



The cover features a man in a green turban and glasses, standing with arms crossed. The background includes the Indian Parliament building, a lion capital, and a globe. Text elements include the Adda247 logo, 'IAS ACADEMY', 'UPSC IAS | Punjab PCS |', 'CURRENT AFFAIRS', 'MONTHLY MAGAZINE', 'JUNE 2026', and a list of subjects: INDIAN POLITY, INDIAN ECONOMY, GEOGRAPHY, ENVIRONMENT, and INTERNATIONAL RELATIONS. A copy of 'THE HINDU' newspaper is also shown.

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CURRENT AFFAIRS

— MONTHLY MAGAZINE —

 — JUNE —
2026

INDIAN POLITY
INDIAN ECONOMY
GEOGRAPHY
ENVIRONMENT
INTERNATIONAL RELATIONS

THE HINDU

📍 Adda247, 1st Floor, Punjab Kesari Building, Sector 25D, Chandigarh!

INDEX

1. POLITY & GOVERNANCE

6-42

Mains Topics

- Citizenship in India & Legal Proof Standards (Census vs. NPR vs. NRC, Art. 5–11).....6
- Anti-Defection Law in India & 10th Schedule (Disqualification, Exceptions, Speaker Role).....12
- Right to Walk on Footpaths (Article 21 & IRC:103-2012 Pedestrian Standards).....17
- Foreign Contribution (Regulation) Amendment Rules, 2026 (FCRA Changes).....20
- Structural Analysis of Paper Leaks & Examination Integrity Reforms.....22

Prelims Topics

- Mission Senehgori (Assam Muga Silk).....25
- National Awards for e-Governance (NAeG) 2026.....26
- Prime Minister Research Chair (PMRC) Scheme, 2026.....27
- PAC Review on PMKVY (Skill Development Gaps).....28
- Economic Advisory Council to the Prime Minister (EAC-PM).....28
- Jan Samarth Portal.....29
- Pradhan Mantri Surakshit Matritva Abhiyaan (PMSMA).....30
- Pradhan Mantri Ujjwala Yojana (PMUY).....31
- State Finance Commissions (SFCs - Art. 243-I/Y).....32
- Viksit Bharat–GRAM G Mission.....33
- Armed Forces Special Power Act (AFSPA).....33
- Telegram Ban.....34
- Aadhaar Misuse Framework.....36
- Nirbhay Chetna36
- She-Box 2.0 (Mission Shakti).....37
- Three-Language Formula in Education.....38
- Air Suvidha 2.0 Portal.....38
- Delhi Electric Vehicle (EV) Policy 2.0.....39
- DIKSHA Portal.....40
- PM Awas Yojana–Urban 2.0.....41

2. INTERNATIONAL RELATIONS**42-64****Mains Topics**

- UNSC Permanent Membership & Structural Reforms.....42
- G7 Summit 2026 & India-France Bilateral Partnership (Horizon 2047 Roadmap).....44
- India–Oman Comprehensive Economic Partnership Agreement (CEPA).....46
- India–Iran Bilateral Relations & Geopolitical Balancing (Chabahar Port & INSTC).....48
- Digital Sovereignty, Data Localisation & Strategic Autonomy.....51

Prelims Topics

- Shangri-La Dialogue.....55
- India–Australia Defence & Strategic Partnership.....56
- India–Venezuela Relations.....57
- AUKUS Alliance.....58
- Blue Helmets (UN Peacekeeping).....59
- Indian Ocean Rim Association (IORA).....60
- Financial Action Task Force (FATF).....61
- BRICS Indore Declaration.....62
- Operation Amistad.....64

3. ENVIRONMENT & ECOLOGY**64-82****Mains Topics**

- Ecologically Sensitive Areas (ESA) & Western Ghats Protection (Gadgil vs. Kasturirangan).....64

Prelims Topics

- The Aravallis & Desertification Prevention.....67
- Banni Grasslands (Kutch, Gujarat).....68
- Biomimicry in Conservation.....69
- Yellow-Throated Marten.....70
- Surha Tal (India's 100th Ramsar Site).....71
- Summer Air Pollution & Ground-Level Ozone.....72
- New Norms for Caustic Soda Wastewater.....73
- Bandipur and Nagarhole Tiger Reserves.....75
- India's Access and Benefit Sharing (ABS) Framework.....76
- Coral Translocation Projects.....78

4. ECONOMY & INFRASTRUCTURE**82-98****Mains Topics**

- World's Top Ship Recycling Nation & Hong Kong Convention (Alang Cluster).....82
- "Ashtalakshmi" & North Eastern Region (NER) Development.....83
- National Food Security (Amendment) Bill, 2026.....87

Prelims Topics

- Smart Seed Coating Technology.....89
- Record Seafood Exports FY 2025-26.....90
- India's Cotton Mission.....91
- Khurasani Imli.....92
- TReDS Platform.....93
- BHARATI Programme.....94
- Coal Exchange Rules, 2026.....94
- Energy Transition Index (ETI) 2026.....95
- Bilateral Investment Treaty (BIT) Model.....96

5. GEOGRAPHY AND MAPPING**98-102****Prelims Topics**

- Majuli Island (Assam).....98
- Padma Barrage.....99
- Caspian Sea Ecosystem & Riparian Countries.....100
- Estonia Mapping & Strategic Location.....101
- Zojila Tunnel.....101

6. Internal Security and Defence — **102-106****Prelims Topics**

- Rudram-II Missile.....102
- Gallantry Awards Architecture.....103
- Project Kusha (Air Defence System).....104
- HIMARS (High Mobility Artillery Rocket System).....104
- Multi-Layered Ballistic Missile Defence (BMD).....105
- Record Defence Production Targets.....105

7. SCIENCE & TECHNOLOGY**106-113****Prelims Topics**

- Lung Cancer Early Detection Blood Tests.....106
- Arbuscular Mycorrhizal (AM) Fungi.....107
- Emerging Power of Synthetic Biology.....108
- Chandrayaan-3 Shiv Shakti Point Discoveries.....109
- GRAPES-3 Experiment (Cosmic Ray Telescope, Ooty).....110
- 100 Years of Solar Data (Kodaikanal Solar Observatory).....111
- High Energy Medical Cyclotron Project.....112
- World's Fastest Supercomputer.....113

8. SOCIETY **114-115**

Prelims Topics

- Declining Total Fertility Rate (TFR) in India.....114

9. MISCELLANEOUS **115-120**

Prelims Topics

- QS World University Rankings 2027.....115
- Food Planet Prize 2026.....116
- Operation Drishti.....117
- Pradhan Mantri Rashtriya Bal Puraskar (PMRBP).....117
- Padma Awards Guidelines.....118
- Thunderstorms & NDRF Protocol.....119

IAS ACADEMY

— LEARN TODAY, LEAD TOMORROW —

Important News**POLITY & GOVERNANCE****Citizenship in India**

A senior government official clarified that an Indian passport cannot be used to contest exclusion from an electoral roll. The official explained that a passport serves only as a travel document and should not be treated as conclusive proof of Indian citizenship.

Citizenship**Definition**

Citizenship is the legal relationship between an individual and a State. It grants a person certain civil and political rights, such as the right to vote and own property, while also imposing responsibilities, including paying taxes and obeying the laws of the country.

Citizenship vs. Nationality**Nationality**

Nationality generally refers to a person's connection with a particular nation or country of origin. It represents a person's national identity and is often reflected through a passport.

Citizenship

Citizenship is the legal status conferred by a government that enables an individual to participate fully in the political and civil life of a country. It determines a person's legal rights, privileges, and responsibilities within that State.

Definitions of Citizenship by Various Thinkers**Aristotle**

Aristotle defined a citizen in functional terms as a person who participates in the deliberative and judicial functions of the State. He emphasized that good citizenship involves public virtue and the ability both to govern and to be governed.

John Locke

John Locke believed that the primary purpose of citizenship is to ensure that the State protects the natural rights that individuals already possess, namely the rights to life, liberty, and property.

Thomas Hobbes

Thomas Hobbes based the idea of citizenship on the concept of a social contract. According to him, individuals surrender a portion of their personal freedom to the State in return for security, peace, and protection.

Immanuel Kant (Cosmopolitanism)

Immanuel Kant expanded the idea of citizenship beyond the boundaries of individual States. He envisioned a moral and political order in which every individual could be regarded as a citizen of a universal or world community.

Hannah Arendt

Hannah Arendt regarded citizenship as the most fundamental of all human rights and famously described it as "**the right to have rights.**" She argued that human rights have little practical meaning unless they are protected by a political community. According to her, genuine freedom requires active and meaningful participation in public and political life.

Core Concept Behind the Idea of Citizenship in India

- Citizenship represents the legal status of an individual in relation to the Indian State. However, the continuation, acquisition, or termination of this status is governed by laws enacted by Parliament under **Article 11 of the Constitution of India.**
- In India, citizenship serves as an eligibility criterion for obtaining several official documents.
- Documents such as the **Aadhaar Card, Passport, Voter ID Card, and PAN Card** may require citizenship or related eligibility conditions for their issuance. However, possessing these documents does **not** automatically establish or conclusively prove Indian citizenship.
- **Example:** A graduation degree is an eligibility requirement for filling out the UPSC application form. However, merely being able to submit the UPSC form does not itself constitute proof that a person has graduated. Similarly, possessing certain official documents does not by itself prove Indian citizenship.

Factors Determining Citizenship in India

The determination of Indian citizenship primarily depends upon:

- **Place of birth**
- **Nationality or citizenship of the parents**

Documents That Establish Indian Citizenship

In India, citizenship is generally established through documents that provide evidence regarding an individual's **date of birth, place of birth, and parentage.**

Birth Certificate

The **Birth Certificate** is the primary and most widely accepted document for establishing a person's date and place of birth, as well as details of parentage.

Parents' Citizenship or Nationality Records

These include documents such as the parents' birth certificates, Indian passports, or other official government records that establish their Indian citizenship or nationality.

Citizenship Certificate

A **Citizenship Certificate** is officially issued only to individuals who acquire Indian citizenship through **Registration** or **Naturalization** under **Section 5** or **Section 6** of the **Citizenship Act, 1955.**

Feature	Census	National Population Register (NPR)	National Register of Citizens (NRC)
Primary Objective	To collect detailed socio-economic and demographic information for policy formulation, planning, and governance.	To prepare a comprehensive database containing the identity details of all usual residents of India.	To identify, verify, and officially register all persons who are legally recognized as citizens of India.
Target Population	Includes every individual residing in India at the time of the Census, irrespective of nationality.	Covers all usual residents , i.e., persons who have lived in a particular area for at least six months or intend to reside there for six months or more.	Covers only those individuals who are able to legally establish and prove their Indian citizenship.

Type of Data Collected	Collects information related to demographics, education, literacy, occupation, economic activity, housing, and other socio-economic indicators.	Collects demographic information along with identity-related particulars and specified biometric details.	Collects documentary evidence relating to lineage, ancestry, and other records required to establish Indian citizenship.
Legal Backing	Conducted under the Census Act, 1948 .	Prepared under the Citizenship Rules, 2003 , framed under the Citizenship Act, 1955 .	Governed by the Citizenship Rules, 2003 , framed under the Citizenship Act, 1955 .
Coverage of Citizenship Status	Includes both Indian citizens and foreign nationals residing in India during the Census period.	Includes both Indian citizens and foreign residents who qualify as usual residents.	Includes only verified Indian citizens and excludes foreign nationals as well as illegal migrants.
Confidentiality and Use of Data	Census data is highly confidential and cannot be used to identify or take action against any individual.	Information collected is integrated into the Central Population Register and may be used for identity verification and efficient delivery of government services.	The information is subject to verification, and individuals are required to furnish documentary proof to establish their citizenship status.

Documents That Are Not Proof of Indian Citizenship

Government authorities, including the **Ministry of External Affairs (MEA)**, have clarified that certain government-issued identity and travel documents **do not constitute conclusive proof of Indian citizenship**. These documents serve specific administrative purposes but cannot, by themselves, establish a person's citizenship.

Passport

- A **Passport** is primarily a **travel document** issued to facilitate international travel.
- It certifies a person's nationality for travel purposes but **does not serve as definitive legal proof of Indian citizenship**.

Aadhaar Card, Voter ID Card, PAN Card, etc.

- Documents such as the **Aadhaar Card, Voter ID Card, PAN Card**, and similar identity documents are issued for specific administrative purposes.
- These documents mainly establish a person's **identity, residence, taxation, or electoral registration**, but they are not conclusive proof of Indian citizenship.

Constitutional Provisions Relating to Citizenship

Part II of the Constitution of India (Articles 5 to 11) lays down the foundational provisions relating to citizenship. These Articles determined who would be recognized as Indian citizens at the commencement of the Constitution on **26 January 1950** and empowered Parliament to regulate citizenship through legislation.

Article 5 – Citizenship at the Commencement of the Constitution

Article 5 granted Indian citizenship at the commencement of the Constitution to every person who was **domiciled in India** and satisfied any one of the following conditions:

- Was born in India; or
- Either of whose parents was born in India; or
- Had been ordinarily residing in India for at least **five years** immediately preceding the commencement of the Constitution.

Article 6 – Rights of Migrants from Pakistan

Article 6 deals with the citizenship rights of persons who migrated from **Pakistan to India** before the commencement of the Constitution. It provides different conditions and registration requirements based on the date of migration and the type of permit under which they entered India.

Article 7 – Rights of Migrants to Pakistan

Article 7 provides that persons who migrated from **India to Pakistan after 1 March 1947** ceased to be Indian citizens. However, such persons could regain Indian citizenship if they returned to India under a valid **permit for resettlement or permanent return**.

Article 8 – Citizenship of Persons of Indian Origin Living Abroad

Article 8 extends citizenship to persons of **Indian origin residing outside undivided India**, provided they registered themselves with an Indian diplomatic mission or consular representative in the country where they were residing.

Article 9 – Voluntary Acquisition of Foreign Citizenship

Article 9 establishes the principle of **single citizenship** in India. It states that any person who voluntarily acquires the citizenship of a foreign country shall cease to be an Indian citizen.

Article 10 – Continuance of Citizenship

Article 10 guarantees that every person recognized as an Indian citizen under the preceding provisions shall continue to remain a citizen of India, subject to any laws enacted by Parliament regarding citizenship.

Article 11 – Power of Parliament

Article 11 empowers **Parliament** to make laws concerning the acquisition, termination, and all other matters relating to Indian citizenship. This constitutional authority led to the enactment of the **Citizenship Act, 1955**.

The Citizenship Act, 1955

The **Citizenship Act, 1955** is the principal legislation governing the acquisition, regulation, and termination of Indian citizenship.

Acquisition of Citizenship

1. By Birth

Citizenship by birth is governed by statutory provisions that have become progressively stricter through various amendments aimed at preventing illegal migration. In general, persons born in India on or after **26 January 1950** may acquire citizenship by birth. However, later amendments require that **at least one parent must be an Indian citizen**, and **the other parent should not be an illegal migrant**, subject to the applicable provisions in force at the time of birth.

2. By Descent

Citizenship by descent generally applies to persons born **outside India** whose parents, or at least one parent, was an Indian citizen at the time of their birth, subject to the conditions prescribed under the Act.

3. By Registration

Citizenship by registration may be granted to:

- Persons of Indian Origin (PIO) who have ordinarily resided in India for the prescribed period; or
- Individuals who are legally married to an Indian citizen and satisfy the conditions laid down under the Act.

4. By Naturalization

Citizenship by naturalization may be granted to foreign nationals (other than illegal migrants) who have resided in India or served the Government of India for the prescribed period. Applicants must also satisfy conditions relating to **good character**, **knowledge of an Indian language**, and other statutory requirements.

5. By Incorporation of Territory

When a new territory becomes part of India, the **Government of India** specifies, through law or notification, the persons belonging to that territory who shall become citizens of India.

Loss of Citizenship

Indian citizenship may be lost in any of the following three ways:

1. Renunciation

Any Indian citizen who has attained full age and possesses legal capacity may voluntarily renounce Indian citizenship by making a formal declaration. Once the declaration is registered, the individual ceases to be an Indian citizen.

2. Termination

If an Indian citizen voluntarily acquires the citizenship of another country, Indian citizenship is automatically terminated, as **India does not recognize dual citizenship**.

3. Deprivation

The **Central Government** may deprive a person of Indian citizenship if:

- the citizenship was obtained by fraud, false representation, or concealment of material facts;
- the person has shown disloyalty to the Constitution of India; or
- the person has unlawfully traded or communicated with an enemy during a period of war or engaged in other acts specified under the Citizenship Act, 1955.

Previous Amendments to the Citizenship Act, 1955

The **Citizenship Act, 1955** has been amended several times to address changing legal, social, and administrative requirements relating to Indian citizenship.

1986 Amendment

- The **Citizenship (Amendment) Act, 1986** made citizenship by birth more restrictive.
- It provided that a person born in India would acquire citizenship by birth only if **at least one parent was an Indian citizen** at the time of the person's birth.

1992 Amendment

- The **Citizenship (Amendment) Act, 1992** removed gender-based discrimination in citizenship by descent.
- It allowed children born outside India to acquire Indian citizenship through **either parent**, including the **mother**, provided the mother was an Indian citizen at the time of the child's birth.

2003 Amendment

- The **Citizenship (Amendment) Act, 2003** introduced the legal definition of an **illegal migrant** and prescribed provisions relating to such persons.
- It also laid the statutory framework for the preparation of the **National Register of Citizens (NRC)**.

2005 Amendment

- The **Citizenship (Amendment) Act, 2005** introduced provisions relating to the **Overseas Citizen of India (OCI)** scheme, granting eligible foreign nationals of Indian origin certain benefits and privileges.

2015 Amendment

- The **Citizenship (Amendment) Act, 2015** merged the **Persons of Indian Origin (PIO)** Card Scheme with the **Overseas Citizen of India (OCI)** Card Scheme, creating a single OCI framework.

2019 Amendment

- The **Citizenship (Amendment) Act, 2019 (CAA)** provided a fast-track pathway to Indian citizenship for undocumented **Hindus, Sikhs, Buddhists, Jains, Parsis, and Christians** who had fled religious persecution from **Pakistan, Bangladesh, and Afghanistan** and had entered India on or before **31 December 2014**, subject to the conditions prescribed under the Act.

Important Supreme Court Judgments on Indian Citizenship

Izhar Ahmad Khan v. Union of India (1962)

- The Supreme Court upheld the constitutional validity of **Section 9 of the Citizenship Act and Schedule III of the Citizenship Rules**.
- The Court held that the voluntary acquisition of a foreign passport constitutes conclusive evidence of acquiring foreign citizenship, resulting in the termination of Indian citizenship.

Sarbananda Sonowal v. Union of India (2005)

- The Supreme Court struck down the **Illegal Migrants (Determination by Tribunals) Act, 1983 (IMDT Act)**.
- The Court observed that the Act created an **insurmountable obstacle** in identifying and deporting illegal migrants in Assam, thereby hampering the Union Government's constitutional obligation to protect States against external aggression and illegal infiltration.

Pranav Srinivasan v. Union of India (2024)

- The Supreme Court examined the citizenship rights of children born to parents who had acquired foreign nationality.
- It clarified that the automatic termination of Indian citizenship under **Section 9(1) of the Citizenship Act**, resulting from the acquisition of a foreign passport, should not be treated as a case of **voluntary renunciation** of citizenship. This interpretation affects the right of such children to resume Indian citizenship after attaining adulthood, subject to the applicable legal provisions.

In Re: Section 6A of the Citizenship Act, 1955 (2024)

- In a **4:1 majority judgment**, the Supreme Court upheld the constitutional validity of **Section 6A of the Citizenship Act, 1955**.
- The provision grants Indian citizenship to eligible immigrants who entered **Assam from Bangladesh before 25 March 1971**, in accordance with the provisions of the historic **Assam Accord**.

Global Citizenship Documentation: A Comparative Perspective

United States

In the **United States**, citizenship is primarily established through:

- A **U.S. Birth Certificate**;
- A **Consular Report of Birth Abroad (CRBA)**;
- A **Certificate of Citizenship**;
- A **Certificate of Naturalization**; or
- A **valid U.S. Passport**, which is widely accepted as proof of citizenship for most legal and administrative purposes.

European Union

In most **European Union (EU)** member states:

- Citizenship is generally established through **National Identity Cards**, which explicitly mention the holder's nationality.
- **Passports** are also universally accepted as proof of nationality and citizenship.
- For routine administrative and domestic purposes, citizens commonly use their government-issued National Identity Cards.

United Kingdom

In the **United Kingdom**, British citizenship may be established through:

- A **British Passport**;
- A **UK Birth Certificate** (along with evidence of the parents' immigration or citizenship status for persons born after 1983); or
- A **Certificate of Registration** or **Certificate of Naturalization**.

Australia and New Zealand

In **Australia** and **New Zealand**, citizenship is generally established through:

- A **Citizenship Certificate**;
- A **Birth Certificate**, subject to the applicable birth-date eligibility rules; or
- A **valid and unexpired national passport**, wherever applicable.

Anti-Defection Law In India

Recently, several legislators from the Aam Aadmi Party (AAP) joined the Bharatiya Janata Party (BJP), and similar instances of legislators switching political parties have been reported in several states. These developments have once again drawn attention to the limitations and challenges associated with the Tenth Schedule of the Constitution, commonly known as the Anti-Defection Law.

Defection

Under the **Anti-Defection Law**, contained in the **Tenth Schedule of the Constitution of India**, **defection** refers to the act of an elected **Member of Parliament (MP)** or **Member of the Legislative Assembly (MLA)** abandoning the political party on whose ticket they were elected or violating the provisions of the Tenth Schedule, thereby attracting disqualification from the membership of the House.

Frequent incidents of defection weaken the trust of the electorate in the democratic process and often enable larger political parties to dominate smaller parties through political realignments.

Anti-Defection Law

The **Anti-Defection Law** is a constitutional mechanism designed to prevent political defections and ensure stability in parliamentary democracy. It was incorporated into the Constitution through the **52nd Constitutional Amendment Act, 1985**, during the government led by **Prime Minister Rajiv Gandhi**.

52nd Constitutional Amendment Act, 1985

The Amendment introduced the **Tenth Schedule** into the Constitution and amended the following constitutional provisions:

- **Article 101**
- **Article 102**
- **Article 190**
- **Article 191**

Objectives of the Anti-Defection Law

Ensuring Political Stability

The law seeks to prevent frequent **floor-crossing** and politically motivated defections that may destabilize governments and obstruct the smooth functioning of legislatures.

Upholding Party Discipline

It strengthens party discipline by requiring elected representatives to adhere to the official decisions and directions (whip) issued by their political party. Members who vote or abstain contrary to the party whip without prior permission may face disqualification.

Curbing Political Corruption

The law attempts to reduce political corruption by discouraging legislators from changing parties in exchange for monetary benefits, ministerial positions, or other political inducements.

Honouring the Voter's Mandate

The Anti-Defection Law respects the mandate of the electorate by ensuring that a legislator elected on the ticket of a particular political party cannot arbitrarily abandon that party without risking disqualification from the House.

Classification of Political Parties

Political parties in India may be classified on the basis of the **party system** as well as their **electoral recognition**.

I. Based on the Party System

One-Party System

In a **One-Party System**, only one political party exercises effective control over the government.

Examples: China, Cuba

Two-Party System

In a **Two-Party System**, two major political parties dominate the political landscape, although smaller parties may also exist.

Example: United States of America (USA)

Multi-Party System

In a **Multi-Party System**, several political parties compete in elections and participate in governance.

Example: India

II. Based on Electoral Recognition

Political parties are classified into the following categories:

- **National Party**
- **State Party**
- **Registered Unrecognized Political Party**

Criteria for Recognition as a National Party

A political party is recognized as a **National Party** if it satisfies **any one** of the following conditions:

1. It is recognized as a **State Party in at least four States**.
2. It secures **at least 6% of the valid votes in four or more States** in a general election to the **Lok Sabha** or the **Legislative Assemblies**, and, in addition, wins **at least four seats in the Lok Sabha**.
3. It wins **at least 2% of the total seats in the Lok Sabha**, and these elected members are returned from **at least three different States**.

Criteria for Recognition as a State Party

A political party is recognized as a **State Party** if it fulfills **any one** of the following conditions in a particular State:

1. It wins **at least 3% of the total seats** in the Legislative Assembly of the State or a **minimum of three Assembly seats**, whichever is higher.
2. It wins **at least one Lok Sabha seat** for every **25 Lok Sabha seats**, or any fraction thereof, allocated to that State.
3. It secures **at least 6% of the valid votes** in the State in a general election to the **Lok Sabha** or the **Legislative Assembly**, and also wins **at least one Lok Sabha seat or two Assembly seats**.
4. It secures **at least 8% of the total valid votes** polled in the State during a general election under the liberalized recognition criteria.

Concept of Registered Political Party and Recognized Political Party

Political parties in India are classified on the basis of their registration with the **Election Commission of India (ECI)** and the electoral recognition granted to them after fulfilling prescribed performance criteria.

Registered Unrecognized Political Party (RUPP)

A **Registered Unrecognized Political Party (RUPP)** is a political party that has completed the registration process with the **Election Commission of India (ECI)** but has **not yet fulfilled the conditions required to be recognized as either a State Party or a National Party**.

Registration

- Registration of political parties is governed by **Section 29A of the Representation of the People Act, 1951**.
- Registration gives a political party legal recognition by the Election Commission but **does not automatically grant it the status of a recognized political party**.

Recognized Political Party

A **Recognized Political Party** is a registered political party that has fulfilled the prescribed electoral performance criteria by securing the required **vote share** or **number of seats** in the **Lok Sabha** or **State Legislative Assembly elections**.

Recognition

- Recognition is granted under the **Election Symbols (Reservation and Allotment) Order, 1968**.
- Depending upon its electoral performance, a recognized party is classified either as a **National Party** or a **State Party**.

Constitutional Provisions Relating to Disqualification under the Anti-Defection Law

The **Tenth Schedule** of the Constitution lays down the circumstances under which a member of a legislature may be disqualified on the ground of defection.

I. Disqualification of an Elected Member

An elected Member of Parliament (MP) or Member of the Legislative Assembly (MLA) is liable to be disqualified under the following circumstances:

Voluntary Giving Up of Party Membership

A member is disqualified if they **voluntarily give up the membership** of the political party on whose ticket they were elected. Formal resignation is not always necessary; conduct indicating abandonment of party membership may also attract disqualification.

Violation of the Party Whip

A member is also disqualified if they **vote or abstain from voting** in the House contrary to the direction (whip) issued by their political party without obtaining prior permission or subsequent condonation from the party within the prescribed period.

II. Disqualification of an Independent Member

An **independently elected member** is disqualified if, after the election, they join any political party.

III. Disqualification of a Nominated Member

A **nominated member** may join a political party **within six months** from the date of taking their seat in the House. However, if they join any political party **after the expiry of six months**, they become liable for disqualification.

Exceptions to the Anti-Defection Law

The provisions relating to disqualification do **not** apply in the following situations:

I. Merger of Political Parties

A member shall not be disqualified if:

- The original political party merges with another political party; and
- **At least two-thirds of the legislators** belonging to the original political party agree to such merger.

II. Member Elected as the Presiding Officer

A member elected as the **Speaker** or **Chairman** of a House is exempt from disqualification if:

- They voluntarily resign from their political party after being elected to the office of Speaker or Chairman; and
- They maintain political neutrality while holding the office or rejoin their original political party after demitting the office.

Note: Following the **91st Constitutional Amendment Act, 2003**, protection against disqualification on the ground of a **split** in a political party was abolished. Only the provision relating to **merger**, supported by at least **two-thirds of the members**, continues to provide protection.

Authority to Decide Disqualification

The authority to decide questions relating to disqualification under the **Tenth Schedule** is vested in the **Presiding Officer** of the concerned House.

- In the case of Parliament, the decision is taken by the **Speaker of the Lok Sabha** or the **Chairman of the Rajya Sabha**.
- In the case of State Legislatures, the decision is taken by the **Speaker** or **Chairman** of the concerned House.

Earlier Position

Initially, the decision of the Presiding Officer was considered **final** and could not be challenged before any court.

Present Position

Following judicial interpretation by the Supreme Court, the decisions of the Presiding Officer are **subject to Judicial Review**, although such review generally takes place after the decision has been made.

Important Supreme Court Judgments

1. Kihoto Hollohan v. Zachillhu (1992)

- The Supreme Court upheld the constitutional validity of the **Tenth Schedule**.
- It ruled that the decision of the **Speaker or Chairman** under the Anti-Defection Law is **subject to Judicial Review**, although courts normally intervene only after the Presiding Officer has delivered a decision.

2. Ravi S. Naik v. Union of India (1994)

- The Supreme Court held that **voluntarily giving up party membership** does not necessarily require a formal resignation.
- A member's **conduct, speeches, public statements, and actions** may be sufficient to infer that they have voluntarily abandoned the political party, thereby attracting disqualification.

3. G. Viswanathan v. Speaker, Tamil Nadu Legislative Assembly (1996)

- This judgment laid down important principles regarding **party membership** and **disqualification** under the Tenth Schedule.
- The Court clarified that legislators who are expelled from their political party but subsequently join another political party may still incur disqualification under the Anti-Defection Law.

4. Keisham Meghachandra Singh v. Speaker, Manipur Legislative Assembly (2020)

- The Supreme Court expressed concern over the prolonged delay by Presiding Officers in deciding disqualification petitions under the Tenth Schedule.

- The Court observed that such petitions should ordinarily be decided **within three months**, except in exceptional circumstances where valid reasons justify a longer period.

Role of Election Commission

- Under the **Tenth Schedule**, the **Election Commission of India (ECI)** has **no direct role** in matters relating to the Anti-Defection Law.
- Indirect Role:** When defection results in a split within a political party, the ECI resolves intra-party disputes by determining which faction is the genuine political party.

Example: Maharashtra – Shiv Sena split.

Merger of Political Party vs. Split of Political Party

- Split:** A split occurs when members of an existing political party separate and form a new political party.
- Merger:** A merger takes place when members of two different political parties agree to combine and function as a single political party.

Political Party Members

- Legislators:** Members who are elected to the Legislature.
- Administrators/Organizational Members:** Members who are part of the organizational structure of the political party.

Merger of Legislators vs. Merger of Political Party

- Merger of Legislators:** It refers to a situation where elected legislators leave their existing political party and merge with another political party.

Example: If **two-thirds** of the legislators of a political party merge with another political party, they may claim protection under the **"merger"** exception provided in the **Tenth Schedule** of the Constitution.

- Merger of Political Party:** It refers to the merger of both the **organizational wing** and the **legislative wing** of a political party with another political party.

Criticism of the Anti-Defection Law

- The law does not clearly distinguish between **dissent** and **defection**.
- It restricts the **freedom of conscience** of legislators.
- It differentiates between **individual defection** and **group defection**, which is often considered irrational.
- It creates discrimination between **independent members** and **nominated members**.
- The power to decide disqualification is vested in the **Presiding Officer**, leading to concerns regarding:
 - Impartiality and bias.
 - Lack of legal knowledge and experience.

91st Constitutional Amendment Act

Reason

- To curb political defections.
- To implement the recommendations of the **Dinesh Goswami Committee** and the **170th Report of the Law Commission**, which recommended the removal of the exemption from disqualification in cases of **split**.

Provisions

- The total number of Ministers, including the **Prime Minister**, shall not exceed **15%** of the total strength of the **Lok Sabha**.
- A member who has been disqualified on the ground of defection shall also be disqualified from:
 - Being appointed as a **Minister**.
 - Holding any **remunerative political post**.
- The total number of Ministers, including the **Chief Minister**, shall not exceed **15%** of the total strength of the **State Legislative Assembly**.

RIGHT TO WALK ON FOOTPATH

In a landmark judgment, the Supreme Court ruled that the right to walk on safe and properly demarcated footpaths forms part of the Fundamental Right under the Constitution. The Court further observed that the interests of pedestrians must be given precedence over those of motorized vehicles.

Road Accidents

The Supreme Court's recognition of the right to walk safely on footpaths comes amid a significant increase in pedestrian fatalities caused by road accidents across India.

India's Deadly Roads

Year	Total Road Deaths	Pedestrian Deaths	Share of Pedestrian Deaths (%)
2015	146,133	13,894	9.50%
2016	150,785	15,746	10.50%
2017	147,913	20,457	13.80%
2018	151,417	22,656	15.00%
2019	151,113	25,858	17.10%
2020	131,714	23,483	17.80%
2021	153,972	29,124	18.90%
2022	168,491	32,825	19.48%
2023	172,890	35,221	20.37%
2024	177,175	36,526	20.61%

The years 2020 and 2021 were affected by the COVID-19 pandemic period.

Supreme Court's Directions

To ensure effective implementation and long-term structural reforms, the Court issued the following directions:

- **Mandatory Accessibility:** Every footpath should be planned, constructed, and maintained in a manner that makes it easily accessible and usable for persons with disabilities.
- **Removal of Encroachments:** Authorities must clear all encroachments from footpaths without making any exceptions.
- **Universal Footpath Standards:** All public roads should be provided with properly designed and inclusive footpaths or pedestrian walkways.
- **Policy Mandate:** Every State and Union Territory must formulate and implement a policy for the construction, maintenance, and protection of accessible footpaths.

Compliance Timeline

- All States and Union Territories have been directed to prepare guidelines consistent with those issued by the **Bombay High Court**.

- The **Union Government** has been instructed to place on record its existing national guidelines or frame fresh guidelines within **two months**.

Authorities Responsible for Maintaining Footpaths in India

In India, the responsibility for developing and maintaining footpaths rests with **Urban Local Bodies (Municipal Corporations, Municipalities, and Development Authorities)** in urban areas and with **Panchayats** in rural areas.

- Urban Local Bodies (ULBs):** Bodies such as the **Municipal Corporation of Delhi (MCD)** and the **New Delhi Municipal Council (NDMC)** are responsible for constructing footpaths, maintaining them, and removing encroachments from most city roads and internal streets.
- Public Works Department (PWD):** The State PWD generally looks after major arterial roads, State Highways, and the pedestrian facilities associated with them.
- National Highways Authority of India (NHAI):** It is responsible for maintaining pedestrian infrastructure along National Highways under its jurisdiction.
- Traffic Police:** Although they do not construct or own footpaths, the Traffic Police enforce regulations by taking action against illegal parking on footpaths and against vendors or vehicles obstructing pedestrian movement.

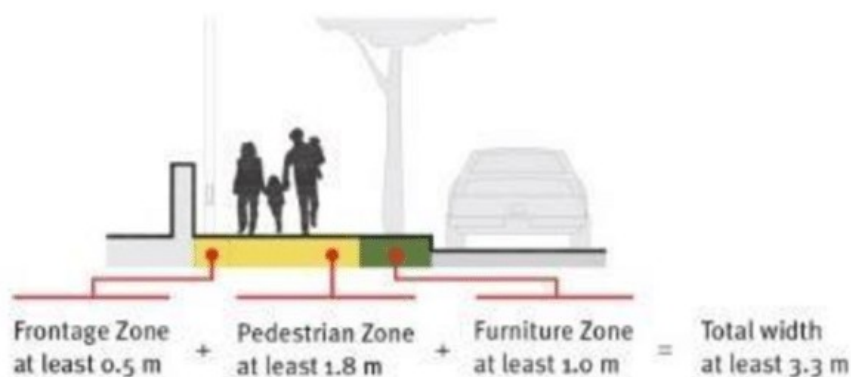
Footpath

- As per the **Indian Roads Congress (IRC)** guidelines, particularly **IRC:103-2012**, a **footpath (or sidewalk)** is a paved pathway exclusively meant for pedestrians and is physically separated from the motorized carriageway.
- It is intended to provide pedestrians of all abilities with a safe, continuous, and barrier-free walking space.

