✓ 5 Top Performers
 - ✓ 15 Frontrunners
 - ✓ 8 Emerging Performers
 - ✓ 8 Aspiring States/UTs
- Peer Group Rankings:** Gujarat topped among Large States; Uttarakhand ranked first among Hilly & North-Eastern States; Goa led the Union Territories & City States category, followed by Delhi and Chandigarh.
- Drivers of Performance:**
 - ✓ **Gujarat:** Efficient ports, competitive power sector and favourable business climate.
 - ✓ **Maharashtra:** Strong private equity & venture capital ecosystem, innovation and robust economic indicators.
 - ✓ **Tamil Nadu:** High-quality infrastructure, efficient ports, strong exports and nearly 100% Memorandum of Understanding (MoU) conversion rate.

- **State Profiles:** The report provides detailed profiles covering macroeconomic indicators, sectoral strengths, investor perceptions, pillar-wise performance and peer-group comparisons to identify reform priorities.
- **India's Investment Imperative:** India recorded an average real GDP growth of **6.1% during FY1992–FY2025**.
 - ✓ According to the World Bank, India needs to achieve **7.8% average real GDP growth** over the next two decades to become a high-income economy by 2047.
 - ✓ The report highlights that investments have contributed to over half of India's economic growth since FY1992, underscoring the need for sustained investment-led growth.

Significance of the Report

- **Benchmark for Reforms:** Provides an objective framework for States to assess investment readiness and identify reform priorities.
- **Promotes Federalism:** Encourages healthy competition, peer learning and the adoption of best practices among States.
- **Improves Investment Climate:** Supports better infrastructure, regulatory efficiency, institutional quality and policy predictability.
- **Supports Evidence-based Policymaking:** Combines objective data with investor feedback to guide targeted governance reforms.
- **Enhances Investor Confidence:** Improves transparency by providing comprehensive State Profiles and comparative performance assessments.
- **Supports Viksit Bharat @2047:** Encourages higher private investment, employment generation and long-term sustainable economic growth.

4.9. Nine years of the Goods and Services Tax

SYLLABUS

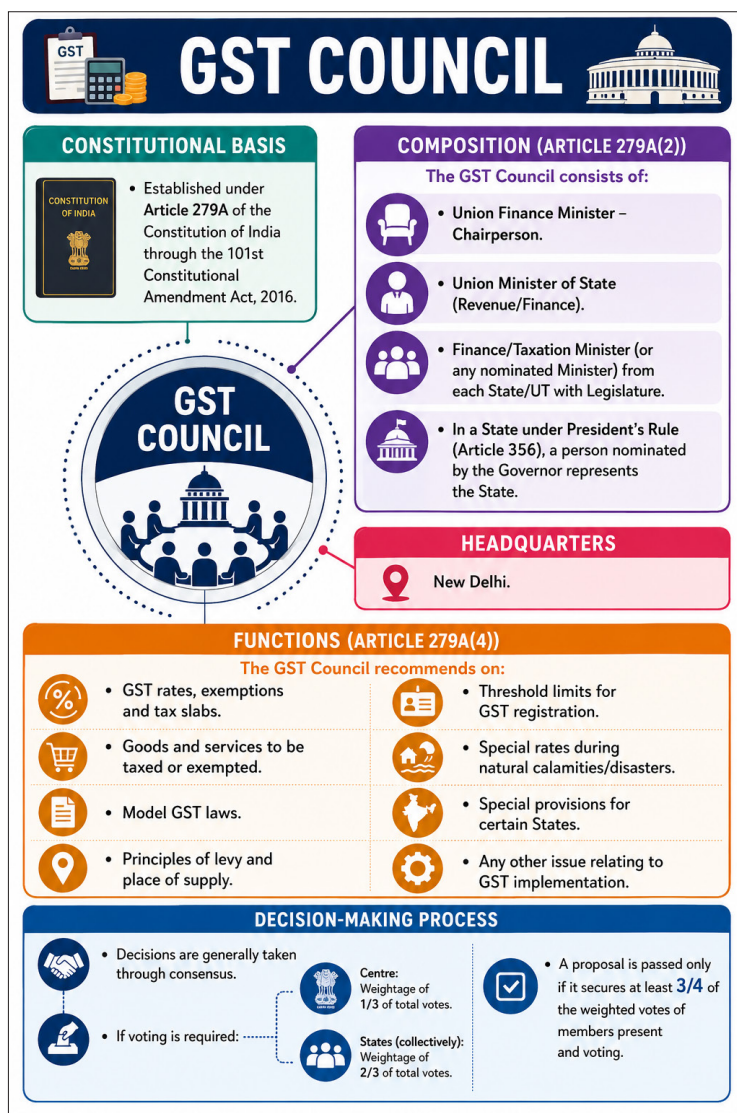
GS-3: Indian Economy and issues relating to planning, mobilization of resources, growth, development and employment.

Context

India completed nine years of the Goods and Services Tax (GST) on 1 July 2026, marking a major milestone in the country's journey towards a unified, technology-driven, and transparent indirect tax system, further strengthened by the Next-Generation GST (GST 2.0) reforms.

About the Goods and Services Tax (GST)

- GST was enabled through the **101st Constitutional Amendment Act, 2016**, which empowered both the Centre and the States to levy GST by amending the constitutional distribution of taxation powers.
- It was launched on **1 July 2017** based on the principle of **"One Nation, One Tax, One Market."**
- GST is implemented through four key laws enacted in 2017—**Central GST (CGST) Act, Integrated GST (IGST) Act, Union Territory GST (UTGST) Act, and GST (Compensation to States) Act**.
- It replaced **17 Central and State taxes and 13 cesses**, eliminating the cascading **"tax-on-tax" effect** and creating a common national market.
- GST is a **destination-based consumption tax**, levied on the **supply of goods and services**, with tax revenue accruing to the state where consumption occurs.
- **It follows a Dual GST Model:**
 - ✓ **CGST** – Levied by the Centre on intra-state supplies.
 - ✓ **SGST** – Levied by States on intra-state supplies.
 - ✓ **IGST** – Levied on inter-state supplies.
- **GST Council is a constitutional body established under Article 279A** that promotes **co-operative federalism** by enabling consensus-based decisions between the Centre and States.
- **Goods and Services Tax Network (GSTN)**, jointly owned by the Centre and States (50:50), provides the digital backbone for registration, return filing, payments, refunds and e-invoicing.
- **Coverage:** GST applies to almost all goods and services, while **alcohol for human consumption** remains outside its ambit. Constitutionally, **five petroleum products** can be brought under GST on the recommendation of the GST Council.
- GST has progressively adopted **AI, machine learning and data analytics** to improve compliance, risk assessment, fraud detection and tax administration.



• **Tax structure simplified to two principal slabs:**

- ✓ **5%** for essential goods and services.
- ✓ **18%** for standard goods and services.
- ✓ **40%** for luxury and sin goods such as **tobacco, lottery/online gaming, aerated drinks, high-end cars, yachts and private aircraft.**

• **Compliance reforms include:**

- ✓ Simpler registration and return filing.
- ✓ Faster refund processing.
- ✓ Reduced compliance costs, particularly for MSMEs and startups.

• **Relief measures for MSMEs and small taxpayers:**

- ✓ Registration threshold for goods suppliers increased from **₹20 lakh to ₹40 lakh.**
- ✓ Composition Scheme limit enhanced from **₹75 lakh to ₹1.5 crore.**
- ✓ **QRMP Scheme** for taxpayers with turnover up to **₹5 crore.**
- ✓ NIL GST returns can be filed through SMS.
- ✓ Ease-based registration enables approval within **three working days** for low-risk applicants.
- ✓ Waiver of interest and penalties for specified past demand notices (FY 2017-18 to FY 2019-20), subject to conditions.

• **Technology-driven administration has been strengthened through:**

- ✓ E-invoicing.
- ✓ Pre-filled returns.
- ✓ Automated Input Tax Credit (ITC) matching.
- ✓ AI-enabled risk-based scrutiny and compliance monitoring.

Significance

- **Creates a unified national market** by replacing multiple indirect taxes with a single integrated tax framework.
- **Promotes co-operative federalism** through consensus-based decision-making in the GST Council.

- **Taxpayer base** expanded from **66.5 lakh (2017) to 1.65 crore (May 2026)**, while gross GST collections increased from **₹7.4 lakh crore (2017-18) to ₹22.27 lakh crore (2025-26).**
- Collections during **April-May 2026** stood at around **₹4.37 lakh crore.**

About GST 2.0 (Next-Generation GST Reforms)

- Approved in the **56th GST Council Meeting**, the reforms came into effect on **22 September 2025** to simplify taxation and improve ease of doing business.

- **Improves ease of doing business** by simplifying tax rates, reducing compliance burden and accelerating refunds, especially for MSMEs and startups.
- **Enhances transparency and tax compliance** through digital platforms, e-invoicing, AI-based analytics and real-time validation.
- **Supports formalisation of the economy**, reflected in a significant rise in registered taxpayers and sustained growth in GST revenues.
- **Reduces production costs** through rationalised tax rates and correction of inverted duty structures, improving domestic manufacturing and export competitiveness.
- **Benefits consumers** by lowering prices on several goods and services, increasing affordability and improving access to essential sectors such as healthcare.
- **Contributes to macroeconomic stability** by strengthening revenue buoyancy, fiscal transparency and data-driven tax administration while supporting the vision of *Viksit Bharat*.

4.10. Draft National Food Security (Amendment) Bill, 2026

SYLLABUS

GS-3: Public Distribution System - Objectives, Functioning, Limitations, Revamping; Issues of Buffer Stocks and Food Security.

Context

The Department of Food and Public Distribution has released the Draft National Food Security (Amendment) Bill, 2026 for public consultation, proposing a major reform in foodgrain entitlements for beneficiaries under the Antyodaya Anna Yojana (AAY).

More on the News

- The draft amendment focuses exclusively on the **Antyodaya Anna Yojana (AAY)** category, which covers the poorest and most vulnerable households under the National Food Security Act (NFSA), 2013.
- It seeks to address intra-category inequities in AAY by shifting from a **fixed household-based foodgrain allocation to a person-based entitlement system**, with the objective of ensuring more rational and equitable distribution aligned with household size and nutritional requirements.
- The amendment has triggered a wider debate on food security, nutritional adequacy, beneficiary coverage and the future direction of India's food subsidy regime.

About the National Food Security Act (NFSA), 2013

- Enacted in **2013**, NFSA provides a **legal right to food security** by ensuring access to subsidised foodgrains through the **Targeted Public Distribution System (TPDS)**.
- The Act covers up to **75% of the rural population and 50% of the urban population**, corresponding to about **81.35 crore beneficiaries** based on the 2011 Census.
- **Beneficiaries are classified into:**
 - ✓ **Antyodaya Anna Yojana (AAY):** Poorest households; currently entitled to **35 kg of foodgrains per household per month**.
 - ✓ **Priority Households (PHH):** Entitled to **5 kg of foodgrains per person per month**.
- The Act follows a **life-cycle approach to food and nutrition security**, providing nutritional support to pregnant women, lactating mothers and children (6 months–14 years) through Anganwadi services and school meal programmes, along with a maternity benefit of at least ₹6,000.

Key Provisions of the Draft NFSA (Amendment) Bill, 2026

- **Person-Based Entitlement for AAY Beneficiaries:** The draft proposes a new provision in **Section 3 of the NFSA 2013** to propose an entitlement of **7 kg of foodgrains per person per month** for AAY beneficiaries instead of the current household-based allocation.
- **Retention of Household Ceiling:** While shifting to a per-person entitlement, the amendment retains a **maximum cap of 35 kg of foodgrains per household per month**.
- **No Change for Priority Households:** The entitlement for **Priority Households (PHH)** remains unchanged

at **5 kg per person per month**. The amendment is confined to the AAY category.

- **Continuity of Existing NFSA Framework:** The draft does not alter NFSA coverage, beneficiary identification mechanisms or the broader public distribution architecture.

Significance of the Amendment

- **Addressing Intra-Category Inequities:** Under the existing AAY framework, every household receives **35 kg of foodgrains per month irrespective of family size**, leading to unequal per-capita entitlements. The proposed shift to a person-based allocation seeks to make foodgrain distribution more equitable.
- **Strengthening Food Security for Vulnerable Families:** Larger AAY households often receive lower per-person foodgrain support than beneficiaries under the Priority Household (PHH) category. The revised entitlement structure seeks to enhance food security for the poorest and most vulnerable families.
- **Rationalising Welfare Delivery:** The amendment represents a shift from a uniform household entitlement to a demographic-sensitive approach, improving the targeting and efficiency of food subsidy distribution.
- **Reinforcing the Objectives of NFSA:** By addressing allocation disparities within the Antyodaya Anna Yojana, the proposal seeks to strengthen the rights-based food security framework envisioned under the National Food Security Act, 2013.

Concerns and Criticisms

- **Limited Benefits for Larger Families:** Although the amendment proposes **7 kg per person**, the retention of the **35 kg household cap** means larger AAY families may still not receive their full entitlement.
- **Outdated NFSA Coverage:** Activists associated with the **Right to Food Campaign** argue that NFSA coverage continues to be based on the **2011 Census**, leaving millions of eligible persons outside the food security net.
- **Exclusion of Other Beneficiaries:** The reform is confined to **AAY households** and does not address concerns relating to **Priority Households (PHH)**,

which constitute the majority of NFSA beneficiaries.

- **Concerns of States:** Kerala and some other southern states have argued that the amendment should be **accompanied by a revision of NFSA coverage limits** and greater flexibility to address state-specific demographic and nutritional requirements.

Way Forward

- **Rationalise AAY Entitlements:** Review the **35 kg household ceiling** to ensure that larger AAY families receive foodgrain support commensurate with their size and needs.
- **Expand and Update NFSA Coverage:** Revise beneficiary coverage using the latest population estimates to address exclusion errors and ensure that all eligible households are brought under the food security net.
- **Move from Food Security to Nutrition Security:** Complement cereal-based support with greater access to **pulses, millets, edible oils and other nutrient-rich foods** to address malnutrition and dietary deficiencies.
- **Strengthen Cooperative Federalism and PDS Reforms:** Incorporate feedback from States and stakeholders while improving beneficiary identification, portability, grievance redressal and last-mile delivery under the Public Distribution System (PDS).

4.11. Government Exempts IFSC GIFT City Units from Coastal Shipping Act

SYLLABUS

GS-3: *Effects of Liberalization on the Economy, Changes in Industrial Policy and their Effects on Industrial Growth; Infrastructure: Energy, Ports, etc.*

Context

The Government has exempted IFSC GIFT City units from the licensing requirement under Section 11 of the Coastal Shipping Act, 2025 for chartering foreign vessels for EXIM and international trade operations.

Key Highlights of the Exemption

- **What Has Been Exempted?**
✓ Earlier, entities chartering foreign vessels for

specified operations were required to obtain a licence under **Section 11 of the Coastal Shipping Act, 2025**. The new exemption removes this requirement for eligible IFSC units.

- ✓ Eligible IFSC entities can now charter foreign vessels for **export-import (EXIM)** and international trade operations without obtaining a licence from the Director General of Shipping.

- **Coastal Shipping Safeguards Remain Intact**

- ✓ The exemption applies only to EXIM and international trade operations and does not alter India's existing **coastal shipping (cabotage) framework** or safeguards applicable to domestic coastal trade.

- **Objective of the Reform**

- ✓ The measure seeks to simplify regulatory requirements and promote **ship leasing, ship financing, and ship-owning activities** through GIFT City.

Significance of the Exemption

- **Boost to Maritime Leasing and Ship Financing:** By removing a key regulatory requirement, the reform is expected to encourage ship leasing, vessel ownership, and maritime financing activities through IFSC-based entities.
- **Strengthening GIFT City as a Maritime Hub:** The exemption enhances GIFT City's attractiveness for global maritime businesses and supports its emergence as an integrated centre for maritime leasing, financing, and related services.
- **Bringing Offshore Maritime Services Onshore:** The reform supports India's objective of developing domestic capabilities in maritime finance and ship leasing, reducing reliance on established overseas financial centres for such services.
- **Supporting India's Blue Economy and Maritime Vision:** The measure complements India's broader efforts to strengthen maritime infrastructure, logistics, shipping services, and the Blue Economy while enhancing the country's role in global trade and shipping networks.

About GIFT IFSC and IFSCA

- **Gujarat International Finance Tec-City (GIFT City),**

located in Gandhinagar, Gujarat, is India's first operational **International Financial Services Centre (IFSC)** and has been developed as a global financial and business hub.

- **What is an IFSC?**

- ✓ An **International Financial Services Centre (IFSC)** is a jurisdiction that provides financial services to non-residents and residents in foreign currencies, bringing offshore financial activities and transactions within India.

- ✓ IFSCs were conceived to enable India to compete with global financial centres and reduce the outflow of financial services business to overseas jurisdictions.

- **International Financial Services Centres Authority (IFSCA)**

- ✓ Established under the **International Financial Services Centres Authority Act, 2019**, the IFSCA is the unified regulator for financial products, financial services, and financial institutions operating in IFSCs in India.

- ✓ It regulates sectors such as **banking, insurance, capital markets, fund management, fintech, aircraft leasing, and ship leasing**.

4.12. Sub-Mission on Agricultural Mechanization

SYLLABUS

GS-3: *E-technology in the aid of farmers; Technology Missions.*

Context

The **Sub-Mission on Agricultural Mechanization (SMAM)** is witnessing a rapid expansion across the country, enhancing farmers' access to modern agricultural machinery and improving farm productivity and efficiency.

More on the News

- Since its launch, SMAM has emerged as a key intervention for promoting inclusive farm mechanization, particularly among small and marginal farmers and other underserved groups.
- The scheme has significantly expanded mechanization infrastructure through Custom Hiring

Centres (CHCs), Farm Machinery Banks (FMBs) and Hi-Tech Hubs, improving access to farm equipment on a shared basis.

- Recent efforts under the scheme have also focused on promoting drone-based and precision agriculture technologies to modernize Indian farming.

About the Sub-Mission on Agricultural Mechanization (SMAM)

- Launched in **2014–15**, the **Sub-Mission on Agricultural Mechanization (SMAM)** is a **Centrally Sponsored Scheme** under the **Rashtriya Krishi Vikas Yojana (RKVY)**.

✓ For most states, the funding pattern is 60:40, while for North-Eastern and Himalayan states, it is 90:10. UTs get 100% central assistance.

- It seeks to promote farm mechanization across the country, particularly among farmers with limited access to modern agricultural machinery and equipment.
- The scheme follows a **“reach the unreached”** approach to make mechanization affordable, accessible and inclusive.

• Objectives:

- ✓ Increase the reach of farm mechanization, particularly among small and marginal farmers and in regions with low farm power availability.
- ✓ Improve productivity, operational efficiency and timeliness of farm operations through adoption of modern machinery.
- ✓ Reduce labour drudgery and cultivation costs while promoting post-harvest management and sustainable agriculture.

• Focus Areas

- ✓ **Promotion of Agricultural Mechanization:** Supports training, demonstrations, testing and post-harvest mechanization to improve adoption of modern farm technologies.
- ✓ **Financial Assistance for Agricultural Machinery:** Provides DBT-based subsidies for machinery purchase, with higher support for SC/ST farmers, small and marginal farmers and beneficiaries in the North-East.
- ✓ **Custom Hiring Centres (CHCs) and Farm Machinery Banks (FMBs):** Facilitates shared

access to agricultural equipment through institutional models, making mechanization affordable for farmers who cannot purchase machinery individually.

- ✓ **Hi-Tech and High-Productivity Equipment Hubs:** Promotes access to advanced, high-capacity and crop-specific machinery for precision and efficient farm operations.

- ✓ **Special Focus on North-Eastern Region (NER):** Provides enhanced financial support and region-specific interventions to address mechanization gaps and improve access to modern farm equipment in the North-East.

Key Achievements under SMAM

- Since inception, central assistance of **₹9,404.47 crore** has supported the distribution of **21.61 lakh agricultural machines** to farmers across the country.
- The scheme has established **27,554 CHCs, 25,608 FMBs and 646 Hi-Tech Hubs**, while the number of individual beneficiaries increased from **2.07 lakh (2020–21) to 2.32 lakh (2024–25)**.
- Under the promotion of agricultural drones, **40,928 demonstrations** covering **40,918 hectares** have been conducted, supporting the adoption of precision agriculture.

Need for Mechanization in Indian Agriculture

- **Low Level of Farm Mechanization:** Farm mechanization in India is estimated at around **47–48%**, indicating significant scope for improving productivity and efficiency in agriculture.
- **Small and Fragmented Landholdings:** With over **86% of operational holdings belonging to small and marginal farmers**, shared-access models such as CHCs and FMBs are essential for ensuring affordable access to machinery.
- **Labour Shortages and Rising Costs:** Increasing rural labour shortages and rising wage costs have made mechanization critical for timely agricultural operations and reducing dependence on manual labour.
- **Need for Precision and Sustainable Agriculture:** Adoption of modern machinery, including drones and precision farming tools, is increasingly necessary

for efficient input use, climate-resilient agriculture and reduction of post-harvest losses.

Challenges

- **Regional Disparities in Mechanization:** Mechanization levels remain uneven across states, with eastern and north-eastern regions lagging behind agriculturally advanced states such as Punjab and Haryana.
- **Affordability and Technology Barriers:** High machinery costs and limited technical capacity continue to constrain adoption of advanced equipment such as drones and precision farming tools.
- **Inadequate Support Infrastructure:** Gaps in repair facilities, skilled operators, extension services and post-harvest mechanization infrastructure constrain the effective and widespread use of farm machinery.

Way Ahead

- **Expand Shared Mechanization Infrastructure:** Scale up CHCs, FMBs and Hi-Tech Hubs, particularly in regions with low mechanization levels, to provide affordable access to modern machinery.
- **Promote Precision and Digital Agriculture:** Promote drones, precision agriculture and other advanced technologies through targeted incentives and capacity building.
- **Strengthen Support for Small and Marginal Farmers:** Enhance credit access, subsidy delivery and FPO-based mechanization models to make advanced equipment more affordable and accessible.
- **Focus on Regional and Capacity Building Gaps:** Prioritise mechanization in eastern and north-eastern India while strengthening training, maintenance services and rural technical support systems for sustainable adoption.

4.13. World Investment Report 2026

SYLLABUS

GS-3: Indian Economy and issues relating to Planning, Mobilization of Resources, Growth, Development and Employment; Investment Models.

Context

The United Nations Conference on Trade and Development (UNCTAD) recently released the World Investment Report (WIR) 2026, titled “International Investment in a Turbulent Era”, highlighting global investment trends, FDI flows and emerging challenges in the international investment landscape.

More on the News

- The **World Investment Report** is UNCTAD’s flagship annual publication that tracks global and regional Foreign Direct Investment (FDI) trends, investment policies and sustainable development financing.
- The 2026 edition examines how geopolitical tensions, industrial policies, technological competition and economic uncertainty are reshaping international investment flows.

Key Findings of the World Investment Report 2026

- **Global FDI Recovered but Remained Uneven**
 - ✓ Global FDI flows increased by **6% to \$1.6 trillion in 2025**, reversing the decline witnessed in previous years.
 - ✓ However, the recovery remained uneven, with developed economies recording stronger gains while many developing economies experienced modest growth (11% increase in FDI inflows in developed countries compared with just 2% growth in developing economies).
- **Asia Retained Its Position as the Leading Investment Destination**
 - ✓ Developing Asia attracted **\$644 billion in FDI inflows** in 2025, accounting for nearly **40% of global FDI** and retaining its position as the largest recipient among developing regions.
 - ✓ ASEAN received a record **\$225 billion** in FDI, while West Asia recorded a **3% increase** in inflows to **\$76 billion**.
- **Investment Became Increasingly Concentrated**
 - ✓ The **top 20 host economies** accounted for over **80% of global FDI inflows**, indicating growing concentration of investment flows.
 - ✓ Investment was increasingly directed towards a limited number of countries and strategic sectors,

leaving many developing economies at risk of marginalisation.

- **Strategic and Technology Sectors Drove Investment Flows**

- ✓ International investment increasingly flowed towards **artificial intelligence (AI), semiconductors, digital infrastructure, critical minerals and clean-energy technologies**.
- ✓ AI-related investment surged from about **\$109 billion in 2020 to \$576 billion in 2025**, reflecting the growing importance of frontier technologies.

- **India Strengthened Its Global Investment Position**

- ✓ India emerged as the **11th largest recipient of FDI globally in 2025**, improving from the **13th position** in the previous year.
- ✓ FDI inflows into India increased by **44% to \$39 billion**, supported by strong performance in manufacturing, digital economy and infrastructure-related sectors.

Challenges and Risks Highlighted by the Report

- **Growing Concentration of Global Investment:** Increasing concentration of FDI in a few countries and sectors may widen development gaps and reduce investment opportunities for smaller economies.
- **Geopolitical and Economic Fragmentation:** Trade tensions, geopolitical rivalries, industrial policy competition and economic uncertainty are making the global investment environment more fragmented and unpredictable.
- **Unequal Access to Strategic Investments:** Many developing countries lack the technological capabilities, infrastructure and fiscal resources needed to attract investments in frontier sectors such as AI and semiconductors.
- **Persistent SDG Financing Gap:** Investment levels in sustainable infrastructure, climate action, clean energy and social sectors remain significantly below what is required to achieve the SDGs by 2030.

Way Forward

- **Promote More Inclusive Global Investment:** Strengthen international cooperation and investment facilitation mechanisms to ensure a more balanced distribution of FDI across regions

and economies.

- **Enhance Investment Readiness in Developing Economies:** Improve infrastructure, regulatory certainty, institutional capacity and ease of doing business to attract quality investments.
- **Scale Up Sustainable Development Financing:** Mobilise greater public and private investment towards renewable energy, resilient infrastructure, food systems and other SDG-linked sectors.
- **Build Capacity in Emerging Technologies:** Support developing countries through technology transfer, skill development and access to finance so they can participate effectively in AI, advanced manufacturing and clean-technology value chains.

