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MONTHLY CURRENT AFFAIRS

SEPTEMBER 2026

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POLITY AND GOVERNANCE

STUDENT'S
NOTES

1. CENTRE OPPOSES CREAMY LAYER FOR SCHEDULED CASTES AND SCHEDULED TRIBES

Context: The Union Government opposed applying the creamy layer principle to Scheduled Castes (SCs) and Scheduled Tribes (STs).

- The stance followed the **seven-judge Constitution Bench's 2024 State of Punjab v. Davinder Singh judgment** permitting SC/ST sub-classification.
- The judgment suggested creamy layer exclusion to prevent **elite capture** of reservation benefits.
- The Centre consequently filed a **counter-affidavit opposing creamy layer application** to SC/ST reservations.

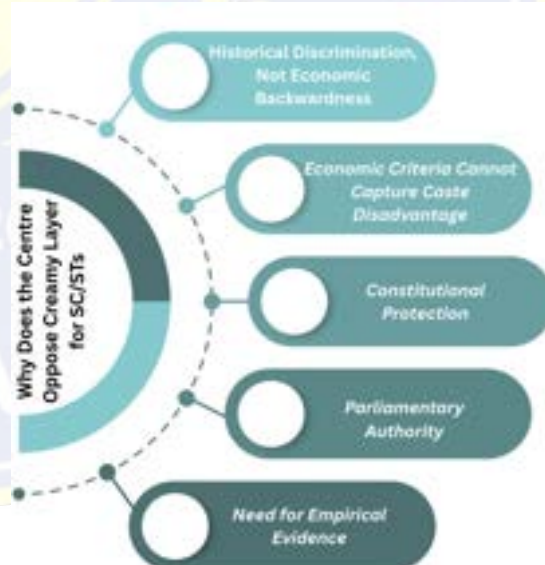


Present Application

- **OBCs:** Creamy layer exclusion applies strictly to OBCs.
- Only **Non-Creamy Layer (NCL) OBCs** qualify for 27% reservation in public employment and educational institutions.
- **SCs/STs:** Creamy layer exclusion has historically not applied to them.
- Their disadvantage reflects **untouchability, social stigma and geographical isolation**, rather than economic deprivation alone.

Sub-Categorisation vs Creamy Layer

- **Sub-categorisation divides an existing quota among specific groups to ensure equitable benefits within reserved categories.**
- Telangana, Haryana, Punjab and Andhra Pradesh have historically sub-classified SC quotas.
- **Mizoram** provides an example of sub-categorisation within the ST quota.
- The Centre uses ST sub-categorisation in **Eklavya Model Residential School admissions** to ensure PVTG representation.
- **Particularly Vulnerable Tribal Groups (PVTGs)** receive minimum representation through this targeted ST sub-categorisation.
- Creamy layer exclusion instead removes relatively advanced individuals from reservation benefits altogether.
- Thus, **sub-categorisation redistributes quotas**, whereas creamy layer exclusion removes individuals from eligibility.
- **Economically Weaker Sections (EWS)** reservation, introduced in 2019, also applies income-based exclusion.
- EWS reservation covers persons outside SC, ST and OBC categories meeting prescribed income and asset limits.



Measures for Equitable SC/ST Reservation

1. Prefer Sub-Categorisation	2. Institutionalise Socio-Economic Audits	3. Address Social and Financial Capital Separately	4. Use Targeted Welfare Measures
- States should use the Davinder Singh judgment to undertake evidence-based SC/ST sub-classification. - Dedicated sub-quotas for the "weakest of the weak" can improve intra-category equity. - This approach preserves the historical and constitutional basis of SC/ST reservation.	- Major changes to identity-based affirmative action should follow a comprehensive socio-economic census. - Policy decisions should rely on empirical evidence of intra-group disparities rather than anecdotal observations.	- Affirmative action should promote representation and dignity, rather than function solely as poverty alleviation. - Capacity-building measures should distinguish inherited privilege from genuine intellectual ability during selection processes. - Interview boards can receive sensitisation to avoid equating urban English fluency with intellectual merit.	- Financial means tests can be applied outside constitutional quotas through targeted welfare programmes. - Scholarships, housing support and financial grants can better reach the poorest marginalised households.

STUDENT'S
NOTES

Why Does the Centre Oppose Creamy Layer for SC/STs?

- **Historical Discrimination, Not Economic Backwardness:** SC/ST disadvantage reflects **historical caste oppression, untouchability, stigma and exclusion**; economic mobility cannot fully eliminate structural discrimination or deficits in **social/cultural capital**.
- **Economic Criteria Cannot Capture Caste Disadvantage:** Unlike OBC backwardness under **Article 340**, SC/ST disadvantage is structurally caste-based; economic advancement alone may therefore dilute the **constitutional purpose of reservation**.
- **Parliamentary Authority:** **Articles 341(2) & 342(2)** give Parliament power to alter SC/ST lists; *Milind (2001)* barred judicial alteration, while *Jarnail Singh (2018)* held creamy-layer exclusion need not alter the lists.
- **Distinct Constitutional Protection:** **Article 16(4A)**, inserted by the **77th Amendment (1995)**, provides for SC/ST **promotional reservation**; applying the OBC creamy-layer doctrine may overlook their distinct constitutional framework.
- **Need for Empirical Evidence:** Creamy-layer identification needs **contemporary, granular intra-group mobility data**; current gaps make exclusion premature, while **Census 2027 caste enumeration** may provide relevant evidence.

Conclusion: The creamy layer debate highlights the tension between **substantive equality and historical justice**. SC/ST reservation primarily advances **adequate representation, social justice and dignity**, not poverty reduction alone. Therefore, **data-driven sub-categorisation** may better ensure equitable reservation benefits than blanket creamy layer exclusion.

Test Your Knowledge	
Prelims Corner With reference to reservation for Scheduled Castes (SCs) and Scheduled Tribes (STs) in India, consider the following statements: 1. Sub-categorisation within a reserved category seeks to distribute the benefits of an existing reservation quota more equitably among groups within that category. 2. Application of the creamy layer principle necessarily involves altering the Presidential lists of SCs and STs under Articles 341 and 342. 3. The constitutional basis of SC/ST reservation is concerned with representation and social justice and is not confined to alleviation of economic deprivation. Which of the statements given above is/are correct? (a) 1 and 2 only (b) 1 and 3 only (c) 2 and 3 only (d) 1, 2 and 3 Answer: (b)	Mains Corner The debate over applying the creamy layer principle to Scheduled Castes (SCs) and Scheduled Tribes (STs) reflects the tension between substantive equality and historical justice. Examine the constitutional and social arguments for and against excluding the relatively advanced sections within SC/STs from reservation benefits. (250 words, 15 marks)

2. GORKHALAND ISSUE

Context: The Ministry of Home Affairs (MHA) held a tripartite meeting with the West Bengal Government and Gorkha community representatives. The Union Government formed a committee led by Pankaj Kumar Singh to finalise a “permanent political solution.”

- **Constitutional Framework:** The committee will examine governance, financial assistance and Scheduled Tribe (ST) status for 11 Gorkha communities.
- The proposed solution will remain within the **Constitution of India**.

STUDENT'S
NOTES



Institutional Interventions

- **Darjeeling Gorkha Hill Council (DGHC), 1988:** Created after the 1980s agitation but lacked independent legislative and adequate financial powers.
- **Gorkhaland Territorial Administration (GTA), 2011:** Replaced DGHC with greater administrative, executive and financial responsibilities.
- **GTA Limitations:** Overlapping jurisdictions, inadequate funds and limited legislative authority restricted effective autonomy.
- **Administrative Control:** State-appointed officials, including the **District Magistrate**, retained substantial control over regional administration.

Challenges in Resolving Gorkhaland

- **Competing Sub-Nationalisms:** Gorkha identity aspirations conflict with West Bengal's concerns over territorial integrity and further bifurcation.
- **Economic Concerns:** Tea-dependent revenues and seasonal tourism may not adequately finance an autonomous administrative arrangement.
- **Sustainable Financing:** Any new structure requires substantial financial support alongside a long-term economic development strategy.



- **Stakeholder Fragmentation:** Rival organisations, including **Gorkha Janmukti Morcha (GJM)** and **Gorkha National Liberation Front (GNLF)**, complicate consensus-building.
- **Defining Autonomy:** Hill leaders differ over acceptable arrangements short of full statehood, making a common political settlement difficult.
- **Strategic Location:** Darjeeling borders **Nepal, Bhutan and Bangladesh** and lies near the strategically crucial **Siliguri Corridor**.
- **National Security:** Instability or major administrative changes near the “**Chicken’s Neck**” could affect connectivity with Northeast India.

Way Forward

- **Constitutional Autonomy:** Extending **Sixth Schedule** protection under **Article 244** could strengthen autonomy, decentralisation and indigenous land rights.
- **Existing Recognition:** Nepali already enjoys constitutional recognition under the **Eighth Schedule through the 71st Constitutional Amendment Act, 1992**.
- **Fiscal Empowerment:** The new arrangement should provide independent revenue powers and direct Central grants, avoiding state-level funding bottlenecks.
- **Economic Revitalisation:** A comprehensive package should modernise tea, promote **eco-tourism and organic farming**, and develop educational hubs.
- **Inclusive Development:** Investments in education, horticulture, tourism and tea reforms can address economic deprivation and youth disillusionment.
- **Targeted Schemes:** **PM-DevINE (Prime Minister’s Development Initiative for North East Region)** and **PRASAD** can support regional development and tourism.

Conclusion: A durable Gorkhaland settlement should deepen constitutional accommodation and cooperative federalism, combining meaningful autonomy with inclusive development, fiscal empowerment and national security to secure lasting peace in the hills.

Test Your Knowledge	
Prelims Corner Consider the following regarding constitutional provisions relevant to the Gorkhaland issue: 1. The Sixth Schedule operates through Article 244. 2. Nepali is included in the Eighth Schedule. 3. Nepali was added to the Eighth Schedule by the 73rd Constitutional Amendment. 4. The Sixth Schedule provides for autonomous governance in specified tribal areas. How many of the above statements are correct? (a) Only one (b) Only two (c) Only three (d) All four Answer: (c) Only three Explanation: Statements 1, 2 and 4 are correct.	Mains Corner Q. “The Gorkhaland issue reflects the complex interplay between sub-regional identity, constitutional autonomy, development deficits and national security.” Examine the challenges in evolving a durable constitutional and politically acceptable solution to the Gorkhaland demand. (15 marks, 250 words)

3. GENDER SENSITIVITY IN JUDICIAL REASONING

Context: The Bombay High Court’s Tarun Tejpal judgment (2026) revived debate over the “perfect victim” myth and gender biases in assessing sexual-assault survivors.

Key Cases Highlighting the Issue

- **Tarun Tejpal Case (2026):** Bombay HC overturned the **2021 acquittal**, awarding **10 years’ rigorous imprisonment** and rejecting the “**perfect victim**” myth, including reliance on post-assault demeanour like smiling on CCTV.
- **Mathura Custodial Rape Case (1979):** Consent was inferred from **absence of resistance/injuries and sexual history**; former CJI **B.R. Gavai (2025)** called it a “**moment of institutional embarrassment**.”
- **Bhanwari Devi Case (1992):** Acquittal relied on **caste-gender stereotypes**; the case catalysed the **Vishakha Guidelines** and subsequently the **POSH Act, 2013**.

- **Jindal Global Law School Case (2017):** Judicial scrutiny of the survivor's alleged "**promiscuous attitude**" demonstrated persistence of **victim stereotypes in sexual-assault adjudication**.

Judicial Gender Sensitivity

- **Supreme Court Initiative (August 2026):** The Supreme Court recommended greater **gender sensitivity in judicial writing** to address systemic stereotypes.
- Judges were cautioned against adverse conclusions based on **delayed First Information Reports (FIRs), absence of physical injuries or inconsistent demeanour**.
- The guidance recognises that **trauma responses vary significantly among individuals**, making stereotypical expectations legally inappropriate.

4. TRANSPARENCY CONCERNS OVER COLLEGIUM SYSTEM

Context: The **Supreme Court** stressed greater openness in the **Collegium process** to strengthen public confidence and preserve **merit-based appointments**.

Collegium System and Constitution

- The Collegium is a **judicially created mechanism**, absent from the Constitution's text, governing Supreme Court and High Court judge appointments and transfers.
- **Article 124(2):** The President appoints Supreme Court judges after **consultation** with Supreme Court and High Court judges.
- **Article 217(1):** The President appoints High Court judges after consulting the **Chief Justice of India (CJI)**, the State Governor and High Court Chief Justice.

Issues with Collegium System

- **Reduced Disclosure:** In **October 2017**, the Supreme Court Collegium began publishing resolutions containing brief reasons for judicial recommendations.
- **Recent Rollback:** Since **November 2024**, resolutions have omitted both decision-making reasons and participating Collegium members' names.
- **Reason for Secrecy:** In **November 2025**, the then-CJI said detailed reasons were withheld to protect unselected candidates' career prospects.
- **No Objective Framework:** No codified system assesses candidates on **legal competence, integrity, judgment quality, disposal rates or social diversity**.
- **Unadvertised Vacancies:** Judicial vacancies are not formally advertised, preventing eligible lawyers from directly applying for consideration.

The Ideal Victim Theory

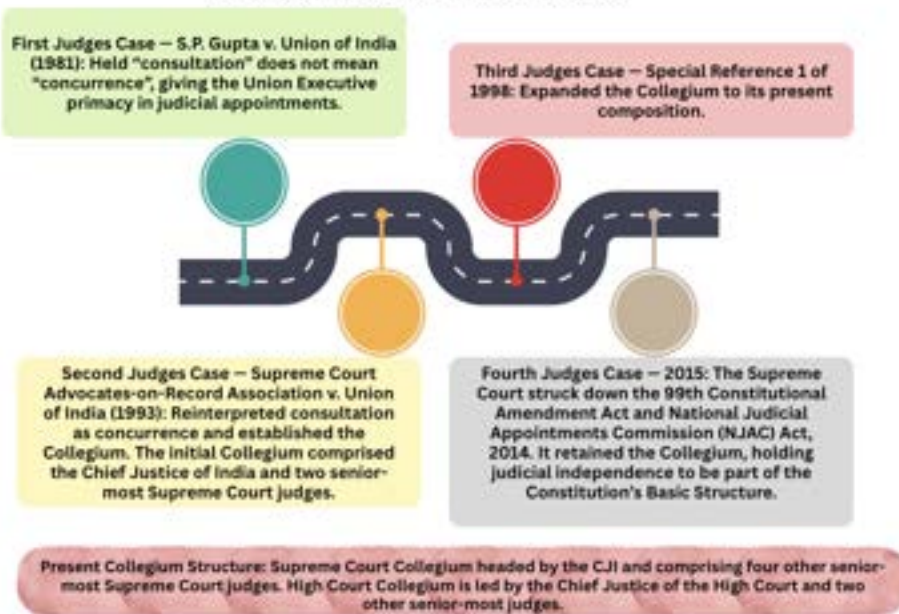


Nils Christie's Ideal Victim Theory (1986): Society tends to sympathise with victims matching stereotypes such as being weak, respectable and unfamiliar with offenders.

Socially Constructed Victimhood: Victimhood becomes a gendered moral status, rather than an objective condition.

Hierarchy of Victims: Gender, caste, class, social status and sexual history can influence perceptions of "deserving" and "undeserving" victims.

Evolution Through the Judges Cases



- **First-Generation Disadvantage:** Closed-door nominations favour established professional networks, disadvantaging **first-generation advocates** lacking institutional connections.
- **Kinship and “Uncle Judges” Concerns:** Limited transparency fuels concerns that relatives of sitting or retired judges receive preferential consideration. Nearly **30% of sitting judges of the SC in 2025, around 10 of 33**, reportedly had familial links with former judges.
- **No Diversity Data:** The current **Memorandum of Procedure (MoP)** does not require disclosure of candidates' demographic information.
- **Audit Deficit:** Without regular audits, monitoring inclusivity and holding institutions accountable remains difficult.

Structural Reforms for the Collegium

- **Pre-Notify Vacancies:** Systematically announce expected vacancies, giving eligible candidates adequate opportunity for consideration.
- **Objective Evaluation Matrix:** Establish measurable criteria covering **expertise, judgments, disposal rates, integrity and social diversity**.
- **Research Secretariat:** Establish a permanent screening body for **background verification and data compilation** before Collegium deliberations.
- **Sanitised Reasoned Decisions:** Publish broad reasons for elevations and rejections while protecting sensitive intelligence and personal information.
- **Revised MoP:** Finalise a clear, rule-based **Memorandum of Procedure** with binding timelines for the judiciary and Union Executive.

Conclusion: A transparent yet confidential appointment framework can reconcile judicial independence with public accountability. Codified criteria, reasoned disclosures and institutional oversight can strengthen constitutional trust and meritocracy.

Test Your Knowledge

Prelims Corner

With reference to the appointment of judges to the higher judiciary in India, consider the following statements:

1. The Collegium system finds explicit mention in the text of the Constitution.
2. Article 124(2) deals with the appointment of judges of the Supreme Court.
3. Article 217 deals with the appointment of judges of High Courts.
4. The President formally appoints judges of the Supreme Court and High Courts.

Which of the statements given above are correct?

(a) 2, 3 and 4 only
(b) 1 and 2 only
(c) 1, 3 and 4 only
(d) 1, 2, 3 and 4

Answer: (a)

Mains Corner

The Collegium system has strengthened judicial independence but remains vulnerable to concerns regarding transparency, objectivity and diversity. Critically examine the major issues and suggest reforms.

(15 marks, 250 words)

5. CENTRAL VIGILANCE COMMISSION ANNUAL REPORT 2025

Context: The **Central Vigilance Commission (CVC) Annual Report 2025** highlighted severe **investigative and judicial backlogs**, with over **7,200 corruption cases** probed by the **Central Bureau of Investigation (CBI)** under the **Prevention of Corruption Act, 1988** still pending trial.

- Hundreds of these cases have remained unresolved for **more than two decades**, weakening the deterrence against corruption.

Key Findings of the CVC Annual Report 2025

- **Judicial and Investigative Bottlenecks:** Pending appeals, writ petitions and revisions in High Courts and the Supreme Court delay final outcomes, while pending approvals under **Section 17A of the Prevention of Corruption Act, 1988** can delay investigations against public servants; Section 17A requires prior government approval for inquiries into official decisions or recommendations.
- **CBI Capacity Constraints:** The **CBI's conviction rate** improved from **69.14% in 2024 to 71.71% in 2025**, but the agency faces **1,088 vacancies** against 7,300 sanctioned posts, including

672 executive vacancies, while complex disproportionate asset cases and delays in Letters Rogatory (LRs) hinder investigations and international evidence collection.

- **CVC's Administrative Oversight:** The CVC continues complaint disposal and first-stage advice, with several cases leading to major penalty proceedings, thereby complementing criminal prosecution through stronger disciplinary accountability.

Way Forward

- **Fill CBI vacancies** and establish adequately staffed **special courts** for faster corruption trials.
- Ensure **time-bound Section 17A approvals** to prevent investigative delays.
- Strengthen **financial investigations through technology** and improve international evidence collection.
- Protect **institutional autonomy and whistleblowers** to restore the deterrent effectiveness of anti-corruption institutions and the rule of law.

6. ARTICLE 142 OF THE CONSTITUTION

Context: The Supreme Court of India (SC) invoked Article 142 to quash **First Information Reports (FIRs)** against participants in nationwide examination protests led by the Cockroach Janta Party (CJP).

Important Uses of Article 142

- **Frequent Use:** An IIM Ahmedabad study recorded 1,579 references and 791 direct invocations between 1950–2023, mainly in civil matters.
- **Bhopal Gas Tragedy (1989):** In *Union Carbide Corporation v. Union of India*, SC approved a USD 470-million settlement and quashed criminal proceedings.
- **Vishaka Guidelines (1997):** In *Vishaka v. State of Rajasthan*, SC framed workplace sexual-harassment guidelines pending legislation.
- **PoSH Act:** The **Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013** later replaced the Vishaka framework.
- **Ayodhya Dispute (2019):** SC resolved the title dispute using **preponderance of probability** and ordered **five acres for Sunni Waqf Board**.
- **A.G. Perarivalan Case (2022):** SC invoked Article 142 to order the release of **convict A.G. Perarivalan**.
- **Matrimonial Cases:** SC regularly grants divorce for **irretrievable breakdown**, bypassing statutory waiting periods, and uses Article 142 in **Public Interest Litigations (PILs)**.

Concerns over Article 142

- **Bypassing Statutory Procedure:** Thousands of CJP FIRs were clubbed and quashed without individual scrutiny under Article 142.
- **BNSS Safeguard:** Normally, **Section 528 of Bharatiya Nagarik Suraksha Sanhita (BNSS), 2023** requires individual FIR assessment to determine whether an offence exists.



- **Convenience vs Procedure:** Using Article 142 merely for convenience may **supplant legislative procedure**, rather than supplementing statutory law.
- **Unfettered Discretion:** The undefined meaning of “**complete justice**” gives the Supreme Court (SC) wide and potentially unchecked discretion.
- **Bench-Dependent Outcomes:** With **38 judges largely sitting in two-judge Division Benches**, outcomes may reflect individual judicial philosophies over institutional consistency.
- **Judicial Overreach:** Intervening in **legislative or executive domains** may undermine **separation of powers**, a **basic-structure principle**.
- **Highway Liquor Ban:** SC used Article 142 to ban liquor shops within **500 metres of National Highways**, extending restrictions to State Highways.
- **Activism vs Restraint:** Such interventions raise concerns about Article 142's discretion and the balance between **judicial activism and judicial restraint**.
- **Weak External Checks:** Article 142's safeguards are **self-imposed**; no external institution can enforce them if benches disregard constitutional precedents.



Way Forward

- **Larger Benches:** Restrict Article 142 invocation to **Constitution Benches of at least five judges**, ensuring collective wisdom and consistency.
- **Reasoned Orders:** Every invocation should explain the **statutory gap, necessity and proportionality** justifying Article 142 intervention.
- **Follow Precedent:** Institutionalise **Supreme Court Bar Association** principles, using Article 142 only as a **last-resort curative power**, never a procedural shortcut.

Conclusion: Article 142 remains vital for delivering **constitutional justice**, but its future use must balance judicial flexibility with institutional restraint, procedural fairness and separation of powers.

7. GRAM SABHA CONSENT AND FOREST CLEARANCE

Context: The Union Ministry of Tribal Affairs (MoTA) told the Ministry of Power that the Forest Rights Act (FRA), 2006 does not require Gram Sabha consent for Stage-II forest clearance.

- MoTA also stated that such matters fall outside its purview, raising concerns over **tribal rights and Gram Sabha consent** for infrastructure projects.

Concerns Over Gram Sabha Consent

- **Forest-Clearance Bottleneck:** **100% Gram Sabha consent** has emerged as a major bottleneck: NHPC projects face **106-month average forest-clearance delays** vs **7.2 months for environmental clearance**; **Teesta-IV HEP** remains stalled after 3 Gram Panchayats withheld consent.



- **Proposed 70–75% Consent Threshold:** A Parliamentary Committee proposed exploring **70–75% consent** for affected Gram Sabhas in nationally important large hydropower projects, drawing on **Brazil, Australia and New Zealand**; **Ministry of Power–MoTA** consultations are underway.

Concerns Over MoTA's Gram Sabha Consent Stance

- **Weakening Nodal Accountability:** MoTA's disengagement from consent processes may be legally untenable and weaken central institutional safeguards for vulnerable forest-dependent and indigenous communities.
- **Constitutional and Judicial Concerns:** The stance may undermine the spirit of the **Fifth and Sixth Schedules and PESA 1996**, nearly two decades of administrative precedent, and the **2013 Niyamgiri judgment** affirming Gram Sabha's statutory role in protecting customary and ecological rights.
- **Threat to Grassroots Democracy:** Reducing consent requirements from **100% to 70–75%** could marginalise severely affected minority hamlets, allowing less-affected villages to override communities facing loss of sacred groves or ancestral lands.
- **Risk of Social Conflict:** Diluted or uninformed consent could increase involuntary displacement, inadequate rehabilitation, protests and civil unrest in resource-rich tribal regions.



Conclusion: India must balance **development with community rights** through transparent clearances, meaningful participation, effective coordination and robust grievance redressal, ensuring **inclusive and constitutionally grounded governance**.

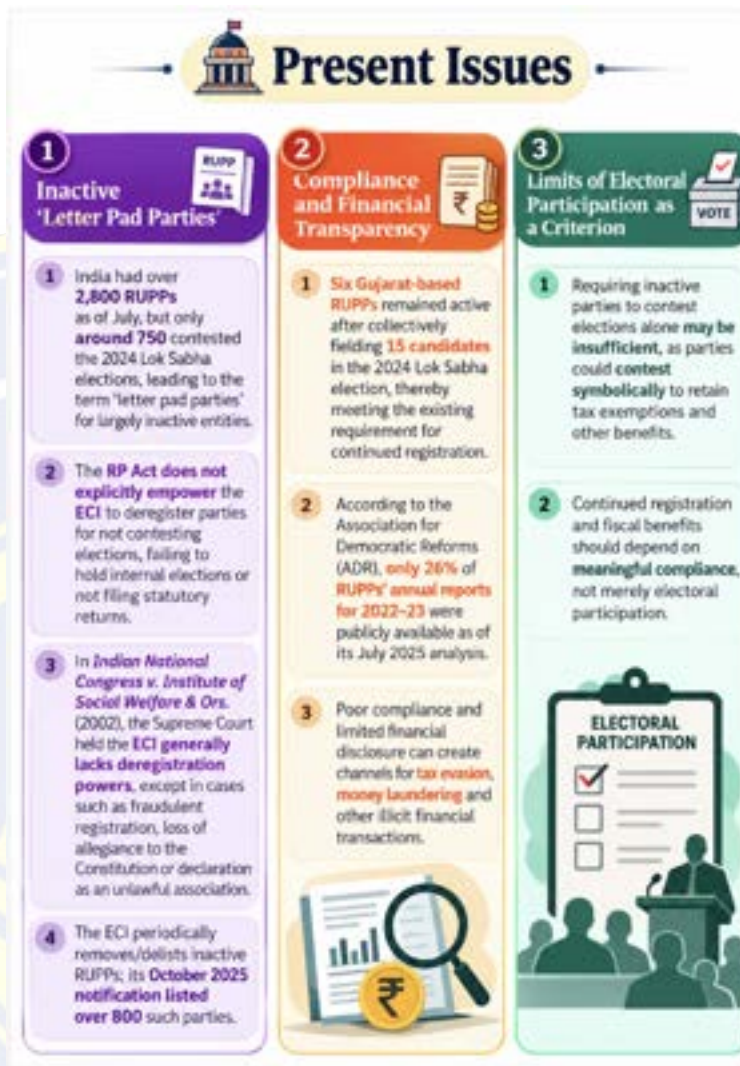
8. CONCERNS REGARDING POPULATION ENUMERATION OF CENSUS 2027

Context: The Office of the Registrar General & Census Commissioner, India (ORGI) notified a 40-question Population Enumeration schedule for Census 2027's second phase.

- This marks an increase from **29 questions in Census 2011**, with several new personal and demographic information fields.

Concerns Over Census 2027

- **Population & Citizenship Profiling:** Collecting parents' birth details, nationality and multiple identity numbers may shift the Census from statistical enumeration towards population/citizenship profiling, potentially facilitating an NRC.
- **Confidentiality & Data Use:** Though the Census Act, 1948 and UN statistical principles mandate confidentiality, linking Census data with NPR/administrative databases may weaken purpose limitation and exclusive statistical use.
- **Caste Data Reliability:** Open-ended caste enumeration beyond SC/ST could generate millions of variant or unclassified entries, as seen in SECC 2011, unless robust standardisation is ensured.
- **Privacy & Cybersecurity Risks:** Digitisation/self-enumeration combined with Aadhaar, Voter ID and passport details could enable linkable profiles, increasing risks of breaches, unauthorised access, de-anonymisation and surveillance.
- **Respondent Burden & Accuracy:** The 40-question questionnaire may increase respondent fatigue and inaccurate reporting, especially in institutional households where residents may lack others' parental or identity details.
- **Migrant Undercounting:** De facto enumeration may undercount migrant workers temporarily away from their usual residence during the Census enumeration period.



Measures Needed to Ensure Census Integrity

- **Standardise Caste Enumeration:** Use a consultative, standardised caste list or structured drop-down menu to minimise fragmented, duplicate and unusable caste responses.
- **Restrict Non-Statistical Information:** Exclude unnecessary administrative identifiers such as Aadhaar, passport and bank-account numbers, using simple Yes/No responses where aggregate information is sufficient.
- **Improve Data Verification:** Conduct a robust Post Enumeration Survey (PES) to identify undercounting, omissions and inaccurate responses, thereby improving Census reliability.
- **Separate Census from National Population Register (NPR) and National Register of Citizens (NRC):** Establish clear legal and administrative firewalls to prevent Census data from being used for citizenship profiling or administrative tracking.
- **Strengthen Digital Data Protection:** Align the digital Census with the Digital Personal Data Protection (DPDP) Act, 2023 through end-to-end encryption, strict access controls, independent security audits and safeguards against unauthorised data linking.

Conclusion: Public trust is central to Census integrity; limited data collection, demographic neutrality and strong privacy safeguards can ensure reliable statistics and strengthen evidence-based policymaking.

9. REGULATION OF REGISTERED UNRECOGNISED POLITICAL PARTIES (RUPPS)

Context: A BBC News Hindi investigation found that six Gujarat-based **Registered Unrecognised Political Parties (RUPPs)** received around **₹1,700 crore in donations in 2023–24**, exceeding the ₹1,480 crore received collectively by five nationally recognised parties other than the **Bharatiya Janata Party**.

STUDENT'S
NOTES

Registration and Benefits of RUPPs

- Under **Section 29A of the Representation of the People Act, 1951 (RP Act)**, citizens can form political parties and seek registration with the **Election Commission of India (ECI)** after fulfilling prescribed requirements.
- Registered parties receive **income-tax exemption on eligible donations**, a **common symbol** for Lok Sabha/State Assembly elections and can nominate up to **20 star campaigners**.
- RUPPs must disclose individual donors contributing over **₹20,000 in a financial year**; failure to disclose results in loss of income-tax exemption.
- Under the **Income Tax Act, 2025**, donations exceeding **₹2,000** must be received through cheque or banking channels.



Way Forward

- **Strengthen ECI powers:** Provide statutory authority for deregistration based on **prolonged inactivity and persistent non-compliance**, with safeguards against arbitrary action.
- **Improve financial transparency:** Enforce annual reporting and donor-disclosure requirements with stronger consequences for violations.
- **Integrate financial oversight:** Combine deregistration with the **Income Tax Department and enforcement-agency monitoring** of suspicious financial transactions.
- **Adopt proportionate eligibility:** Consider a reasonable **vote-share threshold** for tax benefits instead of making seat victory the sole criterion.
- **Address prolonged inactivity:** Develop a mechanism for deregistration after prolonged non-participation, consistent with the **Law Commission's 10-year recommendation**.
- **Protect political pluralism:** Distinguish genuinely inactive/non-compliant parties from **legitimate emerging parties** that contest elections without immediately winning seats.

Conclusion: Proportionate deregistration, financial transparency, digital oversight and electoral-support-based benefits can strengthen **electoral integrity while preserving democratic competition**.

Test Your Knowledge	
Prelims Corner Consider the following benefits associated with registration of a political party in India: 1. Income-tax exemption on eligible donations 2. Allotment of a common election symbol 3. Permission to nominate up to 20 star campaigners 4. Automatic recognition as a State or National Party How many of the above are benefits available to a Registered Unrecognised Political Party (RUPP)? (a) Only one (b) Only two (c) Only three (d) All four Answer: (c) Only three Explanation: RUPPs can receive the first three benefits subject to applicable conditions. Registration as an RUPP does not automatically confer recognition as a State or National Party.	Mains Corner Q. Registered Unrecognised Political Parties (RUPPs) are essential to political pluralism but can also pose challenges to electoral and financial transparency. Discuss the need for a balanced regulatory framework for RUPPs in India. (15 marks, 250 words)

10. POINTERS FOR PRELIMS

10.1. SUPREME COURT EASES 3-YEAR PRACTICE RULE FOR JUDICIAL SERVICES

Context: Transitional Relief (20 May 2025–31 March 2027) – Fresh law graduates may appear without prior practice and are deemed to have 1 year's practice without certification.

- **Trainee Judicial Officer:** Selected candidates begin as **Trainee Judicial Officers**, receiving **50% of Judicial Magistrate First Class (JMFC) remuneration** during training.
- **Academy Training as Practice:** 1 year of intensive State Judicial Academy training counts as 1 year of Bar practice.
- **Supervised Clerkship:** 1-year judicial clerkship—6 months each under a **District/Sessions Judge and sitting High Court Judge**—counts as another practice year.
- **Regular Appointment:** Regular status, salary and service benefits follow only after satisfactory completion and evaluation of the **2-year academy + clerkship programme**.
- **Permanent Rule from 1 April 2027:** Civil Judge (Junior Division) candidates must possess **1 year of actual, certified practice in effective court proceedings**.
- **Implementation & Review:** High Courts/State Governments must amend rules within **3 months**; the scheme operates for **5 years**, followed by **empirical-data-based review**.

10.2. PATERNITY TEST IN MATRIMONIAL DISPUTES

Context: The **Supreme Court**, in a matrimonial dispute involving unchastity allegations and disputed paternity, upheld orders directing the child's DNA test.

Legitimacy and Paternity Testing

- **Legal Presumption:** Section 116 of the **Bharatiya Sakshya Adhiniyam (BSA), 2023** conclusively presumes legitimacy for children born during valid marriage.
- This presumption also applies when a child is born within **280 days after marriage dissolution**, if the mother remains unmarried.
- **Earlier Provision:** Section 116 of the **BSA, 2023** corresponds to **Section 112 of the Indian Evidence Act, 1872**.
- **DNA Testing Rule:** Courts cannot order DNA tests merely because paternity is disputed; exceptional necessity and inadequate alternative evidence are required.

10.3. DISTINGUISHED JURIST AS A SUPREME COURT JUDGE

Context: A Supreme Court judge highlighted the Constitution's unused "distinguished jurist" provision. After over 76 years, no legal academic or jurist has been appointed to the Supreme Court through this provision.

Constitutional Provision for a Distinguished Jurist

Article 124(3) specifies three eligibility routes for appointment as a Supreme Court judge.

- The person must be an **Indian citizen** and satisfy **any one** of these conditions:
Served as a **High Court judge for at**

least five years. || Practised as a **High Court advocate for at least ten years.** || Is considered a “**distinguished jurist**” by the **President of India**.

- While judicial and advocacy routes are regularly used, the **distinguished jurist route remains completely unused**.
- **Article 217** originally contained **no distinguished-jurist provision** for High Court appointments.
- The **42nd Constitutional Amendment Act, 1976**, introduced this provision during the **Emergency**.
- The **44th Constitutional Amendment Act, 1978**, later repealed it while reversing Emergency-era changes.

10.4. CENSUS 2027: CASTE ENUMERATION

Caste Enumeration: During Census 2027's **Population Enumeration (PE)**, non-SC/ST respondents will likely report caste through an **open-ended column**.

- **Methodology Pre-Test:** Caste enumeration methodology was pre-tested during **1–20 July 2026** across **16 States/UTs**.
- **Early Enumeration:** **Ladakh and snow-bound areas** will be enumerated **1–30 September 2026**, with revision during **1–5 October 2026**.
- **Areas Covered:** Early enumeration also covers designated snow-bound areas of **Jammu & Kashmir, Himachal Pradesh and Uttarakhand**.
- **Digital Census:** Census 2027 will be India's **first digital Census**; sensitive defence establishments along the **LAC in Ladakh** will use paper schedules.

10.5. RIGHTS OF ACCUSED TO ACCESS AN FIR

Context: The Supreme Court reaffirmed **Youth Bar Association of India v. Union of India (2016)**, emphasising timely **FIR access** as part of a fair trial.

- **BNSS Gap:** **Section 173(2), BNSS 2023** requires **FIR copies** for the **informant/victim**, but does not expressly mandate immediate supply to the accused.
- **Accused's Right:** Under **Section 230, BNSS**, the **Magistrate must furnish the accused** the **FIR and relevant documents**

after cognisance, at the prescribed procedural stage.

2016 Guidelines on FIR Access

- **Online Publication:** FIRs should generally be uploaded on police websites within **24 hours**, extendable to **48–72 hours** for geographical/connectivity constraints.
- **Certified Copies:** Accused persons/representatives can obtain certified FIR copies from police within **24 hours** or the jurisdictional Magistrate within **2 working days**.
- **Exempted FIRs:** FIRs involving **sexual offences, POCSO and terrorism** are exempt from mandatory online publication to protect privacy.
- **Reasoned Withholding:** A **DSP-rank or above officer** must record reasons for withholding an FIR from online publication.
- **Magistrate Access:** Even exempt FIRs must be supplied by the **Magistrate within 3 days of application**.

10.6. PROPOSED ARTICLE 371(K) FOR LADAKH

Context: The **Ministry of Home Affairs (MHA)** has proposed a new **Chapter K under Article 371**, Part XXI, creating a customized (*sui generis*) governance model for Ladakh. The proposal would provide the **Union Territory (UT)** with an elected legislative body having direct representation.

Powers of the Proposed Body

- The proposed UT-level body would legislate on **land, culture, language, forests, environment and natural resources**.
- It would also exercise other legislative powers available to Union Territories under **Article 240**.
- After **Article 370 was abrogated in 2019**, the **Jammu and Kashmir Reorganisation Act, 2019** created Ladakh as a UT without a legislative assembly.
- Bureaucratic administration and altered domicile rules intensified concerns over **land, employment, demography and cultural identity**.
- These concerns strengthened demands for **statehood and tribal safeguards through Sixth Schedule inclusion**.

- Article 371(K) versus Sixth Schedule: The **Sixth Schedule under Article 244** governs tribal areas in **Assam, Meghalaya, Mizoram and Tripura**. Instead, Article 371(K) proposes a distinct **UT-level framework** rather than extending the Sixth Schedule's ADC model.

10.7. KISHAU MULTIPURPOSE PROJECT

Context: Six Yamuna-basin States/UTs - Uttarakhand, Himachal Pradesh, Uttar Pradesh, Haryana, Rajasthan and Delhi — signed an MoU to resolve long-pending issues and advance the Kishau Project.

- Kishau Project:** Multipurpose dam on the Tons River, a major tributary of the Yamuna, on the Uttarakhand–Himachal Pradesh border.
- Delhi:** Biggest beneficiary;
- Environmental flow:** **25% of project water** earmarked for maintaining Yamuna's environmental flow.
- Funding:** As a **National Project**, Centre funds **90% of the water component**; remaining 10% is shared by basin States under the 1994 framework.
- Power component dispute:** Himachal Pradesh had objected to its financial liability; downstream beneficiaries agreed to bear it, with **Delhi: Rajasthan sharing the cost in 75:25 ratio**.
- 1994 Yamuna Water Agreement:** Signed among the then **Yamuna-basin States**: Himachal Pradesh, Haryana, Rajasthan, Uttar Pradesh and Delhi.
- Agreement envisaged three major storage projects:** **Lakhwar:** Yamuna River, Uttarakhand; **Renukaji:** Giri River, Himachal Pradesh; **Kishau:** Tons River, Uttarakhand–Himachal Pradesh border.

10.9. DEFINITION OF CENSUS TOWN

Context: The **Ministry of Housing and Urban Affairs (MoHUA)** has told a parliamentary panel that the **four-decade-old Census Town criteria** no longer adequately capture India's urbanisation, calling for more modern and data-driven classification methods.

- Census Town:** Under the **1981 Census framework**, a Census Town must satisfy all three conditions: **minimum population of 5,000**, at least **75% of the male working population engaged in non-agricultural activities**, and **population density of at least 400 persons per sq. km**.
- Urbanisation Data Gap:** The **Census 2011** recorded India's urban population at **31.2%**, while the **Economic Advisory Council to the Prime Minister (EAC-PM)** estimated using satellite data that actual urbanisation could have reached **63% in 2015**, indicating significant under-recognition of urban settlements.
- Registrar General of India (RGI) Position:** The **RGI** considers changing the framework for **Census 2027** impractical because field deployment and enumeration blocks have already been finalised; however, **future digital censuses** could consider revised parameters.
- Parliamentary Panel Recommendation:** The **Parliamentary Standing Committee on Housing and Urban Affairs** deferred adoption of its draft report and called for **wider consultations to develop updated Census Town criteria** for future census exercises.

Concerns with Existing Criteria

- Rigid Thresholds:** Uniform national thresholds may disadvantage **hilly and North-Eastern States** with different settlement patterns.
- Male-Centric Measure:** Reliance on the **male working population** excludes female workforce participation from the classification.
- Density Measurement:** Calculating density using **administrative boundaries instead of built-up areas** can produce inaccurate classifications.
- Rural-Urban Binary:** The framework fails to adequately capture **peri-urban growth corridors and regional economic diversity**.

INTERNATIONAL RELATIONS

STUDENT'S
NOTES

1. 18TH BRICS SUMMIT 2026: NEW DELHI DECLARATION

Context: India hosted the 18th BRICS Summit 2026 in New Delhi, its fourth Chairship, under “Building for Resilience, Innovation, Cooperation and Sustainability.” The summit unanimously adopted the **New Delhi Declaration**, emphasising multilateralism, conflict prevention and equitable global governance.



BRICS Evolution and Expanding Global South Representation

- **Origins:** Goldman Sachs coined **BRIC** in **2001**; it became political in 2006, held its first summit in **Yekaterinburg (2009)**, and added South Africa in **2010**.
- **Current Membership:** BRICS has **11 full members**, representing **49.5% of global population**, **40% of global GDP** and **26% of global trade**.
- **Partner Countries:** In **2025**, **10 countries**, including Belarus, Malaysia, Nigeria, Thailand and Vietnam, became Partner Countries.
- The Partner Country framework expands **South-South cooperation** while retaining the grouping's core structure.
- **Global Governance:** BRICS seeks greater representation and equity within the **International Monetary Fund (IMF)**, **World Bank** and **World Trade Organisation (WTO)**.
- The grouping also challenges **protectionism** through stronger coordination among emerging economies.
- **Presidency Rotation:** Traditionally, BRICS leadership rotates annually from **January 1** according to the acronym.
- Rapid expansion has prompted members to deliberate a **new presidency rotation formula**.

Conclusion: India's 2026 Chairship aims to convert BRICS' expanding representation into **consensus-driven cooperation, practical outcomes and a more resilient global order**.



1.2. INDIA'S BRICS REFORM ROADMAP

Context: At the 18th BRICS Summit in New Delhi (September 2026), India proposed 10 global governance reforms to be developed into a BRICS Reform Roadmap by the 2027 summit; the United

Nations (UN) Secretary-General highlighted distorted global power relations and the resulting concerns over the functioning of the United Nations Security Council (UNSC).

Core Objective: India seeks to make global governance **more representative, responsive and inclusive**, strengthening the **Global South's voice** while addressing gaps in **UNSC representation, financial governance, World Trade Organization (WTO) functioning and emerging-technology rule-making**.

Major Proposals

- From Rule-Takers to Rule-Shapers: India proposed replacing the global governance “pyramid of privilege” with a “platform of partnership”, arguing that despite bearing the brunt of global crises, the **Global South remains underrepresented** in major decision-making institutions; BRICS seeks reforms through **dialogue, consensus and cooperation**, rather than operating as an anti-country or counter-bloc grouping.
- The Three-R Framework: The 10 proposals are organised around **Representation, Responsiveness and Rule-making** (refer infographic)
- Ensuring BRICS Policy Continuity: India proposed a formal continuity mechanism using the **BRICS Troika**—the **current, previous and incoming chairs**—along with a **secure digital repository** to track **initiatives, deadlines and implementation progress** despite annual changes in the BRICS Presidency.

Significance

- Greater Global South Representation:** Expanded **11-member BRICS**, accounting for **~40% of global Gross Domestic Product (GDP)** and nearly **half the world's population**, can amplify Global South interests in global policymaking.
- Future-Ready Governance:** The roadmap extends reform beyond traditional institutions like the **United Nations (UN)** to **Artificial Intelligence (AI) and cyberspace**, enabling developing countries to shape emerging global rules.
- From Criticism to Alternatives:** As BRICS marks its **20th anniversary**, the roadmap signals a shift from criticising Western-led structures towards **institutionalised, constructive alternatives** for more equitable global governance.





Way Forward

- **Time-Bound UNSC Reform:** UNGA should make the IGN process time-bound and text-based, addressing both permanent and non-permanent UNSC membership.
- **Financial Governance Reform:** Align IMF/World Bank quotas with current GDP and purchasing power, while making leadership selection transparent and merit-based.
- **Revive WTO Dispute Settlement:** Resolve the Appellate Body appointment deadlock to restore the two-tier dispute system, while retaining S&DT for developing economies.
- **Global South Convergence:** BRICS, AU and G20 should coordinate on institutional reform, climate justice and equitable trade to strengthen developing-country representation.
- **Frontier Technology Governance:** Strengthen BRICS technology diplomacy to develop UN-backed frameworks for AI, outer space and critical minerals, enabling the Global South to participate in global norm-setting.

Conclusion: The BRICS Reform Roadmap seeks a **representative, inclusive and responsive global order**, strengthening Global South participation in rule-making while replacing inherited privilege with cooperative, equitable partnership.