Footpath Design

According to the **Indian Roads Congress (IRC)**, a well-designed footpath consists of three functional zones:

- Frontage Zone:** This is the strip adjoining buildings, compound walls, or property boundaries and is commonly used for temporary shop displays or informal vending activities.
- Pedestrian Zone:** This is the central portion of the footpath kept clear and unobstructed exclusively for pedestrian movement.
- Furniture Zone:** Situated between the pedestrian zone and the roadway, this strip accommodates street furniture and public utilities such as trees, streetlights, manholes, and signboards, ensuring that they do not obstruct pedestrians.



Judicial Observations on Pedestrian Rights

- **Bombay High Court Model:** The Bombay High Court laid down a progressive model for footpath planning by emphasizing accessibility, inclusive design, and encroachment-free pedestrian spaces. It reinforced the principle that public infrastructure should be designed to be inclusive from the outset rather than modified later.
- **Maniyar Ilyaz Shaik Riyaz v. P. Ayyappan (2026):** In this landmark judgment, the Supreme Court held that the right to walk safely on properly demarcated footpaths is a Fundamental Right and affirmed that pedestrians must receive priority over motorized vehicles.
- **Removal of Encroachments:** The Court directed every State and Union Territory to eliminate encroachments from footpaths and ensure the availability of barrier-free and accessible pedestrian pathways.
- **S. Rajasekaran v. Union of India (2026):** The Supreme Court declared that the **right to unobstructed and disability-friendly footpaths** is protected under **Article 21** of the Constitution, recognizing it as an integral part of the Right to Life.

Reasons for Defunct Footpaths

- **Lack of a Pedestrian Zone:** The absence of a dedicated pedestrian zone forces people to walk on the carriageway, exposing them to moving traffic.
- **Excessive Height and Uneven Surface:** Footpaths with excessive height or uneven surfaces become inconvenient to use, leading pedestrians to prefer walking on the carriageway.
- **Frequent Level Changes and Encroachments:** Footpaths with frequent level changes discourage pedestrian movement. Similarly, when streets lack designated vending zones, vendors occupy footpaths, creating obstructions for pedestrians.
- **Improper Parking:** Angular and perpendicular parking consume a significant portion of the available right-of-way. In addition, drivers have limited visibility while exiting such parking spaces, increasing the risk of accidents.
- **Absence of Raised Crossings:** The lack of raised, traffic-calmed pedestrian crossings allows vehicles to travel at higher speeds, making road crossing unsafe for pedestrians.

Probable Solutions

- **Proper Footpath Design:** Footpaths developed according to the zoning system provide uninterrupted walking space. Footpaths with a height of **not more than 150 mm** are more convenient and are therefore more likely to be used.
- **Quality Surfacing:** Properly surfaced footpaths ensure safe and comfortable movement for pedestrians.
- **Dedicated Vending Space:** Footpaths should be planned with adequate space for vending activities outside the pedestrian zone, as recommended under **IRC:103-2012 (Clause 6.11.2)**.
- **Preferred Parking Pattern:** Parallel parking should be encouraged instead of angular or perpendicular parking to improve road safety and optimize available space.
- **Raised Pedestrian Crossings:** Raised crossings compel vehicles to slow down, thereby enhancing pedestrian safety while crossing roads.

Global Scenario Regarding Footpaths

Germany and Central Europe

- **Strict Usage Rules:** Pedestrians are legally required to use sidewalks wherever they are available. Exceptions are generally made only for persons carrying large or bulky objects that may obstruct the sidewalk.

- **Walking Direction:** Where sidewalks are absent, individuals must walk facing oncoming traffic. However, organized groups of pedestrians, such as marching parades, are required to walk in the same direction as vehicular traffic.

Australia and New Zealand

- **Pedestrian Flow:** Since vehicles drive on the left side of the road, pedestrians generally keep to the left side of the footpath, allowing smooth movement. Tourist destinations, however, often experience mixed walking patterns.
- **Shared Spaces:**
 - Pedestrian safety is given priority on footpaths.
 - Many regional transport authorities regulate the use of **e-scooters** on pavements by prescribing maximum speed limits and requiring riders to use bells or provide verbal warnings while passing pedestrians.

Japan

- **Zoning and Right of Way:** Japan follows a well-organized footpath system, where cyclists and pedestrians are often separated through painted markings or signboards.
- **Pedestrian Priority:** Pedestrians enjoy complete right of way on designated sidewalks, while cyclists are expected to yield to pedestrians or use the roadway, depending on local municipal regulations.

Cooperation Required from Citizens and Vendors

- Develop a positive attitude and stronger civic sense towards maintaining public infrastructure.
- Follow proper parking rules to prevent congestion and obstruction of footpaths.
- Treat footpaths as public property meant for collective use instead of encroaching upon them for personal benefit.
- Voluntarily contribute small amounts towards the maintenance and upkeep of footpaths wherever feasible.
- Avoid feeding dogs or other animals on footpaths to reduce the risk of dog bites and ensure safer pedestrian movement.

FCRA Amendment Rules, 2026

The Ministry of Home Affairs (MHA) has notified the **Foreign Contribution (Regulation) Amendment Rules, 2026**. In addition, the **Foreign Contribution (Regulation) Amendment Bill, 2026** has been introduced in Parliament to further amend and strengthen the legal framework governing foreign contributions in India.

Evolution

- **Historical Background:** The original **Foreign Contribution (Regulation) Act (FCRA), 1976** was enacted during the Emergency to regulate foreign influence over India's domestic affairs. It was subsequently repealed and replaced by the **FCRA, 2010**, which established a more comprehensive and stringent framework for regulating foreign contributions.
- **Constitutional Basis:**
 - **Article 19(1)(c)** guarantees citizens the right to form associations or unions.
 - However, **Article 19(4)** permits the State to impose reasonable restrictions in the interests of the sovereignty and integrity of India, public order, and morality.
 - In **Noel Harper v. Union of India (2022)**, the Supreme Court upheld the constitutional validity of the restrictions imposed under the FCRA.

- **Regulatory Evolution:** The **FCRA, 2010** strengthened regulatory oversight over organisations engaged in social, cultural, educational, religious, and charitable activities. The **2020 amendments** further tightened the regulatory framework by:
 - Requiring all foreign contributions to be received only through the **State Bank of India (SBI), New Delhi Main Branch**.
 - Reducing the permissible administrative expenditure limit from **50% to 20%**.
 - Completely prohibiting the transfer (sub-granting) of foreign contributions to any other person or organisation.
 - Expanding the powers of the Government to suspend FCRA registrations.
- **Current Scale:**
 - Nearly **16,000 NGOs** are registered under the FCRA.
 - Collectively, they receive around **₹22,000 crore** in foreign contributions every year, making the FCRA one of the most significant laws governing India's civil society sector.

Changes

- **Activity-Based Registration:** NGOs are now required to specify their exact activities under five categories—**social, economic, educational, cultural, and religious**.
 - Separate registration fees must be paid for each category as well as for every **State or Union Territory**.
 - This represents a shift from **entity-based regulation to activity-based regulation**, enabling closer monitoring of individual activities.
- **Geographical Specification:** Registration certificates must clearly mention the **States or Union Territories** where the organisation intends to operate.
 - Existing NGOs have been granted **one year** to comply with this requirement.
- **Religious Regulation:** Foreign contributions may be utilised for **worship, religious education, preservation of religious heritage, and community kitchens**.
 - However, such funds cannot be used for **proselytisation (religious conversion)**.
 - This is consistent with **Article 25** of the Constitution and the Supreme Court's judgment in **Rev. Stanislaus v. State of Madhya Pradesh (1977)**, which held that the right to propagate religion does not include the right to convert another person.
- **Expanded Definition of Key Functionaries:** The term **key functionaries** now includes **trustees, partners, directors, office-bearers, members of the governing body, and the Karta of a Hindu Undivided Family (HUF)**.
 - Associations having **foreign nationals (except Persons of Indian Origin (PIOs))** as key functionaries will ordinarily not be eligible for registration.
- **Financial Tightening:** NGOs must utilise **at least 75%** of previously received foreign funds before becoming eligible to receive fresh instalments.
 - For renewal of registration, they must spend **at least ₹10 lakh** on approved activities over a period of **two years**.
- **Mandatory Disclosure:** NGOs are required to disclose details of the **ultimate donor**, official websites, social media accounts, and publications to enhance transparency.
- **Asset Vesting:** A **Designated Authority** will assume temporary or permanent control over foreign-funded assets if an NGO's registration is cancelled, surrendered, or expires.
 - If the registration is not restored, such assets may permanently vest in the Government.
- **Automatic Cessation:** FCRA registration will automatically lapse if renewal is **not applied for, is rejected, or is not obtained before the expiry date**.
- **Media Restrictions:** Persons engaged in **news production, publication, or current affairs broadcasting** are prohibited from receiving foreign contributions.
- **Centralisation of Investigation:** Any investigation under the FCRA will require **prior approval of the Central Government**, thereby limiting the independent role of State agencies.

- **Rationalisation of Penalties:** The maximum term of imprisonment for violations has been reduced from five years to one year, while the existing monetary penalties remain unchanged.

Key Concerns

- **Procedural Burden:** Multiple activity-specific registrations and separate fee requirements increase compliance costs, particularly for smaller organisations.
- **Operational Rigidity:** Strict activity-based approvals may reduce the flexibility of NGOs to respond quickly to changing social and humanitarian requirements.
- **Procedural Paralysis:** Automatic cessation of registration under **Section 14B** may halt NGO operations due to procedural delays even in the absence of any proven violation.
- **Property Rights:** Temporary or permanent vesting of assets without judicial review raises concerns under **Article 300A**, which protects individuals from arbitrary deprivation of property.
- **Natural Justice:** Taking control of assets before judicial scrutiny may weaken the principles of natural justice, fair hearing, and due process.
- **Concentration of Executive Power:** The Designated Authority is vested with extensive powers relating to the supervision, management, and disposal of NGO assets.
- **Federal Concerns:** The requirement of prior approval from the Central Government for investigations reduces the role of State agencies and raises concerns regarding the federal balance.
- **Subjective Standards:** Expressions such as "**public interest**" remain undefined, leaving scope for broad interpretation and discretionary application.
- **Impact on Minority Institutions:** Minority-run schools, hospitals, and charitable organisations may experience greater regulatory scrutiny and compliance requirements.
- **Impact on Grassroots Organisations:** Funding uncertainties may adversely affect long-term programmes relating to education, healthcare, child welfare, and skill development.

Judicial Position

- **Noel Harper v. Union of India (2022):** The Supreme Court upheld the constitutional validity of the FCRA, holding that its restrictions are reasonable measures to safeguard the sovereignty and integrity of India as well as public order.
- **Indian Social Action Forum (INSAF) v. Union of India (2020):** The Court recognised the need to regulate foreign contributions but observed that genuine voluntary organisations should not be subjected to unnecessary restrictions.
- **Rev. Stainislaus v. State of Madhya Pradesh (1977):** The Supreme Court clarified that the constitutional right to **propagate religion** does not include the **right to convert another person**.

PAPER LEAKS

LEARN TODAY, LEAD TOMORROW

Repeated paper leaks in major national examinations have seriously undermined the credibility of India's competitive examination system. These incidents have put the future of millions of students at risk and underline the need for comprehensive legislative and institutional reforms.

What is an Exam Leak?

- An **exam leak** or **paper leak** refers to the unauthorized disclosure or circulation of a question paper before the scheduled examination, usually for monetary gain or other illegal benefits, resulting in an unfair advantage for certain candidates.

High Competitive Examination Culture in India

- **Too many aspirants, too few opportunities:** Paper leaks are not merely failures of an examination system but reflect deeper structural issues where the number of candidates far exceeds the available seats or vacancies, creating intense competition.

Trends of Paper Leaks in Recent Years

- Incidents of paper leaks have been reported not only in **NEET** but also in several other competitive examinations, including **SSC-CGL**, various **State Public Service Commission (PSC)** examinations, and **Patwari recruitment examinations**.

Causes of Paper Leaks

Structural Causes

- **High-Stakes Competition:** Millions of candidates compete for a limited number of seats and government jobs through examinations such as **NEET, JEE, CUET, SSC, Railway, and State PSC** exams. The mismatch between demand and supply, combined with the high rewards attached to success, encourages organised cheating.
- **Educational Gaps:** The continued existence of expensive yet low-quality Tier-5 and Tier-6 institutions, coupled with the limited capacity of premier institutions such as **IITs, AIIMS, and IIMs**, intensifies competition among aspirants.
- **Weak Examination Design:** Excessive centralisation means that a single breach can affect admissions or recruitment across the country. At the same time, the involvement of multiple examining bodies often results in fragmented and poorly coordinated management.

Institutional Causes

- **Limited Administrative Capacity:** Inadequate planning, shortage of trained personnel, lack of technical expertise, and weak coordination among agencies reduce the effectiveness of examination management.
- **Insider Collusion:** Printing personnel, examination officials, invigilators, transport staff, and IT personnel may facilitate unauthorized access to question papers before the examination.
- **Cybersecurity Weaknesses:** Poor encryption standards and weak digital security systems increase the risk of hacking, server breaches, malware attacks, and data theft.
- **Inadequate Infrastructure:** Many examination centres lack CCTV surveillance, biometric verification, secure internet connectivity, and standard operating procedures.
- **Weak Monitoring Mechanisms:** The absence of independent audits, real-time monitoring, surprise inspections, and effective paper-tracking systems increases the possibility of leaks.

Criminal and Commercial Causes

- **Organised Syndicates:** Criminal networks involving coaching centres, middlemen, cyber experts, and corrupt officials illegally obtain and sell question papers for large sums of money.
- **Commercial Coaching Culture:** The growing commercialization of coaching institutions has, in some cases, been linked to organised paper leak networks.
- **Weak Deterrence:** Delayed investigations, slow prosecution, and low conviction rates reduce the deterrent effect of existing laws.

Supreme Court Observations

- **2025:** While dealing with the NEET paper leak issue, the Supreme Court observed that the leak was **location-specific** and stressed the need for stronger preventive measures.
- **2026:** The Supreme Court remarked that the **NEET paper leak had traumatized entire families**, highlighting the widespread impact of such incidents.
- The Court's observations indicate that adequate lessons have not been learnt from previous paper leak incidents.
- It further emphasized that the damage caused by examination leaks cannot be remedied merely with the passage of time.

Government Intervention

- Government responses have often focused on addressing the **symptoms** rather than the **root causes** of paper leaks. Measures such as temporarily banning **Telegram** or transporting question papers under enhanced security provide only short-term solutions.
- The silence of concerned authorities and ministers on repeated paper leaks has contributed to declining public confidence in the examination system.
- The involvement of multiple agencies often results in diffused responsibility, where accountability becomes difficult to fix.

Thinkers' Views on the Examination System

- **Niklas Luhmann – Institutional Trust:** Luhmann argued that once institutional trust is lost, even genuine and fair outcomes begin to lose credibility.
- **Peter Senge – Feedback Loop:** According to Senge, blocking one channel of malpractice often leads offenders to adopt another method. For example, restricting digital applications may encourage the use of VPNs or alternative platforms, as witnessed during the temporary ban on Telegram following the NEET examination controversy.
- **Gary Becker – Economics of Crime:** Becker's theory suggests that when a single examination determines access to higher education, government employment, and economic mobility, the incentives for corruption and unethical behaviour become significantly stronger.
- **Mancur Olson – Political Economy of Fraud:** Olson's perspective explains how organised networks and dishonest aspirants can secure substantial rewards through unfair means, while sincere and hardworking candidates bear the greatest loss.

Institutions and Agencies Involved

1. Higher Education and Fellowship Entrance Examinations

These examinations are conducted by specialised testing agencies and educational institutions.

- **National Testing Agency (NTA):** Conducts major national entrance examinations, including **JEE Main**, **NEET-UG**, **CUET (UG/PG)**, and **UGC-NET**.
- **Indian Institutes of Technology (IITs):** The responsibility for conducting **JEE (Advanced)** rotates among different IITs each year.
- **Indian Institutes of Management (IIMs):** Conduct the **Common Admission Test (CAT)** on a rotational basis for admission to management programmes.

2. Civil Services and Government Recruitment

Recruitment to the All India Services and various Central and State Government posts is conducted by constitutional and statutory bodies.

- **Union Public Service Commission (UPSC):** Conducts the **Civil Services Examination (CSE)**, **NDA**, **CDS**, and several other Central recruitment examinations.
- **State Public Service Commissions (State PSCs):** Conduct State-level civil service and administrative recruitment examinations, such as those conducted by **UPPSC**, **BPSC**, and other State Commissions.
- **Staff Selection Commission (SSC):** Conducts recruitment examinations for various **Group 'B'** and **Group 'C'** posts in Ministries, Departments, and other offices of the Government of India.

International Scenario of Competitive Examinations

1. Finland Model

- Finland has moved away from relying on a single high-stakes examination for evaluating students.
- Its education system emphasizes **continuous assessment** at different stages of learning rather than judging students solely through one final examination.

- The model values a student's **overall potential, consistent academic performance, and long-term learning outcomes** instead of performance on a single examination day.

2. Singapore Model

- Singapore has developed a highly efficient examination system supported by **strong institutional capacity, advanced technology, and strict accountability mechanisms** at every stage of the examination process.
- These measures have helped build a high level of **public confidence** in the integrity and fairness of its examination system.
- **Example:** In India, the **Union Public Service Commission (UPSC)** similarly enjoys a strong public reputation because of its consistent record of conducting examinations with credibility and without major controversies.

3. China Model

- China's competitive examination system revolves around the **Gaokao (National College Entrance Examination)**, one of the world's most competitive entrance examinations.
- The examination is conducted with security arrangements comparable to a **national security operation** to ensure complete fairness and eliminate the possibility of paper leaks.
- **State-Secret Classification:** Question papers are legally treated as **State Secrets**. They are printed in highly secured facilities operating under round-the-clock surveillance, where personnel remain completely isolated from the outside world until the examination process is completed.
- **Military-Grade Transportation:** Examination papers are transported in GPS-tracked vehicles under the protection of armed police escorts, with continuous real-time monitoring throughout the journey.
- **Advanced Biometric Verification:** Before entering examination centres, candidates undergo strict identity verification through **facial recognition, fingerprint authentication, and iris scanning** to prevent impersonation.
- **Technology-Based Anti-Cheating Measures:** Examination centres are equipped with **metal detectors, AI-enabled surveillance cameras** capable of detecting suspicious movements, **drones**, and **signal jammers** to block unauthorized wireless communication.
- **Strict Legal Punishment:** Cheating in the **Gaokao** is treated as a criminal offence and attracts severe legal consequences.
- **National-Level Administrative Measures:** During examination days, cities adopt special administrative arrangements to ensure smooth conduct of the examination. Construction activities near examination centres are suspended, traffic routes are diverted, and police escorts are provided to assist candidates facing delays in reaching their examination centres.

— LEARN TODAY, LEAD TOMORROW —

Prelims Special

Polity

Mission Senehjori (Assam Muga Silk USP)

The Union Minister for Development of North Eastern Region (MDoNER) launched **Mission Senehjori (Assam Muga Silk USP)**. The mission seeks to transform Assam's Muga silk sector into a globally competitive luxury textile ecosystem.

About the Mission

- **Mission Senehjori** is a cluster-based initiative being implemented in collaboration with the Government of Assam, the Central Silk Board, the Ministry of Textiles, and other central agencies.
- The mission will be implemented across the major Muga silk-producing districts of **Jorhat, Sivasagar, Lakhimpur, Dhemaji, Dibrugarh, Tinsukia, Majuli, and Sualkuchi**.

- It aims to establish a premium, traceable, export-oriented, and globally competitive Muga silk value chain.
- The mission focuses on **host plant cultivation, silkworm seed production, reeling, weaving, branding, quality assurance, export promotion, digital traceability, and silk tourism.**
- It encourages the formation of **Farmer Producer Organisations (FPOs), Common Facility Centres (CFCs), and Farmer Interest Groups (FIGs)** under the unified **Senehjori** brand.
- The total investment is estimated at **₹396–411 crore** over a period of three years, including **₹136–151 crore** to be provided by MDoNER.

Mission Targets by 2028

- Establish **five modernised Muga reeling units** and **one Muga Spun Mill.**
- Create **30 Farmer Producer Organisations (FPOs)** and more than **1,180 Farmer Interest Groups (FIGs).**
- Regenerate **5,000 hectares** of **Som** and **Soalu** host plants.
- Ensure **Geographical Indication (GI)** authentication of more than **80%** of traded Muga silk through digital traceability.
- Develop a **Muga Silk Trail, a Silk Tourism Park,** and organise annual **Muga Utsav** festivals.

Muga Silk and Sericulture

- **Muga silk** is the world's only naturally golden silk and is produced by **Antheraea assamensis**, which feeds on **Som** and **Soalu** host plants.
- It is highly valued for its natural golden colour, exceptional durability, and suitability for luxury textile markets.
- Muga silk is **India's first GI-tagged silk** and has a deep association with Assam's cultural heritage.
- **Sericulture** refers to the rearing of silkworms, such as **Bombyx mori** for mulberry silk, which feed on host plants including **mulberry, oak, castor, and arjun** to produce cocoons.

Central Silk Board

- The **Central Silk Board (CSB)** is a statutory body under the **Ministry of Textiles**, established under the **Central Silk Board Act, 1948.**
- It is responsible for formulating policies and implementing programmes for the development of the sericulture sector and the silk industry in India.
- The headquarters of the Central Silk Board is located in **Bengaluru, Karnataka.**
- India is the only country in the world that produces all four major varieties of natural silk: **Mulberry (about 70% of total production), Tasar, Eri (Ahimsa Silk), and Muga.**
- **Assam** accounts for nearly **90% of the world's Muga silk production.**
- India is the **second-largest producer of silk** in the world after **China**, contributing nearly **25% of global silk production.**
- The sericulture sector provides livelihood support to nearly **2.6 lakh rearer and weaver families**, contributing to higher incomes and strengthening the silk economy.

NATIONAL AWARDS FOR E-GOVERNANCE (NAEG) 2026

The Government announced **17 winning initiatives** under the **National Awards for e-Governance (NAeG) 2026** across **seven categories**, comprising **10 Gold Awards, 6 Silver Awards, and 1 Jury Award.**

About NAeG

- The **National Awards for e-Governance (NAeG)** are annual awards instituted by the **Department of Administrative Reforms and Public Grievances (DARPG).**
- The awards aim to promote excellence in **e-governance** and strengthen the delivery of digital public services.

- They recognise the innovative use of technology to enhance **governance, transparency, accountability, and citizen-centric service delivery**.
- The awards cover initiatives undertaken by **Ministries, Departments, States, Union Territories, Districts, Urban Local Bodies (ULBs), and Gram Panchayats**.
- **Award Categories:** The awards recognise outstanding initiatives in **Gram Panchayat digitisation, Government Process Re-engineering (GPR), Artificial Intelligence (AI) and emerging technologies, Cyber Security innovations and best practices, and Data Analytics in digital platforms**.

Major Award-Winning Initiatives

- **Agri Stack**, developed by the **Ministry of Agriculture and Farmers Welfare**, creates a digital ecosystem using **unique farmer identities and land-linked databases** to facilitate subsidies, crop insurance, agricultural credit, advisories, and government schemes.
- **e-Jagriti**, developed by the **Ministry of Consumer Affairs**, enables consumers to file and track complaints online.
- The **Mahakumbh 2025 Digital Governance Model**, implemented by the **Prayagraj Mela Authority**, demonstrated large-scale use of digital technologies in managing one of the world's largest religious gatherings.
- The **Blood Bag Traceability and Citizen Interaction Portal**, developed by the **Kerala Development and Innovation Strategic Council (K-DISC)**, enables end-to-end tracking of blood units from donation to transfusion.
- The **AI-enabled Clinical Decision Support System** integrated into **e-Sanjeevani**, developed by the **Ministry of Health and Family Welfare**, enhances telemedicine services.
- **TRINETRA**, developed by the **Mahakaleshwar Temple Trust**, uses **AI-based video surveillance** for improved monitoring and security.
- The **Panchayat Advancement Index**, developed by the **Ministry of Panchayati Raj**, promotes **data-driven local governance** and performance assessment of Panchayats.

Jury Award

- The **Real-Time Precise Positioning Services through the Continuously Operating Reference Stations (CORS) Network** received the **Jury Award** for providing highly accurate geospatial positioning services.

Award Ceremony and Incentives

- The awards will be presented during the **29th National Conference on e-Governance**, to be held in **Jaipur, Rajasthan**.
- **Gold Award** winners will receive a **trophy, certificate, and a cash award of ₹10 lakh**.
- **Silver Award** winners will receive a **trophy, certificate, and a cash award of ₹5 lakh**.
- The cash incentives will be utilised for **project implementation** and to address **resource gaps in public welfare initiatives**.

PRIME MINISTER RESEARCH CHAIR (PMRC) SCHEME, 2026

The **Department of Higher Education** has invited applications for the **Prime Minister Research Chair (PMRC) Scheme, 2026** to attract Indian-origin researchers working abroad.

About the Scheme

- The **Prime Minister Research Chair (PMRC) Scheme** is a flagship initiative of the **Ministry of Education** designed to encourage talented Indian-origin researchers working in foreign universities, private laboratories, and technology industries to return to India.
- The scheme aims to strengthen India's research ecosystem, curb brain drain, and promote breakthroughs in critical technology sectors.

- It is structured around three key pillars: **Lead Institutions, Host Institutions, and PMRC Fellows.**

Categories of Fellows

- **Young Research Fellows (YRF):** Researchers with **less than five years of post-PhD experience.**
- **Senior Fellows (SF):** Researchers with **five years to less than ten years of post-PhD experience.**
- **Research Chairs (RC):** Researchers with **ten years or more of post-PhD experience** and a proven record of research leadership.

Priority Research Areas

- Research proposals must align with **13 strategic sectors**, including **Artificial Intelligence (AI), Quantum Computing, Semiconductors, Cybersecurity, Advanced Manufacturing, Critical Minerals, Space and Defence, Atomic Energy, Energy, Climate Change, Biotechnology, Healthcare, Agri and Food Technologies, and the Blue Economy.**

Eligibility and Governance

- Eligible applicants include **Indian nationals residing abroad, Overseas Citizen of India (OCI) cardholders, and Persons of Indian Origin (PIOs)** with a strong record of research achievements.
- Eligible host institutions include **government institutions ranked among the top 100 in the National Institutional Ranking Framework (NIRF) Overall or Engineering categories, or among the top 50 in the Research category.**
- National laboratories under the **Department of Science and Technology (DST), Department of Biotechnology (DBT), Indian Council of Medical Research (ICMR), and Council of Scientific and Industrial Research (CSIR)** are also eligible to host fellows.
- The selection process will be supervised by an **Empowered Committee** chaired by the **Principal Scientific Advisor (PSA).**

Support and Lead Hubs

- Selected fellows will receive **fellowships, research grants, relocation assistance, and access to advanced research laboratories.**
- The seven **Lead Hubs** under the scheme are **Indian Institute of Technology (IIT) Delhi, IIT Bombay, IIT Madras, IIT Kanpur, IIT Hyderabad, IIT (ISM) Dhanbad, and the Indian Institute of Science (IISc), Bengaluru.**

PAC FLAGS GAPS IN PMKVY

The **Public Accounts Committee (PAC)** of Parliament recently expressed serious concerns regarding the implementation of the **Pradhan Mantri Kaushal Vikas Yojana (PMKVY)**, stating that the scheme appears to have provided training in sectors that do not necessarily offer corresponding employment opportunities.

Pradhan Mantri Kaushal Vikas Yojana (PMKVY)

- The **Pradhan Mantri Kaushal Vikas Yojana (PMKVY)** was launched in **2015** under the **Ministry of Skill Development and Entrepreneurship (MSDE).**
- The scheme was conceived as a national mission to equip India's large and young workforce with **industry-aligned skills.**
- PMKVY is implemented through the **National Skill Development Corporation (NSDC)** and aims to bridge the gap between the skills possessed by Indian youth and the actual requirements of the job market.

ECONOMIC ADVISORY COUNCIL TO THE PRIME MINISTER (EAC-PM)

The **Prime Minister** recently chaired a meeting of the **Economic Advisory Council to the Prime Minister (EAC-PM)** to review measures aimed at sustaining economic growth.

About

- The **Economic Advisory Council to the Prime Minister (EAC-PM)** is an independent advisory body that provides advice to the **Prime Minister** on economic and related issues.
- Its role is purely advisory, and its recommendations are **not binding** on the Government.
- The Council also works to improve public understanding and awareness of important economic issues.

Composition

- The **EAC-PM** is currently chaired by **S. Mahendra Dev**.
- At present, it comprises **one Chairperson, three Full-Time Members, and eleven Part-Time Members**.
- The Council is supported by officials and administrative staff to ensure its effective functioning.
- For administrative, planning, budgeting, and logistical support, **NITI Aayog** serves as the nodal agency.

Functions

- The Council analyses economic and related issues referred to it by the **Prime Minister** and provides policy recommendations.
- It examines macroeconomic issues and offers advice on **economic growth, inflation, employment, and fiscal policy**.
- The Council may examine issues **suo motu (on its own initiative)** or on the basis of references received from the **Prime Minister** or other sources.
- It may also undertake any additional responsibilities assigned by the **Prime Minister** from time to time.

Significance

- The **EAC-PM** serves as an important expert advisory platform for guiding economic policymaking, particularly during periods of **global uncertainty and economic challenges**.

JAN SAMARTH PORTAL

The **Jan Samarth Portal** has completed **four years** of promoting **digital financial inclusion** and ensuring seamless credit delivery.

About Jan Samarth Portal

- **Launched in: 2022**
- It is a **single-window digital platform** designed to facilitate access to **credit-linked government schemes**.

Key Features

1. Digital Loan Processing

- Enables **end-to-end digital loan processing** with **real-time verification** using databases such as:
 - UIDAI
 - UDYAM
 - AgriStack
 - GST
 - Central Board of Indirect Taxes and Customs (CBIC)
 - Direct Taxes

2. Single-Window Platform

- Provides a **single-window digital interface** for availing benefits under **16 credit-linked government schemes**.

3. Language Availability

- Available in **8 languages**.
- Integrated with **26 lending institutions**, including:
 - Banks
 - Non-Banking Financial Companies (NBFCs)
 - Cooperative Banks

4. Sector Access

- Facilitates institutional credit across sectors such as:
 - Agriculture
 - Business
 - Housing
 - Renewable Energy
 - Livelihoods

PRADHAN MANTRI SURAKSHIT MATRITVA ABHIYAAN (PMSMA)

The **10th anniversary** of the **Pradhan Mantri Surakshit Matritva Abhiyaan (PMSMA)** was recently observed, highlighting the scheme's contribution to improving maternal healthcare in India.

About PMSMA

- The **Pradhan Mantri Surakshit Matritva Abhiyaan (PMSMA)** was launched on **9 June 2016** by the **Ministry of Health and Family Welfare (MoHFW)**.
- The scheme provides **free, comprehensive, and quality Antenatal Care (ANC)** services to pregnant women.
- It primarily covers women in the **second and third trimesters of pregnancy** at designated government health facilities on the **9th of every month**.
- PMSMA is based on the principle that **at least one physician-led antenatal examination during pregnancy** can significantly reduce **maternal and neonatal mortality**.

Key Features

- The scheme offers services such as **clinical examination, risk assessment, blood and urine tests, ultrasonography, and the provision of essential medicines**, including **Iron and Folic Acid (IFA) tablets and calcium supplements**.
- Counselling is provided on **nutrition, birth preparedness, and safe pregnancy practices**.
- Special emphasis is placed on **unregistered pregnant women, ANC dropouts, and high-risk pregnancies**.
- **High-risk pregnancies** are identified using **Red stickers**, while **low-risk pregnancies** are marked with **Green stickers**.
- Under the **Doctor Volunteer System**, private medical specialists, including **Obstetricians and Gynaecologists (OBGY), radiologists, and physicians**, can voluntarily provide services under the scheme.

Extended PMSMA (e-PMSMA)

- **Extended PMSMA (e-PMSMA)** was launched in **2022** to strengthen the monitoring and follow-up of **High-Risk Pregnant (HRP) women** until safe delivery.
- The initiative provides **up to four additional PMSMA sessions every month**.
- It ensures continuous tracking of beneficiaries until the **45th day after delivery** and sends **SMS alerts** to both beneficiaries and **Accredited Social Health Activists (ASHAs)**.

Achievements

- More than **6 crore pregnant women** have received antenatal examinations under PMSMA.

- India's **Maternal Mortality Ratio (MMR)** declined from **130 (2014–16)** to **87 (2022–24)**.
- The scheme contributes to achieving the **Sustainable Development Goal (SDG)** target of reducing maternal mortality to **below 70 deaths per 100,000 live births by 2030**.

Complementary Schemes

PMSMA complements several other maternal and child health initiatives, including:

- **Janani Suraksha Yojana (JSY)**
- **Janani Shishu Suraksha Karyakram (JSSK)**
- **Surakshit Matritva Aashwasan (SUMAN)**
- **POSHAN Abhiyaan**
- **Pradhan Mantri Matru Vandana Yojana (PMMVY)**
- **LaQshya**

PRADHAN MANTRI UJJWALA YOJANA

The **Ministry of Petroleum and Natural Gas** has reduced the number of **subsidised Liquefied Petroleum Gas (LPG)** cylinders available under the **Pradhan Mantri Ujjwala Yojana (PMUY)** from **nine to four per year**.

About PMUY

- The **Pradhan Mantri Ujjwala Yojana (PMUY)** was launched in **2016** with the objective of replacing traditional cooking fuels such as **coal and firewood** with **clean Liquefied Petroleum Gas (LPG)**.
- The scheme aims to safeguard the health of **women and children** by reducing **indoor air pollution** caused by smoke from conventional cooking fuels.

Eligibility

- Initially, the scheme was meant for **women belonging to Below Poverty Line (BPL)** households identified through the **Socio-Economic and Caste Census (SECC), 2011**.
- Under **PMUY 2.0**, launched in **2021**, the scope of the scheme was expanded to include **migrant families, Scheduled Castes (SCs), Scheduled Tribes (STs), Most Backward Classes (MBCs), beneficiaries of the Pradhan Mantri Awas Yojana (PMAY), forest dwellers, and other economically weaker households**.

Key Features

- The scheme provides a **free LPG connection**, along with the **first LPG refill** and a **cooking stove**.
- At present, beneficiaries receive a **subsidy of ₹300 per cylinder** for the **first four LPG cylinders** every year, based on the average household consumption.
- Following the recent **₹29 increase** in LPG prices, **PMUY beneficiaries pay ₹642** for a **14.2 kg LPG cylinder**, while **general consumers in Delhi pay ₹942** for the same cylinder.
- The **supply cost of an LPG cylinder** has increased to **more than ₹1,600 per cylinder**.