4.14. OECD-FAO Agricultural Outlook 2026-2035

SYLLABUS

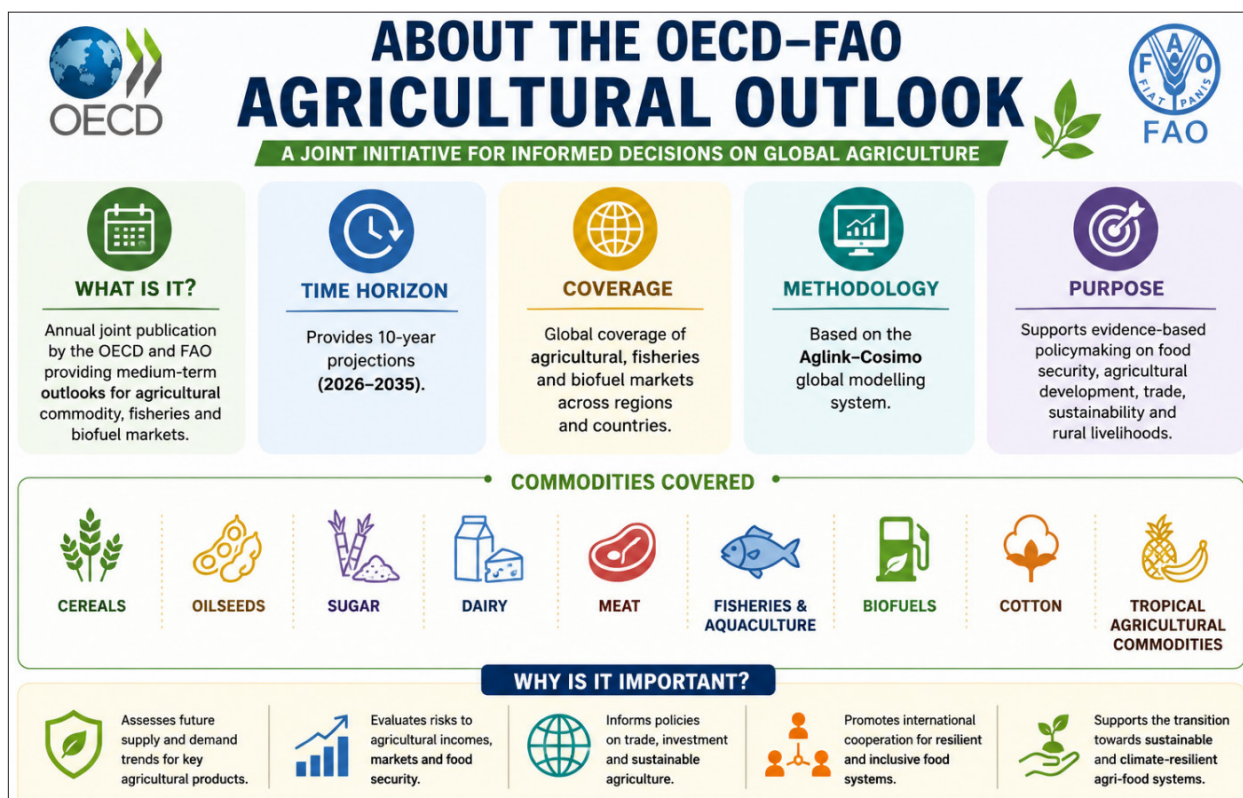
GS-3: *Issues of Buffer Stocks and Food Security; Infrastructure: Energy.*

Context

The recently released OECD-FAO Agricultural Outlook 2026-2035 projects sustained growth in global agriculture through productivity gains, while highlighting risks from climate change, income volatility and geopolitical disruptions.

More on the News

- The **22nd edition** of the OECD-FAO Agricultural Outlook provides a ten-year assessment of global agricultural commodity, fisheries and biofuel markets from **2026 to 2035**.
- The report places special emphasis on **Agricultural Labour Productivity and Income Variability**, highlighting the need for resilient and inclusive agricultural growth.
- Global agricultural and fish production is projected to increase by around **13% by 2035**, while the global population is expected to reach **8.8 billion**.
- The Outlook also analyses the potential impact of the **2026 Middle East conflict**, warning that higher energy and fertiliser prices could adversely affect agricultural production and food security, particularly in low-income countries.



Key Findings of the OECD-FAO Agricultural Outlook 2026–2035

- **Agricultural Production to Grow Through Productivity Gains**
 - ✓ Global agricultural and fish production is projected to increase by about **13% by 2035**, driven primarily by productivity improvements.
 - ✓ However, some expansion of crop area and livestock numbers will still be necessary to meet rising demand.
 - ✓ Most production growth is expected to come from **Asia, Latin America and Sub-Saharan Africa**.
- **Agricultural Incomes Likely to Improve, but Risks Persist**
 - ✓ Average agricultural income per worker is projected to rise by about **9% by 2035**.
 - ✓ However, agricultural incomes remain vulnerable to climate shocks, market volatility and rising input costs, particularly in low-income countries.
 - ✓ There remains a **25% probability** that incomes could fall significantly below baseline projections.

• Biofuels and Energy Transition to Shape Agricultural Demand

- ✓ Global biofuel demand is expected to continue expanding, led by emerging economies.
- ✓ **Maize, sugarcane and vegetable oils** will remain the principal feedstocks, keeping food crops at the centre of biofuel production (First-generation biofuels).
- ✓ The report highlights growing concerns over the **food-versus-fuel debate** and the slow commercial adoption of advanced biofuels and **Sustainable Aviation Fuel (SAF)**.

• Evolving Global Food Systems

- ✓ Rising incomes and urbanisation are expected to increase demand for livestock products, dairy and aquatic foods.
- ✓ **Southeast Asia** is projected to account for around **39% of global food consumption growth by 2035**.

Challenges and Risks Highlighted by the Report

- **Income Volatility and Farmer Vulnerability:** Despite

projected income growth, farmers—especially in low-income countries—remain highly vulnerable to climate shocks, market fluctuations and input-cost volatility.

- **Climate Change and Environmental Sustainability:** Direct agricultural emissions are projected to rise by **6.5% by 2035**, highlighting the challenge of increasing production while reducing environmental impacts.
- **Geopolitical and Input-Cost Risks:** Geopolitical disruptions can raise energy and fertiliser prices, increasing production costs and reducing agricultural output, particularly in vulnerable economies.
- **Food Security Concerns:** Supply-chain disruptions, price volatility and unequal access to resources continue to threaten global food security, especially for low-income populations.

Recommendations

- **Promote Productivity-Led Agricultural Growth:** Increase investments in agricultural research, innovation, digital technologies and improved farming practices to sustainably raise productivity.
- **Strengthen Farmer Resilience:** Expand climate-risk insurance, social protection measures and risk-management tools to reduce the impact of income volatility on farmers.
- **Advance Sustainable Agriculture:** Encourage climate-smart agriculture, efficient resource use and low-emission technologies to decouple production growth from environmental degradation.
- **Balance Food and Fuel Objectives:** Design biofuel policies that support energy-transition goals while minimizing pressure on food systems, land resources and commodity prices.



5.1. NBA Releases SOP for Scientific Identification and Notification of Threatened Species

SYLLABUS

GS-3: Conservation, Environmental Pollution and Degradation, Environmental Impact Assessment.

Context

The National Biodiversity Authority (NBA) has released a Standard Operating Procedure (SOP) for the scientific identification and notification of Threatened Species under Section 38 of the Biological Diversity Act, 2002.

More on the News

- The SOP seeks to establish a **uniform, transparent and scientifically robust framework** for the identification, assessment and notification of threatened species by States and Union Territories.
- India, one of the world's megadiverse countries, is witnessing increasing threats to biodiversity from **habitat degradation, overexploitation, pollution, invasive alien species and climate change**, necessitating stronger conservation measures.
- **Section 38 of the Biological Diversity Act, 2002** empowers the Central Government, in consultation with the concerned State Government, to notify any species that is on the verge of extinction or is likely to become extinct in the near future as a **Threatened Species**.
- At present, **159 plant species and 173 animal species** across **17 States and 3 Union Territories** have been notified as threatened species by the Ministry of Environment, Forest and Climate Change (MoEFCC).
- The SOP gains added significance in light of the **Biological Diversity Regulations, 2025**, which provide differential treatment in benefit-sharing obligations for species notified under Section 38.

- It also supports the implementation of the **National Biodiversity Strategy and Action Plan 2024–2030 (Target 4)** and aligns with India's commitments under the **Kunming–Montreal Global Biodiversity Framework** and the **Convention on Biological Diversity (CBD)**.

Key Highlights of the SOP

- **Scientific Identification and Assessment:** Provides a structured methodology for identifying threatened species through scientific assessment, extinction-risk evaluation, field-based studies and evidence-based decision-making.
- **Multi-Stakeholder Consultation:** Mandates participation of State Biodiversity Boards, Union Territory Biodiversity Councils, Botanical Survey of India (BSI), Zoological Survey of India (ZSI), academic institutions, subject experts and local communities.
- **Integration of Traditional Knowledge:** Encourages the use of traditional ecological knowledge alongside scientific evidence to improve species assessment and conservation outcomes.
- **Transparent Notification Process:** Establishes a clear step-by-step framework covering identification, assessment, stakeholder consultation, validation and recommendation to State Governments for notification.
- **Conservation Planning and Periodic Review:** Emphasises preparation of species recovery and conservation action plans, supported by regular monitoring and periodic review to assess conservation outcomes and emerging threats.

Significance of the SOP

- **Strengthening Scientific Conservation:** Introduces a standardised and evidence-based approach for identifying threatened species, ensuring greater consistency and credibility in conservation decisions across States and UTs.
- **Strengthening Biodiversity Governance:** Enhances

the capacity of State Biodiversity Boards and UT Biodiversity Councils by providing a uniform framework for implementing Section 38 of the Biological Diversity Act.

- **Promoting Participatory Conservation:** Institutionalises the role of local communities, Biodiversity Management Committees and

traditional knowledge systems, thereby fostering community-led conservation efforts.

- **Improving Species Recovery Efforts:** Facilitates timely identification of species facing extinction risks and supports targeted recovery interventions through conservation action plans and continuous monitoring.



5.2. Sustainable Development Goals (SDGs) - National Indicator Framework (NIF) Progress Report, 2026

SYLLABUS

GS-3: Conservation, environmental pollution and degradation.

Context

On the occasion of the 20th Statistics Day, the Ministry of Statistics and Programme Implementation (MoSPI) released four publications to assess India's progress towards achieving the 2030 Sustainable Development Goals (SDGs) through the National Indicator Framework (NIF).

About the Reports

- Sustainable Development Goals – National

Indicator Framework (NIF) Progress Report, 2026:

Flagship report presenting the latest time-series data on India's progress across all **17 SDGs** using national indicators.

✓ Provides an evidence base for policymakers, researchers and planners for monitoring SDG implementation.

- **Data Snapshot on SDG–NIF Progress Report, 2026:** A concise handbook derived from the Progress Report.

✓ Presents national-level SDG indicators in a simplified and user-friendly format.

- **Sustainable Development Goals – National Indicator Framework, 2026 (with Metadata):** Handbook containing all **277 national SDG indicators** along with detailed metadata, data sources and reporting periodicity.

- **Transforming Lives: India's Achievements under the People Dimension of the SDGs:** First thematic SDG bulletin aligned with the **People** pillar of the 2030 Agenda.

✓ Covers India's progress under:

- **SDG 1:** No Poverty
- **SDG 2:** Zero Hunger
- **SDG 3:** Good Health and Well-being
- **SDG 4:** Quality Education
- **SDG 5:** Gender Equality

✓ Highlights major government initiatives supporting human development and India's commitment to **"Leaving No One Behind."**

About Statistics Day (India)

- It is observed every year on **29 June** to commemorate the birth anniversary of **Prasanta Chandra Mahalanobis**, the architect of India's modern statistical system and a pioneer in economic planning.
- It has been celebrated annually since **2007** by the **MoSPI** to promote awareness about the importance of statistics in **evidence-based policymaking, socio-economic planning, and national development.**
- The **2026 theme** is **"Unlocking the Potential of Administrative Data"**, emphasizing the use of administrative data to improve data quality, integration, interoperability, and governance for producing timely, reliable, and granular official statistics.

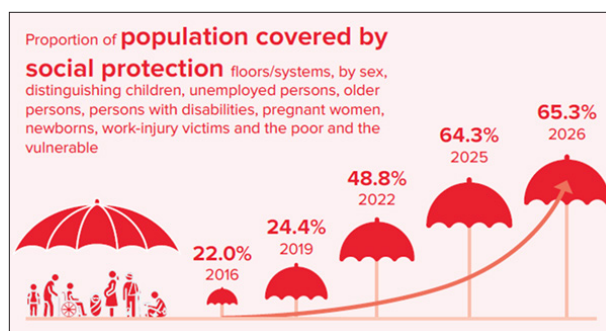
Key Findings of the Reports

- **Social Development:** Population covered under **social protection systems** increased from **22.0% (2016)** to **65.3% (2026)**.

✓ **Maternal Mortality Ratio (MMR)** declined from **122 (2015–17)** to **87 (2022–24)** per 100,000 live births.

✓ **Sex Ratio at Birth** improved from **896** to **918 females per 1,000 male live births** between 2015–17 and 2022–24.

✓ Share of **female professionals and technical workers** increased from **48.7% (2023–24)** to **51.3% (2025)**.



- **Economic Development:** **Unemployment rate** declined from **6.1% (2017–18)** to **3.1% (2025)**.

✓ Total **internet subscriptions** more than tripled from **302.36 million (2015)** to **969.10 million (2025)**.



- **Agriculture & Food Security:** Plant genetic resources conserved increased from **4.33 lakh** to **4.92 lakh** (2014–15 to 2025–26).

✓ Animal genetic resources increased from **1.40 lakh** to **3.62 lakh**.

✓ Fish genetic resources increased from **47** to **105**.

- **Environment & Climate:** Installed **renewable energy**

capacity increased from **64.04 watts per capita (2014–15)** to **193.36 watts per capita (2025–26)**.

✓ Number of **waste recycling plants** increased from **829 (2019–20)** to **3,236 (2025–26)**.

✓ **Ramsar sites** expanded from **4.15%** to **8.66%** of India's total wetland area between 2016 and 2026.

About the Sustainable Development Goals (SDGs)

- The SDGs were adopted by the **United Nations General Assembly in September 2015** under the resolution **"Transforming our World: The 2030 Agenda for Sustainable Development."**
- The framework came into effect on **1 January 2016**.
- It consists of **17 Sustainable Development Goals, 169 targets, and a Global Indicator Framework (GIF)** for monitoring progress.
- The SDGs integrate the **social, economic and environmental** dimensions of sustainable

development with the core principle of **"Leaving No One Behind."**

- In India, **MoSPI** is the nodal agency for SDG data monitoring and has developed the **National Indicator Framework (NIF)** in consultation with Ministries, **NITI Aayog**, UN agencies and other stakeholders.
- The **NIF 2026** contains **277 national SDG indicators** covering all 17 SDGs and is periodically reviewed by the **High-Level Steering Committee (HLSC)** chaired by the **Chief Statistician of India**.
- **NITI Aayog** has mapped SDG targets with Central Government schemes to mainstream SDGs into national and state-level planning.
- At the global level, India represents the **Southern Asia region** in the **Inter-Agency and Expert Group on SDG Indicators (IAEG-SDGs)**. It is also a member of the **Task Team on Lessons Learned** for strengthening the Global Indicator Framework.



5.3. Population Assessment of the Great Indian Bustard

SYLLABUS

GS-3: Conservation, environmental pollution and degradation, environmental impact assessment.

Context

The Wildlife Institute of India (WII) released the first official Great Indian Bustard (GIB) population assessment since 2017-18 and reviewed the progress of Project Great Indian Bustard at the 91st Standing Committee meeting of the National Board for Wildlife.

Key Findings

- **Population Status:** Estimated **130 (± 21) GIBs** remain in the wild.
 - ✓ Population has remained **broadly stable** since the previous estimate of **128 (± 19) during 2017-18.**
 - ✓ Trend analysis showed stable **detections, encounter rate, abundance, and occupancy** since 2017.
- **Habitat Status:** GIB occupies only about **16% of the surveyed landscape**, despite the availability of larger suitable habitat.
 - ✓ Most birds are confined to relatively undisturbed **grasslands** around the **Desert National Park** and **Pokhran Field Firing Range**.
 - ✓ The species prefers **flat to slightly undulating grasslands** with sparse fallows and generally avoids agriculture and infrastructure.
- **Major Threats:** Habitat fragmentation due to expanding **power transmission lines, agricultural fencing, roads, water sources, and solar plants**.
 - ✓ Increasing mortality from **collisions with overhead power lines**, as GIB has poor frontal vision and limited ability to avoid wires.
 - ✓ Other threats include habitat loss, poaching, and egg predation.
 - ✓ The report stressed that long-term survival requires stronger habitat protection, threat mitigation, habitat restoration, and conservation breeding.
- **Other Observations:** During the survey, **35 GIB flocks, 1,568 Chinkara herds, and 79 Desert foxes** were recorded.
 - ✓ Non-native species such as **Nilgai, pigs, and free-ranging dogs** were also observed.
 - ✓ The Thar Desert remains the last viable landscape for large-scale recovery because of its extensive contiguous natural habitat.

About the National Board for Wildlife (NBWL)

- The NBWL is the **statutory apex advisory body** on wildlife conservation in India, constituted under the **Wildlife (Protection) Act, 1972** (amended in 2002), replacing the **Indian Board for Wildlife (1952)**.
- It was formally constituted on **22 September 2003** and is **chaired by the Prime Minister**, with

the Union Environment Minister serving as the Vice-Chairperson.

- It advises the Central Government on wildlife conservation and plays a key role in protecting wildlife, forests, endangered species and protected areas.

About Project Great Indian Bustard (GIB)

- Launched by **the Government of Rajasthan in 2013**.
- A collaborative conservation programme involving the **Government of India, Rajasthan Government, Gujarat Government, Wildlife Institute of India (WII)** and international institutional cooperation.
- **Objectives:**
 - ✓ Improve and restore GIB habitat.
 - ✓ Protect eggs and nests.
 - ✓ Manage predators.
 - ✓ Mitigate threats from power transmission lines.
 - ✓ Support captive breeding and rewilding.
- **Captive Breeding Programme:**
 - ✓ Conservation breeding centres are located at **Sam and Ramdevra** in Jaisalmer, Rajasthan.
 - ✓ **98 chicks** have been produced in captivity.
 - ✓ Wild eggs are collected, incubated, and chicks are reared under controlled conditions before planned release into the wild.
 - ✓ The programme is now preparing to enter the **rewilding phase**, with infrastructure, monitoring systems, and management protocols being developed.
- **Innovative Conservation Approaches:**
 - ✓ **Artificial Insemination:** Has emerged as a major contributor to successful breeding, accounting for the majority of chicks hatched during the current season.
 - ✓ **Jumpstart Intervention:** Eggs are collected from wild nests for captive breeding, encouraging females to lay replacement eggs and thereby increasing both captive and wild populations simultaneously.
 - ✓ **Power-Line Mitigation:** Bird diverters, rerouting, and undergrounding of transmission lines in critical habitats are being pursued to reduce collision-related mortality.

GREAT INDIAN BUSTARD (GIB)

• India's Grassland Icon •

The Great Indian Bustard (*Ardeotis nigriceps*), locally known as **Godawan**, is one of the heaviest flying birds in the world and a flagship species of India's grassland ecosystems.

KEY FACTS



Endemic to the Indian subcontinent.



State Bird of Rajasthan.



Inhabits arid and semi-arid grasslands, scrublands and open landscapes.



Presently found mainly in **Rajasthan and Gujarat**, with small remnant populations in Maharashtra, Karnataka and Andhra Pradesh.



The wild population is estimated to be **below 150 birds**.



DISTRIBUTION IN INDIA



Major Population
Rajasthan, Gujarat



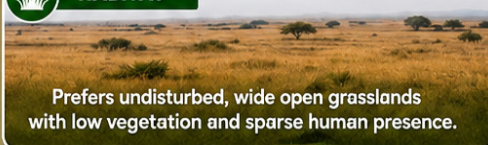
Small Remnant Populations
Maharashtra, Karnataka, Andhra Pradesh



More than 90% of the surviving wild population occurs in Rajasthan.



HABITAT



Prefers undisturbed, wide open grasslands with low vegetation and sparse human presence.



NATURE AT A GLANCE



Terrestrial bird
Spends most of the time on the ground; takes flight only occasionally.



Low Reproductive Rate
Female usually lays only one egg per breeding season.



Strong Flier
Despite its size, it is a powerful and graceful flier.



Indicator Species
A symbol of healthy grassland ecosystems and biodiversity.



AT A GLANCE



SCIENTIFIC NAME
Ardeotis nigriceps



SIZE
One of the largest flying birds in India.



WEIGHT
Among the heaviest flying birds in the world.



BUSTARD FAMILY
Largest among the four bustard species in India (Others: MacQueen's bustard, Lesser florican, Bengal florican)



DIET
Omnivorous – Insects, lizards, seeds, berries, small reptiles, etc.

CONSERVATION STATUS



IUCN RED LIST
Critically Endangered



WILDLIFE (PROTECTION) ACT, 1972
Schedule I



CMS (CONVENTION ON MIGRATORY SPECIES)
Appendix I



CITES (CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES)
Appendix I

“ Conserving the Great Indian Bustard means conserving India's grasslands and the life they sustain. ”

5.4. Himalayan Pangolin Confirmed as a Distinct Species

SYLLABUS

GS-3: Conservation, environmental pollution and degradation, environmental impact assessment.

Context

A recent study has confirmed the Himalayan pangolin (*Manis aurita*) as a distinct species, ending its long-standing classification as a subspecies of the Chinese pangolin (*Manis pentadactyla*)

More on the News

• Historically, three subspecies of the Chinese

pangolin were recognised: *M. p. pentadactyla* (Taiwan), *M. p. pusilla* (Hainan Island) and *M. p. aurita* (Central Nepal). While the first two had been extensively studied, the taxonomic status of *M. p. aurita* remained unresolved for decades.

- Researchers sequenced DNA from the original **1836 lectotype specimen** of *aurita* described by Brian Houghton Hodgson and compared it with modern Himalayan specimens.
- The genomic and morphological analyses confirmed that Himalayan pangolins represent a distinct evolutionary lineage, warranting recognition as *Manis aurita*.
- The species has a restricted distribution in the **southern Himalayan foothills**, with confirmed populations in **Nepal, South Tibet and Northeast India, including Assam**.
- Additionally, DNA analysis of the original 1836 *aurita* specimen confirmed that the recently proposed *Manis indoburmanica* and *Manis aurita* are the same species. Consequently, *Manis aurita* has been retained as the valid scientific name for the Himalayan pangolin.

Scientific Basis for Species Recognition

- **Distinct Physical Characteristics**
 - ✓ The Himalayan pangolin is significantly larger than the Chinese pangolin, averaging **95.2 cm** in length compared to **71.2 cm**.
 - ✓ It has a **larger skull, longer tail, smaller ears**, and a **shorter, broader nasal bone**, indicating clear physical differences.
- **Strong Genetic Evidence**
 - ✓ Genome sequencing revealed substantial genetic differences between Himalayan and Chinese pangolins, confirming that they belong to separate evolutionary lineages.
 - ✓ Differences were also observed in genes related to **olfaction (sense of smell)**, reflecting adaptation to different environments.
- **Long Evolutionary Separation**
 - ✓ Scientists estimate that the ancestors of the two species diverged around **1.8 million years ago** during the **Early Pleistocene Epoch**.
 - ✓ Climatic changes likely isolated populations in the Himalayan region from those in East and

Southeast Asia, leading to the evolution of a separate species over time.

• Impact of Past Climate Change

- ✓ Genetic evidence suggests that the Himalayan pangolin experienced major population declines during periods of climatic cooling, including during the **Little Ice Age (14th–19th century)**.

Conservation Significance

- **Species-Specific Conservation Planning:** Recognition of *Manis aurita* as a separate species enables conservation strategies to be tailored to its unique ecology, distribution and threat profile.
- **Improved Conservation Assessment:** Earlier assessments grouped Himalayan and Chinese pangolins together; species-level recognition will allow more accurate evaluation of population status, distribution and extinction risk.
- **Strengthening Anti-Trafficking and Wildlife Forensics:** Clear taxonomic distinction can improve the identification of pangolin scales and body parts in wildlife crime investigations, supporting efforts to combat illegal trafficking.
- **Recognition of Hidden Himalayan Biodiversity:** The discovery highlights the Himalayan region as an important centre of cryptic biodiversity and underscores the value of integrative taxonomic research.

About Pangolins

- **Unique Mammals:** Pangolins are the world's only mammals covered with protective keratin scales.
- **Distribution:** They occur across a wide range of habitats in Asia and Africa, including forests, grasslands and mountain ecosystems.
- **Species Diversity:** There are **8 pangolin species** recognised globally — **4 in Asia** and **4 in Africa**.
 - ✓ Four Asian Species: **Indian pangolin** (*Manis crassicaudata*), **Philippine pangolin** (*Manis culionensis*), **Sunda pangolin** (*Manis javanica*), and the **Chinese pangolin** (*Manis pentadactyla*).
 - ✓ Four African Species: **Black-bellied pangolin** (*Phataginus tetradactyla*), **White-bellied pangolin** (*Phataginus tricuspis*), **Giant Ground pangolin** (*Smutsia gigantea*), and **Temminck's Ground pangolin** (*Smutsia temminckii*).

- ✓ If the recently confirmed **Himalayan Pangolin** (*Manis aurita*) is adopted by major taxonomic and conservation authorities, it will increase the Asian count to 5.
- **Feeding Behaviour:** Pangolins are insectivorous mammals that feed primarily on ants and termites using their long, sticky tongues.
- **Ecological Role:** They help regulate insect populations and contribute to soil aeration through their burrowing activities.
- **Major Threats:** Illegal wildlife trade, poaching and habitat loss have made pangolins among the most heavily trafficked mammals in the world.
- **Pangolins in India:** India is home to two species — the **Indian Pangolin** (*Manis crassicaudata*) and the **Himalayan Pangolin** (*Manis aurita*).
- **World Pangolin Day** is celebrated on the **third Saturday of February** annually since 2012.