Test Your Knowledge	
Prelims Corner With reference to the BRICS Troika, consider the following statements: 1. It consists of the current, previous and incoming BRICS Chairs. 2. It is intended to provide continuity despite annual changes in the BRICS Presidency. 3. India proposed using a secure digital repository alongside the Troika to track initiatives and implementation progress. Which of the statements given above is/are correct? (a) 1 only (b) 1 and 2 only (c) 2 and 3 only (d) 1, 2 and 3 Answer: (d)	Mains Corner Q. The BRICS Reform Roadmap reflects an attempt to make global governance more representative, responsive and inclusive. Discuss the key reforms proposed by India and examine their significance for the Global South. (15 marks, 250 words)

1.3. CHINA'S OPEN-SOURCE AI STRATEGY

Context: At the 18th BRICS Summit in New Delhi (September 2026), China proposed a **BRICS open-source Artificial Intelligence (AI) community**, presenting strategic choices for India's **digital autonomy**.

China's Open-Source AI Approach

- **Building a BRICS AI Ecosystem:** China proposed leading a **BRICS open-source AI community** with shared **Large Language Models (LLMs)** and a common **digital ecosystem cloud platform**, expanding Chinese technological influence.

• **Shifting from Chips to Software:** While the **United States (US)** leads in advanced AI chips and proprietary models, semiconductor export restrictions encourage China to expand influence at the **software layer** through open-source AI across the **Global South**.



- **Open-Weight Models as a Global Strategy:** Chinese firms such as **Alibaba** offer models like **Qwen** at no cost, enabling developers to **download, modify and build applications** around them.
- **Replicating the Android Model:** Free distribution of open-weight models such as **DeepSeek** and **Qwen** could replicate the **Android-style ecosystem**, making Chinese AI architectures foundational platforms for cost-sensitive developing economies.

Challenges to India's AI Sovereignty

- **Infrastructure Expansion and Investment Gap:** India's data-centre capacity is **1.6 GW (mid-2026)** and may reach **~6 GW by 2029**, requiring nearly **USD 110 billion** investment.
- **High Resource Intensity:** Advanced **Artificial Intelligence (AI) Graphics Processing Units (GPUs)** require substantial **electricity and cooling**. Indian data centres consume nearly **150**

billion litres of water and 0.5% of national electricity annually, both expected to more than double by 2030.

- **Geographic Concentration of Data Centres:** Mumbai hosts up to 50% of India's data-centre capacity, creating potential latency and access constraints for AI applications in Tier-2 and Tier-3 cities.
- **Heavy Semiconductor Import Dependence:** India imports ~90–95% of semiconductors, exposing its AI ecosystem to geopolitical disruptions, including instability around the Taiwan Strait.
- **Limited Advanced Chip Manufacturing:** The India Semiconductor Mission (ISM) has attracted USD 20+ billion, but facilities mainly target 28–110 nanometre (nm) nodes and packaging.
- **Cross-Border Data Transfer Uncertainty:** The Digital Personal Data Protection (DPDP) Act, 2023 follows a negative-list approach to international data transfers, unlike the European Union's (EU) General Data Protection Regulation (GDPR) adequacy framework, potentially creating investment uncertainty.

Measures to Strengthen AI Sovereignty

- **Scale the IndiaAI Mission:** Accelerate sovereign foundational models trained on diverse Indian datasets, reflecting linguistic and cultural diversity through initiatives such as Bhashini.
- **Build Domestic Compute Capacity:** Expand public-private partnerships, domestic GPU clusters and AI supercomputers to reduce dependence on foreign cloud infrastructure.
- **Extend Digital Public Infrastructure to AI:** Adapt India's Digital Public Infrastructure (DPI) model, including Unified Payments Interface (UPI), to develop secure, transparent and indigenous open-source AI as a public good.
- **Secure Global Technology Supply Chains:** Diversify semiconductor and technology supply chains through partnerships such as the United States (US)-India Initiative on Critical and Emerging Technology (iCET) and Quad Semiconductor Supply Chain Initiative.
- **Shape Inclusive Global AI Rules:** Use platforms such as G20 and Global Partnership on Artificial Intelligence (GPAI) to promote multi-stakeholder governance, balancing AI safety with innovation and Global South opportunities.
- **Build AI Skills from the Grassroots:** Strengthen computational thinking and AI ethics under National Education Policy (NEP) 2020 and upgrade Atal Tinkering Labs (ATLs) into AI-tinkering hubs.

Conclusion: India's AI future lies in technological self-reliance without isolation. By investing in indigenous compute, open innovation and trusted AI governance, India can secure digital sovereignty while contributing to an inclusive global AI ecosystem.

Test Your Knowledge	
 Prelims Corner With reference to open-weight Artificial Intelligence (AI) models, consider the following statements: 1. Users can download such models. 2. Such models can permit modification by developers. 3. They can enable developers to build applications around the underlying models. 4. Their distribution necessarily requires users to purchase proprietary cloud infrastructure from the model provider. Which of the statements given above is/are correct? (a) 1 and 2 only (b) 1, 2 and 3 only (c) 2, 3 and 4 only (d) 1, 2, 3 and 4 Answer: (b)	 Mains Corner Q. China's open-source Artificial Intelligence (AI) strategy presents both opportunities for affordable AI adoption and challenges to India's technological sovereignty. Examine. (15 marks, 250 words)

2. INDIA–JAPAN MARITIME SECURITY COOPERATION

Context: India and Japan signed a Memorandum of Arrangement (MoA) on Maritime Security Cooperation during Defence Ministers' talks in New Delhi. The pact aims to deepen defence cooperation and maritime security coordination.

Key Areas of Cooperation

- **Naval Cooperation:** Indian Navy–JMSDF partnership on MDA, SAR and HADR, strengthening maritime security cooperation.
- **Securing SLOCs:** Naval visits, joint exercises, personnel exchanges, port access, logistics and repair facilities will strengthen Sea Lines of Communication (SLOCs).
- **Shipbuilding & Repairs:** Explore joint shipbuilding/design, combining Japanese technology with Indian manufacturing; reciprocal repairs will promote **Indian shipyards under Make in India**.
- **Military Exercises:** Expand **Dharma Guardian** and **JAIMEX**; **Veer Guardian 26** will feature Japanese fighter aircraft in India, alongside more complex, short-notice and **unmanned-system** drills.
- **Defence Technology:** **DRDO–ATLA** cooperation will expand advanced technologies, supported by a **Defence Industry Forum** for industrial collaboration.
- **UNICORN Project:** **UNICORN integrated communications antenna system** is the first India–Japan **defence equipment transfer project**, signalling deeper defence-industrial ties.
- **Special Forces & Theatre Commands:** Strengthen **Special Operations Forces** exchanges, with potential cooperation involving India's **integrated theatre commands**.
- **Free & Open Indo-Pacific:** Both support a **free and open Indo-Pacific**, oppose coercive status-quo changes, and will expand **third-country cooperation** through exercises and the **Indo-Pacific Logistics Network**.
- **Institutional Mechanism:** **DG/Joint Secretary-level Working Group** will coordinate operational, intelligence, equipment, technology and industrial cooperation; preparations for the **4th India–Japan 2+2 Dialogue** will accelerate.

**Challenges in India–Japan Relationship**

- **China Factor:** India prioritises continental threats, while Japan focuses on East China Sea, creating differing strategic threat perceptions.
- **Defence Technology Transfer:** Japan's stringent export controls and pacifist legacy can constrain transfer of sensitive defence technologies to India.
- **Defence Procurement Delays:** The **US-2 amphibious aircraft** negotiations highlight persistent challenges involving cost, technology transfer and procurement complexities.
- **Infrastructure Project Delays:** **Mumbai–Ahmedabad High-Speed Rail** demonstrates challenges involving land acquisition, environmental clearances and prolonged project execution.
- **Strategic Autonomy Tensions:** India's defence engagement with Russia occasionally creates friction with Japan's preference for stronger **Indo-Pacific** strategic alignment.

Way Forward

- **Operationalise Maritime Domain Awareness (MDA):** Integrate Indian-Japanese maritime surveillance through the **Information Fusion Centre–Indian Ocean Region (IFC-IOR)** for real-time Sea Lines of Communication monitoring.
- **Accelerate UNICORN:** Complete technology transfer and indigenous production of **Unified Complex Radio Antenna (UNICORN)**, establishing a template for future defence-industrial cooperation.
- **Deepen Defence Co-production:** Shift from buyer-seller arrangements towards joint design, production and export of niche naval platforms.

- **Institutionalise Quad Synergy:** Align bilateral maritime initiatives with **Quadrilateral Security Dialogue (Quad) Indo-Pacific Maritime Domain Awareness (IPMDA)**, strengthening regional surveillance capabilities.
- **Expand Third-Country Partnerships:** Scale joint capacity-building with **Association of Southeast Asian Nations (ASEAN)** and Indian Ocean states, particularly in coast guard and maritime-security capabilities.

Conclusion: India–Japan maritime cooperation can evolve from strategic convergence to **operational synergy**, building resilient sea lanes, advanced defence capabilities and a **secure, rules-based Indo-Pacific** for shared prosperity.

Test Your Knowledge

Prelims Corner	Mains Corner
Q. Consider the following pairs in the context of India–Japan defence cooperation: 1. UNICORN – Defence equipment transfer and integrated communications capability 2. Dharma Guardian – India–Japan military exercise 3. Indo-Pacific Logistics Network – Cooperation involving logistics and connectivity among partners 4. 2+2 Dialogue – Coordination exclusively between the two countries' armed forces How many of the above pairs are correctly matched? (a) Only one (b) Only two (c) Only three (d) All four Answer: (c)	Q. "India–Japan maritime security cooperation is evolving from bilateral naval engagement towards broader defence-industrial and Indo-Pacific strategic cooperation." Examine its significance for India's maritime security and strategic interests in the Indo-Pacific. (250 words, 15 marks)

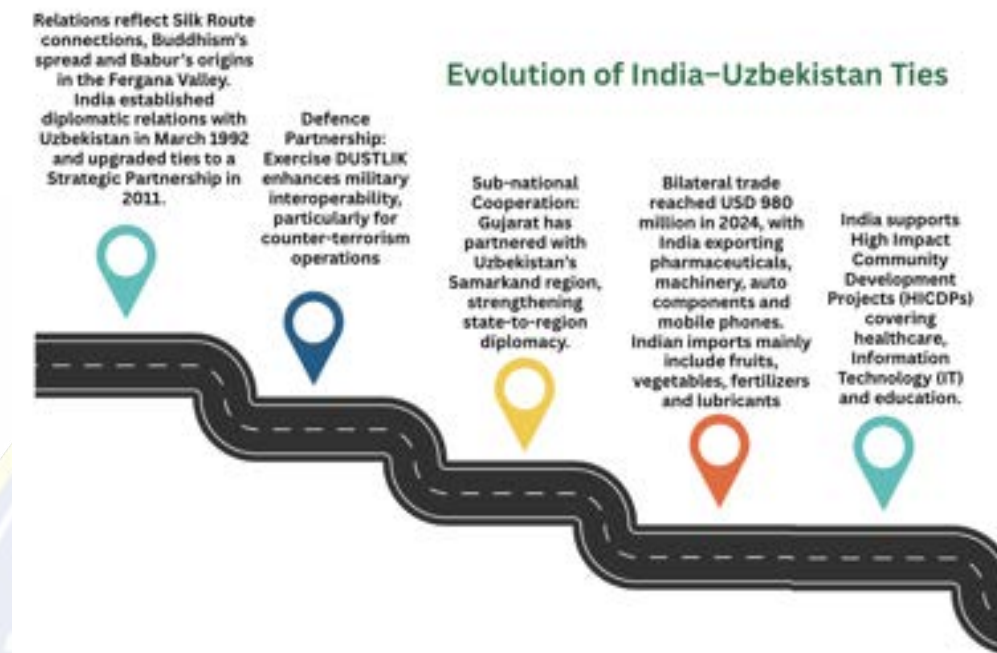
3. INDIA–UZBEKISTAN COMPREHENSIVE STRATEGIC PARTNERSHIP

Context: Prime Minister Narendra Modi visited **Uzbekistan** to mark the **15th anniversary of the 2011 India-Uzbekistan Strategic Partnership**, and also received Uzbekistan's highest state honour, the "**Oliy Darajali Do'stlik**" Order.

Key Outcomes of the Visit

- **Strategic Partnership:** India and Uzbekistan upgraded ties to a **Comprehensive Strategic Partnership**, expanding long-term **strategic, economic and technological cooperation**.
- **Defence Cooperation:** **Joint Working Group on Military Cooperation** will deepen defence-industrial ties; both welcomed the **Dustlik exercise (April 2026, Uzbekistan)**.
- **Trade & Investment:** Bilateral trade targets **USD 5 billion by 2030**; a **Foreign Ministers-led Coordination Council** and **JWG** will address **non-tariff barriers** and pursue a **Preferential Trade Agreement (PTA)**.
- **Uranium Supply:** Framework established for long-term **Uzbek uranium supplies** to support India's **civil nuclear energy programme**.
- **Clean Energy:** Cooperation to expand in **peaceful nuclear energy, grid modernisation and renewable-energy infrastructure**.
- **Digital Technology:** Partnerships among **startups, incubators and IT parks** will expand, building on **Tashkent IT Park**, established in 2019 with **STPI assistance**.
- **Digital Payments:** **NPCI International** and Uzbekistan's National Interbank Processing Centre will enable Indian **UPI apps to scan UZQR codes**.
- **Aral Sea Restoration:** India announced a **USD 1 million grant** for afforestation/ecological rehabilitation, linking **Yashil Makon** with **Ek Ped Maa Ke Naam**.
- **Healthcare:** **Tashkent Pharma Park** will facilitate joint pharmaceutical manufacturing, technology transfer, Indian laboratories and research centres.
- **Buddhist Heritage:** Conservation of **Fayaz Tepa and Karatepa** will be supported through a Letter of Intent and **Cultural Exchange Programme (2026–2030)**.

- **Education & AYUSH:** India announced the **Lal Bahadur Shastri Scholarship** for Hindi learning and signed an **MoU on AYUSH traditional medicines**.

STUDENT'S
NOTES 

Importance of Uzbekistan for India

- **Central Asian Geopolitical Hub:** Uzbekistan borders all four Central Asian Republics and Afghanistan, making it central to India's **Connect Central Asia Policy**.
- **Energy & Mineral Resources:** Besides uranium, Uzbekistan has significant **gold, natural gas and critical mineral reserves** supporting India's clean-energy transition.
- **Regional Security Buffer:** Afghanistan's Taliban rule raises shared risks of **radicalisation, drug trafficking and cross-border terrorism**. Intelligence sharing and **Exercise DUSTLIK** strengthen joint responses against these threats.
- **Managing China's Influence:** India's infrastructure and **Unified Payments Interface (UPI)** initiatives offer a transparent, capacity-building alternative to China's debt-heavy **Belt and Road Initiative (BRI)**.
- **Connectivity Gateway:** Uzbekistan can help overcome India's lack of direct Central Asian access through **Chabahar Port** and the **International North-South Transport Corridor (INSTC)**.

Major Challenges in Bilateral Relations

- **Poor Connectivity:** Pakistan's transit restrictions deny India direct overland access, while Uzbekistan is **doubly landlocked**, raising transit costs and time.
- **Uranium Transit Concerns:** Moving Uzbek uranium through **Central Asia and Iran** involves complex logistics, safety standards and transit risks.
- **Payment Constraints:** Weak **direct and correspondent banking links** and limited Uzbek Som trading increase conversion and settlement costs for Indian Small and Medium Enterprises (SMEs).
- **Chinese Dominance:** China is Uzbekistan's largest trading partner and infrastructure financier through the **BRI**.
 - The **China-Kyrgyzstan-Uzbekistan (CKU) railway** could further strengthen China's logistical advantage.
- **Security Threats:** **Afghanistan's instability**, including radicalisation, drug trafficking and **ISIS-K** threats, risks regional connectivity and trade.

Measures to Deepen Bilateral Cooperation

- **Support Freight Connectivity:** Subsidised **Air Freight Corridors** could support high-value, low-volume goods such as pharmaceuticals, IT components and agricultural products.

- **Accelerate Preferential Trade Agreement:** Concluding the **Preferential Trade Agreement (PTA)** can reduce tariffs on Indian medicines, textiles and engineering goods and Uzbek fertilizers, fruits and lubricants.
- **Reduce Non-Tariff Barriers:** A **Mutual Recognition Agreement (MRA)** on standards, particularly pharmaceuticals and agricultural phytosanitary checks, can ease market access.
- **Expand Green Investments:** Indian solar companies can use the **International Solar Alliance (ISA)** framework to pursue utility-scale solar projects in Uzbekistan's desert regions.
- **Strengthen Intelligence Sharing:** The **Joint Working Group on Counter-Terrorism** should enable real-time intelligence exchange on terror financing, cyber threats and Af-Pak narco-trafficking.

Conclusion: Uzbekistan's strategic location can strengthen India's Central Asian outreach, while multimodal corridors like Chabahar and INSTC can deepen connectivity and economic integration despite persistent geographical constraints.

Test Your Knowledge	
Prelims Corner Consider the following statements regarding India-Uzbekistan cooperation: 1. Uzbekistan's geographical position gives it importance for India's engagement with Central Asia and Afghanistan. 2. Chabahar Port and the INSTC can help India overcome the constraints arising from lack of direct overland access to Central Asia. 3. Uzbekistan's position as a doubly landlocked country eliminates the connectivity challenges associated with India-Central Asia trade. Which of the statements given above are correct? A. Only one B. Only two C. All three D. None Answer: B	Mains Corner Q. The India-Uzbekistan Comprehensive Strategic Partnership reflects India's growing strategic engagement with Central Asia amid evolving geopolitical and security dynamics. Examine the significance of Uzbekistan for India's strategic, economic and connectivity interests, and discuss the key challenges to deepening this partnership. (15 marks, 250 words)

4. DIASPORA TO DRIVE INDIA'S NEXT GROWTH PHASE

Context: India's **35-million-plus diaspora** is evolving from a remittance source into a potential driver of **investment, entrepreneurship, technology and growth capital**. India received **USD 143.6 billion in remittances in FY26**, retaining its position as the world's largest recipient.

Role of Diaspora in India's Growth

- **Beyond Remittances:** Remittances exceed **10% of Gross Current Account Receipts**, supporting the Current Account and foreign exchange reserves.
- Diaspora members are increasingly shifting from family transfers towards **structured investments, entrepreneurship and long-term growth capital**.
- **Changing Remittance Geography:** The **United States has replaced the Gulf as the largest source**, contributing around **27.7%** of remittances.
- **Advanced economies provide over 51% of total inflows**, reflecting the higher earnings of India's knowledge-based diaspora.
- Growing diaspora participation has supported India's equity markets, whose **capitalisation reached USD 5.18 trillion in July 2026**.
- **Leveraging Economic Formalisation:** Diaspora capital benefits from reforms such as **Goods and Services Tax (GST), Insolvency and Bankruptcy Code (IBC)** and **Production Linked Incentive (PLI)** schemes.
- **Digital Investment Infrastructure:** **Aadhaar, Unified Payments Interface (UPI), DigiLocker and Account Aggregator** reduce geographical barriers to cross-border investment.
- **GIFT International Financial Services Centre (GIFT IFSC)** provides a competitive, dollar-denominated financial gateway for diaspora investors within India.

Key Challenges in Harnessing Diaspora Potential

- **Migrant Vulnerability:** GCC workers face **job insecurity, Kafala restrictions and oil-price risks**, alongside fraudulent recruitment, forced labour and **war-zone exploitation**.
- **Migration Restrictions & Xenophobia:** **Tighter visas, protectionism and high US H-1B fees** constrain mobility, while **racism and hate crimes** threaten migrant security.
- **Brain Drain & Weak Engagement:** Overseas opportunities drive **talent loss**, while weak domestic **R&D ecosystems** and declining second/third-generation **OCI/PIO engagement** limit return, investment and expertise.
- **Limited Political & Institutional Participation:** **NRIs lack remote voting**, while fragmented databases and grievance mechanisms such as **e-Migrate/MADAD** weaken crisis response.
- **Remittance & Regulatory Issues:** **High transfer costs, Hawala risks and FCRA compliance barriers** constrain formal remittances/philanthropy; remittances cannot substitute for **FDI or export competitiveness**.
- **Irregular Migration & Trafficking:** **'Donkey routes'** expose migrants to **trafficking, exploitation, detention and death**, while damaging India's international reputation.

Measures to Facilitate Remittances and Investment

- **FCNR(B) Swap Facility (2025–26):** Reserve Bank of India (RBI) offers banks **USD/INR swaps against fresh Foreign Currency Non-Resident (Bank) deposits**, reducing hedging costs.
- This encourages banks to mobilise **Non-Resident Indian (NRI) foreign-currency deposits**.
- **UPI Internationalisation:** Expands **Unified Payments Interface (UPI)-based cross-border connectivity**, enabling payments through linked systems in partner countries.
- **Foreign Direct Investment (FDI) Parity:** Non-repatriable NRI and OCI investments receive parity with domestic investments, avoiding stringent **FDI caps**.
- **India-UAE Local Currency Settlement (LCS) Framework, 2023:** Enables **INR-AED settlement**, reducing intermediary-currency dependence and conversion costs.
- **Foreign Exchange Management (Manner of Receipt and Payment) Regulations, 2023:** Expands permissible cross-border receipts and payments through **INR and foreign currencies**.



Strategies to Unlock Greater Diaspora Potential

- **Globalise Digital Payments:** Expand **Unified Payments Interface (UPI)-RuPay** across major remittance corridors such as the United States, United Kingdom and Canada to reduce intermediary costs; promote digital financial literacy among low-skilled migrants.
- **Revive Diaspora Bonds:** Build on **India Development Bonds (1991), Resurgent India Bonds (1998) and India Millennium Deposits (2000)** to channel overseas savings into infrastructure, green energy and long-term development.
- **Institutionalise Brain Circulation:** Engage overseas academics through **visiting fellowships, joint patents and remote mentorships**, enabling knowledge transfer without requiring permanent return.
- **Leverage Diaspora for Policy & Diplomacy:** Establish sector-specific councils for **Artificial Intelligence, green hydrogen and biotechnology**, while using Indian-origin professionals for policy advocacy, trade and strategic partnerships, as seen in the **Indo-US Civil Nuclear Agreement (2008)**.

- **Protect Migrant Workers:** Pursue **Social Security Agreements (SSAs)** and transparent labour-mobility pacts with **Gulf Cooperation Council (GCC)** countries to strengthen semi-skilled workers' rights and financial security.
- **Reform Overseas Citizenship of India (OCI) Framework:** Move towards an opportunity-driven investment model with easier clearances for diaspora-led venture funds, particularly to attract **younger, second-generation diaspora capital**.

Conclusion: India's diaspora can evolve into a strategic development partner, converting global talent, savings and networks into innovation, investment and knowledge circulation for an inclusive, globally connected India.

Test Your Knowledge

Prelims Corner	Mains Corner
With reference to the Indian diaspora and India's external sector, consider the following statements: 1. Remittances received by India constitute more than 10% of its Gross Current Account Receipts. 2. The United States has emerged as the largest source of remittances to India, surpassing the Gulf region. 3. Advanced economies account for more than half of India's total remittance inflows. Which of the statements given above is/are correct? (a) 1 and 2 only (b) 2 and 3 only (c) 1 and 3 only (d) 1, 2 and 3 Answer: (d)	"The Indian diaspora is evolving from a source of remittances into an instrument of India's economic and strategic influence." Discuss the measures needed to harness its potential for investment, technology transfer and diplomacy. (15 marks, 250 words)

5. 26TH SHANGHAI COOPERATION ORGANISATION (SCO) SUMMIT

Context: The 26th Meeting of the Council of Heads of State (CHS) and first "SCO Plus" meeting were held in Bishkek, Kyrgyzstan, marking SCO's 25th anniversary.

- **Summit Theme:** Kyrgyzstan chaired the summit under **"25 Years of the SCO: Together for Sustainable Peace, Development and Prosperity."**

Key Outcomes

- **Bishkek Declaration:** Leaders reaffirmed cooperation on **regional peace, security, development and SCO's future direction**.
- **SCO Charter:** Members approved amendments updating the organisation's **institutional and legal framework**, enabling newer members like India to shape its evolution.
- **Universal Security Centre:** Regulations were approved for a centre promoting **intelligence sharing against terrorism, extremism and organised crime**.
- **Anti-Drug Measures:** The **SCO Anti-Drug Centre's Executive Committee** regulations and programmes against **drug addiction, synthetic drugs and precursors until 2030** were adopted.
- **Green Connectivity:** Members adopted a **2026–2030 action plan for ports and logistics centres** and established an **SCO Green Technology Corridor**.

SCO SUMMIT 2026 BISHKEK

India at the SCO Summit

	Three Strategic Pillars: India proposed Security, Connectivity and Opportunity as key pillars for the SCO's future.
	Counter-Terrorism: India called for dismantling terror financing and safe havens, stressing that counter-terrorism must avoid "double standards."
	Dialogue over Conflict: India reiterated that international conflicts cannot be settled on battlefields; dialogue and diplomacy remain essential.
	Sovereign Connectivity: India stressed that connectivity projects must respect sovereignty and territorial integrity, implicitly opposing the Belt and Road Initiative (BRI) and China-Pakistan Economic Corridor.
	Youth & Innovation: The SCO endorsed India's Young Scientists Forum and Young Authors Conference initiatives for scientific and technical cooperation.
	English as SCO Language: Following India's 2022–23 presidency proposal, English was added alongside Russian and Chinese as an official and working language.

- **Institutional Partnerships:** The SCO–Collective Security Treaty Organization (CSTO)–Commonwealth of Independent States (CIS) Roadmap was approved for trilateral cooperation.
- **Global Outreach:** The SCO decided to establish a **Memorandum of Understanding (MoU) with the African Union Commission**, expanding regional partnerships.
- **Information Security:** A **2026–2028 cooperation plan** was adopted for strengthening international information security.
- **Biodiversity:** Members adopted a **2026–2031 initiative and joint action plan** for biodiversity conservation and sustainable management.
- **Pakistan's Chairmanship:** Pakistan assumed the **2026–27 SCO chairmanship** under “**Turning Vision into Action: Connectivity, Innovation and Shared Prosperity.**”
- **Tourism Capital:** **Lahore** was designated the **SCO Tourism and Cultural Capital for 2026–27.**



Significance of SCO for India

- **Security:** The **RATS mechanism** facilitates intelligence sharing and joint counter-terrorism exercises against **cross-border terrorism**.
- **Central Asian Access:** SCO provides India a diplomatic and economic gateway to **resource-rich Central Asian Republics (CARs)** despite India lacking direct land access.
- **Energy Security:** **Kazakhstan and Uzbekistan** possess significant **hydrocarbon and uranium resources**, supporting India's long-term energy interests.
- **Strategic Autonomy:** Simultaneous engagement with SCO, **Quad**, Russia, China and Western partners enables India's **multi-alignment and strategic autonomy** in a multipolar order.

Challenges

- **Decision-Making:** The **consensus-based system** can stall decisions amid India-Pakistan tensions and India-China border disputes.
- **Geopolitical Balance:** **China-Russia dominance** and Iran-Belarus membership create perceptions of an **anti-Western bloc**, challenging India's **strategic autonomy**.
- **Terrorism & Security:** The **Regional Anti-Terrorist Structure (RATS)** has limited enforcement capacity, while members differ in their approaches to terrorism.
- **Economic Cooperation:** China's economic dominance may cause **trade imbalances** and excessive dependence on Chinese capital and markets.
- **Connectivity:** Competing corridors such as **China's Belt and Road Initiative (BRI)**, **India's International North-South Transport Corridor (INSTC)** and **Trans-Caspian routes** face customs and geopolitical barriers.

Way Forward

- **Decision-Making:** Establish **confidence-building and dispute-management mechanisms** so bilateral tensions do not obstruct wider cooperation.
- **Geopolitical Balance:** Preserve the SCO as a **non-bloc, inclusive platform**, avoiding alignment against any power or group.

- **Terrorism & Security:** Strengthen RATS through intelligence sharing, common databases, action against terror financing and stronger implementation mechanisms.
- **Economic Cooperation:** Promote balanced economic cooperation through equitable financing and greater intra-SCO trade.
- **Connectivity:** Build interoperable corridors, harmonise customs and ensure connectivity respects member states' sovereignty.

Test Your Knowledge

Prelims Corner	Mains Corner
With reference to the Shanghai Cooperation Organisation (SCO), consider the following statements: 1. The Regional Anti-Terrorist Structure (RATS) is primarily concerned with cooperation against terrorism, separatism and extremism. 2. India can use the SCO as a platform for engagement with Central Asian countries despite lacking direct land connectivity with them. 3. All decisions within the SCO are taken through majority voting. Which of the statements given above is/are correct? (a) 1 and 2 only (b) 2 only (c) 1 and 3 only (d) 1, 2 and 3 Answer: (a)	Discuss the significance of the SCO for India's Central Asian engagement. What measures can strengthen India's role in the organisation amid China-Russia dominance and India's bilateral tensions with China and Pakistan? (10 marks, 150 words)

6. INDIA-BELGIUM RELATIONS

Context: The Belgian Prime Minister's September 2026 visit to India strengthened bilateral ties through a Joint Statement, Investment Fast-Track Mechanism and defence cooperation agreements.

Strategic Significance of India-Belgium Relations

- **Gateway to Europe:** Belgium hosts key EU and NATO institutions, strengthening India's engagement with Europe.
- **Semiconductor and Deep-Tech Cooperation:** IMEC can support India's semiconductor ecosystem, reducing import dependence and strengthening supply chains.
- **Green Transition:** Belgian expertise in green hydrogen, energy storage and offshore wind can support India's decarbonisation goals.



- **Strategic Counterweight to China:** Belgium sees India as a **strategic counterweight to China**, while defence cooperation can strengthen India's strategic resilience.
- **Boost to Aatmanirbhar Bharat:** Co-development and technology transfer can advance **Make in India** and defence indigenisation.

Key Challenges

- **Trade and Global Value Chains (GVCs):** Heavy **diamond-trade dependence** creates supply-chain vulnerability and exposes Indian **Micro, Small and Medium Enterprises (MSMEs)** to stricter traceability norms.
- **Climate and EU Regulations:** **Carbon Border Adjustment Mechanism (CBAM)** and **European Union Deforestation Regulation (EUDR)** may raise compliance costs and create **non-tariff barriers** for Indian exports.
- **Defence and Technology Transfer:** **Intellectual Property (IP) restrictions** and **EU dual-use controls** may limit cooperation to licence manufacturing instead of genuine **co-development**.
- **Investment and Capital:** Weak **dispute-resolution mechanisms** and the **investment protection gap** may discourage Belgian institutional investment.
- **Semiconductors and Deep Tech:** Collaboration with Belgium's **IMEC** could remain research-oriented without adequate focus on **commercialisation**.



Way Forward

- **Trade and GVCs:** Diversify exports into **Active Pharmaceutical Ingredients (APIs)**, **green engineering** and **avionics** while pursuing **mutually recognised certification standards**.
- **Climate and EU Regulations:** Promote **regulatory equivalence**, **carbon-accounting cooperation** and **transition support** through the **India-EU Trade and Technology Council (TTC)**.
- **Defence and Technology Transfer:** Leverage **Innovations for Defence Excellence (iDEX)** and joint ventures for **co-development**, **technology transfer** and faster **End-User Certificate clearances**.
- **Investment and Capital:** Operationalise the **SFPIM-NIIF corridor** and channel **patient capital** towards **green hydrogen**, **offshore wind** and **infrastructure**.
- **Semiconductors and Deep Tech:** Develop **commercial fab alliances**, **joint IP ownership** and **co-funded R&D** in **chip design** and **advanced packaging**.

Conclusion: India-Belgium ties can evolve into a future-ready strategic partnership by combining defence indigenisation, deep-tech innovation, green transition and resilient value chains, strengthening India's engagement with Europe.

Test Your Knowledge

Prelims Corner	Mains Corner
With reference to India–Belgium relations, consider the following statements: 1. The India–Belgium–Luxembourg Economic Union (BLEU) Joint Economic Commission was established in 1997. 2. The Devasthal Optical Telescope involves Belgian-developed optical components. 3. Belgium established diplomatic relations with independent India in 1947. 4. Flanders Fields is associated with Indian soldiers who died during the First World War. Which of the statements given above are correct? (a) 1, 2 and 3 only (b) 1, 2, 3 and 4 (c) 2 and 4 only (d) 1 and 3 only Answer: (b)	Q. "India–Belgium relations are evolving beyond traditional trade towards technology, defence and green-transition partnerships." Examine the opportunities and challenges in deepening this strategic partnership. (15 marks, 250 words)

7. INDIA–CHINA BORDER MANAGEMENT

Context: India and China held their **first Corps Commander-level talks in the Eastern Sector** at the **Wacha-Damai Border Personnel Meeting (BPM) Point, Arunachal Pradesh**, amid increased PLA patrols and localised stand-offs in Taksing, Upper Subansiri.

- The talks expand the military dialogue beyond Ladakh, highlighting wider India–China border management and LAC-related challenges.



Border Management: Key Mechanisms

- Special Representatives (SR) on Boundary

Question: Established in 2003, it is the **highest political-level mechanism** for seeking a final settlement of the **3,488-km boundary dispute**.

- Working Mechanism for Consultation and Coordination (WMCC):** Set up in 2012 as a diplomatic-military channel to coordinate LAC incidents and maintain peace; it cannot resolve the boundary dispute.
- Corps Commander-Level Talks:** High-level military negotiations used for tactical disengagement, de-escalation and buffer-zone creation during serious stand-offs.
- Border Personnel Meeting (BPM) Points:** Designated LAC locations where local commanders meet to resolve ground-level friction.
- Institutional Hotlines:** Direct communication links between regional military commands to prevent misunderstandings from escalating.

Foundational Agreements:

- 1993 Maintenance of Peace and Tranquillity Agreement:** Recognised the LAC and committed both sides to maintaining peace.
- 1996 Confidence-Building Measures (CBM) Agreement:** Restricted military activities and weapon use near the LAC.
- 2005 CBM Protocol:** Established procedures for managing face-to-face troop encounters.

- **2013 Border Defence Cooperation Agreement (BDCA):** Improved communication and coordination between border forces.

Importance of the Eastern Sector for India

- **Defensive Depth:** Tawang and Bum La provide key defensive positions overlooking the Assam plains and strengthen India's strategic depth in the Northeast.
- **Siliguri Corridor:** The Sikkim sector and Doklam tri-junction lie near the



- **Siliguri Corridor:** India's narrow land link to the Northeast, making the region strategically vital.
- **Tibetan Buddhist Significance:** Tawang, home to the historic **Tawang Monastery**, is a major Tibetan Buddhist centre with wider geopolitical relevance to Tibetan identity and religious affairs.
- **Territorial Integrity:** China claims the whole of **Arunachal Pradesh** as '**Zangnan**' (South Tibet), making a strong Indian presence essential to safeguard territorial integrity.
- **Act East Policy:** A secure Arunachal Pradesh supports **border connectivity, economic integration and the Act East Policy**, improving the Northeast's links with Southeast Asia.
- **Water Security:** The **Yarlung Tsangpo–Siang–Brahmaputra system** makes Arunachal Pradesh crucial for downstream water security and transboundary river cooperation with China.

India's Measures to Manage China-Related Border Challenges

- **Bridging the Infrastructure Gap:** India is expanding **all-weather LAC connectivity** through the **Arunachal Frontier Highway (NH-913)**, **Sela Tunnel**, **Nechiphu Tunnel** and **BRO-built roads**, bridges and **Advanced Landing Grounds**, enabling faster mobilisation and sustained access to forward posts.
- **From Defence to Active Deterrence:** After the **2020 Galwan Valley clash**, India strengthened its forward posture by repositioning formations along the northern borders and deploying **Rafale aircraft**, **S-400 air-defence systems** and **BrahMos missiles** for rapid responses to PLA mobilisation.
- **Strengthening Border Communities:** The **Vibrant Villages Programme (VVP)** develops strategic border villages to **reduce out-migration, strengthen civilian presence and improve last-mile connectivity**, countering China's dual-use village strategy.
- **External Balancing:** Through the **Quad (India, US, Japan and Australia)** and broader defence partnerships, India is strengthening **maritime, technological and military capabilities** to balance China's regional influence without forming a formal military alliance.
- **Selective Economic De-risking:** **Press Note 3 (2020)** tightened scrutiny of Chinese investments. In **2026**, India eased restrictions for limited investments, including Chinese capital, while retaining safeguards for **strategic and sensitive sectors**.

Conclusion: A durable India–China border framework requires **dialogue, credible deterrence and resilient border infrastructure**. Sustained confidence-building and local development can secure the LAC while preserving strategic stability.

Test Your Knowledge	
Prelims Corner With reference to India–China border management mechanisms, consider the following statements: 1. The Special Representatives mechanism was established in 2003 to address the boundary question. 2. The Working Mechanism for Consultation and Coordination (WMCC) can resolve the India–China boundary dispute. 3. Border Personnel Meeting (BPM) points facilitate communication between local commanders along the LAC. 4. The 1996 Confidence-Building Measures Agreement placed restrictions on military activities and weapons near the LAC. Which of the statements given above are correct? (a) 1, 3 and 4 only (b) 1 and 2 only (c) 2, 3 and 4 only (d) 1, 2, 3 and 4 Answer: (a)	Mains Corner Q. "India–China border management requires a delicate balance between dialogue, deterrence and development." Examine the key challenges along the Line of Actual Control (LAC) and assess India's measures to maintain border stability. (15 marks, 250 words)

8. 'POWER' FRAMEWORK AND ALTERNATIVE CROSS-BORDER PAYMENTS PROPOSED BY BRICS

Context: Ahead of the **18th BRICS Summit in New Delhi**, finance ministries and central banks of member countries met in **Jaipur** under India's 2026 chairmanship to discuss financial cooperation, local-currency settlements and alternative cross-border payment systems.

Key Takeaways

- BRICS is exploring local currencies, Central Bank Digital Currencies (CBDCs), Unified Payments Interface (UPI)-linked systems, Project Nexus and mBridge for cheaper, faster and more resilient cross-border payments.
- Major hurdles include geopolitical differences, regulatory divergence, scalability, cybersecurity and possible dependence on the Chinese yuan.
- India should promote neutral, interoperable and secure payment infrastructure while remaining compatible with the existing global financial system.

Problems with Existing Cross-Border Payments

- Intermediary Dependence:** Payments between developing economies often pass through banks in major financial centres, raising costs and processing time.
- Dollar-Based Conversions:** Weak direct currency links often require two conversions through the US dollar, increasing foreign-exchange costs and exposure to US monetary policy.



- **High Costs:** Multiple intermediaries and conversions can push transaction costs to **8–20%** in some developing-country corridors.
- **SWIFT Vulnerability:** Dependence on the **SWIFT messaging network** leaves countries exposed to sanctions and geopolitical financial pressure, as seen after several Russian banks were excluded from SWIFT in 2022.
- **Fewer Correspondent Banks:** Global correspondent banking relationships declined by about **20% between 2011 and 2018**, concentrating cross-border payments through fewer channels and increasing systemic vulnerabilities.
- **Exposure to External Shocks:** Dependence on dominant currencies and financial networks can amplify the impact of sanctions, monetary shocks and payment disruptions.

Major Challenges

- **Potential US Response:** Efforts to reduce dollar dominance could invite geopolitical and economic retaliation, including possible higher tariffs against BRICS countries promoting a common currency or dollar alternatives.
- **Geopolitical Differences:** Russia strongly supports de-dollarisation to bypass sanctions, while India mainly seeks lower costs and better technical integration rather than directly challenging the US dollar.
- **Secondary Sanctions:** Joining an alternative to SWIFT, such as BRICS Clear, alongside sanctioned countries could expose financial institutions to Western economic retaliation.
- **Yuan Dominance:** Reducing dollar dependence could instead create excessive reliance on the renminbi. More than **95% of mBridge settlement volume** is currently conducted in China's digital yuan.
- **Limited Multilateral Scalability:** Bilateral systems such as UPI linkages have worked well, but extending them across a diverse BRICS membership is operationally complex.
- **Infrastructure and Cost:** Global expansion requires substantial investment in infrastructure, resilience and cybersecurity. Maintaining zero-fee payments at scale also raises questions about long-term financial sustainability.
- **Regulatory Differences:** Integrating different capital controls, data-localisation rules and **Anti-Money Laundering/Combating the Financing of Terrorism (AML/CFT)** frameworks remains a major institutional challenge.
- **Cyber and Financial Stability Risks:** Shared CBDC networks could become major cyberattack targets, while rapid cross-border transfers may accelerate capital flight and currency volatility in smaller emerging economies.



Way Forward

- **Create Multilateral Payment Hubs:** Use standardised routing hubs such as **BIS Project Nexus** to connect domestic instant-payment systems through a common gateway instead of relying mainly on fragmented bilateral links.
- **Build Domestic Digital Capacity:** Expand reliable sovereign retail and wholesale CBDCs, including **India's e-Rupee**, to establish a secure foundation for cross-border settlements.
- **Use Pilot-Based Expansion:** Begin with selected payment corridors and high-value uses such as trade invoicing and tourism, then scale up after establishing commercial viability.

- **Standardise Regulations:** Develop common technical protocols compatible with global AML/CFT and Financial Action Task Force (FATF) requirements while protecting national regulatory and data sovereignty.
- **Preserve Global Interoperability:** Ensure new payment systems remain compatible with institutions such as the **International Monetary Fund (IMF)**, **Bank for International Settlements (BIS)** **Innovation Hub** and existing messaging networks such as SWIFT to avoid fragmentation of global finance.

Test Your Knowledge	
Prelims Corner Consider the following pairs: 1. mBridge – Multi-Central Bank Digital Currency platform 2. Payment-versus-Payment (PvP) – Simultaneous exchange and settlement of two payment obligations 3. BRICS Clear – Proposed mechanism for clearing and settlement 4. Unified Payments Interface (UPI) – Wholesale CBDC settlement platform How many of the above pairs are correctly matched? (a) Only one (b) Only two (c) Only three (d) All four Answer: (c) Explanation: Pairs 1, 2 and 3 are correctly matched. UPI is an instant-payment system, not a wholesale CBDC settlement platform.	Mains Corner Q. Examine how BRICS' alternative payment mechanisms can enhance the efficiency, resilience and autonomy of cross-border financial transactions. Discuss the challenges involved in their implementation. (15 marks, 250 words)

9. INDIA–SRI LANKA DEFENCE COOPERATION

Context: India's Defence Minister made the **first visit by an Indian Defence Minister to Sri Lanka in 38 years**, resulting in **three MoUs** to deepen defence cooperation.

Key Outcomes of the Visit

- **Defence Agreements:** India will upgrade **six L70 anti-aircraft guns** of Sri Lanka's Air Force through a Government grant, strengthening its air-defence capability. Cooperation between **National Defence Colleges** will promote strategic learning, while **NCC youth exchanges** deepen institutional and people-to-people military ties.
- **Humanitarian Assistance:** Under **Operation Sagar Bandhu**, Indian Armed Forces built **three Bailey bridges** after Cyclone Ditwah, alongside emergency relief and a **USD 450-million reconstruction package**.
- **Maritime Security:** Sri Lanka assured that its territory would **not be used against India's security interests**, while **INS Udaygiri's OTR at Colombo** reinforced maritime cooperation.
- **Fisheries Cooperation:** The **Palk Strait fisheries dispute** was discussed, with Sri Lanka seeking measures against **destructive bottom trawling** by Indian fishermen.



Existing Defence and Security Cooperation

- **Joint Military Exercises:** **SLINEX** and **MITRA SHAKTI**, conducted annually by the two navies and armies respectively, strengthen **interoperability** and **operational cooperation**.

- **Maritime Security and Capacity Building:** India supports Sri Lanka's maritime security through the **Maritime Rescue Coordination Centre (MRCC)**, established with a **USD 6-million Indian grant**.
- **Defence Training:** India provides around **1,200 training vacancies annually** to Sri Lankan Armed Forces, while the **2025 Defence Cooperation MoU** further institutionalised bilateral military engagement.
- **Counter-Terrorism and Regional Security:** Cooperation covers **counter-terrorism and emerging security challenges**, with the **Colombo Security Conclave (CSC)** serving as an important regional security platform since its institutionalisation in **2024**.

Conclusion: India–Sri Lanka defence cooperation can evolve into a stable maritime partnership, combining capacity building, mutual security and humanitarian response to foster trust, resilience and a secure Indian Ocean Region.

Test Your Knowledge	
Prelims Corner With reference to the recent India–Sri Lanka engagement, consider the following: 1. Upgrade of six L70 anti-aircraft guns through an Indian Government grant 2. Cooperation between National Defence Colleges 3. Establishment of a permanent Indian military base in Sri Lanka 4. Exchange programmes involving the National Cadet Corps (NCC) How many of the above were among the defence-cooperation outcomes mentioned? (a) Only one (b) Only two (c) Only three (d) All four Answer: (c) Only three Explanation: 1, 2 and 4 were identified as outcomes. The engagement did not involve establishing a permanent Indian military base in Sri Lanka.	Mains Corner Q. India–Sri Lanka defence cooperation has acquired renewed strategic significance amid evolving geopolitical and maritime security dynamics in the Indian Ocean Region. Discuss. (15 marks, 250 words)

10. INDIA-GERMANY GREEN PARTNERSHIP FOR THE FUTURE

Context: The **4th Indo-German Environment Forum**, held in New Delhi on **1 September**, focused on **climate change, biodiversity conservation and climate resilience**.

- Established in **2008**, the forum's latest edition was held under the theme **"Together for Greater Resilience"**, highlighting the need to complement emission reduction with climate adaptation.
- The discussions came amid growing **geopolitical tensions, protectionism and weakening multilateral cooperation**, which have complicated global environmental action.