Achievements

- PMUY initially set a target of providing **8 crore LPG connections**, which was achieved in **2019**.
- Under **PMUY 2.0**, an additional **1.6 crore LPG connections** were released by **2022**.
- Overall, the scheme has provided **more than 10 crore LPG connections** across the country.
- PMUY has significantly increased **LPG coverage**, bringing India close to **universal household LPG access**.
- The scheme has contributed to **better health outcomes** and reduced dependence on **biomass-based cooking fuels**.

STATE FINANCE COMMISSIONS (SFCs)

The **Ministry of Panchayati Raj** has released a report on **datasets for State Finance Commissions (SFCs)** to strengthen **evidence-based fiscal decentralisation**.

About State Finance Commissions (SFCs)

- **State Finance Commissions (SFCs)** are constitutional bodies established under **Article 243-I** of the Constitution following the **73rd Constitutional Amendment Act, 1992**.
- Every State is required to constitute an **SFC every five years** to review the financial position of **Panchayats**.
- SFCs recommend the principles for sharing financial resources between the **State Government** and **Panchayati Raj Institutions (PRIs)**.
- They recommend the distribution of **taxes, duties, tolls, and fees**, along with **grants-in-aid** from the **Consolidated Fund of the State**.

Key Challenges

- The absence of **consolidated accounts** makes it difficult to accurately assess the financial position of Panchayats.
- **Non-standard accounting practices** reduce comparability of financial data across different States.
- **Capacity constraints** at the Gram Panchayat level, including a shortage of trained accountants and staff, weaken financial record-keeping.
- **Fragmented data systems** across multiple departments delay data availability and reduce the effectiveness of SFC analysis.
- The lack of **Panchayat-level** and **sector-wise expenditure data** hampers performance-based fiscal assessment.
- Delays in the constitution of SFCs and the submission of their reports weaken the process of fiscal decentralisation. The **Fifteenth Finance Commission** observed an **average delay of 16 months** in the constitution and functioning of SFCs.

Key Recommendations

- Classify **Panchayat Advancement Index (PAI)** indicators into **needs, performance, and backwardness/equity** categories to enable objective fiscal devolution.
- Adopt a **standard reporting template** and **uniform accounting heads** to ensure consistency in financial reporting.
- Publish a **supplementary budget document** showing all transfers to **rural and urban local bodies**, including **Gram Panchayat-wise allocations**.
- Establish **permanent State Finance Commission Cells** for the continuous updating of fiscal and governance data.
- The **Comptroller and Auditor General of India (CAG)** should conduct a **performance audit** of the implementation of the **73rd Constitutional Amendment Act**.
- Strengthen the capacity of SFCs through training on **eGramSwaraj**, data management systems, and analytical tools.
- Prepare a **comprehensive State Finance Commission Manual** to provide guidance for future commissions.
- The **National Institute of Rural Development and Panchayati Raj (NIRDPR)** should organise training programmes and compile best practices for SFCs.

Significance

- The report aims to establish a **strong data-driven fiscal decentralisation framework**, improve the quality of financial decision-making, and strengthen **grassroots governance** through more effective and transparent resource allocation.

VIKSIT BHARAT-GUARANTEE FOR ROZGAR AND AJEEVIKA MISSION GRAMIN (VB-G RAM G)

The **Union Government** has proposed an allocation of **₹95,692 crore** for the **Viksit Bharat Gramin Rozgar Mission (VB-G RAM G)**, while workers' organisations have announced protests from **1 July**, demanding the repeal of the scheme.

About the Scheme

- **Viksit Bharat Gramin Rozgar Mission (VB-G RAM G)** has replaced the **Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), 2005**.
- The scheme represents a shift from a **demand-driven employment model** to a **supply-driven framework**.
- It increases the employment guarantee from **100 days to 125 days** per rural household in a financial year for adults willing to undertake **unskilled manual work**.
- The scheme will be implemented as a **Centrally Sponsored Scheme (CSS)** with the following funding pattern:
 - **90:10** for **North-Eastern and Himalayan States/Union Territories**.
 - **60:40** for **all other States**.
- Planning under the scheme will be based on **Viksit Gram Panchayat Plans (VGPPs)** prepared by **Gram Panchayats** and integrated with **national spatial planning systems**.
- If employment is not provided within the prescribed time, the **State Government** will be responsible for paying **unemployment allowance**.
- State Governments may notify **up to 60 days** during **peak sowing and harvesting seasons** when work under the scheme will remain suspended to ensure the availability of agricultural labour.
- The scheme will be monitored by the **Central Gramin Rozgar Guarantee Council** and the **State Gramin Rozgar Guarantee Councils**.

Major Concerns

- Activists argue that the promise of **125 days of employment** is not supported by adequate financial resources or administrative capacity.
- Government data indicates that many States may be unable to provide even **half of the promised employment days**.
- The scheme's rules do not clearly specify **wage rates** and do not guarantee payment of **statutory minimum wages**.
- The continued use of **facial recognition** and **biometric authentication** may result in wage losses due to technological failures.
- Unlike **MGNREGA**, which follows a **bottom-up demand-based approach**, **VB-G RAM G** adopts a **top-down normative allocation** determined by the Central Government.
- Under **MGNREGA**, the **Central Government** bore **100% of the wage cost** and **75% of the material cost**. Under **VB-G RAM G**, a larger financial burden is shifted to the States through the **60:40 funding pattern**.
- The revised funding structure may widen **regional disparities**, as financially weaker States may face difficulties in mobilising their share of funds.

Armed Forces (Special Powers) Act (AFSPA)

Union Home Minister Amit Shah recently stated that the **Armed Forces (Special Powers) Act (AFSPA)** may be withdrawn from **almost the entire North-East by 2027**, except for **one or two States**.

About AFSPA

- The **Armed Forces (Special Powers) Act (AFSPA), 1958** grants special powers to the armed forces to maintain **public order** and combat **insurgency** in areas declared as **disturbed areas**.

- The Act is enforced in regions where the security situation is considered serious enough to require the deployment of armed forces in support of the civil administration.

Key Provisions

- Under **Section 3**, the **Governor, Administrator of a Union Territory**, or the **Central Government** may declare an area as a **disturbed area**.
- Under **Section 4**, the armed forces are empowered to:
 - Use force, including causing death, under specified circumstances.
 - Arrest any person **without a warrant**.
 - Enter and search any premises **without a warrant**.
 - Prohibit the assembly of **five or more persons**.
 - Destroy **arms dumps, militant hideouts, fortified positions, and training camps**.
- Any person arrested under the Act must be handed over to the **nearest police station** with the **least possible delay**.
- Under **Section 6**, no legal proceedings can be initiated against armed forces personnel for actions taken under the Act without the **prior sanction of the Central Government**.

Present Coverage

- AFSPA is currently in force in **certain parts of Nagaland, Assam, Manipur, and Arunachal Pradesh**.
- A separate law, the **Armed Forces (Jammu and Kashmir) Special Powers Act, 1990**, continues to apply in **Jammu and Kashmir**.
- AFSPA was withdrawn from **Tripura in 2015, Meghalaya in 2018, and Mizoram during the 1980s**.

Important Judicial Decisions

- **Naga People's Movement of Human Rights v. Union of India** upheld the constitutional validity of AFSPA while prescribing safeguards against its misuse.
- **Extra-Judicial Execution Victim Families Association v. Union of India** held that the immunity provided under **Section 6** is **not absolute** and does not prevent judicial scrutiny.
- **Sebastian M. Hongray v. Union of India** reaffirmed the principle of **accountability of security forces**.

Committee Recommendations

- The **Justice B.P. Jeevan Reddy Committee (2005)** recommended the **repeal of AFSPA** and suggested incorporating its essential provisions into the **Unlawful Activities (Prevention) Act (UAPA), 1967**.
- The **Santosh Hegde Committee (2013)** exposed instances of **fake encounters in Manipur** and recommended greater accountability of security forces.
- The **Second Administrative Reforms Commission (2007)** described AFSPA as a **symbol of alienation** and recommended its repeal.
- The **Justice J.S. Verma Committee (2013)** recommended that **sexual offences committed by armed forces personnel** should be prosecuted under the **ordinary criminal law** rather than under the protections provided by AFSPA.

Telegram Ban

The **Ministry of Electronics and Information Technology (MeitY)** temporarily blocked **Telegram** under **Section 69A of the Information Technology Act, 2000**, on the recommendation of the **National Testing Agency (NTA)**, following the alleged misuse of Telegram's **message-editing feature** in the **NEET-UG 2026 re-examination fraud**.

What is Section 69A?

- **Section A** of the **Information Technology Act, 2000** empowers the **Central Government** or an authorised officer to block public access to any information that is **generated, transmitted, received, stored, or hosted** in any computer resource.
- The power can be exercised only on the following specified grounds:
 - **Sovereignty and integrity of India**
 - **Defence of India**
 - **Security of the State**
 - **Friendly relations with foreign States**
 - **Public order**
 - **Preventing incitement to the commission of cognisable offences**
- Blocking orders are generally issued through an **Inter-Ministerial Committee** constituted under the **Information Technology (Procedure and Safeguards for Blocking for Access of Information by Public) Rules, 2009**.
- The Government is required to **record the reasons in writing**, and the blocking order is subsequently examined by a **Review Committee**.
- Under **Rule 9** of the Blocking Rules, **emergency blocking orders** may be issued without providing a pre-decisional hearing.
- The same provision was invoked in **2020** to block **59 Chinese mobile applications**, including **TikTok, UC Browser, and ShareIt**.
- In **Shreya Singhal v. Union of India**, the **Supreme Court** upheld the constitutional validity of **Section 69A**.

Why Was Telegram Blocked?

According to the Government, Telegram had become a “**new dark web**” because of the following features:

- **End-to-end encryption** and user anonymity.
- **Retroactive message editing**, which was allegedly used to alter previously sent messages and create false claims of examination paper leaks.
- **Large file-sharing capability** of up to **2 GB** and the use of **automated bots**.
- Its alleged use in **cybercrime networks**, including **mule account operations, extortion, and illegal gambling activities**.

Significance of the Information Technology Act, 2000

- It provides **legal recognition to digital signatures**.
- It defines and penalises various **cyber offences**, including **hacking, cyber fraud, and identity theft**.
- **Section 79** grants **safe harbour protection** to intermediaries, subject to compliance with prescribed due diligence requirements.
- It establishes an **appellate mechanism** for resolving cyber-related disputes.

Concerns

- **Proportionality:** More than **150 million users** were affected due to the alleged actions of a limited number of individuals.
- **Freedom of Speech:** The blocking order may have implications for the **right to freedom of speech and expression under Article 19(1)(a)** of the Constitution.
- **Temporary Solution:** Critics argue that examination fraud stems from **systemic weaknesses** rather than the misuse of a single digital platform.
- **Enforcement Challenges:** Blocking orders can often be bypassed through the use of **Virtual Private Networks (VPNs)**.
- **Lack of Transparency:** Limited public disclosure of blocking orders reduces **accountability and transparency** in the decision-making process.

AADHAAR MISUSE

The **Supreme Court of India**, headed by **Chief Justice Surya Kant**, has sought responses from the **Central Government** and the **State Governments** on a petition filed by **Ashwini Kumar Upadhyay**, alleging that **Aadhaar** is being used beyond the scope permitted under law.

What is Aadhaar?

- **Aadhaar** is a **12-digit unique identification number** issued by the **Unique Identification Authority of India (UIDAI)** since **2010** to residents of India.
- It serves as **proof of identity** and **address** and is widely used for **welfare delivery, financial inclusion, and digital authentication**.

Legal Issue

- The petition contends that Aadhaar is being improperly accepted as **proof of citizenship, domicile, residence, and date of birth** for various services.
- It relies on **Section 9 of the Aadhaar Act, 2016**, which explicitly states that **Aadhaar is not proof of citizenship, domicile, residence, or date of birth**.
- The petition also refers to the **UIDAI notification issued in August 2023**, which clarifies that **Aadhaar serves only as proof of identity**.

Electoral Concerns

- The petition challenges the use of **Aadhaar in Form-6** (application for fresh voter registration) as proof of **age** and **residence**.
- It argues that such use could enable **illegal migrants** to obtain voter registration and be included in the **electoral rolls**, thereby affecting the integrity of elections.
- The matter has been **tagged with other similar petitions** that are pending before the Supreme Court.

Risks of Aadhaar Misuse

- **Identity theft** and the creation of **fraudulent accounts**.
- **Financial fraud** through the misuse of Aadhaar-linked services.
- **Privacy breaches** resulting from the leakage of **Aadhaar numbers** or **biometric information**.
- **Profiling and surveillance** due to excessive linking of Aadhaar with multiple services.

Governance Framework

- **Aadhaar Act, 2016**: Regulates the issuance, use, and authentication of Aadhaar.
- **Information Technology Act, 2000**: Provides legal protection against **cybercrime** and **data theft**.
- **Digital Personal Data Protection Act, 2023**: Protects **Aadhaar-linked personal data** and regulates its processing.
- **Justice K.S. Puttaswamy v. Union of India**: The **Supreme Court** recognised the **right to privacy** as a **fundamental right** under the Constitution.
- **Aadhaar Judgment (2018)**: The **Supreme Court** upheld the constitutional validity of Aadhaar while restricting its **mandatory use by many private entities and services**.

NIRBHAY CHETNA

The **Central Government** has launched **Nirbhay Chetna** to train and sensitise **17.5 lakh male elected representatives** across the country.

About

- **Nirbhay Chetna** is a major initiative under the **Nirbhay Raho** programme, launched in **2026**.
- It is the **first national-level programme** under the **Nirbhaya Fund** dedicated to the **gender sensitisation of men**.

- The **Ministry of Panchayati Raj** is the **nodal ministry** responsible for implementing the initiative.
- The programme aims to strengthen **gender-responsive governance** through **Panchayati Raj Institutions (PRIs)** by enhancing awareness, accountability, and leadership at the grassroots level.

Key Features

- **Nirbhay Chetna** focuses on sensitising **male elected representatives** on **gender equality, women's rights, and women's safety**.
- Under this initiative, **28,500 Master Trainers** are being trained at the **State, district, and block levels**. These trainers will subsequently train **more than 17.5 lakh male Panchayat representatives** across the country.
- **Nirbhay Netri** is designed to strengthen the capacity and legal awareness of **elected women representatives**.
- **Nirbhay Drishti** aims to install **CCTV cameras** at important rural locations to enhance **technology-based safety systems** in **Panchayats**.

SHE-BOX 2.0 PORTAL UNDER MISSION SHAKTI

The **Government** has highlighted **SHe-Box 2.0** as an important initiative under **Mission Shakti** to strengthen workplace safety and improve the implementation of laws relating to **sexual harassment at the workplace**.

What is SHe-Box?

- **SHe-Box (Sexual Harassment electronic Box)** is a digital platform launched by the **Ministry of Women and Child Development (MoWCD)** to facilitate the implementation of the **Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013**.
- **SHe-Box 2.0**, launched in **2024**, provides a **secure, confidential, and user-friendly** platform for reporting incidents of workplace sexual harassment.

Key Features

- Provides a **single-window digital platform** for women working in the **organised, unorganised, public, and private sectors** to file and track complaints.
- Functions as a **centralised repository** of **Internal Committees (ICs)** and **Local Committees (LCs)** established across the country.
- Ensures **time-bound processing** of complaints and a **streamlined grievance redressal mechanism**.
- Enables **real-time monitoring** of complaints through designated **nodal officers**.
- Strengthens coordination among various stakeholders for the effective implementation of the **Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013**.
- Available in **22 languages**, including **Hindi and English**, to ensure wider accessibility.

Mission Shakti

- **Mission Shakti** is a **mission-mode scheme** aimed at ensuring the **safety, security, and empowerment of women**.
- The mission comprises **two sub-schemes**:
 - **Sambal** – focuses on **women's safety and security**.
 - **Samarthya** – focuses on **women's empowerment**.
- Under **Sambal**, the major initiatives include:
 - **One Stop Centre (OSC)**
 - **Women Helpline (WHL)**
 - **Beti Bachao Beti Padhao (BBBP)**
 - **Nari Adalat**

THREE-LANGUAGE FORMULA IN EDUCATION

The Central Board of Secondary Education (CBSE) has clarified that students of Classes VII, VIII, and IX may continue studying foreign languages under the Three-Language Formula until Class X.

About

- The Three-Language Formula aims to promote **multilingualism, national integration, and linguistic diversity** in India.
- It was first recommended by the **Kothari Commission** and adopted under the **National Policy on Education (NPE), 1968**.
- The policy was later reaffirmed under the **National Policy on Education (1986/1992)** and re-emphasised in the **National Education Policy (NEP), 2020**.

Key Provisions under NEP 2020

- Students are required to learn **three languages**, with flexibility in the choice of languages.
- **At least two of the three languages** must be **native Indian languages**.
- **No language can be imposed** on any State. States, regions, and students have the freedom to choose the languages they wish to study.
- A **foreign language** may be studied as the **third language**, provided that the **first two languages** are Indian languages.

Objectives

- To improve **linguistic competence** and encourage learning beyond the mother tongue.
- To strengthen **national integration** by promoting better communication among different regions of the country.
- To preserve and promote **regional and classical languages** in accordance with **Articles 29, 350A, and 351** of the Constitution.
- To enhance **cognitive abilities** and **critical thinking** through multilingual education.
- To improve **educational and employment opportunities** by developing language skills.

Challenges

- Some States have expressed concerns regarding the **possible imposition of Hindi**.
- States seek greater autonomy in language policy, as **education is a subject in the Concurrent List**.
- Many schools face a shortage of **trained language teachers** and adequate **learning materials**.
- Rural schools encounter **infrastructure constraints** and **timetable-related challenges** in implementing the policy.
- Unequal availability of language options may widen the gap between **government and private schools**.
- Learning multiple languages may increase the **academic burden** on students.

Recent Measures

- The **National Education Policy (NEP), 2020** provides greater flexibility while respecting the **federal structure** and the linguistic choices of States.
- The **National Curriculum Framework (NCF)** promotes **multilingual education** while recognising India's regional diversity.
- Initiatives such as **DIKSHA, NIPUN Bharat, PM SHRI, and Samagra Shiksha** support multilingual education through digital resources and institutional support.
- Greater emphasis is being placed on **mother tongue-based education, teacher training, and the development of digital learning resources**.

AIR SUVIDHA 2.0 PORTAL

The **Ministry of Civil Aviation** and **Delhi International Airport Limited (DIAL)** have launched **Air Suvidha 2.0** to strengthen **health surveillance** at India's international points of entry.

About

- The initiative follows the **World Health Organization (WHO)** declaration of the **Ebola/Bundibugyo Virus Disease (BVD)** outbreak in the **Democratic Republic of the Congo (DRC)** and **Uganda** as a **Public Health Emergency of International Concern (PHEIC)**.
- **Air Suvidha 2.0** is an upgraded **contactless and paperless Passenger Health Self-Declaration Portal** for incoming international travellers.
- The portal has been developed in collaboration with the **Directorate General of Health Services (DGHS)** under the **Ministry of Health and Family Welfare (MoHFW)**.
- Its primary objective is to strengthen **early disease detection, traveller screening, and cross-border outbreak control**.

Key Features

- International travellers are required to submit an online **Self-Declaration Form (SDF)** before completing **immigration clearance**.
- The form captures the traveller's **21-day travel history, exposure details, and any symptoms**, if present.
- The portal allows submission of the **Self-Declaration Form** up to **24 hours before arrival** in India.
- It uses **QR code-based verification** and **digitally validated PDF documents**, making the entire process **fully paperless**.
- The system enables **real-time data sharing** with:
 - **Airport Health Officers**
 - **Bureau of Immigration**
 - **Integrated Disease Surveillance Programme (IDSP)**
 - **State Surveillance Officers**

Significance

- Air Suvidha 2.0 enables the **rapid identification, medical referral, and contact tracing** of high-risk international travellers.
- It strengthens **public health surveillance** at **Points of Entry (PoE)**.
- The portal enhances India's preparedness against the import of **infectious diseases**.
- It aligns India's **border health management system** with the **World Health Organization's International Health Regulations (IHR), 2005**.

Bundibugyo Virus Disease (BVD)

- **Bundibugyo Virus Disease (BVD)** is a **rare viral haemorrhagic fever** caused by the **Bundibugyo virus**, a species of the **Ebola virus**.
- The disease spreads through contact with **infected blood, body fluids, contaminated objects, and infected animals**, particularly **bats and non-human primates**.
- Common symptoms include **fever, headache, vomiting, diarrhoea, weakness, and bleeding**.
- There is **currently no approved vaccine or specific treatment** available for **Bundibugyo Virus Disease (BVD)**.

DELHI ELECTRIC VEHICLE (EV) POLICY 2.0

The **Delhi Government** has notified the **Electric Vehicle (EV) Policy 2.0**, which will remain in force from **1 July 2026 to 31 March 2030**, with the objective of accelerating the adoption of clean mobility and reducing urban air pollution.

Key Provisions

- The policy focuses on **high-polluting and high-usage vehicle segments**, including **two-wheelers, three-wheelers, commercial goods vehicles, school buses, aggregator fleets, and government transport fleets**.
- It aims to achieve **30% electrification of Delhi's total vehicle fleet by 2030**, building upon the **14% EV penetration** achieved under the **Delhi EV Policy, 2020**.

Phased Transition

- From **1 January 2027**, only **electric three-wheelers** and **N1 category trucks** will be eligible for registration.
- From **1 April 2028**, only **electric two-wheelers** will be registered in Delhi.
- Existing **petrol, diesel, and CNG vehicles** will be allowed to continue operating until the end of their prescribed operational life.
- **School buses** must convert **10% of their fleet to electric vehicles within two years** and achieve **30% electrification by 2030**.

Financial Support

- The Government has earmarked **₹7,000 crore** for the implementation of the policy as part of a **total investment plan of ₹15,000 crore**.
- Buyers of eligible electric vehicles will receive **purchase incentives, exemptions from road tax, and waivers of registration fees**.
- Separate **vehicle scrapping incentives** will be provided for vehicles that do not comply with **Bharat Stage-IV (BS-IV)** emission norms.
- **Hybrid vehicles** have been excluded from financial incentives to encourage the adoption of **pure electric vehicles**.

Infrastructure and Implementation

- More than **30,000 public EV charging points** will be installed across Delhi with financial support of **₹1,000 crore**.
- The **Transport Department** will serve as the **nodal agency** for implementing the policy, while **Delhi Transco Limited (DTL)** will be responsible for developing the charging infrastructure.
- **Electric N2 category trucks** (weighing **3.5–12 tonnes**) will receive a **10-year "No Entry" exemption** for the **first 1,000 vehicles**, facilitating their movement within the city.

DIKSHA

DIKSHA (Digital Infrastructure for Knowledge Sharing)

The **Ministry of Education** has highlighted the expansion of **DIKSHA** as India's unified **"One Nation, One Digital Platform,"** which has successfully scaled **curriculum-linked, multilingual learning resources** and **certified teacher training** across the country.

About DIKSHA

- **Digital Infrastructure for Knowledge Sharing (DIKSHA)** is an **open-source digital platform** that provides **multilingual, curriculum-linked learning resources** for students and teachers.
- Launched in **2017**, it serves as India's **"One Nation, One Digital Platform"** for school education and is a key component of the **PM e-Vidya** initiative of the **Ministry of Education**.
- The platform is spearheaded by the **National Council of Educational Research and Training (NCERT)** through the **Central Institute of Educational Technology (CIET)**.
- DIKSHA has been adopted by education boards across **almost all States and Union Territories** and covers **K–12 education**, ranging from **Foundational Literacy and Numeracy (FLN)** to **senior secondary education**.

Digital Learning Ecosystem

- DIKSHA offers a wide range of digital learning resources, including **videos, 2D and 3D animations, augmented reality (AR), simulations, virtual laboratories, and interactive learning materials.**
- **QR-coded Energised Textbooks** connect printed textbooks with **videos, interactive content, and teacher guides**, enriching the learning experience.
- The platform promotes **inclusive and personalised learning** through features such as the **Digital Accessible Information System (DAISY) format, text-to-speech functionality, and Indian Sign Language (ISL) videos.**
- **Practice questions, detailed solutions, adaptive assessments, and competency-based question banks** help identify learning gaps and support timely remedial learning.
- Teacher capacity building is strengthened through the **National Initiative for School Heads' and Teachers' Holistic Advancement (NISHTA)** and **State-specific professional development modules**, which provide **self-paced and certified training programmes.**

Architecture and Accessibility

- DIKSHA follows a **federated architecture**, enabling participating States and Union Territories to independently create, manage, and publish educational content in **mother tongues and regional languages** according to their local curriculum and pedagogical requirements.
- This approach ensures that learning resources remain **contextually relevant, regularly updated, and easily accessible**, while **CIET-NCERT** periodically validates their **quality, age-appropriateness, and grade suitability.**
- The platform currently supports **135 languages**, including **128 Indian languages** and **7 foreign languages.**
- **NCERT textbooks for Classes I, II, III, and VI** have been translated into **22 Scheduled Languages** and are also available through the **NCERT portal.**
- DIKSHA also supports **offline access**, including **downloadable learning resources** and **content preloaded on Smart Class boards**, ensuring uninterrupted learning in areas with limited internet connectivity.

PM AWAS YOJANA-URBAN 2.0

The Union Government has approved **more than 2.13 lakh additional houses** for eligible urban families under the **Pradhan Mantri Awas Yojana-Urban 2.0 (PMAY-U 2.0).**

About

- **Pradhan Mantri Awas Yojana-Urban 2.0 (PMAY-U 2.0)** was launched in **September 2024** by the **Ministry of Housing and Urban Affairs (MoHUA)** as the revamped version of **PMAY-U, 2015.**
- The scheme aims to provide **all-weather pucca houses** through **construction, purchase, or rental support** to **one crore urban families** over a period of **five years.**
- The scheme involves a total investment of **₹10 lakh crore**, including **₹2.30 lakh crore** as **Central subsidy assistance.**

Eligibility and Coverage

- Eligible families **must not own a pucca house anywhere in India.**
- The annual income limits for beneficiaries are:
 - **Economically Weaker Section (EWS):** Up to **₹3 lakh**
 - **Low Income Group (LIG):** **₹3 lakh to ₹6 lakh**
 - **Middle Income Group (MIG):** **₹6 lakh to ₹9 lakh**
- The scheme covers **statutory towns, subsequently notified towns, Planning Areas, and regions under Urban or Industrial Development Authorities.**

Implementation

- The scheme follows the following **cost-sharing pattern**:
 - 100:0** for **Union Territories without legislatures**
 - 90:10** for **specified regions**
 - 60:40** for **all other States**
- Implementation and monitoring are carried out through **geo-tagging, Direct Benefit Transfer (DBT), digital dashboards, the Management Information System (MIS), and a unified online portal.**
- By **March 2025**, a total of **3.52 lakh houses** had been approved under the scheme, including **more than 2.67 lakh houses for women beneficiaries** and **90 houses for transgender beneficiaries.**

INTERNATIONAL RELATIONS

UNSC's Permanent Membership

Although the **United Nations** has expanded from **51 to 193 member states** over the past **80 years**, the **permanent membership of the UN Security Council has remained unchanged**, strengthening **India's claim for a permanent seat.**

United Nations Security Council (UNSC)

Parameter	Details
Establishment	Established in 1945; first session held on 17 January 1946 at Westminster, London.
Headquarters	New York City, USA
Total Membership	15 Members – 5 Permanent Members (P5) and 10 Non-Permanent Members
Permanent Members (P5)	China, France, Russia, United Kingdom, United States – all possess veto power.
Non-Permanent Members	10 members elected by the UN General Assembly (UNGA) for two-year terms; no veto power.
Regional Distribution of Non-Permanent Seats	5 – Africa & Asia • 1 – Eastern Europe • 2 – Latin America & Caribbean • 2 – Western Europe & Others
Election Requirement	A candidate must secure a two-thirds majority of members present and voting in the UNGA through a secret ballot.
Requirement for UNSC Reform	Requires approval by two-thirds of all UNGA members and ratification by all five permanent members (P5). The last expansion took place in 1965.
Six Principal Organs of the UN	General Assembly, Security Council, Secretariat, International Court of Justice (ICJ), Economic and Social Council (ECOSOC), and the Trusteeship Council (<i>inactive since 1994</i>).
India's Membership	India has been elected as a Non-Permanent Member eight times. Its latest term was 2021–2022, and it held the UNSC Presidency in August 2021 and December 2022.
Key Observation	More than 50 UN member states have never served on the Security Council, despite the UN expanding from 51 to 193 members over the past 80 years.

Need for Reforms in the UNSC

Shrinking Representativeness

- Declining Representation:** In 1945, the UNSC had **11 members** representing **51 UN member states** (around **22%**). Today, it has only **15 members** for **193 UN member states** (less than **8%**), and **over 50 countries have never served** on the Council.

- **Outdated Structure:** The composition of the **P5** reflects the outcome of **World War II** rather than present-day global realities.
- **Regional Imbalance:** **Africa**, **South America**, and **South Asia** have no permanent representation despite their growing geopolitical and demographic significance.
- **European Overrepresentation:** Europe, with only about **5% of the global population**, occupies **33% of the permanent seats** (excluding Russia).

Veto Paralysis

- **Exclusive Veto Power:** Only the **five permanent members (P5)** possess veto power, allowing any one of them to block substantive resolutions irrespective of the views of the remaining members.
- **Impact on Global Peace:** The repeated use of the veto in conflicts such as **Ukraine** and **Gaza** has weakened the Security Council's ability to respond effectively to international crises.

Factors Strengthening India's Bid

Demographic and Democratic Strength

- India is the **world's most populous country**, with **over 1.4 billion people**, representing nearly **one-sixth of humanity**.
- Excluding such a large population from permanent representation reduces the Council's democratic legitimacy.
- As the **world's largest democracy**, India adds a unique democratic dimension not represented by all existing permanent members.

Economic Importance

- India is the **5th largest economy** in terms of nominal GDP and the **3rd largest by Purchasing Power Parity (PPP)**.
- With an estimated **GDP (PPP) of around US\$20 trillion in 2026**, India plays a major role in global trade, technology, energy security, and development finance.

Military Capability

- India possesses one of the **largest armed forces** in the world.
- Its **2026 defence budget** reached nearly **US\$86 billion**, placing it among the world's leading defence spenders.
- India maintains a **credible nuclear triad**—land, air, and sea-based nuclear delivery systems—demonstrating strong strategic capability.

Outstanding Peacekeeping Contribution

- Since **1948**, India has contributed **over 2,90,000 peacekeepers** to more than **50 UN missions**, one of the highest cumulative contributions globally.
- As of **January 2025**, India ranked **4th among troop-contributing countries**, deploying **5,375 personnel** across **nine active UN peacekeeping missions**.
- India's contribution exceeds that of all **P5 countries combined**.
- Nearly **180 Indian peacekeepers** have lost their lives while serving under the UN flag.
- India deployed the **world's first all-female Formed Police Unit** to **Liberia (2007)**.
- The **Centre for United Nations Peacekeeping (CUNPK)** trains over **12,000 personnel annually** and is recognised as a **UN Centre of Excellence**.

Voice of the Global South

- India has emerged as a leading advocate for developing nations through initiatives such as the **International Solar Alliance**, **Global Biofuels Alliance**, **G20 Presidency (2023)**, and the **AI Impact Summit**.
- It has extended **over US\$12 billion in Lines of Credit** to **42 African countries**, highlighting its commitment to development cooperation.

- India's active role in promoting **freedom of navigation** and support for UNCLOS-based maritime governance further strengthens its global credentials.

Challenges to UNSC Reform and India's Bid

Structural Hurdles

- Any amendment to the UNSC structure requires approval by **two-thirds of the UN General Assembly** and ratification by **all five permanent members (P5)**.
- This stringent requirement has prevented any major reform since the Council's last expansion in **1965**.

China's Position

- China has neither openly opposed nor formally supported India's permanent membership.
- Its reluctance to endorse India remains a major strategic obstacle.
- China also expects India to withdraw support for **Japan**, creating difficulties within the **G4 grouping**.

Uniting for Consensus (UfC) Group

- The **Uniting for Consensus (Coffee Club)** opposes the creation of new permanent seats.
- Led by **Italy** and supported by countries such as **Pakistan**, it favours expanding only **non-permanent or semi-permanent seats**, arguing that additional permanent members would reinforce existing inequalities.

India-Specific Constraints

- India is **not a signatory to the Nuclear Non-Proliferation Treaty (NPT)** and has **not ratified the Comprehensive Nuclear-Test-Ban Treaty (CTBT)**.
- Critics frequently cite these issues while opposing India's candidature, although all existing permanent members are recognised nuclear-weapon states under the NPT framework.

G7 SUMMIT 2026

Prime Minister Narendra Modi participated in the Outreach Session of the **52nd G7 Summit** held at **Évian-les-Bains, France**, where the discussions were centred on the theme **“Forging New Partnerships and Rebuilding International Solidarity.”**

About G7

- The **Group of Seven (G7)** is an informal forum of the world's leading advanced industrial democracies. Its members are **Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States**, while the **European Union (EU)** participates as a non-formal member.
- The grouping was established as the **G6** in **1975** in the aftermath of the global oil crisis. It expanded into the **G7** in **1976** following the inclusion of **Canada**.
- Russia** joined the grouping in **1998**, transforming it into the **G8**. However, its membership was suspended in **2014** after the annexation of **Crimea**, and the forum reverted to the **G7**.
- The G7 functions as an **informal political forum** without a treaty, permanent secretariat, or legislative authority. Although its decisions are not legally binding, the group continues to exert significant influence on global economic and political issues.
- Despite representing only about **10% of the world's population**, the G7 economies collectively account for nearly **30–43% of global GDP**, reflecting their substantial economic influence.
- The **presidency of the G7 rotates annually** among its member countries.

India's Message

- During the Outreach Session, India emphasized that **trust** is the most valuable strategic asset in contemporary international relations.

- Prime Minister Narendra Modi stated that the present global challenges arise not merely from a shortage of resources but also from a **deficit of trust among nations**.
- India advocated replacing the traditional **donor–recipient approach** with a **partnership-based model** founded on equality, mutual respect, and shared responsibility.
- India reiterated its commitment to a **multipolar world order**, arguing that global governance institutions should reflect the realities of the **21st century** rather than the geopolitical structure that emerged after **1945**.
- It also renewed its demand for comprehensive reforms in international institutions, including the **United Nations Security Council (UNSC)**, **International Monetary Fund (IMF)**, and the **World Bank**, to make them more representative and inclusive.

India–France Relations

Strategic Cooperation

- The **India–France Strategic Partnership**, established in **1998**, was upgraded to a **Special Global Strategic Partnership** in **2026**.
- The **Horizon 2047 Roadmap**, adopted in **2023**, serves as a long-term framework for cooperation in areas such as defence, maritime security, outer space, and emerging technologies.
- The **Innovation Roadmap 2030** has further strengthened collaboration between the two countries in science, technology, and innovation.
- Both countries have established a **Joint India–France Artificial Intelligence (AI) Working Group** to enhance cooperation in the field of artificial intelligence.
- India and France also jointly launched **Bharat Innovates 2026**, an initiative aimed at linking India's deep-tech ecosystem with global innovation networks and stakeholders.

Defence Cooperation

- India has inducted **36 Rafale fighter aircraft** into its Air Force and has also signed an agreement for the procurement of **26 Rafale-M fighter jets** for the Indian Navy.
- Under **Project P-75**, six **Scorpene-class submarines** are being constructed in India in collaboration with the **Naval Group**, with **INS Vagsheer** being the latest addition.
- **Hindustan Aeronautics Limited (HAL)** and **Safran** are jointly developing engines for the **Indian Multi-Role Helicopter (IMRH)** programme.
- The two countries regularly conduct joint military exercises, including **Shakti (Army)**, **Varuna (Navy)**, and **FRINJEX-23**.