5.5. Governing Body of National CAMPA Approves New Conservation Projects

SYLLABUS

GS-3: Conservation, Environmental Pollution and Degradation, Environmental Impact Assessment.

Context

Recently, the 7th Meeting of the Governing Body of National CAMPA, chaired by Union Environment Minister Bhopender Yadav in Coimbatore, approved four new national-level conservation projects for the Gangetic River Dolphin, Snow Leopard, Indian Rhinoceros, and Wild Water Buffalo.

More on the News

- The Governing Body also approved the '**Aastha Van Sanrakshan Yojana**' with an initial outlay of **₹3,000 crore (2026–31)** for conservation and restoration of nearly **15,000 sacred groves** across the country.
 - It approved the **extension of MISHTI (Mangrove Initiative for Shoreline Habitats & Tangible Incomes)** up to **2029** with additional financial support for mangrove restoration and conservation.
 - The meeting reviewed the progress of the **Nagar Van Yojana**, which promotes urban forests and green spaces in cities.
 - It also approved continued support for **Sangai (Manipur Brow-antlered Deer) conservation** and reviewed the establishment of a **CAMPA GIS Monitoring Laboratory** for technology-enabled monitoring of conservation projects.
- ### Key Conservation Projects Approved by National CAMPA
- **Project Dolphin**
 - ✓ Preparation of a **Conservation and Recovery Action Plan** for the **Gangetic River Dolphin**, including population assessment, habitat mapping, and river-health monitoring.
 - ✓ Focus on threat mitigation, protection of critical riverine habitats, and strengthening long-term conservation of freshwater ecosystems.
 - **Project Snow Leopard (Phase-II)**
 - ✓ Strengthens conservation of snow leopard populations and fragile Himalayan ecosystems through scientific monitoring and habitat protection.
 - ✓ Includes the **second nationwide population estimation of Snow Leopards** and promotes community-based conservation initiatives.
 - **Indian Rhinoceros Conservation Project**
 - ✓ Focuses on habitat improvement, corridor development, and strengthening anti-poaching measures for the **Greater One-Horned Rhinoceros**.
 - ✓ Emphasizes genetic diversity conservation, disease surveillance, and long-term population security.
 - **Wild Water Buffalo Conservation Project**
 - ✓ Adopts India's **first pan-India conservation approach** for the Wild Water Buffalo across its range states.
 - ✓ Focuses on habitat restoration, population recovery, genetic purity, and mitigation of hybridisation threats from domestic buffaloes.

Significance of the Approved Projects

- **Strengthening Species-Specific Conservation:** The projects expand India's species-focused conservation framework beyond traditional flagship programmes and provide dedicated attention to threatened wildlife species.
- **Promoting Landscape-Based Conservation:** The initiatives cover diverse ecosystems, including riverine habitats, Himalayan landscapes, floodplains, wetlands, and grasslands, encouraging holistic ecosystem management.
- **Advancing Science-Based Wildlife Management:** The projects emphasize population estimation, GIS-based monitoring, habitat connectivity, genetic conservation, and evidence-based wildlife management practices.
- **Supporting Biodiversity Commitments:** The initiatives contribute to India's national biodiversity goals and commitments under global biodiversity conservation frameworks.

SPECIES UNDER CONSERVATION

New Conservation Projects Approved by National CAMPA (2026)

 GANGETIC RIVER DOLPHIN Ganga-Brahmaputra River System National Aquatic Animal Freshwater cetacean Indicator of river ecosystem health IUCN Endangered WPA, 1972: Schedule I	 SNOW LEOPARD Northern Himalaya & Trans-Himalaya Flagship Himalayan Species High-altitude predator IUCN Vulnerable WPA, 1972: Schedule I	 INDIAN RHINOCEROS Stronghold: Assam Greater One-Horned Rhinoceros Largest Rhino Species in Asia IUCN Vulnerable WPA, 1972: Schedule I	 WILD WATER BUFFALO Assam & Chhattisgarh State Animal of Chhattisgarh Threatened by Hybridisation IUCN Endangered WPA, 1972: Schedule I
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About CAMPA (Compensatory Afforestation Fund Management and Planning Authority)

- **Statutory Basis:** CAMPA functions under the **Compensatory Afforestation Fund (CAF) Act, 2016**, enacted to manage funds collected for diversion of forest land for non-forest purposes.
- **Objective:** To compensate for ecological losses arising from forest diversion and strengthen long-term conservation, restoration, and sustainable management of forests and wildlife resources.
- **Administrative Ministry:** It functions under the **Ministry of Environment, Forest and Climate Change (MoEFCC)** through **National CAMPA** and **State CAMPA** mechanisms.
- **Source of Funds:** Funds are generated through **Compensatory Afforestation charges, Net Present Value (NPV)** payments, and other levies imposed on agencies diverting forest land.
- **Fund Distribution:** Under the CAF framework, **90% of funds are transferred to State CAMPA accounts**, while **10% are retained by National CAMPA**.
- **Major Areas of Utilisation:** Funds are used for compensatory afforestation, assisted natural regeneration, wildlife conservation, habitat improvement, forest fire prevention, catchment area treatment, and ecological restoration.

5.6. Supreme Court Approves India's First Night Safari Project

SYLLABUS

GS-3: Conservation, environmental pollution and degradation, environmental impact assessment.

Context

The Supreme Court has permitted the Uttar Pradesh government to proceed with the Kukrail Night Safari and Zoological Park Project at Kukrail Reserve Forest in Lucknow.

More on the News

- The Supreme Court granted prior approval after noting that the project had received recommendations from the **Central Zoo Authority (CZA)**, **MoEFCC**, and the **Central Empowered Committee (CEC)**, while directing strict adherence to all environmental safeguards.
- The Court clarified that its approval does **not replace statutory clearances** under laws such as the **Forest (Conservation) Act, Water Act, Air Act, Biological Diversity Act and the EIA/SEIAA framework**.
- The CEC rejected the proposals to **shift the Lucknow Zoo** and establish an **Adventure Zone**, while directing periodic inspections to ensure compliance with prescribed conditions.

About the Project

- The ₹1,510-crore project will be developed over **855 acres** within the **2,027-hectare Kukrail Reserve Forest** in Lucknow and is proposed to be **India's first Night Safari**.
- It is an integrated wildlife conservation, research, education and eco-tourism project to be implemented in **two phases**:
 - ✓ **Phase I:** Kukrail Night Safari and Eco-tourism Zone
 - ✓ **Phase II:** Day Zoo
- The project aims to combine wildlife conservation, captive breeding, research, environmental education and sustainable tourism.
- Visitors will travel through the safari in **battery-operated/electric vehicles** along designated forest trails.

- The master plan includes:
 - ✓ Conservation breeding facilities
 - ✓ Wildlife interpretation and education centres
 - ✓ Research laboratories
 - ✓ Cafeterias
 - ✓ Auditorium
 - ✓ 7D theatre
- Around **71% (610.34 acres)** of the project area will remain under green cover.
- The CEC has permitted **only essential tree felling and prescribed a 1:10 compensatory plantation ratio**, besides periodic monitoring of environmental compliance.
- The project underwent multiple forest, wildlife, environmental and judicial clearances since its announcement in **2022** because it is located within a Reserve Forest.

Kukrail Reserve Forest

- Kukrail Reserve Forest is a 2,027-hectare Reserve Forest notified under **Section 20 of the Indian Forest Act, 1927**, on the outskirts of Lucknow.
- Developed as a plantation forest in the 1950s, it is named after the **Kukrail Stream**, a tributary of the Gomti River, and serves as one of Lucknow's largest urban forests.
- It houses **India's first Kukrail Gharial Rehabilitation Centre, established in 1975**, for the conservation of the critically endangered gharial.

About the Kukrail Night Safari

- The Kukrail Night Safari is proposed to be **India's first Night Safari** and the **world's fifth**, after similar facilities in **Singapore, Thailand, China and Indonesia**.
- It will allow visitors to observe **nocturnal wildlife during their natural active hours** using a specially designed **moonlight-mimicking lighting system**, minimizing disturbance to animals.
- The safari will feature **theme-based naturalistic habitats** inspired by wildlife landscapes in India and abroad, along with forest trails and eco-tourism experiences.
- **Proposed animal species include:**
 - ✓ Asiatic Lion
 - ✓ Bengal Tiger
 - ✓ Leopard

- ✓ Hyena
- ✓ Flying Squirrel
- ✓ Gharial
- Habitats will replicate natural ecosystems using grasslands, wetlands, rock formations and native vegetation.

Night safari

- It refers to a guided visit conducted within recognized zoos after sunset, where non-diurnal animals are displayed in naturalistic enclosures under artificial illumination, prioritizing their welfare and showcasing their natural activity patterns to promote conservation awareness.

5.7. Marine Cloud Brightening and ENSO Management

SYLLABUS

GS-3: *Conservation, Environmental Pollution and Degradation; Science and Technology- Developments and their Applications and Effects in Everyday Life.*

Context

A recent study published in *Science Advances* has suggested that Marine Cloud Brightening (MCB)—a technique involving the spraying of seawater particles into marine clouds—could potentially weaken or prevent the development of a super El Niño, thereby reducing its global climatic impacts.

Key Findings of the Study

- The study found that **Marine Cloud Brightening (MCB)** over the southeastern Pacific could potentially weaken or prevent a super El Niño by cooling ocean waters and disrupting the ocean-atmosphere feedbacks that drive its growth.
- Simulations of the **1997–98 and 2015–16 El Niño events** showed that early and sustained interventions were most effective, with the potential to restore neutral ENSO conditions or even induce La Niña-like cooling.
- Researchers drew insights from the **2019–20 Australian bushfires**, where aerosol-induced cloud brightening over the Pacific was followed by an unusual multi-year La Niña phase, indicating the influence of cloud reflectivity on climate patterns.
- The simulations suggest that MCB could reverse several temperature and rainfall anomalies linked to extreme El Niño events, helping reduce droughts, floods, heatwaves, and associated economic losses.
- The findings highlight the potential of targeted geoengineering to manage **seasonal climate variability such as ENSO**, although the technique remains experimental and untested at scale.

Understanding the Science: El Niño and Marine Cloud Brightening (MCB)

- **El Niño**
 - ✓ El Niño is the warm phase of the **El Niño–Southern Oscillation (ENSO)**, characterised by unusually warm sea-surface temperatures in the central and eastern Pacific Ocean.
 - ✓ It results from interactions between ocean temperatures, trade winds, and atmospheric circulation patterns.
 - ✓ Strong El Niño events can disrupt global weather systems, causing droughts, floods, heatwaves, weakened monsoons, marine ecosystem stress, and significant socio-economic losses.
 - ✓ Particularly intense episodes are termed **super El Niños**.
- **Marine Cloud Brightening (MCB)**
 - ✓ Marine Cloud Brightening is a form of **Solar Radiation Management (SRM)** that seeks to increase the reflectivity (albedo) of low-lying marine stratocumulus clouds by spraying microscopic seawater droplets into the atmosphere.
 - ✓ The sea-salt particles act as cloud-condensation nuclei, producing brighter and longer-lasting clouds that reflect more incoming sunlight back into space, thereby reducing ocean-surface warming.
 - ✓ The concept has also been explored as a means to reduce coral bleaching risks in vulnerable ecosystems such as Australia’s Great Barrier Reef, demonstrating its potential applications beyond climate modelling.

MARINE CLOUD BRIGHTENING (MCB)

USING BRIGHTER CLOUDS TO COOL THE OCEAN

MCB is a form of Solar Radiation Management (SRM) that increases the reflectivity of low-lying marine clouds to reduce ocean warming.

HOW IT WORKS

5 MORE SUNLIGHT REFLECTED

Brighter clouds reflect more sunlight back to space.

4 BRIGHTER CLOUDS

More, smaller cloud droplets make clouds whiter, denser and more reflective.

3 CLOUD SEEDING

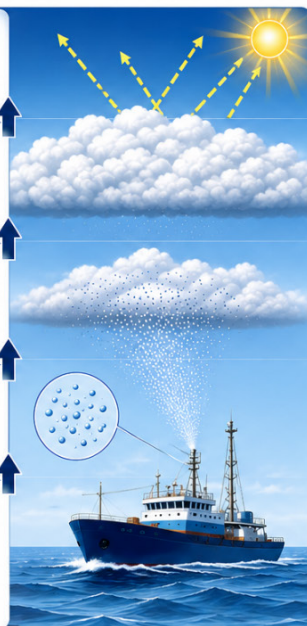
Sea-salt aerosols are sprayed into low-lying marine stratocumulus clouds.

2 SEA-SALT AEROSOLS (CCN)

Microscopic seawater particles act as Cloud Condensation Nuclei (CCN).

1 SEAWATER COLLECTION & SPRAY

Seawater is collected and sprayed into the atmosphere using specialized nozzles on ships.



THE BIG PICTURE



Cooler Ocean Surface
Less solar energy reaches the ocean, lowering sea-surface temperatures.



Weaker El Niño Conditions
Reduces the build-up of warm anomalies in the eastern Pacific.



Moderation of Climate Extremes
Potential reduction in droughts, floods, heatwaves and related impacts.



Global Benefits
Supports ecosystems, food security and climate resilience.

KEY FACTS

	Category	Solar Radiation Management (SRM)
	Material Used	Seawater (Sea-Salt Aerosols)
	Target Clouds	Low-lying Marine Stratocumulus Clouds
	Mechanism	Increase Cloud Albedo (Reflectivity)
	Status	Experimental / Research Stage

Potential Significance of the Study

- **Reducing Extreme Weather Risks:** If proven effective, MCB could help moderate droughts, floods, heatwaves, and other weather extremes often associated with super El Niño events, thereby reducing humanitarian and economic losses.
- **Protecting Marine Ecosystems:** By lowering sea-surface temperatures, MCB may help reduce marine heatwaves and coral bleaching events that threaten biodiversity-rich marine ecosystems.
- **Economic and Food Security Benefits:** Since super El Niño events can trigger major agricultural losses, fisheries disruptions, and water stress, moderating their intensity could improve food security and reduce economic losses in climate-vulnerable regions.
- **Implications for the Indian Monsoon:** Since strong El Niño episodes are frequently linked with weaker monsoon rainfall in India, limiting their intensity

could potentially reduce rainfall variability and support agricultural stability.

Concerns and Limitations

- **Dependence on Model Simulations:** The findings are based primarily on climate models and have not been validated through large-scale field experiments. Actual climatic responses may differ from simulated outcomes.
- **Risk of Unintended Climatic Effects:** Deliberately altering cloud properties could influence rainfall patterns, atmospheric circulation, or ocean conditions in unforeseen ways, potentially shifting climate risks from one region to another.
- **Operational and Technological Challenges:** Large-scale deployment would require specialised systems capable of dispersing seawater aerosols over vast oceanic areas, a capability that remains technologically challenging and largely untested.
- **Governance and Ethical Challenges:** Geoengineering

interventions may have transboundary consequences, raising complex questions regarding international regulation, liability, decision-making authority, and equitable distribution of risks and benefits.

- **Not a Replacement for Climate Mitigation:** MCB may help manage certain climatic impacts, but it does not address the underlying drivers of climate change, particularly rising greenhouse-gas emissions.

5.8. Draft Corporate Average Fuel Efficiency III Norms

SYLLABUS

GS-3: Conservation, environmental pollution and degradation; Infrastructure: Energy.

Context

The Ministry of Power has released the Draft Corporate Average Fuel Economy (CAFE)-III Norms, 2027 for stakeholder consultation to tighten fuel-efficiency and carbon dioxide (CO₂) emission standards for passenger vehicles from 1 April 2027.

Key Provisions and Major New Features of CAFE-III

- **Applicability:** The norms will apply to **M1 category passenger vehicles** (having not more than eight seats in addition to the driver's seat) manufactured or imported for sale in India during **2027-28 to 2031-32**.
- **Implementation Period:** The proposed norms will come into force from **1 April 2027** and will remain applicable for **five years**, replacing the existing **CAFE-II** regime.
- **Compliance Assessment:** Compliance will be assessed over **two blocks: First Block (Three years) and Second Block (Two years)**.
- **Progressively Stricter Fuel-Efficiency Targets:** The draft proposes progressively tighter fleet-average fuel consumption targets:
 - ✓ **2027-28: 3.996 litres/100 km (94.76 gCO₂/km)**
 - ✓ **2031-32: 3.3273 litres/100 km (78.90 gCO₂/km)**
 - ✓ The phased tightening of targets will provide

OEMs with a clear and predictable regulatory pathway to progressively develop and deploy more fuel-efficient vehicle models.

- **Carbon Neutrality Factors (CNFs):** For the first time, the draft recognises the **carbon-neutrality of ethanol, biofuel and Compressed Bio-Gas (CBG)** by permitting specified reductions in declared tailpipe CO₂ emissions before compliance assessment.
 - ✓ **8% CNF** for the current ethanol blending level.
 - ✓ Reductions for **CBG** and other biofuels based on prevailing blending levels.



CORPORATE AVERAGE FUEL EFFICIENCY (CAFE)

ABOUT CAFE

- CAFE norms are **fleet-level fuel consumption standards** notified by the Ministry of Power, in consultation with the Bureau of Energy Efficiency (BEE), under the Energy Conservation Act, 2001.
- The standards apply to the corporate average fuel consumption of all passenger vehicles sold by a manufacturer in a financial year.

OBJECTIVE: To improve fuel efficiency, reduce CO₂ emissions, lower India's oil import dependence, and promote cleaner vehicle technologies.

CAFE-I

(2017–18 to 2021–22)

- Introduced mandatory fuel-efficiency standards for M1 category passenger vehicles based on the manufacturer's average curb weight.

CAFE-II

(2022–23 to 2026–27)

- Tightened fleet-average fuel-efficiency and CO₂ emission standards while retaining the weight-based compliance framework.

- **Technology Incentives:** Manufacturers will be eligible to claim compliance benefits of up to **9 gCO₂/km** for approved fuel-saving technologies, subject to a maximum benefit of **1 gCO₂/km per technology**.
- **Super Credits:** Volume-based super credits will continue for:
 - ✓ Battery Electric Vehicles (BEVs)
 - ✓ Range-Extended Electric Vehicles (REEVs)
 - ✓ Plug-in Hybrid Electric Vehicles (PHEVs)
 - ✓ Strong Hybrid Electric Vehicles (SHEVs)
 - ✓ Flex-Fuel Vehicles (FFVs)

- **Credit-Debit Mechanism:** Manufacturers exceeding prescribed targets will earn compliance credits, which may be carried forward within a compliance block. Those falling short may meet their obligations through:
 - ✓ Carry-forward provisions;
 - ✓ Voluntary pooling arrangements with other manufacturers; or
 - ✓ Purchasing compliance credits from the **Bureau of Energy Efficiency (BEE)**.
- **Compliance Credits:** Compliance credits will be denominated in units of **1 gCO₂/km**, with an initial buy-out price of **₹2,500 per credit, increasing by ₹500 annually**.
 - ✓ Unutilised credits will lapse at the end of the compliance block.
- **Penalty and Exemption:** Manufacturers failing to comply will be liable for penalties under the **Energy Conservation Act**, while passenger vehicle manufacturers with annual sales of **fewer than 1,000 units** will remain exempt.

Significance

- **Supports India's Net Zero Vision:** Accelerates decarbonisation of the transport sector, contributing to India's commitments under the **Paris Agreement** and the target of achieving **Net Zero emissions by 2070**.
- **Strengthens Energy Security:** Lower fuel consumption in the passenger vehicle sector will reduce dependence on imported crude oil, improving India's long-term energy security and reducing vulnerability to global oil price volatility.
- **Enhances Global Competitiveness:** Encourages the Indian automobile industry to align with evolving global fuel-efficiency and emission standards, improving its competitiveness in international markets.
- **Drives Technological Innovation:** Promotes investment in advanced automotive technologies, lightweight materials and energy-efficient powertrains, strengthening domestic manufacturing capabilities.
- **Improves Environmental and Public Health:** Lower vehicular emissions will improve urban air quality, reduce pollution-related health risks and support sustainable urban development.

5.9. Assam's Borjuli Wetland Notified as Biodiversity Heritage Site

SYLLABUS

GS-3: Conservation, environmental pollution and degradation; Infrastructure: Energy.

Context

The Borjuli Wild Rice Habitat in Sonitpur district, Assam, has been notified as a Biodiversity Heritage Site (BHS), marking a major milestone in the conservation of India's wild rice genetic resources.

More on the News

- The recognition has been achieved under the NRAA-funded project titled **"In-situ Conservation and Management of Wild Rice (*Oryza rufipogon*) in Sonitpur District of Assam."**
- The project has been implemented since 2022 by **ICAR-National Bureau of Plant Genetic Resources (ICAR-NBPGR)** in collaboration with the **Assam State Biodiversity Board**.
- The notification is expected to strengthen the long-term conservation of wild rice diversity and support climate-resilient agriculture and future crop improvement programmes.
- Wild rice species are regarded as valuable genetic resources for developing **climate-resilient, high-yielding and nutritionally superior rice varieties**, thereby contributing to food and nutritional security.

About Wild Rice (*Oryza rufipogon*)

- *Oryza rufipogon* is a wild relative and one of the primary progenitors of cultivated rice (*Oryza sativa*).
- It serves as an important genetic reservoir for traits such as **disease resistance, pest tolerance, climate resilience and stress adaptability**.
- Conservation of wild rice is crucial for maintaining genetic diversity and ensuring long-term sustainability of rice breeding programmes.

About Biodiversity Heritage Sites (BHS)

- Biodiversity Heritage Sites are areas of unique

ecological, biological or cultural significance notified under **Section 37 of the Biological Diversity Act, 2002**.

- They are declared by State Governments in consultation with local bodies to conserve ecologically important habitats and biological resources.

5.10. 15th Meeting of the Open-ended Working Group of the Basel Convention

SYLLABUS

GS-3: Conservation, environmental pollution and degradation, environmental impact assessment.

Context

The fifteenth meeting of the Open-ended Working Group (OEWG-15) of the Basel Convention was held in Geneva, Switzerland, to advance technical, legal and policy work ahead of COP-18 (Panama, 2027).

About the Open-ended Working Group of the Basel Convention

- The **Open-ended Working Group (OEWG)** is a **subsidiary body of the Conference of the Parties (COP)** to the Basel Convention and is open to all Parties.
- It assists the COP by reviewing implementation of the Convention's work programme and providing recommendations on **policy, technical, scientific, legal, institutional and administrative matters**.
- The OEWG meets **once between the biennial sessions of the COP** to prepare decisions and recommendations for the next COP.
- **OEWG-15** was attended by representatives from around **140 governments (over 580 participants)** and **adopted 19 decisions** to guide intersessional work before the Conference of the Parties to the Basel Convention (BC COP-18) **in 2027**.

Key Outcomes

- Adopted **19 decisions** covering strategic, technical and legal aspects of hazardous and other waste management.
- Agreed to strengthen the **Prior Informed Consent (PIC)** procedure for transboundary movement of

hazardous waste.

- Advanced technical guidelines on **e-waste, waste batteries, lead-acid batteries, waste tyres, mercury wastes, Persistent Organic Pollutants (POPs)** and electronic waste identification.
- Recommended updated technical guidelines reflecting the **plastic waste amendments and e-waste amendments**.
- Requested compilation of activities on **hazardous and other plastic waste** under the Convention; however, countries remained divided on expanding the Convention's role on plastic pollution due to parallel negotiations on the Global Plastics Treaty.
- Invited further comments and technical work on **used textiles and textile wastes**, including options for future regulation under the Convention.
- Encouraged pilot projects for **electronic notification and movement documents** to facilitate digital tracking of waste shipments.
- Continued work on improving **national reporting**, legal clarity on **Annexes I, III and IV**, and management of **waste containing nanomaterials**.
- Strengthened cooperation with the **World Customs Organization (WCO)** through updated Harmonized System codes for plastic waste, waste tyres and PCB-containing waste oils.
- Continued discussions on coordination between the **Basel Convention** and the **Hong Kong Convention** on environmentally sound ship recycling.

About the Basel Convention

- The **Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal** was **adopted in 1989** at Basel, Switzerland, and **entered into force in 1992**.
- It is the world's most comprehensive international treaty governing **hazardous and other wastes, with 191 Parties**.
- **Objective:** To protect **human health and the environment** from the adverse effects of hazardous and other wastes.
- **It promotes:**
 - ✓ Minimisation of hazardous waste generation.
 - ✓ Environmentally Sound Management (ESM) of wastes.

- ✓ Restriction of transboundary movement of hazardous wastes except where environmentally sound.
- The Convention is based on the **Prior Informed Consent (PIC)** principle, under which hazardous waste exports require the **written consent** of importing and transit countries.
- It also prohibits exports of hazardous waste to:
 - ✓ Countries that have banned such imports.
 - ✓ Non-Parties (unless covered under Article 11 agreements).
 - ✓ Antarctica.
- The Convention establishes **14 Basel Convention Regional and Coordinating Centres** for training, technology transfer and capacity building.

India and the Basel Convention

- India became a **Party to the Basel Convention in**

1992 and had notified hazardous waste rules even before the Convention entered into force.

- India's regulatory framework is governed by the **Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016**, along with the **E-Waste (Management) Rules, 2016**.
- In **2019**, India imposed a **complete ban on the import of solid plastic waste, including into Special Economic Zones (SEZs) and Export Oriented Units (EOUs)**.
- India has **not ratified the Basel Ban Amendment**, unlike countries such as **China, Indonesia, Malaysia, Sri Lanka and Maldives**.
- India has consistently opposed the **"repairable e-waste" loophole** in international discussions, arguing that it could facilitate illegal dumping of hazardous electronic waste.

SCIENCE AND TECHNOLOGY

6.1. Vikram-1 (Mission Aagaman)

SYLLABUS

GS-3: Achievements of Indians in science & technology; indigenization of technology and developing new technology; Awareness in the fields of Space.

Context

India achieved a historic milestone in its space programme with the successful launch of Vikram-1, the country's first privately developed orbital launch vehicle, by Skyroot Aerospace under Mission Aagaman.