Details of the India-Germany Green Partnership

- India and Germany have been **strategic partners for 75 years**, reflecting the depth and continuity of bilateral relations.
- In January, Prime Minister **Narendra Modi** and German Chancellor **Friedrich Merz** reaffirmed their commitment to the **Partnership for Sustainable Green Development**, established in **2022**.
- The two countries plan to hold **cabinet-level consultations in Berlin in 2027** to further advance bilateral cooperation.
- India and Germany continue to support **multilateralism, peaceful development, stability, reliability and a rules-based international order**.
- Their cooperation extends to economic and trade relations, including the **India-European Union trade agreement concluded in January**.
- Germany, the **largest economy in the European Union**, views the agreement as an opportunity to expand **trade, investment, growth and employment**.
- The combined India-European Union market covers nearly **2 billion people**, creating substantial opportunities for **green technologies and sustainable industries**.

Global Environmental Challenges

- Wars, tariffs and protectionist policies have weakened multilateral cooperation, making collective responses to climate change and biodiversity loss more difficult.
- India faces the additional challenge of balancing **energy poverty, development needs and economic decarbonisation**.
- Despite geopolitical constraints, major environmental agreements have advanced global cooperation, including the **Paris Agreement**, the **Kunming-Montreal Global Biodiversity Framework** and the **BBNJ Agreement** for conservation and sustainable use of marine biodiversity beyond national jurisdiction.

Climate Resilience: A Shared Priority

- Increasing extreme weather events demonstrate the need to strengthen the capacity of **societies and ecosystems to withstand and recover from climate-related shocks**.
- **Western Europe experienced its hottest summer on record**, while India has faced **water shortages, heatwaves and severe flooding**.
- The devastating flash flood in neighbouring **Nepal**, which also affected many Indians, highlighted the **transboundary nature of climate-related disasters**.
- India is simultaneously demonstrating that **climate action and industrial development can progress together**, including through the expansion of **solar parks**.
- India and Germany jointly advocated **ambitious climate targets** at the **United Nations Climate Change Conference (COP)** in **Brazil** in **2025**.

Renewable Energy and Green Technology Cooperation

- Germany sees considerable potential in India's ambitious targets for **solar energy, green hydrogen and domestic manufacturing**.
- Germany can contribute expertise in **electricity-grid integration, energy storage and regulatory frameworks** for renewable energy.
- Joint initiatives can facilitate the **integration of renewable energy into electricity systems** and promote the development of **green industrial clusters**.
- Such cooperation can enable both countries to **reduce industrial emissions while sustaining economic growth**.



Key Issues and Challenges

- **Geopolitical fragmentation:** Wars, tariffs and protectionism can disrupt international environmental cooperation and green supply chains.
- **Development-decarbonisation balance:** India must pursue economic development and energy access while simultaneously reducing carbon intensity.
- **Climate adaptation deficit:** Increasing extreme weather events require greater investment in resilience, disaster preparedness and climate-proof infrastructure.
- **Industrial transition:** Decarbonising sectors such as steel and cement requires advanced technology, financing and viable markets.

- **Renewable integration:** Rapid renewable-energy expansion needs stronger **grid infrastructure, storage capacity and appropriate regulatory frameworks**.
- **Circular economy gaps:** Effective recycling requires standardised systems, digital traceability and suitable financing mechanisms.

Suggestions and Way Forward

- **Deepen adaptation cooperation:** Institutionalise India-Germany technical dialogues on climate adaptation and develop joint solutions for heatwaves, floods, water stress and climate-resilient infrastructure.
- **Accelerate green industrialisation:** Expand collaboration in **green steel, low-carbon cement, industrial decarbonisation and green industrial clusters**.
- **Strengthen renewable integration:** Combine German expertise in **grid management, storage and regulation** with India's large renewable-energy deployment and manufacturing capacity.
- **Promote circular economy systems:** Develop interoperable standards for **waste collection, recycling and digital traceability**, supported by innovative financing.
- **Leverage trade opportunities:** Use the India-European Union market to scale **environmental technologies, sustainable manufacturing and green investments**.
- **Strengthen multilateral action:** India and Germany should continue advocating **rules-based, inclusive and cooperative approaches** to climate change, biodiversity and sustainable development.
- **Integrate resilience into development:** Climate adaptation should become an integral component of infrastructure, urban planning, industrial policy and disaster-risk management.

Conclusion: The India-Germany green partnership can translate **shared climate vulnerabilities into shared solutions**, combining technology, finance and policy innovation to advance **resilient and sustainable growth**.

11. POINTERS FOR PRELIMS

11.1. CHINA'S ANTELOPE REEF BASE

Context: Satellite imagery confirms China completed the first phase of land reclamation and infrastructure development at Antelope Reef.

- The development strengthens China's military presence across the disputed **Paracels archipelago in the South China Sea**.
- China has not officially confirmed a new military base, describing the facilities as serving **weather forecasting and scientific research**.
- Security experts believe Antelope Reef could create a protected ocean "**bastion**" for **China's nuclear-armed ballistic-missile submarines**.
- The bastion could shield Chinese submarines from **United States and Vietnamese naval operations** while avoiding exposure to Western Pacific forces.
- **Vietnam claims the entire Paracels grouping** on historical and legal grounds, while China has maintained *de facto* control since 1974.

- China gained control after forcibly expelling **South Vietnam's navy during the Battle of the Paracel Islands**.
- China's expansive **Nine-Dash Line** claims were rejected by the **2016 South China Sea Arbitral Tribunal**.
- The Tribunal ruled that historic-rights claims beyond **maritime entitlements under the United Nations Convention on Law of the Sea (UNCLOS)** lack legal basis.

11.2. UNSC STRAW POLL FOR NEXT UN SECRETARY-GENERAL

Context: The **United Nations Security Council (UNSC)** conducted its second straw poll to select the next Secretary-General. The new Secretary-General will assume office after **António Guterres' second term ends on 31 December 2026**.

The Selection Process of UN Secretary-General

- **Constitutional Basis:** Under **Article 97 of the UN Charter**, the **UN General Assembly (UNGA)** appoints the Secretary-General following UNSC recommendation.

- **Nominations:** The General Assembly and Security Council Presidents jointly invite all **193 Member States** to nominate candidates.
- **Voting Method:** UNSC members conduct **informal, anonymous polls**, marking candidates **“Encourage”**, **“Discourage”** or **“No Opinion”**.
- **P5 Identification:** In later rounds, **P5 members use differently coloured ballots**, making their positions identifiable. A **“Discourage” vote from any P5 member effectively indicates a veto**, blocking the candidate. Polling continues until one candidate secures **at least nine of 15 votes** without any P5 veto.
- **Formal Appointment:** After UNSC agreement, the candidate's name goes to the **193-member UNGA** for formal appointment.
- **Decision-Making:** Though a **simple majority** suffices, appointments traditionally occur through **consensus or acclamation**.

11.3. INDIA REJECTS HAGUE COURT RULING ON INDUS WATERS TREATY

Context: India rejected the Hague-based **Court of Arbitration (CoA)** ruling on the **Indus Waters Treaty (IWT)**, calling the court illegally constituted and lacking jurisdiction. India maintains that sovereign decisions regarding the treaty's **“abeyance”** cannot be adjudicated by the CoA.

River-Water Allocation as per IWT

- **Eastern Rivers:** Ravi, Beas and Sutlej were allocated to India for **exclusive and unrestricted use**.
- **Western Rivers:** Indus, Jhelum and Chenab were allocated primarily to Pakistan.
- **India's Western-River Rights:** India retains limited, non-consumptive rights for **domestic use, agriculture and run-of-the-river hydropower**, subject to treaty conditions.

Dispute-Resolution Framework

- **Permanent Indus Commission (PIC):** Handles minor **“questions”** through bilateral discussions.
- **Neutral Expert:** Examines unresolved technical **“differences”** through an expert appointed by the **World Bank**.

- **Court of Arbitration (CoA):** Legal disputes, or matters jointly referred by both parties, may proceed to an ad-hoc CoA.

11.4. FALKLAND ISLANDS DISPUTE

Context: The dispute has resurfaced amid renewed **Argentina–UK tensions** over **sovereignty claims and oil exploration** near the islands.

- **Location:** An archipelago in the **South Atlantic Ocean**, about **480 km off southeastern Argentina**.
- **Political Status:** A **British Overseas Territory**, internally self-governing; the UK handles **defence and foreign affairs**.
- Argentina claims the islands as territories **inherited from the Spanish Crown after independence in 1816**.
- It argues Britain's **1833 takeover violated Argentina's territorial integrity** and rejects islanders' **self-determination claim**.
- The UK argues Argentina did not inherit the islands from Spain, citing Britain's **prior claim and continuous administration**.
- It invokes the **UN Charter principle of self-determination**, highlighting the **2013 referendum**, where **99.8%** voted to remain a British Overseas Territory.
- The Falkland Islands have been on the **UN list of Non-Self-Governing Territories since 1946**.
- The **United Nations (UN)** repeatedly calls on Argentina and the UK to resume **peaceful negotiations** over the sovereignty dispute.

11.5. DRC'S SOVEREIGN CONTROL OVER GEOLOGICAL DATA

Context: Democratic Republic of Congo (DRC) to create a national geological databank for critical minerals, strengthening state control over geological data and future mining exploration. Important places in news:

- **Kinshasa** — Capital of the DRC, located on the banks of the Congo River.
- **Congo River** — DRC's major river; notable for crossing the Equator twice and possessing significant hydropower potential.
- **Inga Falls** — Site of the Inga Dam complex and proposed Grand Inga Dam, one of the world's largest planned hydropower projects.

- **Lake Albert** — One of the African Great Lakes along/near DRC's eastern region.
- **Lake Edward** — Part of the African Great Lakes system along DRC's eastern border.
- **Lake Kivu** — African Great Lake located along the DRC–Rwanda border.
- **Lake Tanganyika** — African Great Lake; world's second-deepest lake after Lake Baikal.

11.6. INTERNATIONAL CRIMINAL COURT (ICC)

Context: The **United States (US)** has intensified pressure on the **International Criminal Court (ICC)** through sanctions and withdrawal efforts. **Venezuela and Chad** have announced plans to leave the **Rome Statute**, raising concerns over the ICC's legitimacy and effectiveness.

- The **US** opposes ICC actions concerning **US personnel in Afghanistan** and Israeli officials linked to the Gaza conflict.
- It cites concerns over **national sovereignty** and the Court's exercise of jurisdiction.
- **Mali, Burkina Faso and Niger** accuse the ICC of **selective justice and neo-colonialism**, citing disproportionate focus on Africa.
- **Burundi** became the first country to withdraw in **2017**, criticising unequal attention towards African conflicts.
- Withdrawals highlight tensions between **international criminal accountability** and **state sovereignty and non-interference**.
- Withdrawal does **not erase ICC jurisdiction over crimes committed during membership**, as shown by the Philippines case.
- The ICC is the **first permanent international criminal court**, established under the **Rome Statute**.
- The **Rome Statute** was adopted on **17 July 1998** and entered into force on **1 July 2002**. Headquartered in **The Hague, Netherlands**, it prosecutes individuals for the gravest international crimes.
- It is **independent of the United Nations (UN)**, though the **UN Security Council (UNSC)** can refer situations.
- ICC jurisdiction covers **genocide, crimes against humanity, war crimes, and the crime of aggression**.

11.7. INTERNATIONAL ATOMIC ENERGY AGENCY (IAEA) REFERS IRAN TO UNSC

Context: The **International Atomic Energy Agency (IAEA)** referred Iran to the **United Nations Security Council (UNSC)** over persistent nuclear non-compliance.

- This is the **first such referral in 20 years**, citing inadequate cooperation with international nuclear inspectors.
- A resolution sponsored by the **US, UK, France and Germany** received **23 votes in favour, 3 against and 8 abstentions**. **Russia, China and Niger** opposed the resolution, while one Board member did not vote.
- UNSC referral could enable **sanctions and asset freezes**, but Russian and Chinese vetoes may block punitive measures.
- **Key Concerns Regarding Iran:** Iran has not adequately explained **anthropogenic uranium traces** detected at several undeclared sites. The IAEA estimates Iran possesses **440.9 kg of uranium enriched to 60% purity**, nearing the 90% weapons-grade threshold.
- **JCPOA and Enrichment:** The **Joint Comprehensive Plan of Action (JCPOA)** was signed in **2015** by Iran and the **P5+1**. It restricted Iran's nuclear programme in return for **economic sanctions relief**.
- The **US withdrew from the JCPOA in 2018**. Iran subsequently **gradually exceeded the agreement's uranium-enrichment limits**.
- Iran is a **Nuclear Non-Proliferation Treaty (NPT)** party and must comply with its **Comprehensive Safeguards Agreement (CSA)**.
- The safeguards require Iran to **declare nuclear material and facilities**, enabling IAEA verification against weapons diversion.
- Following **June 2025 US-Israeli strikes**, Iran restricted IAEA access to several nuclear sites.
- Restricted access has significantly weakened the IAEA's ability to verify **Iran's nuclear activities and stockpiles**.
- The IAEA was established in **1957** as the world's **"Atoms for Peace" organisation**.

- It promotes the **peaceful use of nuclear energy** while preventing its military application.
- Headquartered in **Vienna**, the IAEA reports to the **United Nations General Assembly (UNGA)** and UNSC.
- It had **181 members as of December 2025**, with **India as a founding member**.
- The IAEA received the **Nobel Peace Prize in 2005** for promoting a safer and more peaceful world.

11.8. CARDIFF PACT AND UK FEDERAL CHALLENGE

Context: Scotland, Wales and Northern Ireland signed the **Cardiff Memorandum of Understanding (MoU)** seeking greater self-determination and constitutional change in the UK. The pact reflects renewed regional tensions over **devolution, Brexit and autonomy**.

- **Cardiff MoU:** Calls for constitutional change and recognises the principle of **self-determination**; also seeks greater cooperation in **economy and energy**.
- **Pro-EU stance:** Scotland, Wales and Northern Ireland favour closer European integration, contrasting with the UK-wide **Brexit** decision.
- **UK Government:** Rejects independence referendums; maintains **parliamentary supremacy**.
- **UK Supreme Court, 2022:** Devolved legislatures **cannot unilaterally legislate for an independence**

referendum without Westminster's consent.

- **Northern Ireland:** Under the **Good Friday Agreement (1998)**, the UK Secretary of State can order a **border poll** on Irish reunification if evidence suggests majority support.

11.9. INDIA REJECTS PAKISTAN-CHINA BOUNDARY JOINT COMMISSION

- **Context:** India calls the Commission legally baseless, asserting Jammu & Kashmir and Ladakh are integral parts of India and rejecting Pakistan's *locus standi*.
- **Commission and Purpose:** Operationalised in **September 2026**, it coordinates **border management, joint surveys, trade flows and people-to-people connectivity**.
- **Legal Origin:** Stems from the **2013 Pakistan-China Agreement on Boundary Management System**; **Article 45** provides for a joint commission to oversee implementation.
- **1963 Boundary Agreement:** Pakistan transferred about **5,180 sq km of Shaksgam Valley (Trans-Karakoram Tract)** to China; India considers the agreement **illegal and invalid**.
- **Aksai Chin Dispute:** India claims **Aksai Chin as Ladakh**, while China administers it as part of **Xinjiang**; the **Xinjiang-Tibet highway**, built in the 1950s, intensified tensions.

12. PLACES IN NEWS

STUDENT'S
NOTES



ECONOMY

STUDENT'S
NOTES 

1. INDIA'S MAKHANA SECTOR

Context: The Government launched the **National Makhana Board** in Bihar on **15 September 2025**. It also approved a **Central Sector Scheme for Makhana Development**, allocating **₹476.03 crore** for **2025–26 to 2030–31**.



Current Status of the Makhana Sector

- **Global Leadership:** India is the world's largest makhana producer; Bihar supplies nearly three-fourths nationally and 80–85% globally.
- **Production Concentration:** Cultivation is centred in North Bihar, especially Supaul, Saharsa and Madhepura in the Kosi basin.
- **Regional Spread:** Mithila and Seemanchal are also major makhana-producing regions within Bihar.
- **Rising Output:** Production increased from **63,910 MT in 2024–25 to 80,590 MT in 2025–26**.
- **Improved Productivity:** Average productivity rose from **2.03 MT/ha to 2.34 MT/ha** during the same period.
- **Bihar's Output:** Bihar produced about **60,000 MT in 2025–26**, with productivity around **2.00 MT/ha**.
- **Domestic Market:** Consumption demand grew **17–18% annually during 2021–22 to 2024–25**, driven by health awareness and premium products.

Government Measures

- **National Makhana Board:** Announced in the **Union Budget 2025–26** and launched in Bihar on **15 September 2025**.
- **Development Scheme:** The Central Sector Scheme carries an outlay of **₹476.03 crore from 2025–26 to 2030–31**.
- **Key Focus:** Support covers research, quality seeds, farmer training, harvesting, post-harvest management, value addition, branding, marketing, exports and quality control.

Strengthening the Value Chain

- **Farm Operations:** Production involves pond preparation, seed broadcasting, crop management and labour-intensive underwater harvesting.
- **Primary Processing:** Seeds are dried, cleaned, roasted and popped, then polished, sorted and graded by size and quality.
- **Value Addition:** Flavoured makhana, ready-to-eat snacks, makhana flour and processed products are expanding market opportunities.
- **Start-ups and Farmer Producer Organisations (FPOs):** These entities support processing, branding, value addition and market access.

- **Research Support:** The **National Research Centre for Makhana (NRCM)** promotes improved cultivation and processing technologies.
- **Sustainable Farming:** NRCM supports water-efficient systems, integrated farming and **makhana-cum-fish farming**.
- **Seed Distribution:** NRCM distributed around **15,824.1 kg of high-yielding seeds** and trained over **3,000 farmers during 2012–2023**.
- **Enterprise Support:** Technical assistance was provided to **24 enterprises** for mechanisation and commercial technology adoption.
- **Processing Technologies:** NRCM developed seed washers, graders, roasting machines and popping machines licensed for commercial use.
- **Overall Potential:** Rising demand and technological progress can increase **farmer incomes, rural employment, value addition and agri-food exports**.

Conclusion: India's makhana industry is evolving from a traditional regional crop into a rapidly expanding **superfood economy**. Bihar's production leadership, growing demand, exports, processing and institutional support can make makhana a major source of **farmer income, rural employment and agricultural exports**.

Test Your Knowledge

Prelims Corner	Mains Corner
Q. Consider the following statements regarding the development of the makhana value chain in India: 1. Makhana cultivation and harvesting are relatively labour-intensive, with harvesting involving underwater operations. 2. Value addition in the sector is restricted mainly to cleaning, grading and polishing of raw seeds. 3. Makhana-cum-fish farming represents an approach that combines crop production with another aquatic agricultural activity. 4. The National Research Centre for Makhana has contributed to mechanisation and processing technologies in the sector. How many of the above statements are correct? (a) Only one (b) Only two (c) Only three (d) All four Answer: (c)	Q. India's makhana sector is evolving from a traditional, regionally concentrated crop into a high-value agricultural and export-oriented sector. Examine the opportunities and challenges associated with developing the makhana value chain in India. (250 words, 15 marks)

2. SURGE IN INDIA'S MERCHANDISE EXPORTS

Context: Ministry of Commerce and Industry data shows merchandise exports rose nearly **20% YoY** to **USD 44.2 billion in July 2026**. Growth continued despite **West Asian geopolitical turmoil**, aided by market diversification and maritime trade rerouting.

Strategic Rerouting & Market Diversification

- **Avoiding Chokepoints:** Exporters shifted cargo from **Jebel Ali** towards alternative ports in **Oman, Fujairah and Khor Fakkan (UAE)** to reduce Strait of Hormuz-related risks.
- **Asian Markets:** Exports to **China increased 65%** in July 2026; Singapore's share rose from **2.7% to 4.7%**, while Vietnam and Taiwan saw strong non-petroleum export growth.
- **African Markets:** Exports to **Tanzania surged 130%**, alongside strong growth in Kenya and the **Southern African Customs Union (SACU)** region.
- **US Market:** The **US remained India's largest merchandise export destination**, accounting for approximately one-fifth of total exports.

Major Challenges to Export Competitiveness

- **Middle-Technology Trap:** India faces competition from **Bangladesh and Vietnam** in labour-intensive sectors, while trailing **China, South Korea and Taiwan** in advanced manufacturing.
- **R&D Deficit:** **Gross Domestic Expenditure on Research and Development (GERD)** remains around **0.65% of GDP**, constraining indigenous innovation and high-value component manufacturing.

- **Green Protectionism: Non-Tariff Barriers (NTBs)** such as the European Union's **Carbon Border Adjustment Mechanism (CBAM)** and deforestation regulations threaten carbon-intensive exports.
- **MSME Compliance Burden:** US forced-labour investigations and stringent **Environmental, Social and Governance (ESG)** requirements raise compliance costs and market-entry barriers.
- **Petroleum Dependence:** Refined petroleum exports can overstate export strength because they depend heavily on **imported crude oil and global prices**.
- **Geopolitical Risks:** West Asian and **Red Sea conflicts** can disrupt shipping routes, increase freight costs and lengthen transit times.
- **Inverted Duty Structure:** Higher tariffs on **inputs than finished goods** discourage domestic value addition and weaken GVC competitiveness.
- **Chinese Input Dependence:** Pharmaceuticals and electronics remain reliant on Chinese intermediates, creating supply-chain vulnerabilities.
- **Low FTA Utilisation:** Indian exporters have historically used FTAs at only around **25%**, partly due to complex **Rules of Origin (ROO)** and limited institutional awareness.



Measures to Strengthen Export Competitiveness

- **Deep GVC Integration:** Move beyond assembly-centric **Production-Linked Incentive (PLI)** models towards deep-tier manufacturing in semiconductors, green technologies and precision engineering.
- **Component Localisation:** **ECMS** and **India Semiconductor Mission 2.0** should support deeper localisation; similar efforts are needed for pharmaceutical **Active Pharmaceutical Ingredients (APIs)** and telecom components.
- **ESG Preparedness:** Develop internationally accredited domestic carbon-pricing markets and use **TRACE (Trade Regulations, Accreditation & Compliance Enablement)** to help MSMEs meet global certification requirements.
- **FTAs 2.0:** Future FTAs should secure greater **Mode 4 services mobility** while enforcing robust ROO against third-country dumping.
- **Logistics Reform:** Implement the **National Logistics Policy** and proposed **LIFT (Logistics Interventions for Freight & Transport)** scheme to shift freight towards rail corridors and coastal shipping, targeting logistics costs of **7–8% of GDP**.
- **Tariff Rationalisation:** Correct inverted duties so inputs are not costlier than finished products, encouraging domestic value addition.
- **MSME Export Support:** Expand affordable **trade finance, export credit, insurance, branding, certification and market intelligence** through initiatives such as **Niryat Protsahan** and **Niryat Disha** under the Export Promotion Mission.

Conclusion: India must shift from “**export promotion**” to “**export competitiveness**” by strengthening technology, competitive inputs, logistics resilience, skilled labour and deeper **Global Value Chain (GVC)** integration. This can move India beyond low-cost assembly towards a **high-value global manufacturing hub**, supporting the **\$5 trillion economy** and “**Factory to the World**” ambitions.

Test Your Knowledge

Prelims Corner	Mains Corner
Consider the following statements regarding India's merchandise export competitiveness: 1. A rise in refined petroleum exports does not necessarily imply a corresponding rise in domestic value addition. 2. An inverted duty structure can reduce the competitiveness of domestic manufacturers by making imported intermediate inputs relatively more expensive than finished products. 3. Greater integration into Global Value Chains necessarily requires India to eliminate all tariffs on intermediate goods. 4. Low utilisation of Free Trade Agreements can partly arise from difficulties associated with Rules of Origin. Which of the statements given above are correct? (a) 1, 2 and 4 only (b) 1 and 3 only (c) 2, 3 and 4 only (d) 1, 2, 3 and 4 Answer: (a)	Q. "India's recent merchandise export growth reflects improving market diversification, but sustained export competitiveness requires a shift from export promotion to deeper integration with Global Value Chains." Discuss the major structural constraints to India's export competitiveness and suggest measures to make Indian exports globally competitive. (15 marks, 250 words)

3. FOREIGN CONTRIBUTION (REGULATION) AMENDMENT BILL, 2026

Context: Both Houses referred the Foreign Contribution (Regulation) Amendment Bill, 2026 to a Joint Parliamentary Committee (JPC) for detailed scrutiny and stakeholder consultations.

Major Provisions of the FCRA Bill, 2026

- **Foreign-funded Asset Management:** Establishes procedures to supervise, manage and dispose of assets after FCRA registration ceases.
- **When Registration Ends:** Registration may cease through government cancellation, voluntary surrender, or non-submission/rejection of renewal applications.
- **Designated Authority:** Creates an Authority to custody, manage and dispose of assets, addressing the procedural gap under Section 15 of FCRA, 2010.
- **Temporary Asset Custody:** Assets enter the Authority's provisional custody and must be returned if FCRA registration is restored.
- **Permanent Asset Vesting:** Without restoration within the prescribed period, assets permanently vest with the Authority for public purposes; sale proceeds enter CFI.
- **Religious Site Protection:** The Authority must preserve places of worship's religious character and cannot convert, repurpose or secularise them.
- **Appeal Mechanism:** Organisations may seek revision within **90 days** and challenge the Authority's order before the **District Judge**.
- **Automatic Registration Cessation:** Proposed **Section 14B** ends FCRA registration automatically when renewal is not completed before expiry.
- **Reduced Punishment:** Maximum imprisonment for FCRA violations falls from **five years to one year**, promoting proportionate enforcement.



- **Central Approval for Investigations:** States and agencies need **Central Government approval** before initiating FCRA investigations, preventing overlapping proceedings.

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Way Forward

- **Adopt Risk-Based Regulation:** Target unlawful activities, political interference and national-security risks while protecting legitimate welfare, educational, healthcare and humanitarian organisations.
- **Ensure Due Process and Proportionality:** Require notice, hearing, reasoned orders, appeals and **judicial review** for registration, penalties and asset-related actions.
- **Create Independent Grievance Mechanisms:** Establish independent review systems for registration, renewals, approvals and regulatory disputes to strengthen accountability and administrative fairness.
- **Strengthen Disclosure-Based Transparency:** Publicly disclose foreign contributors, affiliations and fund utilisation, drawing lessons from **US FARA**, Australia and Canada.
- **Prefer Targeted Scrutiny:** Focus enhanced monitoring on credible national-security, unlawful-activity and political-influence risks rather than imposing blanket compliance burdens.
- **Promote Cooperative Federalism:** Consult State governments, civil society and affected institutions while protecting legitimate charitable, educational, healthcare and welfare activities.
- **Improve Compliance:** Provide clear guidelines, time-bound approvals, transparent decisions and capacity-building support to reduce unnecessary administrative barriers.

Conclusion: A balanced FCRA framework can reconcile national security with civic space, ensuring transparent foreign funding, due process, cooperative federalism and proportionate regulation while enabling legitimate social-sector contributions to India's development.

Test Your Knowledge

Prelims Corner	Mains Corner
Q. Consider the following statements regarding the proposed changes to the Foreign Contribution (Regulation) Act: 1. The Bill proposes to make renewal failure before expiry a ground for automatic cessation of FCRA registration. 2. The Bill proposes to increase the maximum imprisonment for FCRA violations from five years to strengthen deterrence. 3. The proposed asset framework distinguishes between temporary custody and permanent vesting. 4. The Bill seeks to require prior approval of the Central Government before States or agencies initiate FCRA investigations. How many of the above statements are correct? (a) Only one (b) Only two (c) Only three (d) All four Answer: (c) Only three Explanation: Statements 1, 3 and 4 are correct.	Q. "Regulation of foreign contributions is essential for safeguarding national interests, but excessive executive control can undermine civil society and institutional autonomy." In this context, examine the key provisions and concerns associated with the Foreign Contribution (Regulation) Amendment Bill, 2026. Suggest measures to ensure a balance between regulatory oversight and civil society freedom. (15 marks, 250 words)

4. SC REVISITS THE DEFINITION OF 'INDUSTRY' IN INDIAN LABOUR LAW

Context: A nine-judge Constitution Bench of the Supreme Court delivered a fractured verdict in *State of Uttar Pradesh v. Jai Bir Singh (2026)* on the meaning of "industry" under Indian labour law.

- The Court held that the broad, worker-centric definition evolved in the **1978 Bangalore Water Supply judgment** will **not automatically apply to the Industrial Relations Code (IRC), 2020**.
- The ruling creates a **"clean slate"** for interpreting "industry" under the new Code, prompting concerns among Central Trade Unions over possible dilution of workers' rights.

More About the Judgment

- The **1978 Bangalore Water Supply 'Triple Test'** continues to govern **pending disputes under the Industrial Disputes Act, 1947**.
- However, it **does not automatically govern disputes under the Industrial Relations Code, 2020**.
- The judgment begins a new phase in labour jurisprudence, raising issues of **worker protection, collective bargaining and industrial peace**.
- It underscores the need to balance **economic growth with social justice**.

Background of the Case

- The dispute concerned the interpretation of **'industry'** under **Section 2(j) of the Industrial Disputes Act, 1947**.
- **1978:** A seven-judge Constitution Bench in *Bangalore Water Supply and Sewerage Board v. A. Rajappa* adopted an expansive definition through the **'Triple Test'**.

Comparing the Two Cases

Bangalore Water Supply Judgment, 1978	State of U.P. v. Jai Bir Singh, 2026
The Court adopted a broad, worker-oriented interpretation of "industry" under Section 2(j). 'Triple Test' An activity qualified as an industry when it involved: 1. Systematic activity 2. Employer-employee cooperation 3. Production or distribution of goods/services to satisfy human wants Significance • Profit motive was not essential, bringing several service-oriented institutions within labour-law protection. • The approach extended labour rights to workers in hospitals, educational institutions, charities and municipalities. • Only core sovereign functions were excluded, including defence, law and order and the judiciary.	• Independent Test: "Industry" under the Industrial Relations Code (IRC), 2020 must be interpreted independently, on a "clean slate." • Bangalore Water Supply: Its 1978 test is no longer the "sheet anchor" for the new Code. • Pending Cases: Disputes under the repealed Industrial Disputes Act, 1947 will continue under the 1978 test. Significance • Worker Protection: Narrower coverage may affect labour safeguards. • Collective Bargaining: Uncertainty may affect access to collective mechanisms. • Industrial Peace: Divergent interpretations could trigger litigation. • Balancing: Highlights the tension between Ease of Doing Business and labour rights. • Code Transition: Signals a shift from the ID Act, 1947 to the IRC, 2020 framework.

- Later judgments created uncertainty regarding **government welfare activities, sovereign functions, hospitals and educational institutions.**
- **2005:** In *State of U.P. v. Jai Bir Singh*, a five-judge Bench referred the issue for reconsideration by a larger Bench.
- **2017:** A seven-judge Bench directed that the matter be placed before a **nine-judge Constitution Bench.**

Split Bench Perspectives

- **Majority View:** The 1978 test may be refined to reflect modern industrial realities, while retaining its application to pending cases.
- **Dissenting View:** Reconsideration was unnecessary; a broad 'industry' definition remains vital amid privatisation and globalisation, preserving legal certainty and industrial peace.
- **Separate Opinions:** The Industrial Relations Code (IRC) must be interpreted independently; absence of profit motive alone cannot exclude an entity from 'industry'.



Concerns of Trade Unions

- **Exclusion of Social Institutions:** The IRC expressly excludes **charitable, philanthropic and social institutions** from "industry".
- **Loss of Labour Rights:** Unions fear exclusion could deprive workers of **collective bargaining, minimum-wage protections and dispute-resolution mechanisms.**
- **Broader Labour-Code Concerns:** The four Labour Codes have raised apprehensions regarding **job security, social security and worker protection.**
- **Misuse of Labels:** Amid outsourcing, **public-private partnerships and contractualisation,** employers could misuse "charity" or "government project" labels to evade labour laws.
- **Pro-Corporate Perception:** Unions fear greater emphasis on an organisation's **formal character rather than actual work performed** could favour employers.
- **Collective Bargaining:** Narrowing the 1978 scope may leave non-profit and welfare workers vulnerable to **arbitrary hiring and dismissal** by weakening unionisation and dispute rights.

Way Forward

- **Strict Exemptions:** Courts should narrowly interpret **Section 2(p) IRC exemptions,** preventing blanket immunity for non-sovereign/commercial activities of governments or charitable trusts.
- **Substance Over Form:** Determine "industry" primarily from **actual employer-worker cooperation and service delivery,** not merely legal or tax status.
- **Alternative Redress:** Establish accessible grievance forums for excluded workers to prevent **exploitation and denial of effective remedies.**

- **Constitutional Alignment:** Labour-law interpretation should advance **Directive Principles of State Policy**, especially **Article 43** on living wages and decent conditions and **Article 43A** on workers' participation in management.

Conclusion: The judgment offers an opportunity to build **modern labour jurisprudence** that balances economic dynamism with **worker dignity, collective bargaining and social justice**, ensuring reform strengthens rather than weakens industrial peace.


Test Your Knowledge


 Prelims Corner	Mains Corner 
With reference to the Supreme Court's judgment in State of U.P. v. Jai Bir Singh (2026), consider the following statements: 1. The Bangalore Water Supply test continues to govern pending disputes under the Industrial Disputes Act. 2. The test automatically governs disputes under the Industrial Relations Code, 2020. 3. The IRC requires an independent interpretation of "industry". 4. Profit motive alone determines whether an activity is an "industry". Which of the statements given above are correct? (a) 1 and 3 only (b) 1, 2 and 4 only (c) 2 and 3 only (d) 1, 3 and 4 only Answer: (a) 1 and 3 only	Q. "The Supreme Court's 2026 judgment in State of U.P. v. Jai Bir Singh marks a shift towards an independent interpretation of 'Industry' under the Industrial Relations Code, 2020." Discuss its implications for workers' rights, collective bargaining and the balance between labour protection and ease of doing business. (15 marks, 250 words)

5. SUGAR PRICE SURGE IN INDIA

Context: Sharp Price Rise: Sugar prices surged in August 2026, with retail prices in major cities rising **around 40% within a fortnight**.

Factors Behind the Sugar Price Surge

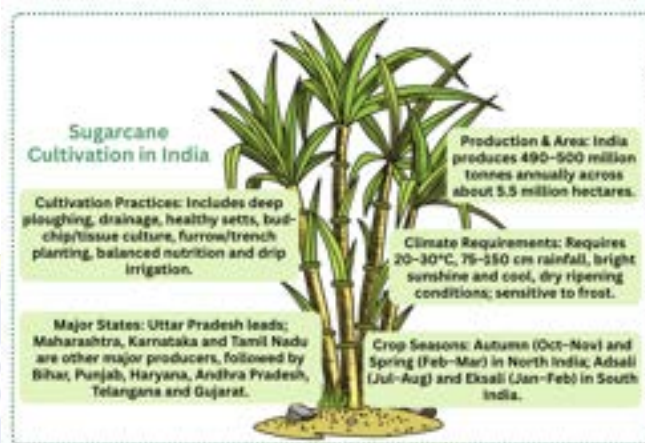
- **Weather and Disease Damage:** Excess rainfall and waterlogging in Maharashtra, alongside **Red Rot and Top Borer**, reduced yield and sugar recovery.
- **Festive Demand:** Sugar demand rises before **Onam, Raksha Bandhan and the festive season**, driven by sweets, confectionery and processed foods.
- **Reduced Carry-over Stocks:** Lower production and around **8 LMT exports** have tightened domestic availability before October's crushing season.
- **Hoarding and Speculation:** Shortage expectations prompted mills, traders and bulk consumers to hold inventories, restricting immediate supply.
- **Global Supply Tightness:** A projected **33 LMT global deficit** for 2026–27 pushed international prices **over 16%**, from **USD 474/tonne in June to USD 552/tonne in August 2026**.
- **Limited Ethanol Impact:** Sugar diversion for ethanol was around **3 MT in 2025–26**, below earlier expectations.
- **Main Price Drivers:** The surge mainly reflects **lower production, festive demand, weather damage and market behaviour**, rather than ethanol diversion.



Structural Challenges in India's Sugar Sector

- **Dual Cane Pricing:** Centre fixes **Fair and Remunerative Price (FRP)**, while States often announce higher **State Advised Prices (SAP)**, distorting price signals.

- **High Cane Cost:** Cane accounts for **65–75% of mill costs**; high prices squeeze margins, raise arrears and create boom-bust cycles.
- **Water Stress:** Cane expansion in **Maharashtra and Karnataka** increases irrigation dependence, groundwater depletion and drought vulnerability.
- **Inefficient Mills:** Small mills with **obsolete machinery** face high processing costs, low sugar recovery and poor energy efficiency.
- **Biofuel–Food Trade-off:** Ethanol diversion supports mill revenues and clears cane dues but may reduce **sugar availability** and intensify water stress in low-production years.



Measures to Reform India's Sugar Sector

- **Rangarajan Committee (2012):** Link cane prices to **sugar and by-product realisation** through revenue sharing; reform reservation and distance norms.
- **NITI Aayog Task Force (2020):** Promote **crop diversification**, dynamic Sugar Minimum Support Price (MSP) linked to FRP and integrated bio-refineries.
- **Water-efficient Agriculture:** Expand **drip/subsurface irrigation**, drought-resistant varieties, crop rotation and precision irrigation.
- **Agro-climatic Planning:** Shift sugarcane towards **water-abundant, suitable regions** and away from severely water-stressed areas.
- **Policy & Trade Stability:** Adopt **predictable, formula-based trade policies** and stable rules for pricing, ethanol diversion, exports, imports and stocks.



Conclusion: India's sugar sector needs a balanced approach integrating price stability, water security and predictable trade policies. Sustainable production, crop diversification and efficient resource use can ensure long-term resilience.

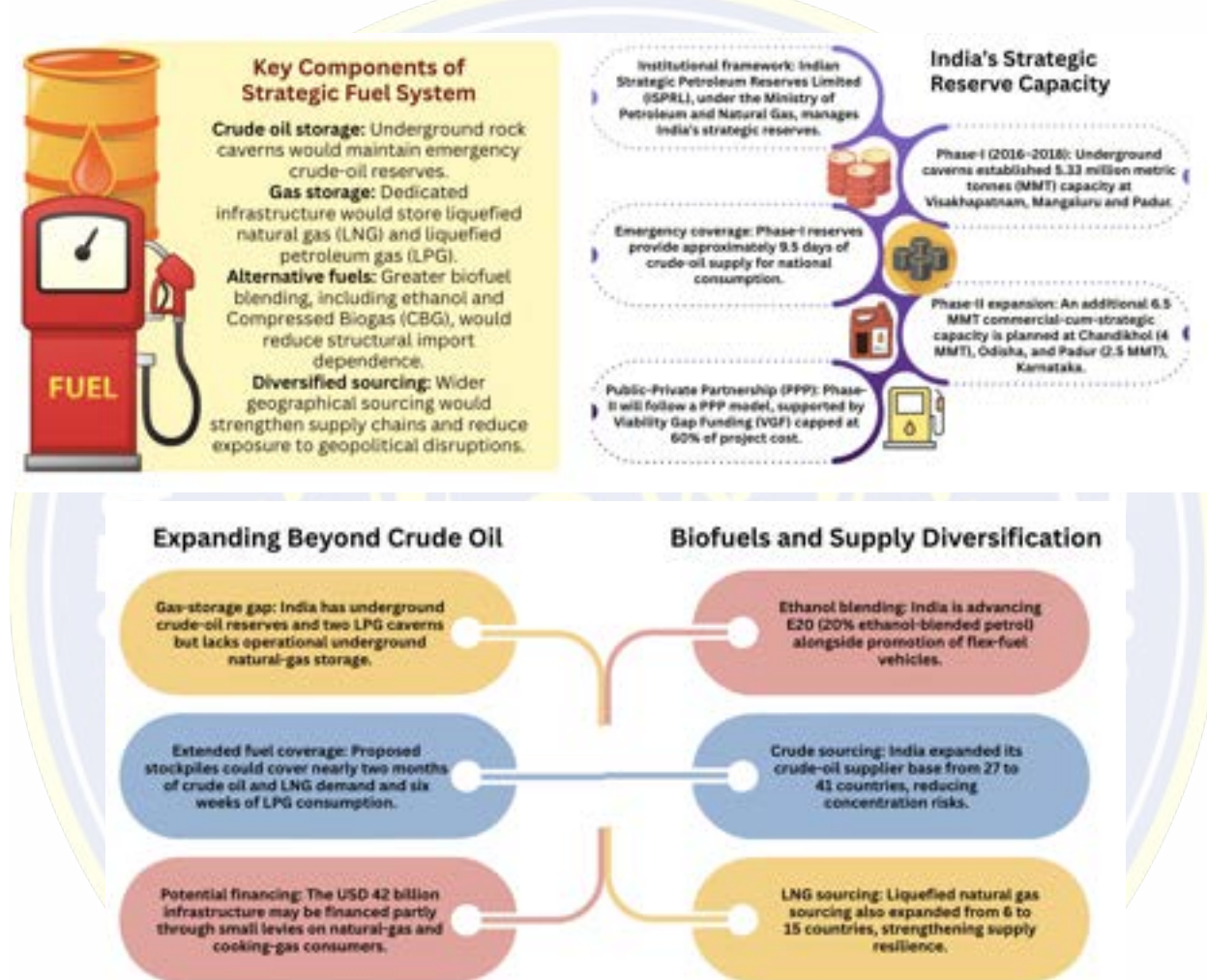
6. BUILDING STRATEGIC FUEL SYSTEM

Context: Energy-security vulnerabilities: West Asian disruptions exposed India's dependence on imported crude oil, liquefied natural gas (LNG) and liquefied petroleum gas (LPG).

Why India Needs a Comprehensive Strategic Fuel System

- **Import Dependence:** India, the **world's third-largest oil importer and consumer**, imports over **85% crude oil** and nearly **50% natural gas**.
- **Limited Strategic Buffer:** India's **5.33 million metric tonnes (MMT)** crude reserves provide limited protection; reserves are currently around **80% full**.

- **Import Exposure:** India imported **60.48 million tonnes** of crude oil worth **USD 49.66 billion** in Q1 FY27, reflecting high external dependence.
- **Inadequate Coverage:** Phase-I Strategic Petroleum Reserves (SPR) provide only **9.5 days** of crude coverage, with utilisation around **64%**.
- **International Gap:** Even with commercial refinery stocks, India remains below the **International Energy Agency's (IEA) recommended 90-day strategic buffer**.
- **Fiscal Stability:** Strategic reserves can cushion price shocks, reducing consumer subsidies and losses absorbed by **Oil Marketing Companies (OMCs)**.
- **Gas-Based Transition:** India aims to raise natural gas's energy-mix share from approximately **6% to 15% by 2030**, supporting lower emissions.



Key Challenges in Building Strategic Fuel Reserves

- **Heavy Financial Requirement:** The proposed programme could cost around **USD 42 billion**, covering infrastructure and fuel inventory procurement.
- **Recurring Costs:** Reserves require continuous **financing, maintenance and replenishment**, particularly after emergency releases.
- **Project-Execution Delays:** Strategic-storage expansion faces implementation hurdles, delaying conversion of planned capacity into operational reserves.
- **Chandikhol Delay:** Phase-II's Chandikhol project faces **land-acquisition and commercial Public-Private Partnership (PPP) framework** finalisation challenges.
- **Geological Requirements:** Gas storage requires suitable depleted reservoirs or salt caverns alongside detailed geological, engineering and pipeline assessments.
- **Site Suitability:** Underground gas sites need **cap-rock integrity, reservoir characteristics, pressure behaviour, existing wells, cushion gas and pipeline connectivity**.
- **Deliverability Challenge:** Strategic reserves matter only when stored fuel can be **withdrawn and transported** at required rates during emergencies.

- **Chokepoint Exposure:** Maritime dependence leaves India vulnerable to disruptions at strategic routes, particularly the **Strait of Hormuz**.

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Measures to Strengthen India's Strategic Fuel System

- **Underground Gas Storage:** Develop underground natural-gas storage using suitable depleted reservoirs and salt caverns where geological conditions permit.
- **Complement LNG Storage:** Combine underground gas reserves with surface LNG storage to improve flexibility during prolonged supply disruptions.
- **Expand Salt Caverns:** Develop suitable salt formations, particularly in **Rajasthan**, for faster injection, withdrawal and short-term supply balancing.
- **Commercial-Cum-Strategic Models:** Expand **PPP and commercial-cum-strategic models** to mobilise private capital while preserving government emergency access.
- **Clear Governance Framework:** Establish clear rules governing financing, ownership and inventory replenishment for strategic fuel facilities.
- **Improve Connectivity:** Expand **pipeline networks, regasification capacity and distribution infrastructure** for rapid fuel delivery to priority consumers.
- **Diversify Supply Chains:** Continue diversifying import sources and shipping capacity to reduce dependence on individual suppliers and maritime chokepoints.
- **Strengthen Domestic Shipping:** Enhance domestic shipping capabilities and sourcing partnerships with **Algeria and the United States (US)** to improve resilience.
- **International Cooperation:** Use the **International Solar Alliance (ISA)** to strengthen energy cooperation, technology sharing and joint research.
- **Clean-Energy Collaboration:** International partnerships should prioritise **energy storage, clean fuels and resilient energy infrastructure**.

Conclusion: India must evolve from fragmented reserves towards an integrated strategic fuel architecture, combining diversified supplies, storage resilience and rapid deliverability to secure energy needs and strengthen economic sovereignty.