Space Cooperation

- India and France have shared a strong space partnership for **more than six decades** through cooperation between **ISRO** and **CNES**.
- Their collaboration includes projects such as **TRISHNA**, maritime domain awareness initiatives, and cooperation in satellite launch programmes.

Energy Cooperation

- India and France are collaborating on the development of **Small Modular Reactors (SMRs)** and **Advanced Modular Reactors (AMRs)** through a dedicated bilateral nuclear task force.

Significance

For the G7

- **India as a Growth Engine:** India is one of the world's fastest-growing major economies and has emerged as a key link in global supply chains because of its large domestic market and favourable demographic profile.
- **Voice of the Global South:** India represents the concerns of developing countries on major global issues, including **climate finance**, **food security**, and **debt sustainability**, making it an important partner for the G7.

- **Strategic Geographical Importance:** India's location in the **Indo-Pacific** gives it a critical role in ensuring regional security, maritime stability, and secure global trade routes.
- **Democratic Credentials:** As the world's largest democracy, India contributes political stability and supports a **rules-based international order**, making it a valuable partner in addressing global challenges.

For India

- **Global Policy Platform:** Engagement with the G7 provides India with an important forum to influence discussions on **global governance, international security, and economic reforms**.
- **Support for Institutional Reforms:** It strengthens India's demand for reforms in major international institutions and reinforces its claim for greater representation in global decision-making bodies.
- **Enhanced Bilateral Cooperation:** Participation in G7 engagements also creates opportunities to deepen India's strategic, economic, and technological partnerships with leading advanced economies.

Challenges

- **Limited Institutional Role:** India is not a formal member of the G7 and, therefore, does not participate in its core decision-making process.
- **Slow Pace of Global Reforms:** Long-pending reforms relating to the **United Nations Security Council (UNSC), IMF quota system, and the World Bank** continue to face significant delays.
- **Geopolitical Divisions:** Ongoing conflicts and strategic rivalries, including the **Russia–Ukraine conflict, US–Iran tensions, and competition in the Indo-Pacific**, continue to weaken international cooperation.
- **Differences Within the G7:** Member countries continue to differ on issues such as **economic sanctions, climate commitments, and industrial subsidy policies**, limiting collective action.
- **India–France Partnership:** Certain concerns remain regarding the extent of **technology transfer**, the slow progress of the **Jaitapur Nuclear Power Project**, and the fact that bilateral trade has yet to reach its full potential.
- **France's Engagement with China:** France's significant economic ties with China occasionally limit complete strategic convergence with India on Indo-Pacific issues.

INDIA–OMAN CEPA

The India–Oman Comprehensive Economic Partnership Agreement (CEPA), signed in December 2025, came into effect on **1 June 2026**, marking a significant milestone in the economic and strategic partnership between the two countries.

About CEPA

- A **Comprehensive Economic Partnership Agreement (CEPA)** is a more comprehensive trade arrangement than a conventional **Free Trade Agreement (FTA)**.
- While an **FTA** primarily focuses on reducing or eliminating tariffs on goods, a **CEPA** extends cooperation to several additional areas, including:
 - Trade in goods and services
 - Investment and Intellectual Property Rights (IPR)
 - Competition policy
 - Government procurement and regulatory cooperation
 - Labour mobility
- Therefore, a **CEPA** promotes deeper and long-term economic integration rather than providing only limited market access.

Strategic Geography of Oman

- **Oman**, whose capital is **Muscat**, is a member of the **Gulf Cooperation Council (GCC)** and is regarded as the oldest independent Arab State.
- It shares land boundaries with **Yemen, Saudi Arabia, and the United Arab Emirates (UAE)**, while its coastline extends along the **Arabian Sea** and the **Gulf of Oman**.
- The country's major geographical features include the **Rub al-Khali (Empty Quarter) Desert**, the **Hajar Mountains**, and the **Dhofar Mountain Range**.
- Oman possesses abundant natural resources, including **petroleum, natural gas, copper, and limestone**.
- Its strategically important ports—**Salalah, Duqm, and Sohar**—are located outside the **Strait of Hormuz**, allowing uninterrupted maritime trade even during regional disruptions.

Key Features of the India–Oman CEPA

- The agreement broadens India's trade framework beyond tariff reduction and strengthens its strategic economic presence in **West Asia**, particularly at a time of growing maritime uncertainty in the Gulf region.
- **Near-Universal Duty-Free Access:** Oman has provided **zero-duty access on 98.08% of tariff lines**, covering **99.38% of India's exports by value**, compared to only **15.33%** under the earlier **Most Favoured Nation (MFN)** regime.
- **Protection of Sensitive Sectors:** India has liberalised **77.79% of tariff lines**, accounting for **94.81% of imports from Oman**, while safeguarding sensitive sectors such as **dairy, cereals, fruits, vegetables, edible oils, oilseeds, rubber, leather, and spices** through **exclusion lists and Tariff Rate Quotas (TRQs)**.
- **Services Liberalisation:** Oman has opened **127 service sub-sectors**, making it the most comprehensive services commitment extended by any **GCC country** to India.
- **100% FDI Access:** Indian companies are permitted to establish **100% foreign-owned commercial entities** in major service sectors in Oman.
- **Professional Mobility:** The agreement provides improved market access for Indian professionals, including **doctors, engineers, teachers, and IT specialists**.
- **Mode 4 Commitments:** Under the **General Agreement on Trade in Services (GATS)**, Oman has significantly expanded temporary mobility commitments for Indian professionals.
- **ICT Expansion:** The ceiling for **Intra-Corporate Transferees (ICTs)** has been increased from **20% to 50%**, while the maximum stay has been extended to **four years**.
- **Contractual Service Suppliers:** The permitted stay for contractual service suppliers has been enhanced from **90 days to two years**, with provision for further extension.
- **Business Visitors:** Business visitors may stay in Oman for **up to 90 days**, while independent professionals are permitted to stay for **up to 180 days**.
- **Traditional Medicine:** The CEPA incorporates the world's first comprehensive trade commitment relating to **Traditional Medicine**, creating new opportunities for India's **AYUSH** sector.
- **Fast-Track Approval for Pharmaceuticals:** Medicines approved by the **USFDA, EMA, UK MHRA, and TGA** will receive market authorisation in Oman within **90 days**.
- **Regulatory Recognition:** Oman recognises **Good Manufacturing Practices (GMP)** inspection records, **Export Inspection Council (EIC)** certificates, **National Programme for Organic Production (NPOP)** certifications, and India's **Halal certification system**.

Current Trade Structure

- **Total Bilateral Trade:** Bilateral trade between India and Oman reached **USD 11.18 billion** in **FY 2025–26**, compared to **USD 10.61 billion** in **FY 2024–25**.
- **India's Exports:** India's exports to Oman amounted to **USD 3.64 billion**, consisting mainly of **petroleum products, machinery, iron and steel, calcined alumina, and Basmati rice**.
- **India's Imports:** India's imports from Oman stood at **USD 7.2 billion**, with major imports including **crude oil, LNG, fertilisers, methanol, and ammonia**.

- **Trade Rankings:** During FY 2024–25, Oman ranked as **India's 29th largest export destination, 25th largest import source, and 28th largest overall trading partner.**
- **Importance for Oman:** India is **Oman's fourth-largest source of non-oil imports** and the **third-largest destination for its non-oil exports.**
- **Strategic Gulf Exception:** During a period of wider instability in the Gulf region, India's exports to the Gulf declined from **USD 4.4 billion to USD 2.7 billion**, whereas imports from Oman increased by **246.4%**, highlighting Oman's growing strategic significance.

India–Oman Bilateral Relations

- **Strategic Partnership:** India and Oman elevated their relationship to a **Strategic Partnership** in **2008**, making Oman India's oldest strategic partner in the Gulf region.
- **Defence Cooperation:** Oman is the **first Gulf country** to conduct **tri-service military exercises** with India, namely **Al Najah (Army), Eastern Bridge (Air Force), and Naseem Al Bahr (Navy).**
- **Political Importance:** Oman serves as an important partner for India in regional organisations such as the **Gulf Cooperation Council (GCC), Arab League, and the Indian Ocean Rim Association (IORA).**
- **Indian Diaspora:** A vibrant Indian community of nearly **6.7 lakh people** in Oman continues to strengthen bilateral economic, cultural, and people-to-people ties.

India–Iran

Following the assassination of **Iran's Supreme Leader Ayatollah Ali Khamenei** on **28 February 2026** in joint **US–Israeli airstrikes**, Iran invited **Prime Minister Narendra Modi** to attend the funeral, highlighting India's delicate balancing strategy in **West Asia.**

Ali Khamenei

- **Ayatollah Ali Khamenei (1939–2026)** served as **Iran's Supreme Leader** from **1989** until his assassination in **2026.**
- At the time of his death, he was the **longest-serving head of state in West Asia.**
- On **8 March 2026**, the **Assembly of Experts** elected **Mojtaba Khamenei** as Iran's new Supreme Leader.

Civilisational Roots

Ancient Connections

- Trade between the **Indus Valley Civilization** and **Mesopotamia** flourished across the **Persian Gulf** nearly **4,000 years ago.**
- The **Rig Veda** and the **Avesta** (Zoroastrian scripture) exhibit strong linguistic and theological similarities, such as:
 - **Asura ↔ Ahura**
 - **Soma ↔ Haoma**
 - **Yajna ↔ Yasna**
- Under the **Achaemenid Empire**, **Gandhara** and **Sind** became part of Persian territory, while Indian soldiers served in Persian armies and trade routes linked India with Central Asia.
- **Mauryan architecture**, particularly polished stone pillars and monumental structures, reflected significant **Achaemenid Persian influence.**

Medieval Period

- During the **Delhi Sultanate** and the **Mughal Empire**, **Persian** became the language of administration, diplomacy, law, and literature.

- Indian architecture blended indigenous traditions with Persian features such as **arches, domes, aiwans, pishtaq, and charbagh gardens**.
- From the **16th century**, numerous Iranian scholars, poets, artists, physicians, and administrators migrated to India, contributing immensely to Mughal culture and scholarship.

Modern Diplomatic Foundation

- Nearly **15% of India's Muslim population belongs to the Shia community**, maintaining historical religious and cultural ties with Iran.
- Diplomatic relations were formally established in **1950** through the **Friendship Treaty**, followed by the **Tehran Declaration (2001)** and the **New Delhi Declaration (2003)**.
- Despite belonging to different geopolitical blocs during the **Cold War**, India and Iran maintained stable bilateral relations.

Contemporary Strategic and Economic Relations

Energy Cooperation

- Between **1990 and 2018**, Iran remained one of **India's largest crude oil suppliers**, offering:
 - Freight concessions
 - Flexible payment mechanisms
 - Rupee-based settlements
- India stopped importing Iranian crude in **May 2019** following the withdrawal of **US sanctions waivers**.

Trade Relations

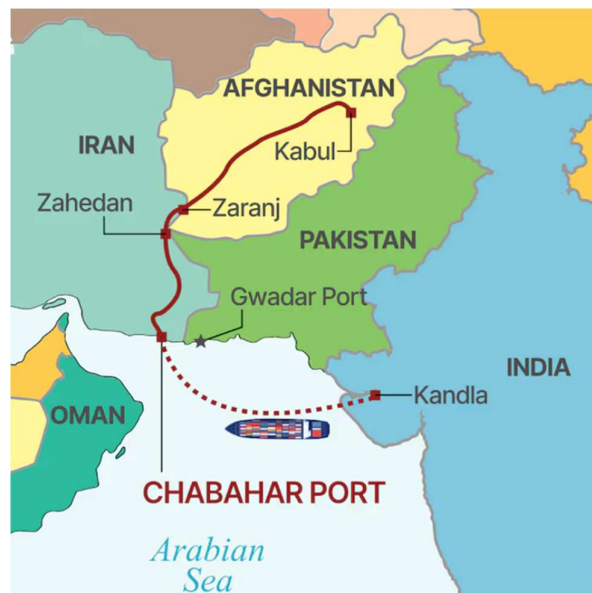
- Bilateral trade once reached nearly **US\$17 billion**, largely driven by oil imports.
- Excluding petroleum, trade stood at about **US\$2.33 billion (2022–23)**, with India maintaining a trade surplus.
- Both countries operate through the **Joint Commission on Bilateral Trade (1983)** and a **Double Taxation Avoidance Agreement**.

Strategic Support

- During the **1994 OIC episode**, Iran declined to support Pakistan's resolution on Kashmir at the **UN Human Rights Commission**, demonstrating strategic support for India.

Chabahar Port

- Located on Iran's **Gulf of Oman** coast, approximately **170 km from Pakistan's Gwadar Port**, Chabahar provides India strategic access to Central Asia.
- On **13 May 2024**, India and Iran signed a **10-year agreement** allowing **Indian Ports Global Limited (IPGL)** to operate the **Shahid Beheshti Terminal**.
- India committed:
 - **US\$120 million** for terminal development.
 - **US\$250 million** as a **Line of Credit**.



International North–South Transport Corridor (INSTC)

- A 7,200-km multimodal transport corridor connecting Mumbai–Tehran–Baku–Moscow through sea, rail, and road.
- Conceived in 2000 by India, Iran, and Russia.
- Once fully operational:
 - Cargo transit time could reduce from 40 days to about 20 days.
 - Transportation costs could decline by nearly 30%.
- Chabahar Port serves as the southern gateway of the corridor.

Significance of Iran for India

- **Gateway to Central Asia:** Iran offers India's only practical land route to Afghanistan, Central Asia, Russia, and Europe, bypassing Pakistan.
- **Energy Security:** Iran possesses the world's second-largest natural gas reserves and among the largest crude oil reserves, making it an important long-term energy partner.
- **Strategic Alternative to Gwadar:** Chabahar provides India with a counterbalance to China's Gwadar Port and the China–Pakistan Economic Corridor (CPEC).
- **Maritime Security:** Iran plays a crucial role in maintaining stability in the Persian Gulf, Strait of Hormuz, and wider West Asian maritime region.
- **Strategic Autonomy:** Maintaining strong relations with Iran enables India to balance its partnerships with Israel, Gulf countries, and the United States without joining any regional security bloc.

Challenges

- **US Sanctions:** Following the 2024 Chabahar agreement, the United States reiterated that engagement with Iran may attract sanctions.
- **Regional Instability:** The 2026 US–Israeli conflict with Iran has increased shipping risks, insurance costs, and concerns for Indian nationals in the Gulf.
- **Connectivity Constraints:** The Chabahar–Zahedan railway project continues to face financial and geopolitical delays.
- **Balancing Partnerships:** India's participation in I2U2 and its expanding strategic ties with the US and Israel complicate its engagement with Iran.
- **China's Growing Influence:** The 25-year Iran–China cooperation agreement (2021) has significantly expanded China's economic presence in Iran.

- **Financial Restrictions:** Iran's inclusion on the **FATF blacklist** and exclusion from the **SWIFT payment system** continue to restrict banking channels, trade, and investment.

Way Forward

- Fully operationalise the **Chabahar Port** and the **International North–South Transport Corridor (INSTC)**.
- Strengthen long-term cooperation in **energy, connectivity, and infrastructure**.
- Continue pursuing a **balanced West Asia policy** while safeguarding India's strategic autonomy.
- Expand economic engagement despite sanctions through innovative financial and diplomatic mechanisms.
- Deepen cooperation in maritime security, regional connectivity, and Central Asian access while maintaining constructive relations with all major regional stakeholders.

Digital Sovereignty

Recent cyber incidents have once again highlighted India's growing dependence on foreign digital ecosystems, raising serious concerns about the country's digital sovereignty and strategic autonomy.

About Digital Sovereignty

- **Digital sovereignty** refers to a nation's ability to exercise effective control over its **data, digital infrastructure, critical technologies, and digital decision-making systems** without undue external influence or interference.
- Digital sovereignty rests on **three fundamental pillars**:
 - **Data Sovereignty:** Ensures that the data of citizens, businesses, and public institutions remains under India's legal and technological jurisdiction.
 - **Computational Sovereignty:** Refers to domestic control over cloud infrastructure, Artificial Intelligence (AI) models, computing platforms, and other digital processing systems.
 - **Technological Sovereignty:** Focuses on developing indigenous capabilities in strategic technologies such as semiconductors, telecom equipment, electronics, and software ecosystems.
- In the digital era, the concept of sovereignty extends beyond **land, sea, and air** to include **code, chips, cables, cloud infrastructure, and digital platforms**.

Background

- In **April 2026**, CCTV systems connected with Indian defence installations were reportedly compromised through the Chinese software **EseeCloud**.
- Earlier, in **July 2025**, **Nayara Energy** lost access to its email services, cloud storage, and collaboration platforms after **Microsoft** implemented external sanctions.
- These incidents demonstrated how dependence on foreign-controlled digital platforms can directly affect India's **strategic autonomy, security, and continuity of critical services**.

Associated Issues

Security Concerns

- Modern warfare has become increasingly **software-driven**, with fighter aircraft, drones, radar systems, communication networks, and defence platforms depending heavily on embedded software.
- Dependence on foreign software creates risks such as **hidden kill-switches, cyber surveillance, remote disruption**, and operational interference.
- India's experience during the **Kargil War (1999)**, when access to GPS services was denied, remains an important example of technological vulnerability.

Data Sovereignty

- Merely storing data within India does not necessarily ensure sovereign control over that data.
- Laws such as the **United States CLOUD Act** allow foreign governments to compel companies under their jurisdiction to provide access to data, even when that data is physically stored in India.
- This creates a jurisdictional gap in which legal control over data may remain outside India's sovereign authority.

Economic Concerns

- India's rapidly expanding digital economy depends substantially on foreign-owned cloud service providers.
- The **Nayara Energy** incident illustrated how sanctions or restrictions imposed by foreign digital platforms can interrupt industrial operations and affect economic continuity.

Artificial Intelligence and Algorithms

- Heavy reliance on foreign AI systems creates the possibility of **algorithmic hegemony**, where legal, cultural, political, or strategic biases embedded within external AI models influence governance, policymaking, and judicial processes in India.
- Such dependence effectively results in the outsourcing of India's **cognitive sovereignty**.

Financial Vulnerability

- International financial messaging systems such as **SWIFT** have demonstrated that digital financial infrastructure can be used as a geopolitical instrument.
- Dependence on such platforms increases India's exposure to sanctions and external economic coercion.

Digital Colonialism

- India generates enormous volumes of digital data because of its large online population.
- However, a significant portion of this data is processed, analysed, and monetised by foreign technology companies, resulting in a form of **digital colonialism**, where economic value is extracted outside India's jurisdiction.

Areas of Vulnerability

Hardware

- India continues to depend heavily on imported technologies such as **Extreme Ultraviolet (EUV) lithography**, advanced semiconductor chemicals, telecom equipment, routers, and surveillance systems.
- Imported hardware may contain hidden vulnerabilities, including **hardware Trojans**, which can compromise national security.
- **Extreme Ultraviolet (EUV) Lithography** is an advanced semiconductor manufacturing technology that uses ultraviolet light with a wavelength of **13.5 nanometres** to fabricate extremely dense and complex integrated circuits on silicon wafers.

Software

- Critical sectors such as **aviation, banking, energy, and power infrastructure** rely extensively on proprietary foreign software whose source code remains inaccessible.
- This **black-box dependence** restricts independent security audits, transparency, and technical verification.
- **Black-box dependence** refers to a situation in which organisations rely on software or AI systems without understanding or being able to verify how those systems generate their outputs or make decisions.

Defence Systems

- Many sophisticated defence platforms acquired from foreign countries operate using proprietary software systems.
- Such dependence may restrict operational autonomy and create strategic vulnerabilities during periods of conflict.

Cloud Infrastructure

- India's sovereign cloud infrastructure remains relatively limited.
- Heavy dependence on foreign cloud service providers increases the risk that sanctions, legal interventions, or commercial decisions could disrupt essential digital services.

Subsea Cables

- More than **95% of India's international internet traffic** passes through submarine fibre-optic cables.
- India currently lacks a dedicated fleet for repairing these cables, making international digital connectivity vulnerable during sabotage, natural disasters, or armed conflict.

AI Computing Capacity

- Under the **IndiaAI Mission**, India has deployed nearly **38,000 GPUs** for AI computing.
- Despite this progress, the country's computing capacity remains significantly below that of major global technology companies, resulting in a substantial AI compute gap.

Quantum Computing Risks

- The rapid development of quantum computing introduces the possibility of "**Harvest Now, Decrypt Later**" attacks.
- In such attacks, encrypted data collected today may be stored and decrypted in the future once sufficiently powerful quantum computers become available.

Satellite Dependence

- Reliance on foreign **Low Earth Orbit (LEO)** satellite communication systems, including **Starlink-type networks**, may create strategic vulnerabilities affecting India's communication sovereignty.

Standards Dependence

- India's influence in international technology standard-setting bodies, such as the **International Telecommunication Union (ITU)**, remains limited.
- Consequently, India often has to adopt global digital standards and protocols designed largely by foreign countries and technology companies.

Government Responses

Semiconductor Manufacturing

- The **India Semiconductor Mission (ISM)** has been launched to reduce India's dependence on imported semiconductor chips and to promote the development of a strong domestic semiconductor manufacturing ecosystem.

Critical Minerals

- The **National Critical Mineral Mission (NCMM)** aims to secure a reliable supply of strategic minerals such as **lithium, cobalt, and rare earth elements**, which are essential for semiconductors, batteries, electronics, and advanced digital technologies.

Artificial Intelligence

- Through the **IndiaAI Mission**, along with initiatives such as **BharatGen** and **Bhashini**, the Government seeks to develop sovereign Artificial Intelligence systems that are trained on Indian languages, datasets, and socio-cultural contexts.

Digital Public Infrastructure

- India has developed robust **Digital Public Infrastructure (DPI)** through platforms such as **Aadhaar**, **UPI**, and **DigiLocker**, creating open, interoperable digital systems that reduce dependence on foreign digital platform monopolies.

Digital Commerce

- The **Open Network for Digital Commerce (ONDC)** has been introduced to create an open digital commerce ecosystem and reduce excessive concentration of market power among large private digital marketplaces.

Cloud Sovereignty

- MeghRaj (GI Cloud)** provides sovereign cloud infrastructure by hosting critical government data within India and supporting secure cloud services for public institutions.

Cybersecurity

- Institutions such as the **Indian Computer Emergency Response Team (CERT-In)** and the **National Critical Information Infrastructure Protection Centre (NCIIPC)** strengthen India's cybersecurity architecture by improving incident reporting, cyber defence, and the protection of critical digital infrastructure.

Legal Framework

- The **Digital Personal Data Protection (DPDP) Act, 2023** establishes the legal framework governing the collection, processing, storage, and protection of personal data in India.

Quantum Technologies

- The **National Quantum Mission (NQM)**, together with the **Post-Quantum Cryptography (PQC) Roadmap, 2026**, seeks to prepare India's digital infrastructure for future quantum computing challenges by strengthening encryption and cybersecurity capabilities.

Response from the Global Community

Europe

- Several European countries, including **France**, **Germany**, **Denmark**, and **the Netherlands**, are increasingly adopting sovereign alternatives to foreign digital platforms, particularly in cloud computing and public administration.

European Union

- The **European Union (EU)** is developing independent cloud infrastructure and digital technology standards to reduce its dependence on large American technology companies and strengthen digital sovereignty.

Strategic Partnerships

- Emerging international initiatives such as **Pax Silica** demonstrate growing cooperation in semiconductor supply chains and technological resilience, reflecting the increasing importance of digital sovereignty in global geopolitics.

Needed Reforms

Cloud Infrastructure

- India should expand **MeghRaj** into a comprehensive sovereign enterprise cloud capable of supporting critical government functions and strategic industries.

Geopattribution

- India should adopt the concept of **geopattribution**, which involves bringing critical digital assets, strategic data, cloud infrastructure, and computing systems back under domestic ownership and control.

Indigenous Digital Platforms

- Critical government ministries and strategic sectors should progressively migrate towards **indigenously developed** or **independently audited software systems** to reduce dependence on foreign platforms.

Defence Technology

- The **Atmanirbhar Bharat** framework for defence should incorporate **software sovereignty** as a key requirement in all future defence procurement and indigenous weapon development programmes.

Subsea Cable Security

- India should establish **Cable Protection Zones** within its **Exclusive Economic Zone (EEZ)** and develop a dedicated domestic fleet for the maintenance and repair of submarine communication cables.

Artificial Intelligence Capacity

- Greater investment is required to expand India's sovereign AI ecosystem through the development of **foundation models**, increased **GPU computing capacity**, and advanced AI research infrastructure.

Financial Sovereignty

- Wider adoption of the **Digital Rupee (CBDC)** and the development of alternative digital payment and settlement systems can reduce dependence on vulnerable international financial networks.

Leadership in Global Standards

- India should enhance its participation in international digital standard-setting organisations so that it can play a greater role in shaping future global technology protocols and reduce long-term dependence on externally developed standards.

Prelims Special

SHANGRI-LA DIALOGUE

India's decision to supply **BrahMos missiles to Vietnam** was confirmed during the **Shangri-La Dialogue** held in Singapore, highlighting the growing strategic partnership between the two countries.

About

- The **Shangri-La Dialogue**, also known as the **Asia Security Summit**, is the **premier defence and security forum in Asia**.
- It was **launched in 2002** and is held **annually** at the **Shangri-La Hotel in Singapore**.
- The dialogue is organised by the **International Institute for Strategic Studies (IISS)**, London, with support from the **Ministry of Defence, Singapore**.
- Over the years, it has evolved into the **leading multilateral platform for security and defence discussions in the Indo-Pacific region**.

Focus Areas

- The dialogue deliberates on **traditional security issues**, including:
 - Territorial and maritime disputes
 - Defence cooperation
 - Military partnerships
- It also examines **non-traditional security challenges**, such as:
 - Terrorism
 - Cybersecurity
 - Climate change

- Its agenda reflects the **changing security environment and cooperation priorities of the Asia-Pacific region.**

Format

- The event opens with a **keynote address** delivered by a **Head of State or Government.**
- It features **plenary sessions** where Defence Ministers and senior leaders discuss major strategic and security issues.
- The dialogue also includes **breakout sessions** involving policymakers, military officials, and security experts.
- It serves as an important platform for **bilateral and multilateral meetings**, enhancing defence diplomacy and regional cooperation.

India's Participation

- India is a regular participant in the dialogue through its:
 - Defence Minister
 - Chief of Defence Staff (CDS)
 - Senior military officials
- India's **Raisina Dialogue** is widely regarded as being **inspired by the Shangri-La Dialogue.**

INDIA-AUSTRALIA DEFENCE & STRATEGIC PARTNERSHIP

Recently, **Defence Minister Rajnath Singh** co-chaired the **Second India–Australia Defence Ministers' Dialogue** in **New Delhi**, reaffirming the commitment of both countries to strengthen their defence and strategic partnership.

Key Outcomes of the Dialogue

- Both countries agreed to expand **collaborative Maritime Domain Awareness (MDA)** activities through the use of **maritime patrol aircraft** and to explore cooperation in **Undersea Domain Awareness (UDA).**
- Discussions were held to finalise the **Joint Maritime Security Collaboration Roadmap** to deepen maritime cooperation.
- India and Australia agreed to improve **procedural interoperability** during joint exercises and operations, building on the **Mutual Logistics Support Arrangement (MLSA), 2020.**
- Both sides decided to develop a **Memorandum of Understanding (MoU) on the Provision of Defence Articles and Defence Services**, marking the next phase of defence-industrial cooperation.

Key Bilateral Defence Mechanisms

- India and Australia elevated their relationship from a **Strategic Partnership (2009)** to a **Comprehensive Strategic Partnership (2020).**
- The institutional framework for defence cooperation includes:
 - **2+2 Defence and Foreign Ministers' Dialogue**
 - **Defence Policy Talks**
 - **Defence Services Staff Talks**
- **AUSINDEX** serves as the flagship bilateral naval exercise between the **Indian Navy** and the **Royal Australian Navy.**
- The **Indian Air Force** first participated in **Exercise Pitch Black** at **Darwin** in **2018.**
- Australia joined the **MALABAR Naval Exercise** in **2020**, alongside **India, the United States, and Japan.**
- In **2021**, both navies signed the **Joint Guidance for India–Australia Navy-to-Navy Relationship**, providing a roadmap for enhanced naval cooperation.

Other Key Pillars of India–Australia Relations

- Both countries are members of the **QUAD (Quadrilateral Security Dialogue)**, comprising **India, Australia, the United States, and Japan**.
- The **India–Australia Economic Cooperation and Trade Agreement (ECTA), 2022** has reduced tariffs on bilateral trade, while negotiations for a **Comprehensive Economic Cooperation Agreement (CECA)** are ongoing.
- The **Australia–India Critical Minerals Investment Partnership (2022)** promotes cooperation in **lithium, cobalt, and rare earth minerals**. A **Critical Minerals Research Hub** was established in **late 2023** with **approved funding of \$5 million**.
- The **Migration and Mobility Partnership Arrangement (MMPA), 2023** provides a framework to facilitate **legal migration** while addressing **irregular migration**.
- The **India–Australia Rooftop Solar Training Academy**, launched in **2025**, aims to train **2,000 women and young people** as solar technicians.
- **Bilateral trade reached \$24.1 billion in FY 2024–25**, with **India's exports valued at \$8.58 billion** and **imports at \$15.52 billion**.

INDIA-VENEZUELA RELATIONS

Recently, **Venezuela's Acting President Delcy Rodríguez** visited **New Delhi** and held talks with **Prime Minister Narendra Modi**. Both leaders reviewed the entire spectrum of bilateral relations and reaffirmed the importance of **Global South solidarity**.

Key Outcomes

- Both countries discussed shifting from **one-time crude oil purchases** to **long-term energy supply agreements**, covering the entire value chain from **oil exploration and production** to **refining and petrochemical processing**.
- Cooperation in **critical minerals**, particularly **gold and diamonds**, emerged as an important area of discussion.
- India and Venezuela identified **agriculture, animal husbandry, transport, automobile manufacturing, and science & technology** as priority sectors for future cooperation.

Trade and Energy Relations

- **Bilateral trade stood at US\$678.94 million in FY 2025–26**, with **India's exports valued at US\$210 million**.
- India's major exports to Venezuela include:
 - Pharmaceuticals
 - Cotton
 - Machinery
 - Mineral fuels
- As of **May 2026**, **Venezuela became India's third-largest supplier of crude oil**, reflecting the growing energy partnership between the two countries.

Significance of Venezuela for India

- Venezuela possesses the **world's largest proven crude oil reserves**, making it a strategically important energy partner for India, which imports **more than 85% of its crude oil requirements**.
- Indian refineries are technically equipped to process **heavy crude oil**, strengthening the scope for long-term energy cooperation.
- Venezuela is also rich in **rare earth elements, nickel, gold, diamonds, and other critical minerals**, supporting India's growing demand for strategic minerals used in advanced technologies.
- Stronger engagement with Venezuela enhances India's presence in **Latin America** and helps diversify its energy and strategic partnerships beyond traditional suppliers.

Venezuela

Location

- Venezuela is located on the **northern coast of South America**.
- It shares borders with:
 - **Colombia** to the west
 - **Brazil** to the south
 - **Guyana** to the east
- The **Caribbean Sea** lies to its north.



Capital

- **Caracas**

Major Physiographic Regions

- The **Andes Mountains** extend into **northwestern Venezuela** through their northeastern branch.
- The **Lake Maracaibo Basin** is one of the country's most important geological and petroleum-producing regions.
- The **Llanos** are vast tropical **savanna grasslands** covering more than **250,000 square kilometres** across central Venezuela and form one of the country's major physical regions.

AUKUS ALLIANCE

Recently, on completing **five years**, the **AUKUS** member countries announced plans to jointly develop **advanced underwater drone systems** and further strengthen **maritime security cooperation**.

About

- **AUKUS** is a **trilateral strategic security partnership** between **Australia, the United Kingdom (UK), and the United States (US)**.
- The partnership was **launched in September 2021** in response to the evolving geopolitical and security environment in the **Indo-Pacific region**.
- It aims to enhance the **defence capabilities, technological integration, and industrial capacity** of all three member countries.
- AUKUS seeks to protect the security interests of its members while promoting peace, stability, and deterrence in the Indo-Pacific.
- The partnership builds upon the long-standing bilateral defence and strategic relationships among the three nations.

Two Pillars of AUKUS

Pillar I: Nuclear-Powered Submarines (SSNs)

- Focuses on enabling **Australia** to acquire **conventionally armed, nuclear-powered submarines (SSNs)**.
- The agreement **does not involve the transfer of nuclear weapons**.
- Under the arrangement, the **United States** will supply **three Virginia-class nuclear-powered submarines** to Australia, with an option to purchase **two additional submarines**.
- With this capability, **Australia will become the seventh country in the world to operate nuclear-powered submarines**.

Pillar II: Advanced Defence Technologies

- Promotes cooperation in **eight key areas of advanced military technology**, including:
 - Artificial Intelligence (AI)
 - Quantum Technologies
 - Cyber Capabilities
 - Undersea Systems
 - Hypersonic and Counter-Hypersonic Technologies
 - Electronic Warfare
 - Innovation
 - Information Sharing
- The partnership is also developing **advanced Uncrewed Undersea Vehicles (UUVs)** and **underwater drone systems** to strengthen maritime surveillance and security operations.

BLUE HELMETS

Recently, the **United Nations Mission in South Sudan (UNMISS)** awarded the **UN Medal of Honour** to **565 Indian peacekeepers** in recognition of their outstanding service and contribution to peacekeeping operations.

About Blue Helmets

- **Blue Helmets** is the common name given to the **military personnel, police officers, and civilian experts** serving under **United Nations Peacekeeping Missions**.
- They are deployed in **conflict-affected and post-conflict regions** to maintain peace, protect civilians, support humanitarian assistance, and help implement peace agreements.
- The term "**Blue Helmets**" is derived from the distinctive **light blue helmets or berets** worn by UN peacekeepers.

Recognition of Indian Peacekeepers

The Indian contingent was honoured for its significant contributions, including:

- Conducting **civilian protection patrols** and promoting **community engagement**.
- Organising **veterinary camps** and improving **humanitarian access** in remote and conflict-affected areas.
- Providing **self-defence training for women** and actively supporting efforts to prevent **gender-based violence**.

India's Role in UN Peacekeeping

- India is the **second-largest contributor of uniformed personnel** to **United Nations Peacekeeping Operations**, after Nepal.
- More than **4,200 Indian military and police personnel**, including **155 women**, are currently serving in UN peacekeeping missions.
- Indian peacekeepers are deployed across **nine mission areas**, namely:
 - Abyei

- Central African Republic
- Cyprus
- Democratic Republic of the Congo
- Lebanon
- Middle East
- Somalia
- South Sudan
- Western Sahara

INDIAN OCEAN RIM ASSOCIATION (IORA)

Recently, **Canada's application to become a Dialogue Partner of the Indian Ocean Rim Association (IORA)** came up for consideration during the **28th Committee of Senior Officials (CSO) Meeting** held in **New Delhi**.