More on the News

- **Mission Aagaman** successfully lifted off from the **Satish Dhawan Space Centre (SDSC-SHAR), Sriharikota**, and placed multiple technology demonstration payloads into a **450 km Low Earth Orbit (LEO)** in about **15.5 minutes**.
- With this achievement, **India became the third country after the United States and China in the world to demonstrate orbital launch capability through a privately developed launch vehicle**, highlighting the success of India's space-sector reforms and growing private participation.

About Vikram-1

- **Developer:** Skyroot Aerospace (Hyderabad-based private space startup)
- **Mission Name:** Mission Aagaman ("Arrival")
- **Named After:** Dr. Vikram Sarabhai, the father of India's space programme.
- **Launch Site:** First Launch Pad, Satish Dhawan Space Centre (SDSC-SHAR), Sriharikota.
- **Launch Authorisation:** Indian National Space Promotion and Authorisation Centre (IN-SPACe).
- **Specifications:**
 - ✓ Height: **22 metres (about seven storeys)**
 - ✓ Diameter: **1.7 metres**
 - ✓ Payload Capacity: **Up to 350 kg to Low Earth Orbit (LEO)**

- ✓ Target Orbit (Mission Aagaman): **450 km altitude with 60° inclination**
- ✓ Flight Duration: **Approximately 15.46 minutes**
- **Configuration:**
 - ✓ Three solid-fuel stages.
 - ✓ Liquid-fuel **Orbital Adjustment Module (OAM)** as the fourth stage.
 - ✓ Built using an **all-carbon composite structure**.
 - ✓ Powered by **indigenously developed propulsion systems**, including high-thrust solid rocket motors and a **100% 3D-printed liquid rocket engine**.



- **Payloads Carried:**
 - ✓ **SCOPE** – Skyroot Aerospace.
 - ✓ **SOLARAS Satellite** – Grahaa Space.
 - ✓ **Embrace** – Cosmoserve Space (space debris capture technology).
 - ✓ **uD3PP & mD3RN** – Germany's DCUBED.
 - ✓ **Cosmic Bloom** – Cosmos Diamonds.
 - ✓ **Micro Art Tribute** featuring microscopic sculptures of **C.V. Raman, Vikram Sarabhai and A.P.J. Abdul Kalam**.
 - ✓ Handwritten postcards, including one signed by

the Prime Minister.

• **Mission Objectives:**

- ✓ Demonstrate successful lift-off and tower clearance.
- ✓ Validate propulsion, avionics, telemetry, guidance, navigation and control systems.
- ✓ Demonstrate stage separation and orbital injection.
- ✓ Collect real-flight data for future commercial launches.
- ✓ Establish a reliable, on-demand launch service for small satellites.

Orbital Flight

- Achieves **orbital velocity**, allowing a spacecraft to remain in continuous orbit around Earth.
- Requires a speed of about **28,000 km/h** to orbit at **200 km altitude**, making such missions technically complex and expensive.

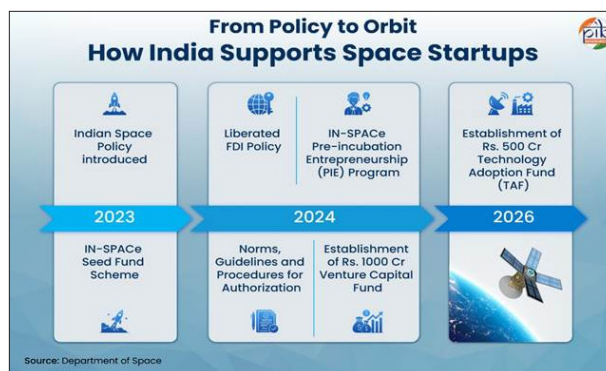
Suborbital Flight

- Travels **below orbital velocity**, reaches a certain altitude, and then returns to Earth without entering orbit.
- Requires a speed of about **6,000 km/h** to reach **200 km altitude** and provides a few minutes of **weightlessness** during freefall.

Significance

- **Historic Milestone for India's Private Space Sector:** Vikram-1 became **India's first privately developed orbital launch vehicle** to successfully place payloads into orbit, representing the next phase of **India's commercial space programme**.
- **Success of Space Sector Reforms:** Demonstrates the impact of the **Indian Space Policy 2023**, liberalised private participation, and the role of **IN-SPACE** in enabling private launch companies.
- **Strengthens India's Commercial Launch Capability:** Positions India to compete in the rapidly growing **global small satellite launch market**, where demand for dedicated launches continues to increase.
- **Boosts Indigenous Technology:** Validates advanced indigenous technologies including **carbon-composite structures**, **3D-printed rocket engines**, **indigenous propulsion systems**, and **advanced separation mechanisms**.

- **Supports India's Space Economy:** Reinforces the Government's vision of expanding **India's space economy** from about **USD 8 billion** today to **USD 40–45 billion by 2030**, with a long-term target of **USD 100 billion by 2040** through greater private participation.



6.2. India's First Hydrogen-Powered Train Launched

SYLLABUS

GS-3: *Achievements of Indians in Science & Technology; Indigenization of Technology and Developing New Technology; Infrastructure: Railways.*

Context

Recently, the Prime Minister flagged off India's first hydrogen fuel cell-powered train on the Jind–Sonipat section of Northern Railway in Haryana, marking a major milestone in the country's transition towards clean, sustainable and hydrogen-based rail mobility.

More on the News

- The launch marks the successful completion of a **pilot project**, demonstrating the feasibility of hydrogen-powered passenger rail services and advancing the decarbonisation of Indian Railways.
- With this initiative, **India joins a select group of nations** that include Germany, Japan, China and the United States operating hydrogen-powered trains, reflecting its growing capabilities in clean mobility technologies.
- Developed indigenously under the **Make in India initiative**, the project is supported by an integrated

ecosystem for green hydrogen production, storage and refuelling at Jind, advancing the objectives of the **National Green Hydrogen Mission**.

- As Indian Railways has already electrified **over 99% of its Broad-Gauge network**, hydrogen technology offers a sustainable solution for **non-electrified routes** where conventional electrification is challenging or uneconomical.

Understanding Hydrogen-Powered Trains

- A **hydrogen-powered train** uses **fuel cells** to generate electricity onboard through an electrochemical reaction between **hydrogen and oxygen**, producing **water vapour as the only direct emission**.
- The electricity generated powers the train's traction motors, eliminating the need for diesel engines.
- Compared to conventional diesel trains, hydrogen-powered trains produce **near-zero emissions at the point of operation**, generate less noise, and offer greater energy efficiency.
- They are particularly suitable for **non-electrified railway routes**, where installing overhead electric lines is technically difficult or economically unviable.
- Their large-scale adoption, however, depends on the availability of **green hydrogen**, dedicated refuelling infrastructure and affordable fuel-cell technology.

Key Highlights of India's First Hydrogen-Powered Train

- **Indigenously developed:** Designed, engineered and integrated in India, reinforcing the vision of Atmanirbhar Bharat and self-reliance in advanced railway technologies.
- **World's longest hydrogen trainset:** Configured as a **10-coach** passenger train comprising **two Hydrogen Driving Power Cars (DPCs)** and **eight passenger coaches**, with a carrying capacity of around **2,600 passengers**.
- **World's most powerful hydrogen-powered passenger train:** Equipped with **two 1,200 kW Hydrogen Driving Power Cars** (total installed power of **2,400 kW**).
- **Operational profile:** The train will initially operate on the **89-km Jind–Sonipat route** in Haryana, with an operational speed of **75 km/h** and a design speed

of **110 km/h**.

- **Integrated hydrogen ecosystem:** The project is supported by a dedicated hydrogen production, storage and refuelling facility at Jind, where green hydrogen is produced through electrolysis and supplied for train operations.
- **Robust safety framework:** The train and refuelling infrastructure incorporate advanced hydrogen leak detection, fire and heat monitoring systems, while the refuelling facility has received approval from the **Petroleum and Explosives Safety Organisation (PESO)**.

Significance of India's Hydrogen Rail Initiative

- **Accelerating Green Rail Mobility:** Provides a clean alternative for non-electrified rail corridors, supporting Indian Railways' long-term decarbonisation strategy.
- **Advancing the National Green Hydrogen Mission:** Demonstrates the commercial application of green hydrogen in mass transportation and promotes the development of a domestic hydrogen economy.
- **Strengthening Technological Self-Reliance:** Showcases indigenous capabilities in hydrogen propulsion, fuel-cell integration, hydrogen storage and railway engineering under **Make in India** and **Atmanirbhar Bharat**.
- **Positioning India as a Global Clean Mobility Leader:** Places India among the few countries operating hydrogen-powered passenger trains and strengthens its standing in next-generation sustainable transport technologies.

Challenges to Wider Adoption

- **High Cost of Green Hydrogen:** Producing green hydrogen through electrolysis remains considerably more expensive than conventional fossil fuels.
- **Infrastructure Requirements:** Developing hydrogen production, storage, compression and refuelling infrastructure demands substantial capital investment.
- **Storage and Transportation Challenges:** Hydrogen is highly flammable and must be stored and transported under **high pressure**, requiring

specialised infrastructure and stringent safety protocols.

- **Technology Maturity:** Hydrogen rail technology is still at an early stage globally, with limited large-scale operational experience and supply chains.

Way Ahead

- **Scale up Green Hydrogen Production:** Increase renewable energy-based hydrogen production to reduce fuel costs and improve commercial viability.
- **Expand Deployment on Suitable Routes:** Introduce hydrogen-powered trains on strategically selected **non-electrified and environmentally sensitive rail corridors**, where conventional electrification is difficult or uneconomical.
- **Strengthen Indigenous Manufacturing:** Promote domestic production of fuel cells, hydrogen storage systems and other critical components to reduce import dependence.
- **Develop a Robust Hydrogen Ecosystem:** Expand hydrogen production, storage and refuelling infrastructure through public-private partnerships while supporting continuous research and innovation to make hydrogen-powered rail transport safer, more efficient and affordable.

6.3. China Lands a Reusable Rocket for the First Time

SYLLABUS

GS-3: Science and Technology- Developments and their Applications and Effects in Everyday Life; Indigenization of Technology and Developing New Technology.

Context

China successfully recovered and landed the first stage of its Long March-10B rocket, marking its first successful demonstration of an orbital-class reusable launch vehicle and a major milestone in its space programme.

More on the News

- The **Long March-10B** successfully completed a controlled descent and vertical landing on a sea-based recovery platform, becoming China's first recovered orbital-class reusable rocket booster.
- Unlike conventional landing-leg recovery systems, the booster was captured using a **net-based recovery system** mounted on an offshore platform, a method claimed to be a world-first in reusable rocket recovery.
- The rocket can carry about **16 tonnes to Low Earth Orbit (LEO)** in reusable mode and is expected to support China's **Qianfan satellite constellation**, commercial launch market, and future lunar exploration missions.

Reusable Rocket Technology: Concepts and Types

• What are Reusable Rockets?

- ✓ Reusable rockets are launch vehicles whose stages or major components can be recovered after launch, refurbished, and flown again for future missions.
- ✓ Unlike conventional expendable rockets, they are designed to survive re-entry and landing, reducing the need to manufacture a new rocket for every launch.

• Why Does Reusability Matter?

- ✓ The first-stage booster accounts for a major share of launch costs because it contains expensive engines, avionics, fuel systems, and structural components.
- ✓ Recovering and reusing these components can significantly reduce the cost of access to space and improve launch frequency.
- ✓ The concept is often compared to commercial aviation, where aircraft are reused repeatedly rather than discarded after a single flight.

• Types of Recovery Systems

✓ Vertical Take-off, Vertical Landing (VTVL)

- The rocket launches vertically and returns to land vertically using controlled engine burns and precision guidance systems.
- Requires advanced navigation, thrust-vector control, and autonomous landing technologies.
- **Examples:** SpaceX Falcon 9, SpaceX Starship Booster, Blue Origin New Shepard, China's Long March-10B

✓ Horizontal Landing Systems

- The vehicle returns through the atmosphere and lands on a runway like an aircraft.

- Requires aerodynamic control surfaces and robust thermal protection systems.
- **Examples:** ISRO's Pushpak Reusable Launch Vehicle (RLV), NASA Space Shuttle

• How Reusable Rockets Work

- ✓ After launch, the reusable stage separates from the upper stage carrying the payload.
- ✓ Guidance, navigation, and control systems steer the booster through a controlled descent trajectory.
- ✓ Engine burns reduce velocity before landing on a designated platform or runway.
- ✓ The recovered vehicle is inspected, refurbished, and prepared for future launches.

Significance of Reusable Rocket Technology

- **Lowering the Cost of Space Access:** Reusing expensive booster stages significantly reduces launch costs, making space missions more affordable.
- **Increasing Launch Frequency:** Faster turnaround and reuse enable more frequent launches than conventional expendable rockets.
- **Supporting Mega Satellite Constellations:** Reusable launch systems facilitate the cost-effective deployment of large satellite networks for communication and internet services.
- **Enabling Future Deep-Space Missions:** Reduced launch costs improve the feasibility of sustained lunar, planetary, and human spaceflight missions.
- **Expanding the Commercial Space Economy:** Affordable and frequent launches encourage private-sector participation and enhance competitiveness in the global space market.

India's Reusable Launch Vehicle Efforts

- **ISRO's RLV Programme**
 - ✓ ISRO is developing a reusable launch system through the **Reusable Launch Vehicle-Technology Demonstrator (RLV-TD)** programme.
 - ✓ The programme seeks to reduce launch costs and enhance India's competitiveness in the global launch market.
- **Key Milestones**
 - ✓ **HEX (Hypersonic Flight Experiment), 2016:** Demonstrated atmospheric re-entry technologies.
 - ✓ **LEX (Landing Experiment), 2023 & 2024:**

Successfully validated autonomous runway landing capabilities.

- ✓ **Pushpak RLV:** Demonstrated autonomous landing and recovery technologies required for future reusable launch systems.

• Significance for India

- ✓ Can substantially reduce launch costs for Indian missions.
- ✓ Strengthens India's position in the global commercial launch market.
- ✓ Supports the long-term objectives of India's expanding space economy and future human spaceflight ambitions.

Challenges in Mastering the Reusable Technology

- **Precision Recovery:** Achieving reliable landings under varying atmospheric and operational conditions remains technologically demanding.
- **Thermal Protection:** Re-entry generates extreme temperatures, requiring advanced heat-shield materials and durable structures.
- **Refurbishment Requirements:** Frequent inspection, repair, and maintenance can reduce the economic benefits of reusability.
- **Economic Viability:** Reusable systems become cost-effective only when refurbishment costs and turnaround times remain significantly lower than the cost of building a new rocket.
- **Safety and Reliability:** Launch vehicles must maintain high performance and reliability across multiple flight cycles.

Future Outlook

- Reusable rockets are expected to become the backbone of commercial launch services and satellite-constellation deployment.
- Advances in propulsion, automation, and materials science will further improve the efficiency of reusable launch systems.
- As more countries and private companies master reusability, competition is likely to reduce launch costs and expand global access to space.
- Reusable launch vehicles will play a crucial role in future lunar missions, deep-space exploration, and the long-term commercialisation of outer space.

GLOBAL RACE FOR REUSABLE ROCKET TECHNOLOGY

UNITED STATES	CHINA	EUROPE	INDIA	OTHERS
 SPACEX FALCON 9 STARSHIP - Operational reuse (Falcon 9) - High flight cadence - Developing fully reusable Starship	 LONG MARCH-10B  - First recovered orbital-class booster (LM-10B) - Net-based sea recovery (world-first) ~16 t payload to LEO (reusable mode) - Backbone for Qianfan constellation & commercial launches - Active private players: LandSpace, iSpace, Galactic Energy	 ESA THEMIS  - ESA-backed reusable launcher demonstrator - Focus on future reusable capabilities & competitiveness	 ISRO  - RLV-TD / Pushpak programme - Runway-based recovery - HEX (2016) - LEX (2023, 2024) - NGLV – reusable first stage in future PRIVATE SECTOR ABYOM SPACETECH - Tested fully indigenous reusable rocket engine	 JAPAN - Reusability technology demonstrations in progress  RUSSIA - Exploring reusable launch systems  PRIVATE PLAYERS GLOBALLY - Growing number of startups working on reusable launch vehicles

6.4. ISRO Successfully Conducts First SOLVE Ground Test

SYLLABUS

GS-3: Achievements of Indians in Science & Technology; Indigenization of Technology and Developing New Technology.

Context

ISRO successfully conducted the first ground test of the SOLVE (Sub-Orbital Launch Vehicle for Experiments) solid motor recently, marking an important milestone in the Gaganyaan Human Spaceflight Programme.

More on the News

- The test was conducted at the **Static Test Facility of Satish Dhawan Space Centre (SDSC-SHAR), Sriharikota**, and all motor performance parameters met the expected objectives.
- SOLVE is being developed primarily for conducting **Integrated Parachute Tests (IPTs)** to validate the

Crew Module's deceleration and recovery systems under realistic mission conditions.

- Future SOLVE missions will carry a Gaganyaan Crew Module to an altitude of **10–17 km**, enabling end-to-end validation of the parachute recovery sequence before splashdown in the sea.
- ISRO highlighted that the development of SOLVE will provide greater flexibility in conducting Gaganyaan test missions by simulating different conditions that may arise during an actual human spaceflight mission.

About SOLVE

- SOLVE (Sub-Orbital Launch Vehicle for Experiments)** is a solid motor-based sub-orbital test vehicle being developed by ISRO to support technology validation for the Gaganyaan programme.
- The vehicle is powered by a solid motor derived from the **PSOM-XL strap-on motor used in PSLV missions**, adapted for sub-orbital experimental testing.
- It has been conceived primarily for **Integrated**

Parachute Tests, which are critical for validating the Crew Module's deceleration and recovery systems before crewed missions.

- During test flights, the Crew Module will be released at a designated altitude and recovered through a carefully sequenced parachute deployment system, closely replicating actual recovery conditions.
- SOLVE provides a dedicated and flexible experimental platform for repeated validation of critical recovery technologies without requiring a full-scale orbital mission.
- **Significance for Gaganyaan**
 - ✓ Safe descent and splashdown constitute one of the most critical phases of a human spaceflight mission; SOLVE will help validate the systems responsible for the safe return of astronauts.
 - ✓ By enabling repeated tests under varied mission scenarios, SOLVE will reduce mission risks and enhance the reliability of future crewed Gaganyaan missions.



Photographic view during the Static Test of SOLVE-ST01

About the Gaganyaan Mission

- **Gaganyaan** is India's first human spaceflight programme aimed at demonstrating the capability to send a **crew of three astronauts** to a **Low Earth Orbit (LEO)** of about **400 km** for a mission of three days and bring them back safely through splashdown in Indian waters.
- The programme involves a series of **uncrewed qualification missions, abort tests and technology demonstrations** before the eventual crewed mission.
- **Its major components include:**
 - ✓ **Human-Rated LVM3 (HLVM3)** launch vehicle;
 - ✓ **Crew Module (CM)** for astronaut habitation;
 - ✓ **Service Module (SM)** for propulsion and mission support;
 - ✓ **Crew Escape System (CES)** for emergency crew evacuation.
- Successful completion of Gaganyaan will make India the **fourth country**, after the United States, Russia and China, to independently demonstrate human spaceflight capability.
- The programme is also expected to provide the technological foundation for future initiatives such as the **Bharatiya Antariksh Station** and long-duration human spaceflight missions.

Major Milestones Achieved So Far

- **Test Vehicle Demonstration Mission (TV-D1), 2023:** Successfully validated the **Crew Escape System** through an in-flight abort test, demonstrating astronaut escape capabilities during launch emergencies.
- **Integrated Air Drop Test (IADT-01), 2025:** Validated the parachute-based deceleration and recovery system of the Gaganyaan Crew Module under realistic operational conditions.
- **Integrated Main Parachute Airdrop Tests (IMAT Series), 2025:** A series of qualification tests successfully validated the main parachute system of the Crew Module.
- **Drogue Parachute Qualification Tests, 2025:** Successfully demonstrated the performance of drogue parachutes that form a critical part of the Crew Module's deceleration system.
- **Integrated Air Drop Test (IADT-02), 2026:** A 5.7-tonne simulated Crew Module was successfully recovered after deployment of **10 parachutes**, validating the complete parachute-based recovery architecture.
- **First SOLVE Ground Test, 2026:** ISRO successfully completed the first ground test of the SOLVE solid motor, paving the way for future Integrated Parachute Test missions.

6.5. India–Australia Civil Nuclear Cooperation

SYLLABUS

GS-3: *Infrastructure-Energy; Science and Technology-developments and their applications and effects in everyday life; Indigenization of technology and developing new technology.*

Context

India and Australia have finalised the Administrative Arrangement under the India–Australia Civil Nuclear Cooperation Agreement during the Third India–Australia Annual Summit held in Melbourne.

About India–Australia Civil Nuclear Cooperation

- India and Australia signed the **Civil Nuclear Cooperation Agreement** in **September 2014**, which entered into force in **November 2015**.
- The Agreement provides the framework for civil nuclear cooperation and enables Australian companies to export uranium to India on a commercial basis.
- **Key Features:**
 - ✓ Enables **long-term exports of Australian uranium** to India.
 - ✓ Uranium will be used **exclusively for peaceful civilian purposes**.
 - ✓ All supplies will remain under **IAEA safeguards**.
 - ✓ Provides a **stable long-term framework** for cooperation between governments and industry.
 - ✓ Under Australian policy, uranium exports are permitted only to countries having a **Civil Nuclear Cooperation Agreement**.
- **Why Australia is Important**
 - ✓ Holds **more than one-third of global uranium resources**, the largest in the world.
 - ✓ Offers India a reliable source of uranium for its expanding nuclear fleet.
 - ✓ Diversifies India's uranium imports, reducing dependence on limited domestic reserves.
 - ✓ Australia reaffirmed support for **India's membership of the Nuclear Suppliers Group (NSG)**.

Significance

- **Energy Security:** Ensures **assured long-term uranium supplies**, strengthens **fuel security**, and **diversifies uranium imports** for long-term energy security.
- **Supports Nuclear Energy Mission:** Supports the **100 GW nuclear power target by 2047** by providing assured fuel for timely implementation of nuclear projects.
- **Reinforces SHANTI Act:** Complements the **SHANTI Act, 2025** by enabling private participation and ensuring the **fuel security** needed to expand nuclear power.
- **Clean Energy Transition:** Provides **reliable baseload power**, supports **manufacturing, industry, data centres**, and advances **Net Zero by 2070** and India's **NDCs**.
- **Strategic Importance:** Reinforces India's **responsible nuclear credentials** and strengthens the **India–Australia Comprehensive Strategic Partnership** in clean energy and energy security.

India's Status of Nuclear Energy

- India currently operates **24 nuclear power reactors** across **seven sites** with a total installed capacity of **8.78 GW**.
- **The reactor fleet comprises:**
 - ✓ Pressurised Heavy Water Reactors (PHWRs)
 - ✓ Boiling Water Reactors (BWRs)
 - ✓ Light Water Reactors (LWRs)
- Most operational PHWRs use **natural uranium** as fuel while producing **plutonium** as a by-product.
- **Expansion Plans: 10 reactor units (8,000 MW)** are under construction, and **pre-project activities have commenced for 10 additional reactors**.
- **Nuclear Energy Mission:** Announced in the **Union Budget 2025–26**, it targets **100 GW of nuclear power capacity by 2047** and supports **Net Zero emissions by 2070**.
- **SHANTI Act, 2025:** The **Sustainable Harnessing and Advancement of Nuclear Energy for Transforming India (SHANTI) Act, 2025** modernises India's nuclear legal framework by enabling **limited private participation** under regulatory oversight.
 - ✓ It also opens **new avenues for collaboration and investment**.

- **Small Modular Reactors (SMRs):** The Union Budget 2025–26 allocated ₹20,000 crore for indigenous SMRs (up to 300 MWe).
✓ Their advantages include **factory-based manufacturing, faster construction, improved quality control and phased deployment**, with a target of **at least five operational SMRs by 2033**.
- **Prototype Fast Breeder Reactor (PFBR):** India's 500 MWe PFBR at Kalpakkam, developed by BHAVINI, attained **first criticality on 6 April 2026**, marking the **second stage of India's Three-Stage Nuclear Power Programme**.
✓ It uses **plutonium from spent PHWR fuel** to breed more fuel and will eventually produce **Uranium-233 from thorium**, strengthening **long-term fuel security** and supporting **Net Zero**.

India's Civil Nuclear Cooperation with Other Countries

- India has signed **Inter-Governmental Agreements (IGAs) on Civil Nuclear Cooperation for peaceful purposes with 18 countries**, reflecting expanding international cooperation in the nuclear energy sector.

India's Three-Stage Nuclear Programme

- Formulated by **Dr. Homi J. Bhabha** during the 1950s.
- Designed to utilise India's **limited uranium resources** while harnessing its **vast thorium reserves** for long-term energy security and self-reliance.
- India possesses around **2% of the world's uranium reserves** but nearly **25% of global thorium reserves**, primarily located in **Kerala, Tamil Nadu, Andhra Pradesh and Odisha**.
- **Stage I; Pressurised Heavy Water Reactors (PHWRs):** Use **natural uranium** as fuel and **heavy water (D₂O)** as both moderator and coolant.
✓ It generates electricity while producing **Plutonium-239 from Uranium-238**, and was chosen because it **does not require uranium enrichment**.
- **Stage II; Fast Breeder Reactors (FBRs):** Uses **Mixed Oxide (MOX) fuel** prepared from **Plutonium-239 recovered from spent PHWR fuel** and natural uranium.

✓ It produces **more nuclear fuel than it consumes** by converting **Uranium-238 into Plutonium-239**, while **thorium** can be used to produce **Uranium-233**; the **Prototype Fast Breeder Reactor (PFBR) at Kalpakkam** marks India's entry into this stage.

- **Stage III; Thorium-Based Reactors:** Envisages **thorium-fuelled breeder reactors** that initially use a mixture of **Uranium-233 and thorium**.