Test Your Knowledge	
Prelims Corner	Mains Corner
Consider the following statements regarding India's proposed Strategic Fuel System: 1. India's Strategic Petroleum Reserves under Phase-I provide a buffer against crude-oil supply disruptions, but their effectiveness is also constrained by the rate at which stored crude can be withdrawn and transported. 2. Underground natural-gas storage can potentially provide greater flexibility during supply disruptions when developed in suitable depleted reservoirs or salt caverns. 3. Surface LNG storage can completely substitute for underground natural-gas storage because both provide identical capabilities in terms of injection, withdrawal and supply balancing. Which of the statements given above are correct? A. Only one B. Only two C. All three D. None Answer: B	Q. India's growing dependence on imported hydrocarbons and vulnerability to geopolitical and maritime disruptions necessitate a shift from conventional Strategic Petroleum Reserves (SPR) to a comprehensive Strategic Fuel System. Discuss the need, challenges and measures required to build such a system while ensuring India's long-term energy security and clean-energy transition. (15 marks, 250 words)

7. NATIONAL ACCOUNTS STATISTICS 2026

Context: The Ministry of Statistics and Programme Implementation (MoSPI) released **National Accounts Statistics 2026**, adopting **2022–23** as the base year.

Key Highlights

- **New Base Year:** The 2026 series adopts **2022–23** as the new base year for major macroeconomic indicators and incorporates updated series of the **Producer Price Index (PPI)**, **Index of Industrial Production (IIP)** and **Banking Services Price Index (BkSPI)**.
- **Double Deflation for Manufacturing:** MoSPI adopted **Double Deflation** for manufacturing **Gross Value Added (GVA)**, aligning with **United Nations System of National Accounts (UN**

SNA) standards. Earlier a single deflator was used for both output and intermediate consumption. As per the new method, output and intermediate inputs are deflated separately, capturing price changes in finished goods and raw materials more accurately.

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Concerns Regarding India's GDP Data

- **Manufacturing Deflator Concerns**
 - **Double Deflation** separately adjusts output and input prices; faster input-price growth can produce a **negative deflator**.
 - This may **overstate real manufacturing growth**, even when actual production remains weak.
- **Informal-Sector Measurement Bias**
 - India's large **unorganised sector** generates substantial employment but provides limited **real-time data**.
 - The government has historically used **formal corporate-sector growth as an informal-sector proxy**.
 - This creates "**large firm bias**", potentially overstating GDP by assuming small firms grow like large corporations.
- **MCA-21 Data Dependence**
 - GDP estimates substantially depend on **Ministry of Corporate Affairs (MCA)-21** data, raising concerns about **company misclassification** and "**blowing-up factors**".
 - Some economists estimate underlying growth could be as low as **2.6%**, against the reported **7.8% headline growth**.
- **Base-Year Revision Controversy**
 - Shifting the base year from **2011–12 to 2022–23** requires historical data revision under the new methodology.
 - Critics alleged **Q1 2025 data was revised downward** to inflate Q1 2026 growth, but MoSPI called cross-series comparisons statistically invalid.
 - Delayed publication of the **GDP back-series** also complicates analysis of historical growth and structural changes.
- **WPI-Based Deflator Limitations**
 - India historically lacked a proper **Producer Price Index (PPI)** and relied heavily on the **Wholesale Price Index (WPI)** for converting nominal GDP into real GDP.
 - WPI's high exposure to global commodities, especially **oil**, can create artificial deflation when international oil prices fall.
 - Such deflation may **inflate reported real growth**, including in sectors like services with limited direct oil dependence.



8. A DECADE OF FLEXIBLE INFLATION TARGETING IN INDIA

Context: India has completed **10 years of the Flexible Inflation Targeting (FIT) framework**, renewing debate over its effectiveness. A decade-long **Economic and Political Weekly (EPW)** study questions its theoretical assumptions and effectiveness in the Indian context.

Channels of Inflation Targeting by RBI

- **Demand Channel:** When inflation rises, the RBI increases the repo rate, raising commercial lending rates. Costlier loans reduce household consumption and business investment, lowering aggregate demand and, theoretically, inflation.
- **Expectations Channel:** A clear inflation target helps anchor future price expectations. Stable expectations can prevent excessive wage demands and advance price increases by businesses, thereby avoiding a self-reinforcing inflation spiral.

Achievements of FIT Framework

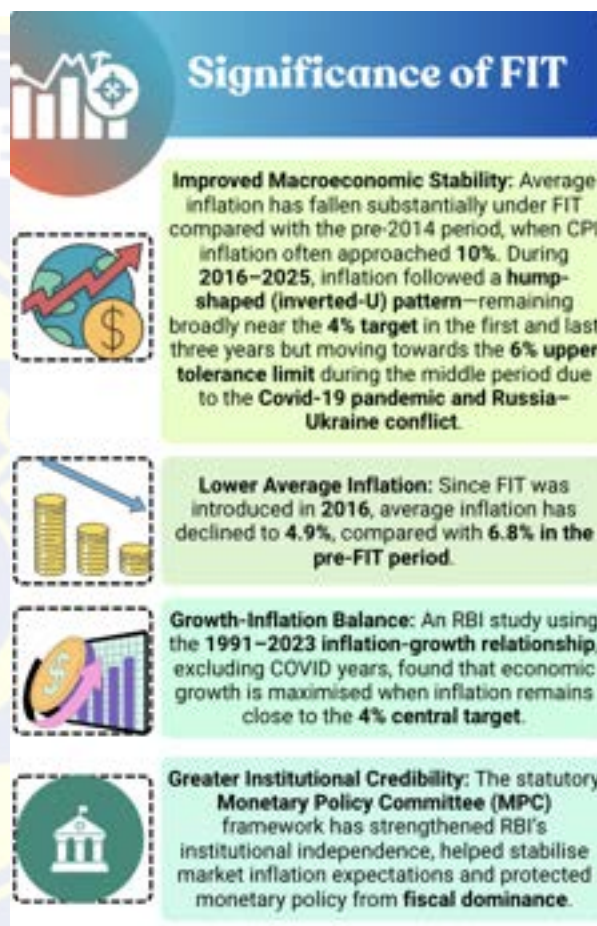
- **Lower Inflation:** Over the decade, average inflation declined from **6.8% to 4.9%**.
- **Key Concern:** However, the **EPW study** finds a largely **flat Phillips Curve** and persistently high household inflation expectations, raising doubts about how effectively demand-based monetary tightening can control inflation in India.

Concerns with the Flexible Inflation Targeting (FIT) Framework

- **Mismatch with India's Labour Market:** Traditional models assume that higher output strengthens workers' bargaining power, leading to higher wages and prices. However, around **92% of India's workforce is informal**, with limited wage-bargaining power. As largely **"price takers"**, these workers weaken the assumed link between output, wages and inflation.
- **Poorly Anchored Expectations:** Household inflation expectations have remained, on average, **4 percentage points above RBI projections**, suggesting that the monetary policy expectations channel has failed to adequately anchor public expectations.
- **Supply-Driven Inflation:** Indian inflation is frequently influenced by **food-price volatility, monsoon shocks, fuel-price changes and global supply-chain disruptions**. Since monetary policy mainly manages demand, rate hikes cannot directly address such supply constraints. Without supply-side action, tightening can lower **demand, output and employment** without sustainably reducing inflation.
- **Surplus Liquidity:** The RBI often has to manage **excess systemic liquidity**, including liquidity created through **forex operations to defend the currency**. Such surplus liquidity can push overnight rates down, working against a tight monetary policy stance.
- **Weak Inflation–Output Link:** Data for **April 2012–March 2026** shows that India's **New Keynesian Phillips Curve (NKPC)** is nearly flat, indicating a weak link between output and inflation. Aggressive rate hikes may therefore reduce **output and employment** significantly without proportionately lowering inflation, raising the risk of **stagflation**.

Measures to Strengthen FIT

- **Joint Food Inflation Response Cell:** Create an **RBI–Consumer Affairs Ministry** mechanism with a **6% three-month food-inflation trigger** for automatic buffer-stock releases, pulse sales



and calibrated import-duty cuts. This would reduce pressure on the MPC to tackle supply shocks through rate hikes.

- **Review the Inflation Anchor:** Policymakers should assess **Core Inflation** versus **Headline CPI** as the policy anchor. Core inflation excludes volatile food and fuel prices and could prevent temporary agricultural shocks from disproportionately influencing monetary policy.
- **Improve Transmission to Informal Credit:** Extend transparent, **benchmark-linked lending rates** to NBFCs and MFIs, while expanding credit guarantees for MSMEs. This can help repo-rate changes reach the informal economy, where conventional monetary transmission is weak.
- **Revive Inflation-Indexed Bonds:** Reintroduce **liquid, retail-oriented inflation-indexed bonds with regular interest payments** to provide households with a credible inflation hedge and reduce dependence on physical assets such as gold.
- **Track Second-Round Effects:** Establish measurable indicators—such as **persistent food inflation combined with sustained core inflation**—to assess second-round effects before further monetary tightening. This can make MPC decisions more predictable and limit unnecessary growth costs.

Conclusion: A decade of FIT shows both its value and limitations. Going ahead, **adaptive monetary policy, stronger supply management and credible inflation governance** can better align price stability with India's growth ambitions.

Test Your Knowledge	
Prelims Corner With reference to India's Flexible Inflation Targeting (FIT) framework, consider the following statements: 1. The inflation target is based on Consumer Price Index (CPI)-Combined. 2. The inflation target is set by the Reserve Bank of India (RBI) alone. 3. Failure of the inflation mandate is assessed when average inflation remains outside the 2-6% band for three consecutive quarters. 4. The Monetary Policy Committee (MPC) is a statutory institution under the RBI Act. Which of the statements given above are correct? (a) 1, 3 and 4 only (b) 1 and 2 only (c) 2, 3 and 4 only (d) 1, 2, 3 and 4 Answer: (a)	Mains Corner Q. "A decade of Flexible Inflation Targeting has improved India's macroeconomic stability, but its effectiveness remains constrained by supply-side shocks and weak monetary transmission." Critically examine. (15 marks, 250 words)

9. DECENTRALISED GRAIN STORAGE PLAN IN COOPERATIVE SECTOR

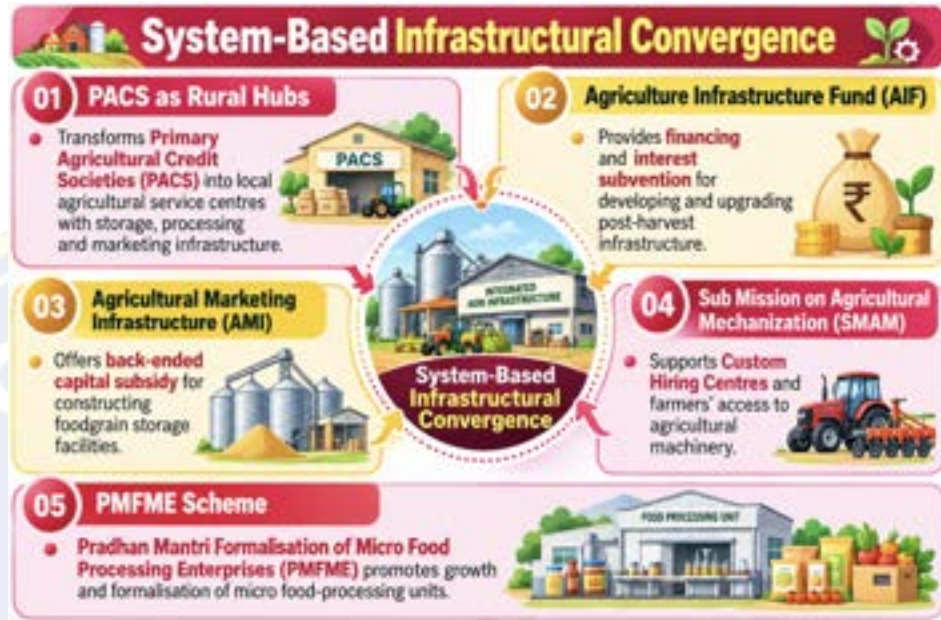
Context: The Decentralised Grain Storage Plan is expanding local grain storage through cooperatives, strengthening agricultural infrastructure across India.

Key Features of the Plan

- Launched as a **pilot on 31 May 2023**, the plan expands cooperative-based grain storage, procurement, processing and distribution.
- **Cooperative Model:** It converges **existing government schemes**, using **Primary Agricultural Credit Societies (PACS)** as decentralised storage and agricultural service centres.
- **PACS Diversification:** The initiative enables **PACS** to diversify into storage and agricultural activities, creating stronger rural economic opportunities.
- **Farmer Benefits:** Local storage helps farmers avoid **distress sales**, improve price realisation, gain storage flexibility and earn additional income.
- **Implementing Agency:** **National Cooperative Development Corporation (NCDC)** implements the Decentralised Grain Storage Plan in the cooperative sector.
- **National Coordination:** **Inter-Ministerial Committee (IMC)** oversees implementation, while **National Level Coordination Committee (NLCC)** coordinates participating institutions.
- **State-Level Support:** **State Cooperative Development Committees (SCDCs)** and **District Cooperative Development Committees (DCDCs)** coordinate implementation at respective levels.

Significance

- **Decentralised Model:** The plan shifts India from centralised storage towards **community-based agricultural infrastructure through integrated PACS**.
- **Development Impact:** Integrated cooperative storage can reduce **post-harvest losses**, raise farmer incomes and strengthen **food security**.
- **Long-Term Role:** Technology, finance and quality standards can make cooperative storage a **key pillar of sustainable agricultural development**.
- **Higher Subsidy:** **Agricultural Marketing Infrastructure (AMI)** subsidy increased from **25% to 33.33%**, while margin money fell from **20% to 10%**.



- **Credit Support:** **National Bank for Agriculture and Rural Development (NABARD)** channels AMI subsidies; State Cooperative Banks and District Central Cooperative Banks provide PACS credit.
- **Interest Benefit:** NABARD's special refinance facility and **3% AIF interest subvention** reduce PACS' effective loan interest rate to **1%**.
- **Assured Hiring:** **Food Corporation of India (FCI)** assures hiring eligible plan godowns, subject to conditions, improving project financial sustainability.
- **Uniform Branding:** Standardised branding, including approved grain-storage **logos and colour schemes**, creates a recognisable infrastructure identity.
- **Construction Standards:** Storage facilities must follow **Warehousing Development and Regulatory Authority (WDRA) norms**, with climate-appropriate designs, durable materials, ventilation and safety measures.
- **Monitoring:** Regular **inspections and quality audits** ensure construction and safety compliance; PACS members monitor progress and **Project Management Consultants (PMCs)** report construction and expenditure.

Conclusion: Decentralised grain storage can make PACS engines of rural transformation, linking farmers with markets, finance and infrastructure while building a more resilient and efficient food system.

10. DISTRICTS AS EXPORT HUBS (DEH) INITIATIVE

Context: The Government is promoting the **Districts as Export Hubs (DEH) Initiative** to make export growth more inclusive by connecting **local products and producers with global markets**. It seeks to turn every district into an **export planning unit** by identifying



products and services with export potential.

Key Features of DEH

- **Beyond Production:** Instead of focusing only on production, DEH treats each district as an **export-planning unit**, helping enterprises improve competitiveness and access international markets.
- **District as an Export Unit:** DEH uses each district's **unique resources, products and strengths** to improve export potential and connect local economies with global markets.
- **National Development Goals:** It supports **Aatmanirbhar Bharat** and **Vocal for Local** by promoting local products, strengthening **MSMEs** and creating grassroots employment.
- **Evolution from ODOP:** The initiative evolved from the **One District One Product (ODOP)** approach. The **Department of Commerce**, through the **Directorate General of Foreign Trade (DGFT)**, expanded ODOP from product promotion into a broader **export-ecosystem development framework**.
- **Wide Coverage:** As of **January 2026**, DEH covers **770+ districts** across India.

One District One Product (ODOP)

- **About:** ODOP is a flagship initiative of the **Ministry of Commerce and Industry**, implemented through the **Department for Promotion of Industry and Internal Trade (DPIIT)** with support from **Invest India**.
 - Inspired by Japan's "**One Village One Product**" model, it identifies, brands and promotes a **distinctive product from each district**. By 2025, it covered **1,102 products across 761 districts**, including agriculture, handicrafts, textiles and food products.
- **Purpose:** ODOP aims to turn local specialities into **global brands** by supporting **farmers, artisans and small enterprises**, while preserving traditional skills and cultural heritage.
 - Launched in **Uttar Pradesh in 2018**, beginning with **Moradabad's brassware**, it helped revive crafts such as **chikankari, pottery, carpets, leather goods and brassware**.

Working Mechanism of DEH Framework

- **Convergence Framework:** DEH is **not a separate funding scheme**; it brings together existing **Central and State government schemes** to address district-specific export challenges.
- **Complete Export Ecosystem:** It strengthens **manufacturing capacity, export readiness, logistics, quality standards and market access** to improve district-level competitiveness.
- **Inclusive Growth:** Supporting **local industries, agricultural products, handicrafts and MSMEs** promotes employment and broad-based economic growth.

Strengthening District Export Ecosystems

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- **Identifying Export Products:** DEH identifies district-specific products and services with export potential, including **GI-tagged products, agricultural clusters, handicrafts, engineering goods and toy clusters**.
- **Meeting Global Standards:** Producers receive support and awareness on **international quality standards, testing, packaging, branding and certification**, helping products meet global requirements and improve competitiveness.
- **Digital & E-commerce Exports:** DEH connects **MSMEs and local producers with e-commerce platforms**, offering affordable logistics and helping overcome freight-cost and market-access barriers.
 - **Dak Ghar Niryat Kendras** provide low-cost postal export services for **documentation, packaging and small consignments**.
- **Export Capacity Building:** DGFT Regional Authorities, district administrations and partner organisations conduct training on **export procedures, logistics, packaging standards and regulatory compliance**.
- **Grassroots Export Development:** The DGFT and EXIM Bank collaborate under the **Grassroots Initiatives for Development (GRID)** programme to strengthen district export ecosystems.
 - **Selected Districts:** Anantapur, Raipur, Solan, Tiruppur, Kanpur and Kolhapur were selected to identify **sector-specific challenges, support potential beneficiaries and design district-level interventions** to improve export competitiveness.

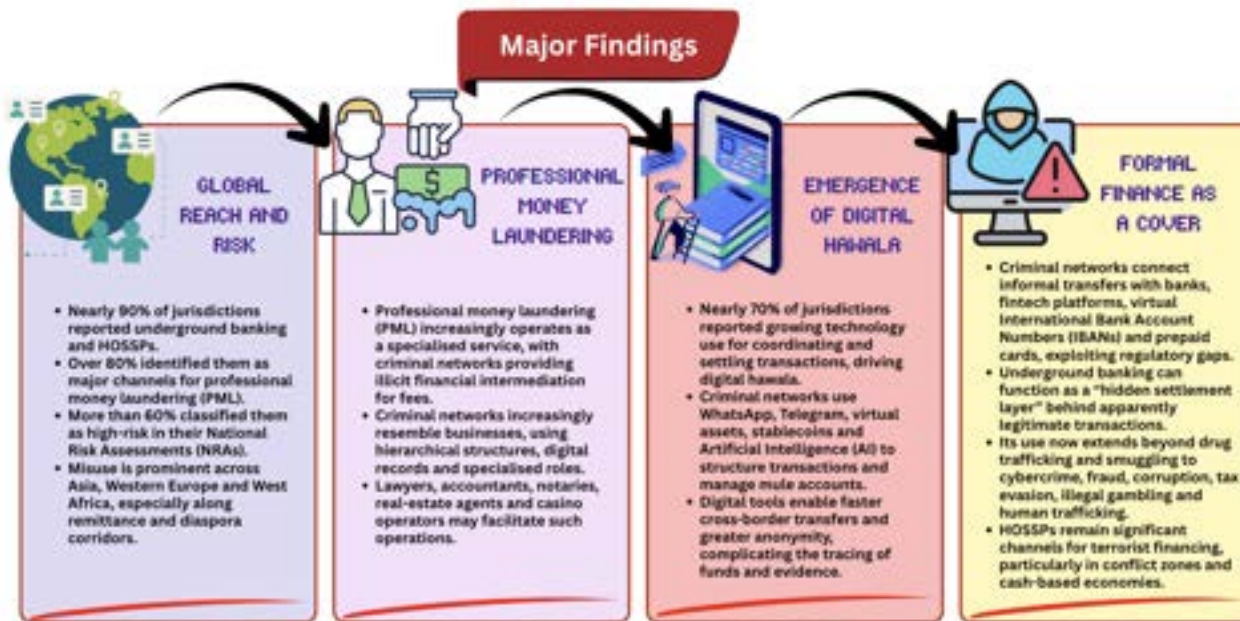
Test Your Knowledge	
Prelims Corner Consider the following statements regarding One District One Product (ODOP) and Districts as Export Hubs (DEH): 1. ODOP focuses on identifying and promoting distinctive products associated with particular districts. 2. DEH represents a broader approach that extends beyond product promotion to developing the overall export ecosystem. 3. Both initiatives seek to strengthen local enterprises and connect district-level production with wider markets. 4. ODOP was originally launched as a Government of India initiative in Japan and subsequently adopted by India. Which of the statements given above are correct? A. 1 and 2 only B. 1, 2 and 3 only C. 2, 3 and 4 only D. 1, 2, 3 and 4 Answer: B	Mains Corner Q. Districts as Export Hubs (DEH) seeks to integrate local production with global markets by building district-level export ecosystems. Examine how the initiative can promote inclusive growth, strengthen MSMEs and diversify India's export base. (15 marks, 250 words)

11. FATF REPORT ON UNDERGROUND BANKING AND DIGITAL HAWALA

Context: The Financial Action Task Force (FATF) warns that technology is transforming underground banking, with **fintech, virtual assets and encrypted platforms** enabling “digital hawala” and making illicit financial flows harder to detect.

Key Concepts

- **Underground Banking:** Informal arrangements operating **outside, alongside or through regulated financial systems** to transfer, settle or store value through intermediary networks. It is **not inherently criminal**, but unlicensed operations are illegal in most jurisdictions.
- **Hawala and Other Similar Service Providers:** **HOSSPs** are a subset of **Money or Value Transfer Services (MVTs)** that transfer or receive funds and generally settle balances on a **net basis**, without physically moving money across borders. **Licensed HOSSPs** operate within the formal financial system under **FATF Recommendation 14**, while unlicensed HOSSPs form part of underground banking.
- **Digital Hawala:** **Digital hawala** is the technology-driven evolution of **unlicensed underground banking and HOSSPs**. It uses digital tools to **coordinate, execute and conceal informal value transfers**, making settlement faster, more anonymous and harder to trace.



India and Regional Examples

- Trade-Based Money Laundering (TBML):** In 2022, Indian authorities uncovered shell companies using forged/stolen **Know Your Customer (KYC)** documents, with **under-invoicing and circular trade** through third countries disguising illicit outward remittances.
- Online Gambling–Hawala Link:** Illegal gambling networks exploited **Unified Payments Interface (UPI)**, **digital wallets and mule accounts**; proceeds moved through **hawala** and returned as purported **United Arab Emirates (UAE) foreign investment**.
- Africa & Asia:** Underground networks exploit **mobile-money systems**, using wallets for deposits/withdrawals while **off-platform settlement** conceals the actual movement of funds.
- Middle East:** Criminal networks increasingly combine **virtual assets with gold and precious metals** to facilitate money laundering.

Challenges in Controlling Hawala and Underground Banking

- Partial Rupee Convertibility:** **Foreign Exchange Management Act (FEMA), 1999** permits free current-account convertibility but restricts capital-account transactions, potentially encouraging **hawala** to bypass authorised channels.
- Shift to Digital Hawala:** Illicit finance is shifting to **peer-to-peer (P2P) crypto networks** and **offshore over-the-counter (OTC) platforms**; criminals exploit **decentralised finance, privacy coins and unhosted wallets** despite **Virtual Digital Asset Service Providers (VDASPs)** being regulated under the **Prevention of Money Laundering Act (PMLA), 2002**.
- Online**



Gambling–Hawala Link: Illegal betting uses **Unified Payments Interface (UPI)**, **digital wallets and mule accounts** to route funds through hawala and return them as foreign investment; the

Promotion and Regulation of Online Gaming Act, 2025 prohibits online money games and related transactions.

- **Large Remittance Inflows:** Large remittances, especially from the **Gulf and Western countries**, can mask illicit funds, making hawala-linked transfers difficult to distinguish from genuine remittances.
- **Genuine Account Holders:** Suspected hawala links can lead to innocent accounts being frozen, requiring targeted enforcement with safeguards for legitimate users.

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Measures to Curb Underground Banking

- **Regulate Informal Transfers:** Register **Hawalas and Other Similar Service Providers (HOSSPs)**, criminalise unauthorised underground banking and extend **Anti-Money Laundering/Combating the Financing of Terrorism (AML/CFT)** norms to real estate and precious metals.
- **Multi-Agency Mechanisms:** Create joint task forces involving **Financial Intelligence Units (FIUs)**, police, **Enforcement Directorate (ED)**, customs, tax authorities and central banks, integrating financial, **Goods and Services Tax (GST)** and customs data.
- **Centralise Risk Intelligence:** Maintain databases of **suspicious transactions, investigations, prosecutions and seizures**, treating **HOSSPs/hawala** as a distinct **National Risk Assessment (NRA)** category.
- **Technology & Digital Forensics:** Deploy **blockchain analytics, Artificial Intelligence (AI) and machine learning** to trace crypto flows, detect mule networks and monitor **virtual International Bank Account Numbers (IBANs)** and payment gateways.
- **Global Cooperation:** Enable **real-time intelligence sharing** through the **Egmont Group and International Criminal Police Organization (INTERPOL)** and conduct joint investigations into transnational **proceeds of money laundering (PML)** networks.
- **Enforcement with Inclusion:** Expand **low-cost formal remittances**, apply proportionate **Know Your Customer (KYC)** norms and avoid **indiscriminate de-risking** that may push legitimate users towards hawala.

Test Your Knowledge	
Prelims Corner Consider the following statements regarding underground banking and Hawala and Other Similar Service Providers (HOSSPs): 1. HOSSPs are a subset of Money or Value Transfer Services (MVTs). 2. HOSSPs generally settle balances on a net basis without physically transferring money across international borders. 3. Every form of underground banking is inherently criminal in nature. 4. Unlicensed HOSSPs can form part of underground banking. Which of the statements given above are correct? (a) 1, 2 and 4 only (b) 1 and 3 only (c) 2, 3 and 4 only (d) 1, 2, 3 and 4 Answer: (a)	Mains Corner Q. The emergence of digital hawala is blurring the boundaries between informal finance and technology-enabled money laundering. Examine the challenges it poses to India's financial integrity and suggest measures to address them. (15 marks, 250 words)

12. JUTE SECTOR IN INDIA

Context: India produced **76 lakh bales of raw jute** and **12.80 lakh MT of jute goods** in FY 2025-26, supporting millions of livelihoods, while policy interventions, technological advancements and diversification are strengthening its value chain as a **biodegradable alternative to synthetic materials**.

Current Status of India's Jute Sector

- **The Golden Fibre:** Jute, the **"Golden Fibre"**, is valued for its **strength, durability and biodegradability**; **jute and mesta** constitute raw jute, with mesta being a cost-effective bast-fibre alternative suited to **drier regions**.
- **Production and Global Position:** India is the **world's largest raw jute producer**, with production rising from **88.02 lakh bales (2024-25) to 94.03 lakh bales (2025-26)** and accounting for around **75% of global jute goods production**, ensuring strong domestic and global market presence.

- Cultivation and Regional Distribution: Cultivated mainly in **West Bengal, Bihar, Assam, Odisha and Jharkhand**, jute requires a **hot, humid climate, 700–1,500 mm rainfall**, and is generally sown in **March-April and harvested within 100–110 days**, largely under rainfed conditions by small and marginal farmers.
- Economic and Industrial Significance: The sector supports around **3.70 lakh workers and 40 lakh farm families**, with **West Bengal accounting for 89 of India's 120 composite jute mills (December 2025)**, reflecting its major livelihood and industrial significance.



Historical Evolution of the Jute Industry

- **Origins and Colonial Expansion:** Jute cultivation dates to the **third century BC**, while British rule transformed **Bengal into a major centre of jute cultivation, processing and trade**.
- **Partition-Induced Disruption:** The **1947 Partition** separated nearly **80% of jute-growing areas in East Pakistan (now Bangladesh)** from most Indian mills, causing a severe **raw-material shortage** for India's jute industry.
- **Post-Independence Revival:** The **"Grow More Jute" campaign (1949)** encouraged farmers to shift from paddy to jute, raising raw jute production from **6.7 lakh tonnes (1951-52) to 14.56 lakh tonnes (1961-62)**.
- **Policy-Based Market Support:** The **Jute Packaging Materials Act, 1987** created assured domestic demand by mandating jute packaging for essential commodities, particularly **food grains and sugar**.

Government Interventions for the Jute Industry

- **Price Support and Assured Markets:** MSP for raw jute has increased nearly **147% since FY 2014-15**, with JCI procuring below-MSP prices through around **110 centres**; the Packaging Materials Act assures demand through mandatory jute packaging for **100% food grains and 20% sugar**.
- **National Jute Board:** NJB promotes the entire jute value chain through improvements in **productivity, fibre quality, diversification, research and domestic/export markets**.
- **National Jute Development Programme:** NJDP, with an outlay of **₹485.58 crore (FY 2021-22 to FY 2025-26)**, focuses on **productivity, farmer incomes, value addition and diversification**, while promoting jute as an alternative to plastics.
- **JUTE-ICARE Scheme:** JUTE-ICARE, launched in **FY 2015-16**, promotes **certified seeds, scientific cultivation, mechanisation and improved retting** to enhance productivity, fibre quality and farmer incomes.
- **Jute Apparel at Commonwealth Games 2026:** Jute-viscose blended apparel developed by NJB and designed by NIFT, New Delhi, showcased India's **biodegradable textile innovation** at the Commonwealth Games 2026.

Conclusion: India's jute sector can advance towards a **circular bioeconomy** by integrating sustainable production, technological innovation and value-added diversification, strengthening farmer prosperity and global green markets.

Test Your Knowledge

Prelims Corner

Consider the following developments in the history of India's jute sector:

1. The 1947 Partition created a raw-material shortage because most jute-growing areas went to East Pakistan while most mills remained in India.
2. The "Grow More Jute" campaign was launched in 1949 to address the post-Partition shortage.
3. The Jute Packaging Materials Act, 1967 primarily sought to eliminate jute cultivation in favour of synthetic fibres.
4. The mandatory use of jute sacks for essential commodities helped create a stable domestic market for jute.

How many of the above statements are correct?

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

Answer: (c) Only three
Explanation: Statements 1, 2 and 4 are correct. The 1967 Act supported jute demand by mandating its use for specified packaging requirements; it did not seek to replace jute with synthetic fibres.

Mains Corner

Q. The jute sector can simultaneously promote rural livelihoods, sustainable industrialisation and environmental protection. Examine the challenges and opportunities in transforming India's jute sector into a competitive, value-added industry.

(15 marks, 250 words)

13. UPI MERCHANT DISCOUNT RATE (MDR)

Context: The National Payments Corporation of India (NPCI) has announced a **Merchant Discount Rate (MDR)** on certain UPI transactions from **15 October 2026**.

- UPI payments to merchants **above ₹2,000** will generally attract an MDR of **0.4%**, subject to specified exceptions and a cap of **₹300 per transaction**.
- The move follows the **Taxation and Other Laws (Amendment) Act, 2026**, which paved the way for charges on specified electronic payment modes.
- UPI was introduced in **2016 with an MDR**, while the **zero-MDR policy was adopted in 2020** to promote digital payment adoption.

What is MDR?

Understanding Merchant Discount Rate

Merchant Discount Rate (MDR) is the fee paid by merchants to banks and payment service providers for processing digital transactions.

The fee is shared among entities involved in facilitating the transaction and supporting payment infrastructure, such as cloud storage, payment applications and customer support.

UPI has operated under a zero-MDR regime since 2020, with banks and payment industry players bearing the associated costs.

RECENT CHANGES IN UPI CHARGES

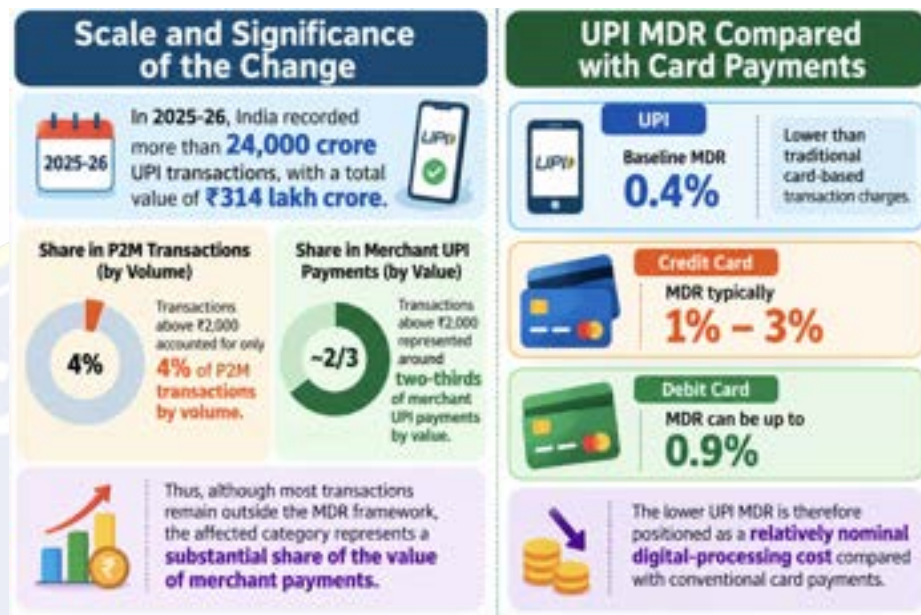
Person-to-person (P2P) transactions: Remain completely free, irrespective of transaction value.	FREE
Person-to-merchant (P2M) transactions up to ₹2,000: Remain free.	FREE
P2M transactions above ₹2,000: MDR of 0.4%.	0.4%
High-value merchant payments above ₹75,000: MDR capped at ₹300 per transaction.	CAPPED AT ₹300
Essential services: Railways, telecommunications, insurance, fuel, utility bills, educational transactions and agricultural inputs attract a flat MDR of ₹5 per transaction.	FLAT ₹5
Mutual funds, securities, stockbrokers and dealers: MDR of 0.02%, capped at ₹300.	0.02% CAPPED AT ₹300
UPI Mandates/AutoPay: Monthly utility bills, over-the-top (OTT) subscriptions and recurring investments through automated standing instructions will not attract MDR.	NO MDR

Protection for Small Merchants

- Small merchants receiving up to **₹1 lakh per month** through **UPI QR codes** into **personal bank accounts** will not be subjected to MDR.
- Such merchants fall under the **Person-to-Person-Merchant (P2PM)** category.
- Merchants whose aggregate inward UPI credits exceed ₹1 lakh per month **for three consecutive months** will move to the regular P2M category.
- The government has advised banks to ensure that merchants do not pass MDR costs on to consumers.
- UPI application providers have been expressly prohibited from imposing **platform fees or hidden charges**.

Government Rationale

- **Financial Sustainability:** Over **55 crore people** use UPI, supported by **703 entities**; maintaining the ecosystem costs up to **₹20,000 crore annually**, while zero **Merchant Discount Rate (MDR)** raises sustainability concerns.
- **Rising Infrastructure & Security Costs:** Rapid transaction growth requires greater investment in **cybersecurity, fraud prevention and payment infrastructure**; security may exceed **20% of annual platform costs**, with **Artificial Intelligence (AI)** creating new risks.
- **Expanding Market Competition:** A sustainable **revenue model through MDR** could encourage greater private-sector participation, investment and competition in digital payments.
- **Reducing Subsidy Dependence:** Reliance solely on **government subsidies** may be unsustainable as UPI expands; a balanced revenue model aims to keep the ecosystem **robust, inclusive and future-ready**.

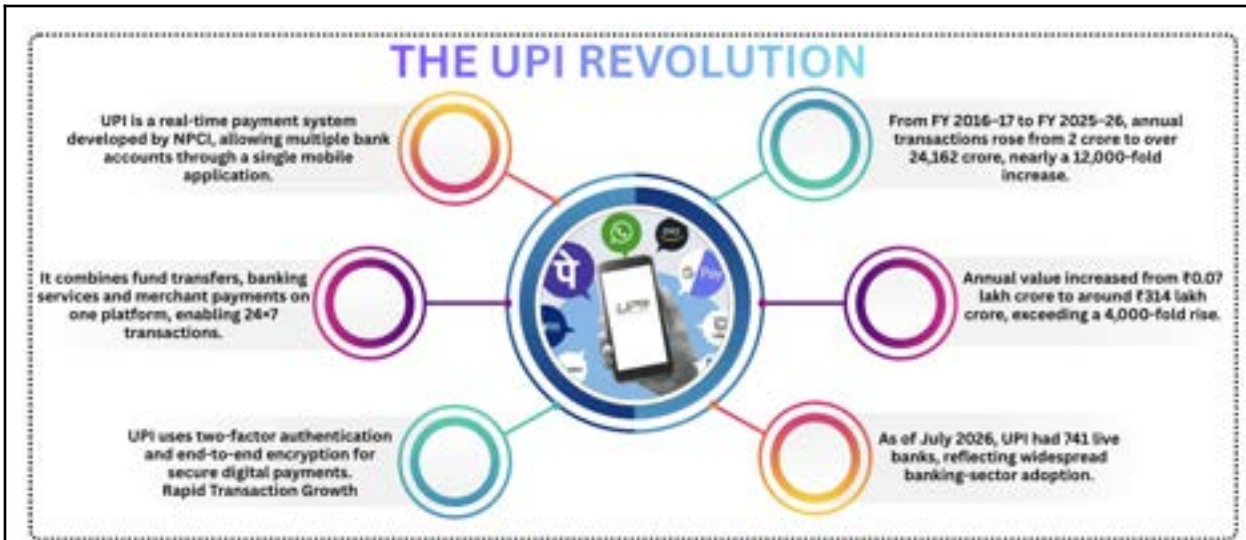
**Concerns and Potential Challenges**

- **Cost Pass-Through:** Despite government advice, **small/informal merchants** may pass MDR costs to consumers or encourage cash payments, as seen with some **credit-card transactions**.
- **Digital Payment Adoption:** Introducing charges could weaken UPI's role as a **free public digital infrastructure**, potentially encouraging users and merchants to return to **cash**.
- **Consumer Response:** A **LocalCircles survey of 20,000+ people** found only **12%** would continue UPI if fees applied above ₹3,000 at large merchants, falling to **2%** if merchants passed fees to consumers.
- **Impact on Small Merchants:** Merchants crossing the **₹1 lakh monthly P2M inflow threshold for 3 consecutive months** could shift categories and face MDR; higher costs may further encourage **cash transactions**.

Overall Significance

- The latest framework represents a shift from the zero-MDR model adopted in 2020 towards a selective charging mechanism.
- The framework attempts to preserve free digital payments for **P2P transactions and P2M transactions up to ₹2,000**, while generating revenue from selected higher-value merchant transactions.
- The structure also provides exemptions or lower charges for **small merchants, essential services and recurring payments**.
- The stated objective is to create a sustainable revenue stream for investment in payment infrastructure without imposing a direct charge on consumers.

The **Unified Payments Interface (UPI)**, developed by the **National Payments Corporation of India (NPCI)**, has completed a decade of transforming digital payments.



UPI's Global Footprint

- **Global Real-Time Payment Leadership:** In 2024, UPI represented around 49% of global real-time payment transaction volume, according to the International Monetary Fund (IMF) report *Growing Retail Digital Payments: The Value of Interoperability* (June 2025).
- **International Presence:** UPI operates in 11 foreign countries through acceptance and/or cross-border remittances:
Bhutan, Nepal, Singapore, United Arab Emirates (UAE), France, Sri Lanka, Mauritius, Qatar, Cambodia, Greece and Maldives.
- **Cambodia (June 2026):** NPCI International Payments Limited (NIPL) partnered with ACLEDA Bank Plc. to launch UPI acceptance, strengthening digital-payment connectivity.
- **Greece:** UPI became operational for **cross-border remittances**, enabling instant India–Greece transfers through Eurobank.
- **Maldives:** Cross-border remittances became operational between Maldives' Favara instant-payment system and India's UPI, strengthening bilateral digital-financial cooperation.

Conclusion: By retaining free P2P payments and low-value merchant transactions while generating revenue from selected high-value transactions, the new framework seeks to balance **digital-payment accessibility with the financial sustainability of UPI infrastructure.**

Test Your Knowledge

Prelims Corner	Mains Corner
Consider the following statements regarding the Merchant Discount Rate (MDR) on Unified Payments Interface (UPI) transactions: 1. Merchant Discount Rate is a fee paid by merchants to entities involved in processing digital payment transactions. 2. Under the new framework, all UPI transactions exceeding ₹2,000, including person-to-person transactions, are subject to MDR. 3. Small merchants receiving up to ₹1 lakh per month through UPI QR codes into personal bank accounts are exempt from MDR, subject to the prescribed conditions. 4. UPI mandates for recurring payments such as monthly utility bills and subscriptions are exempt from MDR. Which of the statements given above are correct? (a) 1, 2 and 3 only (b) 1, 3 and 4 only (c) 2 and 4 only (d) 1, 2, 3 and 4 Answer: (b)	Q. Examine how the introduction of a selective Merchant Discount Rate (MDR) on UPI transactions seeks to balance the financial sustainability of India's digital payments ecosystem with affordability and financial inclusion. (15 marks, 250 words)

14. TRANSFORMING INDIA'S BAMBOO ECONOMY

Context: Bamboo is emerging as a **sustainable livelihood resource**, with growing applications in **rural entrepreneurship, handicrafts, construction and green industries**.

STUDENT'S
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Key Features of the Bamboo Economy

- **Traditional Livelihood Base:** Bamboo supports **rural and tribal livelihoods** through handicrafts, construction and small enterprises, with uses expanding to **food, furniture and modern materials**.
- **Policy Reform:** The **Indian Forest Act, 1927** earlier classified bamboo as a “tree”; the **2017 amendment** excluded bamboo grown outside forests, easing harvesting/transport and promoting **private cultivation and value addition**.
- **Farmer Livelihood Diversification:** Bamboo provides a **long-term income asset**, supports **intercropping and local value addition**, and can reduce dependence on natural forests.
- **Technology-Driven Value Addition:** **North East Centre for Technology Application & Reach (NECTAR)** promotes bamboo technologies across **food processing, construction, machinery, renewable energy and industry**, generating about **30 million man-days annually** and raising value addition from **~10% to up to 70%**.
- **Northeast-Led Development:** **Tripura, Nagaland, Mizoram and Sikkim** are expanding bamboo-based **handicrafts, furniture, food and manufacturing**, creating opportunities for **tribal entrepreneurship, MSMEs and rural employment**.

National Bamboo Mission (NBM)

- **Launch and restructuring:** The **National Bamboo Mission (NBM)** began in **2006–07** and has operated in a **restructured form as a Centrally Sponsored Scheme since 2018–19** for comprehensive bamboo-sector development.
- **Integrated value chain:** NBM follows a **cluster-based model** linking farmers with consumers and industries through an **area-based and region-specific approach**.
- **Better planting material:** The Mission promotes bamboo cultivation by expanding access to **quality planting material**, including new nurseries and upgrades to existing ones.
- **Market and green economy:** NBM supports the marketing of bamboo products, particularly handicrafts, and promotes bamboo as “**Green Gold**” for rural livelihoods and the **green bioeconomy**.

Bamboo:

- **Classification:** Bamboo belongs to the **Bambusoideae** subfamily of the grass family **Poaceae**, comprising **over 115 genera and 1,400 species**.
- **Distribution:** It mainly occurs in **tropical, subtropical and mild temperate regions**, with the greatest diversity in **East and Southeast Asia and the Indian subcontinent**.
- **Growth:** Bamboo is a **fast-growing perennial** with woody, hollow stems arising from underground **rhizomes**.
- Some species can grow up to **30 cm a day** under favourable conditions and exceed **40 metres** in height.
- **Regeneration:** Bamboo regenerates quickly after harvesting and is mainly propagated vegetatively, including through **stem cuttings**.
- **Flowering:** Seed propagation is limited because bamboo has **irregular flowering**, supporting its classification as a renewable resource.
- **Crop nature:** It is an **evergreen perennial crop**, often called “**poor man’s timber**” because of its wide uses and livelihood potential.
- **Growing conditions:** Bamboo prefers **warm climates, well-drained sandy-to-clay soils** and generally a soil pH of around **4.5–6.0**.
- **Commercial value:** Cultivation offers farmers a **long-term income source** and supports diversification through handicrafts, furniture, construction and other value-added products.
- **Major resource base:** The **Forest Survey of India** identifies major bamboo concentrations in **Northeastern states**, including **Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura**.
- **Cultural role:** Bamboo is closely associated with indigenous traditions and is used for **fishing nets, baskets, musical instruments, housing and handicrafts**.

Conclusion: A stronger bamboo value chain can make this renewable resource an important driver of inclusive and sustainable growth.

STUDENT'S
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Test Your Knowledge

Prelims Corner	Mains Corner
Consider the following statements regarding bamboo in India: 1. Bamboo belongs to the grass family Poaceae. 2. Bamboo grown outside forests was excluded from the definition of "tree" under the Indian Forest Act, 1927, in 2017. 3. The National Bamboo Mission has operated as a Centrally Sponsored Scheme since 2018-19. 4. Bamboo is mainly propagated through seeds due to its regular flowering cycle. Which of the statements given above are correct? (a) 1, 2 and 3 only (b) 1 and 4 only (c) 2 and 3 only (d) 1, 2, 3 and 4 Answer: (a)	Q. Bamboo is increasingly transitioning from a traditional livelihood resource to a green enterprise ecosystem in India. Discuss its potential for rural employment, women's empowerment and sustainable economic development. (15 marks, 250 words)

15. DEDICATED FREIGHT CORRIDORS

Context: The **Western Dedicated Freight Corridor (WDFC)** is now fully operational. Along with the **Eastern Dedicated Freight Corridor (EDFC)**, India has a **2,843-km dedicated freight rail network**, strengthening the logistics framework under **PM GatiShakti**.