About IORA

- The **Indian Ocean Rim Association (IORA)** is an **intergovernmental organisation** comprising **23 Member States** and **12 Dialogue Partners**, established to promote regional cooperation among countries bordering the **Indian Ocean**.
- The concept of IORA was first proposed by **South African President Nelson Mandela** during his **1995 visit to India**, where he emphasised the shared geographical, historical, and economic links among Indian Ocean nations.
- This initiative led to the formation of the **Indian Ocean Rim Initiative (1995)** and the formal establishment of **IORA in 1997**.
- The **Secretariat** of IORA is located in **Ebène, Mauritius**.

Structure and Functioning

- The **Council of Ministers (COM)** is the **highest decision-making body** of IORA and functions on the principle of **consensus**.
- Other important institutional mechanisms include:
 - **Committee of Senior Officials (CSO)**
 - **TROIKA**
 - **IORA Secretariat**
- The organisation functions under the **IORA Charter**, which is based on the principles of:
 - Multilateralism
 - Consensus-based decision-making
 - Non-intrusive cooperation

Priority Areas

IORA focuses on six major areas of regional cooperation:

- Maritime Safety and Security
- Trade and Investment Facilitation
- Fisheries Management
- Disaster Risk Management
- Academic, Science and Technology Cooperation
- Tourism and Cultural Exchanges

Cross-Cutting Themes

- Blue Economy
- Women's Economic Empowerment

Membership

- **Member States** include major Indian Ocean littoral countries such as:

- India
- Australia
- Indonesia
- South Africa
- France
- Iran
- United Arab Emirates (UAE)
- **Dialogue Partners** include:
 - United States
 - United Kingdom
 - China
 - Japan
 - Russia
 - European Union (EU)
- IORA also enjoys **Observer Status** at:
 - United Nations General Assembly (UNGA)
 - African Union (AU)
 - United Nations Conference on Trade and Development (UNCTAD)

Significance for India

- IORA complements India's **SAGAR (Security and Growth for All in the Region)** vision by promoting:
 - Maritime security
 - Freedom of navigation
 - Blue Economy cooperation
- It strengthens India's strategic influence and leadership in the **Indian Ocean Region (IOR)** while enhancing regional connectivity, economic cooperation, and sustainable maritime development.

FINANCIAL ACTION TASK FORCE (FATF)

Recently, the **FATF Plenary** appointed **Vivek Aggarwal**, Secretary in India's **Ministry of Culture**, as the **next Vice-President of the Financial Action Task Force (FATF)**. This is the **first time India will hold the Vice-Presidency of FATF**. He will serve from **July 2026 to June 2027**.

About FATF

- The **Financial Action Task Force (FATF)** is the **global watchdog** responsible for combating **money laundering, terrorist financing, and the financing of the proliferation of weapons of mass destruction**.
- It is an **intergovernmental organisation** with **40 members**.
- **India became a member in 2010**.
- FATF studies methods used for **money laundering and terrorist financing** across borders.
- It develops **international standards (FATF Recommendations)** and assesses whether member countries are implementing them effectively.
- The **FATF Plenary** is the organisation's principal decision-making body.
- The **Vice-President** is elected by the **Plenary** from among its members.
- The Vice-President supports the **President** in carrying out FATF's mandate during the **two-year presidential term**.

FATF Monitoring Lists

- FATF publishes **two monitoring lists three times every year—February, June, and October**.

- These lists identify countries with deficiencies in their **Anti-Money Laundering and Counter-Terrorist Financing (AML/CFT)** frameworks.

Grey List (Jurisdictions under Increased Monitoring)

- Includes countries with **significant but addressable weaknesses** in their AML/CFT systems.
- These countries are **working with FATF** to implement agreed reforms within specified timelines.
- Grey-listed countries are subject to **enhanced monitoring**.
- Grey-listing often results in:
 - Reduced foreign investment
 - Higher borrowing costs
 - Limited access to international financial assistance
 - Reputational damage
- **As of June 2026, 22 countries** are on the **Grey List**.

Black List (High-Risk Jurisdictions Subject to a Call for Action)

- Includes countries with **serious and strategic deficiencies** in their AML/CFT regimes.
- FATF calls on all countries to apply **enhanced due diligence** while dealing with blacklisted jurisdictions.
- Members are also encouraged to adopt **counter-measures** to safeguard the international financial system.
- **As of June 2026, three countries** are on the **Black List**:
 - North Korea
 - Myanmar
 - Iran

BRICS INDORE DECLARATION

Recently, the **BRICS Agriculture Ministers' Meeting** was held in **Indore, Madhya Pradesh**, under **India's Presidency**.

BRICS Indore Declaration

- The meeting unanimously adopted the **BRICS Indore Declaration**, a joint agricultural charter focusing on **farmers, food security, climate resilience, and technology**.
- The declaration provides a **farmer-centric framework** to strengthen cooperation among BRICS countries in:
 - Food security
 - Sustainable agriculture
 - Agricultural trade
 - Agricultural innovation
 - Climate resilience
- It was adopted despite ongoing geopolitical tensions, highlighting the importance of **multilateral cooperation in agriculture**.
- Collectively, BRICS countries:
 - Account for **nearly half of the world's population**.
 - Possess about **42% of the world's agricultural land**.
 - Produce nearly **42% of global foodgrain output**.

Four Institutional Initiatives Proposed

1. Centres of Excellence on Agro-Ecology and Regenerative Agriculture

- Aims to promote:
 - Joint research
 - Exchange of best practices

- Capacity building in **natural, organic, and regenerative farming**
- The **Indian Institute of Farming Systems Research (IIFSR), Modipuram**, will serve as the coordinating institution.

2. BRICS Network on Digital Agriculture

- Promotes cooperation in:
 - Artificial Intelligence (AI)
 - Geospatial technologies
 - Digital Public Infrastructure (DPI)
 - Data-driven agricultural solutions
- **IIT Delhi** has been designated as the coordinating institution.

3. Global Forum on Farmers' Rights in Seed Systems

- Focuses on:
 - Protecting farmers' seed rights
 - Conserving indigenous seed varieties
 - Preserving traditional agricultural knowledge
- Supports **biodiversity conservation** and **long-term food security**.

4. BRICS AgriN (Agro Inputs, Genetic Resources and Information Network)

- Facilitates cooperation in:
 - Agricultural inputs
 - Seed exchange
 - Genetic resources
 - Technical expertise
- Strengthens agricultural collaboration among BRICS member countries.

About BRICS

- **BRICS** was originally formed by **Brazil, Russia, India, China, and South Africa**.
- The term "**BRIC**" was coined by economist **Jim O'Neill** in **2001**.
- The grouping was formally launched during the **First BRIC Foreign Ministers' Meeting** held on the sidelines of the **United Nations General Assembly (UNGA)** in **New York in 2006**.
- **South Africa joined in 2010**, after which the grouping became **BRICS**.
- The new full members include:
 - Egypt
 - Ethiopia
 - Iran
 - Indonesia
 - United Arab Emirates (UAE)
- BRICS leaders have been holding **annual summits since 2009**.

New Development Bank (NDB)

- The **New Development Bank (NDB)**, formerly known as the **BRICS Development Bank**, is the financial institution of BRICS.
- It finances **infrastructure and sustainable development projects** through:
 - Loans
 - Guarantees
 - Equity participation
 - Other financial instruments

OPERATION AMISTAD

Recently, **India launched Operation Amistad** to provide **Humanitarian Assistance and Disaster Relief (HADR)** following the devastating earthquakes in **Venezuela**.

About

- **Operation Amistad** is India's **Humanitarian Assistance and Disaster Relief (HADR)** mission for **Venezuela**.
- The word "**Amistad**" means "**Friendship**" in **Spanish**, symbolising India's solidarity with the people of Venezuela.
- The operation reflects India's commitment to the principle of *Vasudhaiva Kutumbakam* ("The World is One Family").
- It is one of **India's longest-range humanitarian relief missions**, demonstrating the country's capability to deliver rapid disaster assistance across long distances.

Relief Measures

- The **Indian Air Force (IAF)** deployed **two C-17 Globemaster aircraft** from **Hindon Air Force Station** to transport relief personnel and supplies.
- The mission included a **41-member rescue and medical team** from the **Indian Army's 60 Para Field Hospital**.
- The medical team was equipped to provide:
 - Emergency medical treatment
 - Trauma care
 - Life-saving surgical procedures
- India dispatched **over 35 tonnes of relief materials and medical supplies** to support rescue and rehabilitation efforts.
- The mission also carried **two BHISHM Cube portable hospitals**, developed under the **Aarogya Maitri Initiative**, to provide rapid and mobile medical assistance in disaster-affected areas.

ENVIRONMENT & ECOLOGY

Ecologically Sensitive Areas

After a delay of nearly 12 years, the Central Government is preparing to notify the Ecologically Sensitive Area (ESA) in the Western Ghats, beginning with Gujarat, Goa, and Maharashtra. The proposed ESA is expected to cover nearly 56,825 sq. km, in accordance with the recommendations of the Kasturirangan Committee.

About Ecologically Sensitive Areas (ESA)

- An **Ecologically Sensitive Area (ESA)** is a region notified under the **Environment (Protection) Act, 1986** for the protection and conservation of ecologically fragile ecosystems.
- Such areas are identified and notified by the **Ministry of Environment, Forest and Climate Change (MoEFCC)** on the basis of their **biodiversity, ecological significance, environmental sensitivity**, and the need to regulate developmental activities.
- Developmental activities that are likely to cause significant environmental damage—such as **mining, quarrying, highly polluting industries, and large-scale construction projects**—are either prohibited or strictly regulated within these areas.

- **Objective:** The primary objective of declaring an ESA is to maintain a balance between **environmental conservation and sustainable development**, while protecting ecosystem services and safeguarding the livelihoods of local communities.

Western Ghats

- The **Western Ghats** extend for nearly **1,500 km** along the western coast of India, covering six States—**Gujarat, Maharashtra, Goa, Karnataka, Kerala, and Tamil Nadu**.
- Spread across an area of approximately **1,64,280 sq. km**, they are recognised as one of the **eight hottest biodiversity hotspots** in the world.
- The Western Ghats play a crucial role in regulating the **Indian monsoon**, maintaining regional climate, conserving soil, and ensuring water security for millions of people.
- Owing to their exceptional biodiversity and high level of endemism, the Western Ghats have been designated as a **UNESCO World Heritage Site**.
- **Major Peaks of the Western Ghats:**
 - **Anamudi (Kerala):** Highest peak of the Western Ghats.
 - **Doddabetta (Tamil Nadu):** Highest peak in Tamil Nadu.

Other Regions in India Notified as Ecologically Sensitive Areas

- **Kumbhalgarh Wildlife Sanctuary**, Rajasthan (Aravalli Range)
- **Kaziranga–Karbi Anglong Landscape**, Assam
- **Gir National Park**, Gujarat
- **Ranthambore Tiger Reserve**, Rajasthan
- **Sundarbans**, West Bengal
- **Great Indian Bustard Habitats** in Rajasthan and Gujarat
- **Bhagirathi Eco-Sensitive Zone**, Uttarakhand
- **Chilika Lake**, Odisha
- **Deepor Beel**, Assam

Ecological Significance

Biodiversity Hotspot

- The Western Ghats harbour nearly **30% of India's flora and fauna** and are characterised by an exceptionally high degree of **endemism**.
- The region provides habitat to several threatened and endangered species, including the **Lion-tailed Macaque, Nilgiri Tahr, Malabar Civet, and the Great Indian Hornbill**.

Water Security and Climate Regulation

- The Western Ghats function as a major **watershed** and act as a **natural barrier to monsoon winds**, significantly influencing rainfall patterns across Peninsular India.
- Several important rivers, including the **Godavari, Krishna, Cauvery, Tungabhadra, and Periyar**, originate from the Western Ghats.
- The dense forest cover contributes to **groundwater recharge, carbon sequestration, climate regulation**, and mitigation of natural disasters such as floods and landslides.

Socio-Economic Significance

- Unlike the Himalayan region, the Western Ghats directly support the livelihoods of millions of people through **agriculture and plantation-based activities**.
- The region is renowned for the cultivation of major export-oriented crops such as **pepper, cardamom, coffee, tea, cinnamon, rubber**, and various other spices.
- In addition, the Western Ghats provide substantial economic benefits by supporting **tourism, hydroelectric power generation, and diverse livelihood opportunities** for local communities.

Evolution of ESA Delineation

Gadgil Committee vs. Kasturirangan Committee

Gadgil Committee (Western Ghats Ecology Expert Panel, 2011)

- The **Western Ghats Ecology Expert Panel (WGEEP)**, headed by **Madhav Gadgil**, identified the Western Ghats as covering nearly **1,29,037 sq. km** and recommended that the **entire region** should be declared an **Ecologically Sensitive Area (ESA)**.
- The Committee proposed a **graded regulatory framework**, prescribing stringent restrictions on activities such as **mining, polluting industries, and large infrastructure projects** based on the ecological sensitivity of different areas.
- It also advocated a **participatory, bottom-up governance model**, assigning a greater role to local bodies and communities in environmental decision-making.

Kasturirangan Committee (High-Level Working Group, 2013)

- The **High-Level Working Group (HLWG)** chaired by **Dr. K. Kasturirangan** adopted a comparatively balanced and development-oriented approach.
- It considered the total Western Ghats landscape to cover approximately **1,64,280 sq. km** and recommended that nearly **60,000 sq. km** be notified as an **Ecologically Sensitive Area (ESA)**.
- The Committee classified the Western Ghats into **Natural Landscape (40%)** and **Cultural Landscape (60%)**, recommending protection primarily for the ecologically intact natural areas.
- It proposed a **ban on mining and quarrying**, prohibition of **red-category polluting industries**, restrictions on the establishment of **thermal power plants**, and regulation of **large-scale construction and township projects** within the notified ESA.

Concerns

- **Opposition from State Governments:** Several State Governments have expressed concerns that the ESA notification could adversely affect industrial development, infrastructure expansion, plantation agriculture, local livelihoods, and revenue generated from mining and quarrying activities.
- **Boundary-Related Disputes:**
 - The draft notification issued by the Central Government proposed an ESA covering **56,825 sq. km**.
 - Several States have sought the exclusion of certain areas based on findings from ground-level surveys.
 - **Kerala, Karnataka, and Maharashtra** have demanded substantial reductions in the proposed ESA boundaries.
- **Challenges in Data Reconciliation:** Achieving consensus has been difficult because of differences in **satellite imagery, village-level data, revenue records, land-use patterns**, and other mapping records.

Recent Developments

Expert Committee (2022)

- In **2022**, the **Ministry of Environment, Forest and Climate Change (MoEFCC)** constituted an expert committee under the chairmanship of the **former Director General of Forests** to examine the objections raised by various States.
- The Committee has been entrusted with responsibilities such as:
 - Reconciling village-wise data.
 - Conducting field verification of disputed areas.
 - Examining proposals relating to financial incentives and compensation for States.

Draft Notification (July 2024)

- The **Draft Notification issued in July 2024** introduced an important procedural change.
- It provides that **ESA boundaries may be notified either on a State-wise basis or through a combined notification covering multiple States**.
- This approach is intended to prevent unnecessary delays by allowing notifications to proceed in States where consensus has already been achieved.

Western Ghats Protection: A Crucial Imperative

Increasing Ecological Threats

- The Western Ghats are facing increasing environmental pressures due to **deforestation, mining, quarrying, expanding infrastructure, unregulated tourism, and climate change-induced extreme rainfall events.**
- Recent **landslides in Kerala and Karnataka** have highlighted the growing ecological vulnerability of the region.

Ecosystem Services

- The Western Ghats provide a wide range of critical ecosystem services, including **water supply, flood moderation, carbon sequestration, pollination, and soil conservation.**
- These ecological benefits support not only the six Western Ghats States but also contribute significantly to the environmental security of the entire country.

Need for Sustainable Development

- Conserving the Western Ghats does not imply excluding people or restricting all developmental activities.
- Rather, it calls for the promotion of **sustainable agriculture, eco-tourism, community participation, appropriate compensation mechanisms, and payment for ecosystem services,** thereby ensuring that environmental protection and economic development progress together.

Prelims Special

THE ARAVALLIS PREVENTS DESERTIFICATION

A recent dust storm in Rajasthan has highlighted the vital ecological role of the Aravalli Range in protecting northern India from dust storms, desertification, and land degradation.

Dust Storms in Northwestern India

- Dust storms commonly occur in **northwestern India** during the **pre-monsoon season (April–June).**
- Intense summer heating creates **dry, unstable atmospheric conditions** that favour the formation of dust storms.
- Strong **southwesterly and westerly winds** carry large quantities of dust from the **Thar Desert** and adjoining arid regions towards northern India.

How the Aravalli Range Protects Northern India

- The **Aravalli Range** is the **oldest mountain range in India**, extending for about **692 km (430 miles).**
- It stretches in a **southwest–northeast direction** across **Gujarat, Rajasthan, Haryana**, and ends in **Delhi.**
- **Rajasthan** contains nearly **two-thirds** of the total Aravalli range.
- The Aravallis support **groundwater recharge** and serve as the source of important rivers such as the **Sabarmati** and **Luni.**
- The region is rich in mineral resources, including:
 - Sandstone
 - Limestone
 - Marble
 - Granite
 - Lead
 - Zinc
 - Copper
 - Gold

- Tungsten

Ecological Significance of the Aravallis

- The hills act as a **natural barrier**, slowing down **dust-laden winds** from the Thar Desert and causing dust and sand particles to settle on the western slopes.
- **Forests and vegetation** along the range trap airborne dust particles, reducing their movement towards northern India.
- The Aravallis help **check the eastward spread of desertification**, protecting agricultural lands, urban centres, and ecosystems from excessive dust deposition.
- They also contribute to **soil conservation, groundwater recharge, biodiversity conservation, and climate regulation**.

Causes of Degradation

- **Unregulated mining** of granite, marble, red silica, and other minerals has severely damaged the hills and natural landscapes.
- **Deforestation** and removal of natural vegetation have reduced the range's ability to trap dust and prevent soil erosion.
- **Encroachment and land-use change**, including the conversion of forests and grazing lands into settlements and agricultural fields, have weakened the ecological resilience of the Aravallis.
- Rapid urbanisation and infrastructure development have further fragmented the ecosystem.

Aravalli Green Wall Initiative

- In **2025**, the **Government of India** launched the **Aravalli Green Wall Initiative** to restore the degraded ecosystem of the Aravalli range.
- The project aims to **increase green cover within a 5-km buffer zone** along the Aravalli hills.
- It covers **29 districts** across:
 - Gujarat
 - Rajasthan
 - Haryana
 - Delhi
- The initiative seeks to **restore 26 million hectares of degraded land by 2030**, strengthen ecological resilience, combat **desertification**, improve biodiversity, and enhance climate adaptation.

BANNI GRASSLANDS

The proposed **solar power project** by **NTPC Renewable Energy Limited (NTPC REL)** in the **Banni Grasslands of Gujarat** has sparked concerns over its potential impact on **pastoral communities, biodiversity, wetlands, and fragile ecosystems**.

About Banni Grasslands

- The **Banni Grasslands**, located in the **Kachchh district of Gujarat**, are among the **largest natural grasslands in Asia**.
- They support traditional pastoral communities, including the **Fakirani Jat** and **Maldharis**, who have depended on the grasslands for livestock grazing for centuries.
- The grasslands contain **more than 70 species of nutritious grasses**, providing excellent fodder for livestock.
- They support grazing of:
 - Camels
 - Banni buffaloes
 - Sheep
 - Goats

- The nearby **Chhari Dhand Wetland Conservation Reserve**, a **Ramsar Site**, is an important habitat for migratory birds and other wildlife.

Significance of the Banni Grasslands

Ecological and Climate Importance

- **Carbon Sequestration:** The grasslands store approximately **27 million tonnes of carbon** in their soils, making them an important natural **carbon sink**.
- **Biodiversity Hotspot:** Banni supports:
 - More than **40 species of drought-tolerant grasses**
 - Hundreds of resident and migratory bird species
 - Diverse wildlife, including the:
 - **Caracal**
 - **Desert Fox**
 - **Nilgai**
- **Wetland Ecosystem:** The **Chhari Dhand Conservation Reserve**, located within Banni, is a **Ramsar Wetland** that provides a critical habitat for thousands of migratory birds.
- **Potential Cheetah Habitat:** The **Wildlife Institute of India (WII)** has identified Banni as a potential site for the future reintroduction of the **cheetah**.

Importance for Pastoral Communities

- The region is home to **22 semi-nomadic and pastoral communities**, including the **Maldharis** and **Fakirani Jat**, whose livelihoods depend on traditional livestock rearing and grazing.
- **Banni Buffalo:** The grasslands sustain the **Banni Buffalo**, a unique indigenous breed known for:
 - High-quality milk production
 - Exceptional tolerance to saline and harsh climatic conditions
- **Kharai Camel:** Banni is one of the natural habitats of the **Kharai Camel**, a rare breed capable of **swimming across seawater** to graze on mangrove vegetation.

Concerns Over the Proposed Solar Project

- The proposed solar park covers nearly **4,500 acres** across **16 villages**, close to ecologically sensitive areas.
- Local communities fear:
 - Loss of valuable grazing lands
 - Displacement from traditional cultural spaces
 - Damage to community graveyards
 - Threats to their pastoral livelihoods
- Environmentalists warn that:
 - Solar infrastructure and associated human activities could disturb wildlife habitats.
 - **Light pollution** may alter bird behaviour and migratory patterns.
 - Large solar panels may confuse birds by reflecting sunlight, increasing the risk of **bird collisions**.
- Concerns have also been raised over the inadequate implementation of safeguards relating to:
 - **Common pasturelands**
 - The **Forest Rights Act, 2006**
 - Protection of local community rights and biodiversity.

BIOMIMICRY

Biomimicry is transforming innovation by drawing inspiration from **nature's designs, processes, and ecosystems** to develop **sustainable, efficient, and resilient solutions** across industries. Instead of exploiting nature, biomimicry views **nature as a mentor, model, and measure** for innovation.

About Biomimicry

- **Biomimicry** involves studying and emulating nature's **billions of years of evolutionary adaptations** to solve human challenges sustainably.
- It seeks to create products, technologies, and systems that are **resource-efficient, environmentally friendly, and regenerative**.
- The approach promotes working **with nature rather than against it**, encouraging sustainable development and circular economy principles.

Core Approaches of Biomimicry

Form (Structure)

- Involves copying the **shape, structure, or physical characteristics** of natural organisms.
- **Example:** Shark skin-inspired surfaces that resist bacterial growth and reduce microbial contamination.

Process (Function)

- Focuses on imitating **natural biological or chemical processes**.
- **Example:** Artificial photosynthesis that mimics the way plants convert sunlight into energy for clean fuel production.

Ecosystem (Systems)

- Designs human systems based on the functioning of **natural ecosystems**, where the waste of one organism becomes a resource for another.
- This approach promotes **zero waste, resource recycling, and circular production systems**.

Applications of Biomimicry

- **Transportation:** Japan's **Shinkansen Bullet Train** was redesigned based on the **kingfisher's beak**, reducing tunnel pressure waves, lowering noise, improving speed, and enhancing energy efficiency.
- **Architecture:** Buildings inspired by termite mounds use natural ventilation systems to reduce energy consumption.
- **Healthcare:** Biomimetic materials and medical devices are inspired by natural structures and biological processes.
- **Manufacturing:** Nature-inspired materials improve durability, efficiency, and sustainability while reducing waste.
- **Agriculture:** Biomimicry supports sustainable farming through improved water management, soil conservation, and ecosystem-based agricultural practices.

YELLOW-THROATED MARTEN

For the **first time**, the **Kaziranga National Park** in Assam has confirmed the presence of the **Yellow-throated Marten**, highlighting the park's rich biodiversity and healthy forest ecosystem.

About the Yellow-throated Marten

- **Scientific Name:** *Martes flavigula*
- It belongs to the **Mustelidae (weasel) family**, which also includes:
 - Otters
 - Badgers
 - Wolverines
- It is a **medium-sized carnivorous mammal** that occupies a position below apex predators such as **tigers and bears** in the food chain.
- The species is **diurnal**, meaning it is **active during the daytime**, and is an excellent **tree climber**.
- It plays an important ecological role by **dispersing seeds**, thereby promoting **forest regeneration** and maintaining ecosystem balance.

Distribution

- The Yellow-throated Marten is distributed across:
 - The Himalayas
 - South Asia
 - Southeast Asia
 - China
 - Korea
 - Parts of Russia
- In India, it is found in:
 - The Himalayan region
 - Northeastern states, including Assam

Conservation Status

- **IUCN Red List: Least Concern (LC)**
- **Wildlife (Protection) Act, 1972:** Listed under **Schedule II**, providing legal protection against hunting and trade.

Kaziranga National Park

- Located in the **state of Assam** in northeastern India.
- Established as a **Reserve Forest in 1908**.
- Declared a **National Park in 1974**.
- Recognised as a **UNESCO World Heritage Site in 1985**.
- It is the **largest natural habitat of the Indian One-Horned Rhinoceros (*Rhinoceros unicornis*)**.
- The park is also home to a rich diversity of wildlife, including:
 - Bengal Tiger
 - Asian Elephant
 - Wild Water Buffalo
 - Swamp Deer
 - Numerous species of birds, reptiles, and mammals.

SURHA TAL: INDIA'S 100TH RAMSAR SITE

The **Jai Prakash Narayan Bird Sanctuary (Surha Tal)** in **Ballia district, Uttar Pradesh**, has been designated as **India's 100th Ramsar Site**, recognising its international importance as a wetland ecosystem and habitat for migratory and resident birds.

About Jai Prakash Narayan Bird Sanctuary (Surha Tal)

- The sanctuary was **established in 1991**.
- It is centred around **Surha Tal**, a **natural perennial oxbow lake** formed by the changing course of the **Ganga River**.
- It is situated in the **Indo-Gangetic Plain**, near the confluence of the **Ganga** and **Ghaghara** rivers.
- The wetland provides an important habitat for numerous **resident and migratory bird species**.

Important Bird Species

Migratory Birds

- Greylag Goose
- Northern Pintail
- Common Teal
- Bar-headed Goose

Resident Birds

- Sarus Crane
- Heron

- Cormorant

The sanctuary plays a vital role in supporting migratory birds arriving from **Siberia and Central Asia** during the winter season.

Ramsar Convention on Wetlands

- The **Ramsar Convention on Wetlands** was adopted in **Ramsar, Iran**, in **1971** and came into force in **1975**.
- India became a **Contracting Party** to the Convention on **1 February 1982**.
- There are **more than 2,500 Ramsar Sites** across the world.

Objectives and Three Pillars of the Ramsar Convention

1. Wise Use of Wetlands

- Promote the **sustainable conservation and management** of all wetlands within member countries.

2. Ramsar Sites

- Identify and designate **wetlands of international importance** for inclusion in the **List of Wetlands of International Importance (Ramsar Sites)**.

3. International Cooperation

- Encourage cooperation among countries for the conservation and sustainable management of:
 - Transboundary wetlands
 - Shared river basins and water systems
 - Migratory species and their habitats

Recent Ramsar Site Additions in India

Ramsar Site	State	Significance
95th – Kopra Reservoir	Chhattisgarh	Supports rich wetland biodiversity and important waterbird populations.
96th – Siliserh Lake	Rajasthan	Important freshwater wetland supporting diverse flora and fauna.
97th – Patna Bird Sanctuary	Uttar Pradesh	Important habitat for numerous resident and migratory bird species.
98th – Chhari Dhand Wetland	Gujarat	Located in the Banni Grasslands; internationally renowned bird habitat.
99th – Shekha Jheel Bird Sanctuary	Uttar Pradesh	Declared in April 2026; supports over 150 bird species.
100th – Jai Prakash Narayan Bird Sanctuary (Surha Tal)	Uttar Pradesh	Natural oxbow lake providing habitat for migratory birds and rich wetland biodiversity.

SUMMER AIR POLLUTION AND GROUND LEVEL OZONE

The severe heatwaves of summer 2026 led to the reimposition of **GRAP Stage-I measures in Delhi** due to rising **ground-level ozone pollution**. According to an **IIT Kharagpur study**, exposure to ground-level ozone contributed to **more than 26,500 deaths in India during 2024**, highlighting its growing public health impact.

What is Ground-Level Ozone?

- **Ground-level ozone (O₃)** is a **secondary air pollutant**, meaning it is **not emitted directly** into the atmosphere.
- It is formed when:
 - **Nitrogen Oxides (NO_x)** released from vehicles, thermal power plants, and industries, and
 - **Volatile Organic Compounds (VOCs)** emitted from industries, paints, solvents, fuel vapours, and other sources,
 react in the presence of **strong sunlight**.
- Ground-level ozone is a major component of **photochemical smog**.

- Exposure to ozone and particulate matter can cause serious respiratory and cardiovascular illnesses, particularly among **children, elderly people, and individuals with pre-existing lung diseases**.

Why Do Heatwaves Increase Ground-Level Ozone?

- **High temperatures and intense sunlight** accelerate the chemical reactions between **NO_x** and **VOCs**, resulting in higher ozone formation.
- **Calm weather and low wind speeds** during heatwaves prevent pollutants from dispersing, allowing ozone to accumulate near the ground.
- Increased electricity demand for cooling leads to greater use of **fossil fuel-based power generation**, releasing more ozone-forming pollutants.
- Even after temperatures begin to decline, **ozone concentrations may remain elevated for several days**, continuing to affect air quality and public health.

About Ozone (O₃)

- **Ozone (O₃)** is a gas composed of **three oxygen atoms**.
- It occurs in two layers of the atmosphere:

Stratospheric Ozone

- Located in the **stratosphere**.
- Forms the **ozone layer**, which protects Earth by absorbing harmful **ultraviolet (UV) radiation** from the Sun.
- It is **beneficial** for life on Earth.

Tropospheric (Ground-Level) Ozone

- Found in the **troposphere**, the lowest layer of the atmosphere.
- It is a **harmful air pollutant** and also a **greenhouse gas**.
- It is formed through chemical reactions between **NO_x** and **VOCs** in the presence of sunlight.

WHO Guideline

- The **World Health Organization (WHO)** recommends that ozone concentrations should not exceed **100 micrograms per cubic metre (100 µg/m³)**, measured as the **maximum 8-hour moving average** within a day.

Major Causes of Summer Air Pollution

- **Regional Dust Storms (Loo):** Hot, dry winds transport dust from the **Thar Desert** and **West Asia**, significantly increasing **PM₁₀** levels.
- **Localized Thunderstorms (Andhi):** Thunderstorms lift loose soil and dust into the atmosphere, worsening air quality.
- **Urban Heat Island Effect:** Concrete structures and reduced green cover increase urban temperatures, accelerating ozone and smog formation.
- **Construction and Demolition Activities:** Relaxation of winter restrictions increases dust emissions from construction sites.
- **Human Activities:** Continuous emissions from:
 - Vehicles
 - Industries
 - Thermal power plants
 - Waste burning
 release pollutants that contribute to ozone formation.

NEW NORMS FOR CAUSTIC SODA WASTE WATER

The **Union Government** has notified **new environmental standards** requiring wastewater from **standalone caustic soda plants using membrane cell technology** to undergo a **laboratory-based fish**

survival (bioassay) test before discharge. The objective is to strengthen pollution control and reduce the environmental impact of industrial effluents.

About the New Standards

- The standards apply to **standalone caustic soda plants** operating with **membrane cell technology**.
- Membrane cell technology** uses a **selective membrane** to separate chemical products during electrolysis and is considered **more environmentally friendly** than the older **mercury cell process**, as it avoids mercury pollution and reduces environmental hazards.
- Under the new rules:
 - At least **90% of fish must survive** after **96 hours** of exposure to **100% wastewater** during a laboratory-based **bioassay test**.
 - The standards also prescribe limits for:
 - pH
 - Chloride concentration
 - Total Suspended Solids (TSS)
 - Total Dissolved Solids (TDS)
 - Water consumption
 - Wastewater (effluent) generation
- Experts emphasize that effective implementation will require:
 - Accredited laboratories
 - Trained personnel
 - Regular and independent monitoring

Key Effluent Standards

Parameter	Permissible Limit
pH	6.5 – 8.5
Chloride	Maximum 250 mg/L
Total Dissolved Solids (TDS)	Maximum 2,100 mg/L or 2.1 kg per tonne of caustic soda produced
Total Suspended Solids (TSS)	Maximum 100 mg/L
Water Consumption	Maximum 5 cubic metres per tonne of caustic soda produced
Effluent Generation	Maximum 1 cubic metre per tonne of caustic soda produced

About Caustic Soda

- Caustic soda**, also known as **Sodium Hydroxide (NaOH)**, is one of India's most important industrial chemicals.
- It is widely used in the manufacture of:
 - Soaps and detergents
 - Paper and pulp
 - Textiles
 - Aluminium
 - Petrochemicals
 - Water treatment and purification
- India has approximately **32–37 caustic soda plants**, producing **more than 5 million metric tonnes annually**.

Environmental Concerns

- Wastewater from caustic soda plants is often:
 - Highly **alkaline**
 - Rich in **salts**
 - High in **Total Dissolved Solids (TDS)**
- It may also contain:
 - Chlorine

- Hydrochloric acid
- Other harmful chemical residues
- Untreated discharge can:
 - Damage aquatic ecosystems
 - Reduce fish survival
 - Degrade water quality
 - Affect agriculture and public health

BANDIPUR AND NAGARAHOLE TIGER RESERVES

The **Karnataka Government** has announced the **full restoration of jungle safari operations** at the **Bandipur and Nagarahole Tiger Reserves**, which had been suspended since **November 2025** following incidents of **human–tiger conflict** in the region.

About Bandipur and Nagarahole Tiger Reserves

- Both reserves are located in **Karnataka** and form part of the **Nilgiri Biosphere Reserve**, India's **first Biosphere Reserve**.
- They are among the country's most important protected areas for the conservation of **tigers, Asian elephants, and other wildlife**.

Project Tiger

- **Bandipur Tiger Reserve**
 - Declared one of the **first nine Tiger Reserves** under **Project Tiger** in **1973**.
- **Nagarahole Tiger Reserve**
 - Declared a **Tiger Reserve** in **2003**.
 - Formerly known as **Rajiv Gandhi National Park**.

Landscape

- Along with:
 - **Mudumalai Tiger Reserve (Tamil Nadu)**
 - **Wayanad Wildlife Sanctuary (Kerala)**
- Bandipur and Nagarahole form one of the **largest contiguous protected forest landscapes** in the world for **tigers and Asian elephants**.

River System

- The **Kabini Reservoir** separates **Bandipur Tiger Reserve** from **Nagarahole Tiger Reserve** on the north-western side.
- The **Kabini River** and its reservoir provide an important water source for wildlife throughout the year.

Flora

The reserves are dominated by:

- Tropical moist deciduous forests
- Tropical dry deciduous forests
- Scrub forests
- Extensive patches of bamboo and teak forests

Major Fauna

The reserves are home to a rich diversity of wildlife, including:

- Bengal Tiger
- Leopard
- Asiatic Elephant
- Dhole (Asiatic Wild Dog)
- Sloth Bear

- Four-horned Antelope (Chousingha)
- Mouse Deer
- South-western Langur
- Numerous species of birds, reptiles, and butterflies

Tiger Reserves in Karnataka

Bandipur Tiger Reserve

- Located in **Chamarajanagar district**.
- One of India's oldest and most renowned tiger reserves.
- The **largest tiger reserve in Karnataka**.