✓ Thorium is progressively converted into **Uranium-233**, enabling large-scale use of India's **abundant thorium reserves** and ensuring **long-term energy independence**.

6.6. Cabinet Approves Semicon 2.0

SYLLABUS

GS-3: *Science and Technology- Developments and their Applications and Effects in Everyday Life; Indigenization of Technology and Developing New Technology.*

Context

The Union Cabinet has approved Semicon 2.0 with a total outlay of ₹1,27,500 crore to strengthen India's semiconductor design and manufacturing ecosystem and provide long-term policy support to the sector.

More on the News

- Semicon 2.0 marks the next phase of the **India Semiconductor Mission (ISM)**, expanding support from chip fabrication to the entire semiconductor value chain, including design, materials, equipment, R&D, and talent development.
- The programme aims to position India as a trusted partner in global semiconductor supply chains amid rising demand driven by AI, electronics, telecommunications, automotive systems, defence technologies, and advanced computing.
- The approval builds on the achievements of Semicon 1.0, under which multiple semiconductor manufacturing, packaging, and design projects have been approved, and several have already commenced production.



Key Highlights of Semicon 2.0

- Semicon 2.0 is aimed to holistically build the semiconductor ecosystem on the following six pillars:

• Pillar 1: Design

- ✓ Strengthens India's semiconductor design ecosystem by supporting chip design,

semiconductor IP creation, and fabless startups.

- ✓ Builds on the momentum of over **105 startups** that have already begun developing semiconductor chips in India.

• Pillar 2: Machines and Materials

- ✓ Promotes domestic manufacturing and R&D of semiconductor equipment, specialty materials,

chemicals, gases, and wafers.

- ✓ Seeks to reduce import dependence and create a resilient upstream semiconductor supply chain.
- **Pillar 3: Setting Up More Fabs**
 - ✓ Encourages establishment of additional semiconductor manufacturing facilities across the value chain.
 - ✓ Covers **Silicon CMOS Fabs, Compound Semiconductor Fabs, Display Fabs, and Discrete Semiconductor Fabs.**
 - ✓ The first semiconductor fab approved under the programme is expected to be commissioned by **2028.**
- **Pillar 4: Strengthening the ATMP/OSAT Ecosystem**
 - ✓ Expands India's capabilities in **Assembly, Testing, Marking and Packaging (ATMP)** and **Outsourced Semiconductor Assembly and Test (OSAT)** operations.
 - ✓ Aims to establish India as a major global destination for semiconductor packaging and testing services.
- **Pillar 5: Research & Development (R&D)**
 - ✓ Supports development of next-generation semiconductor technologies beyond the current **28 nm–110 nm node capabilities.**
 - ✓ Encourages collaboration among industry, academia, startups, and global research institutions.
- **Pillar 6: Talent Development**
 - ✓ Focuses on creating a future-ready semiconductor workforce through specialised education, skilling, training, and industry-academia partnerships.
 - ✓ Seeks to meet the growing demand for engineers, researchers, and technicians across the semiconductor ecosystem.

Achievements Under Semicon 1.0

- **Manufacturing Ecosystem Expansion: 12 semiconductor projects** approved with investments exceeding **₹1.5 lakh crore**, laying the foundation for India's semiconductor manufacturing ecosystem.
- **Production Commences:** Facilities promoted by **Micron, Kaynes, and CG Semi** have begun commercial production, marking the transition from approvals to manufacturing.
- **Growth of Design Ecosystem: 24 chip-design projects** supported and **105 startups/MSMEs** enabled with advanced EDA tools to strengthen indigenous semiconductor design capabilities.
- **Rising Global Confidence:** Participation of leading domestic and international companies reflects growing investor confidence in India's semiconductor ambitions and policy framework.

Challenges in Building India's Semiconductor Ecosystem

- **Capital-Intensive Industry:** Semiconductor fabrication requires massive investments, long gestation periods, and continuous technology upgrades.
- **Technology Dependence:** Advanced semiconductor manufacturing technologies remain concentrated among a few countries and firms.
- **Ecosystem Gaps:** India continues to depend significantly on imports for semiconductor-grade materials, equipment, and manufacturing inputs.
- **Skilled Workforce Constraints:** Sustained growth requires a large pool of specialised semiconductor engineers, technicians, and researchers.
- **Global Competition:** India faces intense competition from established semiconductor hubs such as Taiwan, South Korea, the United States, China, and Japan.

Way Forward

- **Strengthen Semiconductor Design and IP:** Expand support for indigenous chip design, semiconductor IP creation, and fabless startups.
- **Develop Domestic Machines and Materials Ecosystem:** Build capabilities in semiconductor equipment, chemicals, gases, wafers, and specialty materials.
- **Accelerate Fabs and ATMP/OSAT Facilities:** Ensure timely commissioning of approved manufacturing and packaging projects.
- **Invest in Advanced R&D:** Develop next-generation semiconductor technologies through stronger industry-academia collaboration.
- **Expand Talent Development:** Scale up semiconductor-focused education, skilling, and research programmes to meet future workforce requirements.

- **Deepen Global Integration:** Position India as a trusted semiconductor partner by integrating more deeply into global value chains and attracting strategic investments.

6.7. NITI Aayog Report on Transforming India into a Global BioEconomy Powerhouse

SYLLABUS

GS-2: Government Policies and Interventions for Development in various sectors and Issues arising out of their Design and Implementation.

GS-3: Awareness in the fields of Bio-technology.

Context

NITI Aayog has released the report “Roadmap for Building India as a Leading Bioeconomy Powerhouse by 2035”, proposing a ₹50,000 crore BioEconomy Growth Fund and a mission-driven strategy to position India among the world’s top three biotechnology powers by 2035.

More on the News

- The report has been prepared by the **NITI Frontier Tech Hub** in consultation with government agencies, industry stakeholders, researchers, and domain experts to chart a long-term strategy for India’s biotechnology sector.
- The roadmap presents a mission-driven strategy to position India among the **world’s top three biotechnology powers by 2035** while harnessing biotechnology as a catalyst for economic growth, innovation, sustainability, and strategic resilience.
- The roadmap aligns with the **BioE3 Policy (Biotechnology for Economy, Environment and Employment)** and the broader vision of **Viksit Bharat 2047**.

About BioE3 Policy

- Approved in 2024, the **BioE3 Policy** seeks to leverage biotechnology for **Economy, Environment and Employment** through high-performance biomanufacturing and innovation-led growth.
- The policy promotes the convergence of biotechnology with artificial intelligence, advanced manufacturing, and sustainability to create globally competitive bio-based industries.

Understanding India’s Bioeconomy

- The bioeconomy refers to economic activity based on the use of biological resources, biotechnology, and biomanufacturing to produce goods, services, and sustainable solutions across sectors such as healthcare, agriculture, industry, energy, and environmental management.
- **Current Status of India’s Bioeconomy**
 - ✓ India’s bioeconomy has expanded **16-fold**, from **\$10 billion in 2014 to \$195.3 billion in 2025**, and now contributes **4.8% to the national GDP**.
 - ✓ The country hosts **10,000+ biotech startups**, one of the world’s largest vaccine manufacturing ecosystems, and more than **700 USFDA-approved manufacturing facilities outside the United States**.
 - ✓ India has emerged as a global leader in affordable vaccines, biosimilars, generic medicines, and contract research and manufacturing services.
- **Future Growth Targets**
 - ✓ The roadmap envisions expanding India’s bioeconomy to **\$392 billion by 2030**, **\$691 billion by 2035**, and **\$2.6 trillion by 2047**.
 - ✓ It also projects the creation of more than **30 million high-value jobs** by 2035 and an increase in the bioeconomy’s contribution to GDP to **5–6% by 2035** and **8–10% by 2047**.

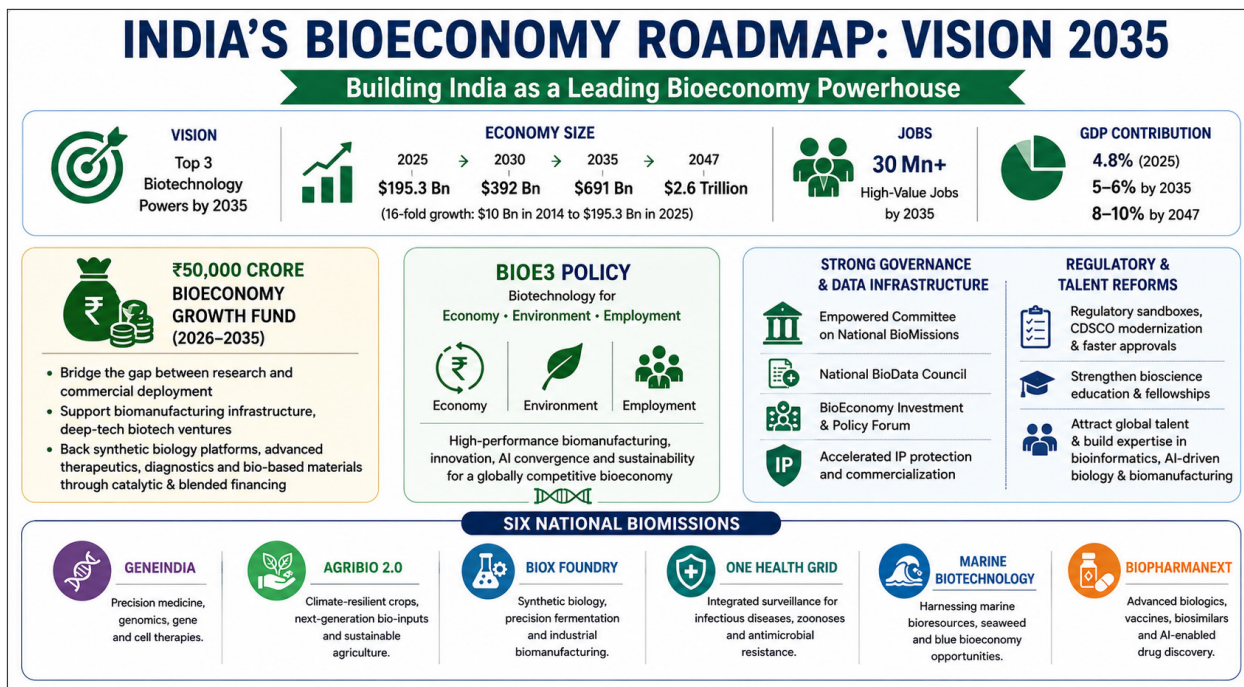
Key Recommendations of the Roadmap

- **National BioMissions for Mission-Mode Growth**
 - ✓ The roadmap proposes six flagship **National BioMissions** to build capabilities across healthcare, agriculture, industrial biotechnology, biosecurity, marine resources, and advanced therapeutics.
 - ✓ These include:
 - **GeneIndia** – Precision medicine, genomics, gene and cell therapies.
 - **AgriBio 2.0** – Climate-resilient crops, next-generation bio-inputs, and sustainable agriculture.
 - **BioX Foundry** – Synthetic biology, precision fermentation, and industrial biomanufacturing.
 - **One Health Grid** – Integrated surveillance for infectious diseases, zoonoses, and antimicrobial resistance.

- **Marine Biotechnology** – Harnessing marine bioresources, seaweed, and blue bioeconomy opportunities.
- **BioPharmaNext** – Advanced biologics, vaccines, biosimilars, and AI-enabled drug discovery.
- **₹50,000 Crore BioEconomy Growth Fund**
 - ✓ The report proposes a dedicated **₹50,000 crore BioEconomy Growth Fund (2026–2035)** to bridge the financing gap between research and commercial deployment.
 - ✓ The fund would support biomanufacturing infrastructure, deep-tech biotech ventures, synthetic biology platforms, advanced therapeutics, diagnostics, and bio-based materials through catalytic and blended financing mechanisms.
- **Strengthening Governance and Data Infrastructure**
 - ✓ The roadmap recommends establishing

an **Empowered Committee on National BioMissions** for cross-sectoral coordination and implementation oversight.

- ✓ It also proposes a **National BioData Council**, a **BioEconomy Investment & Policy Forum**, and a dedicated pathway for accelerating biotechnology-related intellectual property (IP) protection and commercialization.
- **Regulatory and Talent Reforms**
 - ✓ The report calls for regulatory sandboxes, modernization of the **Central Drugs Standard Control Organisation (CDSCO)**, and faster approval pathways for emerging biotechnology products.
 - ✓ It further recommends strengthening bioscience education, expanding research fellowships, attracting global talent, and building expertise in bioinformatics, AI-driven biology, and advanced biomanufacturing.



Significance of the Roadmap

- **Accelerating Economic Growth:** By positioning biotechnology as a strategic growth sector, the roadmap can significantly enhance India's GDP, exports, and global competitiveness while driving
- the transition towards a knowledge-based economy.
- **Advancing Strategic and Technological Self-Reliance:** Strengthening domestic capabilities in advanced therapeutics, industrial biotechnology, critical bio-inputs, and next-generation technologies can reduce import dependence and bolster strategic autonomy.

- **Strengthening Healthcare and Food Security:** Investments in precision medicine, genomics, climate-resilient agriculture, and bio-based inputs can improve healthcare outcomes and enhance agricultural resilience in the face of climate change.
- **Boosting Biomanufacturing and Innovation:** The focus on AI-enabled biotechnology, synthetic biology, biofoundries, and precision fermentation can accelerate innovation and help India emerge as a global hub for advanced biomanufacturing.
- **Generating High-Value Employment:** Expansion of research, entrepreneurship, manufacturing, and digital-biology ecosystems can create millions of skilled jobs and foster a globally competitive biotechnology workforce.

6.8. Draft National Health Research Policy, 2026

SYLLABUS

GS-3: Science and Technology- Developments and their Applications and Effects in Everyday Life; Indigenization of Technology and Developing New Technology.

Context

The Department of Health Research (DHR), Ministry of Health and Family Welfare, has released the Draft National Health Research Policy (NHRP), 2026 for public consultation, proposing a comprehensive and impact-oriented overhaul of India's health research ecosystem.

More on the News

- The draft policy seeks to replace the **National Health Research Policy, 2011** and establish a modern, impact-oriented framework aligned with India's evolving health priorities.
 - It aims to create a **capable, inclusive, self-reliant, and responsive health research ecosystem**, while strengthening the link between research, policymaking, healthcare delivery, and innovation.
 - The policy seeks to establish India's first comprehensive framework covering biomedical, clinical, public health, health systems, epidemiological, behavioural, and digital health research.
- Need for the Policy**
- **Changing Health Challenges:** India's health burden is increasingly shaped by non-communicable diseases (NCDs), antimicrobial resistance (AMR), mental health disorders, ageing-related conditions, and emerging infectious diseases, requiring a reoriented research framework.
 - **Fragmented Research Ecosystem:** Health research remains dispersed across institutions and sectors, leading to duplication of efforts, weak coordination, and limited translation of research into policy and practice.
 - **Low Public Investment in Health Research:** Government expenditure on health research is estimated at only **0.024% of GDP**, limiting India's research capacity and innovation potential.
 - **Uneven Research Capacity:** Research infrastructure, funding opportunities, and skilled manpower remain concentrated in a limited number of premier institutions, creating regional and institutional disparities.
- Key Proposals/Features of the Draft Policy**
- **National Health Research Agenda (NHRA)**
 - ✓ Establish a dynamic national framework for identifying priority research areas based on disease burden, public health needs, and emerging challenges.
 - ✓ Priority areas include TB, AMR, vector-borne diseases, cancer, NCDs, mental health, anaemia, child malnutrition, women's health, maternal and neonatal mortality, primary healthcare, and emergency care.
 - **Increased Investment in Health Research:** Proposes a phased increase in public spending on health research from **0.024% of GDP currently to 0.072% by 2037 and 0.15% by 2047**.
 - **Shift to Impact-Oriented Research:** Move beyond publication- and citation-based assessment towards evaluation based on **public health outcomes, policy relevance, societal impact, and translational value**.
 - **Three-Tier Governance Structure:** It proposes a governance framework comprising:
 - ✓ **National Health Research Stewardship Committee** for strategic oversight;

- ✓ **Department of Health Research (DHR)** as the nodal implementation agency; and
- ✓ **ICMR** as the scientific and technical lead.
- **National Research Integrity Office (NRIO) and Research Governance Reforms**
 - ✓ Proposes establishing a **National Research Integrity Office (NRIO)** to strengthen scientific integrity, ethical oversight, and responsible research practices.
 - ✓ Also seeks to simplify approvals for multicentre studies and improve research governance mechanisms.
- **Greater Role for States and Private Sector:** Encourages state-level research agendas and greater participation of private hospitals, industry, startups, philanthropy, and community organisations in health research.

Significance of the Policy

- **Aligning Research with Public Health Priorities:** Ensures that research funding and efforts are directed towards India's most pressing health challenges and disease burdens.
- **Strengthening Health Security:** Enhances preparedness for pandemics, AMR, emerging diseases, and other public health emergencies through targeted and coordinated research.
- **Promoting Evidence-Based Policymaking:** Strengthens the integration of scientific evidence into health policies, programmes, and healthcare delivery systems.
- **Democratising Health Research:** Expands research opportunities beyond a few elite institutions and promotes wider participation by states, medical colleges, young researchers, and underserved regions.
- **Improving Research Translation:** Seeks to bridge the gap between research generation and its application in healthcare delivery, public policy, and health outcomes.

6.9. UN's First Scientific Report on AI

SYLLABUS

GS-3: *Science and Technology—Developments and their Applications and Effects in Everyday Life; Awareness in the fields of IT, Computers, and Biotech; Basics of Cyber Security.*

Context

The United Nations' Independent International Scientific Panel on Artificial Intelligence (AI) released its first scientific report on AI, providing a global scientific assessment of AI's capabilities, opportunities, risks, and governance challenges.

More on the News

- The report was prepared by the **40-member Independent International Scientific Panel on AI**, co-chaired by **Yoshua Bengio** and **Maria Ressa**, to provide an independent scientific assessment of AI.
- It served as the scientific foundation for the **inaugural Global Dialogue on AI Governance** held in **Geneva on 6–7 July 2026**.
- The report covers **seven thematic dimensions of AI** and marks the first in a series of periodic UN assessments, with a comprehensive report expected in 2027.

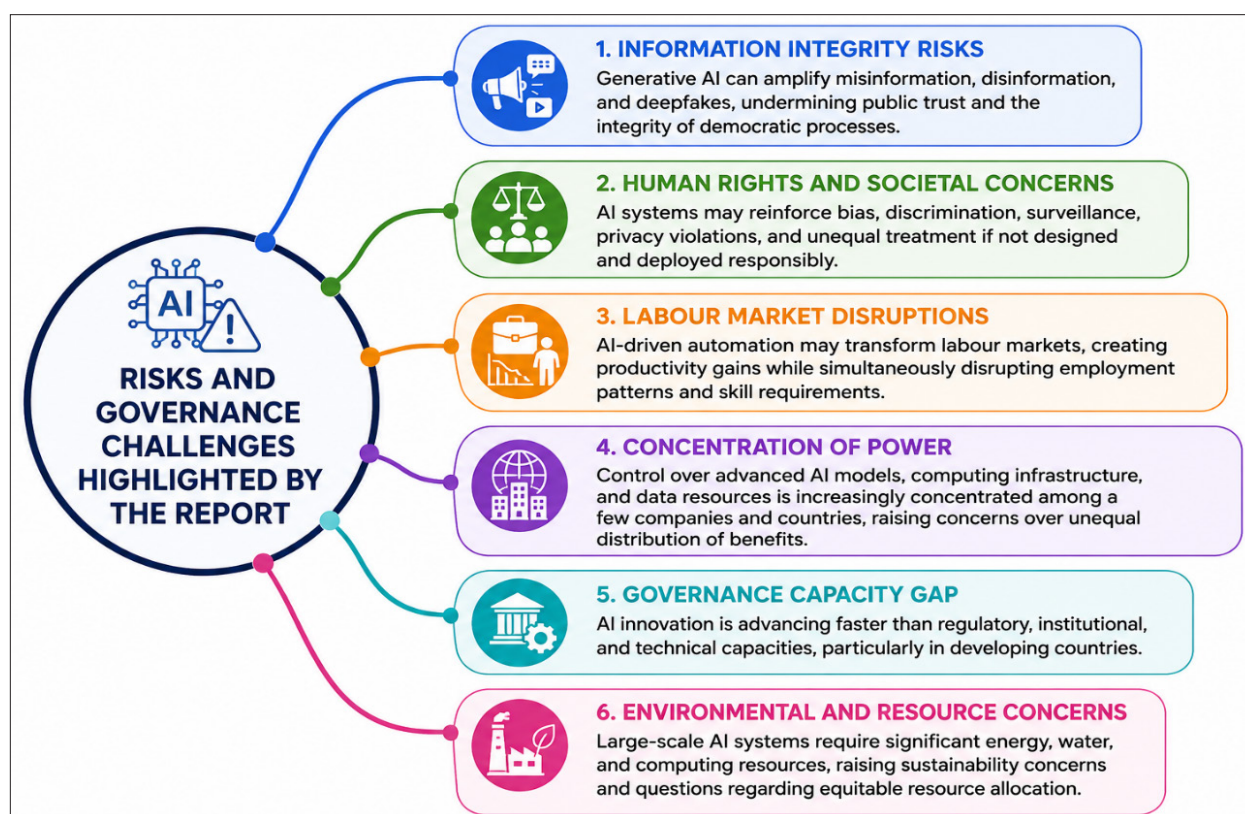
Key Findings of the UN Scientific Report on AI

- **Rapid Advancement in AI Capabilities:** AI capabilities in reasoning, coding, content generation, and scientific research are improving at an unprecedented pace.
- **AI as a General-Purpose Technology:** AI is emerging as a transformative technology with applications across health, education, agriculture, governance, and scientific research.
- **Concentration of AI Development:** Frontier AI development remains concentrated in a few countries and firms; the US accounts for about **75%** of leading AI compute capacity, while China accounts for **15%**.
 - ✓ Only 32 countries host advanced AI data centres, with 150 countries hosting none.
- **AI Is Creating a New Development Divide:** Countries lacking compute infrastructure, talent, data, and governance capacity risk being left behind in the AI economy.
- **Emergence of Agentic AI Systems:** AI systems are increasingly capable of autonomous planning and task execution, creating new governance challenges.
- **AI Can Accelerate Sustainable Development:** Responsible deployment of AI can support the

achievement of SDGs in sectors such as health, education, food systems, and climate action.

Relevance of Report Findings for India

- **Building AI Compute and Innovation Capacity:** The report's emphasis on compute infrastructure and research ecosystems underscores the importance of initiatives such as the **IndiaAI Mission**, indigenous AI models, and domestic GPU capacity.
- **Bridging the AI Capacity Gap:** India must strengthen access to high-performance computing, quality datasets, AI talent, and governance capabilities to ensure broad-based participation in the AI economy.
- **Leveraging AI for Development:** The report's findings align with India's efforts to deploy AI in healthcare, agriculture, education, language technologies, and Digital Public Infrastructure (DPI).
- **Voice of the Global South:** India's experience with digital public goods and inclusive technology governance positions it to advocate for equitable, development-oriented, and inclusive global AI governance frameworks.



Way Forward

- **Bridge the Global AI Capacity Gap:** Expand access to compute infrastructure, datasets, technical expertise, and governance capacity, particularly in developing countries.
- **Develop Better AI Evaluation Mechanisms:** Build independent testing, auditing, benchmarking, and post-deployment monitoring systems for frontier AI models.
- **Prepare for Agentic AI Systems:** Strengthen oversight mechanisms for increasingly autonomous AI systems capable of independent planning and action.
- **Promote Shared Global Evidence Standards:** Develop common scientific frameworks and measurement standards to support informed AI governance.
- **Deepen International Cooperation:** Strengthen

multilateral collaboration through UN-led processes to ensure that AI benefits are distributed more equitably across countries.

6.10. World's First Nuclear-Assisted Hydrogen Production Facility Based on the Copper-Chlorine Thermochemical Cycle

SYLLABUS

GS-3: Achievements of Indians in science & technology; indigenization of technology and developing new technology.

Context

The Department of Atomic Energy (DAE) inaugurated the world's first Hydrogen Production Facility based on the Copper–Chlorine (Cu–Cl) Thermochemical Cycle using nuclear process heat from the Fast Breeder Test Reactor (FBTR) at the Indira Gandhi Centre for Atomic Research (IGCAR), Kalpakkam.

About the Hydrogen Production Facility

- It is the **world's first hydrogen production facility** based on the **Copper–Chlorine (Cu–Cl) Thermochemical Cycle** using **nuclear process heat** from the **Fast Breeder Test Reactor (FBTR)**.
- The facility has been established as a **technology demonstrator** to validate hydrogen production using nuclear energy through the **indigenously developed Cu–Cl process** by the **Bhabha Atomic Research Centre (BARC), Mumbai**.
- It successfully integrates **nuclear process heat with hydrogen generation**, demonstrating the feasibility of **large-scale, carbon-free hydrogen production** using advanced nuclear reactors.
- The project is the result of **joint efforts by BARC and IGCAR**, involving research, process development, engineering design, equipment fabrication, installation, testing and commissioning.
- The facility will:**
 - ✓ Generate operational data for process validation.
 - ✓ Facilitate optimisation of the Cu–Cl process.
 - ✓ Support research for scaling up **commercial nuclear-assisted hydrogen production**.



ABOUT THE INDIRA GANDHI CENTRE FOR ATOMIC RESEARCH (IGCAR)



ESTABLISHED: 1971.

One of India's premier nuclear research institutions under the Department of Atomic Energy (DAE).

Nodal institution for India's Fast Breeder Reactor (FBR) Programme.

Designed, constructed and successfully operated the Fast Breeder Test Reactor (FBTR), which has served as a platform for the development and validation of fuels, materials and sodium technologies for over four decades.

The expertise gained through FBTR laid the technological foundation for the 500 MWe Prototype Fast Breeder Reactor (PFBR), the flagship of the second stage of India's Three-Stage Nuclear Power Programme.

Has developed internationally recognised capabilities in reactor physics, thermal hydraulics, advanced materials, sodium technology, fuel cycle research, instrumentation and control systems, remote handling, non-destructive evaluation, and high-temperature engineering.