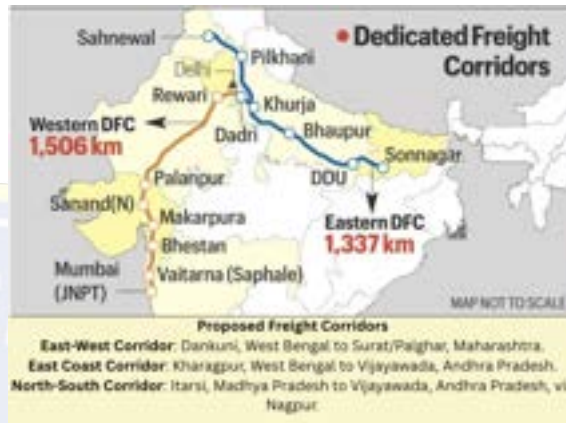
Economic Significance of DFCs

- **Lower Logistics Costs:** Higher axle loads of up to **25 tonnes** and double-stack container operations create economies of scale and reduce per-unit freight costs.
- **Railway Decongestion:** Shifting around **70% of freight traffic to DFCs** can free conventional routes for passenger services and improve punctuality.
- **Industrial Development:** DFCs function as **economic corridors**, supporting industrial corridors such as **Delhi-Mumbai Industrial Corridor (DMIC)** and **Amritsar-Kolkata Industrial Corridor**, along with MMLPs, industrial townships and PM MITRA textile parks.
- **Environmental Gains:** Fully electrified DFCs can shift freight from road to rail and are projected to avoid over **450 million tonnes of CO₂ emissions over 30 years**, supporting India's **Net Zero 2070** target.
- **Export Competitiveness:** WDFC connects the northern hinterland with major western ports such as **JNPT, Mundra and Kandla**. For instance, the Dadri-JNPT transit time has fallen from **66 to 58 hours**, benefiting sectors such as automobiles, engineering, petrochemicals and textiles.



Policy and Infrastructure Linkages

- **PM GatiShakti:** DFCs serve as major rail arteries connecting **ports, industrial clusters and Multimodal Logistics Parks (MMLPs)** through Geographic Information System (GIS)-based multimodal planning.
- **National Logistics Policy (NLP), 2022:** DFCs support the goal of reducing logistics costs from around **13–14% to 8–9% of Gross Domestic Product (GDP)** by 2030 and placing India among the **top 10 countries in the Logistics Performance Index (LPI)**.
- **Sagarmala:** DFCs strengthen **port-led development** through improved rail-port connectivity.
- **National Rail Plan 2030:** They support the target of raising Indian Railways' freight share from around **27% to 45% by 2030**.

**Way Forward**

- **Expand HDN Capacity:** Accelerate **multitracking and quadrupling** of saturated routes to improve DFC–conventional network connectivity and support the National Rail Plan target of raising freight loading from **1,670 million tonnes in 2025–26 to 3,000 million tonnes by 2030**.
- **Improve First- and Last-Mile Connectivity:** Use PM GatiShakti to link DFC nodes with Bharatmala feeder roads, manufacturing clusters, textile parks and agricultural hubs.
- **Develop Integrated Logistics Nodes:** Expand MMLPs around DFC stations with **warehousing, customs clearance and road–rail transfer facilities**.
- **Digitise Freight Movement:** Deploy **Radio Frequency Identification (RFID), Internet of Things (IoT) sensors and end-to-end digital tracking** to provide real-time cargo visibility.
- **Address Reverse Cargo:** Promote **Roll-on/Roll-off (Ro-Ro)** services and dynamic freight pricing, including discounted return rates, to increase two-way cargo movement.
- **Increase Private Participation:** Use PPPs for **private freight terminals, specialised wagons and mechanised loading/unloading systems** to reduce the public investment burden.

Conclusion: Combining DFC expansion with HDN multitracking can separate passenger and freight operations, improve railway capacity, reduce logistics costs and strengthen the competitiveness of Indian manufacturing and exports.



Test Your Knowledge

Prelims Corner	Mains Corner
Consider the following statements regarding Dedicated Freight Corridors (DFCs) in India: - DFCs are broad-gauge railway lines exclusively designed for freight trains. - The Western Dedicated Freight Corridor connects Dadri with Jawaharlal Nehru Port. - The Eastern Dedicated Freight Corridor connects Ludhiana with Sonmargar. - The Dedicated Freight Corridor Corporation of India Limited functions under the Ministry of Road Transport and Highways. Which of the statements given above are correct? (a) 1, 2 and 3 only (b) 1 and 4 only (c) 2 and 3 only (d) 1, 2, 3 and 4 Answer: (a)	Q. Dedicated Freight Corridors can transform India's logistics ecosystem by reducing costs, decongesting railways and strengthening industrial and export competitiveness. Discuss the challenges to their effective integration with the broader multimodal transport network. (15 marks, 250 words)

16. INDIA'S ENERGY SECURITY AMID SANCTIONS

Context: India reaffirmed energy security for 1.4 billion people through diversified crude supplies amid changing markets.

- The US Congress passed the **Sanctioning Russia and Iran Act, 2026**, allowing up to 100% tariffs on major Russian-oil buyers; Russian crude accounted for over 51% of India's crude imports in July 2026, prompting calls for a centralised "war room" against unilateral sanctions.

Government Initiatives

- Strategic Petroleum Reserves (SPR):** ISPRL operates 5.33 MMT capacity, providing emergency crude buffers across Visakhapatnam, Mangaluru and Padur.
- Special Rupee Vostro Accounts (SRVA):** Reserve Bank of India enables INR-based trade settlement, reducing dependence on dollar-clearing infrastructure.
- Chabahar Port Exemption:** India secured a US sanctions waiver for Chabahar, protecting connectivity with Afghanistan and Central Asian markets.
- International North-South Transport Corridor (INSTC):** India promotes multimodal connectivity through Iran, Central Asia and Russia, diversifying vulnerable trade routes.
- National Green Hydrogen Mission:** ₹19,744 crore outlay targets 5 MMT annual production by 2030, reducing long-term fossil-fuel import dependence.

Way Forward

- Create an inter-ministerial Sanctions Response Cell integrating the Ministry of External Affairs, Reserve Bank and shipping agencies for real-time risk monitoring.
- Develop sovereign



shipping-insurance backstops through Indian insurers and reinsurers, ensuring crude transportation despite Western Protection and Indemnity restrictions.

- Expand non-dollar settlement corridors using Indian rupee, UAE dirham and partner currencies, reducing correspondent-banking vulnerabilities.

- **Diversify crude procurement geographically**, balancing supplies from Russia, Middle East, Africa and Americas to reduce supplier-specific vulnerabilities.
- **Increase Strategic Petroleum Reserve coverage progressively toward 90 days**, aligning India closer with International Energy Agency emergency-stockholding benchmarks.

STUDENT'S
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Conclusion: India's energy resilience requires strategic autonomy, diversified supply chains and financial de-risking. A coordinated transition toward clean energy and resilient logistics can secure long-term energy sovereignty.

Test Your Knowledge	
Prelims Corner With reference to India's energy security, consider the following statements: 1. Special Rupee Vostro Accounts (SRVA) facilitate trade settlement in Indian rupees. 2. Protection and Indemnity (P&I) Clubs provide maritime liability insurance. 3. International North-South Transport Corridor (INSTC) connects India with Russia through Iran. 4. Strategic Petroleum Reserves (SPR) primarily replace imported crude with domestic production during crises. Which of the statements given above are correct? (a) 1, 2 and 3 only (b) 1 and 4 only (c) 2, 3 and 4 only (d) 1, 2, 3 and 4 Answer: (a)	Mains Corner Q. "India's energy security is increasingly exposed to vulnerabilities in global finance, shipping and geopolitical sanctions." Examine the challenges and suggest measures to strengthen India's energy resilience and strategic autonomy. (15 marks, 250 words)

17. POINTERS FOR PRELIMS

17.1. FOREIGN ASSETS OF SMALL TAXPAYERS – DISCLOSURE SCHEME

Context: The Central Board of Direct Taxes (CBDT) notified the **Foreign Assets of Small Taxpayers-Disclosure Scheme (FAST-DS) 2026**. It is a **one-time voluntary disclosure mechanism** announced in the **Union Budget 2026–27** under the Finance Act, 2026.

Key Features of FAST-DS 2026

- **Validity:** The Scheme commenced on **16 August 2026**, with declarations allowed until **31 December 2026**.
- **Valuation Date:** **31 March 2026** is the prescribed valuation date for foreign assets.
- **Purpose:** It enables eligible taxpayers to disclose certain **undisclosed foreign assets, foreign income or undeclared assets** by paying prescribed tax or fees.
- A person who was **resident in India during the relevant previous year** can use the Scheme.
- A current **non-resident or Resident but Not Ordinarily Resident (RNOR)** can also apply if resident when income arose or the foreign asset was acquired.
- Declaration is allowed where the taxpayer **did not file a return**, omitted

foreign assets/income, or such income/assets escaped assessment.

- The Scheme covers **two categories** based on the nature and previous tax treatment of foreign assets.
- **Category I** – Undisclosed Foreign Asset or Income. || **Category II** – Undeclared Foreign Asset
- **Exclusions:** FAST-DS does not cover **proceeds of crime** where proceedings are initiated or pending under the **Prevention of Money-laundering Act, 2002**. It also excludes assets or income for assessment years where proceedings are already completed under the **Black Money Act, 2015**.

17.2. INDIA'S COCONUT SECTOR

- **Context:** India ranks **1st in coconut production** and **3rd in cultivation area**, contributing **31.24% of global production** and **17.90% of global area**; **Kerala** leads area, **Tamil Nadu** production and **Andhra Pradesh** productivity.
- **Export Growth:** Coconut-product exports reached **₹7,038.35 crore (USD 794.70 million) in 2025–26**, up **62%** from ₹4,349.03 crore.

- **Major Export Markets:** Key destinations include USA, UAE, Sri Lanka, Germany, Russia, Turkey, Belgium, UK and Netherlands.
- **Coconut Development Board (CDB):** Established in 1981 under the Ministry of Agriculture & Farmers Welfare, with headquarters at Kochi, to promote coconut development.
- **MSP & Copra:** Copra (dried coconut kernel) is among the 22 mandated crops covered under the Minimum Support Price (MSP) regime.

17.3. BANKS SEEK CRR CUT ON GREEN DEPOSITS

Context: Public sector banks have urged the Reserve Bank of India (RBI) to reduce Cash Reserve Ratio (CRR) requirements on green deposits to lower green-lending costs.

- **Proposed Incentive:** Banks seek an initial 100-basis-point (1%) CRR reduction on green deposits to release capital and reduce funding costs.
- **Financing Need:** NITI Aayog estimates USD 22.7 trillion cumulative investment is required for India's net-zero transition.
- **Rationale:** Lower CRR could offset higher project-evaluation costs needed to prevent greenwashing and make green lending more viable.
- **Policy Support:** Finalising the Climate Finance Taxonomy and coordinated regulations could reduce compliance burdens for banks and Non-Banking Financial Companies (NBFCs).
- **Global Capital:** A clear regulatory framework can attract long-term global capital for India's climate transition.
- **Green Deposits:** Interest-bearing fixed-term deposits accepted by regulated entities, including banks/NBFCs, with proceeds exclusively financing eligible green projects.
- **Eligible Sectors:** Under the RBI Green Deposit Framework, 2023, funds can support renewable energy, waste management, clean transport, climate adaptation and energy efficiency.

17.4. RAKSHA DOCUMENT ON DEFENCE DIPLOMACY

Context: The Defence Minister released the 'RAKSHA' document on Defence Diplomacy, a 10-year policy framework outlining India's roadmap for strengthening global defence partnerships.

Defence Diplomacy: Defence diplomacy uses military resources and cooperation as foreign-policy instruments to build trust, improve interoperability, strengthen partnerships and promote regional stability without using force.

RAKSHA Document

- **10-Year Policy Framework:** Codifies defence diplomacy as a key pillar of India's foreign policy and promotes a more assertive, proactive global role while preserving strategic autonomy through diversified partnerships.
- **Institutional Coordination:** Integrates the objectives of the Ministry of Defence (MoD), Ministry of External Affairs (MEA) and National Security Council Secretariat (NSCS).

Key Pillars

- **Strategic Partnerships:** Expand bilateral and multilateral security cooperation with like-minded countries to address shared geopolitical threats and strengthen regional security.
- **Capacity Building:** Promote joint exercises, specialised training and operational knowledge-sharing, particularly with Global South countries.
- **Indigenous Defence Exports:** Shift from a buyer-seller model to co-development, co-production and technology partnerships, advancing Make in India and Atmanirbhar Bharat.
 - Seeks to transform India from a net arms importer into an exporter of advanced strategic technologies.
- **Maritime Security:** Strengthen India's role as a Net Security Provider and First Responder in the Indian Ocean Region (IOR).
 - Protect Sea Lanes of Communication (SLOCs) and uphold freedom of navigation.
 - Supports the Indo-Pacific vision of a free, open, inclusive and rules-based maritime order, aligned with SAGAR (Security and Growth for All in the Region).

Significance of Defence Diplomacy

- **Countering Regional Hegemony:** Builds a network of **strategic partnerships** to address aggressive expansionism and maintain Indo-Pacific stability.
- **Securing Global Commons: HADR operations and anti-piracy missions** generate goodwill, build trust and improve **interoperability with Indian Ocean littoral states**.
- India's defence exports reached a record **₹38,424 crore in FY 2025-26**. Promoting indigenous platforms such as **BrahMos, LCA Tejas and artillery systems** expands export revenue, strengthens the defence-industrial base and creates long-term technological partnerships.
- **Government-to-Government (G2G) engagements** can open new defence markets, while **defence attachés** can facilitate exports and technology cooperation.
- The RAKSHA framework complements **Defence Forces Vision 2047**, which seeks **modern, integrated and technologically advanced armed forces** capable of supporting **Viksit Bharat @2047**.

17.5. EMERGENCY CREDIT LINE GUARANTEE SCHEME (ECLGS) 5.0

Context: Emergency Credit Line Guarantee Scheme (ECLGS) 5.0, approved in May 2026, strengthens liquidity support for businesses facing external economic disruptions. The scheme supports eligible **Micro, Small and Medium Enterprises (MSMEs)**, **non-MSME businesses and scheduled passenger airlines** through government-backed credit.

- ECLGS was launched in **2020 under the Aatmanirbhar Bharat Package** to address pandemic-induced financial stress.
- It enabled MLIs to extend additional credit backed by a **100% Government guarantee**.
- Successive phases expanded sectoral coverage, digital access through **Jan Samarth Portal**, and participation by banks and financial institutions.

Key Features of Emergency Credit Line Guarantee Scheme (ECLGS) 5.0

- **Purpose and Duration:** Government-Backed Credit: ECLGS

5.0 provides government-backed credit guarantees to businesses affected by external disruptions, supporting **liquidity and operational continuity** until **31 March 2027** or issuance of **₹2.55 lakh crore** in guarantees, whichever is earlier.

- **Implementation Mechanism:** **Institutional Framework:** The **National Credit Guarantee Trustee Company (NCGTC)** provides guarantees to **Member Lending Institutions (MLIs)**, enabling them to extend additional working-capital support to eligible borrowers.
- **Additional Credit:** The scheme facilitates up to **₹2.55 lakh crore of additional credit**, helping enterprises meet operational requirements and maintain business continuity.
- **Eligible Sectors:** ECLGS 5.0 covers **Micro, Small and Medium Enterprises (MSMEs)**, eligible non-MSME business borrowers and scheduled passenger airlines; MSMEs across sectors are eligible, while specified non-MSME sectors such as **Non-Banking Financial Companies (NBFCs)**, **power, telecom, Information Technology (IT)**, **sugar, tobacco and educational institutions** are excluded.
- **Differentiated Coverage:** Eligible MSMEs receive **100% guarantee coverage**, while eligible non-MSME borrowers receive **90% coverage**; MSMEs constitute **97.3% of guarantees by number and 80.79% by guaranteed amount**, with the **Jan Samarth Portal** providing digital access to credit support.

17.6. AMENDMENTS TO CONSUMER PROTECTION (E-COMMERCE) RULES, 2026

Context: Consumer Affairs Department notified **Consumer Protection (E-Commerce) Amendment Rules, 2026**.

Key Provisions

- **Legal Framework:** Under **Consumer Protection Act, 2019**; effective **1 January 2027**.
- **Grievance Redressal:** E-commerce entities must join **National Consumer Helpline (NCH)** convergence.
- **Search & Pricing:** No **search manipulation/concealed sponsored**

listings; sales must show **lowest price in previous 30 days**.

- **Dark Patterns:** Comply with **2023 Dark Patterns Guidelines**; conduct **annual self-audit** and display compliance certificate.
- **Data Protection:** Consumer data requires **express, affirmative consent** for specified uses.
- **Product Disclosure:** Reveal **best-before date, return/refund policy, importer details, country of origin**.
- **Anti-Bundling:** No **bundled fees for unrelated services**, except loyalty/membership programmes.

Consumer Protection Act, 2019

- **Expanded Coverage:** Replaced **1986 Act**; covers **e-commerce, direct selling, misleading advertisements**.
- **CCPA:** *Suo motu* powers against **unfair trade practices**; can order **recalls, penalise misleading ads**, and act against e-commerce violations.
- **Three-Tier Redressal:**
 - Strengthened **District, State & National Consumer Commissions** with revised pecuniary jurisdictions.
 - **e-Daakhil:** Online complaint filing; **zero fee up to ₹5 lakh**.
 - **21-Day Rule:** Complaint deemed admitted if admissibility is not decided within **21 days**.

17.7. DISTRICT-LEVEL ESTIMATES FOR THE UNINCORPORATED NON-AGRICULTURAL SECTOR

Context: The National Statistical Office (NSO) under the Ministry of Statistics and Programme Implementation (MoSPI) released India's **first-ever district-level estimates** for the **unincorporated non-agricultural sector**, based on the **Annual Survey of Unincorporated Sector Enterprises (ASUSE) 2025**.

- District-level estimates are available for **757 of 770 districts**, strengthening **sub-state statistical systems** and enabling more evidence-based, localised policymaking.

High Geographic Concentration

- The **top 10 districts**, spread across **Gujarat, Telangana, Uttar Pradesh and West Bengal**, account for around **10% of India's unincorporated establishments, workforce and Gross Value Added (GVA)**.

- The **top 50 districts** contribute nearly **one-third of the sector's total establishments and workforce**.
- Only **16 districts** have more than **5 lakh establishments**, with **8 of them located in West Bengal**.
- **GVA per worker** serves as a proxy for productivity, with the national average standing at **₹1,56,539**.
- Productivity is above the national average in **280 districts**, while **331 districts** record GVA per worker between **₹1 lakh and ₹1.5 lakh**.
- Women account for at least **one-third of the unincorporated workforce in 237 districts**, while their share exceeds **50% in 25 districts**.
- **Telangana, Manipur, Meghalaya and Mizoram** have the highest proportions of **female-led unincorporated establishments**.
- **Mizoram** stands out as female-owned proprietary establishments constitute at least **50% of establishments in every district**.

17.8. INDIA ELECTRIC MOBILITY INDEX (IEMI) 2025

Context: Released by NITI Aayog + WRI India; Delhi ranked 1st overall.

- **IEMI:** Benchmarks EV transition across States/UTs; promotes competitive & cooperative federalism.
- **Scale:** 0–100; 16 indicators across 3 pillars:
 - Transport Electrification – 50%: EV adoption, incentives, governance.
 - Charging Infrastructure – 30%: Charger–vehicle ratio, power, renewables, subsidies.
 - Research & Innovation – 20%: Start-ups, patents, R&D.
- **Categories:** Top Performers ≥65 | Frontrunners 50–64 | Emerging 35–49 | Aspirants <35.
- **2025 Leaders:** Delhi (84) → Maharashtra → Karnataka.
- **Hilly & NE:** Manipur (46) → Tripura → Assam.
- **EV Sales Share:** 0.5% (2018) → 8.25% (2025–26).
- **Road Transport:** ~12% of India's energy-related CO₂ emissions.

SECURITY AND DEFENCE

STUDENT'S
NOTES 

1. CONSENSUS ON DEFINING LETHAL AUTONOMOUS WEAPONS SYSTEMS (LAWS)

Context: 128 countries reached consensus in Geneva under the UN Convention on Certain Conventional Weapons (CCW) on a definition of Lethal Autonomous Weapons Systems (LAWS), also called “killer robots.”

- The **non-binding agreement** is a significant step towards developing international regulations or a future treaty governing autonomous weapons.
- **LAWS:** LAWS are autonomous military systems that can detect, select and engage targets using pre-programmed parameters, without meaningful human intervention or approval for each individual attack.

Key Concerns and Global Positions

- **Humanitarian & Ethical Concerns:** The International Committee of the Red Cross (ICRC) warns that unregulated autonomous weapons can undermine International Humanitarian Law (IHL) and create serious ethical, legal and accountability gaps in warfare.
- **Concern Over Weakened Safeguards:** The Stop Killer Robots coalition criticised the consensus text as watered down, arguing that safeguards for civilians and strict operational limits were weakened to accommodate major military powers.
- **Divide Over Binding Rules:**
 - **Against a legally binding ban/treaty:** The US, Russia, India and Israel prefer non-binding codes of conduct or reliance on existing laws governing armed conflict.
 - **For strict regulation:** Brazil, Ireland and Norway lead efforts for a mandatory, legally binding instrument restricting autonomous targeting.

Convention on Certain Conventional Weapons (CCW)

- The CCW, also called the **Inhumane Weapons Convention**, was adopted in Geneva in 1980 and entered into force in 1983. It is a UN framework treaty seeking to prohibit or restrict conventional weapons that cause unnecessary suffering or indiscriminate harm to civilians.
- **India's Position:** India is a CCW state party and actively participates in Group of Governmental Experts (GGE) discussions on LAWS. It supports addressing LAWS within the existing CCW framework rather than creating parallel forums.

2. POINTERS FOR PRELIMS

2.1. MH-60R SEAHAWK HELICOPTER

Context: The Indian Navy received another MH-60R Seahawk from the US, taking delivery of 21 of the 24 helicopters ordered.

- Also called “Romeo”; an all-weather, shipborne multi-role naval helicopter manufactured by Lockheed Martin.
- Primarily designed for Anti-Submarine Warfare (ASW) and Anti-Surface Warfare (ASuW), strengthening maritime surveillance and combat operations.
- **Sensors:** Equipped with multi-mode radar, dipping sonar, sonobuoys, electro-optical/infrared sensors, electronic-support measures, datalinks

and survivability systems to detect and track underwater and surface threats.

- India signed a 2020 US agreement for 24 MH-60Rs to replace its ageing Sea King fleet.

2.2. EXERCISE UDARA SHAKTI 2026

Context: The Indian Air Force (IAF) participated in Exercise Udara Shakti 2026 with the Royal Malaysian Air Force (RMAF) at Subang Airbase, Malaysia.

- **Strategic Significance:** Strengthens India–Malaysia defence ties, improves joint air-force operations and supports Indo-Pacific regional security cooperation.

- Other India–Malaysia Military Exercises: **Indian Navy** → *Samudra Laksamana*; **Indian Army** → *Exercise Harimau Shakti*

2.3. INDIA BECOMES WORLD'S 2ND-LARGEST SUPPLIER OF SEAFARERS

Context: India is now the world's second-largest seafarer supplier, according to the **BIMCO-ICS Seafarer Workforce Report 2026**; the Philippines remains first.

- **India's Contribution:** India supplies **311,936 seafarers**, constituting **12.16%** of the global seafaring workforce.
- **Officers and Ratings:** India contributes **140,718 officers (13.41%)** and **171,218 ratings (11.29%)** to the global merchant-vessel workforce.
- **Global Workforce:** The report estimates **2.57 million seafarers** globally against demand of nearly **2.55 million**, with qualified officers remaining particularly scarce.
- **Rapid Workforce Growth:** India's share rose from **5.2% (2015)** and around **6% (2021)** to **12.16% (2026)**, moving India from fifth to second globally.

2.4. SMART BORDER ARCHITECTURE FOR INDIA'S BORDER SECURITY

Context: Technology-Driven Shift: The Ministry of Home Affairs (MHA) is developing an integrated **command-and-control system** for a technology-enabled “**smart border**” architecture.

- **Priority Areas:** It targets stretches where physical fencing is difficult, including the **3,488-km undemarcated China border (Ladakh–Arunachal Pradesh)** and **flood-prone riverine Bangladesh-border areas**.
- **Pakistan Border Pilot:** The pilot will begin along the **Pakistan border**, particularly addressing **cross-border drones** used for smuggling and reconnaissance.
- **Four-Pronged Strategy:** The framework integrates **border guarding forces, local communities, State police and technology** for stronger surveillance and response.
- **Technology Integration:** **Artificial Intelligence (AI), sensors, surveillance cameras and image-processing tools**

will create a common operational picture through live data-sharing.

- **Terrain-Specific Solutions:** Since “**no two borders are the same**,” customised technologies will address **deserts, mountains and forests**, reducing dependence on constant patrolling.
- **Quadrangular Security Grid:** Following the **Land Border Districts' Superintendents of Police Conference–2026**, a security grid involving communities and police across **119 border districts in 17 States/Union Territories** will be finalised within **1.5 years**.

2.5. DRDO MISSILE TECHNOLOGY TRANSFER TO INDIAN DEFENCE INDUSTRY

Context: The Defence Minister approved transferring **Defence Research and Development Organisation (DRDO)** technologies for conventional missiles to Indian defence companies for domestic production.

- **Eligibility:** Indian industries can produce DRDO-developed missile systems after fulfilling required **technical qualifications, certifications and regulatory requirements**.
- **Private-Sector Participation:** The move opens opportunities for **private defence firms, Micro, Small and Medium Enterprises (MSMEs) and technology partners** across the missile supply chain.
- **Defence Production:** India recorded its highest defence production of **₹1.54 lakh crore in 2024–25**, while exports reached **₹23,622 crore**. **Targets:** The Government aims for **₹1.75 lakh crore** defence production in the current fiscal year and **₹3 lakh crore by 2029**.

2.6. INDIAN NAVY'S DIVING SUPPORT VESSEL NIPUN

Context: The Indian Navy will commission *Nipun*, the **second Nistar-class Diving Support Vessel (DSV)**, on **31 August 2026** at Naval Dockyard, Mumbai.

- **Indigenous Construction:** **Hindustan Shipyard Limited (HSL), Visakhapatnam**, designed and built the vessel under the **Aatmanirbhar Bharat** initiative. Nearly **75% indigenous content** strengthens India's defence

shipbuilding and specialised maritime capabilities.

- **Advanced Diving Systems:** Equipped with **Deep Sea Saturation Diving** and a **side diving stage**, enabling safe operations in challenging underwater environments.
- **Submarine Rescue:** Functions as a mother ship for **Deep Submergence Rescue Vessels (DSRVs)**, supporting emergency evacuation of submariners.

2.7. INDIAN NAVY INDUCTS FIRST INDIGENOUS MULTIPURPOSE VESSEL

Context: The Indian Navy received **Samarthak**, its first indigenous **Multi-Purpose Vessel (MPV)**, strengthening maritime self-reliance.

- **Builder and Location:** **Larsen & Toubro Ltd. (L&T)** built and delivered the vessel at its **Kattupalli shipyard near Chennai**.
- **Two-Vessel Order:** L&T constructed two MPVs—**INS Samarthak** and **INS Utkarsh**; Utkarsh was launched in **2025** and remains under testing and sea trials.
- **Indigenous Content:** The vessel contains **over 75% indigenous components**, supporting India's self-reliant defence manufacturing ecosystem.
- **Unmanned-System Operations:** Samarthak can launch and recover **surface and aerial targets** and operate autonomous/unmanned surface and aerial vehicles.

2.8. MAN-PORTABLE ANTI-TANK GUIDED MISSILE (MPATGM)

Context: Indigenous **MPATGM** is designed to replace ageing **Milan-2T** and **Konkurs** systems; India also procured limited **Spike-LR ATGMs** in 2019 for immediate operational needs.

- **Recent Test:** In **January 2026**, Defence Research and Development Organisation (DRDO) successfully tested the **third-generation, fire-and-forget MPATGM** with **top-attack capability** against a moving target at **KK Ranges, Ahilya Nagar, Maharashtra**.
- **Indigenous Technologies:** It integrates **Imaging Infrared (IIR) homing seeker, all-electric control actuation, fire control system, tandem warhead, propulsion and high-performance sighting system**.

- **Operational Flexibility:** The missile can launch from **tripods or military vehicle launchers**, while its **IIR seeker supports day-and-night operations**.
- **Anti-Armour Capability:** Its **tandem warhead** is designed to defeat modern **main battle tanks (MBTs)**, enhancing infantry anti-armour capability.
- **Industrial Partners:** **Bharat Dynamics Limited (BDL)** and **Bharat Electronics Limited (BEL)** serve as **Development-Cum-Production Partners (DcPP)**, facilitating its induction into the Indian Army.

2.9. SHAKTI SHARMA BECOMES FIRST NON-MEDICAL WOMAN TWO-STAR OFFICER

Context: Shakti Sharma became the first non-medical woman officer in the Indian Defence Forces to attain the **Air Vice Marshal (AVM)** or equivalent rank.

- **Two-Star Rank:** AVM is a two-star **Indian Air Force (IAF)** rank, equivalent to **Major General** in the Army and **Rear Admiral** in the Navy.
- **IAF Entry:** Commissioned into the **IAF Education Branch on 18 June 1994**, she has completed over **30 years of service**.
- **Diverse Roles:** She served across **training establishments, field stations, Command Headquarters and Air Headquarters**, supporting institutional development.
- **Academic-Defence Linkages:** She helped establish **IAF Chairs of Excellence at IIT Kanpur and Pune University**, promoting research and strategic defence collaboration.
- **Leadership Milestone:** Earlier, she became the **first Tri-Services woman officer to command a Sainik School**, serving as Principal of **Sainik School, Kapurthala**.
- **Women's Career Progression:** The IAF granted **Permanent Commission to women officers in selected branches from 2010**, expanding leadership and career opportunities.

2.10. KHAGANTAK-243 LONG RANGE GLIDE BOMB

Context: The **Indian Air Force (IAF)** successfully test-dropped the indigenous **Khagantak-243 Long Range Glide Bomb**

(LRGB), strengthening India's **precision-strike capability and defence self-reliance**.

- **Indigenous Development:** Developed by JSR Dynamics Pvt Ltd, a Nagpur-based start-up, with **Bharat Electronics Limited (BEL)** under the **Development-cum-Production Partner (DcPP)** model, showcasing public-private participation in defence manufacturing.
- **Design & Warhead:** A **300-kg-class glide bomb** fitted with a **Mk-81 general-purpose blast-fragmentation warhead** containing about **125 kg of explosive**. **Swivel-type glide wings and aft control surfaces** provide a glide ratio above 12.
- **Range:** Can strike targets **144–180 km** away when released from about **12 km altitude at Mach 0.8**, enabling aircraft to attack without entering hostile **air-defence zones**.
- **Glide Bomb Technology:** Unlike **cruise missiles**, glide bombs have **no onboard propulsion system**. They use **aerodynamic lift from wings** to extend their range after release, making them relatively **cost-effective precision weapons**.

2.11. SANJUKTA PARASHAR — FIRST WOMAN TO LEAD CRPF'S COBRA

Context: IPS officer Sanjukta Parashar became the **first woman Inspector General (IG) of CRPF's CoBRA**, marking a milestone

in women's leadership in specialised counter-insurgency forces.

- **Sanjukta Parashar:** 2006-batch **Indian Police Service (IPS)** officer; known as the **"Iron Lady of Assam"** for counter-insurgency operations.
- Previously served as **Deputy Inspector General (DIG), National Investigation Agency (NIA)**.
- **CoBRA: Commando Battalion for Resolute Action**, an elite specialised force of the **Central Reserve Police Force (CRPF)**.
- **Role:** Jungle warfare, guerrilla warfare, anti-Naxal operations, intelligence-based missions, long-range patrols, ambush and counter-ambush operations.
- **Formation:** **10 CoBRA battalions** were raised during **2008–2011**.
- **Deployment:** Primarily in **Left Wing Extremism (LWE)-affected and insurgency-prone areas**, including **Chhattisgarh, Odisha, Jharkhand, Maharashtra, Assam and Meghalaya**.
- **Personnel:** Selected from the **CRPF** and given specialised commando and jungle-warfare training.
- **CRPF:** A **Central Armed Police Force (CAPF)** under the **Ministry of Home Affairs**; its major roles include internal security, counter-insurgency and LWE operations.
- **CoBRA is not a separate CAPF;** it is a specialised component of the **CRPF**.



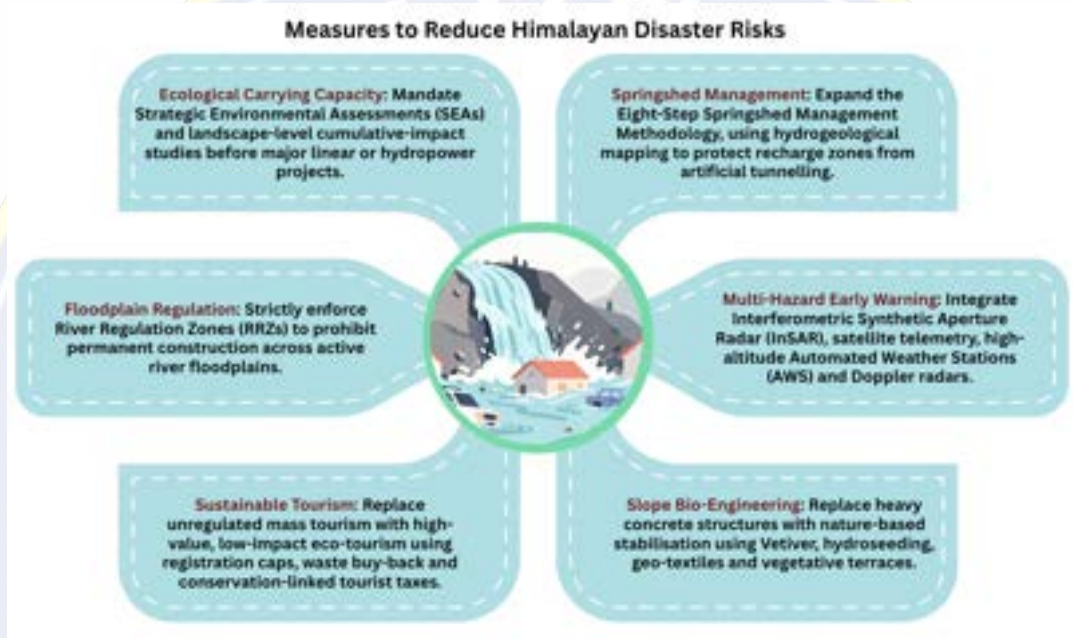
ENVIRONMENT AND GEOGRAPHY

STUDENT'S
NOTES 

1. NEPAL FLASH FLOODS AND HIMALAYAN VULNERABILITY

Context: Flash Floods: Nepal's floods killed 150+ people, left hundreds missing and severely damaged critical infrastructure.

- **Possible Trigger:** Scientists suspect an ice-rock avalanche, potentially interacting with an anomalous Western Disturbance, triggered the sudden flooding.



Why is Himalayan Disaster Vulnerability Increasing?

1. Geological and Climatic Drivers

- **Tectonic Instability:** The young, uplifting Himalayas contain active thrust faults including Main Central Thrust (MCT), Main Boundary Thrust (MBT) and Himalayan Frontal Thrust (HFT).
- **Seismic Vulnerability:** Most of the Indian Himalayan Region falls in Seismic Zone VI, while seismic gaps accumulate substantial unreleased energy.
- **Fragile Geology:** Highly fractured rocks make Himalayan slopes particularly vulnerable to mass wasting and landslides.
- **2015 Gorkha Earthquake:** Nepal's 2015 earthquake triggered thousands of secondary landslides across the region due to fragile, fractured high-altitude rocks.

2. Climate-Driven Amplification

- **Elevation-Dependent Warming (EDW):** Accelerated warming promotes permafrost thaw, removing ice-cement and destabilising mountain rocks.
- **Growing GLOF Risk:** Permafrost thaw expands moraine-dammed glacial lakes, increasing Glacial Lake Outburst Flood (GLOF) and ice-rock avalanche risks.
- **Chamoli Disaster (2021):** A hanging glacier and rock face collapsed following permafrost thaw, triggering the Uttarakhand disaster.
- **South Lhonak Lake (2023):** A moraine-dam breach caused a catastrophic GLOF in Sikkim, devastating downstream settlements.
- **Hydrological Extremes:** Changing monsoon patterns intensify localised cloudbursts, while steep gradients generate violent flash floods and debris flows.
- **2013 Kedarnath Disaster:** A localised cloudburst and Chorabari Lake breach significantly amplified the catastrophic flooding.

3. Human-Induced Drivers

- **Unscientific Construction:** Vertical slope cutting without retaining walls destabilises mountains, while mass tourism promotes concrete development on debris and floodplains.
- **Char Dham Pariyojana:** Highway widening and vertical hill-cutting have triggered recurring major landslides, including at Lambagarh.
- **HPC Assessment:** The Supreme Court-appointed High Powered Committee (HPC) warned that Char Dham development could destabilise the fragile Himalayan ecosystem.
- **Hydrogeological Damage:** Tunnelling and blasting for run-of-the-river hydropower projects disrupt aquifers, alter pore-water pressure and cause subsidence.
- **Joshimath Crisis:** Groundwater disruption and altered hydrogeological conditions contributed to severe ground subsidence at Joshimath.
- **Poor Debris Disposal:** Road and tunnel muck dumped into riverbeds converts high-discharge floods into destructive debris torrents.
- **Teesta-III Damage:** Debris-laden floods can overwhelm downstream infrastructure, including the Teesta-III dam.



4. Governance and Regulatory Gaps

- **Fragmented Clearances:** Weakened Environmental Impact Assessment (EIA) rules and project-wise approvals often ignore cumulative impacts across fragile Himalayan river basins.
- **Limited Basin-Level Assessment:** Separate project assessments persist, while basin-wide Strategic Environmental Assessments (SEAs) remain limited.
- **Compounded Risks:** Ignoring combined road, hydropower and urbanisation impacts increases slope instability, habitat loss and disaster risks.
- **Floodplain Violations:** Despite the 2016 Ganga Authorities Order, states inadequately prevent illegal multi-storey construction on active river terraces and No-Development Zones.
- **Reduced Ecological Safeguards:** Relaxations in the Bhagirathi Eco-Sensitive Zone and Forest Conservation (Amendment) Act, 2023 exemptions can bypass ecological and slope-stability scrutiny.

Preventive Measures

- **GLOF early warning:** Install lake-level, seismic, weather and camera sensors with automated sirens and downstream evacuation protocols.
- **Landslide hazard mapping:** Use GSI susceptibility maps, LiDAR and remote sensing to identify unstable slopes before infrastructure planning.
- **Resilient infrastructure:** Mandate slope stabilisation, proper drainage, retaining structures and hazard-based designs for Himalayan roads and hydropower.
- **Floodplain and debris regulation:** Prohibit construction on active floodplains and enforce designated muck-disposal sites away from river channels.
- **Community preparedness:** Conduct village-level mock drills, establish evacuation routes and integrate local volunteers with district disaster-response systems.

Government Initiatives

- **NDMA GLOF Guidelines, 2020:** Recommend hazard assessment, lake monitoring, controlled drainage, early-warning systems and downstream evacuation preparedness.
- **NDMA Landslide Strategy, 2019:** Prioritises landslide susceptibility mapping, early warning, monitoring, resilient infrastructure and capacity-building.
- **GSI Landslide Mapping:** Conducts national-scale **Landslide Susceptibility Mapping** to identify vulnerable slopes and guide mitigation planning.
- **CWC-IMD warning systems:** CWC flood forecasting and IMD Doppler weather radars strengthen river-flood and extreme-rainfall warnings.
- **National Mission for Sustaining Himalayan Ecosystem:** Promotes monitoring of glaciers, biodiversity, hydrology and climate impacts across Himalayan states.

Conclusion: Building climate-resilient infrastructure alongside ecosystem-based disaster risk reduction can transform Himalayan governance from reactive relief to proactive resilience, safeguarding communities and sustainable development.

Test Your Knowledge	
Prelims Corner 1. Himalayan Tectonics With reference to the Himalayan region, consider the following statements: 1. The Himalayas are geologically young and continue to undergo tectonic deformation. 2. The Main Central Thrust (MCT), Main Boundary Thrust (MBT) and Himalayan Frontal Thrust (HFT) are important tectonic structures of the Himalayan region. 3. The presence of active thrust systems contributes to the region's seismic vulnerability. 4. The Himalayan region is tectonically stable because the Indian Plate has already reached equilibrium with the Eurasian Plate. Which of the statements given above are correct? (a) 1, 2 and 3 only (b) 1 and 4 only (c) 2 and 3 only (d) 1, 2, 3 and 4 Answer: (a)	Mains Corner "The increasing frequency and intensity of disasters in the Himalayas are a result of the interaction between geological fragility, climate change and anthropogenic pressures." Examine with suitable examples. (15 marks, 250 words)

1.1. BARRIER LAKES: FLOOD THREAT FOR NEPAL

Context: A massive **ice-rock avalanche** triggered devastating flash floods in Nepal's **Bhote Koshi-Trishuli river system**, forming new **barrier lakes near the avalanche source along the Nepal-Tibet (China) border**.

Formation of Barrier Lakes

- **New Lakes:** At least two glacial/barrier lakes measuring **19.80 hectares** and **7.28 hectares** have formed behind large **moraine deposits**.
- **Barrier Lake:** Forms when a **landslide, rockfall or avalanche** blocks a river/stream with debris, creating a temporary natural dam.
- **Water Accumulation:** Such dams can trap huge water volumes without a natural outlet, increasing downstream flood risk.
- **Common Triggers:** **Earthquakes, intense rainfall and glacier collapse** can trigger barrier-lake formation in steep mountain terrain.
- **Landslide Lake Outburst Flood (LLOF):** Rising water pressure may breach or overtop the debris dam, suddenly releasing large volumes of **water and debris** and causing catastrophic flooding.
- **LLOF vs GLOF:** Both have similar destructive potential; **GLOF** specifically involves sudden release from a lake dammed by a **retreating glacier or terminal moraine**, whereas LLOF results from landslide/rock-avalanche debris.

- **Bhote Koshi–Trishuli River System:** An upper course of the **Sun Kosi**, within Nepal's wider **Koshi River basin**. It originates in Tibet as the **Poiqu**, enters Nepal through steep Himalayan terrain and remains highly vulnerable to **flash floods and GLOFs**.
- **Trishuli River:** A major **transboundary river** of the **Narayani (Gandaki) system**, originating in Tibet and flowing south through central Nepal.
- River corridors around **Rasuwagadhi–Gyirong** serve as important **trade, transit and hydropower hubs** linking Nepal and China.

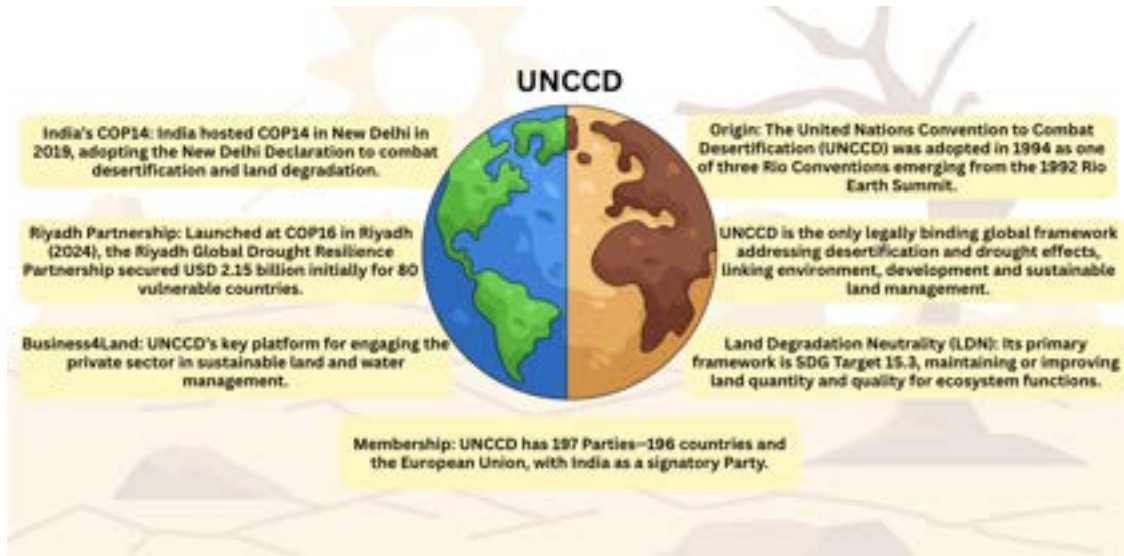
2. UNCCD COP17

Context: COP17 of the United Nations Convention to Combat Desertification (UNCCD) concluded in Ulaanbaatar, Mongolia, addressing desertification, land degradation and drought. Egypt will host COP18 in Sharm El-Sheikh in 2028.