Nagarahole Tiger Reserve

- Located in the **Mysuru** and **Kodagu** districts.
- Formerly known as **Rajiv Gandhi National Park**.
- Famous for its dense forests, wildlife, and the Kabini backwaters.

Bhadra Tiger Reserve

- Situated in the **Chikkamagaluru** and **Shivamogga** districts.
- Known for its scenic hills, forests, and the **Bhadra Reservoir**.

Kali Tiger Reserve

- Located in **Uttara Kannada district**.
- Formerly known as the **Dandeli-Anshi Tiger Reserve**.
- Contains extensive evergreen and semi-evergreen forests of the Western Ghats.

Biligiri Ranganatha Temple (BRT) Tiger Reserve

- Located in **Chamarajanagar district**.
- Forms an important **wildlife corridor** connecting the **Eastern Ghats** and the **Western Ghats**, facilitating the movement of tigers, elephants, and other wildlife.

INDIA'S ABS FRAMEWORK

India's **Access and Benefit Sharing (ABS)** framework under the **Biological Diversity Act, 2002** has mobilised **more than ₹266 crore** since **2008**, of which nearly **₹145 crore** has been distributed to local communities and other beneficiaries for conserving biological resources and traditional knowledge.

About Access and Benefit Sharing (ABS)

- **Access and Benefit Sharing (ABS)** is a mechanism that ensures the **fair and equitable sharing of benefits** arising from the use of **biological resources** and **associated traditional knowledge** with the communities that have conserved and protected them.
- ABS is one of the key principles of the **Convention on Biological Diversity (CBD)**.
- In India, ABS is implemented through:
 - **Biological Diversity Act, 2002**
 - **Biological Diversity (Amendment) Act, 2023**

Institutional Framework for ABS in India

The ABS framework is implemented through a **three-tier institutional system**:

National Biodiversity Authority (NBA)

- Regulates access to biological resources by:
 - Foreign individuals and organisations.
 - Applicants seeking intellectual property rights (IPRs) involving biological resources.
- Advises the Central Government on biodiversity conservation and sustainable use.

State Biodiversity Boards (SBBs)

- Regulate access to biological resources by **Indian individuals, companies, and institutions**.
- Promote conservation and sustainable utilisation of biodiversity at the state level.

Biodiversity Management Committees (BMCs)

- Local bodies established by **local self-government institutions**.
- Responsible for:
 - Conserving biodiversity.
 - Preparing **People's Biodiversity Registers (PBRs)**.
 - Documenting traditional knowledge and local biological resources.

Three Main Components of ABS

1. Prior Informed Consent (PIC)

- Users must obtain **prior permission** from the concerned country or local community before accessing their biological or genetic resources.

2. Mutually Agreed Terms (MAT)

- The conditions for access and benefit sharing are decided through **negotiation and mutual agreement** between the provider and the user of biological resources.

3. Fair and Equitable Benefit Sharing

Benefits may be:

- **Monetary**
 - Royalties
 - Upfront payments
 - Licence fees
- **Non-Monetary**
 - Technology transfer
 - Capacity building
 - Research collaboration
 - Training and skill development

Significance of India's ABS Framework

- Promotes **conservation and sustainable use** of biological resources.
- Ensures that local communities receive a fair share of benefits from the commercial use of biodiversity.
- Supports the implementation of:
 - **Nagoya Protocol**
 - **National Biodiversity Strategy and Action Plan (NBSAP) 2024–2030**
 - **Kunming–Montreal Global Biodiversity Framework**, particularly **Target 13**, which focuses on fair and equitable benefit sharing.
- Encourages protection of traditional knowledge and strengthens community participation in biodiversity conservation.

Biological Diversity Act, 2002

- Enacted to fulfil India's obligations under the **United Nations Convention on Biological Diversity (CBD), 1992**.
- The Act aims to:
 - Conserve biological diversity.
 - Promote the sustainable use of biological resources.
 - Ensure fair and equitable sharing of benefits arising from the utilisation of biological resources.
- It also provides the legal framework for implementing the **Nagoya Protocol on Access and Benefit Sharing**.

Nagoya Protocol

- The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilisation (ABS) is a supplementary agreement to the Convention on Biological Diversity (CBD).
- It establishes a transparent legal framework for implementing one of the three objectives of the CBD:
 - Fair and equitable sharing of benefits arising from the utilisation of genetic resources.
- Adopted: 2010, at Nagoya, Japan.
- Entered into force: 2014.

CORAL TRANSLOCATION

As part of the **Great Nicobar Island (GNI) Mega Project**, coral colonies and giant clams likely to be affected by the proposed **International Container Transshipment Terminal (ICTT)** at **Galathea Bay** will be **translocated to four sites on the island's west coast** to minimise ecological damage.

About the Great Nicobar Island Project

- The project received **Stage-I (Forest) Clearance** in **2022**.
- **Implementing Agency: Andaman and Nicobar Islands Integrated Development Corporation Limited (ANIIDCO)**, established in **1988** and headquartered in **Port Blair**.
- The project aims to transform Great Nicobar into a major strategic and economic hub.

Major Components

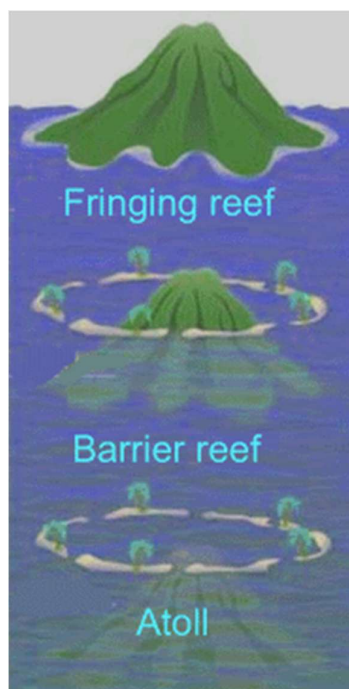
- **International Container Transshipment Terminal (ICTT)**
- **International Airport**
- **Township Development**
- **450 MVA Gas and Solar-based Power Plant**
- The **ICTT** and the **power plant** are proposed at **Galathea Bay**, located on the **south-eastern coast** of **Great Nicobar Island**, where there is **no permanent human habitation**.

About Corals

- Corals are **marine invertebrate animals** belonging to the phylum **Cnidaria**.
- They consist of numerous tiny, soft-bodied organisms called **polyps**.
- Each polyp secretes a **hard calcium carbonate (CaCO₃) exoskeleton**, which provides protection.
- Over time, millions of polyps collectively build **coral reefs**, forming massive limestone structures beneath the sea.

Appearance

- Corals occur in a variety of colours, including **red, purple, blue, brown, and green**.
- Their bright colours are mainly due to microscopic symbiotic algae called **zooxanthellae**, which live within coral tissues.
- Zooxanthellae perform **photosynthesis**, supplying nutrients to corals and contributing to reef growth.

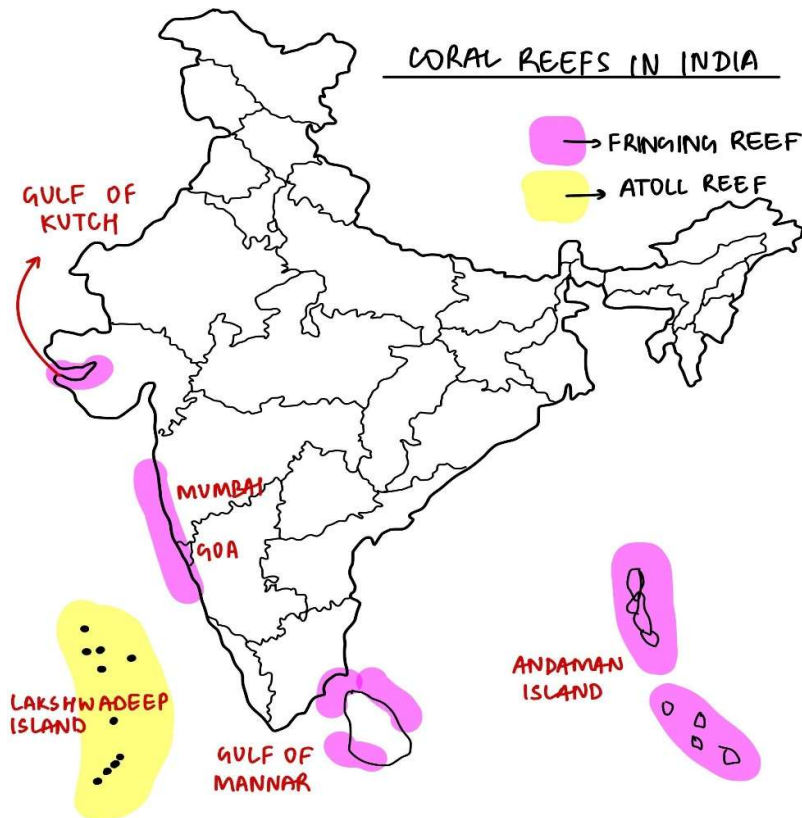


Significance of Coral Reefs

- **Biodiversity Hotspots:** Coral reefs provide food, shelter, breeding grounds, and nursery habitats for nearly **25% of all marine species**, despite covering less than 1% of the ocean floor.
- **Coastal Protection:** They act as natural barriers, reducing wave energy and protecting coastlines from erosion, storms, and tsunamis.
- **Livelihood Support:** Coral reefs support the livelihoods of **more than one billion people** by providing:
 - Fisheries
 - Tourism
 - Recreation
 - Coastal employment
- **Food Security:** They sustain important commercial and subsistence fisheries.
- **Economic Value:** Coral reefs contribute significantly to the **blue economy** through tourism and marine resources.
- **Climate Regulation:** Healthy coral ecosystems contribute to marine ecological balance and carbon cycling.

Significance of Coral Translocation

- Coral translocation is a conservation measure aimed at relocating coral colonies from areas affected by development to suitable alternative habitats.
- It seeks to minimise biodiversity loss while allowing essential infrastructure projects to proceed.
- The success of translocation depends on careful site selection, scientific monitoring, and long-term ecological management.



Giant Potato Patch Coral

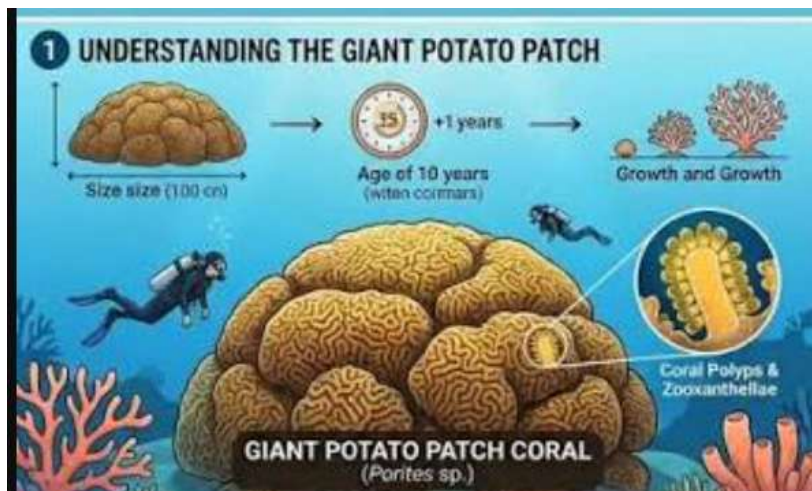
The **Giant Potato Patch Coral**, located on the south-eastern side of **Kadmat Island** in **Lakshadweep**, is one of the largest and oldest coral formations in the Indian Ocean. Commonly known as the "**Potato Patch**", this remarkable coral colony is estimated to be **700–1,800 years old** and covers an area of nearly half the size of a football field, making it an important **climate-resilient marine ecosystem**.

About the Giant Potato Patch Coral

- **Common Name:** Giant Potato Patch Coral
- **Scientific Name:** *Porites* spp.
- It is a **massive dome-shaped coral colony** formed by the continuous growth of countless tiny coral polyps over several centuries.
- The colony is located near **Kadmat Island**, one of the coral islands of **Lakshadweep**.
- Its exceptional size and longevity make it one of the most significant coral formations in the **Indian Ocean**.

Key Features

- Forms a **large, dome-shaped massive coral structure**.
- Individual colonies generally exceed **1 metre (100 cm)** in diameter, while exceptionally large colonies can span several metres.
- The **Potato Patch** itself is estimated to be **700–1,800 years old**, reflecting centuries of uninterrupted coral growth.
- The coral grows **very slowly**, with its calcium carbonate skeleton continuously built by millions of tiny **coral polyps**.



Symbiotic Relationship

- Coral polyps live in a mutually beneficial relationship with microscopic algae called **zooxanthellae**.
- **Zooxanthellae:**
 - Perform **photosynthesis** and supply food and energy to the coral.
 - Give corals their characteristic colours.
- In return, the coral provides the algae with:
 - Shelter
 - Nutrients
 - Carbon dioxide required for photosynthesis.

Reef Resilience Mechanisms

Heat Tolerance

- *Porites* corals are relatively **tolerant of high sea temperatures**.
- Some colonies possess natural resistance to **coral bleaching**, enabling them to survive climatic stress better than many other coral species.

Recovery Capacity

- Healthy *Porites*-dominated reefs can recover from disturbances such as storms and bleaching events.
- Successful recovery depends on:
 - Good water quality
 - Limited pollution
 - Reduced human disturbance

Genetic Diversity

- Genetic variation among coral colonies enhances their ability to adapt to changing environmental conditions.
- Greater genetic diversity improves resilience against **climate change**, diseases, and ocean warming.

Ecological Significance

- Provides habitat, shelter, breeding grounds, and feeding areas for numerous marine organisms.
- Supports rich marine biodiversity and contributes to healthy reef ecosystems.
- Serves as a valuable natural archive for scientists studying:
 - Coral longevity
 - Past climate conditions
 - Climate change adaptation
 - Marine ecosystem resilience

- Acts as an important indicator of reef health and the long-term impacts of global warming on coral ecosystems.

ECONOMY & INFRASTRUCTURE

WORLD'S TOP SHIP RECYCLING NATION

According to the latest report of the United Nations Conference on Trade and Development (UNCTAD), India's share in global ship recycling increased from 30.1% in 2024 to 35.4% in 2025, further strengthening its position as one of the world's leading ship recycling nations.

About Ship Recycling

- **Ship Recycling** refers to the process of dismantling a ship for the purpose of scrapping, recycling, or final disposal. The activity may be carried out on a **beach, pier, dry dock, or dismantling slip**.
- The process involves a series of operations, ranging from the removal of machinery, equipment, and reusable components to the cutting, dismantling, and recycling of the ship's structural framework.

India's Ship Recycling Landscape

- India's ship recycling capacity witnessed significant growth, with recycling increasing to **2.99 million gross tonnes in 2025**, compared to **1.86 million gross tonnes in 2024**, representing an increase of nearly **60%**.
- With this achievement, India has fulfilled the objective set under the **Maritime India Vision 2030** of becoming the world's leading ship recycling nation **five years ahead of schedule**.
- The **Alang-Sosiya Ship Recycling Cluster in Gujarat** remains the backbone of India's ship recycling industry and is recognised as the **largest ship recycling hub in the world**.
- The Alang-Sosiya cluster contributes nearly **97%** of the country's total ship recycling activity.

Regulatory Framework

Ship Recycling Act, 2019

- The **Ship Recycling Act, 2019** provides the principal legal framework for regulating ship recycling activities in India.
- The Act incorporates international standards into domestic law, designates the **Directorate General of Shipping** as the **National Authority**, and provides for the authorisation, certification, inspection, and enforcement of ship recycling facilities.

Ship Recycling Rules, 2021

- The **Ship Recycling Rules, 2021** operationalise the provisions of the Act by prescribing detailed procedural and technical requirements.
- These include regulations relating to **authorisation of recycling facilities, preparation of Ship Recycling Plans, management of hazardous materials, worker safety measures, training requirements, and reporting obligations**.

Ship Recycling Regulations, 2026

- The **Ship Recycling Regulations, 2026** further strengthen implementation by introducing comprehensive operational, environmental, and occupational safety standards to ensure uniform compliance and effective monitoring.

Key Government Initiatives

- The Government of India enacted the **Recycling of Ships Act, 2019** with the objective of developing a ship recycling industry that complies with the **Hong Kong International Convention**

for the Safe and Environmentally Sound Recycling of Ships (HKC), which India ratified in 2019.

Ship-breaking Credit Note Scheme

- The **Ministry of Ports, Shipping and Waterways (MoPSW)** introduced the **Ship-breaking Credit Note Scheme** to promote both ship recycling and domestic shipbuilding.
- Under the scheme, ship owners receive a **credit note equivalent to 40% of the scrap value** of a recycled vessel.
- This credit note can be utilised to pay **up to 5% of the cost of a new ship** constructed in an Indian shipyard, thereby encouraging the growth of India's shipbuilding industry.

Hong Kong International Convention (HKC)

- The **Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships (HKC)** is the principal international treaty governing the safe and environmentally sound recycling of ships.
- The Convention lays down **legally binding standards** for both ships and authorised ship recycling facilities.
- It entered into force on **26 June 2025**, making compliance mandatory for all Parties to the Convention.

Ship Recycling Industries Association

- The **Ship Recycling Industries Association** is an industry body established to promote the welfare and development of India's ship recycling sector.
- It works to protect the interests of its member recyclers while promoting **safe, environmentally responsible, and sustainable ship recycling practices**.

Economic and Environmental Significance

Circular Economy

- Ship recycling contributes significantly to the **circular economy** by recovering high-quality scrap steel, reducing dependence on virgin iron ore, conserving natural resources, and minimising marine pollution.

Employment and Revenue Generation

- The industry provides **thousands of direct and indirect employment opportunities** and supplies a continuous and affordable source of steel to India's **secondary steel industry**, thereby supporting industrial growth and economic development.

Challenges in Ship Recycling

- **Hazardous Waste Management:** Ships contain hazardous materials such as **asbestos, heavy metals, oil residues**, and other toxic chemicals, requiring safe handling, treatment, and disposal.
- **Infrastructure Constraints:** Many recycling yards require modern infrastructure and advanced waste management systems to achieve environmentally sound recycling standards.
- **Worker Safety:** Ship dismantling remains a hazardous occupation involving risks such as **fires, explosions, industrial accidents**, and prolonged exposure to harmful substances.
- **Global Competition:** India faces intense competition from countries such as **Bangladesh and Pakistan**, where lower operational costs often provide a competitive advantage in the ship recycling industry.

ASHTALAKSHMI

Recently, Prime Minister Narendra Modi described the North Eastern Region (NER) as India's "Ashtalakshmi" and stated that the Government has progressed beyond the "Act East" Policy to an

"Act Fast" approach, with the objective of accelerating development and improving connectivity across the region.

North Eastern Region (NER)

- The North Eastern Region (NER) consists of eight States—Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, and Tripura.
- The region is one of the most culturally and ethnically diverse parts of India, comprising **more than 200 ethnic communities**, each possessing distinct languages, dialects, customs, and socio-cultural traditions.
- The NER accounts for nearly **7.97% of India's geographical area** and around **3.78% of the country's population**.
- The region is connected with an extensive international boundary of about **5,484 km** and shares borders with several neighbouring countries, including **Bangladesh, China, Myanmar, Bhutan, and Nepal**.



Significance of the North Eastern Region

Geostrategic Importance

- **International Borders:** The North Eastern Region shares international boundaries with **China, Bhutan, Myanmar, Bangladesh, and Nepal**, making it one of India's most strategically significant regions.
- **Gateway to ASEAN:** The region serves as India's land bridge to **Southeast Asia** and occupies a central place in the country's **Act East Policy**, facilitating stronger economic and strategic engagement with ASEAN nations.

- **India–ASEAN Trade:** Bilateral trade between **India and ASEAN** currently stands at nearly **USD 125 billion** and is projected to exceed **USD 200 billion**, enhancing the strategic importance of the North East.

Economic and Trade Potential

Act East Policy and Cross-Border Trade

- The North East functions as India's principal land corridor to ASEAN markets, creating significant opportunities for regional trade and economic integration.
- **Border Haats** and connectivity projects such as the **India–Myanmar–Thailand Trilateral Highway** and the **Kaladan Multi-Modal Transit Transport Project** are strengthening regional trade, logistics, and supply chains.

Bio-Economy and Horticulture

- Favourable climatic conditions make the region highly suitable for **organic farming, bamboo-based industries**, and the cultivation of high-value agricultural products.
- Premium products such as **Muga Silk, Lakadong Turmeric**, and **Nagaland Coffee** possess substantial export potential.

Clean Energy Potential

- The North Eastern Region possesses more than **40% of India's exploitable hydropower potential**, estimated at around **60 GW**, making it an important contributor to India's renewable energy and net-zero ambitions.

Tourism

- The region's exceptional cultural diversity, rich biodiversity, scenic landscapes, and proximity to international wildlife destinations provide immense potential for the development of **sustainable and eco-friendly tourism**.

Challenges Faced by the North Eastern Region

Geographic and Environmental Constraints

- The predominantly **hilly terrain, dense forests**, and difficult topography make the construction of infrastructure and the development of industries both expensive and technically challenging.

Connectivity Deficits

- Although transport infrastructure has improved considerably, the mountainous landscape and the narrow **Siliguri Corridor (Chicken's Neck)** continue to create logistical and supply-chain bottlenecks.
- **Digital connectivity** has also improved over time, but internet and telecommunications infrastructure remain relatively weaker than in many other parts of the country.

Industrial Gap

- The region continues to have a relatively underdeveloped **manufacturing and services sector**, resulting in lower levels of **foreign direct investment (FDI)**, industrialisation, and exports compared with the national average.

Insurgency and Internal Security Challenges

- Certain parts of the region continue to experience the presence of **insurgent organisations and separatist movements**, posing challenges to long-term peace and development.
- **Cross-border infiltration**, illegal movement of arms, and smuggling remain concerns because of porous international borders, particularly along **Myanmar and Bangladesh**.
- **Narco-Terrorism:** The North East serves as an important transit route for narcotics entering India from the **Golden Triangle**, a region comprising **Myanmar, Thailand, and Laos**, which is known for illicit drug production and trafficking.
- Although the security situation has improved significantly in recent years, occasional incidents of violence and unrest continue to affect regional stability.

Ethnic Tensions and Migration Issues

- The region periodically witnesses **inter-community conflicts**, demands for greater autonomy, and movements seeking separate states, creating administrative and political challenges.
- **Illegal immigration** from neighbouring countries has altered demographic patterns in certain areas, contributing to social tensions and local unrest.

Government Initiatives for the North Eastern Region

UNNATI Scheme

- The **Uttar Poorva Transformative Industrialization (UNNATI) Scheme** has been launched to promote industrial development in the North Eastern Region.
- The scheme provides **capital investment incentives** and **interest subvention** to attract industries, encourage private investment, and generate employment opportunities across the region.

PM-DevINE

- The **Prime Minister's Development Initiative for North East Region (PM-DevINE)** is a dedicated Central Sector Scheme aimed at accelerating the development of the North East.
- It provides direct financial support for **infrastructure creation, social sector projects, and region-specific development initiatives** based on the unique requirements of the North Eastern States.

Connectivity Initiatives

Bogibeel Bridge (2018)

- The **Bogibeel Bridge**, inaugurated in **2018**, is a combined **road-cum-rail bridge** constructed across the **Brahmaputra River** in Assam.
- It has significantly improved connectivity between Assam and Arunachal Pradesh while also strengthening strategic and defence logistics in the region.

Dhola-Sadiya Bridge (2017)

- The **Dhola-Sadiya Bridge**, opened in **2017**, is the first permanent road link connecting **northern Assam** with **eastern Arunachal Pradesh**.
- The bridge spans the **Lohit River**, one of the major tributaries of the Brahmaputra, and has considerably reduced travel time while improving border connectivity.

Noney Bridge

- The **Noney Bridge**, located in **Manipur**, forms an important component of the **111-km Jiribam–Imphal Railway Project**.
- Built across the **Aling River**, it is recognised as the **world's tallest railway pier bridge**, representing a major engineering achievement in railway infrastructure.

Sela Tunnel

- The **Sela Tunnel** has been constructed to provide **all-weather road connectivity** to strategically important border areas of Arunachal Pradesh.
- The tunnel enhances civilian mobility as well as defence preparedness by ensuring uninterrupted transportation throughout the year.

Geographical Indications (GI)

- As of **March 2026**, the North Eastern Region accounted for **89 Geographical Indication (GI)-registered products**.
- The region is renowned for several GI-tagged agricultural products, including **Queen Pineapple, Lakadong Turmeric, King Chilli, and Large Cardamom**.

Inland Waterways

- The number of **National Waterways** in the North Eastern Region has increased from **one to twenty**, significantly improving inland water transport.

- Development efforts have focused particularly on strengthening navigation and transport infrastructure along the **Brahmaputra** and **Barak** river systems.

Energy and Green Growth

- The North Eastern Region is emerging as an important hub for clean energy development through major hydropower projects.
- Prominent projects include the **Dibang Multipurpose Hydropower Project (2,880 MW)** and the **Subansiri Lower Hydroelectric Project (2,000 MW)**, both of which are expected to enhance renewable energy generation and contribute to sustainable regional development.

National Food Security (Amendment) Bill, 2026

The Union Ministry of Consumer Affairs, Food and Public Distribution has released the draft **National Food Security (Amendment) Bill, 2026**, proposing amendments to the **National Food Security Act (NFSA), 2013**.

About the Amendment

- The proposed amendment seeks to revise the method of foodgrain allocation under the **Antyodaya Anna Yojana (AAY)** by shifting from a **household-based entitlement** to a **person-based entitlement**, while continuing to retain the overall ceiling of **35 kg per household**.

Framework of the National Food Security Act (NFSA), 2013

Rights-Based Framework

- The **National Food Security Act (NFSA), 2013**, commonly known as the **Right to Food Act**, provides a legal framework to ensure food and nutritional security by guaranteeing access to subsidised foodgrains.
- The Act converted food assistance from a welfare scheme into a **statutory legal entitlement**, making the State legally responsible for providing food security to eligible beneficiaries.

Coverage and Beneficiaries

- The Act covers **75% of the rural population** and **50% of the urban population**, based on **Census 2011**, benefiting nearly **81.35 crore people**.
- Beneficiaries are classified into two categories:
 - **Antyodaya Anna Yojana (AAY)**: Covers the poorest and most vulnerable households, including widows, elderly persons without family support, persons with disabilities, primitive tribal households, and landless labourers.
 - **Priority Households (PHH)**: Beneficiaries identified by the respective State Governments under the provisions of the Act.

Foodgrain Entitlements

- Under the existing system:
 - **AAY households** receive **35 kg of foodgrains per month**, irrespective of the number of family members.
 - **Priority Household (PHH)** beneficiaries receive **5 kg of foodgrains per person per month**.

Institutional Evolution

- During the **COVID-19 pandemic**, the Government introduced the **Pradhan Mantri Garib Kalyan Anna Yojana (PMGKAY)** to provide additional free foodgrains to NFSA beneficiaries.
- In **January 2023**, PMGKAY was merged with the **NFSA**, making the regular NFSA foodgrain entitlement completely free of cost.
- The Government subsequently extended this arrangement for **five years (2024–2028)**.

Proposed Amendment

Revised Allocation under Antyodaya Anna Yojana (AAY)

- The draft amendment proposes that **each individual** belonging to an AAY household will receive **7 kg of foodgrains per month**, subject to a **maximum household entitlement of 35 kg**.
- Under the existing arrangement, every AAY household receives a uniform **35 kg**, regardless of the size of the family.

Continuation of Free Distribution

- The amendment retains the existing provision of **free foodgrain distribution** for beneficiaries covered under the Antyodaya Anna Yojana.

Structural Change

- The proposal represents a shift from a **household-centric distribution model** to a **person-linked entitlement system**, with the objective of making foodgrain allocation more proportionate to household size.

Rationale Behind the Amendment

Correcting Per-Capita Imbalance

- Under the earlier system, smaller households effectively received a higher quantity of foodgrains per person, whereas larger households received comparatively less.
- The amendment seeks to reduce this imbalance by linking entitlement to the actual number of eligible family members.

Improving Distributional Equity

- A person-based allocation system is expected to improve fairness by aligning foodgrain distribution more closely with the consumption requirements of each household.

Maintaining Fiscal Stability

- While introducing greater equity, the Government has retained the **35 kg household ceiling**, thereby limiting any significant increase in food subsidy expenditure.

Noteworthy Gaps

Calorie Security versus Nutritional Security

- The amendment primarily revises the quantity and method of distributing cereals without expanding the nutritional basket available under the scheme.
- This highlights the continuing policy gap between **calorie security** and **nutritional security**.
- Although cereals help address hunger, they are insufficient to meet requirements relating to **proteins, micronutrients, healthy fats, and dietary diversity**.
- The present framework still does not adequately incorporate **pulses, edible oils**, and other nutrient-rich food items.

Changing Nature of Malnutrition

- India's food security challenge is gradually shifting from ensuring adequate calorie intake to addressing **hidden hunger**, where individuals consume sufficient calories but continue to suffer from deficiencies of essential nutrients.

Challenges

Structural Limitations

- Although the amendment introduces a person-based allocation system, the overall ceiling of **35 kg per household** remains unchanged.
- Consequently, larger families may still receive a lower quantity of foodgrains on a per-person basis than intended.

Exclusion Errors

- NFSA coverage continues to rely on **Census 2011**, despite significant changes in population size and poverty patterns over the past decade.
- As a result, many eligible households continue to remain outside the ambit of the food security system.

Delivery Constraints

- Issues such as **biometric authentication failures, e-KYC-related exclusions, poor internet connectivity**, and technological barriers continue to hinder access to foodgrains.
- These problems disproportionately affect **migrant workers, elderly persons, and persons with disabilities**.

Leakages in the Public Distribution System

- Diversion of foodgrains, corruption, weak monitoring mechanisms, and concerns regarding food quality continue to reduce the overall efficiency of the **Public Distribution System (PDS)**.

Demand for Higher Entitlements

- Several **Right to Food** advocacy groups have demanded that AAY beneficiaries should receive **14 kg of foodgrains per person per month**, arguing that the proposed allocation of **7 kg** remains insufficient for the most vulnerable households.

Regional Variations

- Variations in average household size across different States may result in uneven outcomes, with the impact of the amendment differing from one region to another.

Prelims Special

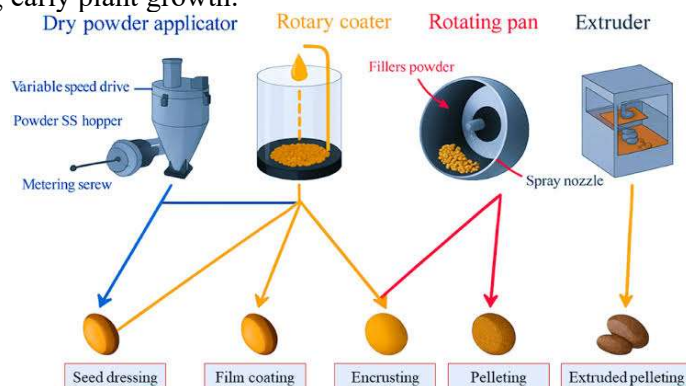
SMART SEED COATING TECHNOLOGY

The **Indian Institute of Oilseeds Research (IIOR)**, Hyderabad, under the **Indian Council of Agricultural Research (ICAR)**, has developed **Smart Seed Coating Technology** to improve seed quality, enhance crop establishment, and increase resilience against environmental stresses.

Working Mechanism

The technology provides a **multifunctional protective coating** around seeds, unlike conventional seed treatments that serve only a single purpose.

- **Layered Encapsulation:** Seeds are coated with **biodegradable biopolymers** containing essential nutrients, micronutrients, beneficial microorganisms, crop protection agents, and plant growth-promoting compounds.
- **Controlled Release:** After sowing, **soil moisture activates the coating**, enabling the gradual release of these inputs directly into the root zone, ensuring efficient nutrient availability and protection during early plant growth.



About the Technology

- The technology uses **biodegradable biopolymeric materials** to form a protective layer around seeds.
- The coating functions as a **carrier system** for nutrients, micronutrients, beneficial microbes, crop protection agents, and plant growth-promoting substances, delivering them precisely at the **seed-soil interface**.
- It creates a favourable microenvironment that promotes **faster germination, vigorous seedling growth, stronger root development, and greater tolerance to environmental stresses** during the critical crop establishment stage.
- The innovation is especially beneficial for **rainfed agriculture**, which covers a large portion of India's cultivated land and is highly vulnerable to delayed or erratic monsoon rainfall.

Significance

- **Climate Resilience:** Protects young seedlings from climate-related stresses such as **irregular monsoons, heat waves, and drought**, improving crop survival and productivity.
- **Resource Efficiency:** Ensures targeted delivery of nutrients and crop protection agents, reducing dependence on broad-spectrum chemical sprays and minimizing input wastage.
- **Improved Crop Establishment:** Enhances seed germination, root growth, and overall plant health, leading to better crop performance.
- **Sustainable Agriculture:** The use of **biodegradable materials** supports environmentally friendly farming practices while improving resource-use efficiency.

INDIA'S SEAFOOD EXPORTS REACH RECORD HIGH IN FY 2025-26

India's **seafood exports** achieved an all-time high in **both volume and value** during **FY 2025-26**, reflecting the country's growing strength in the global marine products market despite challenging international trade conditions.

About

- India exported **19.72 lakh metric tonnes (MT)** of seafood valued at **USD 8.46 billion** during FY 2025-26.
- The **Marine Products Export Development Authority (MPEDA)**, under the **Ministry of Commerce and Industry**, is the nodal agency responsible for promoting and monitoring marine product exports.
- **Frozen shrimp** remained India's largest seafood export, contributing **nearly two-thirds of total export earnings**.
 - The **United States** was the largest importer of Indian frozen shrimp, followed by **China**.
 - Other key markets included the **European Union (EU)**, **Southeast Asia**, **Japan**, the **Middle East**, and several other countries.
- **Frozen fish** ranked as the **second-largest export category**, while **dried seafood products** stood third.
 - Exports of dried seafood recorded an impressive **78.05% growth in rupee value** during the year.
- The **United States, China, and the European Union** remained the top destinations for India's seafood exports.
- **Visakhapatnam Port, Jawaharlal Nehru Port Trust (JNPT), and Kochi Port** were the three leading ports handling seafood export cargo during FY 2025-26.

Government Initiatives

- **Pradhan Mantri Matsya Sampada Yojana (PMMSY):** A flagship programme aimed at promoting the **Blue Revolution** through sustainable and responsible fisheries development.

- **Fisheries and Aquaculture Infrastructure Development Fund (FIDF):** Supports the creation of modern fisheries and aquaculture infrastructure to bridge critical gaps.
- **Quality Assurance:** MPEDA has established advanced **quality control laboratories** and certification mechanisms to ensure compliance with international **Sanitary and Phytosanitary (SPS)** standards.

Challenges

- **Export Concentration:** Heavy dependence on **frozen shrimp** and a limited number of export markets increases vulnerability to external shocks.
- **Trade Barriers:** Indian exporters continue to face **Anti-Dumping Duties (ADD)** and **Countervailing Duties (CVD)** in key markets such as the **United States**.
- **Non-Tariff Barriers:** Strict **SPS regulations**, particularly regarding **antibiotic residues**, often lead to export rejections.
- **Climate Change:** Erratic weather conditions, rising temperatures, and changing coastal ecosystems adversely affect aquaculture production and marine resources.