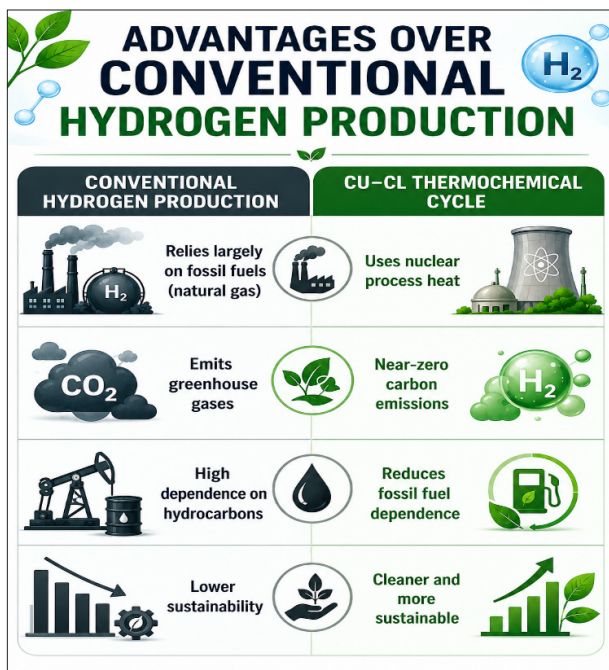
Continues to strengthen India's technological self-reliance and reinforce its position among the global leaders in advanced nuclear technologies.

LOCATION:
KALPAKKAM, TAMIL NADU

About the Copper–Chlorine (Cu–Cl) Thermochemical Cycle

- The **Copper–Chlorine (Cu–Cl) Thermochemical Cycle** is an advanced hydrogen production process that uses **nuclear process heat** to split water into **hydrogen and oxygen** through a series of thermochemical reactions.
- The process involves multiple **thermochemical reactions in which copper and chlorine compounds** are continuously recycled, while water is ultimately split into hydrogen and oxygen.
- The process has been **developed indigenously by the BARC**.
- It utilises **high-temperature process heat** generated from the **Fast Breeder Test Reactor (FBTR)** instead of relying on fossil fuels.
- The process produces **carbon-free (Pink) Hydrogen** by utilising nuclear energy as the primary heat source.
- Nuclear reactors provide continuous high-temperature process heat, enabling round-the-clock hydrogen production unlike intermittent renewable sources.
- It is considered one of the **most promising thermochemical hydrogen production technologies** because of:
 - ✓ **Relatively lower operating temperatures** compared to many other thermochemical cycles.
 - ✓ **Higher thermodynamic efficiency**.

- ✓ Reduced energy losses during hydrogen production.
- **The process:**
 - ✓ Significantly reduces dependence on fossil fuels.
 - ✓ Eliminates greenhouse gas emissions associated with conventional hydrogen production.
 - ✓ Enables production of **carbon-free (pink) hydrogen** using nuclear energy.



Significance of the Facility

- **World First Achievement:** Establishes India as the first country to demonstrate hydrogen production through the Cu-Cl thermochemical cycle using nuclear process heat.
- **Clean Energy Transition:** Provides a carbon-free pathway for hydrogen production, supporting India's decarbonisation and Net Zero ambitions.
- **Energy Security:** Reduces dependence on imported fossil fuels by producing hydrogen using indigenous nuclear resources.
- **Technological Breakthrough:** Demonstrates successful integration of advanced nuclear reactors with hydrogen production technologies.
- **Commercial Potential:** Generates valuable operational experience for scaling up nuclear-assisted hydrogen production for industrial and commercial deployment.
- **Strengthening India's Nuclear Programme:** Showcases the versatility of fast breeder reactors beyond electricity generation by utilising high-temperature process heat.
- **Boost to Indigenous Innovation:** Reflects the technological capabilities of BARC and IGCAR in advanced nuclear systems and clean energy technologies.
- **Supports India's Three-Stage Nuclear Programme:** Builds upon the expertise developed through the FBTR, which laid the foundation for the **500 MWe Prototype Fast Breeder Reactor (PFBR)**.
- **Promotes AtmaNirbhar Bharat & Viksit Bharat:** Reinforces India's commitment to technological self-reliance, sustainable development and a secure low-carbon energy future.



7.1. Netra Airborne Early Warning and Control System

SYLLABUS

GS-3: Achievements of Indians in science & technology; indigenization of technology and developing new technology.

Context

The Defence Research and Development Organisation (DRDO) has handed over the Final Operational Clearance (FOC) of the indigenous Netra Airborne Early Warning and Control (AEW&C) system to the Indian Air Force (IAF).

More on the News

- The FOC certificate was handed over to the IAF, nearly **nine years after the system received Initial Operational Clearance (IOC) in 2017**, certifying the platform for full operational service.
- Developed jointly by **DRDO, the IAF, certification agencies (CEMILAC and DGAQA), and Indian industry partners**, the system has already demonstrated its operational reliability during the **Balakot Air Strike (2019) and Operation Sindoor (2025)**.
- It strengthens India's airborne surveillance, command-and-control capabilities, and the vision of **Aatmanirbhar Bharat**.

About the Netra Airborne Early Warning and Control (AEW&C) System

- **Netra** is India's **first indigenously developed Airborne Early Warning and Control (AEW&C)** system, developed by DRDO's **Centre for Airborne Systems (CABS)** in collaboration with the IAF and Indian industry.
- It is mounted on the **Brazilian Embraer EMB-145 aircraft** and functions as an airborne surveillance, battle management, and command-and-control platform—often referred to as an **"Eye in the Sky."**

AEW&C (DRDO NETRA)

TOI

Indigenous airborne surveillance system



DEVELOPMENT

- Developed by DRDO
- Mounted on Embraer ERJ-145 aircraft
- Fully Indian mission system

CORE FUNCTION

- Airborne early warning
- Tactical airspace control
- Monitoring hostile aircraft and drones

TECHNICAL CAPABILITY

- Active electronically scanned radar
- 240–300 km detection range
- Secure data links Smaller footprint than AWACS

STRATEGIC VALUE

- Indigenous technology boost
- Rapid deployment capability
- Supplements larger AWACS fleet



- The system is equipped with an **indigenous Active Electronically Scanned Array (AESA) radar**, providing **240° radar coverage** and detecting low-flying aircraft, missiles, drones, and maritime targets up to **about 375 km**.

- It integrates advanced mission systems such as:
 - ✓ Secondary Surveillance Radar (SSR)
 - ✓ Identification Friend or Foe (IFF)
 - ✓ Electronic Support Measures (ESM)
 - ✓ Electronic Counter Measures (ECM)
 - ✓ Secure communication systems
 - ✓ Line-of-Sight (LOS) and Beyond-Line-of-Sight (BLOS) data links.
 - ✓ Mission computer and self-protection suite
 - ✓ Air-to-air refuelling capability for extended endurance.
- Unlike ground-based radars, the airborne platform overcomes limitations posed by terrain and the Earth's curvature, providing a real-time, integrated picture of the aerial battlespace.
- India currently operates **three Netra AEW&C aircraft** (No. 200 Squadron, Bhisiana, Punjab) and **three Phalcon AWACS**, while **six upgraded Netra Mk-1A systems** and **six Airbus A321-based Netra Mk-2 AEW&C aircraft** have been approved to further enhance the IAF's surveillance network.

Significance

- **Force Multiplier:** Provides early warning against aircraft, missiles, drones and maritime threats while directing fighter aircraft and air defence assets during combat.
- **Network-Centric Warfare:** Enhances real-time situational awareness, battle management and integration with the IAF's **Integrated Air Command and Control System (IACCS)**.
- **Operational Validation:** The FOC confirms that the platform has successfully completed all operational trials and is ready for full-scale deployment after proving its effectiveness during **Balakot and Operation Sindoor**.
- **Strategic Self-Reliance:** Reduces dependence on imported airborne surveillance platforms and showcases India's indigenous capabilities in advanced radar, avionics, electronic warfare and mission software.
- **Future-Ready Capability:** The upcoming **Netra Mk-1A and Netra Mk-2** programmes will provide longer-range surveillance, enhanced electronic warfare capabilities, greater endurance and improved coverage, strengthening India's air defence architecture against evolving threats such as stealth

aircraft, cruise missiles and unmanned aerial systems.

7.2. Indonesia Becomes First Foreign Buyer of Astra Missile

SYLLABUS

GS-3: *Achievements of Indians in science & technology; indigenization of technology and developing new technology.*

Context

India and Indonesia have signed a deal for the supply of Astra Mk-1 Beyond Visual Range Air-to-Air Missiles (BVRAAMs), marking the first-ever export of the Astra missile system and a major milestone in India's defence-export journey.

More on the News

- Indonesia becomes the first foreign customer of the Astra missile, which will be integrated with the Indonesian Air Force's **Su-30 fighter aircraft**.
- The deal was concluded alongside Indonesia's acquisition of the **BrahMos supersonic cruise missile**, reflecting deepening India-Indonesia defence cooperation and strengthening strategic ties in the Indo-Pacific.
- The export is significant because several countries in Asia and Africa operate **Russian-origin Su-30 aircraft**, potentially opening new export opportunities for India's indigenous air-to-air missile ecosystem.

About Astra Missile

- **Astra** is an indigenously developed **Beyond Visual Range Air-to-Air Missile (BVRAAM)** designed by DRDO for engaging enemy aircraft at long ranges beyond visual contact.
- **Astra Mk-1** has a range of about **80–110 km**, can operate at altitudes up to **20 km**, and travels at speeds of around **Mach 4.5**.
- The missile uses **inertial navigation with mid-course data-link updates** and an **active radar seeker** for terminal guidance, enabling high-precision target engagement.
- Astra has been integrated with the **Su-30MKI** and is planned for integration with platforms such as **Tejas Mk-1A** and other future combat aircraft.

Significance of the Deal

- **First Export of an Indigenous BVRAAM:** The deal marks India's entry into the global market for advanced air-to-air missiles.
- **Boost to Defence Exports:** It strengthens India's position as a defence exporter and supports the goal of expanding indigenous defence manufacturing under *Aatmanirbhar Bharat*.
- **Strategic Indo-Pacific Partnership:** The Astra and BrahMos deals deepen defence cooperation with Indonesia, a key maritime partner located near critical sea lanes such as the Malacca Strait.
- **Potential Gateway to New Markets:** Compatibility with widely used Su-30 aircraft could facilitate future exports to other countries operating similar fighter fleets.

7.3. INS Mahendragiri Commissioned into the Indian Navy

SYLLABUS

GS-3: *Achievements of Indians in science & technology; indigenization of technology and developing new technology.*

Context

Defence Minister Rajnath Singh recently commissioned INS Mahendragiri, an indigenous stealth frigate of the Indian Navy, at the Naval Dockyard, Visakhapatnam.

About INS Mahendragiri

- **INS Mahendragiri (F38)** is the **sixth Project 17A (Nilgiri-class) stealth guided-missile frigate** to be commissioned into the Indian Navy.
- Built by **Mazagon Dock Shipbuilders Limited (MDL), Mumbai**, the warship incorporates over **75% indigenous content**, reflecting India's growing self-reliance in defence manufacturing.
- Designed by the Indian Navy's **Warship Design Bureau**, it is named after **Mahendragiri Peak** in Odisha's Eastern Ghats.
- The ship is about **149 metres long** with a displacement of around **6,670 tonnes** and incorporates advanced stealth features, **Combined Diesel or Gas (CODAG) propulsion**, an **Integrated Platform Management System (IPMS)**, and advanced indigenous combat systems.

- Equipped with state-of-the-art weapons, sensors, and electronic warfare systems, it is capable of **anti-surface, anti-air, and anti-submarine warfare operations**, enhancing the Indian Navy's multi-dimensional maritime combat capability and supporting India's vision of **MAHASAGAR (Mutual and Holistic Advancement for Security and Growth Across Regions)**.

About Project 17A

- **Project 17A** is the follow-on programme to the **Shivalik-class (Project 17) frigates**, aimed at constructing advanced stealth frigates for the Indian Navy.
- **The project comprises seven frigates, being built by:**
 - ✓ **Mazagon Dock Shipbuilders Limited (MDL), Mumbai** – 4 ships
 - ✓ **Garden Reach Shipbuilders & Engineers (GRSE), Kolkata** – 3 ships
- With the commissioning of **INS Mahendragiri**, six Project 17A frigates—**Nilgiri, Udaygiri, Himgiri, Taragiri, Dunagiri, and Mahendragiri**—have entered service. **INS Vindhyagiri** is the only remaining ship yet to be commissioned.
- Compared to Project 17 frigates, Project 17A ships feature enhanced stealth characteristics, advanced sensors and weapons, integrated platform management systems, and improved automation.

7.4. DRDO Conducts Successful Flight-Test of Pinaka Long Range Guided Rocket

SYLLABUS

GS-3: *Achievements of Indians in science & technology; indigenization of technology and developing new technology.*

Context

The Defence Research and Development Organisation (DRDO) recently successfully conducted the flight-test of the Pinaka Long Range Guided Rocket (LRGR) at the Integrated Test Range (ITR), Chandipur, Odisha.

Key Highlights of the Index

- The rocket was tested for a **user-defined minimum range of 60 km** and successfully executed all planned in-flight manoeuvres before striking the target with

high precision along the predicted trajectory.

- All deployed range instrumentation tracked the rocket throughout its flight, validating its guidance, navigation, and control performance.
- Defence Minister Rajnath Singh described the successful test as a **major milestone in India's indigenous capability for long-range guided rocket systems**.
- The trial is part of ongoing efforts to enhance the precision-strike capability of the **Pinaka weapon system**, a key component of the Indian Army's artillery modernization programme.

About the Pinaka Long Range Guided Rocket (LRGR)

- Pinaka is an **indigenously developed multi-barrel rocket launcher (MBRL)** system of the Indian Army, designed to deliver rapid and concentrated firepower over large areas.
- The **Long Range Guided Rocket (LRGR)** is a precision-guided variant of the Pinaka system, featuring enhanced range and accuracy compared to earlier versions.
- The rocket was tested for a **user-defined minimum range of 60 km**. Earlier, the LRGR-120 variant had successfully demonstrated a **maximum range of 120 km** during its maiden flight test in December 2025.
- The **Pinaka LRGR rocket** has been designed by **Armament Research and Development Establishment (ARDE)** in association with **High Energy Materials Research Laboratory (HEMRL)** and **Defence Research and Development Laboratory (DRDL)**.

Pinaka Weapon System: Evolution

- **Pinaka Mk-I:** Unguided rocket system with a range of about **37–45 km**.
- **Pinaka Guided Rocket:** Precision-guided variant with a range of about **75 km** and significantly improved accuracy.
- **Pinaka LRGR (Long Range Guided Rocket):** Advanced guided variant capable of engaging targets up to **120 km**; the latest test validated its performance at a **user-defined minimum range of 60 km**.

7.5. Centre Names 23 JeM, LeT Operatives as Terrorists

SYLLABUS

GS-I (Prelims): *Current Events of National and International Importance.*

Context

The Ministry of Home Affairs (MHA) designated 23 individuals linked to Jaish-e-Mohammed (JeM), Lashkar-e-Taiba (LeT) and affiliated terror networks as terrorists under the Unlawful Activities (Prevention) Act, 1967 (UAPA).

More on the News

- The designated individuals are accused of involvement in terror recruitment, infiltration, training, financing, radicalisation and logistical support for attacks targeting India.
- Several of them are wanted by Indian investigative agencies in connection with major terrorism-related cases.
- The list includes operatives associated with **JeM, LeT and affiliated organisations**, including individuals linked to cross-border terror networks and attacks in Jammu & Kashmir.
- With these additions, the number of individuals designated as terrorists under the UAPA has increased to **80**.

About Designation of Individuals as Terrorists under UAPA

- The **Unlawful Activities (Prevention) Act, 1967 (UAPA)** is India's principal anti-terror legislation.
- The **UAPA (Amendment) Act, 2019** empowered the Central Government to designate **individuals**, in addition to organisations, as terrorists.
- Such individuals are added to the **Fourth Schedule** of the Act if the government believes they are involved in terrorism.
- Designation as a terrorist is distinct from a criminal conviction; however, it enables stronger legal measures such as surveillance, restrictions on movement, financial scrutiny and asset-related actions.
- An affected individual may seek removal of their name, and the request is examined by a **Review Committee headed by a sitting or retired High Court judge**.



HISTORY, ART AND CULTURE

8.1. PM Pays Tribute to Tribal Heroes on Hul Diwas

SYLLABUS

GS-I (Prelims): *Current Events of National and International Importance.*

Context

On the occasion of Hul Diwas (30th June), the Prime Minister paid tributes to the tribal heroes of the Santhal Hul (Rebellion) of 1855, one of the earliest and most significant tribal uprisings against British colonial rule.

About Hul Diwas

- **Hul Diwas** is observed annually on **30 June** to commemorate the **Santhal Rebellion of 1855**, also known as the **Santhal Hul** ("Hul" means revolution or uprising).
- The movement was led by **Sidho Murmu, Kanhu Murmu**, their brothers **Chand Murmu and Bhairav Murmu**, along with their sisters **Phulo and Jhano**, against the exploitative practices of the British administration, zamindars, moneylenders and other outsiders (Dikus).
- The rebellion began on **30 June 1855 at Bhognadih village** in present-day **Sahibganj district of Jharkhand**, where thousands of Santhals gathered and declared resistance against colonial authority.
- Although the uprising spread rapidly across large parts of present-day Jharkhand, Bihar and West Bengal, it was **brutally suppressed by the British through martial law and superior military force by early 1856**, resulting in the deaths of thousands of Santhals.
- The rebellion nevertheless exposed the deep-rooted exploitation of tribal communities and contributed to administrative reforms, including the creation of the **Santhal Pargana** region with special provisions for tribal protection.

Significance of the Santhal Hul

- **Tribal Resistance to Colonial Rule:** The Santhal Hul is regarded as one of the earliest and largest organised tribal uprisings against British rule, predating the Revolt of 1857.
- **Assertion of Land and Community Rights:** The movement symbolised resistance against land alienation, exploitative revenue practices, indebtedness and the erosion of traditional tribal institutions.
- **Legacy for Tribal Welfare and Governance:** The rebellion prompted the colonial administration to introduce reforms and recognise the distinct socio-cultural identity and land rights of tribal communities in the Santhal region.

8.2. Bankim Chandra Chattopadhyay

SYLLABUS

GS-1: *Modern Indian history from about the middle of the eighteenth century until the present- significant events, personalities, issues.*

Context

Prime Minister Narendra Modi paid tributes to Bankim Chandra Chattopadhyay on his 188th birth anniversary and highlighted that 2026 marks the 150th anniversary of *Vande Mataram*.

About Bankim Chandra Chattopadhyay

- Born on **26 June 1838 at Kathalpara, Naihati** (present-day North 24 Parganas district, West Bengal) into an orthodox Brahmin family.
- Educated at **Hooghly College, Presidency College**, and the **University of Calcutta**, becoming one of its **first graduates**.
- Joined the British Indian administration in **1858 as**



a **Deputy Magistrate** and served for over **32 years** before retiring in 1891.

- Obtained a **Law degree** in 1869.
- Widely regarded as the **pioneer (father) of modern Bengali prose fiction** and one of the foremost figures of the **Bengal Renaissance**.
- Believed that the cultures of the East and the West were complementary, but opposed blind imitation of the West.
- Advocated a rational interpretation of Hindu philosophy and scriptures.
- Founded the influential Bengali literary journal **Bangadarshan** in 1872, which became a major platform for Bengali literature and inspired several emerging writers, including Rabindranath Tagore.
- Initially wrote poetry and essays; his first English novel, **Rajmohan's Wife** (1864), was the first Indian novel written in English by a Bengali author.
- **Authored several literary classics, including:**
 - ✓ **Durgeshnandini** (1865)
 - ✓ **Kapalkundala** (1866)
 - ✓ **Mrinalini** (1869)
 - ✓ **Krishnakanter Will** (1878)
 - ✓ **Anandamath** (1882)
 - ✓ **Devi Chaudhurani** (1884)
 - ✓ **Sitaram** (1886)
 - ✓ **Krishna Charitra**
- Passed away on **8 April 1894** in Calcutta (present-day Kolkata).

Legacy of Bankim Chandra Chattopadhyay

- **Pioneer of Modern Bengali Literature:** Established prose fiction as a major literary medium in Bengali and laid the foundation of the modern Bengali novel.
- His novels blended **history, romance, philosophy, social reform and nationalism**.
- Inspired later literary giants such as **Rabindranath Tagore and Sarat Chandra Chattopadhyay**.
- **Composer of India's National Song:** Composed **Vande Mataram**, which first appeared in his novel **Anandamath**.
 - ✓ **Vande Mataram** became one of the most powerful symbols of India's freedom movement and inspired countless freedom fighters.

✓ India is commemorating the **150th anniversary of Vande Mataram** in 2026.

- ✓ **Vande Mataram** was adopted as the **National Song** by the Constituent Assembly on **24 January 1950**.
- **Anandamath and National Awakening:** **Anandamath** (1882) is based on the **Sannyasi Rebellion** of the late eighteenth century.
 - ✓ During the freedom struggle, **Vande Mataram** emerged as a rallying cry against British rule.
- **Champion of Nationalism and Cultural Pride:** His writings awakened patriotism, self-respect, and cultural pride during British colonial rule.
 - ✓ Through his literary works, he linked India's cultural heritage with the emerging nationalist movement.
 - ✓ He demonstrated that one could serve within the colonial administration while inspiring national consciousness through literature.
- **Social and Intellectual Contributions:** His works addressed important social issues such as **widow remarriage, women's role in society, morality and social customs**.
 - ✓ In **Krishna Charitra**, he attempted to interpret Lord Krishna through rational and historical analysis rather than mythology alone.
 - ✓ Advocated the use of reason and critical inquiry in understanding Indian philosophical traditions.
- **Enduring Legacy:** Revered as "**Sahitya Samrat**" (**Emperor of Literature**) for his immense contribution to Indian literature.

8.3. Dr. Syama Prasad Mookerjee

SYLLABUS

GS-1: Modern Indian history from about the middle of the eighteenth century until the present- significant events, personalities, issues.

Context

Prime Minister Narendra Modi paid tributes to Dr. Syama Prasad Mookerjee on his 125th birth anniversary (6 July 2026), remembering his contributions to nation-building, education, industrial development and national integration.

About Dr. Syama Prasad Mookerjee

- Dr. Syama Prasad Mookerjee was born on **6 July 1901** in Kolkata to **Sir Ashutosh Mukherjee**, the eminent educationist, jurist and former Vice-Chancellor of the University of Calcutta.
- He became the **youngest Vice-Chancellor of the University of Calcutta** in 1934 at the age of 33 and played an important role in strengthening higher education in India.
- During the Partition period, he strongly advocated that large parts of Bengal should remain within the Indian Union, thus contributing to the formation of present-day **West Bengal**.
- After Independence, he served as **Minister for Industry and Supply** in India's first Cabinet under Prime Minister Jawaharlal Nehru and contributed to the country's early industrial development.
- He resigned from the Union Cabinet in **1950** over differences regarding the **Nehru-Liaquat Pact**.
- In **1951**, he founded the **Bharatiya Jana Sangh**, which emerged as an important political force in post-independence India.
- He strongly advocated national integration and opposed the system of separate permits for entry into **Jammu & Kashmir**.
- Dr. Mookerjee passed away on **23 June 1953** while under detention in Jammu & Kashmir.

Legacy

- Dr. Mookerjee is remembered as a distinguished educationist, parliamentarian and nationalist leader who left a lasting impact on India's political and intellectual life.
- His contributions to higher education, industrial development and public policy helped shape the foundations of independent India.
- Through the establishment of the Bharatiya Jana Sangh, he played a significant role in the evolution of India's democratic and political landscape.
- His commitment to national unity and territorial integration continues to be widely remembered and commemorated.

8.4. Rettamalai Srinivasan Birth Anniversary

SYLLABUS

GS-1: *Modern Indian history from about the middle of the eighteenth century until the present- significant events, personalities, issues.*

Context

Vice President C. P. Radhakrishnan paid floral tributes to eminent social reformer Rettamalai Srinivasan on his birth anniversary on 7th July.

About Rettamalai Srinivasan & His Legacy

- **Rettamalai Srinivasan (7 July 1859/1860 – 18 September 1945)** was a pioneering Dalit leader, social reformer, journalist, and political activist from present-day Tamil Nadu. He is regarded as one of the foremost leaders of the Depressed Classes movement in South India.
- Born in **Kozhiyalam village (present-day Chengalpattu district, Tamil Nadu)**, he pursued education despite severe social discrimination and emerged as one of the earliest educated leaders from the marginalized communities.
- After moving to Madras (Chennai), he founded the **Paraiyar Mahajana Sabha (1891)**, later known as the **Adi-Dravida Mahajana Sabha**, to promote the social, educational, and political rights of the Depressed Classes.
- He also launched the Tamil journal **Paraiyan (1893)** to highlight caste discrimination and advocate social reform.
- Along with **Dr. B. R. Ambedkar**, he represented the Depressed Classes at the **First and Second Round Table Conferences (1930–31)** and advocated political representation and civil rights for marginalized communities.
- As a member of the **Madras Legislative Council**, he played a significant role in securing access for the Depressed Classes to public roads, wells, tanks, and other public spaces, becoming a pioneering voice against untouchability and caste discrimination.

8.5. Prambanan Temple Restoration Project

SYLLABUS

GS-1: Indian Culture – Salient aspects of Art Forms, Literature and Architecture from ancient to modern times.

GS-2: Effect of Policies and Politics of Developed and Developing Countries on India's interests, Indian Diaspora.

Context

India and Indonesia have jointly launched the Prambanan Temple Restoration and Conservation Project at the UNESCO World Heritage-listed Prambanan Temple Complex in Yogyakarta, Indonesia.