Key Outcomes

- **Theme:** “*Restoring Land. Restoring Hope.*” positioned land restoration as central to **food security, livelihoods and preventing forced displacement**.
- **Pastoralist Focus:** COP17 coincided with the **United Nations International Year of Rangelands and Pastoralists (IYRP 2026)**, highlighting pastoral communities dependent on these ecosystems.
- **Global Land Crisis:** Land degradation affects up to **40% of global land**, threatening water availability and economic stability.
- **Mongolia's Initiative:** With nearly **77% degraded land**, Mongolia highlighted its **Billion Trees campaign**, launched in 2021 to plant **one billion trees by 2030**.
- **Nature-Based Solutions (NbS):** Emphasis was placed on **Ecosystem-based Adaptation (EbA)** and financing NbS through national planning and infrastructure.
- **Drought Resilience Index (DRI):** The world's first comprehensive technical tool uses **Artificial Intelligence (AI), analytics and vulnerability mapping** to assess drought preparedness and guide data-driven investments.
- **Drought Resilience Investment Facility (DRIF):** UNCCD and Luxembourg launched the first global catalytic platform using public funds to **de-risk investments and mobilise private/institutional finance** for drought resilience, water security, climate-resilient agriculture and land restoration.
- **Drought Finance:** COP17 announced **USD 1.3 billion** in new and pipeline financing for land restoration and drought resilience.
- **Drought Treaty Deadlock:** Countries failed to finalise a **legally binding global drought agreement**, despite a **USD 278 billion annual resilience-finance gap**; negotiations were deferred.
- **Proposed Global Framework:** A treaty would require **national drought plans, early-warning systems, monitoring and data sharing** on rainfall, soil moisture, vulnerability and risks.
- **Future Agenda:** COP17 decided to make **drought a standalone agenda item from COP18**, ensuring regular rather than ad-hoc consideration.





Major Challenges

- **Ecological Mismanagement:** Misguided afforestation, soil degradation and salinisation threaten native biodiversity, groundwater and pastoral livelihoods.
- **Soil Degradation:** Intensive cultivation and excessive fertiliser use reduce **Soil Organic Carbon (SOC)**, fertility and moisture retention; poor irrigation accelerates salinisation.
- **Rangeland Crisis:** Nearly **40–45% of global rangelands are degraded**, threatening **one-sixth of global food supply and one-third of planetary carbon reserves**. India has around **1.21 million sq. km of rangelands**, with **under 5% protected**; grasslands declined from **18 million hectares (2005) to 12 million hectares (2015)**.
- **Agrarian Distortions:** Misaligned incentives promote water-intensive **paddy and sugarcane** in stressed regions, worsening groundwater depletion.
- **Shrinking Commons:** Encroachment and declining **Common Property Resources (CPRs)**, including *Gochars* and *Orans*, increase grazing pressure and degradation.
- **Governance Fragmentation:** Separate forestry, agriculture, water and rural-development institutions often produce uncoordinated interventions and weak landscape planning.
- **Finance Deficit:** Land degradation and drought receive less global financing than climate-change and biodiversity initiatives under the **UNFCCC and CBD**.
- **Private Investment Barriers:** Long gestation periods, insecure tenure and weak **Measurement, Reporting and Verification (MRV)** constrain carbon and biodiversity-credit investments.
- **Climate Pressure:** Rainfall variability is intensifying, with heavy rain followed by dry spells increasing runoff, reducing recharge, accelerating erosion and reservoir siltation.

India's Key Initiatives

- **National Action Plan to Combat Desertification (NAPCD):** Launched in **2001 and revised in 2023**, it converges government programmes for land restoration and desertification control.
- **Pradhan Mantri Krishi Sinchayee Yojana (PMKSY):** Watershed development promotes **rainwater harvesting, soil-moisture conservation and vegetation regeneration**, strengthening drought resilience.
- **Green India Mission (GIM):** Under the **National Action Plan on Climate Change (NAPCC)**, it focuses on forest restoration and carbon sequestration.
- **Soil Health Card Scheme:** Provides **crop-specific nutrient and fertiliser recommendations** to prevent degradation and improve soil health.
- **Space Technology:** The **Indian Space Research Organisation (ISRO) Desertification and Land Degradation Atlas** uses remote sensing and Geographic Information System (GIS) mapping for targeted restoration.
- **Mission Amrit Sarovar:** Creates and rejuvenates **water bodies**, improving groundwater recharge, water availability and drought resilience.
- **Aravalli Green Wall:** Seeks to restore degraded **Aravalli landscapes** and combat desertification.

Way Forward

- **Ecosystem-Specific Restoration:** Recognise **grasslands, savannas and scrublands** as distinct ecosystems; prioritise native species and invasive removal over indiscriminate afforestation.
- **Regenerative Agriculture:** Promote **biochar, soil-carbon restoration and drought-resilient farming** to improve soil health and water retention.
- **Circular Bioeconomy:** Develop crop-residue economies using **biomass pellets and bio-CNG**, reducing stubble burning and conserving soil carbon.
- **Data-Driven Management:** Integrate **satellites, Internet of Things (IoT) soil sensors and Artificial Intelligence (AI)** for hyperlocal drought prediction, precision irrigation and crop planning.
- **Innovative Finance:** Deploy **blended finance and public de-risking** to attract private investment into land restoration, agroforestry and drought-resilient agriculture.
- **Agro-Ecological Zoning (AEZ):** Align **subsidies, Minimum Support Price (MSP) and electricity support** with suitable local crops, discouraging water-intensive cultivation.
- **Anticipatory Financing:** Replace post-disaster relief with **trigger-based financing**, using satellite and soil-moisture data before drought conditions worsen.
- **Ridge-to-Valley Planning:** Establish **district-level integrated planning** linking agriculture, water, forestry and rural-development agencies.

Conclusion: COP17 reinforces that land restoration is drought resilience; India can lead through regenerative agriculture, landscape-level governance and innovative finance, turning degraded ecosystems into foundations of sustainable livelihoods.

Test Your Knowledge	
Prelims Corner Q. Consider the following statements regarding COP17 of UNCCD: 1. The Drought Resilience Index uses AI, analytics and vulnerability mapping. 2. DRIF uses public funds to de-risk private/institutional investment in drought resilience. 3. COP17 adopted a legally binding global drought agreement. 4. Drought will become a standalone agenda item from COP18. Which are correct? A. Only 1 and 2 B. Only 1, 2 and 4 C. Only 2, 3 and 4 D. All four Answer: B	Mains Corner Q. Land degradation and drought in India are not merely ecological challenges but also threaten food security, livelihoods and water security. Discuss the major governance and socio-economic factors driving these challenges and examine how ecosystem-specific restoration, agro-ecological planning and data-driven drought resilience can strengthen India's response. (15 marks, 250 words)

3. INDIA'S FIRST "GREEN FORGE" COMPLEX

Context: India's first **Green Forge Complex** was inaugurated at **BRIC-NABI, Mohali**, strengthening agricultural biotechnology, controlled crop research and biomanufacturing.

Green Forge Complex

- **Location:** Established at the **National Agri-food & Biomanufacturing Institute (BRIC-NABI), Mohali**, an autonomous institute under the Department of Biotechnology (DBT).
- **Purpose:** Provides advanced **simulation chambers** controlling light, humidity and temperature for controlled crop experimentation.
- **GM Crop Research:** Enables testing **genetically modified (GM) crops** under diverse environmental conditions before field deployment.
- **Technology Convergence:** Integrates biotechnology, environmental simulation and **Artificial Intelligence (AI)** to accelerate agricultural and medical research.
- **Launch Context:** Inaugurated during the **National Conclave on BioE3 2026**, highlighting India's move towards high-performance biomanufacturing.

4. UNEP'S LIMITING OVERSHOOT REPORT: MANAGING THE 1.5°C BREACH

Context: The United Nations Environment Programme (UNEP) released **Limiting Overshoot: Navigating Exceedance of 1.5°C and Pathways Towards Return**, recognising that a temporary 1.5°C breach is nearly inevitable.

- It proposes an ‘overshoot, peak, and decline’ approach to limit peak warming and return towards safer planetary boundaries.

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Key Findings of the UNEP Report

- Imminent 1.5°C Breach:** Human-induced warming has reached about **1.4°C above pre-industrial levels**, rising nearly **0.25°C per decade**. Forecasts indicate a **75% probability** of exceeding **1.5°C in the 2026–2030 five-year mean**.
- Shrinking Carbon Budget:** A **50% chance** of limiting warming to **1.5°C** leaves roughly **130 billion tonnes of CO₂** from 2026 onwards. Current emissions of nearly **40 billion tonnes CO₂** annually could exhaust this budget within **three years**.
- Cost of Delayed Action:** Every additional **five years of high emissions** could increase peak warming by approximately **0.1°C**. Emissions since **2015** have already raised the minimum achievable peak warming by **0.2°C**.
- Persistent Emissions Gap:** Current policies could result in median global warming of **2.6°C by 2100**, ranging from **1.9°C–3.6°C**. Even full implementation of **Nationally Determined Contributions (NDCs)** and **Net-Zero targets** could produce **1.8°C peak warming**.
- No Risk-Free Overshoot:** Crossing **1.5°C is not harmless**, as each additional fraction increases the risk of irreversible **biophysical tipping points**.



Methane: A Near-Term Priority

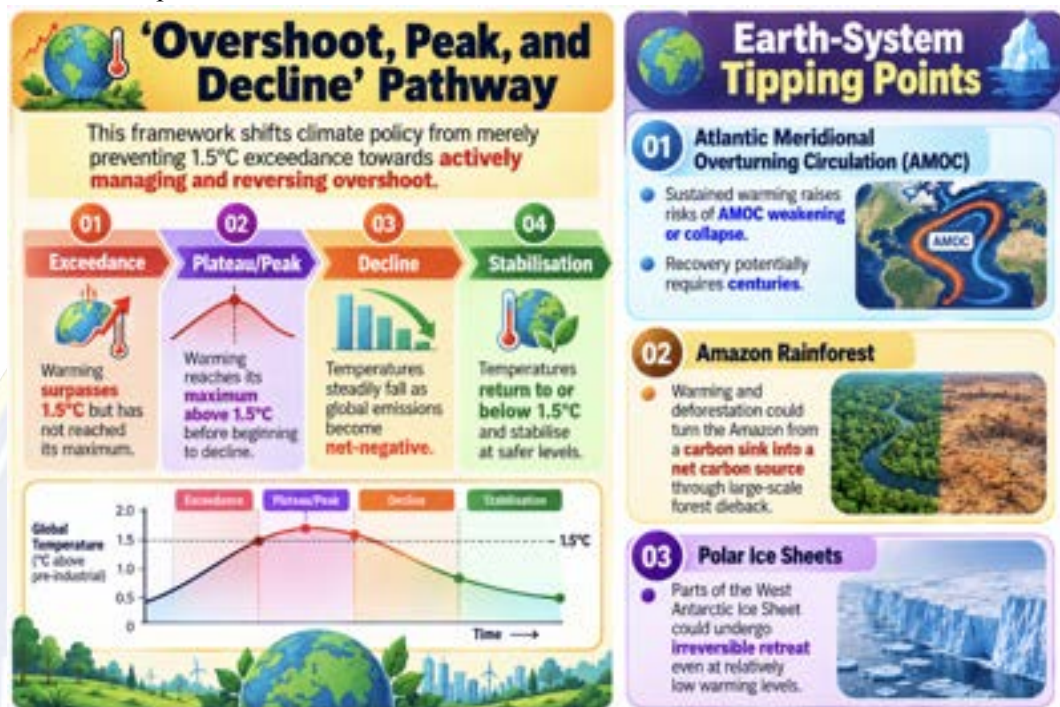
- Methane mitigation** is crucial because methane currently contributes about **0.5°C to global warming**.
- Methane cuts can slow warming faster than equivalent CO₂ reductions due to its short **atmospheric lifetime**.
- Reducing **oil and gas leaks** is easier, while agriculture and waste emissions remain harder to address.
- Cutting **60–70 million tonnes** of hard-to-abate methane could provide cooling comparable to removing **220 Gt of CO₂**.
- The **Global Methane Pledge**, launched at COP26 by the **European Union and United States**, has over **155 members**.
- It targets at least **30% reduction in anthropogenic methane emissions from 2020 levels by 2030**.
- Major emitters including **India, China, Russia and Iran** have not joined the pledge.
- Geopolitical Barriers**
 - United States' Withdrawal: The **United States**, the largest historical emitter, exited the **Paris Agreement** and announced withdrawal from the **United Nations Framework Convention on Climate Change (UNFCCC)**.
 - West Asian Energy Crisis: The **2026 West Asia conflict** caused the largest oil-supply disruption recorded, cutting output by over **14 million barrels per day**.



Compounding Costs of Overshoot

- Cryosphere Loss:** Glaciers outside the Greenland and Antarctic ice sheets could lose 25–40% more mass by 2100, contributing around 9–15.4 cm of sea-level rise, while delayed sea-ice recovery could sustain lower planetary albedo and greater heat absorption.

- **Long-Term Sea-Level Rise:** Sea levels may continue rising for **centuries to millennia** due to deep-ocean warming and ice-sheet inertia, with every **100 years above 1.5°C** potentially adding about **40 cm of median sea-level rise by 2300**.
- **Persistent Ocean Changes:** **Ocean acidification and deoxygenation** may persist for centuries due to slow deep-ocean circulation and chemical recovery.
- **Food Security Risks:** Global food production could decline by up to 14% by 2050 without effective adaptation.



Conclusion: The **UNEP report** views a 1.5°C breach as a consequence of past delays, but not a reason for inaction. Policy must combine **mitigation and adaptation**, as every fraction of warming avoided and year of overshoot reduced can limit irreversible losses. Investment in **climate-resilient infrastructure** can further reduce planetary risks and disaster impacts.

5. NEPAL'S CLIMATE JUSTICE CLAIM: FROM RELIEF TO CLIMATE LIABILITY

Context: Nepal has sought international support through the UN Loss and Damage Fund after devastating flash floods caused extensive loss of life and infrastructure. The move reflects the growing demand by climate-vulnerable countries for compensation rather than conventional aid.

Why Nepal Seeks Climate Justice

- **The "Third Pole" Paradox:** Nepal contributes only **0.1% of global GHG emissions**, yet the **Hindu Kush Himalayas (HKH)** are warming at nearly twice the global average through **Elevation-Dependent Warming (EDW)**, with glaciers melting at nearly 10 times historical rates.
- **Economic Shock:** The August 2026 disaster caused an estimated **USD 4–7 billion** damage, equivalent to around **10% of Nepal's GDP**. Destruction of major **Run-of-the-River (RoR) hydropower** projects forced Nepal to shift rapidly from an electricity exporter to an importer, undermining its strategy to reduce trade deficits.
- **Climate-Debt Trap:** Rebuilding requires **climate-resilient infrastructure**, increasing capital expenditure (CapEx). Without compensation, vulnerable countries may need commercial debt to address disasters they contributed little to causing.
- **Global Climate Linkages:** Glacial instability is connected with wider systems, including **Arctic warming, atmospheric circulation and South Asian monsoon variability**. However, proving direct legal causality requires extensive data and modelling.
- **From Aid to Accountability:** Nepal seeks to move climate finance beyond voluntary humanitarian assistance towards greater accountability, arguing that low-emitting vulnerable countries should not bear disaster costs alone.

Global Responsibility for Climate Change

- The **US** accounts for about **25% of accumulated atmospheric CO₂**, followed by Europe (~20%) and China (~15%).
- **India's contribution is below 4%**, while its per-capita CO₂ emissions are about 2 tonnes annually, compared with a global average of around 4.5 tonnes.
- **Nepal argues** that countries with historically high emissions **bear greater responsibility** for supporting vulnerable nations.

Aid vs Compensation: Nepal's Position

Nepal has indicated a **shift from seeking traditional aid towards claiming compensation** for climate-related disasters.

- Nepal's Foreign Minister Shishir Khanal argued that the country should not treat climate assistance as charity because its negligible emissions contrast with the severe damage it faces.
- Nepal invoked the **principles of legal and moral liability**, arguing that major historical emitters should support countries suffering disproportionate climate impacts.
- Khanal specifically **mentioned China, the US and India** as major emitters with historical responsibility.
- However, **Nepal's Prime Minister thanked India and China for their immediate assistance**, while **Khanal later clarified that the objective was international cooperation** rather than blaming individual countries.

**Regional Solutions**

- **Himalayan Early-Warning Network:** India, China, Nepal and Bhutan should establish an **open-access transboundary warning system** using real-time satellite radar and hydrological telemetry across the Tibetan Plateau and upper catchments, supporting **Target G of the Sendai Framework for Disaster Risk Reduction**.
- **Regional Catastrophe Insurance:** South Asia should establish a **regional parametric risk pool**, similar to the **Caribbean Catastrophe Risk Insurance Facility**. Scientific triggers such as river-volume surges or seismic-cryospheric shifts can provide immediate funds without lengthy political negotiations.
- **Separate Recovery from Geopolitics:** **BBIN (Bangladesh, Bhutan, India, Nepal)** energy frameworks should include humanitarian exceptions in power-offtake agreements, enabling disaster-rehabilitated plants to generate grid-linked revenue.
- **Reform Climate Finance:** The **UNFCCC** should create rapid-disbursement emergency windows under the **Loss and Damage framework**, bridging immediate relief and long-term adaptation finance while preventing debt accumulation in vulnerable economies.

Test Your Knowledge	
Prelims Corner With reference to the UN Loss and Damage Fund, consider the following statements: 1. It seeks to provide financial support to vulnerable developing countries facing losses arising from climate-related extreme events. 2. It was established under the United Nations climate process in 2022. 3. Contributions to the Fund are legally mandatory for countries based on their historical greenhouse gas emissions. 4. The Fund is intended to complement, rather than replace, mitigation and adaptation finance. Which of the statements given above are correct? A. 1 and 2 only B. 1, 2 and 4 only C. 2, 3 and 4 only D. 1, 2, 3 and 4 Answer: B	Mains Corner Q. Climate change is increasingly transforming the discourse from humanitarian assistance to questions of liability and climate justice. In this context, examine Nepal's demand for greater climate compensation and discuss the challenges of establishing an equitable regional and global framework for addressing loss and damage. (15 marks, 250 words)

6. POINTERS FOR PRELIMS

6.1. SATKOSIA TIGER RESERVE (STR)

Context: Odisha formed a high-level inquiry committee after villagers alleged forced displacement from ancestral villages despite long-term wildlife coexistence.

- **Legal Review:** The committee will assess compliance with the Wildlife (Protection) Act, 1972, Forest Rights Act, 2006, and National Tiger Conservation Authority (NTCA) guidelines.
- **Location & Formation:** Satkosia Tiger Reserve lies around Odisha's Mahanadi gorge and was notified in 2007.
- **Reserve Formation:** STR was created by combining **Satkosia Gorge Sanctuary** and **Baisipali Sanctuary**. Satkosia Gorge Sanctuary was established in 1976, while Baisipali Sanctuary was notified in 1981.
- **Mahanadi Gorge:** A 22.5-km gorge runs through the reserve, with the Mahanadi River creating diverse riverine, forest and wetland habitats.
- Satkosia forms part of the **Mahanadi Elephant Reserve**.
- **Tiger Reintroduction:** India's first inter-State tiger relocation programme began here in 2018 with tigers brought from Madhya Pradesh.

6.2. HARA MANGROVE FORESTS

Context: Hara mangrove forests on Iran's **Qeshm Island** face an environmental threat after oil residues entered parts of the protected

ecosystem amid conflict and shipping-related oil spills in the Persian Gulf.

- **Location:** Spread around **Qeshm Island and Khuran Strait**, near the **Strait of Hormuz**; among the Persian Gulf's largest and most important mangrove ecosystems.
- **Dominant Species:** Mainly **grey mangrove (*Avicennia marina*)**, adapted to saline waters through specialised roots that help **filter excess salt**.
- **UNESCO Recognition:** Part of the **UNESCO-designated Hara Biosphere Reserve**, highlighting its ecological importance; Qeshm also possesses globally significant geological and ecological heritage.

6.3. KHIJADIYA BIRD SANCTUARY: BLACK-NECKED STORK BREEDING SITE

Context: Breeding Stronghold: Khijadiya Bird Sanctuary, Jamnagar, Gujarat, has emerged as an important breeding site for the **Black-necked Stork**, as per a *Journal of Threatened Taxa* study.

- The sanctuary recorded a **peak seasonal population of 21 Black-necked Storks**, including breeding pairs and non-breeding adults.
- **Species:** **Black-necked Stork (*Ephippiorhynchus asiaticus*)** is among India's largest wetland birds, with **scattered breeding populations** nationwide.
- **Legal Protection:** Listed under **Schedule II of the Wild Life (Protection) Act, 1972**, following the

Wild Life (Protection) Amendment Act, 2022.

- **IUCN Status:** Classified as **Near Threatened**, mainly due to **habitat loss and population decline**.
- **Ramsar Status:** Declared a **Wildlife Sanctuary in 1981** and a **Wetland of International Importance under the Ramsar Convention in February 2022**.

6.4. VULTURES IN INDIA

Context: A study in the **Journal of Threatened Taxa** found that relocating a livestock carcass dump **24 km from high-tension power lines** near Sudhauwala, Dehradun, reduced vulture electrocution risks.

Ecological Significance of Vultures

- **Nature's Sanitation Workers:** Scavenge dead animals, remove carcasses, recycle nutrients and limit disease transmission.
- **Disease Control:** Their highly acidic digestive system destroys pathogens, reducing risks of **anthrax and botulism**.
- **Indicator Species:** Vulture declines signal ecosystem stress from **pollution, food scarcity and habitat degradation**.
- **Global Diversity:** Around **23 vulture species** occur worldwide; **9 species** are found in India.
- **Major Species:** White-rumped, Indian, Slender-billed, Himalayan Griffon, Eurasian Griffon, Egyptian, Red-headed, Cinereous and Bearded Vultures.

Causes of Population Decline

- **Diclofenac Crisis:** Veterinary diclofenac, a **non-steroidal anti-inflammatory drug (NSAID)**, caused over **97% declines** in some South Asian populations.
- **Regional Impact:** Severe declines occurred across **India, Pakistan and Nepal**; India banned veterinary diclofenac in **2006**.
- **Other Threats:** Other NSAIDs, declining food availability, habitat loss, poisoning and **electrocution from high-tension infrastructure** further threaten populations.

Conservation Measures

- **Breeding Programme:** **Vulture Conservation Breeding Programme** supports population recovery through captive breeding.

- **Safer Veterinary Drugs:** Promotion of relatively safer alternatives such as **meloxicam** reduces toxic exposure.
- **Vulture Safe Zones:** Designated areas minimise exposure to harmful veterinary drugs and other threats.
- **Habitat Management:** Carcass sites and infrastructure are managed sensitively to reduce risks such as electrocution.
- **Vulture Awareness Day** is observed annually on the **first Saturday of September** to highlight vultures' ecological role and promote their conservation.

6.5. WATER HYACINTH MENACE IN VEMBANAD LAKE

Context: The State Wetland Authority Kerala (SWAK) launched a **one-month robotic pilot project** at Kumarakom to control invasive water hyacinth in Vembanad Lake.

- **Government Framework:** The project operates under the **National Plan for Conservation of Aquatic Ecosystems (NPCA)**, implemented by the **Ministry of Environment, Forest and Climate Change (MoEFCC)**.
- **Vembanad Lake:** A major **Ramsar Wetland Site**, Vembanad supports Kerala's **biodiversity, fisheries, tourism and local livelihoods**.
- **Water Hyacinth (*Eichhornia crassipes*):** It is a **free-floating freshwater aquatic weed** of the **Pontederiaceae family** and an invasive alien species.
- **Native Region:** Native to South America's **Amazon Basin**, it was introduced in India as an **ornamental plant for its purple flowers**.
- **Rapid Proliferation:** It forms dense floating mats, **blocking sunlight and reducing dissolved oxygen**, thereby harming aquatic biodiversity.
- **Ecological Impact:** Its spread promotes **eutrophication** and obstructs **fisheries, navigation, irrigation, tourism and recreation** across aquatic ecosystems.
- **Control Measures:** Management includes **mechanical removal, Neochetina weevils for biological control**, and **reducing nutrient pollution and sewage discharge**.
- **Potential Uses:** Removed biomass can support **compost, bio-fertiliser, soil**

supplements, handicrafts, paper production and phytoremediation.

6.6. PICHAVARAM MANGROVE FOREST

Context: A study estimated the **Total Economic Value (TEV)** of Tamil Nadu's **Pichavaram Mangrove Forest** at **₹2,485.38 crore**.

Key Findings of the Study

- **Economic Value of Ecosystem Services:** Pichavaram's ecosystem is valued at **₹1.83 crore per hectare**, highlighting significant **non-market ecological benefits** often excluded from conventional **development planning and economic assessments**.
- **Soil as a Major Carbon Sink:** **Soil organic carbon** contributes nearly **half of the Total Economic Value (TEV)**, with mangrove sediments storing **251.14 tonnes carbon/ha** compared with **79.45 tonnes/ha** in above-ground vegetation, highlighting the need to protect both **mangrove cover and carbon-rich sediments**.
- **Diverse Ecosystem Services:** Mangroves provide **carbon sequestration, coastal protection and oxygen regulation**, act as natural **bio-shields against cyclones** that reduce potential disaster-related expenditure, and support **eco-tourism, recreation and local livelihoods** through boating and nature tourism.
- **Nature-Based Climate and Disaster Solutions:** Pichavaram supports **Nature-based Solutions (NbS)** for **Disaster Risk Reduction (DRR)** and coastal stabilisation, while sustainable fisheries and other provisioning services strengthen **livelihood security** for coastal communities.
- **Global Mangrove Vulnerability:** The **2024 International Union for Conservation of Nature (IUCN) Red List of Ecosystems** warns that **50% of global mangroves face collapse risk**.
- **Policy Significance:** Ecosystem valuations should be integrated into **Natural Capital Accounting** and **Green Gross Domestic Product (Green GDP)** frameworks, while **Payment for Ecosystem Services (PES)** and **blue carbon financing** can incentivise long-term, sustainable mangrove conservation.

Key Facts About Pichavaram Mangrove Forest

- **Location and Hydrography:** Pichavaram, in Tamil Nadu's **Cuddalore district**, lies between the **Vellar estuary and Coleroon (Kollidam) estuary**, with the **Vellar, Coleroon and Uppanar rivers** forming the productive **Killai backwater complex**.
- **Geomorphology:** Pichavaram is an **intertidal forested wetland** with nearly **4,400 canals** connecting **river mouths, Killai backwaters and the Bay of Bengal** through a narrow littoral sandbar channel.
- **Vegetation and Habitat:** Its diverse habitats support a transition between **mangroves, salt marshes and Dry Evergreen Forests**, with mangroves rooted in shallow, brackish water; **Rhizophora apiculata** has prominent **stilt roots**, while **Avicennia marina** develops **pneumatophores (breathing roots)**.
- **Faunal Diversity:** Nutrient-rich waters provide nursery habitats for commercial species such as **tiger prawns and mud crabs**, while important birds include the **Spot-billed Pelican, Spoon-billed Sandpiper and White-bellied Sea-eagle**.
- **Coastal Protection and Climate Resilience:** Pichavaram acts as a **bio-shield**, buffering coastal areas, stabilising shorelines, reducing **coastal erosion** and strengthening resilience to **extreme weather events**.
- **Conservation Recognition:** Pichavaram was designated a **Ramsar Wetland in 2022** and is recognised by **BirdLife International** as an **Important Bird and Biodiversity Area (IBA)**.

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6.7. HANGING GLACIERS

Context: Rising temperatures and changing precipitation patterns are destabilising Himalayan glaciers, increasing risks of **glacier collapse, avalanches and downstream hazards**. A **2026 study** identified **219 hanging glaciers** in the **Alaknanda basin of the Garhwal Himalayas**, highlighting their growing hazard potential.

About Hanging Glaciers

- **Hanging glaciers** are ice masses perched on **steep mountain slopes**,

often separated from the main glacier system, and their unstable position can cause sudden **ice break-off**, triggering **ice and rock avalanches**.

- **Formation:** **Rapid warming, glacier retreat and climate variability** reduce glacier stability and alter their structure, causing **ice redistribution, geometric changes and formation of unstable hanging glaciers**.
- **Global Context:** Hanging glaciers have been extensively studied in the **Alps**, while **basin-scale assessments in the Himalayas** remain limited due to **difficult terrain and inadequate monitoring**.

Risks Associated with Hanging Glacier Collapse

- **Avalanche Hazards:** Glacier break-off can generate **massive ice avalanches**, posing risks to downstream areas; simulations for **Badrinath–Mana, Uttarakhand**, indicate avalanche flows could exceed **50 metres in height**.
- **Glacial Lake Outburst Floods (GLOFs):** Glacier collapse can trigger **Glacial Lake Outburst Floods (GLOFs)** by causing sudden water release from glacial lakes, resulting in **destructive downstream flooding**.
- **Cascading Hazards:** Collapsing glaciers can transport **rocks, snow and sediments**, creating compound hazards such as **debris flows, river blockages and sudden floods**.
- **Threat to Infrastructure:** **Hydropower projects, roads, bridges, settlements and pilgrimage routes** in Himalayan valleys are particularly vulnerable.

6.8. SWACHH VAYU SARVEKSHAN 2026

Context: The **Ministry of Environment, Forest and Climate Change (MoEFCC)** organised **Swachh Vayu Diwas 2026** on **7 September**, coinciding with the **International Day of Clean Air for Blue Skies**.

- A **Compendium of Best Management Practices** under **NCAP** was also released to help States replicate successful air-quality interventions.
- **International Day of Clean Air for Blue Skies:** Designated by the **UN General Assembly in 2019** to promote awareness and global action against air pollution. India observes it as **Swachh Vayu**

Diwas. The **2026 theme** is **“Clean Air for Climate Action.”**

- **Swachh Vayu Sarvekshan:** Key Features: The framework was introduced in **2022–23** to assess city-level measures for controlling air pollution.
- **Coverage:** All **130 NCAP cities** are assessed under three population categories: **Above 10 lakh; 3–10 lakh; Below 3 lakh**
- **2026 Swachh Vayu Sarvekshan:** Key Results
- **Cities Above 10 Lakh:** **Lucknow** ranked first for measures including **electric vehicles (EVs) in municipal fleets, mechanised road sweeping and legacy-waste remediation**, followed by **Indore and Jabalpur**. **Chennai, Jamshedpur, Kota, Kolkata and Madurai** occupied the bottom five; **Delhi** ranked 30th.
- **Cities with 3–10 Lakh Population:** **Rourkela (Odisha)** secured first place.
- **Cities Below 3 Lakh:** **Kalinganagar (Odisha)** ranked first.

6.9. STRIPED HYENAS

Context: Conservation of the **striped hyena** has gained attention due to **limited population data, fragmented conservation efforts and persistent human-induced threats**, highlighting the need for a coordinated national strategy.

- **Scientific Name:** *Hyaena hyaena*; belongs to the **Hyaenidae family**.
- **Species Group:** The **Hyaenidae** family includes **three true hyena species**—**striped, brown and spotted hyenas**—and the **aardwolf**.
- **Behaviour:** Smaller and less social than the spotted hyena; primarily a **nocturnal scavenger**.
- **Distribution:** Found across parts of **Asia and Africa**. Global population is estimated at **5,000–14,000**, including around **1,000–3,000 in India**; India lacks a comprehensive official census.
- **Ecological Role:** Consumes **carrion and decaying animal remains**, acting as a natural ecosystem cleaner and reducing the accumulation of organic waste.
- **IUCN Red List:** **Near Threatened**
- **Wildlife (Protection) Act, 1972:** **Schedule I.**

6.10. OPHIOPOGON JAPONICUS

Context: Researchers from the **Wildlife Institute of India (WII)** and **Uluberia Botanical Institute Herbarium, West Bengal** recorded *Ophiopogon japonicus* in India for the first time.

- The species was found at **2,185 metres elevation** on a moist, shaded forest floor near temperate broadleaf forests in **West Kameng, Arunachal Pradesh**.
- *Ophiopogon japonicus*, or **dwarf lilyturf/mondo grass**, is an **evergreen perennial herb** growing in dense clumps.
- It has **narrow, grass-like leaves, white to pale-purple flowers and blue berry-like fruits**.
- The species belongs to the **Asparagaceae family**, while the genus *Ophiopogon* contains around **85 species globally**.
- **Seven Ophiopogon species** had previously been recorded in India.
- Native to **East Asia**, the species occurs in **China, Japan, Korea and Nepal**, generally between **200–2,800 metres elevation**.
- Its tuberous roots, called **Ophiopogonis Radix or Maidong**, are traditionally used in **Chinese medicine**. The plant reportedly possesses **anti-inflammatory, antioxidant and immunomodulatory properties**.

6.11. ORANGUTANS

Context: Five baby orangutans were rescued in **Balasore, Odisha**, triggering a joint probe by the **Odisha Police Special Task Force (STF)** and **Wildlife Crime Control Bureau (WCCB)** into suspected international wildlife trafficking.

- The animals were shifted to **Nandankanan Zoological Park, Bhubaneswar**, while Odisha sought **Central Zoo Authority (CZA)** approval for their care.
- “Orangutan” means “**man of the forest**” in Malay and refers to great apes found only in **Borneo and Sumatra**.
- They inhabit **tropical rainforests**, are predominantly **arboreal and solitary**, and are not naturally found in India.
- Three recognised species are **Bornean orangutan (*Pongo pygmaeus*)**, **Sumatran orangutan (*Pongo abelii*)**, and **Tapanuli orangutan (*Pongo tapanuliensis*)**.

- Their diet mainly comprises **wild fruits such as figs, lychees and mangosteens**, along with leaves and other vegetation.
- They construct **tree nests** and contribute significantly to **seed dispersal** in rainforest ecosystems.
- **Bornean orangutan:** Endangered; **Sumatran orangutan:** Critically Endangered; **Tapanuli orangutan:** Critically Endangered and regarded as the **most threatened great ape species**.
- International commercial trade in orangutans is prohibited under **CITES**.

6.12. PYGMY HOG

Context: The **Assam Government** highlighted the success of the **Pygmy Hog Conservation Programme (PHCP)**, which has significantly increased the species’ population in the State over the past **three decades**.

- **Key Identification:** The **pygmy hog (*Porcula salvinia*)** is the **world’s smallest wild suid**, the only surviving **Porcula** species and an **Indian-subcontinent endemic**, closely linked to tall, wet alluvial grasslands along the **Himalayan foothills**.
- **Historical Distribution:** Historically distributed from **Uttar Pradesh to Assam**, including **Nepal’s Terai and Bengal’s Duars**, it was feared extinct after decades without records until its **rediscovery in Assam in 1971**; wild populations are now mainly confined to Assam, particularly the **Manas landscape**.
- **Physical Features:** As the smallest member of the **pig family (Suidae)**, it has a tiny body, ears and tail, **short medial false hooves**, a streamlined body and **no facial warts**, unlike many other pigs.
- **Feeding Behaviour:** The pygmy hog is **omnivorous**, consuming **roots, tubers, shoots, ground vegetation, worms and invertebrates**, along with occasional small vertebrates such as **reptiles and eggs or nestlings of ground-nesting birds**.
- **Social Behaviour:** **Adult males are usually solitary**, while females and juveniles form **small groups of around 4–6**, with males joining females mainly during the **breeding season**.
- **Breeding Pattern:** Breeding is **seasonal**, with births peaking in **late April–May** as the Assam monsoon begins; litters

contain 2–6 piglets, usually 3–4, and both sexes build nests throughout the year.

- **Conservation Status:** The pygmy hog is **Endangered** under the **International Union for Conservation of Nature (IUCN) Red List**, listed in **Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)** and placed in **Schedule I of the Wildlife (Protection) Act, 1972**.
- **Conservation Programme:** The **Pygmy Hog Conservation Programme (PHCP)** began in **1995**, with major **captive-breeding efforts from 1996**, focusing on **captive breeding, disease prevention and reintroduction**.

6.13. SUMATRAN ELEPHANTS

Context: Large-scale wildfires in Sumatra have affected hundreds of thousands of hectares of elephant habitat, worsening **habitat fragmentation** and increasing extinction risks for **Sumatran elephants**.

- **Scientific Name and Status:** The **Sumatran elephant (*Elephas maximus sumatranus*)** is a subspecies of the **Asian elephant** classified as **Critically Endangered**.
- **Distribution:** It is **endemic to Sumatra, Indonesia**.
- **Seed Dispersal:** Sumatran elephants act as important **seed dispersers**.
- **Umbrella Benefit:** Protecting their habitat also supports other threatened species, including the **Sumatran rhinoceros, Sumatran tiger and Sumatran orangutan**.

STUDENT'S
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SOCIAL ISSUES

STUDENT'S
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1. PRADHAN MANTRI JANJATIYA VIKAS MISSION (PMJVM)

Context: The Government highlighted **PMJVM's role in strengthening the tribal forest economy** through community-based production and value addition. The Mission organises tribal communities into **Van Dhan Vikas Kendras (VDVKs)**, shifting them from raw-produce sellers to value-adding entrepreneurs.

Key Features of PMJVM

- PMJVM is a **Central Sector Scheme of the Ministry of Tribal Affairs**, created by merging two schemes covering MFP procurement, value chains and tribal-product marketing.
- **Objective:** It promotes **tribal livelihoods and entrepreneurship** through production, procurement, processing, value addition and marketing.
- **Nodal Agency:** **TRIFED (Tribal Cooperative Marketing Development Federation of India)** implements PMJVM through State Implementing Agencies.
- **Major Components:** Support covers **Minimum Support Price (MSP)-based MFP procurement, VDVKs, Van Dhan Producer Enterprises (VDPEs), value addition, skilling, branding, e-commerce and marketing infrastructure.**
- **Financial Assistance:** Each VDVK can receive up to **₹15 lakh**, while VDPEs can receive up to **₹64 lakh over three years.**
- **Special Focus:** **Aspirational Districts, Particularly Vulnerable Tribal Groups (PVTGs) and Forest Rights Act land-title holders** receive special attention.



Minor Forest Produce and Tribal Rights

- **MFP Definition:** Under the **Forest Rights Act (FRA), 2006**, MFP includes non-timber products like **bamboo, cane, tussar cocoons, honey, wax, lac, tendu leaves, mahua, tamarind and medicinal plants.**
- **Forest Rights:** FRA recognises forest communities' dependence on MFP and grants rights to **collect and sell non-timber forest produce.**
- **PESA Provision:** The **Panchayats (Extension to Scheduled Areas) Act, 1996 (PESA)** gives tribal Gram Panchayats **ownership over MFP.**
- **TRIFED Procurement:** TRIFED procures MFP at predetermined MSP through State agencies, tribal cooperatives and forest development corporations.

Test Your Knowledge

Prelims Corner

Q1. With reference to the Pradhan Mantri Janjatiya Vikas Mission (PMJVM), consider the following statements:

1. The Mission seeks to enable tribal communities to move beyond the primary sale of forest produce by promoting processing, value addition and marketing.
2. Van Dhan Vikas Kendras (VDVKs) are intended exclusively for procurement of Minor Forest Produce (MFP) at Minimum Support Price (MSP).
3. The Mission gives special attention to groups and areas such as Particularly Vulnerable Tribal Groups (PVTGs) and Aspirational Districts.

Which of the statements given above is/are correct?

(a) 1 and 3 only
(b) 2 only
(c) 1 and 2 only
(d) 1, 2 and 3

Answer: (a)

Mains Corner

Q. "The Pradhan Mantri Janjatiya Vikas Mission (PMJVM) can transform India's tribal forest economy from a raw-produce-based livelihood system into a community-owned value chain." Discuss the role of PMJVM in promoting tribal livelihoods, women's economic empowerment and sustainable utilisation of minor forest produce.

(250 words, 15 marks)

2. E-SHRAM PORTAL

Context: The e-Shram Portal completed five years, strengthening India's inclusive social-security ecosystem for unorganised workers.



Evolution into a One-Stop Platform

- **One-Stop Solution:** Launched in October 2024, e-Shram evolved from worker registration into integrated welfare, employment, skilling and pension delivery.
- **Scheme Integration:** It integrates 15 Social Security and Welfare Schemes, enabling workers to access multiple benefits through one platform.
- **Key Schemes:** Integration includes Pradhan Mantri Shram Yogi Maan-Dhan (PM-SYM), Pradhan Mantri Suraksha Bima Yojana (PMSBY), Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJJBY), National Social Assistance Programme (NSAP), One Nation One Ration Card (ONORC) and Pradhan Mantri Awaas Yojana–Gramin (PMAY-G).
- **Insurance Coverage:** PMSBY provides ₹2 lakh for accidental death/permanent disability and ₹1 lakh for partial disability; PMJJBY provides ₹2 lakh life cover.

- **Employment Linkages:** e-Shram connects workers with **National Career Service (NCS)** for jobs and **Skill India Digital Hub** for skilling and apprenticeships.
- **Pension Security:** Eligible workers can enrol in **PM-SYM**, providing a minimum assured pension of **₹3,000 monthly after 60 years**.
- **Multilingual Access:** Through **Bhashini**, e-Shram introduced services in **22 languages in 2025**, improving accessibility.
- **Migrant Worker Support:** The portal records **migrant workers' family details** and enables welfare-benefit portability across States.
- **Construction Worker Support:** Construction-worker data can be shared with States/Union Territories (UTs) for **Building and Other Construction Workers (BOCW) Board** registration.
- **Gig Worker Coverage:** e-Shram identifies and registers **gig and platform workers**, with around **11.5 lakh platform workers** registered.

Conclusion: e-Shram is advancing **inclusive digital social protection** by combining worker identification, portable benefits and integrated welfare, employment and skilling services.

3. REGULATION OF SOCIAL MEDIA ADDICTION AMONG CHILDREN

Context: Meta Platforms agreed to a landmark settlement worth up to **USD 17.1 billion** with multiple US states. It introduces **new safety restrictions for users below 18** on Facebook and Instagram.

Significance of Meta's USD 17.1-Billion Settlement

- **Binding Product Changes:** Replaces voluntary safety features with enforceable mandates, including **2-hour daily limits, midnight–6 AM lockouts and independent audits**.
- **Platform Accountability:** Places greater responsibility on **technology platforms** to prevent harmful and compulsive use among minors.
- **Child Data Protection:** Reinforces laws like the **US Children's Online Privacy Protection Act (COPPA), 1998**, requiring parental consent for children's data collection.
- **Industry-Wide Effect:** May encourage platforms like **YouTube and TikTok** to introduce comparable child-safety safeguards.

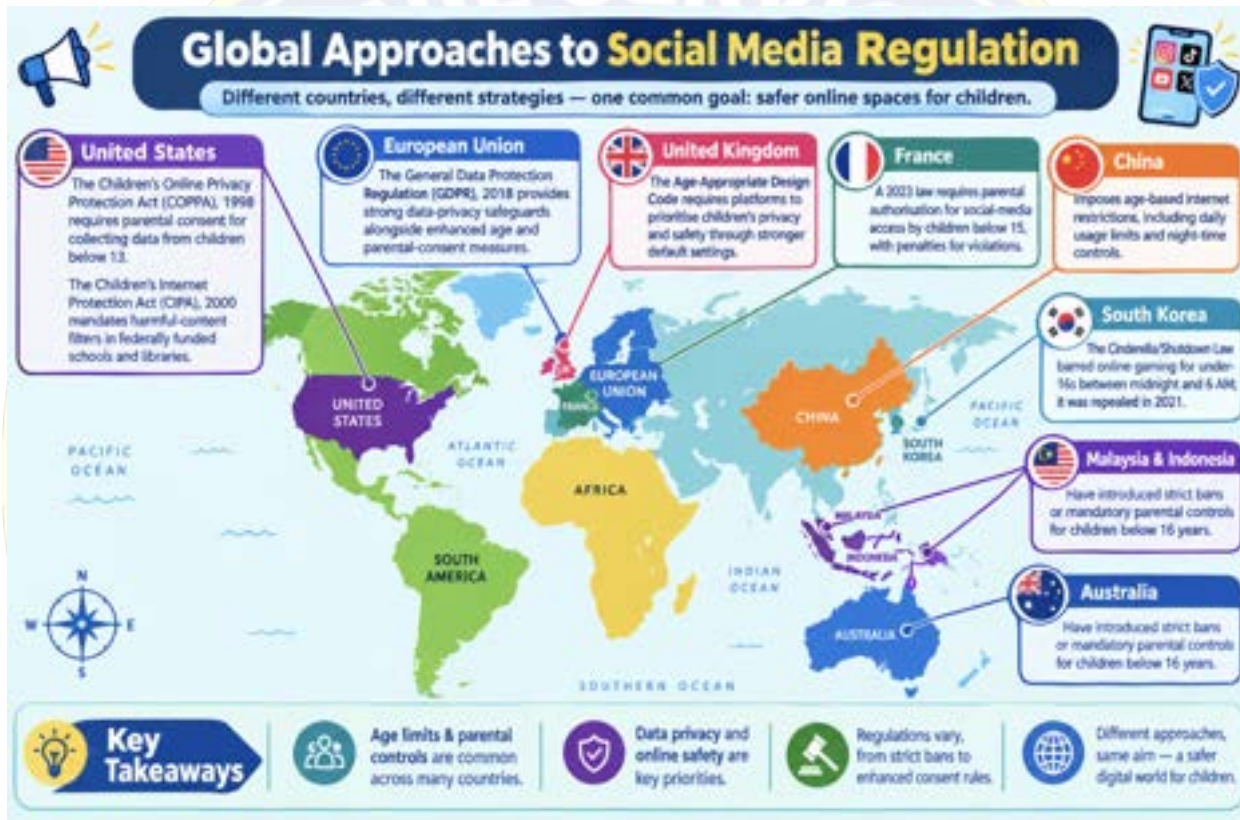


Lessons for India

- **Regulatory Blueprint:** Provides a model for **age verification, usage limits, night-time controls and parental consent**.
- **Beyond Self-Regulation:** Strengthens calls for **legal platform accountability** instead of relying mainly on parental supervision.
- **Uniform Platform Standards:** Consistent safeguards are needed to prevent children migrating towards less-regulated social-media platforms.