INDIA'S COTTON MISSION

In 2026, the **Union Cabinet** approved the **Mission for Cotton Productivity** with a financial outlay of **₹5,659 crore** for the period **2026–27 to 2030–31**. The mission aims to improve cotton productivity, enhance farmers' income, and strengthen India's position in the global cotton sector.

About the Mission

- The mission seeks to increase **lint productivity** from **441 kg per hectare** (Triennium Ending 2025–26) to **755 kg per hectare by 2031**.
- It focuses on improving productivity through better seeds, scientific farming practices, and technological interventions.
- Experts believe that achieving these targets will require the adoption of **next-generation genetic technologies** and science-based regulatory reforms to overcome declining yields and exports.

Introduction of Bt Cotton in India

- In **2002**, India approved the **commercial cultivation of Bt cotton** following clearance by the **Genetic Engineering Appraisal Committee (GEAC)**.
- The first generation of **Bt cotton hybrids** contained the **Cry1Ac gene**, providing resistance against the **bollworm complex**.
- In **2006**, GEAC approved **Bollgard II**, a second-generation Bt cotton hybrid containing **two stacked genes** for improved pest resistance.

Bt Cotton

- **Bt cotton** is a **Genetically Modified (GM) cotton variety** containing genes from the soil bacterium *Bacillus thuringiensis* (**Bt**).
- These genes enable the plant to produce a protein that is toxic to major insect pests, particularly the **pink bollworm**.
- It remains the **only genetically modified (GM) crop approved for commercial cultivation in India**.

Impact of Bt Cotton

- Cotton production increased from **13.6 million bales in 2002–03** to **39.8 million bales in 2013–14**, representing a **193% increase**.
- Cotton output grew at an average annual rate of **10%**, while the cultivated area expanded by **56%**, from **7.6 million hectares** to **11.9 million hectares**.
- India emerged as the **world's largest producer** and **second-largest exporter** of cotton during this period.

Next-Generation Bt Cotton Hybrids

- Following **Bollgard II**, newer hybrids such as **Bollgard II with Roundup Ready Flex** and **Bollgard III** were developed.
- These varieties incorporated **three stacked genes** and **herbicide-tolerant traits** to tackle emerging pest resistance and reduce weed-management costs.
- However, these advanced hybrids have **not been approved for commercial cultivation** in India.

Decline in Cotton Production

- Since **2014–15**, India's cotton production has declined at an average annual rate of **around 2%**.
- The country has gradually shifted from being a **net exporter** to a **net importer**, importing nearly **4 million bales** during **2025–26**.

Reasons for Declining Cotton Production

- **Regulatory Delays:** Uncertainty and delays in approving next-generation GM cotton technologies have limited technological progress.
- **Seed Price Controls:** Government regulation of cotton seed prices and reduced trait fees have discouraged private-sector investment in research and innovation.
- **Stagnating Productivity:** Cotton yields have been affected by **pest resistance, climate change, and limited access to advanced seed technologies**.
- **Rising Imports:** Slower growth in domestic production has increased India's dependence on cotton imports to meet industrial demand.

KHURASANI IMLI

The **Khurasani Imli**, the fruit of the **Baobab tree** found in **Mandu, Madhya Pradesh**, has been awarded a **Geographical Indication (GI) tag**, recognising its unique historical, cultural, and medicinal significance.

About Khurasani Imli

- **Khurasani Imli** is the fruit of the **Baobab tree (*Adansonia digitata*)**, a species native to **Africa and Madagascar**.
- The Baobab is widely known as the **"Tree of Life"** due to its remarkable resilience and diverse nutritional, medicinal, and ecological uses.
- In India, Baobab trees are mainly found in the **semi-arid regions of central India** and parts of the **Western Ghats**.
- **Mandu (Madhya Pradesh)** is one of the few regions in India where Baobab trees are found in significant numbers.
- Historical records indicate that the seeds were introduced to Mandu by **Afghan rulers or Arab traders** during the **14th–15th centuries**.
- The tree is easily identified by its **large bottle-shaped trunk**, which can store substantial quantities of water, enabling it to survive prolonged droughts.
- The fruit is highly nutritious, being rich in **Vitamin C, antioxidants, dietary fibre, and essential minerals**, and has been traditionally used in indigenous medicine.

Health and Medicinal Benefits

- **Boosts Immunity:** Rich in **Vitamin C**, the fruit helps strengthen the immune system and improves the body's resistance to infections.
- **Powerful Antioxidant Source:** It contains abundant antioxidants and essential minerals that help reduce oxidative stress and support overall health.
- **Supports Blood Sugar Management:** Tribal communities have traditionally used the fruit pulp, juice, and dried bark as natural remedies to help regulate **blood sugar levels**.
- **Promotes Digestive Health:** The fruit is widely used in traditional medicine to relieve **stomach disorders, indigestion, and other digestive problems**.

- **Reduces Fatigue:** Its mineral-rich composition helps improve energy levels, while traditional communities have long used it to combat **fatigue and fever**.
- **Traditional Medicinal Value:** Besides diabetes and digestive ailments, the fruit has been used in indigenous healthcare practices for promoting general well-being and recovery.

TReDS PLATFORM

The **Reserve Bank of India (RBI)** has notified the **TReDS Directions, 2026** to simplify the onboarding of **Micro, Small and Medium Enterprises (MSMEs)** and improve their access to **receivables financing**, thereby strengthening their working capital position.

About TReDS

- **Trade Receivables Discounting System (TReDS)** is an online platform that enables **MSMEs to convert unpaid invoices into immediate cash** by selling or discounting their trade receivables through banks and other financial institutions.
- The platform facilitates financing against receivables due from:
 - Corporate buyers
 - Government departments
 - Public Sector Undertakings (PSUs)
- By providing early access to payments, TReDS improves liquidity and reduces the working capital burden on MSMEs.

Key Features of RBI's TReDS Directions, 2026

- The RBI has prescribed a **minimum net worth of ₹25 crore** for entities operating TReDS platforms.
- The required net worth must be **certified by a statutory auditor**.
- Existing TReDS operators have been given time until **31 March 2028** to comply with the revised net worth requirement.
- The new directions are intended to strengthen the financial stability and operational capacity of TReDS platform operators while expanding financing opportunities for MSMEs.

MSME Onboarding Process

- MSMEs must first obtain **Udyam Registration** by registering on the **Udyam Registration Portal** using their **Aadhaar** and **PAN** details.
- After successful registration, eligible enterprises can:
 - Join **TReDS platforms** for faster invoice discounting and receivables financing.
 - Access government digital commerce initiatives such as the **MSME TEAM Portal for ONDC**.
 - Avail themselves of various government support schemes and financial services.

Udyam Registration

- **Udyam Registration** is the official registration system for MSMEs and is the primary requirement for accessing government benefits.
- Registration is **free of cost** and can be completed online using the entrepreneur's **Aadhaar** and **PAN**, or the details of an authorised signatory.

Benefits of Udyam Registration

- Easier access to **government procurement opportunities**.
- Eligibility for **Priority Sector Lending (PSL)** by banks.
- Access to collateral-free credit support under the **Credit Guarantee Fund Trust for Micro and Small Enterprises (CGTMSE)**.
- Faster access to **invoice financing through TReDS**, improving cash flow and reducing payment delays.

- Greater participation in digital commerce and government-supported business initiatives.

BHARATI PROGRAMME

The **Agricultural and Processed Food Products Export Development Authority (APEDA)**, under the **Ministry of Commerce & Industry**, has successfully completed the **first cohort of BHARATI (Bharat's Hub for Agritech, Resilience, Advancement and Incubation for Export Innovation)**, a flagship initiative designed to help Indian agri-food startups expand into global export markets.

About BHARATI

- **BHARATI** stands for **Bharat's Hub for Agritech, Resilience, Advancement and Incubation for Export Innovation**.
- It is APEDA's **flagship export acceleration programme** aimed at nurturing **export-ready agri-food startups**.
- The programme focuses on enabling Indian agri-food enterprises to become **globally competitive exporters** through mentorship, capacity building, and market access support.

Objectives

- Promote an **"export-first" approach** among agri-food startups.
- Develop a strong pipeline of **export-ready enterprises** to help achieve India's target of **USD 50 billion in APEDA-scheduled exports by 2030**.
- Strengthen startups by addressing challenges related to:
 - Product development
 - Quality standards
 - Sustainability
 - Logistics and supply chains
 - Export regulations and compliance

Who Can Apply?

The programme is open to:

- **Agri-food startups**
- **APEDA-registered exporters**
- **Farmer Producer Companies (FPCs)**
- **Startups, innovators, and researchers** working on **Sanitary and Phytosanitary (SPS)** solutions to improve export quality and compliance.

Startup Eligibility

To participate, an entity must:

- Be registered as a **Private Limited Company, Limited Liability Partnership (LLP), or Partnership Firm**.
- Be **not more than five years old**.
- Have an **annual turnover of not more than ₹10 crore** in any financial year.

COAL EXCHANGE RULES, 2026

The **Ministry of Coal** has notified the **Coal Exchange Rules, 2026**, providing a legal framework for establishing **Coal Exchanges** in India. The initiative aims to promote **transparent, competitive, and market-driven coal trading** through electronic trading platforms.

About Coal Exchange

- A **Coal Exchange** is an **electronic marketplace** where coal producers, consumers, traders, and other market participants can buy and sell coal through transparent trading mechanisms.

- It enables **efficient price discovery** based on market demand and supply rather than administrative pricing.
- The exchange is expected to improve transparency, competition, and efficiency in India's coal market.

Key Features of the Coal Exchange Rules, 2026

- **Market-Based Trading:** Introduces a **many-to-many trading model**, replacing the traditional **one-to-many model**, where producers sold coal directly to multiple consumers.
- **Transparent Price Discovery:** Coal prices will be determined by **market forces**, ensuring fair and competitive pricing.
- **Regulatory Oversight:** The **Coal Controller Organisation (CCO)** has been designated as the **nodal authority** for registering, regulating, and supervising Coal Exchanges.
- **Registration Requirements:** Entities operating a Coal Exchange must:
 - Be incorporated as a **company in India**.
 - Maintain a **minimum net worth of ₹50 crore**.
 - Receive registration valid for **25 years**.
- **Transition of Existing Platforms:** Existing electronic coal trading platforms must register as Coal Exchanges within **six months** of the commencement of the first registered Coal Exchange.
- **Software Audits:** The exchange's **price-discovery software** must be audited by a **certified auditor** before operations begin and re-audited **every two years** to ensure transparency and fairness.
- **Demutualisation:** The ownership and management of a Coal Exchange **cannot possess trading rights**, ensuring a clear separation between exchange operations and market participation to avoid conflicts of interest.

Coal Sector in India

- India is the **world's second-largest producer and consumer of coal**.
- The country possesses the **fifth-largest coal reserves** globally.
- Coal contributes approximately **55% of India's primary commercial energy requirement** and accounts for nearly **70% of electricity generation**.
- Major coal-producing states include:
 - **Odisha**
 - **Jharkhand**
 - **Chhattisgarh**
 - **Madhya Pradesh**
 - **West Bengal**

ENERGY TRANSITION INDEX (ETI) 2026

The **Energy Transition Index (ETI) 2026**, released by the **World Economic Forum (WEF)**, highlights that the **global energy transition has slowed** despite record investments of **USD 3.3 trillion in 2025**. The report attributes this slowdown to **rising geopolitical tensions, infrastructure bottlenecks, and financing challenges**, particularly in emerging economies.

Key Highlights of ETI 2026

- **India** improved its position by **two places**, ranking **70th** in the index.
- Global **electricity demand increased by 3%**, driven by:
 - Rapid electrification
 - Growing cooling requirements
 - Expansion of digital infrastructure
 - Rising adoption of Artificial Intelligence (AI)

- Increasing electricity demand has emerged as a major constraint on the global energy transition due to pressure on existing power grids and infrastructure.
- **Emerging economies** accounted for nearly **80% of global energy demand growth**, but continue to face:
 - High financing costs
 - Inadequate energy infrastructure
 - Limited investment in grid expansion

WEF's Key Recommendations

The World Economic Forum identifies three priority areas to accelerate the global energy transition:

- **Strengthen resilience and energy security** by integrating them into the design of future energy systems.
- **Accelerate investment in power grids and energy infrastructure** to meet rising electricity demand.
- **Establish stable and predictable policy frameworks** that encourage long-term investment, particularly in emerging and developing economies.

Major Reports Published by the World Economic Forum (WEF)

Global Risks Report

- Assesses major **environmental, geopolitical, economic, technological, and societal risks** over both short- and long-term horizons.

Global Gender Gap Report

- Measures progress towards **gender equality** across four dimensions:
 - Economic participation
 - Educational attainment
 - Health and survival
 - Political empowerment

Global Competitiveness Report

- Evaluates the **microeconomic and macroeconomic factors** that determine a country's productivity and long-term competitiveness.

Future of Jobs Report

- Examines how **technology, automation, digitalisation, and Artificial Intelligence (AI)** are reshaping labour markets, employment patterns, and future skill requirements.

Energy Transition Index (ETI)

- Ranks countries based on the performance of their energy systems across three key dimensions:
 - **Energy security**
 - **Environmental sustainability**
 - **Economic development and affordability**

Travel and Tourism Development Report

- Assesses the policies, infrastructure, and enabling conditions that support the **sustainable, resilient, and inclusive growth** of the travel and tourism sector.

Global Information Technology Report

- Tracks the development of **Information and Communication Technology (ICT)** and evaluates countries' readiness for the **digital economy**, innovation, and technological transformation.

BILATERAL INVESTMENT TREATY MODEL

The **Government of India** is revising its **2016 Model Bilateral Investment Treaty (BIT)** to create a more **investor-friendly framework** while preserving **India's regulatory sovereignty, public policy space, and legal system**.

About Bilateral Investment Treaty (BIT)

- A **Bilateral Investment Treaty (BIT)** is an agreement between two countries to **promote and protect investments** made by investors of one country in the territory of the other.
- It provides legal safeguards such as:
 - Protection against **expropriation** without adequate compensation.
 - **Fair and equitable treatment** of foreign investors.
 - **Dispute resolution mechanisms**, including international arbitration.
- BITs aim to enhance **investor confidence**, encourage **Foreign Direct Investment (FDI)**, and strengthen economic cooperation between countries.

India's Progress on BITs

- **Evolution of India's BIT Framework:**
 - India adopted its **first Model BIT in 1993**, which was revised in **2003**.
 - Following several international investment arbitration disputes, India introduced a **new Model BIT in December 2015**, which came into effect in **2016**.
- **Recent BIT Agreements:**
 - India has signed BITs or investment agreements with countries such as:
 - **Belarus**
 - **Kyrgyz Republic**
 - **United Arab Emirates (UAE)**
 - **Uzbekistan**
 - **Brazil** (through an **Investment Cooperation and Facilitation Treaty**).
- **Budget 2025–26 Announcement:**
 - The Union Government announced a review of the BIT framework to make it more attractive to investors while safeguarding national interests.

Key Features of the Proposed New BIT Model**Two-Year Local Remedies Requirement**

- Foreign investors will generally be required to **exhaust domestic legal remedies in India for at least two years** before initiating international arbitration.
- During negotiations with certain partner countries, the government may consider a **shorter one-year cooling-off period**.

No Most-Favoured Nation (MFN) Clause

- The revised BIT model is expected to **exclude the Most-Favoured Nation (MFN) clause**.
- Under an MFN clause, investors can claim the same favourable treatment that India offers to investors from other treaty partners.
- The government believes removing the MFN provision will:
 - Reduce **treaty shopping**.
 - Minimise legal ambiguities and arbitration risks.

Exclusion of Taxation Matters

- **Tax-related disputes** will remain **outside the scope** of investment treaties.
- This approach has been shaped by earlier arbitration disputes involving companies such as **Vodafone Group** and **Cairn Energy**.
- The government maintains that **taxation is a sovereign policy matter** and should not be subject to investor-state arbitration.

Concerns**Concerns of Foreign Investors**

- Requiring investors to first pursue remedies in Indian courts may:
 - Increase litigation costs.
 - Delay dispute resolution.

- Reduce India's attractiveness as an investment destination.
- The absence of an **MFN clause** may limit the legal protections available to investors under other investment treaties.

Concerns of the Government

- Excessive protections for foreign investors may restrict the government's ability to implement **legitimate public policy measures**.
- **Investor-State Dispute Settlement (ISDS)** mechanisms may be used to challenge sovereign regulatory decisions.
- International arbitration awards can impose **substantial financial liabilities** on the government, affecting public finances.

GEOGRAPHY & MAPPING

Prelims Special

MAJULI ISLAND

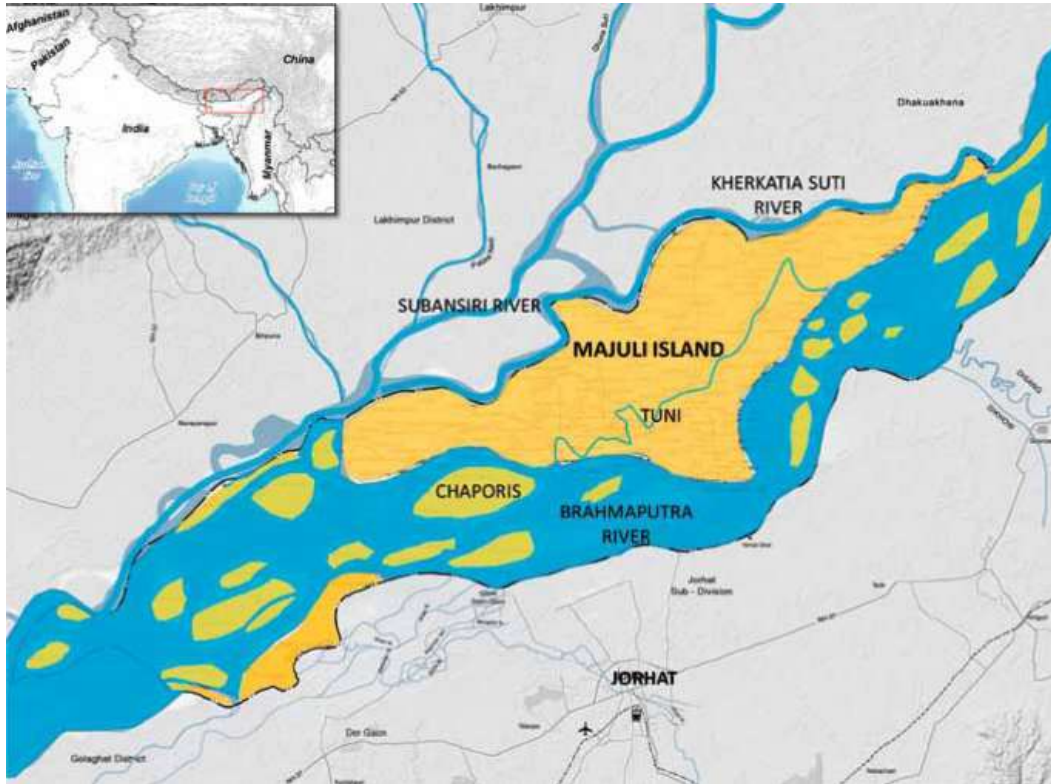
A recent study by scientists from the **Birbal Sahni Institute of Palaeosciences (BSIP)** has reconstructed nearly **4,000 years** of the climate, vegetation, and river dynamics of **Majuli Island**.

About

- **Location:** Situated in the **Brahmaputra River system** in Assam, Majuli is recognised as the **world's largest inhabited river island**.
- It is a **fluvial island** formed by the Brahmaputra River and its tributaries, covering about **875 sq. km**.
- **Boundaries:**
 - **North:** Subansiri River
 - **North-East:** Kherkatia Suti
 - **South:** Brahmaputra River

IAS ACADEMY

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- **Landscape:**
 - Alluvial plains
 - Braided channels
 - Wetlands (Beels)
 - Riverine sandbars (Chaporis)

Art and Culture

- Majuli is a major centre of **Neo-Vaishnavite culture**, established by **Srimanta Sankardeva**.
- It has around **30 Sattras (Vaishnavite monasteries)** that serve as centres of religion, culture, education, and community governance.
- Major Sattras include **Auniati Satra, Kamalabari Satra, Garamur Satra, and Dakshinpat Satra**.
- **Intangible Heritage:** Sattriya dance, Bhaona (theatre), mask-making, and traditional boat and pottery making.
- It is home to the **Mising, Deori, and Sonowal Kachari** tribes.

Economy and Society

- **Communities:** Mainly inhabited by the **Mising, Deori, Sonowal Kachari** tribes and Assamese communities.
- **Agriculture:** Cultivation of flood-tolerant rice varieties such as **Komal Saul** and **Bao Dhan**.
- **Threats:** Recurrent floods, riverbank erosion, deforestation, and land loss.

Conservation and Status

- **UNESCO:** Included in the **UNESCO Tentative List** for World Heritage Site nomination under the **mixed (cultural and natural)** category.
- **Government Initiatives:** State and Central Government projects, including support from the **North Eastern Council (NEC)**, focus on shoreline protection and sustainable development.

PADMA BARRAGE

Bangladesh has approved the **Padma Barrage Project** on the **Padma River** (the Bangladesh stretch of the Ganga) in **Rajbari district**.

About

- The project aims to **partially re-engineer the hydrology** of southwestern Bangladesh, which has become drought-prone due to reduced seasonal river flows.
- The barrage will be **2.1 km long** with **78 spillway gates**, undersluices, navigation locks, fish passages, and associated embankments.
- According to Bangladesh, the project will affect about **37% of the country's land area** and irrigate nearly **2.88 million hectares** of farmland.

India's Stance

- India has expressed **caution and diplomatic concern**, as the barrage may alter the **downstream hydrology and sediment flow** of the shared **Ganga–Padma basin**.
- India considers the unilateral project a challenge to regional water-sharing, particularly with the **Ganga Water Treaty** nearing its expiry.

Padma River

- The **Padma River** is one of the largest and most important rivers in Bangladesh.
- It is the **main distributary of the Ganga River** after the river enters Bangladesh from India.
- The Padma flows southeast, joins the **Jamuna River** (lower Brahmaputra), and later merges with the **Meghna River** before draining into the **Bay of Bengal**.
- It forms part of the **Ganga–Brahmaputra–Meghna Delta**, the world's largest delta system.

Dam vs Barrage

- **Dam:** A large structure built to **store water** in a reservoir, mainly for **hydropower generation, irrigation, and flood control**.
- **Barrage:** A **diversion structure** with a series of gates built across a river to **control water flow and divert water into canals**, rather than store it.

CASPIAN SEA

Since the **mid-1990s**, the **Caspian Sea** has lost nearly **24,000 sq. km** of its surface area, an area almost equal to **Sicily**, the largest island in the Mediterranean Sea.

About

- The **Caspian Sea** is the **world's largest inland water body**, situated between **Europe and Asia**.
- It is bordered by **Russia, Kazakhstan, Turkmenistan, Iran, and Azerbaijan**.
- Despite being called a sea, it is technically a **saltwater lake with no natural outlet**.
- Major rivers flowing into it are the **Volga (largest), Ural, Kura, and Terek**.
- The region holds vast **oil and natural gas reserves**, making it strategically significant.

Do You Know?

- Although the **2018 Aktau Convention** defines the legal status of the Caspian Sea, it does not provide a comprehensive and enforceable framework for **water sharing, hydrological monitoring, or ecological conservation**.
- Due to **climate change** and **human-induced river diversion**, the Caspian Sea is shrinking rapidly, with studies projecting a **decline in water levels of 8–30 metres by 2100**.



ESTONIA

The **Estonian Government** and business leaders have shown increased interest in expanding cooperation with **India** in the areas of **defence** and **trade**.

About

- **Location:** A **Baltic country** in **Northern Europe**, located on the eastern coast of the **Baltic Sea**.
- **Boundaries:**
 - **East:** Russia
 - **South:** Latvia
 - **North:** Gulf of Finland
 - **West:** Baltic Sea
- It shares **maritime borders** with **Finland** and **Sweden**.
- Estonia is the **northernmost** of the three **Baltic States**—**Estonia, Latvia, and Lithuania**.
- It has around **1,500 islands and islets**, the largest being **Saaremaa** and **Hiiumaa**, located off its west coast.
- **Official Language:** Estonian.
- Estonia remained part of the **Soviet Union** until **1991**, when it regained independence along with the other Baltic states.
- In **2004**, it became a member of both **NATO** and the **European Union (EU)**.
- Estonia is regarded as one of the world's most **digitally advanced countries**, known for its **e-governance, online public services, and electronic voting**.

India–Estonia Relations

- India and Estonia share **growing economic and defence relations**.
- Bilateral cooperation has expanded in **Information Technology (IT), cyber security, e-governance, and blockchain technology**.

ZOJILA TUNNEL

The **Zojila Tunnel** achieved its **final breakthrough in June 2026**, marking a major milestone in providing **all-weather connectivity** between **Kashmir** and **Ladakh**.

About

- The **Zojila Tunnel** is a **13.14-km-long, single-tube, bi-directional road tunnel** being constructed beneath the **Zojila Pass** in the Himalayas.
- It is situated at an altitude of about **11,578 feet**, connecting **Baltal (Kashmir)** with **Meenamarg (Ladakh)**.
- The tunnel is a **two-lane horseshoe-shaped structure** and is among the **world's longest road tunnels** at such a high altitude.
- It will reduce travel time between **Baltal and Meenamarg** from **3.5 hours to 15–20 minutes**, while shortening the travel distance from **40 km to 13 km**.
- The project is being executed by **Megha Engineering & Infrastructures Ltd. (MEIL)**.
- The tunnel is being constructed using the **New Austrian Tunnelling Method (NATM)**.
- **NATM** involves **sequential excavation**, immediate support through **shotcrete and rock bolting**, and continuous **geotechnical monitoring** to adapt to changing ground conditions.

Strategic Importance

- Provides **all-weather road connectivity** between the **Kashmir Valley** and **Ladakh**.
- Reduces dependence on the **snow-bound Zojila Pass**, which remains closed during winter due to heavy snowfall and avalanches.
- Enhances **military logistics** and **troop mobility** in areas near the **Line of Actual Control (LAC)**.

INTERNAL SECURITY & DEFENCE TECHNOLOGY

Prelims Special

RUDRAM-II MISSILE

The **Defence Research and Development Organisation (DRDO)** and the **Indian Air Force (IAF)** successfully conducted the flight test of the indigenous **RudraM-II** missile from a **Sukhoi Su-30MKI** fighter aircraft.

About

- **RudraM-II** is an indigenous **air-to-surface anti-radiation missile** developed by the **Research Centre Imarat (RCI)**, the nodal laboratory of DRDO.
- It is part of the **RudraM missile series**, comprising **RudraM-I, RudraM-II, and RudraM-III**.
- The missile is designed to enhance the **Suppression of Enemy Air Defence (SEAD)** capability of the **Indian Air Force**.

Features

- **Anti-radiation missiles** are designed to destroy enemy **radars, communication systems, and other radio-frequency emission sources**.
- RudraM-II uses a **hybrid navigation system** integrating:
 - **Inertial Navigation System (INS)**
 - **GPS**
 - **Passive homing seeker**
- It can achieve a speed of **Mach 5.5**, strike targets up to **300 km**, and carry a **200 kg warhead**.
- It can be launched from aircraft flying at altitudes between **3 km and 15 km**.

Significance

- Enhances **Suppression of Enemy Air Defence (SEAD)** by destroying enemy air-defence systems from **stand-off ranges** during the initial phase of an air conflict.
- It is expected to replace the **Kh-31** anti-radiation missiles currently in service.

- The successful test strengthens India's **precision-strike capability**, **SEAD operations**, and **Aatmanirbhar Bharat** in defence.

GALLANTRY AWARDS

The **President of India** conferred **Gallantry Awards** during the **Defence Investiture Ceremony** at **Rashtrapati Bhavan**, honouring acts of bravery by personnel of the **Armed Forces**, **Central Armed Police Forces (CAPFs)**, **Police Forces**, and civilians.

About

- **Gallantry Awards** are among India's highest honours for **bravery, sacrifice, and exceptional courage**.
- They are awarded to members of the **Armed Forces**, **CAPFs**, **Police Forces**, and **civilians**.
- The awards are conferred by the **President of India** and administered by the **Ministry of Defence** and the **Ministry of Home Affairs**.
- They are announced twice every year on **Republic Day** and **Independence Day**.

Categories

Wartime Gallantry Awards

- Awarded for acts of bravery **in the presence of the enemy**.
- Include:
 - **Param Vir Chakra (PVC)**
 - **Maha Vir Chakra (MVC)**
 - **Vir Chakra (VrC)**
- Instituted on **26 January 1950** with retrospective effect from **15 August 1947**.

Peacetime Gallantry Awards

- Awarded for acts of bravery **other than in direct combat**.
- Include:
 - **Ashoka Chakra (AC)**
 - **Kirti Chakra (KC)**
 - **Shaurya Chakra (SC)**
- Instituted on **4 January 1952** with retrospective effect from **15 August 1947**.
- Initially known as **Ashoka Chakra Class I, II, and III**, they were renamed in **1967**.

Order of Precedence

1. **Param Vir Chakra**
2. **Ashoka Chakra**
3. **Maha Vir Chakra**
4. **Kirti Chakra**
5. **Vir Chakra**
6. **Shaurya Chakra**

Key Points

- In the latest ceremony, the President conferred:
 - **7 Kirti Chakras**
 - **15 Vir Chakras**
 - **29 Shaurya Chakras**
- **Prasanth Balakrishnan Nair**, one of India's **Gaganyatris**, received the **Kirti Chakra**.
- All six **Gallantry Awards** can be awarded **posthumously**.
- In **Balaji Raghavan v. Union of India (1995)**, the **Supreme Court** held that Gallantry Awards are **not titles** under **Article 18(1)** of the Constitution.

PROJECT KUSHA

Defence Minister Rajnath Singh described **Project Kushi** as a potential **game changer** for India's security architecture.

About

- **Project Kushi** is an indigenous **long-range Surface-to-Air Missile (SAM)** system being developed by **DRDO**.
- It is designed to provide **layered air defence** against a wide range of aerial threats.
- The system is intended to rival advanced air defence systems such as **Russia's S-400 Triumph**.
- It will have **three interceptor variants**:
 - **M1**: Range of about **150 km**
 - **M2**: Range of about **250 km**
 - **M3**: Range of **350–400 km**
- It is designed to intercept:
 - Fighter aircraft, including **stealth aircraft**
 - Drones
 - Cruise missiles
 - Precision-guided munitions
 - Certain ballistic missile threats
- Project Kushi is linked to **Mission Sudarshan Chakra**, which aims to establish a **multi-layered air and missile defence shield** for India by **2035**.

Development Status

- The **Defence Acquisition Council (DAC)** granted **Acceptance of Necessity (AoN)** in **2023** for the procurement of **five squadrons** for the **Indian Air Force**.
- The system is expected to be **operational between 2028 and 2030**.

HIGH MOBILITY ARTILLERY ROCKET SYSTEM (HIMARS)

Taiwan recently conducted its **first-ever live-fire exercise** using the **High Mobility Artillery Rocket System (HIMARS)** in the **Taiwan Strait**, simulating a defence scenario against a potential Chinese military threat.

About HIMARS

- **HIMARS (High Mobility Artillery Rocket System)** is a **lightweight, mobile multiple rocket launcher** manufactured by **Lockheed Martin**, a US aerospace and defence company.
- It is mounted on a **six-wheeled truck**, enabling rapid movement across roads and rough terrain.
- It can carry:
 - **One pod of six precision-guided rockets**, or
 - **One MGM-140 ATACMS missile** with a strike range of up to **200 miles**.
- Its operational range of around **300 km** enables it to strike targets across the **Taiwan Strait**, including **China's Fujian Province**.
- It is known for its **"shoot-and-scoot"** capability, allowing it to fire quickly and relocate before enemy forces can retaliate.
- It is equipped with an **Increased Crew Protection (ICP) cabin** to protect its **three-member crew**.
- HIMARS is designed to engage:
 - Artillery
 - Air defence systems
 - Light armoured vehicles
 - Troop concentrations

Do You Know?

- **HIMARS** has been extensively used by **Ukraine** in its conflict with **Russia** and has become one of its most effective **long-range precision strike systems**.

MULTI-LAYERED BALLISTIC MISSILE DEFENCE

DRDO successfully conducted **three consecutive flight tests**, validating India's **multi-layered Ballistic Missile Defence (BMD) system** and the **Naval Anti-Ship Missile–Medium Range (NASM-MR)**.

What is a Ballistic Missile?

- A **ballistic missile** is launched using a rocket and then travels mainly under the influence of **gravity** along a curved path known as a **ballistic trajectory**.

What is a Missile Defence System?

- A **missile defence system** is an integrated military system designed to **detect, track, intercept, and destroy incoming missiles** before they reach their targets.
- It operates through a network of **satellites, radars, command centres, and interceptor missiles** working together in real time.

India's Missile Defence Architecture**Prithvi Air Defence (PAD)**

- Designed for **exo-atmospheric interception** at altitudes of **50–180 km**.

Advanced Air Defence (AAD)

- Designed for **endo-atmospheric interception** during the **terminal phase** at altitudes of up to **30 km**.

S-400 Triumph

- A **Russian-developed long-range mobile Surface-to-Air Missile (SAM)** system inducted by India for advanced air defence.

Barak-8 (MRSAM/LRSAM)

- Jointly developed by **India and Israel**.
- Provides **360-degree protection** to land and naval assets with a range of **70–100 km**.

Akash and SPYDER Systems

- **Akash** (India) and **SPYDER** (Israel) provide **short-range air defence** with a range of **25–50 km**.
- They protect **strategic installations** and **mobile military formations**.

Mission Sudarshan Chakra

- A long-term initiative to establish an **AI-enabled, multi-layered national missile and air defence shield** by **2035**.

INDIA'S RECORD DEFENCE PRODUCTION

India's **annual defence production** reached a record **₹1.78 lakh crore** in **FY 2025–26**, registering **15.6% growth** over the previous year and a **110% increase** since **FY 2020–21**.

Key Facts

- **Production Mix:**
 - **DPSUs & PSUs:** 76%
 - **Private Sector:** 24%
- **Domestic Production:** Around **65%** of defence equipment is now produced domestically, compared to an earlier **65–70% import dependence**.
- **Targets for 2029:**
 - Defence Production: **₹3 lakh crore**

- Defence Exports: ₹50,000 crore

Factors Behind Rising Defence Production

- Higher Defence Budget:** Continuous increase in defence allocations.
- R&D Investment:** Defence R&D allocation increased by over **112%** (FY 2026–27 compared to FY 2014–15). Since **2022–23**, **25%** of the R&D budget has been earmarked for **industry, start-ups, and academia**.
- iDEX (Innovations for Defence Excellence):** Promotes indigenous defence technology by involving **MSMEs, start-ups, innovators, research institutions, and academia**.
- Development-cum-Production Partner (DcPP) Model:** DRDO selects manufacturing partners through a competitive process and transfers technology for production.
- DRDO Young Scientists Laboratories (DYSLs):** DRDO established **five DYSLs in 2020**, with a **sixth planned in 2026**, taking the total to **36 laboratories**.
- Defence Acquisition Procedure (DAP) 2020:** Emphasises **indigenous procurement**, domestic manufacturing, and higher indigenous content.
- Defence Diplomacy:** Expanded to include **technology collaboration, industrial partnerships, and joint manufacturing** with other countries.