More on the News

- Prime Minister Narendra Modi and Indonesian President Prabowo Subianto jointly inaugurated the project and unveiled a commemorative plaque marking its commencement.
- The conservation work will be undertaken by the **Archaeological Survey of India (ASI)** in collaboration with Indonesia's heritage authorities.
- The project reflects the growing cultural dimension of the India–Indonesia Comprehensive Strategic Partnership.

About the Prambanan Temple

- Prambanan is located near **Yogyakarta in Central Java, Indonesia**, and was designated a **UNESCO World Heritage Site in 1991**.
- Built in the **9th century CE** during the **Mataram Kingdom**, it represents one of the finest examples of Hindu temple architecture in Southeast Asia.
- Prambanan is the **largest Hindu temple complex in Indonesia** and the **largest Shiva temple complex in Southeast Asia**, reflecting the historical influence of Hindu civilization in the Indonesian archipelago.
- Built in the **Shaivite tradition**, the complex is dedicated to the **Trimurti—Brahma, Vishnu, and Shiva**, with the central Shiva temple serving as its most prominent shrine.
- The complex follows a **mandala-based layout** and

originally comprised around **240 temples**. Its central Shiva temple rises to about **47 metres**, and the site is renowned for its towering spires and intricate bas-reliefs depicting scenes from the **Ramayana** and other Hindu traditions.

- Prambanan stands as a lasting symbol of the centuries-old cultural, spiritual, and civilizational links between India and Indonesia.

Significance of the Restoration Project

- **Preservation of a Shared Civilizational Legacy:** The project seeks to conserve one of the most significant symbols of Hindu heritage in Southeast Asia, reflecting the deep historical links between Indian and Indonesian civilizations.
- **Expanding India's Heritage Diplomacy:** The initiative reinforces India's growing role in conserving cultural heritage beyond its borders and showcases heritage conservation as an important instrument of soft power.
- **Conserving a Vulnerable UNESCO Heritage Site:** The project supports long-term conservation of a monument that has faced repeated damage from earthquakes, volcanic activity, weathering, and centuries of structural deterioration.
- **Strengthening India–Indonesia Relations:** Beyond heritage conservation, the project adds a strong cultural dimension to bilateral ties and promotes greater people-to-people engagement between the two countries.

India's Heritage Diplomacy Initiatives

- **Angkor Wat and Ta Prohm, Cambodia:** ASI has undertaken major conservation and restoration work at the Angkor World Heritage Complex, particularly the Ta Prohm Temple.
- **Ananda Temple, Myanmar:** India undertook extensive restoration of the 12th-century Ananda Temple in Bagan after it was damaged by an earthquake.
- **Wat Phou, Laos:** India has supported conservation and restoration efforts at the UNESCO-listed Wat Phou Temple Complex, an important Khmer-era Hindu site.

- **Borobudur Temple Documentation, Indonesia:** ASI has previously undertaken extensive documentation of the Borobudur Temple Compounds in Indonesia.
- **My Son Sanctuary, Vietnam:** India has assisted in

conservation and restoration work at the UNESCO-listed My Son temple complex, reflecting its commitment to preserving shared cultural heritage in Southeast Asia.

PRAMBANAN TEMPLE

A Masterpiece of Heritage and Devotion

QUICK FACTS

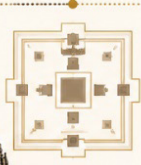
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Yogyakarta, Central Java, Indonesia
- BUILT**
9th Century CE
- DYNASTY**
Mataram Kingdom
- UNESCO WORLD HERITAGE SITE**
1991
- SIGNIFICANCE**
Largest Hindu temple complex in Indonesia
- DISTINCTION**
Largest Shiva temple complex in Southeast Asia

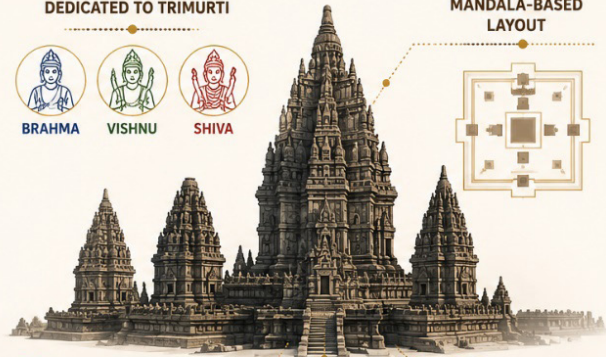
ARCHITECTURAL HIGHLIGHTS

DEDICATED TO TRIMURTI

 BRAHMA
  VISHNU
  SHIVA

MANDALA-BASED LAYOUT





~240
TEMPLE STRUCTURES
(Originally)

FAMOUS FOR INTRICATE
BAS-RELIEFS

Depicting scenes from the Ramayana and other Hindu traditions

47 METRES
Height of the central Shiva temple

8.6. The Iconic 200-Year-Old Jodhpur Mojari Receives GI Tag

SYLLABUS

GS-I (Prelims): *Current Events of National and International Importance.*

Context

The Centre has granted a Geographical Indication (GI) tag to Jodhpur's nearly 200-year-old Mojari craft, providing official recognition and strengthening the identity of Rajasthan's traditional footwear heritage.

More on the News

- The GI certificate was awarded to the **Jodhpur Handicraft Exporters Association** and **Gram Vikas**

Seva Sansthan, following an application submitted in 2021.

- The craft supports around **400 manufacturers**, over **35,000 artisans**, and is practised in more than **5,000 households** in Jodhpur.
- The domestic market for Jodhpur Mojari is estimated at **₹100 crore**, while exports are worth around **₹10 crore**; the GI tag is expected to boost exports and improve market access.

About Jodhpur Mojari

- Originating in the **early 19th century in the Marwar region of Rajasthan**, Jodhpur Mojari is a traditional handcrafted leather footwear associated with Jodhpur and its surrounding areas.
- Traditionally crafted by the **Jinagar (Jingar)**

community, historically known for making **jeen (saddles)** and **myaan (leather sheaths)** for armies.

- Once patronised by royal families, the craft evolved into a distinctive cultural symbol of Jodhpur and is known for its durability, comfort, and intricate embroidery.
- The footwear is designed to suit Rajasthan's hot climate and is traditionally worn by both men and women.

About Geographical Indication (GI) Tag

- A **Geographical Indication (GI)** identifies goods whose quality, reputation, or characteristics are essentially linked to a specific geographical origin.
- GI tags help protect traditional products from imitation, preserve cultural heritage, and enhance market value and export potential.
- GI protection in India is provided under the **Geographical Indications of Goods (Registration and Protection) Act, 1999**, enacted in compliance with the **WTO-TRIPS Agreement**, and came into force in **2003**.
- GI registrations are administered by the **Department**

for **Promotion of Industry and Internal Trade (DPIIT)**, Ministry of Commerce and Industry through the GI Registry at Chennai.

- **Darjeeling Tea** became India's **first GI-tagged product** in **2004-05**.

8.7. Human Skeletal Remains from Rakhigarhi Transferred to Anthropological Survey of India

SYLLABUS

GS-I (Prelims): *Current Events of National and International Importance.*

Context

The Archaeological Survey of India (ASI) has transferred human skeletal remains excavated from Rakhigarhi, Haryana, to the Anthropological Survey of India (AnSI) for advanced scientific examination.

More on the News

- The skeletal remains were recovered during the **2025–26 excavation season** at **Mound No. 7**, identified as an ancient Harappan cemetery.

ASI Archaeological Survey of India	AnSI Anthropological Survey of India
	
 Established 1861	 Established 1945
 Nodal Ministry Ministry of Culture	 Nodal Ministry Ministry of Culture
 Primary Mandate Archaeological research, excavation, conservation & protection of India's archaeological heritage.	 Primary Mandate Anthropological research in biological, socio-cultural & archaeological anthropology.
 Key Functions Protection of monuments & sites, excavations, heritage conservation, archaeological surveys & museums.	 Key Functions Studies on human populations, ancient human skeletal remains, population history & human evolution.
 Reach Administers and protects centrally protected monuments, sites and archaeological remains across India.	 Specialisation Maintains repositories & laboratories for scientific examination of human remains and related research.

★ ASI uncovers & preserves the past; AnSI deciphers the human story behind it. ★

- Excavations unearthed **eight burials**, including **three complete human skeletons** and skeletal fragments from other burials.
- The remains have been transferred to AnSI's specialised repository and laboratory in Kolkata for multidisciplinary scientific investigations.
- Proposed studies include **ancient DNA analysis, isotope studies, osteological examination, palaeopathological assessment, facial reconstruction, dietary analysis, mobility patterns and ancestry research**.
- The initiative is expected to provide deeper insights into the health, lifestyle, population history, biological relationships and burial practices of the Harappan people.

About Rakhigarhi

- Located in the **Hisar district of Haryana**, Rakhigarhi is one of the largest known urban centres of the **Indus-Saraswati (Harappan) Civilisation** and is regarded as the largest Harappan site discovered in India.
- The site comprises multiple settlement mounds and has yielded evidence of advanced urban planning, craft production, trade networks and burial practices of the Mature Harappan period.
- Earlier archaeological and genetic studies from Rakhigarhi have contributed significantly to understanding the ancestry and population history of Harappan communities.



9.1. Global Passport Index 2026

SYLLABUS

GS-I (Prelims): *Current Events of National and International Importance.*

Context

The Global Passport Index 2026, released by Global Citizen Solutions, ranked India 125th among 199 countries and territories, down one position from 124th in 2025.

Key Highlights of the Index

- **Sweden** topped the 2026 rankings, followed by **Switzerland** and **Finland**. **Nine of the top ten positions** were occupied by European countries, highlighting Europe's continued dominance in global mobility, quality of life, and economic indicators.
- ✓ **Singapore**, ranked 10th, was the only non-European in the top 10.
- **India ranked 125th** with an overall score of **45.1**, its highest score in the last five years despite a marginal decline in rank. Indian passport holders currently enjoy **visa-free access to 26 destinations**.
- Among India's neighbours, **Bangladesh (166th)** and **Pakistan (188th)** ranked below India, while **China (104th)** secured a significantly higher position.
- India's **Mobility Rank (135th)** remained lower than its overall rank, indicating that its performance was supported by factors such as **investment attractiveness (94th)** and **quality of life (118th)** rather than travel freedom alone.

About the Global Passport Index

- The **Global Passport Index** is published annually by **Global Citizen Solutions** and evaluates passports using a multidimensional framework rather than relying solely on visa-free travel access.
- **The index is based on three weighted indices:**
 - ✓ **Enhanced Mobility Index (50%)**
 - ✓ **Investment Index (25%)**
 - ✓ **Quality of Life Index (25%)**

- The methodology assesses factors such as global mobility, investment attractiveness, economic opportunities, personal freedoms, and living conditions to determine the overall value of a passport.
- Unlike the **Henley Passport Index**, which primarily ranks passports based on the number of destinations accessible without a prior visa, the Global Passport Index incorporates investment and quality-of-life considerations in addition to travel mobility.

9.2. Bukhman International Booker Prize

SYLLABUS

GS-I (Prelims): *Current Events of National and International Importance.*

Context

The International Booker Prize for translated fiction will be renamed the Bukhman International Booker Prize from 2027 following a decade-long funding partnership between the Booker Prize Foundation and Bukhman Philanthropies.

More on the News

- **Bukhman Philanthropies**, founded by **Daria and Dmitri Bukhman**, has committed funding for the prize for the next **10 years**, providing about **1.4£ million annually** to support translated literature and the translation ecosystem.
- With the new partnership, the winner's prize money will **double from £50,000 to £100,000** (about ₹1.28 crore), to be shared equally between the **author and translator**. The shortlisted books will continue to receive **5,000£** each.
- The additional funding will support initiatives such as wider access to translated literature, library outreach programmes, prison reading initiatives, accessible editions (Braille and audio), and professional development opportunities for translators.

- The announcement coincides with the **10th anniversary of the International Booker Prize in its current form**, which has recognised **11 winners in 11 different languages** since 2016.

About the Booker Prizes

- The **Booker Prize** was established in **1969**, and is awarded annually to the best original novel written in English and published in the **UK or Ireland**. It is open to writers of any nationality.
- The **International Booker Prize** is awarded annually to the best work of **fiction translated into English** and published in the UK or Ireland. The prize is shared equally between the **author and translator**.
- It was introduced in 2005 as the Man Booker International Prize. Between 2005 and 2015, it was awarded biennially for an author's overall contribution to fiction. Since 2016, it has been awarded annually.
- From **2027**, the International Booker Prize will be renamed the **Bukhman International Booker Prize** following a 10-year funding partnership with Bukhman Philanthropies.

Indian Winners

- **Booker Prize**
 - ✓ V. S. Naipaul — In a Free State (1971)
 - ✓ Salman Rushdie — Midnight's Children (1981)
 - ✓ Arundhati Roy — The God of Small Things (1997)
 - ✓ Kiran Desai — The Inheritance of Loss (2006)
 - ✓ Aravind Adiga — The White Tiger (2008)
- **International Booker Prize**
 - ✓ Geetanjali Shree, translated by Daisy Rockwell — Tomb of Sand (2022)
 - ✓ Banu Mushtaq, translated by Deepa Bhashti — Heart Lamp (2025)

9.3. World's First Ever Sub-1 Nanometre Chip Technology

SYLLABUS

GS-I (Prelims): *Current Events of National and International Importance.*

Context

International Business Machines (IBM) has unveiled the world's first sub-1 nanometre (0.7 nm/7 angstrom) semiconductor chip technology, marking a breakthrough in next-generation semiconductor manufacturing.

About the Sub-1 Nanometre Chip Technology

- IBM introduced a revolutionary **three-dimensional transistor architecture**, called **Nanostack**, the industry's first known **3D nanosheet-based design** capable of enabling chip technology below the 1 nm node.
- The architecture vertically stacks and staggers transistors using **3D sequential integration**, allowing nearly **100 billion transistors** to be packed onto a fingernail-sized chip—almost **twice the density** of IBM's 2 nm chip unveiled in **2021**.
- It also enables different material combinations within each stacked layer, allowing independent optimisation of speed, power efficiency, and performance.
- IBM stated that the new technology could provide **up to 50% higher performance or 70% greater energy efficiency** than its 2 nm chips.
- Researchers also demonstrated **40% SRAM scaling**, improving memory density and supporting high-bandwidth AI workloads.
- The technology extends semiconductor scaling into the **angstrom era**, where chip features approach atomic dimensions, and is expected to reach commercial production within the **next five years**.

Significance

- The breakthrough addresses the physical limits of conventional transistor scaling and demonstrates that continued semiconductor miniaturisation remains possible beyond the nanometre era.
- Higher transistor density, improved energy efficiency, and enhanced computing performance could accelerate applications in **generative AI, cloud computing, high-performance computing, advanced smartphones, data centres, communications equipment, transportation systems, and critical infrastructure**.

- The innovation also reinforces IBM's leadership in semiconductor research and provides a roadmap for at least another decade of chip scaling, supporting the future of AI-driven computing.

9.4. Union Health Minister Launches Aarogya Setu 2.0

SYLLABUS

GS-I (Prelims): *Current Events of National and International Importance.*

Context

Union Health Minister recently launched Aarogya Setu 2.0, transforming the COVID-era contact tracing application into a comprehensive National Health App under the Ayushman Bharat Digital Mission (ABDM).

About Aarogya Setu 2.0

- Originally developed during the **COVID-19 pandemic** for contact tracing, risk awareness and citizen engagement, the application has now been repurposed by the **National Health Authority (NHA)** as a **Personal Health Record (PHR)** application and a **single citizen-centric digital gateway for health services**.
- The platform enables users to create and manage **Ayushman Bharat Health Accounts (ABHA)**, access and share digital health records with consent, and utilise digital health services through a unified interface.
- With nearly **20 crore downloads**, the application is expected to accelerate citizen adoption of India's digital health ecosystem and mainstream the use of ABDM services across the country.

About Ayushman Bharat Digital Mission (ABDM)

- Launched in **2021**, ABDM aims to create an **interoperable digital health ecosystem** by providing every citizen with a unique digital health identity and enabling seamless exchange of health records with consent.
- Its key building blocks include **ABHA (Ayushman Bharat Health Account)**, **Healthcare Professionals**

Registry (HPR), Health Facility Registry (HFR) and a consent-based health information exchange framework.

9.5. 3rd NAMASTE Day

SYLLABUS

GS-I (Prelims): *Current Events of National and International Importance.*

Context

The Ministry of Social Justice & Empowerment commemorated the 3rd NAMASTE Day on 14 July 2026, marking three years of the National Action for Mechanized Sanitation Ecosystem (NAMASTE) Scheme.

More on the News

- **NAMASTE Day** is observed annually to recognise the contribution of sanitation workers and reaffirm the commitment to their **dignity, safety, and social security**.
- It promotes awareness regarding **mechanised sanitation, occupational safety, workers' rights, and the elimination of hazardous sanitation practices**.

About the NAMASTE Scheme

- **NAMASTE (National Action for Mechanized Sanitation Ecosystem)** is a **Central Sector Scheme** jointly implemented by the **Ministry of Social Justice & Empowerment (MoSJE)** and the **Ministry of Housing & Urban Affairs (MoHUA)** through the **National Safai Karamcharis Finance & Development Corporation (NSKFDC)**.
- Implemented during **FY 2023–24 to FY 2025–26**, the scheme aims to eliminate hazardous manual cleaning of sewers and septic tanks through mechanisation while ensuring the dignity and safety of sanitation workers.
- It covers **Sewer and Septic Tank Workers (SSWs)** and, since **June 2024**, **waste pickers** engaged in solid-waste management.
- The scheme seeks to ensure that **no sanitation worker is required to enter sewers or septic tanks for cleaning**, promoting a fully mechanised sanitation ecosystem.

9.6. MECON Limited Granted Miniratna Category-I Status

SYLLABUS

GS-I (Prelims): *Current Events of National and International Importance.*

Context

The Ministry of Steel has granted Miniratna Category-I status to MECON Limited, recognising its strong financial performance and providing greater financial and operational autonomy to support its future growth and expansion.

About MECON Limited

- It is a **Schedule 'A' Central Public Sector Enterprise (CPSE)** under the administrative control of the **Ministry of Steel**.
- Established in **1959** and headquartered in **Ranchi, Jharkhand**, it is one of India's premier engineering, consultancy, project management and contracting organisations.

- The company has made significant contributions to the development of India's steel sector and has diversified its operations into **mining, infrastructure, power, oil & gas**, and other core sectors.
- The company reported continuous profits during the last three financial years, recording a **Profit Before Tax (PBT)** of **₹77.62 crore (FY 2023-24, restated)**, **₹32.08 crore (FY 2024-25, restated)** and **₹104.53 crore (FY 2025-26)**.
- It also reported a **positive net worth of ₹535.42 crore as on 31 March 2026**, fulfilling the financial requirements for the status.

Classification of CPSEs

- The government classifies Central Public Sector Enterprises (CPSEs) into **three** groups, i.e. **Maharatna, Navratna, and Miniratna**.
- The main aim of assigning the **"ratna"** statuses to various CPSEs was to give operational freedom and decision-making power to the state-run entities.

Criteria	Maharatna	Navratna	Miniratna
Eligibility	- Must already be a Navratna company and listed on the Stock exchange with minimum prescribed public shareholding under SEBI regulations - During the last three years, it should have an average annual turnover of over ₹25,000 crore, a net worth exceeding ₹15,000 crore, and a net profit after tax above ₹5,000 crore - Additionally, the CPSE should have a significant global presence or international operations	- Must already be a Miniratna I, Schedule 'A' CPSE and have obtained an 'excellent' or 'very good' MoU rating in three of the last five years - It should have a composite score of 60 or more in six performance indicators like profitability, productivity, efficiency, etc.	Miniratna Category-I: The CPSEs which have reported profits in three consecutive years, have a pre-tax profit of ₹30 crore or more in at least one of the three years, and have a positive net worth are eligible to be considered for grant of Miniratna-I status. Miniratna Category-II: The CPSEs with a profit for the last three successive years and have a positive net worth are eligible to be considered for grant of Miniratna-II status.
Financial Autonomy	Can invest up to ₹5,000 crore or 15% of their net worth in a single project without government approval	Can invest up to ₹1,000 crore or 15% of their net worth in a single project without government approval	Category I: Can invest up to ₹500 crore or an amount equal to their net worth, whichever is less Category II: Can invest up to ₹300 crore or 50% of their net worth, whichever is lower
Number of CPSEs	14	27	Around 74

9.7. India's First Private Point-in-Space (PinS) Instrument Approach Procedure

SYLLABUS

GS-I (Prelims): *Current Events of National and International Importance.*

Context

India has approved its first Private Point-in-Space (PinS) Instrument Approach Procedure for helicopter operations at Undavalli Heliport, Andhra Pradesh, marking a significant milestone in the country's aviation modernisation efforts.

More on the News

- The procedure was developed by the **Airports Authority of India (AAI)** and approved by the **Directorate General of Civil Aviation (DGCA)** in accordance with **ICAO Standards and Recommended Practices (SARPs)**.
- **PinS (Point-in-Space)** uses satellite-based navigation technology to enable helicopters to conduct safe and precise instrument approaches to heliports that lack conventional instrument landing infrastructure.
- The system improves **flight safety, operational efficiency and all-weather accessibility**, particularly in adverse weather conditions and remote areas where ground-based navigation aids are unavailable.
- The approval is expected to facilitate similar PinS procedures across India, benefiting emergency medical services, disaster relief, tourism, pilgrimage, offshore operations and regional connectivity.

About PinS (Point-in-Space)

- PinS is a specialised instrument flight procedure designed specifically for helicopters, allowing them to navigate safely from the en-route phase to a defined point in space near a heliport using satellite-based navigation.
- It enables **Instrument Flight Rules (IFR)** operations even where conventional airport navigation infrastructure is unavailable.

- It uses **GNSS/satellite-based navigation** to guide helicopters to a predefined point near a heliport, enabling operations where conventional instrument landing systems are unavailable.
- PinS procedures are widely used internationally to improve the safety, reliability and accessibility of helicopter operations.

9.8. Wimbledon 2026

SYLLABUS

GS-I (Prelims): *Current Events of National and International Importance.*

Context

The 2026 Wimbledon Championships, the oldest and most prestigious tennis tournament, concluded at the All England Lawn Tennis and Croquet Club, London, with Jannik Sinner and Linda Nosková emerging as the singles champions.

More on the News

- **Men's Singles: Jannik Sinner (Italy)** won his second consecutive Wimbledon title
- **Women's Singles: Linda Nosková (Czech Republic)** won her maiden Grand Slam title
- **Men's Doubles: Harri Heliövaara (Finland) & Henry Patten (Great Britain)**
- **Women's Doubles: Guo Hanyu (China) & Kristina Mladenovic (France)**
- **Mixed Doubles: Marcelo Arévalo (El Salvador) / Jeļena Ostapenko (Latvia)**

About Wimbledon Championships

- Established in **1877**, Wimbledon is the **oldest tennis tournament in the world**.
- It is held annually at the **All England Lawn Tennis and Croquet Club, London**.
- Wimbledon is the **only Grand Slam tournament played on grass courts**.
- The tournament is known for traditions such as the **all-white dress code** for players and the serving of **strawberries and cream**.

About Grand Slam Tennis Tournaments

- **Grand Slam tournaments** are the four most

prestigious tennis tournaments in the world:

- ✓ **Australian Open** – Hard Court (January)
- ✓ **French Open (Roland Garros)** – Clay Court (May–June)
- ✓ **Wimbledon** – Grass Court (June–July)
- ✓ **US Open** – Hard Court (August–September)

- The four tournaments are **organised independently** but cooperate through a shared Grand Slam framework on matters of common interest.
- Winning all four Grand Slam singles titles in the same calendar year is known as a **Calendar Grand Slam**.

PRACTICE MCQS

Q 1. With reference to the Viksit Bharat – Guarantee for Rozgar and Aajeevika Mission (Gramin) [VB-G RAM G] Act, 2025, consider the following statements:

1. The Act replaces MGNREGA and raises the statutory rural employment guarantee from 100 days to 125 days per eligible household.
2. If employment is not provided within 30 days of demand, the worker becomes entitled to an unemployment allowance.
3. Under the unemployment allowance provision, workers are entitled to at least one-fourth of the wage rate for the first 30 days and at least one-half of the wage rate thereafter.
4. The highest wage notified under the Act, ₹450 per day, applies to select high-altitude Gram Panchayats of Haryana.
5. Existing e-KYC verified job cards will cease to be valid immediately on notification of the new Gramin Rozgar Guarantee Cards.

How many of the above statements are correct?

- (a) Only two (b) Only three
(c) Only four (d) Only Five

Q 2. With reference to the Pradhan Mantri Garib Kalyan Anna Yojana (PMGKAY) and the recent CCEA decision on rice quality, consider the following statements:

1. PMGKAY was launched on 26 March 2020 to ensure food security under the National Food Security Act, 2013.
2. Under PMGKAY, Antyodaya Anna Yojana (AAY) households are entitled to 5 kg of foodgrains per person per month, while Priority Households (PHH) are entitled to 35 kg per family per month.
3. The scheme has been extended for five years, from 1 January 2024 to 31 December 2028, with a financial outlay of approximately ₹11.80 lakh crore.

4. The revised rice quality norms approved by the CCEA will apply uniformly and simultaneously across all procuring States from the ongoing Kharif Marketing Season itself, with no phased rollout for distribution under welfare schemes.

How many of the above statements are correct?

- (a) Only one
(b) Only two
(c) Only three
(d) All four

Q 3. Match the following defence systems with their primary role:

Defence System	Role
A. AKASH	1. Persistent Intelligence, Surveillance and Reconnaissance from the stratosphere
TARANG	2. Detects ships using magnetic, acoustic and pressure signatures
B. FW-HAPS	3. Electronic warfare system to detect and neutralise hostile UAVs
C. MIGM	4. Detects and neutralises incoming anti-tank missiles
D. APS	

Select the correct answer using the code below:

- (a) A-3, B-1, C-2, D-4
(b) A-2, B-3, C-1, D-4
(c) A-3, B-4, C-2, D-1
(d) A-1, B-3, C-4, D-2

Q 4. With reference to the outcomes of the 16th India-Japan Annual Summit (2026), consider the following pairs:

Initiative/Agreement	Area of Cooperation
1. UNICORN Project	Defence & Security Cooperation
2. India-Japan Cooperative Biogas for Growth (CBG) Initiative	Energy Cooperation
3. Japan-India Startup Support Initiative (JISSI)	Technology & Innovation
4. Next Generation Mobility Partnership (NGMP)	Infrastructure & Connectivity

How many of the above pairs are correctly matched?