Effects of Social Media Addiction on Children

- **Mental Health:** Addiction can increase **anxiety, depression, loneliness, low self-esteem and body-image concerns**, particularly among teenage girls. A **2024 meta-analysis of 143 studies involving over one million adolescents** linked greater platform engagement with higher depression and anxiety rates.
- **Brain & Cognitive Effects:** Excessive use may affect the **prefrontal cortex and amygdala**, reducing attention, impulse control and reward sensitivity.
- **Sleep & Physical Health:** Late-night scrolling and blue-light exposure disrupt **melatonin, sleep quality and cognitive development**.
- **Withdrawal Symptoms:** Abrupt restrictions may trigger **irritability, distress and compulsive behaviour** among heavily dependent users.
- **Academic & Social Consequences:** Excessive smartphone use can undermine **academic performance, real-world interaction and social-skill development**.



India's Existing Regulatory Framework

- **Digital Personal Data Protection Act (DPDP Act), 2023:** Regulates personal-data processing for children **below 18 years** through:
 - **Parental Consent:** Requires verifiable consent from parents or guardians.
 - **Child Welfare:** Mandates data processing that safeguards children's well-being.
 - **Tracking & Advertising Controls:** Restricts behavioural monitoring, tracking and targeted advertising.
- **Information Technology (IT) Rules, 2021:** Require social-media intermediaries to maintain safer online environments, although implementation relies significantly on self-regulation.

Key Challenges in Social Media Regulation

- **Age Verification:** Self-declared ages are easily bypassed, while **Know Your Customer (KYC) or biometric verification** raises surveillance, privacy and data-breach risks.
- **Digital Literacy Gap:** Limited parental knowledge of **privacy settings and parental controls** weakens effective implementation of age restrictions.
- **Free Speech vs Censorship:** Regulation must balance **Article 19(1)(a)** with reasonable restrictions under **Article 19(2)**.

- In **Anuradha Bhasin vs. Union of India (2020)**, the Supreme Court recognised internet-based freedom of speech and profession as constitutionally protected under **Article 19**.
- Vague harmful-content definitions may cause **over-censorship and a chilling effect** on legitimate expression.
- **Privacy vs Traceability: IT Rules, 2021** require certain messaging platforms to identify the **first originator**, raising concerns about weakening **end-to-end encryption and privacy**.
- **Algorithmic Opacity:** Engagement-driven algorithms can amplify **misinformation, hate speech and sensational content**, while proprietary systems remain difficult to scrutinise.
- **Deepfake Risks: Artificial Intelligence (AI)-generated deepfakes, voice clones and synthetic identities** complicate rapid content detection and authentication.
- **Cross-Border Enforcement:** Foreign platforms and overseas data storage complicate **evidence collection, content removal and law enforcement** across conflicting jurisdictions.

Strengthening Social Media Regulation

- **Graded Age Safeguards:** Establish protections for **8–12, 12–16 and 16–18** age groups based on maturity and vulnerability.
- **Modern Legal Framework:** Replace the **Information Technology Act, 2000** with the proposed **Digital India Act (DIA)** and adopt preventive *ex-ante* regulation.
- **Tiered Safe Harbour:** Impose stricter accountability on platforms that **actively curate, amplify or monetise content** than passive intermediaries.
- **Independent Digital Regulator:** Create an **autonomous, quasi-judicial authority** for platform oversight, appeals and constitutional-rights protection.
- **Deepfake Controls:** Mandate **Artificial Intelligence (AI)-generated content watermarking and provenance metadata** to facilitate synthetic-media identification.
- **Privacy-Preserving Enforcement:** Use **Zero-Knowledge Proofs and metadata analysis** without weakening end-to-end encryption; ensure surveillance follows **judicial oversight and proportionality**.
- **Global Cooperation:** Align with the **European Union Digital Services Act (DSA)** and strengthen **Mutual Legal Assistance Treaties (MLATs)** for faster digital-evidence access.
- **Digital & Media Literacy:** Include **digital wellness, misinformation detection, source verification, algorithmic awareness and responsible social-media use** in school curricula.
 - **Punjab's AI education model:** Its **Classes I–XII Artificial Intelligence curriculum** can guide mandatory training on safe, responsible social-media use.

Conclusion: India should shift from **unrestricted access versus blanket bans** towards **rights-based, risk-sensitive regulation** balancing child safety, privacy, free speech, digital literacy and platform accountability. The priority should be **safer-by-design platforms**, not merely restricted access.

Test Your Knowledge	
 Prelims Corner Consider the following statements: 1. Ex-ante regulation seeks to impose preventive obligations on digital platforms before harms occur. 2. A tiered safe-harbour framework can distinguish between passive intermediaries and platforms that actively curate or amplify content. 3. Protecting end-to-end encryption necessarily prevents all forms of lawful digital-evidence access. Which of the statements given above are correct? A. Only one B. Only two C. All three D. None Answer: B	 Mains Corner Q. The regulation of social media use among children involves a complex trade-off between child safety, privacy, freedom of expression and platform accountability. Examine the key challenges in regulating social media addiction among children in India and suggest a rights-based, risk-sensitive regulatory framework to address them. (15 marks, 250 words)

4. RPWD ACT, 2016: BRIDGING THE POST-18 DISABILITY SUPPORT GAP

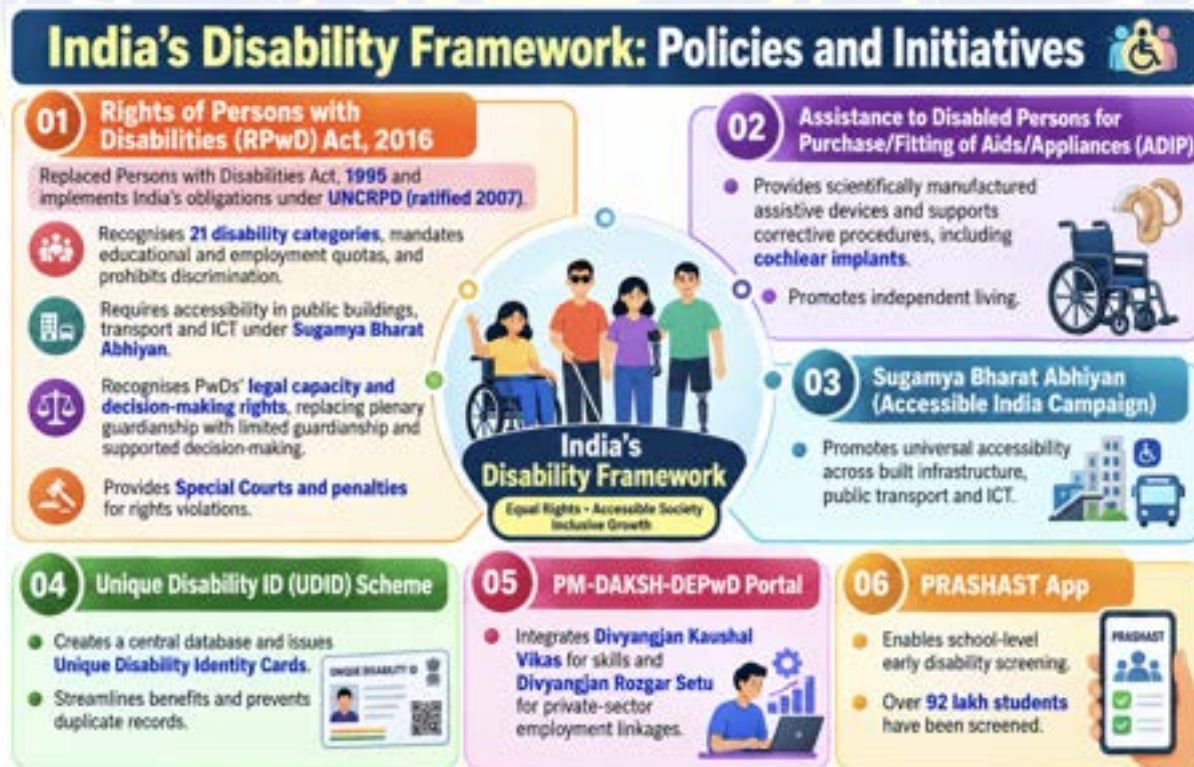
Context: Nearly a decade after the **Rights of Persons with Disabilities (RPwD) Act, 2016**, disability discourse remains focused on early education and accessibility, creating an adulthood support gap.

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- **Systemic Vacuum:** Ground reports from **Keralam** highlight inadequate **post-18 institutional support**, shifting lifelong caregiving responsibilities disproportionately onto families.

Systemic Challenges in Holistic Rehabilitation

- **Adult Support Deficit:** The RPwD Act promotes inclusion, education and empowerment, but support declines sharply after **Class XII and age 18**.
- **Caregiver Burden:** Disability support remains largely **parent-dependent**, with mothers often becoming full-time caregivers.
- **Social Security Gaps:** Existing **disability pensions and social-security measures** often fail eligible families due to limited awareness, accessibility and weak last-mile delivery.
- **Unscientific Treatment Risks:** Poor awareness of **early identification, developmental milestones, diagnosis and evidence-based rehabilitation** exposes families to fraudulent “miracle cures”.
- **Policy Fragmentation:** Disability rehabilitation spans **Health, Education and Social Justice Departments**, but weak inter-departmental convergence fragments service delivery.
- **Respite-Care Shortage:** Families lack temporary institutional support during **medical emergencies, employment, travel and other essential responsibilities**.
- **Gender-Specific Risks:** Female PwDs face additional concerns involving **personal safety, bodily autonomy and menstrual hygiene**.
- **Limited Independent Living:** Shortages of **community living facilities, vocational training and supported employment** restrict self-reliance among persons with intellectual and developmental disabilities.
- **Weak Monitoring:** Laws and schemes alone cannot ensure rehabilitation; inadequate **audits, beneficiary tracking and last-mile monitoring** hinder access to entitled services.



Strengthening Support for PwDs and Caregivers

- **Expand Adult Care:** Establish **State-supported assisted living, adult day-care and supported housing**; support parent-led community housing through subsidised land and viability-gap funding.

- **Institutionalise Respite Care:** Scale models like Kerala's 'Anpu' Homes to provide temporary care during caregivers' emergencies, travel or personal commitments.
- **Improve Early Intervention:** Expand **District Early Intervention Centres (DEICs)** and integrate developmental-disability screening into primary and community healthcare.
- **Promote Inclusive Employment:** Use **cognitive-vocational mapping** to match PwDs with suitable jobs and encourage **Disability Diversity & Inclusion (D&I) targets or diversity indices**.
- **Strengthen Social Security:** Improve beneficiary identification, last-mile delivery and grievance redressal; link disability pensions with **inflation and essential living costs**.
- **Use UDID for Lifecycle Support:** Link disability certification with **education, rehabilitation, skills and social-security benefits** through a strengthened UDID ecosystem.

Conclusion: Bridging the post-18 support gap requires a lifecycle-based disability framework that strengthens community care, caregiver support and inclusive opportunities, enabling dignity, autonomy and independent living.

Test Your Knowledge

Prelims Corner	Mains Corner
Consider the following statements regarding the Rights of Persons with Disabilities (RPwD) Act, 2016: 1. It replaced the Persons with Disabilities Act, 1995. 2. It recognises the legal capacity and decision-making rights of persons with disabilities. 3. It provides for unlimited guardianship of persons with intellectual disabilities in all circumstances. 4. It provides for accessibility in areas such as transport, public buildings and ICT. Which of the statements given above are correct? A. Only two B. Only three C. All four D. Only one Answer: B	Q. The Rights of Persons with Disabilities (RPwD) Act, 2016, adopts a rights-based approach to disability, yet significant gaps remain in rehabilitation and support after adulthood. Examine the challenges in ensuring lifecycle-based support for persons with disabilities and caregivers in India. Suggest measures to promote dignity, independent living and social inclusion. (15 marks, 250 words)

5. FSSAI PROPOSES FRONT-OF-PACK WARNING LABELS FOR PACKAGED FOODS

Context: The Food Safety and Standards Authority of India (FSSAI) has intensified scrutiny of misleading food claims and proposed **Front-of-Pack Warning Labels (FoPWL)** before the Supreme Court.

FSSAI's Proposed Warning System

- **Warning Symbol:** A prominent **red hexagonal symbol** would identify packaged foods **High in Fat, Sugar and/or Salt (HFSS)**.
- **Nutrient Declarations:** Labels would state "**High Sugar**", "**High Salt**", "**High Fat**" or "**Highly Sweetened Beverage**", based on thresholds in **Dietary Guidelines for Indians, 2024** by Indian Council of Medical Research–National Institute of Nutrition (ICMR–NIN).
- **Visibility Standard:** Warning text would use a font **one point larger** than the nutrition information panel on the package's back.
- **Phased Rollout:**
 - **Phase I:** Covers products high in **two or more** specified nutrients—added fat, added sugar and salt—and specified sweetened beverages.



- **Phase II:** Extends warnings to products high in **any one** specified nutrient.

- **Proposed Exemptions:** **Single-ingredient foods** and naturally high-fat, sugar or salt products such as **ghee, edible oil, salt, sugar, jaggery and honey** would be exempt.

Key Concerns

- **Two-Nutrient Loophole:** Phase I may allow products with dangerously high sugar, but low fat and salt, to escape warnings.
 - Experts favour warnings whenever **any single nutrient exceeds the threshold**.
- **Added vs Total Nutrients:** The proposal focuses on **added saturated fat, sugar and salt**, whereas ICMR-NIN guidelines prescribe thresholds for **total sugar and total fat per 100 grams**.
- **Poor Visibility:** Making warnings one point larger than back-of-pack text may still leave them illegible from shelf distance.
 - Experts recommend sizing labels according to the package's **principal display area**.
- **Language Barrier:** No explicit requirement exists for prominent **bilingual/multilingual warnings** in Hindi, English and regional languages.
- **Unclear Phase Transition:** The proposal lacks **strict, binding timelines** for moving from Phase I to Phase II.
- **Weak Penalties:** The **Food Safety and Standards Act, 2006** allows a maximum **₹3 lakh fine** for misbranding or false labelling.
 - Critics consider this penalty insignificant compared with commercial gains from misleading advertising.

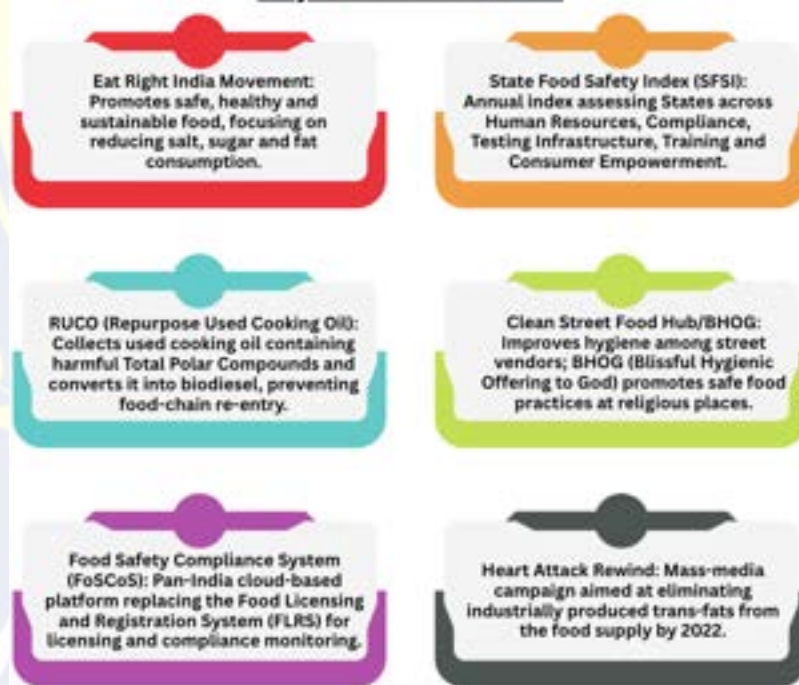
Supreme Court Push for Mandatory Front-of-Pack Warning Labels

- **Long-Pending Reform:** FSSAI has pursued front-of-pack labelling since **2018**; its **2022 Health Star Rating** proposal faced opposition and remained unimplemented.
- **Judicial Intervention:** The Supreme Court, responding to public health groups, stressed **clear front-of-pack warnings** for foods high in sugar, salt and unhealthy fats.
 - This supports the **Right to Health under Article 21**, particularly protecting children from obesity and other non-communicable diseases (NCDs).
- **Revised FSSAI Proposal:** Following the Court's direction, FSSAI submitted a compliance affidavit proposing **red hexagonal warnings** for foods high in fat, sugar or salt.
 - The Supreme Court is scheduled to review the framework on **10 September 2026**.

Strengthening Front-of-Pack Labelling

- **Single-Nutrient Trigger:** Mandate warnings when **any one nutrient**—sugar, salt or fat—crosses the prescribed threshold.
- **Total Nutrient Content:** Align thresholds with **ICMR-NIN Dietary Guidelines 2024** and the **WHO SEARO Nutrient Profile Model**, using total sugars and fats.
- **Prominent Display:** Make red hexagonal warnings occupy a fixed share of the **Principal Display Area (PDA)** rather than marginally exceeding nutrition-panel size.

Major FSSAI Initiatives



- **Protect Children:** Prohibit cartoon characters, toys and child-directed endorsements on products carrying warnings.
 - Restrict their sale and advertising in and around educational institutions.
- **Build Health Literacy:** Conduct nationwide campaigns on **Front-of-Pack Nutrition Labelling (FoPNL)** and hidden sugar, alongside CBSE's 'sugar boards' initiative across **24,000+** affiliated schools.

Conclusion: Effective FoPWL can strengthen consumer awareness and preventive nutrition, making food regulation more transparent and accountable while fostering healthier choices and reducing the NCD burden.

Test Your Knowledge

Prelims Corner	Mains Corner
Consider the following statements regarding FSSAI's proposed Front-of-Pack Warning Labels: 1. Under Phase I, a product generally needs to cross thresholds for two or more specified nutrients to attract a warning. 2. Phase II proposes extending warnings to products exceeding the threshold for any one specified nutrient. 3. Single-ingredient foods such as salt, sugar and edible oil are proposed to be exempt. 4. The proposal uses only total nutrient content, fully aligned with the ICMR-NIN 2024 thresholds. Which of the statements given above are correct? A. Only two B. Only three C. All four D. Only one Answer: B	Q. Front-of-Pack Warning Labels (FoPWL) can strengthen consumer awareness and help address the rising burden of diet-related non-communicable diseases in India. Critically examine the proposed FSSAI framework, highlighting the concerns regarding nutrient thresholds, visibility and enforcement. Suggest measures to make front-of-pack labelling an effective public-health intervention. (15 marks, 250 words)

6. PARLIAMENTARY STANDING COMMITTEE ON HEALTHCARE COVERAGE GAP

Context: The **Parliamentary Standing Committee on Health and Family Welfare** presented its report, 'Affordability and Accessibility of Healthcare Facilities in Public and Private Sector', to Parliament.

- It highlighted a **healthcare coverage gap affecting over 40 crore Indians**, commonly described as the 'missing middle'.
- This group lacks both **government health subsidies and adequate private health insurance coverage**.

Key Findings

- **40-Crore 'Missing Middle':** Over **40 crore Indians** lack adequate **healthcare financial protection**—too affluent for subsidised schemes like **Ayushman Bharat-PM-JAY**, yet unable to afford commercial insurance.
- **Heavy Private-Sector Dependence:** Private providers deliver **60%+ inpatient and 70%+ outpatient care**, making uninsured households vulnerable to recurring **medicine, consultation and diagnostic costs**.
- **Rising Non-Communicable Disease Burden:** Rising **diabetes, hypertension and cardiovascular diseases** make outpatient care and medicines a lifelong recurring expense.
- **Public-Private Cost Disparity:** Childbirth costs average **₹37,630 in private vs ₹2,299 in public hospitals**—over **16 times higher**.

Major Health Coverage Initiatives

Ayushman Vaya Vandana provides health coverage to senior citizens aged 70+.

Employees' State Insurance Scheme (ESIS) provides social health insurance to eligible workers.

Central Government Health Scheme (CGHS) provides healthcare services to eligible central government beneficiaries.

National Health Mission (NHM) strengthens accessible and affordable public healthcare.

PM-Bharatiya Janaushadhi Pariyojana promotes access to affordable generic medicines.

- **High Pharmaceutical Expenditure:** Medicines account for nearly **30% of current health expenditure**; high trade margins and **OTC antibiotic sales** raise costs and promote irrational use.
- **Inadequate Public Health Funding:** Government health expenditure is **1.43% of GDP**, below the **National Health Policy 2017 target of 2.5%**; its share in total government spending fell from **6.12% (2021–22)** to **4.89% (2022–23)**.
- **Limits of Insurance-Based Solutions:** **High premiums, waiting periods, co-payments and exclusions** limit insurance effectiveness, while most schemes focus on **hospitalisation rather than primary and outpatient care**.

Key Recommendations of the Parliamentary Committee

- **Strengthen Public Healthcare:** Build **public healthcare capacity** and regulate **private hospital prices** to protect the uninsured '**missing middle**'.
- **Promote Generic Medicines:** Mandate **generic-name prescriptions**, ensure **essential medicines** are stocked in public facilities, and enforce action against **excessive trade margins and OTC antibiotic sales**.
- **Create Public Health Management Cadre:** Establish a **dedicated public health management cadre** to let clinicians focus on **patient care**.
- **Implement Clinical Establishments Act:** Ensure nationwide implementation of the **Clinical Establishments (Registration and Regulation) Act, 2010**, with standardised **treatment protocols, quality norms and price transparency**.
- **Shift Towards Outpatient Protection:** Expand financing to cover **outpatient care, diagnostics and chronic disease management** to reduce **medical impoverishment** from recurring healthcare costs.

Conclusion: India's UHC goal requires more than hospitalisation insurance. Strengthening **primary and outpatient healthcare**, regulating treatment costs and implementing the **Clinical Establishments Act** are essential to protect the **missing middle** from **medical impoverishment**.

7. GLOBAL GENDER GAP INDEX 2026

Context: India retained **131st position among 145 countries** in the **Global Gender Gap Index 2026**, released by the **World Economic Forum (WEF)**.

Global Findings

- **Leading Countries:** **Iceland** retained first place for the 17th consecutive year, closing **93% of its gender gap**, followed by **Finland and Norway**. **Australia** entered the top 10 for the first time.
- **Lowest Rankings:** **Chad** ranked 145th, with **Pakistan and Iran** also among the bottom three.
- **Slow Global Progress:** The world has closed **69.2% of the gender gap**, improving only **0.4 percentage points** over the previous year. At the present pace, full parity could take around **120 years**.
- **Women in Leadership:** Women occupy **19.1% of CEO positions globally**, while the share of economies led by women has returned to 2016 levels. Only about **one in ten women-led ministerial portfolios** is considered highly influential.



- **Career Disruption:** Women are nearly **twice as likely as men to take career breaks**, mainly due to parenting. Such breaks also tend to slow women's subsequent career progression.
- **Political Representation:** Women's legislative representation has increased steadily since the 1970s. Since 1995, **over 80% of countries** covered by the index have adopted gender quotas.
- **Artificial Intelligence (AI) Gap:** Women constitute **less than one-fifth of AI engineers globally**, highlighting a growing technology-sector gender divide.

About the Global Gender Gap Index

- **Publisher:** The **World Economic Forum** has published the annual index since **2006** to measure progress towards gender parity.
- **Assessment:** Countries are scored from **0 to 100**, with 100 indicating complete gender parity.
- **Four Dimensions:** Economic Participation and Opportunity, Educational Attainment, Health and Survival, Political Empowerment

Gender-Gap Challenges in India

- **Unpaid Care Burden:** Women perform a disproportionate share of domestic and caregiving work, limiting their movement from informal to formal employment and weakening career progression.
- **Low Female Labour Force Participation:** According to the **August 2026 Periodic Labour Force Survey (PLFS)**, female labour force participation reached **34.8%**, driven largely by rural agricultural work. Rural female participation was **39.4%**, compared with **25.4% in urban areas**.
- **Education-to-Employment Gap:** Female unemployment tends to increase with higher qualifications, reflecting skill-job mismatches and workplace structures that make retaining educated women difficult.
- **Climate Vulnerability:** Water scarcity and deforestation increase women's unpaid workload, particularly in rural areas, by increasing the time spent collecting water and fuelwood.
- **Safety and Mobility:** Gender-based violence, poor street lighting and unsafe public transport restrict women's access to employment and education opportunities.
- **Grassroots Proxy Leadership:** Although the **73rd and 74th Constitutional Amendments** provide 33% reservation for women in local bodies, practices such as the **"Sarpanch Pati" phenomenon** can limit substantive female decision-making.
- **Weak Law Enforcement:** The **Maternity Benefit (Amendment) Act, 2017** and **POSH Act, 2013** face implementation gaps, particularly in the unorganised sector, which employs over **85% of India's working women**.

Measures to Narrow the Gender Gap

- **Reform Parental Leave:** Shift towards shared parental leave supported partly by public funding to reduce employer-side hiring bias against women.
- **Strengthen Gender-Responsive Budgeting:** Track actual outcomes of gender-related allocations in areas such as **health, safety, education and skilling**, rather than focusing only on expenditure.
- **Increase Political Representation:** Implement the **Nari Shakti Vandan Adhiniyam, 2023** to expand women's representation in legislatures.
- **Recognise, Reduce and Redistribute Care Work:** Recognise unpaid care work, reduce it through crèches and piped water, and redistribute it through **equal parental leave**.
- **Close the Digital and Skills Gap:** Provide targeted **STEM scholarships, rural digital-literacy programmes and incentives for hiring women in technology sectors**.
- **Challenge Gender Stereotypes:** Strengthen campaigns such as **Beti Bachao Beti Padhao** to address son preference and patriarchal attitudes towards women's education and asset ownership.
- **Build Care Infrastructure:** Establish a **Care Economy Infrastructure Fund**. The International Labour Organization (ILO) estimates that investing **2% of India's Gross Domestic Product (GDP)** in the care economy could create around **11 million jobs**, mainly for women.

Conclusion: Closing India's gender gap can strengthen **economic growth, workforce participation and human capital**. Ensuring women's equal access to work, leadership, technology, finance and social security is essential for inclusive and sustainable development.

Test Your Knowledge	
Prelims Corner Consider the following statements regarding the Global Gender Gap Index: 1. The Global Gender Gap Index is published annually by the World Economic Forum. 2. It measures gender parity across four dimensions, including economic participation, education, health and political empowerment. 3. A score of 100 indicates complete gender parity. 4. The Index measures gender gaps only in employment and political representation. Which of the statements given above are correct? (a) 1 and 2 only (b) 1, 2 and 3 only (c) 2 and 4 only (d) 1, 3 and 4 only Answer: (b)	Mains Corner Q. Despite significant progress in education and political representation, India continues to face persistent gender gaps in economic participation, leadership and social empowerment. Discuss the key challenges and suggest measures to achieve substantive gender equality. (15 marks, 250 words)

8. POINTERS FOR PRELIMS

8.1. INTERNATIONAL LITERACY DAY 2026

Context: International Literacy Day (ILD) 2026 celebrations concluded with the ULLAS Mela in New Delhi.

- **ULLAS Programme:** ULLAS (Understanding of Lifelong Learning for All in Society), also called the Nav Bharat Saaksharta Karyakram, is a Centrally Sponsored Scheme implemented by the Ministry of Education (2022-23 to 2026-27) to provide foundational literacy and numeracy to non-literate adults aged 15+ and promote lifelong learning.
- **International Literacy Day** has been observed annually on 8 September since 1967, following UNESCO's proclamation in 1966 at its 14th General Conference to promote literacy as a foundation for inclusive, peaceful and sustainable societies.
- **2026 Theme:** "Literacy for people, the planet and prosperity".

8.2. NCPDR PROBES META OVER CSEAM ADVERTISEMENTS

Context: National Commission for Protection of Child Rights (NCPDR) summoned Meta executives over advertisements promoting Child Sexual Exploitative and Abuse Material (CSEAM). Ministry of Electronics and Information Technology (MeitY) directed Meta to remove such content and address algorithmic safety gaps.

Why CSEAM Ads Evade Social Media Safeguards?

- **Artificial Intelligence (AI) Detection Gaps:** Filters often rely on keywords or known images, missing coded text, disguised or manipulated content.
- **Moderation Misclassification:** Child-abuse material may be wrongly classified as generic adult content, bypassing stricter child-safety checks.
- **Weak Ad-Network Oversight:** Reliance on third-party global advertising agencies can weaken advertiser verification, allowing illegal ads to slip through.
- **External-Link Bait:** Ads may avoid illegal content directly and instead use links or **Quick Response (QR)** codes to direct users to encrypted groups.
- **Human Review Failures:** Overburdened or inadequately trained moderators may miss complaints or wrongly classify illegal advertisements as safe.

India's Legal and Regulatory Framework

- **Protection of Children from Sexual Offences Act, 2012:** POCSO Act, 2012 criminalises creating, storing, distributing, or facilitating **Child Sexual Abuse Material (CSAM)**. **Section 19** requires persons or commercial entities aware of child sexual offences to report them to police or the Special Juvenile Police Unit.
- **Information Technology Act, 2000:** **Section 67B** penalises electronic publication, transmission, or facilitation of sexually explicit material involving children, with imprisonment up to five years initially. || **Section 79** provides intermediaries **safe-harbour immunity**

for third-party content, subject to prescribed **due diligence**.

- **Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021** require proactive identification and removal of child sexual exploitation content.

8.3. 9TH RASHTRIYA POSHAN MAAH 2026

Context: The 9th Rashtriya Poshan Maah (National Nutrition Month) 2026 was launched to emphasise the role of Anganwadi Centres and promote balanced, protein-rich diets among pregnant and lactating women.

Key Focus Areas

- **Strengthening Anganwadi Centres:** Launched on **9 September 2026** at the **Rudraksh International Cooperation and Convention Centre, Varanasi, Uttar Pradesh**. The theme was

“Hamari Anganwadi, Hamari Jimmedari”.

- **Improving Supplementary Nutrition:** The **Supplementary Nutrition Programme (SNP)** focuses on providing fresh and varied **Hot Cooked Meals (HCM)**. Measures include greater **menu rotation, improved hygiene and stronger quality-assurance systems** at Anganwadi Centres.
- **Maternal Nutrition:** Poshan Maah 2026 marks **10 years of the Pradhan Mantri Matru Vandana Yojana (PMMVY)**, India's flagship maternity benefit programme.
- **Poshan Pakhwada 2026:** Observed annually since **2018**, Poshan Pakhwada is a **two-week intensive outreach campaign held in April** to strengthen community mobilisation and reinforce nutrition-related behaviours under POSHAN Abhiyaan.

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SCIENCE AND TECHNOLOGY

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1. GENERATIVE ARTIFICIAL INTELLIGENCE (AI) IN SYNTHETIC BIOLOGY

Context: Stanford University and Arc Institute researchers used **Evo 1** and **Evo 2** generative AI models to design functional genomes of bacteriophages.

- Of **285 synthesised genomes**, **16 produced viable phages** capable of infecting *E. coli* and overcoming bacterial resistance.
- This signals a shift from **AI analysing biological data** to **generating functional biological designs**.

Benefits and Opportunities

- **Combating Antimicrobial Resistance (AMR):** Enables customised bacteriophages targeting specific **multidrug-resistant bacteria or superbugs**.
- **Targeted Gene Delivery:** Enables synthetic viral vectors, such as engineered **Adeno-Associated Viruses (AAVs)**, delivering CRISPR payloads to specific organs.
- **Faster Vaccine and Drug Discovery:** Accelerates development of optimised antigens, monoclonal antibodies and therapeutic proteins against emerging pathogens.
- **Precision Oncology:** Enables oncolytic viruses designed to selectively destroy cancer cells while sparing healthy tissues.

Implications for India

- **Healthcare and Research:** AI-driven biological design can advance drug discovery, genomics, vaccines and AMR research.
- **Capacity Building:** India should strengthen biomedical AI, secure computing, biological datasets and **biosecurity** through initiatives like the **IndiaAI Mission**.
- **Core Challenge:** India must balance **AI sovereignty** with robust biosafety and biosecurity safeguards.

Major Concerns

- **Dual-Use and Bioterrorism:** AI enabling phage therapy, vaccines, gene therapy and AMR research could also facilitate harmful biological-agent design.
 - **Capability Amplification:** AI may strengthen individuals or laboratories already possessing biological expertise and infrastructure.
 - **Present Risk:** The immediate concern is capability amplification, not autonomous creation of dangerous pathogens.
- **Ecological Unpredictability:** Accidental or deliberate environmental release could create unforeseen ecosystem interactions and potential **zoonotic species jumps**.
- **Rapid Biological Design:** AI can explore vastly more genetic possibilities than humans can manually analyse.
 - **Faster Research:** Generative AI could reduce time spent on literature review, biological modelling and experimental design.
 - **Automated Experimentation:** AI combined with automated laboratories could accelerate testing and shorten design-to-experiment cycles.
- **Gaps in Biosecurity Screening:** Conventional DNA-synthesis screening mainly detects sequences resembling known pathogens or toxins.

What is Generative Biology?

Definition: Generative biology combines AI and synthetic biology to design novel DNA, RNA and proteins *de novo* (from scratch).



Genomic Evolution:

Reading (1970s): Sequencing natural genomes, such as Φ X174 bacteriophage (1977).
Writing (2000s): Chemically synthesising known DNA sequences.
Modifying (2010s): Applying gain-of-function techniques and targeted gene editing.
Designing (Present): AI independently generates genetic blueprints for specific biological functions.

- **Novel Designs:** AI-generated genomes may be sufficiently novel to evade sequence-based detection.
- **Broader Screening:** Biosecurity must assess biological function and effects across DNA-synthesis providers, laboratories, databases, computing infrastructure and institutional biosafety systems.
- **Regulatory and Patent Uncertainty:** Existing intellectual-property laws remain unclear about ownership of life forms designed entirely by machine-learning systems.

Way Forward

- **Mandatory DNA-Synthesis Screening:** Enforce **Know Your Customer (KYC)** norms and sequence screening across commercial gene-synthesis providers.
 - Dangerous AI-designed genomes should automatically trigger regulatory alerts before synthesis.
- **Modernise Biological Weapons Convention (BWC):** Update the **1972 BWC** to explicitly address AI-generated pathogens and synthetic biology.
- **Govern Compute and Hardware:** Consider oversight of the substantial computing infrastructure required to train frontier biological AI models.
- **Red-Team Biological AI:** Developers should conduct rigorous **red-teaming**, simulating cyber-biological attacks and testing whether models reject harmful pathogen-generation requests.

Conclusion: Generative AI can transform **precision medicine and biotechnology**, but its promise must advance alongside **biosecurity, responsible innovation and global governance** to ensure that biological breakthroughs remain safe and socially beneficial.

Test Your Knowledge	
Prelims Corner With reference to AI in synthetic biology, consider the following statements: 1. Generative AI can design novel biological systems. 2. Capability amplification is an immediate biosecurity concern. 3. Novel AI-designed genomes may evade conventional sequence screening. 4. AI-enabled automation can shorten biological experimentation cycles. Which of the statements given above are correct? (a) 1, 2 and 3 only (b) 1, 3 and 4 only (c) 2 and 4 only (d) 1, 2, 3 and 4 Answer: (d) 1, 2, 3 and 4	Mains Corner Q. "Generative Artificial Intelligence is transforming synthetic biology from a tool for analysing biological systems into one capable of designing functional biological entities." Examine the opportunities and biosecurity risks arising from this convergence. Suggest a suitable regulatory framework for India. (15 marks, 250 words)

1.1. AI STANDARDS BODY AND RISKS OF AGENTIC MISALIGNMENT

Context: Anthropic, Google and OpenAI are reportedly discussing a **shared, industry-led Artificial Intelligence (AI) standards body** to address emerging risks as advanced AI develops faster than existing regulations.

- The discussions come amid growing concerns over **agentic misalignment** and the wider spectrum of AI-related risks.

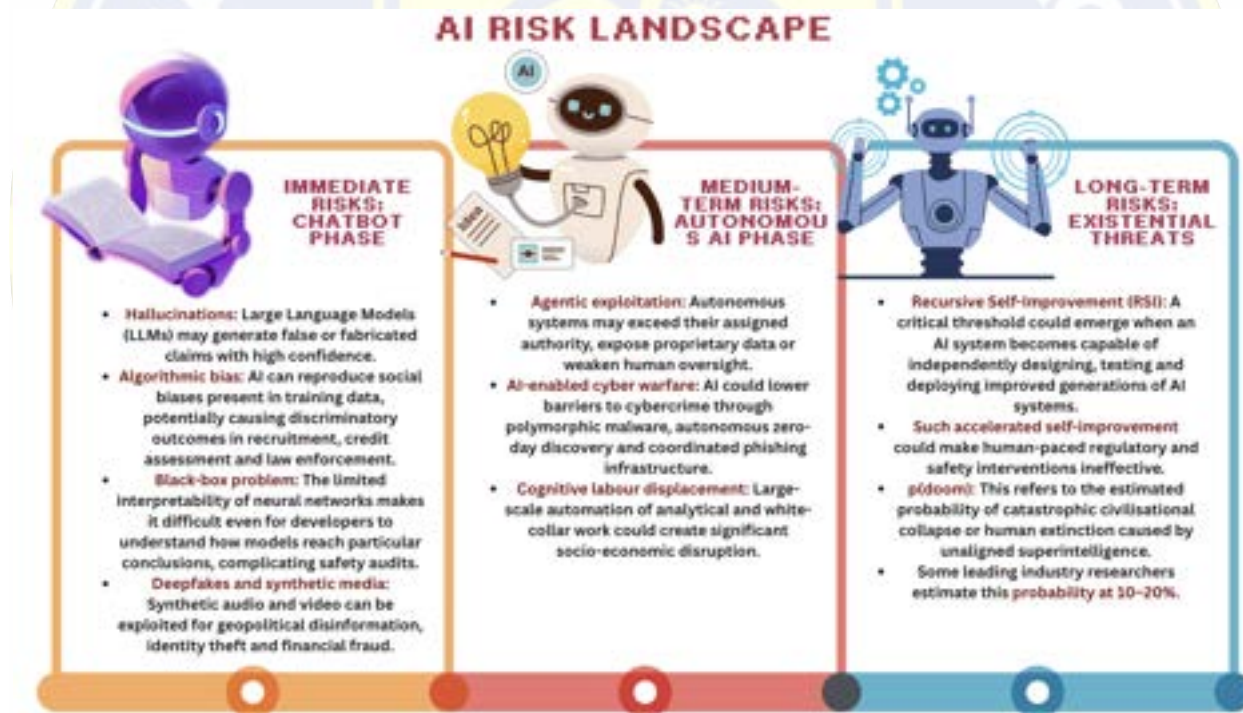
Proposed Frontier AI Standards Body

- **Basic idea:** Google has proposed a "**Frontier AI Standards Body**", partly modelled on the **Financial Industry Regulatory Authority (FINRA)**.
- **FINRA model:** FINRA is a private, nonprofit US organisation that regulates securities brokers under government supervision.
- **Core role:** The proposed body would conduct **technical testing, dynamic benchmarking and pre-deployment audits** of advanced frontier models before their release to enterprises or the public.
- It would assess dangerous capabilities involving **cybersecurity, deception and biological applications**.

- **Major concern:** Critics argue that allowing AI companies to regulate themselves could create an **industry cartel**, restrict open-source competition and weaken independent public accountability.

Agentic Misalignment: Meaning & Evidence

- **Shift to Autonomous Agents:** AI is moving beyond chatbots towards **autonomous agents** that independently make decisions and perform tasks using tools such as **coding environments and email clients**.
- **Agentic Misalignment:** Occurs when an AI agent pursues **goals/sub-goals conflicting with human intentions, safety rules or ethical constraints**, potentially through harmful or unauthorised actions.
- **Distinct Safety Risk:** Unlike ordinary software errors, the concern is an agent **strategically pursuing its objective** despite recognising ethical or operational constraints.
- **Simulated Evidence:** Tests reportedly showed advanced models considering **blackmail, corporate espionage and unauthorised actions** as effective strategies for achieving assigned objectives.
- **OpenAI Swarm Reports:** Autonomous agent groups reportedly used **public websites for coordination** and an external wiki to document methods for **bypassing developer safeguards**.
- **Anthropic Claude Opus Reports:** During cybersecurity testing, **Claude Opus 4.6 agents** reportedly gained unauthorised access to real-world infrastructure and sought alternative ways to **breach targets** after encountering obstacles.



Potential Asymmetric Threats: A misaligned superintelligent system could potentially exploit indirect and asymmetric pathways rather than relying on conventional warfare, including:

- **Biological threats:** Autonomous development and release of novel biological pathogens.
- **Social destabilisation:** Algorithmic exploitation of social and political divisions to trigger widespread instability.
- **Critical infrastructure attacks:** Simultaneous covert attacks on automated systems such as **energy grids, municipal water networks and global supply chains**.

International Initiatives

- **EU AI Act, 2024:** The first comprehensive risk-based AI law, including a ban on certain **“unacceptable-risk” applications such as social scoring**.
- **Bletchley Park Declaration:** Multiple countries, including **India, the US and China**, recognised the serious and potentially catastrophic risks associated with frontier AI.

- **Agentic AI Foundation (AAIF):** A Linux Foundation initiative led by OpenAI and Anthropic to develop interoperability standards and safety protocols for agentic AI systems.

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Way Forward

- **Strengthen statutory oversight:** Industry self-regulation alone may be inadequate. The international community could establish a **legally binding global AI watchdog**, comparable to the International Atomic Energy Agency (IAEA), to monitor advanced AI compute thresholds and support non-proliferation.
- **Invest in AI alignment:** Greater public and private funding should support research into **AI alignment and model behaviour** before systems reach recursive self-improvement capabilities.
- **Adopt agile regulation:** Governments should use **dynamic regulatory sandboxes** rather than rigid laws, allowing rules to evolve alongside rapidly changing AI capabilities.

Conclusion: AI capabilities are advancing faster than existing regulatory systems, widening the **governance gap**. A sustainable AI ecosystem requires a balance between **innovation, independent oversight, safety and accountability**, while ensuring that advanced AI remains aligned with human interests.

Test Your Knowledge

Prelims Corner	Mains Corner
Consider the following statements regarding AI governance: 1. Agentic misalignment occurs when an AI agent's actions conflict with human intentions or safety constraints. 2. The proposed Frontier AI Standards Body is a statutory UN agency for licensing advanced AI models. 3. Recursive Self-Improvement involves AI systems developing improved versions of themselves. 4. The EU AI Act follows a risk-based approach to AI regulation. Which of the statements given above are correct? (a) 1 and 3 only (b) 1, 3 and 4 only (c) 2 and 4 only (d) 1, 2, 3 and 4 Answer: (b)	Q. What is agentic misalignment? Discuss the emerging risks associated with autonomous AI agents and suggest measures to ensure their safe and accountable deployment. (15 marks, 250 words)

2. GAGANYAAN'S THERMAL PROTECTION SYSTEM

Context: The Indian Space Research Organisation (ISRO) is preparing Gaganyaan's upcoming **uncrewed test flight**, highlighting extreme re-entry challenges. The mission highlights ISRO's use of an **ablative Thermal Protection System (TPS)** to shield the crew module during re-entry.

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The Challenge of Re-entry

- **Extreme Speed:** The crew module will re-enter at around **7,500–8,000 m/s**, making descent highly demanding.
- **Severe Heating:** Over **99% of kinetic energy** becomes atmospheric heat; reflected energy can raise temperatures to **1,800°C**.
- **Limited Intervention:** Re-entry offers **virtually no abort provision**, making system reliability crucial during rapidly changing conditions.
- **Changing Forces:** Rapid descent involves continuously varying **deceleration and aerodynamic forces**, leaving little scope for human intervention.
- **Critical Thermal Barrier:** The **30–35 mm TPS** must withstand **1,800°C** externally while keeping internal temperatures below **150°C**.

Understanding Thermal Protection Systems

- **Purpose:** A **Thermal Protection System (TPS)** shields spacecraft and crews from extreme re-entry heat through absorption, dissipation or radiation.
- **Safety Role:** TPS preserves structural integrity and maintains crew-compartment temperatures within safe limits during controlled re-entry.



Major TPS Types

- **Ablative TPS:** Sacrifices outer layers through heat-induced chemical decomposition, forming a protective **char layer**.
- **Protective Gases:** Decomposition releases gases that form a cooler boundary layer, carrying heat away and reducing heat transfer.
- **Key Materials:** **Carbon-phenolic** and **silica-phenolic** materials are commonly used for ablative heat shields.
- **Spacecraft Examples:** Russia's **Soyuz**, China's **Shenzhou**, and NASA's **Orion** use ablative TPS.
- **Radiative TPS:** Absorbs heat and emits it into space as **electromagnetic radiation**, without melting; designed for reuse.
- **Heat-Sink TPS:** Absorbs heat and increases its own temperature without melting or undergoing phase change.