Need for Indigenisation

- Strategic Autonomy:** Reduces dependence on foreign suppliers during crises.
- Capability Enhancement:** Replaces ageing military platforms and strengthens capabilities in the **Indian Ocean Region (IOR)**.
- Lower Import Bill:** Reduces foreign exchange outflow by decreasing arms imports.
- Customisation:** Enables defence equipment suited to India's **mountains, deserts, and maritime regions**.
- Technology Sovereignty:** Minimises risks from sanctions, supply chain disruptions, and technology restrictions.

Significance

- India is transforming from a **defence importer to a defence manufacturer**, with exports reaching **over 80 countries**.
- The defence ecosystem includes:
 - 16 Defence Public Sector Undertakings (DPSUs)**
 - Around **500 licensed companies**
 - Nearly **17,000 MSMEs**
- Defence Corridors (2026):**
 - Uttar Pradesh:** ₹42,057 crore
 - Tamil Nadu:** ₹32,699 crore

Exercise KHAAN QUEST (23rd Edition)

Particulars	Details
Exercise	KHAAN QUEST (23rd Edition)
Venue	Five Hills Training Area, Ulaanbaatar, Mongolia
Participants	Armed forces from 18 countries , including India, Mongolia, and the USA
Type	Multinational Peacekeeping Exercise

SCIENCE & TECHNOLOGY

Prelims Special

BLOOD TEST THAT PREDICTS LUNG CANCER EARLY

A recent study has identified a group of 14 blood plasma proteins, known as the '**14-protein signature**', as a strong predictor for detecting the risk of **lung cancer** several years before diagnosis.

About

- **Blood plasma** is the liquid component of blood that circulates throughout the human body.
 - It contains thousands of proteins released by every organ and tissue.
 - This complete collection of proteins is known as the **plasma proteome**.
 - The large-scale and systematic study of the proteome is known as **proteomics**.
- The **plasma proteomics profile** offers a real-time snapshot of an individual's health and disease status.
- By comparing the plasma proteomics profiles of people before and after the onset of a disease, scientists can identify important clues about biological changes.
- Scientists are now close to developing a new method to identify individuals who may be at risk of developing **lung cancer** and provide preventive protection at an early stage.
- **Lung cancer** is primarily caused by **smoking** and, to a lesser extent, by **air pollution** and **occupational exposure**.
- According to the latest **World Health Organization (WHO)** estimates, around **2.5 million new cases** and **1.8 million deaths** due to lung cancer occur every year.

ARBUSCULAR MYCORRHIZAL (AM) FUNGI

A scientific study has, for the first time, mapped the global distribution of **Arbuscular Mycorrhizal (AM) fungi**, highlighting their vital role in maintaining **soil health** and regulating the **global climate**.

About

- These fungi have supported plant life for millions of years, but their global extent and distribution has remained largely unknown until now.
 - By forming mutually beneficial relationships with nearly **70% of plant species**, exchanging nutrients for carbon, AM fungal networks sequester an estimated **4 billion tonnes of CO₂-equivalent annually**.
- Grassland ecosystems such as those in **South Sudan**, the **Tibetan Plateau**, and **India's Banni grasslands** contain nearly **40% of the world's AM fungal networks**.
- As grasslands are being converted into agricultural land **four times faster than forests**, these ecosystems are under severe threat. The study aims to bring fungi from the margins of environmental policy to the centre of climate action.

AM Fungi

- **Arbuscular Mycorrhizal (AM) fungi** are soil fungi that establish a mutually beneficial symbiotic relationship with the roots of nearly **70% of terrestrial plant species**.
- They primarily belong to the phylum **Glomeromycota** and develop specialized structures called **arbuscules** inside root cells for nutrient exchange.
- AM fungi enhance the absorption of essential nutrients such as **phosphorus, nitrogen, zinc, and copper**, along with water, from the soil.
- In return, plants provide the fungi with **carbohydrates and lipids** produced through photosynthesis.

Fungi

- **Fungi** are **eukaryotic organisms** that include **yeasts, molds, and mushrooms** and belong to the **Kingdom Fungi**.
- They lack **chlorophyll** and cannot perform photosynthesis. Instead, they obtain nutrients by absorbing organic matter from their surroundings.
- Fungi reproduce through **spores** and may be **unicellular** (e.g., yeast) or **multicellular** (e.g., mushrooms).

- They play a vital role as **decomposers**, breaking down dead plants and animals and recycling nutrients within ecosystems.

EMERGING POWER OF SYNTHETIC BIOLOGY

The rapid advancement of **genome sequencing**, **gene-editing technologies**, **artificial intelligence (AI)**, and **DNA synthesis** has significantly accelerated the growth of **synthetic biology**.

About Synthetic Biology

- **Synthetic Biology (SynBio)** is the application of engineering principles to biology, where biological systems and components are designed, assembled, and modified to perform specific functions.
- It involves engineering living organisms to acquire new or improved capabilities beyond those naturally found in nature.

Applications

- **Healthcare:** Engineered microbes are now used to produce **artemisinin** (an anti-malarial drug) and **insulin** without relying on plant or animal sources.
- **CAR-T cell therapy**, in which immune cells are genetically reprogrammed to target cancer cells, is a major application of synthetic biology.
- **Agriculture:** Scientists are engineering **nitrogen-fixing microbes** to supply nutrients directly to crops, thereby reducing dependence on chemical fertilisers.
- **Energy and Environment:** Specially designed microorganisms can convert greenhouse gases such as **methane** into valuable industrial compounds.
- **Forensics and Materials:** **Synthetic DNA watermarking** demonstrates how biological systems can be used to store and transmit encoded information.

Challenges and Concerns

- **Biosafety and Biosecurity:** Engineered organisms, if accidentally or intentionally released into the environment, could disturb natural ecosystems.
- **Regulatory Gaps:**
 - India does not yet have a comprehensive and standalone regulatory framework for synthetic biology.
 - The **DNA Technology (Use and Application) Regulation Bill** has remained pending for years and has since been withdrawn.
 - Existing regulations under the **Environment (Protection) Act** and the **Recombinant DNA Safety Guidelines** are inadequate to address the scale and complexity of current synthetic biology activities.
- **Equity and Access:** Synthetic biology extensively relies on biodiversity data, often sourced from megadiverse countries such as India. However, the benefits have largely accrued to laboratories and corporations in the Global North, raising concerns under the **Nagoya Protocol** regarding **Access and Benefit Sharing (ABS)**.
- **Ethical Concerns:** The potential to engineer multicellular organisms or introduce designer genomes into fertilised eggs raises significant ethical issues. The distinction between therapeutic use and human enhancement continues to remain a matter of debate.

India's Policy Response

- The **BioE3 Policy (Biotechnology for Economy, Environment, and Employment)**, approved by the Union Cabinet in **August 2024**, serves as the cornerstone of India's synthetic biology strategy.

- The policy identifies six priority areas: **bio-based chemicals, biopolymers, APIs and smart proteins, precision biotherapeutics, climate-resilient agriculture, and carbon capture.**
- India's **bioeconomy**, valued at nearly **\$10 billion in 2014**, surpassed **\$165 billion in 2024** and aims to reach **\$300 billion by 2030**. India is among the first countries in the world to establish a dedicated **bioeconomy policy framework**.
- Under the **BioE3 Policy**, "**Moolankur**" **Biofoundry Hubs** have been established to provide startups, academic institutions, and MSMEs with shared **biomanufacturing infrastructure**.

CHANDRAYAAN-3 REVEALS DEEP LUNAR SECRETS FROM SHIV SHAKTI POINT

Data obtained from **Chandrayaan-3's Pragyan rover** has revealed that the soil at **Shiv Shakti Point**, near the Moon's South Pole, is chemically very similar to the lunar meteorite **ALHA 81005**, which was discovered in Antarctica. The findings are based on observations made by the **Alpha Particle X-ray Spectrometer (APXS)** carried onboard the rover.

About APXS

- The **Alpha Particle X-ray Spectrometer (APXS)** is a highly specialized and lightweight scientific instrument used in space missions to determine the **elemental composition** of rocks and soils on extraterrestrial bodies.
- **Working Principle:**
 - **Bombardment:** The instrument directs **alpha particles** and **X-rays** onto the target surface.
 - **Detection:** When the radiation strikes the atoms present in the rock or soil, the alpha particles are scattered, and the target atoms emit **characteristic X-rays**.
 - **Analysis:** By measuring the energy and intensity of the reflected X-rays and scattered alpha particles, scientists can identify the chemical elements present and determine their relative abundance.

Significance of the Chemical Similarity

- The chemical composition differs from that of conventional **lunar highland rocks**, which are mainly composed of **ferroan anorthosite**.
- The lunar soil consists of a mixture of:
 - **Ferroan anorthosite** materials.
 - **Magnesium-rich (Mg-suite) rocks**.
- This indicates that materials from the deeper layers of the Moon have become mixed with the surface **regolith**.

Validation of the Lunar Magma Ocean Theory

- The findings provide fresh evidence in support of the **Lunar Magma Ocean Theory**, which proposes that:
 - The early Moon was covered by a global ocean of molten rock.
 - As the molten surface cooled, lighter minerals floated upward to form the lunar crust, while denser **iron- and magnesium-rich minerals** sank into the interior.
- The detection of **iron- and magnesium-bearing materials** originating from deeper layers at the lunar surface further supports this model of the Moon's geological evolution.

Chandrayaan-3 and Shiv Shakti Point

- **Shiv Shakti Point** is the official name approved by the **International Astronomical Union (IAU)** for the **Chandrayaan-3** landing site located at **69.37° South latitude** on the Moon.

- **Lander Module (Vikram):** It was designed using a "**failure-based**" approach, featuring stronger landing legs and additional fuel. Its payloads include **ChaSTE** (to measure thermal conductivity), **ILSA** (to study seismic activity), and **RAMBHA** (to measure plasma density).
- **Rover (Pragyan):** It is a **26-kg, six-wheeled rover** equipped with the **Laser-Induced Breakdown Spectroscope (LIBS)** and the **Alpha Particle X-ray Spectrometer (APXS)** to analyse the elemental composition of the lunar surface.

GRAPES-3

Researchers from **India and Japan** have used the **GRAPES-3 (Gamma Ray Astronomy PeV EnergieS–Phase 3) Telescope** to develop a method for monitoring changes in the **Earth's upper atmosphere** in real time.

About

- **GRAPES-3 (Gamma Ray Astronomy PeV EnergieS–Phase 3)** is a **cosmic ray observatory** located at **Ooty, Tamil Nadu**, at an altitude of about **2,200 metres above sea level**.
- It is operated by the **Tata Institute of Fundamental Research (TIFR)**.
- The **Earth's upper atmosphere**—comprising the **mesosphere, thermosphere, and exosphere** (extending from about **50 km to 10,000 km** above the Earth's surface)—is an extreme environment.
- **Objective:**
 - It is designed to study the **origin, acceleration, and propagation of cosmic rays**.
 - The observatory investigates **extensive air showers**, which are cascades of secondary particles produced when high-energy cosmic rays or gamma rays enter the Earth's atmosphere.
 - It measures particles in the **tera-electronvolt (TeV) to peta-electronvolt (PeV)** energy range, among the highest energies observed in nature.
- In addition to cosmic ray research, **GRAPES-3** also studies:
 - **Solar phenomena**, including the impact of solar activity on cosmic rays.
 - **Thunderstorm-related phenomena**, particularly atmospheric electric fields and their interaction with cosmic-ray muons.
- The observatory uses:
 - An array of **plastic scintillator detectors** to detect extensive air showers.
 - A **large-area muon detector** based on proportional counters to measure high-energy muons reaching the Earth's surface.

Gamma Rays

- **Gamma rays (γ)** are the **highest-energy** and **shortest-wavelength** form of electromagnetic radiation.
- They are emitted from the **atomic nucleus** during **radioactive decay** or during extreme cosmic events.
- These massless packets of energy are highly penetrating and can cause cellular damage due to their **ionising nature**.

Sources of Gamma Rays:

- **Cosmic events:** They are produced during **supernova explosions**, and by **neutron stars, pulsars, and black holes**.
- **Radioactive decay:** On Earth, they are commonly emitted by the unstable nuclei of radioactive elements such as **Cobalt-60** and **Cesium-137** as they release excess energy.
- **Other phenomena:** Terrestrial sources also include **lightning flashes** and **nuclear explosions**.

Muons

- **Muons** are elementary subatomic particles that are similar to **electrons**, but are approximately **200 times heavier**.

- They are produced when **high-energy cosmic rays** originating from outer space collide with atoms in the **Earth's upper atmosphere**.
- Owing to their **high energy** and **strong penetrating ability**, a large number of muons reach the Earth's surface, where they can be detected.

100 YEARS OF SOLAR DATA

The **Kodaikanal Solar Observatory**, which maintains **India's longest continuous record of solar observations**, has provided valuable insights for predicting future **solar cycles**.

About

- The energy produced inside the **Sun** is transported through its outer layers by the process of **convection**.
- Convective cells give rise to **small-scale granulations** and **large-scale supergranulations**, forming a network-like structure on the solar surface.
- The **supergranular network cells** have an average lifetime of about **24 hours** and an average size of nearly **30,000 km**, while the cooler **intergranular lanes** are about **6,000 km** wide.
- The origin of these **supergranulations**, the reason for their size, and their relationship with the **11-year solar cycle** are still not fully understood.
- A recent study conducted by the **Indian Institute of Astrophysics (IIA)** using more than **100 years of observations** from the **Kodaikanal Solar Observatory** has provided new insights into these questions.
- The study suggests that **supergranular properties**, including **lane width** and **intensity**, are influenced by **local magnetic flux** and the level of **solar activity**.
- The analysis confirms that although no single latitude follows the solar cycle exactly, significant correlations exist at specific latitudes for different parameters.
- The findings highlight the importance of understanding these correlations for improving the prediction of future **solar activity**.

Solar Cycle

- The **solar cycle** is the periodic cycle through which the Sun's **magnetic field** changes approximately every **11 years**.
- The Sun is a massive sphere of electrically charged hot gas. The movement of this charged gas generates a powerful **magnetic field**.
- Approximately every **11 years**, the Sun's magnetic field completely reverses, causing its **north and south magnetic poles** to exchange positions.
- After another **11 years**, the magnetic poles reverse once again, completing the full magnetic cycle.
- The solar cycle influences solar surface activity, including the formation of **sunspots**, which are produced by changes in the Sun's magnetic field.
- As the magnetic field changes, the level of activity on the Sun's surface also changes.

Tracking of the Solar Cycle

- One of the most common methods of tracking the **solar cycle** is by counting the number of **sunspots**.
- The beginning of a solar cycle is known as the **solar minimum**, when the Sun has the fewest sunspots.
- As the cycle progresses, solar activity increases along with the number of sunspots.
- The midpoint of the cycle is called the **solar maximum**, when the Sun has the highest number of sunspots.

- Towards the end of the cycle, solar activity gradually declines back to the **solar minimum**, after which a new solar cycle begins.

Forecasting

- Astronomers use several methods to forecast the strength of the next **solar cycle**.
- These include **theoretical calculations based on dynamo models**, **extrapolation techniques**, and **precursor methods**.
- The **precursor method** predicts the strength of the next **solar maximum** by using the value of a selected measure of solar activity at a specific point in time.

HIGH ENERGY MEDICAL CYCLOTRON PROJECT

The **Maharashtra Cabinet** has approved the establishment of the **High Energy Medical Cyclotron Project (HEMCP)** in **Nagpur** with an allocation of **₹300 crore**.

About

- A **medical cyclotron** is a specialized **particle accelerator** used to produce **radioactive substances**, known as **radioisotopes**, for medical applications.
- It functions by accelerating charged particles, such as **protons**, to very high speeds using **electric and magnetic fields**.
- These high-speed particles are then directed towards a target material, where they trigger **nuclear reactions** that produce radioisotopes.
- The radioisotopes produced are used in:
 - **PET (Positron Emission Tomography)** scans and **PET-CT imaging**.
 - Various **nuclear medicine diagnostic procedures**.
 - **Targeted radionuclide therapies** for the treatment of diseases such as **cancer**.
- Common medical radioisotopes include **Fluorine-18 (F-18)**, **Gallium-68 (Ga-68)**, and **Lutetium-177 (Lu-177)**.

Radioactive Isotopes and their Uses

- **Cobalt-60 (Co-60)**: Emits high-energy **gamma rays** and is widely used in **External Beam Radiation Therapy (EBRT)** and **teletherapy** for treating conditions such as **tumours** and **leukaemia**.
- **Iodine-131 (I-131)**: Used for the treatment of **thyroid cancer** and **hyperthyroidism**. Since the thyroid naturally absorbs iodine, it provides highly targeted therapy.
- **Iridium-192 (Ir-192)**: Used in **brachytherapy**, where localized radioactive sources are placed inside or near tumours, particularly in **cervical** and **breast cancers**.
- **Lutetium-177 (Lu-177)**: Used in **targeted radionuclide therapy** for treating **neuroendocrine tumours** and **prostate cancer**.
- **Yttrium-90 (Y-90)**: Commonly used in **radioembolization** for the treatment of **liver cancer** (hepatocellular carcinoma).

India's Institutional Framework

- **BARC (Bhabha Atomic Research Centre)**: Produces medical radioisotopes using reactors such as **Dhruva** at **Trombay**. It has also developed **titanium-encapsulated Iodine-125 seeds** for the treatment of eye cancer.
- **BRIT (Board of Radiation and Isotope Technology)**: The operational arm of the **Department of Atomic Energy (DAE)** responsible for processing and supplying medical radioisotopes across the country.

- **AERB (Atomic Energy Regulatory Board):** The statutory authority responsible for regulating the **safe use** of radiation technologies and ensuring radiation safety standards in India.

WORLD'S FASTEST SUPERCOMPUTER

China has overtaken the **United States** to secure the top position in the global ranking of the **world's fastest supercomputers**.

About

- A supercomputer named **LineShine**, installed at the **National Supercomputing Center in Shenzhen**, has been recognised as the **world's fastest supercomputer**.
- The system achieved a performance of **2.198 exaflops**, enabling it to perform more than **2 quintillion calculations per second**.
- Unlike most modern supercomputers, **LineShine** operates entirely on **CPUs (Central Processing Units)** instead of relying on **GPUs (Graphics Processing Units)**.
- **El Capitan**, a supercomputer used by the **United States** to develop and maintain its **nuclear weapons stockpile**, has been ranked **second**.
- **India's Ranking:**
 - India's most powerful supercomputer, **Shakti Cloud**, is currently ranked **32nd** on the **TOP500** list, with a performance of **84.31 petaflops**.
 - China's **LineShine** is approximately **26 times faster** than India's highest-ranked supercomputer.
- India's supercomputing programme is being advanced through the **National Supercomputing Mission (NSM)**, which was launched in **2015**.
- Under the mission, India has installed **38 supercomputers** across research and academic institutions, creating a combined computing capacity of **47 petaflops**.
- India has also developed **indigenous supercomputing systems**, including the **PARAM Rudra** series, while continuing to strengthen its digital and computing infrastructure.

Supercomputers

- A **supercomputer** is an exceptionally powerful computer designed to perform an enormous number of calculations at extremely high speeds.
- Supercomputers are used to solve problems that are too complex or computationally intensive for conventional computers.
- Their performance is generally measured in **FLOPS (Floating-Point Operations Per Second)**.
- Modern supercomputers are capable of performing **quintillions (10^{18})** of calculations every second, achieving **exascale computing** performance.

Features

- **Massive Processing Power:** Thousands to millions of processors work together to execute computational tasks.
- **Parallel Computing:** Multiple calculations are carried out simultaneously, significantly improving processing speed.
- **Large Memory and Storage:** They can process and store extremely large volumes of data.
- **Specialized Architecture:** Supercomputers are specifically designed for **scientific research, engineering simulations, weather forecasting, artificial intelligence, and other high-performance computing applications**, rather than routine everyday tasks.

SOCIETY

Prelims Special

DECLINING FERTILITY RATE IN INDIA

According to the **Sample Registration System (SRS) Statistical Report 2024**, India's **Total Fertility Rate (TFR)** has declined to **1.9**, falling below the **replacement level fertility** of **2.1**.

Key Findings

- **Total Fertility Rate (TFR)** is the average number of children a woman is expected to have during her reproductive years (**15–49 years**).
- **Replacement level fertility** refers to the average number of children required to maintain a stable population in the absence of migration.
- In **2024**, only **Bihar, Uttar Pradesh, Madhya Pradesh, Rajasthan, and Chhattisgarh** recorded a TFR above **2.1**.
- **Delhi** recorded the **lowest TFR (1.2)**, followed by **Tamil Nadu, Kerala, and West Bengal**, each with a TFR of **1.3**.
- India's TFR has declined from **4.3 in 1985** to **1.9 in 2024** and is projected to fall below **1.6 by 2031**.

Reasons

- Delay in marriage and postponement of childbirth.
- Rapid urbanisation and rising costs of **housing, education, healthcare, and childcare**.
- Improved access to **family planning** and **contraceptive services**.
- Declining **infant and child mortality** due to better healthcare facilities.
- Increasing cost of raising children and a growing preference for **smaller families**.
- India's progression to the later stage of the **Demographic Transition Model (DTM)**.

Implications

- Slower population growth and eventual stabilisation of the population.
- A rising **ageing population**, leading to increased demand for **pensions, healthcare, and geriatric care**.
- A shrinking future workforce, which could affect long-term **economic growth**.
- Regional differences in fertility rates may influence **migration patterns, political representation, resource allocation, and labour markets**.

Major Concerns

- India is experiencing population ageing at a relatively **low income level**, with a **narrow tax base** and fiscally constrained states.
- A large proportion of **informal employment** limits pension coverage and retirement security.
- Existing **social security schemes** provide only limited financial support for the elderly population.

Government Initiatives

- **State population policies** aimed at supporting families and promoting fertility.
- **Jiyo Parsi Scheme** to provide assistance for infertility treatment.
- **National Health Mission (NHM)** and **Pradhan Mantri Matru Vandana Yojana (PMMVY)** to improve maternal and child health.

- **Mission Shakti** and the **Palna Scheme** to promote childcare services and women's empowerment.
- **Atal Vayo Abhyudaya Yojana (AVYAY)**, the **Integrated Programme for Senior Citizens (IPSrC)**, and the **Seniorcare Ageing Growth Engine (SAGE)** initiative to support senior citizens and promote the silver economy.

MISCELLANEOUS

Prelims Special

QS WORLD UNIVERSITY RANKINGS 2027

The **QS (Quacquarelli Symonds) World University Rankings 2027** assessed more than **1,500 universities** across **106 countries and territories**, highlighting key trends in global higher education.

About QS Rankings

- **Quacquarelli Symonds (QS)** was founded in **1990** and is headquartered in **London**.
- The **QS World University Rankings** were launched in **2004** and are among the world's most prestigious university ranking systems.
- The rankings assess universities using **10 indicators**, including **academic reputation, employer reputation, faculty-student ratio, citations per faculty, employment outcomes, internationalisation, and sustainability**.
- The **10 indicators** used for evaluation are:
 - Academic Reputation
 - Employer Reputation
 - Faculty-Student Ratio
 - Citations per Faculty
 - International Faculty Ratio
 - International Student Ratio
 - International Research Network
 - Employment Outcomes
 - Sustainability
 - International Student Diversity

Global Trends

- The **Massachusetts Institute of Technology (MIT)** retained the **1st position** for the **15th consecutive year**.
- **Imperial College London** and **Stanford University** jointly secured the **2nd rank**, followed by the **University of Oxford** at **4th**.
- The **United States** remained the most represented country with **184 institutions**, followed by the **United Kingdom (93)**, **China (85)**, and **Germany (60)**.
- However, the number of **US universities** in the global **Top 200** for **International Student Ratio** declined from **28 to 14** over the past decade.
- **Asia** and the **Middle East** recorded significant improvements, particularly **China, Singapore, the United Arab Emirates, and Saudi Arabia**.
- **Peking University** ranked **13th**, while the **Technical University of Munich** secured the **25th position**.

India's Performance

- **India** featured **52 universities** in the rankings, down from **54** in the previous edition, but remained the **5th most represented higher education system** globally.
- This represents an increase from **11 institutions in 2015**, reflecting a **271% rise** over the past decade.
- The **Indian Institute of Technology (IIT) Delhi** emerged as India's **highest-ranked institution**, securing the **118th position**, driven by strong research output and employer reputation.
- The **Indian Institute of Technology Bombay (134th)** and the **Indian Institute of Technology Madras (170th)** remained the only other Indian institutions in the **global Top 200**.
- The **University of Delhi** ranked **322nd**, becoming India's **highest-ranked non-technical university**.
- **Jawaharlal Nehru University (JNU)** secured the **555th position**.
- A total of **24 private universities** from India entered the rankings, including **Shoolini University**, **BITS Pilani**, and **Chandigarh University**.
- **Vellore Institute of Technology (VIT)** recorded the **largest improvement**, climbing **94 positions** in the rankings.

Key Indicators

- In **Citations per Faculty**, the **Indian Institute of Science (IISc)**, Bengaluru, ranked **21st globally**.
- In **Employer Reputation**, **IIT Bombay** ranked **32nd globally**.
- Under **Employment Outcomes**, only the **University of Mumbai** and the **University of Delhi** featured among the **global Top 100**.
- No Indian institution secured a place in the **global Top 100 for Academic Reputation**.

Challenges

- Indian universities continue to lag behind in terms of **international faculty**, **international students**, and **international research collaboration**.
- Limited **internationalisation** remains the biggest challenge preventing Indian institutions from entering the **global Top 100**.

QS World Future Skills Index 2027

- **India** ranked **13th globally** and emerged as the **highest-performing country in South Asia**.
- It secured the **5th position globally** in the **Future of Work** indicator.
- India achieved a **score of 100 in Economic Capacity**, reflecting strong **GDP growth** and **Artificial Intelligence (AI)** investments worth **\$90 billion**.
- However, India ranked only **73rd in Human Capital**, indicating a gap between the **number of graduates** and the **quality of employable skills**.

FOOD PLANET PRIZE 2026

The **Andhra Pradesh Community Managed Natural Farming (APCNF)** programme has won the **Food Planet Prize 2026**, becoming the **first Indian initiative** to receive this prestigious award.

About the Prize

- The **Food Planet Prize** was established in **2019** by the **Curt Bergfors Foundation** and is regarded as the **world's largest environmental award** dedicated to transforming global food systems.
- The award carries a cash prize of **US\$ 1.5 million** (approximately **₹14 crore**).
- It recognises and supports innovative initiatives that contribute to building **sustainable and resilient food systems**.

About APCNF

- The **Andhra Pradesh Community Managed Natural Farming (APCNF)** programme was launched in **2016** through the **Rythu Sadhikara Samstha (RySS)**.
- It promotes **natural farming** by reducing farmers' dependence on **chemical fertilisers** and **chemical pesticides**.
- The programme now covers more than **8,000 villages** and nearly **18 lakh farmer families**, making it one of the **largest community-led agroecology initiatives** in the world.
- It operates through **Women's Self-Help Groups (SHGs)** and a network of more than **10,000 Community Resource Persons (CRPs)**.

Significance

- The programme helps farmers **reduce cultivation costs** while improving **farm incomes**.
- It promotes **sustainable agriculture** and helps maintain **ecological balance**.
- The **Andhra Pradesh model** is now being studied and replicated in other regions as an example of **community-led natural farming**.

OPERATION DRISHTI

The **Indian Army** and the **Indian Air Force** have launched a **Mega Advanced Surgical Eye Camp** under **Operation DRISHTI** at **Military Hospital Namkum**.

About

- **Operation DRISHTI** is the flagship **humanitarian outreach programme** of the **Armed Forces Medical Services (AFMS)**.
- It combines **advanced ophthalmic care** with social service to provide specialised eye treatment in **remote, underserved, and difficult-to-access regions**.
- Its primary objective is to **reduce avoidable blindness** and improve access to **quality eye care**.

Key Features

- The eye camp is being organised through **inter-service coordination** between the **Indian Army** and the **Indian Air Force** medical teams.
- The surgical team is performing advanced ophthalmic procedures such as:
 - **Phacoemulsification** for the treatment of **cataracts**.
 - **Minimally Invasive Glaucoma Surgery (MIGS)** for the management of **glaucoma**.
 - **Anti-VEGF intravitreal injections** for the treatment of **retinal diseases**.
- The medical team is led by **Sanjay Kumar Mishra, Consultant and Head of Ophthalmology** at the **Army Hospital (Research and Referral)**.

Previous Outreach

- Earlier, **Operation DRISHTI** successfully organised **eight advanced surgical eye camps** in regions including **Leh, Lakshadweep, Bhuj, Kutch, and Bagdogra**.

PRADHAN MANTRI RASHTRIYA BAL PURASKAR (PMRBP)

The **Ministry of Women and Child Development** has invited nominations for the **Pradhan Mantri Rashtriya Bal Puraskar (PMRBP) 2026**.

About

- The **Pradhan Mantri Rashtriya Bal Puraskar (PMRBP)** is **India's highest civilian honour for children**, recognising exceptional achievements by young achievers.

- The award was instituted in its present form in **2019**.
- It is conferred annually by the **President of India** on **Veer Bal Diwas**, which is observed every year on **26 December** to commemorate the martyrdom of the two younger sons (**Sahibzadas**) of **Guru Gobind Singh—Sahibzada Zorawar Singh** (aged **9 years**) and **Sahibzada Fateh Singh** (aged **6 years**).

Eligibility

- The nominee must be an **Indian citizen** residing in **India**.
- The nominee should be **between 5 and 18 years of age**.
- The child should **not have received the award earlier**.
- The recognised achievement must have been accomplished **within two years** preceding the nomination deadline.

Award Categories

- The award recognises excellence in the following **six categories**:
 - Bravery
 - Art and Culture
 - Environment
 - Science and Technology
 - Social Service
 - Sports

Award Components

- Each awardee receives a **medal**, a **certificate**, and a **citation booklet**.
- The award is generally **not conferred posthumously**, although **exceptional cases** may be considered.

Significance

- The **Pradhan Mantri Rashtriya Bal Puraskar (PMRBP)** aims to recognise **talent, courage, innovation, and social commitment**, while inspiring children to make meaningful contributions to society.

PADMA AWARDS

President **Droupadi Murmu** conferred the **second set of Padma Awards 2026** at **Rashtrapati Bhavan**, presenting **65 awards**. For **2026**, a total of **131 Padma Awards** were approved.

About

- Instituted in **1954**, the **Padma Awards** are among **India's highest civilian honours**.
- The awards are announced annually on **Republic Day**.
- They are administered by the **Ministry of Home Affairs (MHA)**.

Categories

- **Padma Vibhushan**: India's **second-highest civilian award**, conferred for **exceptional and distinguished service**.
- **Padma Bhushan**: India's **third-highest civilian award**, awarded for **distinguished service of a high order**.
- **Padma Shri**: India's **fourth-highest civilian award**, presented for **distinguished service in any field**.
- In **2026**, the awards included **5 Padma Vibhushan**, **13 Padma Bhushan**, and **113 Padma Shri**.
- The awards are conferred in fields such as **art, literature, education, medicine, science, engineering, sports, social work, trade, industry, civil service, and public affairs**.

Selection Process

- Nominations are invited from **State Governments, Central Ministries, previous awardees, and the general public.**
- The nominations are examined by the **Padma Awards Committee**, which is constituted annually by the **Prime Minister.**
- The Committee's recommendations are submitted to the **Prime Minister** and are finally approved by the **President of India.**

Key Features

- The awards are **open to all persons**, irrespective of **race, occupation, position, or gender.**
- The awards may also be **conferred posthumously.**

Order of Precedence

- The **Bharat Ratna** remains **India's highest civilian honour** and ranks above all the **Padma Awards.**

THUNDERSTORMS

Severe **thunderstorms** and **dust storms** during the **pre-monsoon season** caused more than **100 deaths** in **Uttar Pradesh**, highlighting the increasing vulnerability to rapidly developing local weather events.

About

- A **thunderstorm** is a **short-duration, high-intensity weather phenomenon** associated with **lightning, thunder, strong gusty winds, heavy rainfall, and sometimes hail.**
- It commonly occurs during **April and May** and may generate **dust storms** in **arid and semi-arid regions.**

Formation

- Intense **surface heating**, with temperatures exceeding **45°C** in northern India, rapidly warms the lower atmosphere.
- **Moist southeasterly winds** from the **Bay of Bengal** provide moisture, while **Western Disturbances** bring cooler and drier air to the upper atmosphere.
- The warm, moist air rises rapidly through **convection**, condenses to form **cumulonimbus clouds**, and releases **latent heat**. This strengthens vertical air movement and atmospheric instability, leading to the development of thunderstorms.

Types and Regional Names

- **Single-cell thunderstorms** are small and short-lived, whereas **multi-cell thunderstorms** consist of clusters of storm cells that produce prolonged rainfall and strong winds.
- **Squall lines** are organised lines of thunderstorms capable of causing severe wind damage, while **supercells** are rotating thunderstorms that are rare in India but can produce extremely strong winds and hailstorms.
- The thunderstorms that affected **Uttar Pradesh** resembled organised **multi-cell systems** with **squall-line characteristics.**
- These storms are known by different regional names:
 - **Andhi** in **Uttar Pradesh** and other parts of **northern India.**
 - **Kalbaisakhi** or **Nor'wester** in **West Bengal** and **Assam.**
 - **Mango Showers** in **Karnataka.**
 - **Blossom Showers** in **Kerala.**

Impacts and Forecasting Challenges

- Severe thunderstorms cause fatalities due to **lightning strikes, falling trees, collapsing walls, and flying debris**.
- They damage **houses, electricity infrastructure, hoardings, and agricultural crops** such as **wheat, vegetables, and mango orchards**, while disrupting **power supply, communication networks, and transportation**.
- Rapid **urbanisation**, weak building structures, and limited public awareness increase disaster vulnerability.
- Forecasting and evacuation remain challenging because thunderstorms are **highly localised, rapidly intensify**, and often consist of **multiple storm cells** developing simultaneously.

Disaster Management

- **Thunderstorms and lightning** are **not included** among the **12 nationally notified disasters** eligible for automatic financial assistance under the **State Disaster Response Fund (SDRF)** or the **National Disaster Response Fund (NDRF)**.
- The **12 notified disasters** are **cyclone, drought, earthquake, fire, flood, tsunami, hailstorm, landslide, avalanche, cloudburst, pest attack, and frost and cold wave**.
- However, States are permitted to utilise up to **10% of their SDRF allocation** for **local disasters**, including thunderstorms and lightning.
- The **India Meteorological Department (IMD)** issues **weather bulletins, alerts, and nowcasts** using **Doppler Weather Radars, mobile-based warning systems**, and nearly **2,400 weather stations** across **Uttar Pradesh**.
- The **National Disaster Management Authority (NDMA)** promotes disaster preparedness and **lightning safety** through its **Sachet Portal**, which uses the **Common Alerting Protocol (CAP)** and **geo-intelligence** to provide near real-time warnings.
- The **Lightning Resilient India Campaign** promotes public awareness and scientific forecasting, while State Governments provide **compensation, relief, rehabilitation, and restoration of power supply** after such disasters.
- Safety measures include **remaining indoors during thunderstorms, avoiding open fields, securing loose outdoor objects, and strengthening local disaster preparedness and response systems**.

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