- (a) Only one pair (b) Only two pairs
(c) Only three pairs (d) All four pairs

Q 5. Consider the following statements regarding the Basel Convention:

1. It prohibits the export of hazardous waste to Antarctica under all circumstances.
2. It permits export of hazardous waste to non-Parties only if covered under Article 11 agreements.
3. The Convention operates on the principle of Prior Informed Consent (PIC), requiring consent of only the importing country.

How many of the above statements are correct?

- (a) Only one (b) Only two
(c) All three (d) None

Q 6. Which of the following best reflects the relationship between APAAR and the Academic Bank of Credits (ABC)?

- (a) APAAR stores academic credits, while ABC verifies student identity.
- (b) APAAR serves as a unique learner identifier, while ABC acts as a digital repository for academic credits and records linked to that learner.
- (c) Both APAAR and ABC perform identical functions in the digital education ecosystem.

- (d) APAAR is applicable to school students only, whereas ABC is applicable to higher education students only.

Q 7. With reference to the evolution of the UDAN (Ude Desh ka Aam Nagrik) Scheme, consider the following pairs:

UDAN Phase	Key Focus
1. UDAN 1.0	Connecting regional airports
2. UDAN 2.0–4.0	Connectivity to North-Eastern, hilly, remote, island and tourism-centric regions
3. UDAN 5.0–5.5	Introduction of high-speed rail links to airports
4. Viksit UDAN	Airport expansion and sustainable regional aviation

How many of the above pairs are correctly matched?

- (a) Only one (b) Only two
(c) Only three (d) All four

Q 8. With reference to the Ninth Session of the Intergovernmental Group of Experts (IGE) on Consumer Protection, consider the following statements:

1. The session will include a Voluntary Peer Review of India's consumer protection law and policy.
2. The United Nations Principles for Consumer Product Safety were adopted by the UN General Assembly in December 2025.
3. Rebeca Grynspan is the first woman to head UNCTAD as Secretary-General.
4. The session is being held at the Palais des Nations from 6–8 July 2026.

Which of the statements given above are correct?

- (a) 1, 2 and 3 only
(b) 2, 3 and 4 only
(c) 1, 3 and 4 only
(d) 1, 2, 3 and 4

Q 9. Assertion (A): Israel became the first OECD member country to conclude an investment agreement under India's post-2016 investment treaty framework.

Reason (R): India's post-2016 investment treaty model seeks to balance investor protection with the sovereign right of states to regulate in the public interest.

Select the correct answer using the code below:

- (a) Both A and R are true, and R is the correct explanation of A.
- (b) Both A and R are true, but R is not the correct explanation of A.
- (c) A is true, but R is false.
- (d) A is false, but R is true.

Q 10. With reference to the Ministry of Cooperation, consider the following statements:

- 1. The Ministry of Cooperation was established on 6 July 2021 with the vision "Sahkar Se Samriddhi."
- 2. Under White Revolution 2.0, the target is to increase milk procurement by 50% by 2028–29.
- 3. As part of key achievements over five years, India's first cooperative university, Tribhuvan Sahkari University, has been established.

How many of the above statements are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Q 11. Assertion (A): The Himalayan Pangolin has been recognised as a distinct species based on both morphological and genomic evidence.

Reason (R): The species exhibits significant differences from the Chinese Pangolin in body size, skull morphology and genetic makeup.

Select the correct answer using the code below:

- (a) Both A and R are true, and R is the correct explanation of A.
- (b) Both A and R are true, but R is not the correct explanation of A.
- (c) A is true, but R is false.
- (d) A is false, but R is true.

Q 12. With reference to India–Indonesia relations, consider the following statements:

- 1. The defence cooperation agreement between India and Indonesia was first signed in 2001 and has been renewed periodically since.
- 2. The Local Currency Settlement System (LCSS) between the two countries was signed in 2024 to facilitate trade in domestic currencies.
- 3. Indonesia is currently India's largest trading partner within the ASEAN grouping.
- 4. The Science & Technology Cooperation MoU between India and Indonesia was signed in 2018, and the first India–Indonesia Joint Committee on Science & Technology was held in 2025.

How many of the above statements are incorrect?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Q 13. Consider the following statements regarding the "Designated Repository" under the Biological Diversity Act, 2002:

- 1. Institutions are notified as Designated Repositories by the Central Government under Section 39 of the Biological Diversity Act, 2002.
- 2. Designated Repositories are required to maintain deposited biological resources for at least five years, or longer as directed by the National Biodiversity Authority.
- 3. Discoverers of new taxa are required to notify the designated repository and deposit voucher/type specimens.
- 4. Specimens held by Designated Repositories can be made available for research only outside India, to prevent biopiracy.

How many of the above statements are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Q 14. With reference to PM-SETU, consider the following statements:

1. PM-SETU is a Centrally Sponsored Scheme launched in 2025.
2. The scheme seeks to upgrade 1,000 Government ITIs through a Hub-and-Spoke model.
3. The scheme is implemented by the Ministry of Education.

Which of the statements given above is/are correct?

- (a) 1 and 2 only (b) 2 and 3 only
(c) 1 and 3 only (d) 1, 2 and 3

Q 15. SOLVE, recently seen in the news, is associated with:

- (a) Testing reusable launch vehicle technologies for orbital missions
- (b) Validating Crew Module parachute recovery systems under the Gaganyaan programme
- (c) Developing cryogenic engines for heavy-lift launch vehicles
- (d) Demonstrating satellite servicing technologies in orbit

Q 16. With reference to the All-India Survey on Higher Education (AISHE) 2023–24, consider the following statements:

1. The Gross Enrolment Ratio (GER) for females was higher than that for males for the seventh consecutive year.
2. The Gender Parity Index (GPI) has remained above 1.0 continuously since 2017–18.
3. Women constituted more than 50% of the total STEM enrolment in 2023–24.
4. Around 70% of registered colleges in India are private unaided.

Which of the statements given above are correct?

- (a) 1, 2 and 4 only (b) 1 and 3 only
(c) 2, 3 and 4 only (d) 1, 2, 3 and 4

Q 17. Consider the following statements regarding the Performance Grading Index (PGI) 2.0 for States/UTs and PGI-D 2025–26, released by the Ministry of Education:

1. The PGI 2.0 for States/UTs uses a ranking system, under which no two States/UTs can be placed in the same category.
2. Chandigarh was the only State/UT to attain the Uttam-3 grade in PGI-S 2025–26.
3. The PGI-D framework carries a total weightage of 1,000 points distributed across 70 indicators, identical to PGI-S.
4. As per PGI-D 2025–26, the number of districts placed in the Uttam-3 grade increased compared to 2024–25.

How many of the above statements are correct?

- (a) Only one (b) Only two
(c) Only three (d) All four

Q 18. With reference to the World Investment Report 2026, consider the following statements:

1. India became the 11th largest recipient of FDI globally in 2025.
2. AI-related investment increased from about \$109 billion in 2020 to \$576 billion in 2025.
3. The top 20 host economies accounted for less than half of global FDI inflows.
4. International investment is increasingly flowing towards semiconductors, critical minerals and clean-energy technologies.

Which of the statements given above are correct?

- (a) 1, 2 and 4 only (b) 1 and 3 only
(c) 2 and 4 only (d) 1, 2, 3 and 4

Q 19. With reference to the UDISE+ 2025–26 Report, consider the following statements:

1. UDISE+ 2025–26 is the first report to present educational indicators under the NEP 2020-aligned 5+3+3+4 structure.
2. Under the new framework, the Secondary stage accounts for the highest share of student enrolment.
3. The report is based on the student-wise registry system introduced in 2022–23.

Which of the statements given above are correct?

- (a) 1 and 2 only (b) 2 and 3 only
(c) 1 and 3 only (d) 1, 2 and 3

Q 20. Consider the following statements regarding the ULLAS – New India Literacy Programme:

1. ULLAS is a Centrally Sponsored Scheme implemented by the Ministry of Education, aligned with the National Education Policy (NEP) 2020, targeting non-literate adults aged 15 years and above.
2. Under the revised literacy criteria notified in August 2024, a State/UT is declared fully literate only after achieving 90% literacy.
3. Literacy under the new criteria has been redefined to include not just the ability to read, write, and compute, but also critical life skills such as digital and financial literacy.

Which of the above statements is/are correct?

- (a) 1 and 2 only (b) 1 and 3 only
(c) 2 and 3 only (d) 1, 2 and 3

Q 21. With reference to the Sub-Mission on Agricultural Mechanization (SMAM), consider the following statements:

1. SMAM was launched in 2014–15 under the Rashtriya Krishi Vikas Yojana (RKVY).
2. The scheme is implemented with a special focus on small and marginal farmers and regions with low farm power availability.
3. At least 30% of the funds allocated under the scheme are earmarked for women farmers.
4. The scheme exclusively promotes individual ownership of agricultural machinery.

How many of the above statements are correct?

- (a) Only one (b) Only two
(c) Only three (d) All four

Q 22. With reference to the Third India–Australia Annual Summit (2026) and India–Australia bilateral relations, consider the following statements:

1. The Joint Declaration on Defence and Security Cooperation (JDDSC) replaces the 2009 Joint Declaration on Security and establishes an Annual Defence Ministers' Dialogue.

2. The Administrative Arrangement under the Civil Nuclear Agreement operationalises the 2014 India–Australia Civil Nuclear Agreement to enable Australian uranium exports to India for peaceful purposes under IAEA safeguards.
3. The Australia–India Partnership on Cyber, Critical Technologies and Supply Chains (PACTS) builds upon the India–Australia Economic Cooperation and Trade Agreement (IndAus ECTA) signed in 2022.
4. The India–Australia Energy Security Dialogue was established in 2012 and now covers renewable energy, critical minerals and clean energy technologies.

Which of the statements given above are correct?

- (a) 1, 2 and 4 only (b) 1 and 3 only
(c) 2, 3 and 4 only (d) 1, 2, 3 and 4

Q 23. With reference to the WHO Global Status Report on Cancer 2026, consider the following statements:

1. Cancer is the leading cause of death globally.
2. Annual global cancer cases are projected to rise to nearly 35 million by 2050.
3. Asia accounted for more than half of global cancer cases in 2024.

Which of the statements given above is/are correct?

- (a) 2 and 3 only (b) 1 and 2 only
(c) 3 only (d) 1, 2 and 3

Q 24. With reference to the Great Indian Bustard (GIB), consider the following statements:

1. The latest population assessment (2023–24) by the Wildlife Institute of India recorded a decline in GIB numbers compared to the 2017–18 estimate.
2. The GIB occupies only about 16% of the surveyed landscape, despite the availability of larger suitable habitat.
3. Among the four bustard species found in India, the Great Indian Bustard is the smallest.

PRACTICE MCQS

4. More than 90% of the surviving wild population of GIB occurs in Rajasthan.

Which of the statements given above are correct?

- (a) 1 and 3 only (b) 1, 2 and 3 only
(c) 2 and 4 only (d) 1, 3 and 4 only

Q 25. Consider the following pairs:

Temple/Heritage Site	Country
1. Ta Prohm	Cambodia
2. Wat Phou	Laos
3. Ananda Temple	Thailand
4. My Son Sanctuary	Vietnam

How many pairs given above are correctly matched?

- (a) Only one (b) Only two
(c) Only three (d) All four

Q 26. With reference to India–New Zealand relations, consider the following statements:

- The India–New Zealand Strategic Partnership was accompanied by the adoption of a Roadmap to 2030 to guide bilateral cooperation.
- New Zealand agreed to join the Maritime Security Pillar of India's Indo-Pacific Oceans Initiative (IPOI) and both countries decided to establish an Annual Maritime Security Dialogue.
- New Zealand became a member of the International Solar Alliance (ISA) during the Prime Minister's 2026 visit to India.
- New Zealand reaffirmed its support for India's permanent membership of a reformed UN Security Council as well as India's membership of the Nuclear Suppliers Group (NSG).

Which of the statements given above are correct?

- (a) 1, 2 and 4 only (b) 1 and 3 only
(c) 2, 3 and 4 only (d) 1, 2, 3 and 4

Q 27. Consider the following statements regarding the Compensatory Afforestation Fund Management and Planning Authority (CAMPA):

- CAMPA functions under the Ministry of Environment, Forest and Climate Change.
- It derives funds from compensatory afforestation charges and Net Present Value (NPV) payments.
- Under the CAF Act, 2016, 90% of the funds are retained by National CAMPA and 10% are transferred to States.

Which of the statements given above is/are correct?

- (a) 1 and 2 only
(b) 2 only
(c) 1 and 3 only
(d) 1, 2 and 3

Q 28. Which one of the following best explains the rationale behind establishing an International Financial Services Centre (IFSC) in India?

- To regulate coastal shipping and maritime trade operations within India.
- To provide financial services exclusively to Indian residents in domestic currency.
- To bring offshore financial services and transactions within India and compete with global financial centres.
- To promote compensatory afforestation and ecological restoration projects.

Q 29. Which one of the following situations best illustrates the horizontal application of Fundamental Rights?

- A citizen challenges a law enacted by Parliament for violating Article 14.
- A State Government restricts a peaceful assembly under Article 19.
- A private establishment is held accountable for practices violating constitutional guarantees against discrimination or exploitation.
- The Union Government imposes restrictions during a national emergency.

Q 30. With reference to the "Digital Threat Report 2025–26," consider the following statements:

- The report has been released jointly by MeitY, CERT-In, CSIRT-Fin and SISA for India's BFSI and digital payments ecosystem.

2. As per the report, cyberattacks on India's BFSI sector are 1.6 times the global average.
3. The report introduces a 3-Layer Gap Archetype Framework to explain the anatomy of cyber failures.

How many of the above statements are correct?

- (a) Only one (b) Only two
(c) All three (d) None

Q 31. Consider the following pairs relating to India–Oman defence cooperation:

Exercise	Service
1. Al Najah	Army
2. Eastern Bridge	Air Force
3. Naseem Al Bahr	Navy
4. Ekuverin	Army

How many of the above pairs are correctly matched with reference to India–Oman relations?

- (a) Only one (b) Only two
(c) Only three (d) All four

Q 32. With reference to the World Intangible Investment Report 2026, consider the following statements:

1. The Global INTAN-Invest Database covers 29 high- and middle-income economies accounting for about 57% of global GDP.
2. Formal-sector intangible investment accounts for a larger share of GDP than tangible investment across the economies covered by the report.
3. India's formal-sector intangible investment accounts for a higher share of GDP than the average of the economies covered in the report.
4. Software and databases account for the largest share of India's total intangible investment among all economies covered.

Which of the statements given above is/are incorrect?

- (a) 2 and 4 only (b) 3 only
(c) 1 and 4 only (d) 1, 3 and 4 only

Q 33. With reference to the UN's Preliminary Report on Artificial Intelligence (2026), consider the following statements:

1. Frontier AI development is concentrated among a small number of countries and firms.
2. The report argues that the AI divide is primarily due to unequal access to AI applications.
3. Agentic AI systems are increasingly capable of autonomous planning and task execution.

Which of the statements given above are correct?

- (a) 1 and 2 only
(b) 1 and 3 only
(c) 2 and 3 only
(d) 1, 2 and 3

Q 34. With reference to the Index of Services Production (ISP), recently released by the Ministry of Statistics and Programme Implementation (MoSPI), consider the following statements:

1. The ISP is the first monthly indicator introduced in India to measure short-term activity in the formal services sector.
2. The present Trial ISP covers services sub-sectors that together account for more than three-fourths of India's total services sector.
3. The ISP is compiled using Goods and Services Tax (GST) data, Administrative Data, and the Annual Survey of Incorporated Services Sector Enterprises (ASISSE), and excludes the informal sector and core government functions.
4. Among the sub-sectors covered, Railway Transport recorded a sharper contraction than Air Transport.

How many of the above statements are correct?

- (a) Only one
(b) Only two
(c) Only three
(d) All four

Q 35. Match the following Government initiatives with their primary focus:

Initiative	Focus
1. PMFME	A. District-level product specialisation
2. ODOP	B. Formalisation of Micro Food Processing Enterprises
3. PM Kisan SAMPADA Yojana	C. Food Processing Infrastructure and Value-chain Development
4. PLISFPI	D. Incentivising Food Manufacturing and Processing

Select the correct answer using the code below:

- (a) 1-B, 2-A, 3-C, 4-D
- (b) 1-A, 2-B, 3-D, 4-C
- (c) 1-C, 2-A, 3-B, 4-D
- (d) 1-B, 2-D, 3-C, 4-A

Q 36. With reference to the India–Australia Civil Nuclear Cooperation, recently seen in the news, consider the following statements:

1. The India–Australia Civil Nuclear Cooperation Agreement permits Australian uranium exports to India exclusively for peaceful civilian purposes under the safeguards of the International Atomic Energy Agency (IAEA).
2. Australia permits uranium exports only to countries with which it has a Civil Nuclear Cooperation Agreement.
3. India's Prototype Fast Breeder Reactor (PFBR) at Kalpakkam uses natural uranium directly as its primary fuel and represents the first stage of India's Three-Stage Nuclear Programme.
4. The SHANTI Act, 2025 allows unrestricted private ownership and operation of nuclear power plants in India without regulatory oversight.

Which of the statements given above is/are correct?

- (a) 1 and 2 only
- (b) 1, 2 and 3 only
- (c) 2 and 4 only
- (d) 1, 3 and 4 only

Q 37. With reference to the Mobile Phone Manufacturing Scheme (MPMS), consider the following statements:

1. The scheme is a Centrally Sponsored Scheme with a budgetary outlay of ₹62,500 crore, to be implemented over five years from FY 2026–27 to FY 2030–31.
2. It provides a 2.25%–5% incentive on eligible sales of mobile phones manufactured in India, along with up to 1.5% additional incentive for domestic sourcing of key components and sub-assemblies.
3. The scheme succeeds the Production Linked Incentive Scheme for Large Scale Electronics Manufacturing (PLI-LSEM), whose tenure ended on 31 March 2026.

How many of the above statements are incorrect?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Q 38. With reference to the National Investment Policy for Urea-2026 (NIPU-2026), consider the following statements:

1. The policy applies only to new gas-based urea manufacturing projects and provides a uniform incentive framework for public, private, and cooperative sector projects.
2. Under the policy, the Return on Equity (RoE) has been fixed at 16% for all eligible projects.
3. The policy provides for conversion of fixed costs into Indian Rupees after four years based on prevailing exchange rates to mitigate foreign exchange risk.
4. One of the objectives of the policy is to create an additional production capacity of about 10 million tonnes annually through the establishment of 8–9 new gas-based urea plants.

Which of the statements given above are correct?

- (a) 1, 3 and 4 only
- (b) 1 and 2 only
- (c) 2, 3 and 4 only
- (d) 1, 2, 3 and 4

Q 39. Which of the following is/are considered major advantages of reusable rocket technology?

1. Reduction in launch costs.
2. Higher launch frequency.
3. Easier deployment of large satellite constellations.
4. Improved feasibility of deep-space missions.

Select the correct answer using the code below:

- (a) 1 and 2 only (b) 1, 2 and 3 only
(c) 2, 3 and 4 only (d) 1, 2, 3 and 4

Q 40. Consider the following statements regarding India's semiconductor ecosystem:

1. Assembly, Testing, Marking and Packaging (ATMP) is a downstream segment of the semiconductor value chain.
2. Outsourced Semiconductor Assembly and Test (OSAT) facilities are involved in packaging and testing semiconductor chips.
3. Semiconductor-grade chemicals, gases, and wafers form part of the upstream semiconductor ecosystem.

Which of the statements given above is/are correct?

- (a) 1 and 2 only (b) 2 and 3 only
(c) 1 and 3 only (d) 1, 2 and 3

Q 41. Consider the following pairs with reference to the Draft National Health Research Policy (NHRP), 2026:

Institution/ Mechanism	Proposed Role
1. National Health Research Stewardship Committee	Strategic oversight of health research
2. Department of Health Research (DHR)	Scientific and technical lead
3. ICMR	Nodal implementation agency
4. National Research Integrity Office (NRIO)	Promote research integrity and ethical oversight

How many pairs given above are correctly matched?

- (a) Only one (b) Only two
(c) Only three (d) All four

Q 42. With reference to the Draft Corporate Average Fuel Efficiency (CAFE)-III Norms, consider the following statements:

1. Compliance credits earned under the norms may be carried forward only within the same compliance block.
2. The draft, for the first time, recognises the carbon-neutrality of ethanol, biofuels and Compressed Bio-Gas (CBG) for compliance assessment.
3. Passenger vehicle manufacturers with annual sales of fewer than 1,000 units are exempt from the provisions of the draft norms.

Which of the statements given above are correct?

- (a) 1 and 2 only (b) 2 and 3 only
(c) 1 and 3 only (d) 1, 2 and 3

Q 43. With reference to the Skill India Mission (SIM), consider the following statements:

1. The National Apprenticeship Promotion Scheme (NAPS) has engaged more than 54.41 lakh apprentices since its launch in 2015, the same year the Skill India Mission itself was launched.
2. IndiaSkills and WorldSkills Competitions, along with Centres of Excellence, are listed among the major components of the Skill India Mission.

Which of the statements given above is/are correct?

- (a) 1 only (b) 2 only
(c) Both 1 and 2 (d) Neither 1 nor 2

Q 44. With reference to Marine Cloud Brightening (MCB), consider the following statements:

1. It is a form of Solar Radiation Management (SRM).

- It involves spraying microscopic seawater droplets into the atmosphere to increase cloud reflectivity.
- Its primary objective is to reduce the concentration of greenhouse gases in the atmosphere.

Which of the statements given above is/are correct?

- (a) 1 and 2 only (b) 2 and 3 only
(c) 1 only (d) 1, 2 and 3

Q 45. Consider the following statements regarding premature release of prisoners in India:

- Premature release results in the permanent shortening of a prisoner's sentence before its full term is completed.
- Parole and furlough permanently reduce the duration of imprisonment in the same manner as premature release.
- Premature release may be considered on grounds such as age, health condition, good conduct, and humanitarian considerations.
- The power to grant premature release is exercised exclusively by the President under Article 72 of the Constitution.

Which of the statements given above are correct?

- (a) 1 and 3 only (b) 1, 2 and 3 only
(c) 2 and 4 only (d) 1, 3 and 4 only

Q 46. With reference to the Investment Friendliness Index (IFI) 2026, consider the following statements:

- Gujarat emerged as the best-performing Large State, while Goa topped the Union Territories & City States peer group.
- Tamil Nadu's performance was attributed, among other factors, to its nearly 100% Memorandum of Understanding (MoU) conversion rate.
- Maharashtra was ranked second primarily because it recorded the highest Memorandum of Understanding (MoU) conversion rate among all States.
- The report provides State Profiles covering

macroeconomic indicators, sectoral strengths, investor perceptions, pillar-wise performance and peer-group comparisons.

Which of the statements given above are correct?

- (a) 1, 2 and 4 only (b) 1 and 3 only
(c) 2, 3 and 4 only (d) 1, 2, 3 and 4

Q 47. With reference to the NITI Aayog's Roadmap for Building India as a Leading Bioeconomy Powerhouse, consider the following statements:

- It proposes a ₹50,000 crore BioEconomy Growth Fund to bridge the gap between research and commercial deployment.
- The roadmap aims to position India among the world's top three biotechnology powers by 2030.
- It proposes six National BioMissions covering healthcare, agriculture, industrial biotechnology, marine biotechnology, and biosecurity.

Which of the statements given above is/are correct?

- (a) 1 and 2 only (b) 2 and 3 only
(c) 1 and 3 only (d) 1, 2 and 3

Q 48. With reference to Vikram-1 (Mission Agaman), consider the following statements:

- Vikram-1 is India's first privately developed orbital launch vehicle and was developed by Skyroot Aerospace.
- The launch was authorised by the Indian Space Research Organisation (ISRO).
- Vikram-1 uses a liquid-fuel Orbital Adjustment Module (OAM) as its fourth stage.
- India became the third country in the world to demonstrate orbital launch capability through a privately developed launch vehicle after the success of Mission Agaman.

Which of the statements given above are correct?

- (a) 1, 3 and 4 only (b) 1 and 2 only
(c) 2, 3 and 4 only (d) 1, 2, 3 and 4

Q 49. With reference to hydrogen-powered trains, consider the following statements:

1. They generate electricity onboard through an electrochemical reaction between hydrogen and oxygen.
2. Water vapour is the only direct emission produced during train operation.
3. They require overhead electric lines for traction.

Which of the statements given above is/are correct?

- (a) 1 and 2 only (b) 2 and 3 only
(c) 1 only (d) 1, 2 and 3

Q 50. With reference to the World Artificial Intelligence Cooperation Organisation (WAICO), consider the following statements:

1. It is an intergovernmental international organisation dedicated to cooperation in the civilian application and governance of Artificial Intelligence.
2. It is headquartered in Geneva, Switzerland.
3. India is among the founding signatories of WAICO.

Which of the statements given above is/are correct?

- (a) 1 only (b) 2 only
(c) 1 and 3 only (d) 1, 2 and 3

ANSWER KEY

1. a	6. b	11. a	16. a	21. c	26. a	31. c	36. a	41. b	46. a
2. b	7. c	12. a	17. b	22. a	27. a	32. b	37. a	42. d	47. c
3. a	8. b	13. c	18. a	23. a	28. c	33. b	38. a	43. b	48. a
4. c	9. b	14. a	19. d	24. c	29. c	34. b	39. d	44. a	49. a
5. b	10. c	15. b	20. b	25. c	30. b	35. a	40. d	45. a	50. a

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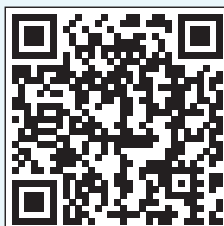
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