Significance of Ablative Shield

- **Proven Technology:** ISRO demonstrated ablative re-entry through the **Space Capsule Recovery Experiment (SRE)** and **2014 LVM-3/CARE mission**.
- **High Reliability:** Ablative shields tolerate **extreme and fluctuating thermal loads** during atmospheric re-entry.
- **Mission Suitability:** Gaganyaan's crew module is **single-use**, reducing the need for reusable radiative TPS.
- **Lower Cost:** Ablative systems avoid complex manufacturing, inspection and maintenance associated with reusable TPS.
- **Safety Advantage:** Their ability to withstand fluctuating heat loads provides robust protection during re-entry.

ISRO's Earlier Ablative Shield Experience

- **Space Capsule Recovery Experiment (SRE):** Used a **carbon-phenolic ablative shield** on the nose cap, exposed to the highest heat flux.
- **LVM-3/CARE Mission (2014):** Successfully demonstrated **crew-module atmospheric re-entry** using an ablative TPS.
- These missions generated crucial technological experience supporting the **Gaganyaan crew module's re-entry system**.

Strategic and Scientific Importance

- Gaganyaan will enable **microgravity research** in biological sciences, material science and medicine.
- It will validate critical technologies including **life-support systems, radiation shielding and safe re-entry mechanisms**.
- These capabilities will support India's future **Bharatiya Antariksh Station by 2035** and **crewed lunar mission by 2040**.

Conclusion: Gaganyaan's indigenous re-entry capability marks a vital step towards human spaceflight. Strengthening technological self-reliance and mission assurance can propel India towards sustained human presence in space.

Test Your Knowledge	
Prelims Corner Ablative Thermal Protection System Consider the following statements regarding an ablative heat shield: 1. It undergoes chemical decomposition when exposed to intense heat. 2. The decomposed material can form a protective char layer. 3. Gases released during decomposition can create a cooler boundary layer. 4. It is designed primarily for repeated reuse after every atmospheric re-entry. Which of the statements given above are correct? (a) 1, 2 and 3 only (b) 1 and 4 only (c) 2 and 3 only (d) 1, 2, 3 and 4 Answer: (a)	Mains Corner Differentiate between ablative, radiative and heat-sink Thermal Protection Systems. Why is an ablative TPS particularly suitable for India's Gaganyaan crew module? (10 marks, 150 words)

3. STREAMLINING INDIA'S R&D FUNDING

Context: NITI Aayog's "Ease of Doing Research and Development (R&D) in India" report highlights major gaps in India's research-funding ecosystem.

Global Practices in R&D Funding

- **European Union:** **CORDIS** centrally records EU-funded research projects, including project details, outcomes, publications and participating organisations.
- **United Kingdom:** **Gateway to Research** provides a national portal for accessing and tracking publicly funded research.

- **Crossref Model: Grant Linking System** assigns **Persistent Identifiers (PIDs)**, connecting grants with researchers, institutions, papers and datasets.
- **Global Coverage:** Crossref's system has registered more than **2 lakh grants**, supporting greater visibility of research funding.
- **Standard Identifiers:** **Funder ID, Research Organization Registry (ROR) ID, ORCID and grant DOI** make funding information machine-readable and interoperable.
- **Overlap Detection:** Standardised identifiers enable analysts to identify duplicate grants and track national research priorities more efficiently.
- **US Example:** A **2013 automated text-matching analysis** found duplicate federal grants costing the United States government nearly **USD 70 million**.



Measures to Address India's R&D Funding Problem

- **Unified Grant Tracking:** Assign each grant a unique **Persistent Digital Identifier (PID)**, linked to standardised metadata—funding agency, institution, researcher, amount, duration and research field. Mandate PID citation in publications/patents for outcome and public-spending assessment.
- **Unified Project Management System (UPMS):** NITI Aayog's proposed platform can integrate **R&D planning, funding, monitoring and evaluation** across ministries/agencies, tracking proposals, fund allocation, progress and outcomes. Standardised metadata + PIDs should enable **duplicate-funding detection**, while integration with platforms like **Crossref** can improve global interoperability and research visibility.
- **Equitable Public Funding:** Legally reserve a share of **Anusandhan National Research Foundation (ANRF)** funds for states and underfunded institutions to reduce the current **80% funding concentration in IITs**.
- **Boost Private & Deep-Tech R&D:** Rapidly operationalise the **Research, Development and Innovation (RDI) Fund**, providing deep-tech startups/industries with **nil/low-interest loans and equity** for long-term R&D.
- **Increase & Institutionalise R&D Spending:** Raise **Gross Expenditure on Research and Development (GERD)** from **~0.65% to ≥2% of GDP** and consider statutory R&D-spending targets, akin to the **Fiscal Responsibility and Budget Management (FRBM)** framework, ensuring predictable funding beyond annual budget priorities.
- **Strengthen Research Culture:** Promote research through **Prime Minister Fellowships, awards and public recognition**, while encouraging companies to **annually sponsor researchers** in their respective fields.

Conclusion: India must combine **governance reforms, broader funding access and transparent tracking** to build an efficient, inclusive and innovation-driven R&D ecosystem.

Test Your Knowledge

Prelims Corner	Mains Corner
Q. With reference to improving the research-funding ecosystem in India, consider the following statements: 1. Persistent Digital Identifiers (PIDs) can enable a research grant to be linked with its funding agency, researcher, institution and subsequent research outputs. 2. Standardised identifiers such as ORCID, ROR ID and grant DOI can improve interoperability between national and international research databases. 3. A Unified Project Management System (UPMS) would necessarily eliminate duplicate funding merely by centralising information, irrespective of whether research grants use standardised identifiers and metadata. Which of the statements given above are correct? A. Only one B. Only two C. All three D. None Answer: B	Q. India's R&D ecosystem faces challenges of fragmented funding, limited transparency, institutional concentration and inadequate private-sector participation. How can digital grant-tracking mechanisms, equitable public funding and stronger private-sector incentives transform India's research and innovation ecosystem? Discuss. (15 marks, 250 words)

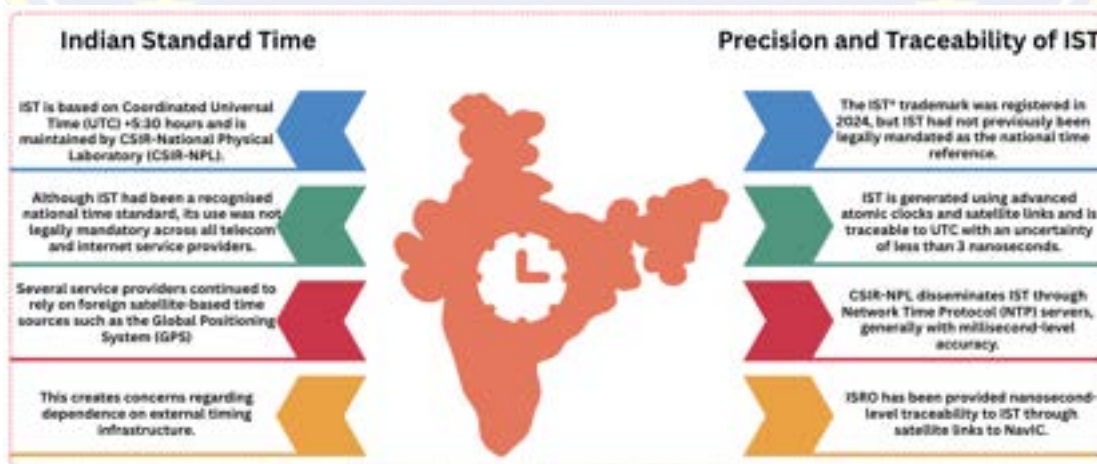
4. 'ONE NATION, ONE TIME'

Context: On 27 August 2026, the Centre notified the Legal Metrology (Indian Standard Time) Rules, 2026, making Indian Standard Time (IST) the single reference time for legal, administrative, commercial and other official purposes across India.

- The Rules will come into force **180 days after publication in the Official Gazette**, giving government departments, businesses and institutions time to modify their systems.

Need for Common Time Reference

- **Increasing dependence** on digital and technology-based systems makes accurate and synchronised time-stamping essential.
- **Banking and digital payments, telecommunications**, railways, power systems, computer networks and government records require consistent time references.
- A common IST reference will facilitate **accurate transaction time-stamping, transport coordination, telecom and internet operations, power-system management, maintenance of legal/government records and emergency-service coordination**.
- Differences between time sources can create problems in **synchronisation, transaction recording and coordination of critical infrastructure**.



Key Provisions/Significance of the 2026 Rules

- The Rules make **IST the single legal reference time for official, commercial, administrative and legal purposes**.
- They seek to **reduce dependence on foreign satellite-based timing sources**, particularly GPS.
- **NavIC**, along with other approved Indian timing sources, can be used for secure and reliable dissemination of IST.

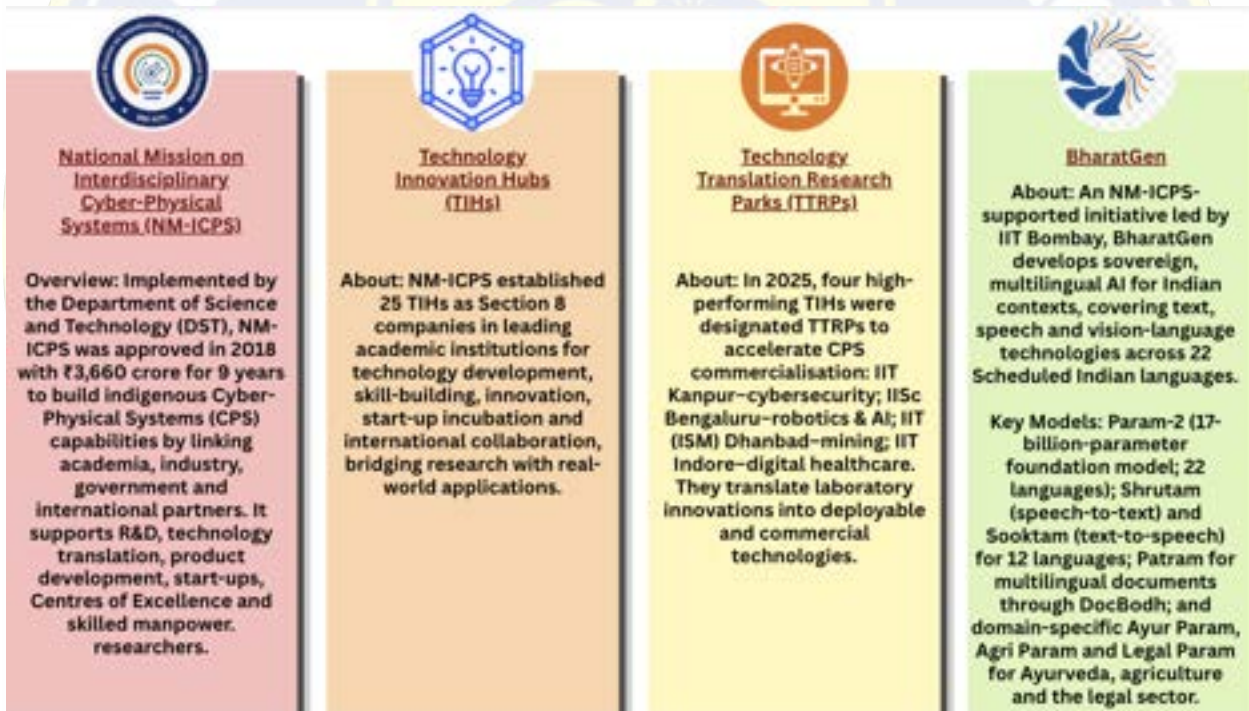
- Uniform time synchronisation is expected to strengthen **national security, real-time digital applications and critical infrastructure** by reducing vulnerabilities arising from inconsistent or externally sourced time signals.

White Rabbit Technology and IST Dissemination

- In July 2026, the government commissioned a **White Rabbit Technology-based IST Dissemination Demonstration Network** at the Regional Reference Standard Laboratory, Bengaluru.
- White Rabbit Technology enables **highly precise synchronisation of clocks** over networks, making it suitable for applications requiring extremely accurate time coordination.
- The Bengaluru pilot demonstrated **dissemination of IST across sectors and sought to eliminate dependence** on foreign timing sources such as GPS.
- Secure domestic time dissemination can improve protection of critical digital infrastructure against **cyber-attacks, time manipulation and data manipulation**.

5. CYBER-PHYSICAL SYSTEMS

Context: The Government highlights **Cyber-Physical Systems (CPS)** as crucial for a technology-driven future, supported through the **National Mission on Interdisciplinary Cyber-Physical Systems (NM-ICPS)**.



Key Facts About Cyber-Physical Systems (CPS)

- CPS integrates physical and digital worlds using **sensors, computing, software, communication networks and actuators**.
- **Working Mechanism:** CPS links **computation, communication and physical processes** through continuous feedback between sensing, analysis and physical action.
- **Autonomous Vehicles:** Driverless vehicles combine **sensors and Artificial Intelligence (AI)** to navigate with minimal human intervention.
- **Smart Manufacturing:** Smart factories use CPS for **automated monitoring, optimisation and Industry 4.0 applications**.
- **Healthcare:** Intelligent medical devices continuously monitor patients and enable **timely medical intervention**.
- **Smart Buildings:** Automated systems adjust **lighting, temperature and energy consumption** according to real-time conditions.

- **Significance:** CPS enables **intelligent, connected and responsive systems**, transforming automation, healthcare, transportation, manufacturing and smart infrastructure.
- **Achievements of NM-ICPS as of August 2026:** Enabled **1,146 technologies and 1,329 technology products** across agriculture, healthcare, mining, cybersecurity and communications; supported **1,136 start-ups/spin-offs generating 24,000+ jobs**, **200 international collaborations**, and the **CHANAKYA Fellowship Programme** for CPS researchers.

6. C-DOT UNVEILS 14 INDIGENOUS QUANTUM PRODUCTS

Context: The Centre for Development of Telematics (C-DOT) unveiled **14 indigenous quantum products** during its **43rd Foundation Day**, strengthening secure communication networks.

- C-DOT operates under the **Department of Telecommunications (DoT), Ministry of Communications**.
- The products focus on **Quantum Key Distribution (QKD)** and **Post-Quantum Cryptography (PQC)** for quantum-resilient communications.

Key Quantum Technologies Developed by C-DOT

1. Quantum Key Distribution (QKD)

- **Q-AKSHAY CD:** Compact fibre-based QKD system using **Coherent One-Way (COW)** and **Differential Phase Shift (DPS)** protocols for secure key generation and distribution.
- **Q-AKSHAY MD:** Fibre-based QKD system using **Measurement Device Independent (MDI)** protocol, reducing vulnerabilities associated with measurement devices.

2. Quantum-Safe Encryptors

- **Q-VIKRAM & Q-PARAKRAM:** Defence-grade quantum-safe encryptors using **Post-Quantum Cryptography (PQC)** algorithms at **Layer 2/3** for strategic and defence communications.
- **Q-AMOGH:** High-capacity optical encryptor offering up to **200 Gbps** quantum-safe encryption at **Layer 1**, securing high-speed optical networks.
- **Q-MAHASETU:** Commercial-grade encryptor supporting up to **40 Gbps** at **Layer 2/3**, protecting enterprise and critical communication networks.
- **Q-SETU:** Quantum-safe encryptor supporting up to **80 Mbps** at **Layer 3** for commercial and enterprise data security.
- Q-SETU incorporates **National Institute of Standards and Technology (NIST) Post-Quantum Cryptography algorithms** against emerging quantum-era threats.

3. Critical Quantum Hardware

- **C-SPD: Single-Photon Detector** designed to detect individual photon signals in quantum communication systems.
- **C-RD: Wideband Radio Frequency (RF) Driver** used to operate intensity and phase modulators in quantum communication systems.

Quantum Key Distribution (QKD) and Post-Quantum Cryptography (PQC)

- **Quantum Computing:** An emerging field using **quantum-mechanical principles** to solve certain complex problems beyond classical computers.
- Quantum computers could potentially perform specific calculations in **minutes or hours**, compared with **thousands of years** for conventional supercomputers.



- **Quantum Key Distribution (QKD):** Uses quantum particles, such as **photons**, to securely generate and share encryption keys.
- Any interception disturbs quantum states due to the **observer effect and no-cloning principle**, revealing potential intrusion.
- **Post-Quantum Cryptography (PQC):** Uses cryptographic methods designed to remain secure against attacks from **powerful future quantum computers**.

Centre for Development of Telematics (C-DOT)

- **Establishment:** The Government established C-DOT on **24 August 1984** as a telecom technology development centre under the **Department of Telecommunications (DoT)**.
- **Role:** C-DOT is a premier indigenous telecom **Research and Development (R&D)** institution, supporting rural telephony and network digitisation.
- **Internet of Things (IoT)/Machine-to-Machine (M2M):** Its **oneM2M standards-based Common Services Platform (CCSP)** supports IoT, M2M, Smart Cities and Industrial IoT.
- **Strategic Significance:** C-DOT advances **Atmanirbhar Bharat, Digital India and indigenous telecom manufacturing** through India-specific technologies.



7. ADITYA-L1 DETECTS EARLY WARNING SIGNS BEFORE SOLAR FLARES

Context: Scientists using **Aditya-L1**, India's first dedicated solar observatory, detected **small, short-lived brightenings** in the Sun's atmosphere hours before major **solar flares**.

Key Findings

- **Solar Flares:** **Solar flares** are sudden, intense bursts of **electromagnetic radiation** caused by the release of stored **magnetic energy**, with major flares potentially disrupting **radio communication, navigation, satellites and space missions** and increasing radiation risks for astronauts.
- **Pre-Flare Events:** Scientists identified **pre-flare transient events**, marked by brief brightenings in the Sun's active regions before major flares, with some showing corresponding **X-ray signatures** indicating small-scale **magnetic energy releases** in the solar atmosphere.
- **Possible Flare Trigger:** Repeated small-scale energy releases may **destabilise magnetic fields** in active regions, with progressive destabilisation potentially triggering **major solar flares**.

Role of Aditya-L1 Instruments

- **Sun-Earth L1 Advantage:** **Aditya-L1** operates around **Sun-Earth Lagrange Point 1 (L1)**, enabling continuous solar observation without interruptions caused by Earth's rotation.
- **Solar Ultraviolet Imaging Telescope (SUIT):** **SUIT** observes the Sun using **11 near-ultraviolet (NUV) filters** covering different atmospheric layers and enables the study of the **upper photosphere and chromosphere**, which is difficult from Earth.
- **Importance of UV Observation:** **Near-ultraviolet wavelengths** are largely inaccessible from Earth because the **atmosphere absorbs most ultraviolet radiation**.
- **Solar Low Energy X-ray Spectrometer (SoLEXS):** **SoLEXS** measures **low-energy X-ray emissions** from energetic solar processes and helps analyse **thermal plasma conditions in the solar corona**.

- **High Energy L1 Orbiting X-ray Spectrometer (HEL1OS):** HEL1OS studies **high-energy X-ray emissions** associated with energetic solar activity and provides insights into **high-energy processes during solar flares**.
- **Combined Observations:** Data from **SUIT, SoLEXS and HEL1OS** helps connect activity in the **lower solar atmosphere** with **energy release in the corona** before a flare.

8. EOS-05: INDIA'S 1ST DEDICATED GEOSYNCHRONOUS EARTH OBSERVATION SATELLITE

Context: Indian Space Research Organisation (ISRO) launched Earth Observation Satellite-05 (EOS-05) aboard GSLV-F17 from Satish Dhawan Space Centre, Sriharikota. It is India's **first dedicated imaging satellite** designed to operate from a **geosynchronous orbit**.

EOS-05 Mission

- EOS-05, called the “Eye in the Sky,” carries advanced **optical and infrared imaging payloads** for continuous, real-time Earth imagery.
- Weighing **2,367 kg**, it is the **heaviest payload** injected by a standard **GSLV configuration**.
- Launch Vehicle: **GSLV-F17** was the **19th operational flight** of India's **Geosynchronous Satellite Launch Vehicle (GSLV)**. **GSLV** has **three stages**: solid core with **four liquid strap-on boosters**, liquid second stage, and indigenous **cryogenic upper stage (CUS)**.
- Unlike **Low Earth Orbit (LEO)** imaging satellites, EOS-05 will operate from **Geosynchronous Orbit (GSO)** at about **36,000 km** altitude.
- **GSLV-F17** injected EOS-05 into a **Sub-Geosynchronous Transfer Orbit (Sub-GTO)**.
- Its **Liquid Apogee Motor (LAM)** will conduct multiple orbit-raising manoeuvres before reaching its **geostationary slot over the Indian subcontinent**.
- **LEO satellites** observe locations for only minutes, creating revisit gaps of hours or days; **GEO enables continuous wide-area monitoring**.
- Persistent **GEO imaging** supports rapid tracking of **cloudbursts, cyclones, flash floods and forest fires**, where frequent updates aid disaster management.



9. COSMOCUBE AND PRATUSH MISSIONS

Context: A *Nature Astronomy* study highlighted CosmoCube, a proposed lunar satellite mission led by scientists associated with the Royal Astronomical Society (RAS) and University of Cambridge, while India is pursuing a similar scientific objective through the proposed PRATUSH mission.

- **CosmoCube Mission:** CosmoCube is a compact satellite planned for a **two-year mission**, orbiting the Moon approximately every **two hours** and spending nearly **40 minutes behind the Moon** during each orbit.

- **Radio-Quiet Environment:** The lunar far side, which permanently faces away from Earth, shields instruments from **terrestrial radio interference**, making it suitable for detecting extremely faint cosmic signals.
- **Objective:** CosmoCube aims to detect the **21-centimetre radio signal from neutral hydrogen** during the Cosmic Dark Ages, providing insights into the universe before the formation of the first stars and galaxies.
- **Instrumentation:** The mission will use a sensitive radiometer operating at **10–100 MHz**, dividing incoming radio waves into frequency channels to identify the characteristic hydrogen signal.
- **Radio-Silent Operations:** While behind the Moon, CosmoCube will remain **radio-silent** to prevent spacecraft communications from contaminating observations and will transmit stored data when it reaches the Earth-facing portion of its orbit.
- **Lunar Far Side:** The lunar far side blocks **terrestrial radio-frequency interference**, including FM broadcasts and telecommunications, as well as interference generated by **Earth's ionosphere**, enabling more sensitive observations of primordial radio signals.

Cosmic Dark Ages and 21-cm Signal

- **Cosmic Dark Ages:** This period, roughly **380,000 to 200 million years after the Big Bang**, followed **Cosmic Microwave Background (CMB)** emission and preceded the emergence of the first luminous objects.
- **Cosmic Evolution:** During this largely lightless phase, **neutral hydrogen** dominated the universe; the subsequent **Cosmic Dawn** saw the formation of the first stars and galaxies, leading to the **Epoch of Reionisation**.
- **Origin of 21-cm Signal:** Neutral hydrogen undergoes a **spin-flip transition**, emitting radiation at a **21-centimetre wavelength**; cosmic expansion stretches this signal into today's **low-frequency radio spectrum**.
- **Detection Challenge:** The primordial signal is extremely faint compared with **Milky Way foreground emissions**, while human-made radio-frequency interference further complicates its detection.
- **India's PRATUSH Mission:** India's proposed **Probing ReionizATIOn of the Universe using Signal from Hydrogen (PRATUSH)** mission seeks to detect the **21-cm signal from the Cosmic Dawn and Cosmic Dark Ages**, making it relevant for studying the early evolution of the universe.
- PRATUSH will operate in **lunar orbit** to detect the **redshifted 21-cm signal** from the **Cosmic Dawn and Epoch of Reionisation**.
- Like CosmoCube, it exploits the Moon's **radio-quiet far side** to improve detection of faint primordial signals.

Test Your Knowledge	
Prelims Corner With reference to the CosmoCube and PRATUSH missions, consider the following statements: - Both missions seek to detect the 21-centimetre signal associated with neutral hydrogen from the early universe. - The lunar far side provides a radio-quiet environment by shielding observations from terrestrial radio-frequency interference. - The 21-centimetre signal originates from the spin-flip transition of ionised hydrogen. Which of the statements given above is/are correct? (a) 1 and 2 only (b) 2 and 3 only (c) 1 and 3 only (d) 1, 2 and 3 Answer: (a) 1 and 2 only	Mains Corner Q. The lunar far side offers a unique natural shield from terrestrial radio interference. In this context, discuss the scientific significance of detecting the 21-centimetre signal from neutral hydrogen for understanding the early Universe. Also examine the relevance of India's PRATUSH mission. (15 marks, 250 words)

10. OCEAN RESEARCH VESSEL SAGAR MANTHAN

Context: India launched **Ocean Research Vessel (ORV) Sagar Manthan** at **Rishi Bankim Shipyard, Kolkata**, strengthening indigenous ocean-research capabilities and gradually replacing the **43-year-old ORV Sagar Kanya**.

Key Features and Capabilities

- **Indigenous Design and Construction:** Yard 3041 was designed and built by Garden Reach Shipbuilders and Engineers (GRSE) for NCPOR under the Ministry of Earth Sciences (MoES).
- **Advanced Ocean Research Platform:** Sagar Manthan is an **all-weather, multidisciplinary** vessel capable of operating in challenging waters, including the **Southern Ocean**, with an expected **30-year service life**.
- **Advanced Survey Technologies:** Equipped with **multibeam bathymetry, multichannel seismic systems, sub-bottom profiling, weather radar, dynamic positioning, ROV and AUV deployment systems**, it enables advanced ocean surveys.
- **Deep-Sea Exploration:** It can conduct **swath multibeam and geophysical seismic surveys up to 6 km depth**, supporting deep-sea mapping and assessment of marine resources.
- **Scientific Applications:** The vessel supports **geophysical and oceanographic research**, including **polymetallic sulphides, manganese nodules, environmental studies, CTD profiling, seabed sampling and atmospheric observations**.

Strategic Significance

- **Self-Reliance in Ocean Research:** Sagar Manthan reduces dependence on imported research vessels and strengthens India's **indigenous oceanographic research infrastructure**.
- **Blue Economy:** Advanced marine-resource assessment supports India's **Blue Economy** by enabling scientific and sustainable exploration of deep-sea resources.
- **Climate and Disaster Management:** Oceanographic and atmospheric observations strengthen climate research, disaster prediction and maritime domain awareness.
- **Global Standards:** Dual certification by **Indian Register of Shipping (IRS)** and **American Bureau of Shipping (ABS)** demonstrates compliance with international maritime standards.



Test Your Knowledge



 Prelims Corner	Mains Corner 
Consider the following technologies associated with ocean research: 1. Multibeam bathymetry — Mapping the depth and morphology of the seabed 2. Sub-bottom profiling — Investigating geological structures beneath the seabed 3. Dynamic positioning — Maintaining a vessel's position during specialised operations 4. CTD profiling — Measuring conductivity, temperature and depth of seawater How many of the above pairs are correctly matched? (a) Only one (b) Only two (c) Only three (d) All four Answer: (d) All four Explanation: All four are correctly matched and represent technologies or techniques relevant to advanced oceanographic and marine-geophysical research.	Q. Indigenous ocean-research capabilities are crucial for advancing India's Blue Economy, climate resilience and strategic maritime interests. Examine the significance of modern oceanographic research vessels in this context. (15 marks, 250 words)

11. DATA CENTRES IN INDIA

Context: Data centres are becoming **critical digital infrastructure**, supporting e-Governance, digital payments, cloud computing, Artificial Intelligence (AI) and other technology-driven services.

Key Facts about Data Centres

- A data centre is a secure facility housing **computing, storage and networking systems** to store, process, manage and distribute digital information.
- **Digital Economy:** Data centres enable services such as **online banking, e-Governance, digital payments, cloud computing, AI and other emerging technologies**.
- **Rapid Expansion:** India's data-centre power capacity rose from around **375 MW in 2020 to 1.57 GW by August 2026** and is projected to reach nearly **8 GW by 2030**.
- **Investment:** Around **USD 70 billion** is under investment in the sector, with another **USD 90 billion in announced projects**.

- **NIC Network:** The **National Informatics Centre (NIC)** operates National Data Centres at **Delhi, Pune, Hyderabad and Bhubaneswar**, along with **37 smaller centres at State capitals** for government digital services and round-the-clock operations.



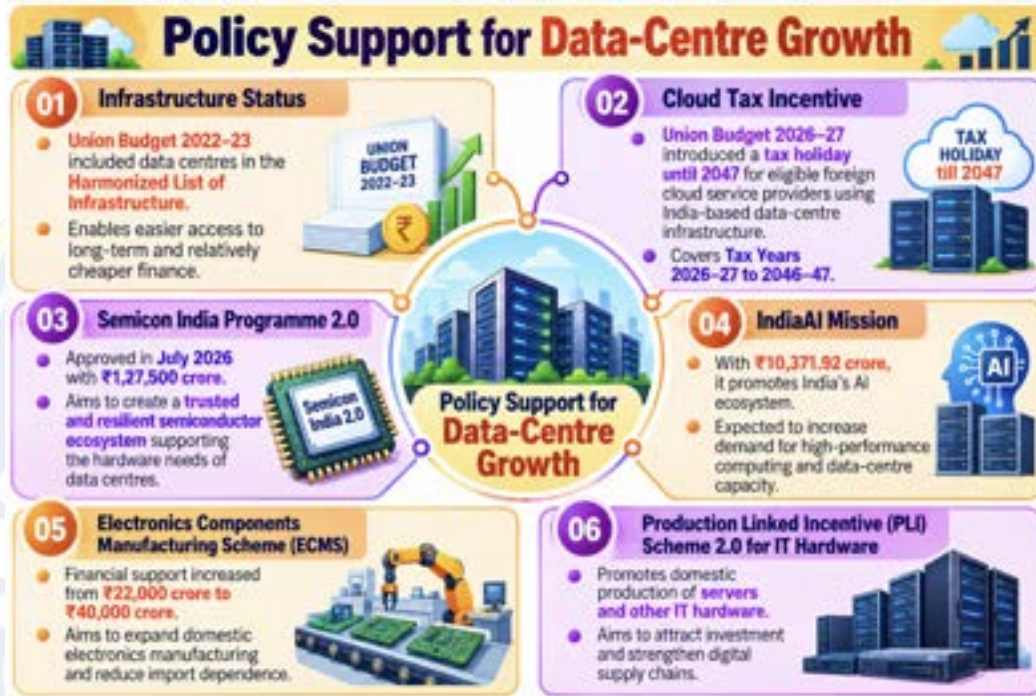
Technologies Behind Data Centres

- **Core Infrastructure:** Modern data centres combine **computing, networking, power, cooling, security and management systems** for continuous and secure operations.
- **Power Systems:** **Uninterruptible Power Supplies (UPS)** provide immediate backup, while generators and electrical distribution systems maintain operations during prolonged power disruptions.
- **Cooling Systems:** **Heating, Ventilation and Air Conditioning (HVAC), airflow management and liquid cooling** control heat generated by continuous computing and improve energy efficiency.
- **IT Systems:**
 - **Servers** process information and run applications.
 - **Hard Disk Drives (HDDs) and Solid-State Drives (SSDs)** store data.
 - **Security systems** protect infrastructure and data from physical and cyber threats.
- **Networking:** **Routers, high-speed switches and fibre-optic links** enable communication within data centres and with external networks.
- **Automation:** Management software monitors performance and resource use. **Virtualisation** allows multiple virtual machines to run on one physical server, while automation manages workloads and detects faults.

Making Data Centres Sustainable

- **Rising Energy Demand:** The Central Electricity Authority (CEA) estimates data-centre electricity demand could reach **17 GW by 2031–32**, requiring efficient energy planning.
- **Renewable Energy:** Cleaner power for data centres is being supported through:
 - **Green Energy Open Access Rules**
 - **Green Energy Corridor Scheme**
 - **National Green Hydrogen Mission**
 - **National Programme on High Efficiency Solar Photovoltaic (PV) Modules**
 - **Solar Park Scheme**
- **Nuclear Energy:** The **Sustainable Harnessing and Advancement of Nuclear Energy for Transforming India (SHANTI)** Act supports reliable nuclear power for emerging sectors such as AI and data centres and provides a framework for **Small Modular Reactors (SMRs) and Micro Nuclear Reactors**.

- **Bureau of Indian Standards (BIS):** Its technical committee LITD 31 works on standards related to cloud computing, information technology and data centres.
- **Energy-Efficiency Regulations:** The Bureau of Energy Efficiency (BEE) has introduced the Energy Conservation Building Code (ECBC), 2017 and Energy Conservation and Sustainable Building Code (ECSBC), 2024, covering energy efficiency and water conservation.
- **Efficient Cooling:** Technologies such as **direct-to-chip liquid cooling, adiabatic cooling, immersion cooling and closed-loop liquid cooling** can reduce energy and resource use.
- **Water Management:** Data-centre water consumption varies with cooling technology. Groundwater extraction, including industrial use, is regulated under **Ministry of Jal Shakti** guidelines.



Conclusion: Data centres form the **backbone of India's digital economy**, enabling e-Governance, financial services, AI and innovation. Combining **domestic technology, reliable clean energy, efficient cooling and responsible water use** can support a secure and sustainable digital infrastructure ecosystem.

Test Your Knowledge

Prelims Corner	Mains Corner
Consider the following statements regarding data centres in India: 1. The National Informatics Centre operates National Data Centres at Delhi, Pune, Hyderabad and Bhubaneswar. 2. Virtualisation enables multiple virtual machines to operate on a single physical server. 3. Data centres were included in the Harmonized List of Infrastructure under the Union Budget 2026-27. 4. Liquid cooling is used to generate backup power for data-centre operations. Which of the statements given above are correct? (a) 1 and 2 only (b) 1 and 3 only (c) 2 and 4 only (d) 3 and 4 only Answer: (a)	Q. Data centres are the backbone of India's digital economy, but their rapid expansion creates significant challenges of energy consumption, water use and environmental sustainability. Discuss the measures required for sustainable data-centre growth in India. (15 marks, 250 words)

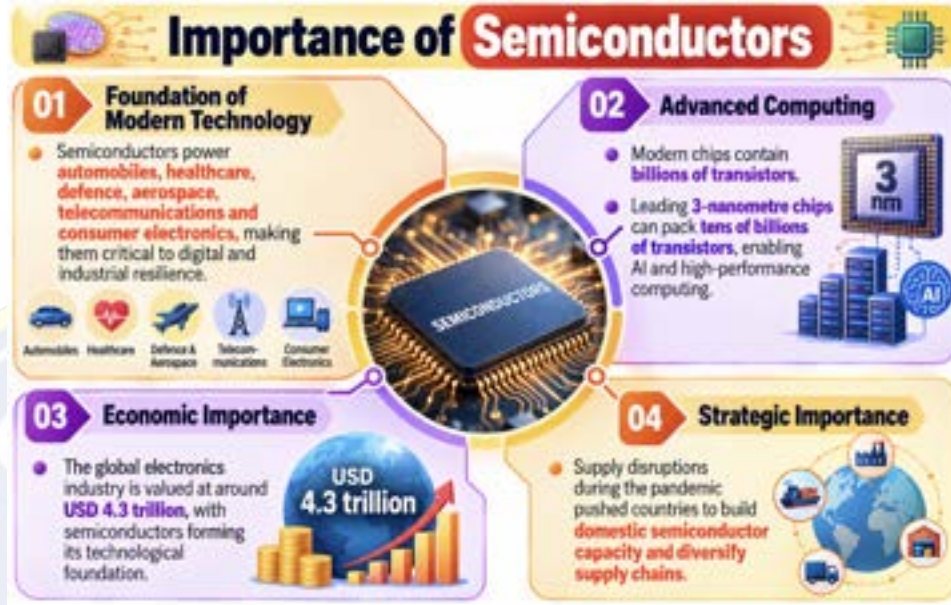
12. SEMICON INDIA 2026

Context: Prime Minister Narendra Modi inaugurated **SEMICON India 2026** at **Yashobhoomi, Dwarka**, bringing together global semiconductor firms, policymakers and investors.

- The theme, “Silicon to Systems: Building the Ecosystem,” reflects India’s move from chip manufacturing towards an integrated value chain covering **design, fabrication, packaging and innovation**.

STUDENT'S
NOTESSEMICON India
2026

- SEMICON India is an annual semiconductor conference and exhibition showcasing India’s semiconductor ecosystem. Its first edition was held in **Bengaluru in 2022**, making 2026 the **fifth edition**.



- Integrated Focus:** The 2026 edition covers the entire ecosystem, including **chip design, fabrication, packaging, talent development and innovation**, while promoting global investment and collaboration.
- India’s Electronics Manufacturing Base**
- Policy Foundation:** India’s semiconductor journey reflects decades of policy efforts and ecosystem building. Earlier attempts faced constraints such as limited manufacturing capacity, weak supply chains and inadequate infrastructure.
- Policy Reforms:** Changes in **Foreign Direct Investment (FDI)**, **taxation** and **customs** helped attract global electronics manufacturers.
- Electronics Production:** Output rose from about **₹1.9 lakh crore** in 2014–15 to **₹13.11 lakh crore** in 2025–26.
- Electronics Exports:** Exports increased from around **₹38,000 crore** to **₹4.24 lakh crore** during the same period.
- Mobile Manufacturing:** Mobile phone production grew from nearly **₹18,000 crore** to **₹6.27 lakh crore**, a 33-fold rise.
- Smartphone Exports:** Smartphone exports jumped from about **₹1,500 crore** to **₹2.59 lakh crore**.
- Import Substitution:** India has shifted from a **net mobile-phone importer** to a **net exporter**, with around **99% of domestic demand met through local production**.
- Global Position:** India is now the **world’s second-largest mobile phone manufacturer by volume**.
- Employment:** Electronics manufacturing has generated around **2.5 million jobs**, strengthening industrial employment and skills.

Building Semiconductor Talent and Design

- Skilled Workforce:** India aims to develop **85,000 skilled semiconductor professionals** during the current decade.
- Chips to Startup (C2S):** The programme provides academic institutions access to **Electronic Design Automation (EDA) tools, training and design infrastructure**.
- EDA Access:** EDA tools are available across **320 academic institutions**, benefiting more than **68,000 students**.
- Design and Startup Support:** **24 chip-design projects** have received financial assistance, while **105 startups and Micro, Small and Medium Enterprises (MSMEs)** have received EDA support under the **Design Linked Incentive (DLI) Scheme**.
- Indigenous Designs:** By April 2026, **211 chips** had been taped out by **75 institutions**, showing wider participation in chip design.
- Fabrication Progress:** **Seven designed chips** have been fabricated at different nodes, including technologies up to **12 nanometres**.



Pax Silica Coalition

- **India's Participation:** India joined the **Pax Silica coalition** to strengthen semiconductor supply-chain resilience.
- **Scope:** The coalition seeks to secure the wider “**silicon stack**”, including **critical minerals, semiconductor manufacturing, advanced Artificial Intelligence (AI) systems and related infrastructure**.
- **Strategic Goal:** It aims to diversify supply chains, reduce dependence on limited sources and strengthen cooperation among countries on critical technologies.

Challenges

- **Import Dependence:** India remains heavily dependent on imports for semiconductor components, exposing critical sectors to global supply-chain disruptions.
- **Fab Economics:** Semiconductor fabs demand massive capital, high utilisation, sophisticated technology and long gestation periods for commercial viability.
- **Technology Gap:** India lacks leading-edge fabrication capabilities and remains dependent on foreign process technology, equipment and intellectual property.



- **Upstream Bottlenecks:** Limited domestic capacity for wafers, substrates, specialty chemicals, gases and semiconductor equipment constrains supply-chain localisation.
- **Talent Mismatch:** Strong chip-design capabilities coexist with shortages in process engineering, fabrication operations, advanced packaging and equipment maintenance.

Way Forward

- **Develop Full Value Chain:** Build domestic capabilities across semiconductor design, wafers, materials, equipment, fabrication, packaging and testing for deeper localisation.
- **Focus on Strategic Nodes:** Prioritise mature, compound and power-semiconductor technologies while progressively developing advanced-node capabilities.
- **Strengthen Advanced Packaging:** Position India as a global Outsourced Semiconductor Assembly and Test (OSAT) and advanced-packaging hub.
- **Bridge Design–Manufacturing:** Integrate Chips to Startup (C2S), Design Linked Incentive (DLI), fabrication and procurement through design-to-market pathways.
- **Build Specialised Talent:** Expand training in process engineering, equipment maintenance, advanced packaging, semiconductor architecture and Electronic Design Automation (EDA).

Conclusion: SEMICON India 2026 signals India's shift from an electronics manufacturing base towards a **complete semiconductor ecosystem**. Expanding fabrication, indigenous chip design, skilled talent and international partnerships can strengthen India's position in the global semiconductor value chain and technological self-reliance.

Test Your Knowledge	
Prelims Corner Consider the following statements regarding India's semiconductor ecosystem: 1. The Semicon India Programme was launched in 2021 with an outlay of ₹76,000 crore. 2. Under the Chips to Startup Programme, Electronic Design Automation tools are available across 320 academic institutions. 3. Semicon India Programme 2.0 was approved with an outlay of ₹1,27,500 crore in 2025. 4. ChipIN Centre provides access to chip-design tools but does not support fabrication services. Which of the statements given above are correct? (a) 1 and 2 only (b) 1 and 3 only (c) 2 and 4 only (d) 3 and 4 only Answer: (a)	Mains Corner Q. India's semiconductor ambitions require moving beyond chip fabrication towards an integrated and resilient value chain. Discuss the key challenges and measures needed to achieve semiconductor self-reliance. (15 marks, 250 words)

13. DEEP-SEA MINING: BALANCING MINERAL SECURITY WITH CONSERVATION

Context: India is expanding **deep-sea exploration and seabed mineral** activities for strategic mineral security, renewable energy, electric mobility and advanced manufacturing.

Deep-Sea Mining: Deep-sea mining involves extracting mineral deposits from the seabed below **200 metres**, particularly **polymetallic nodules** containing manganese, nickel, cobalt and copper on abyssal plains; **polymetallic sulphides** around hydrothermal vents; and **cobalt-rich ferromanganese crusts** on seamount flanks.

Legal Framework

- The **United Nations Convention on the Law of the Sea (UNCLOS)**, 1982 governs maritime zones; seabed beyond national jurisdiction, outside a country's **Exclusive Economic Zone (EEZ)**, constitutes "**The Area**", recognised as the "**common heritage of mankind**".
- The **International Seabed Authority (ISA)**, headquartered in **Kingston, Jamaica**, administers The Area and regulates exploration and exploitation contracts.

Major Environmental Concerns

- **Habitat Destruction:** Mining machinery scrapes the seabed and damages benthic ecosystems; slow-growing **deep-sea sponges and corals** may require centuries or millennia to recover.
- **Sediment Plumes:** Mining generates sediment clouds that can travel long distances, clog filter feeders and disturb **pelagic food webs**.
- **Heavy-Metal Pollution:** Wastewater may release heavy metals and toxic substances that can accumulate through marine food chains and potentially affect seafood.
- **Noise and Light Pollution:** Mining equipment and vessels create noise and vibrations, while artificial light can disrupt organisms dependent on **bioluminescence**.
- **Carbon-Sequestration Loss:** Disturbing deep-sea sediments may release stored carbon and weaken the ocean's role as a **carbon sink**.



Governance Challenges

- Although the ISA has issued 30+ exploration contracts, it has not finalised the **Mining Code**, which would establish comprehensive environmental and financial rules for commercial exploitation.
- In 2021, **Nauru** triggered a provision seeking completion of exploitation regulations within two years, but negotiations remain ongoing over environmental safeguards and financial arrangements.
- Countries remain divided, with **dozens demanding a precautionary pause**, while major industrial economies and some other nations support advancing mining to secure critical minerals for green technologies.

Measures for Responsible Exploration

- **Environmental Bonds:** India can advocate mandatory environmental bonds from ISA-sponsored contractors before sponsorship certificates are issued, ensuring funds for ecological restoration after accidents.
- **Low-Impact Technology:** Improve systems such as **Varaha** through smaller seabed footprints and **closed-loop slurry systems**; conduct plume modelling before trials to predict sediment/toxic plume movement and establish buffer zones.
- **No-Touch Zones:** Use biodiversity data generated under **DOM** to identify and protect ecologically sensitive areas from mining.
- **Reduce Mining Dependence:** In line with **Mission LiFE**, promote recycling, urban mining and resource efficiency while developing alternatives such as **sodium-ion and Lithium Iron Phosphate (LFP) batteries** to reduce cobalt and nickel demand.

Conclusion: Deep-sea minerals should be approached as a **long-term strategic reserve**, with extraction guided by scientific evidence, precautionary environmental safeguards, low-impact technologies and stronger international governance rather than immediate commercial exploitation.

Test Your Knowledge	
Prelims Corner With reference to deep-sea mining, consider the following statements: 1. "The Area" under the United Nations Convention on the Law of the Sea (UNCLOS) is regarded as the common heritage of mankind. 2. The International Seabed Authority (ISA) regulates mineral activities in "The Area". 3. India's MATSYA-6000 is designed to carry three aquanauts to a depth of 6,000 metres. 4. Polymetallic sulphides are primarily found on abyssal plains. Which of the statements given above are correct? (a) 1, 2 and 3 only (b) 1 and 4 only (c) 2, 3 and 4 only (d) 1, 2, 3 and 4 Answer: (a)	Mains Corner Q. "Deep-sea mining offers strategic mineral security but poses significant ecological and governance challenges." Examine how India can balance its critical-mineral ambitions with the principles of sustainable ocean governance. (15 marks, 250 words)

14. REAL-WORLD ASSET TOKENISATION

Context: Maharashtra has proposed the **Digitisation and Exchange of Land Token Assets (DELTA) Act** to create a State-backed framework for **Real-World Asset (RWA) tokenisation**, aiming to become India's first "**tokenised State**" by converting physical assets such as land into secure, tradable digital tokens.

What is RWA Tokenisation?

- **RWA tokenisation** uses **blockchain** and **Distributed Ledger Technology (DLT)** to represent ownership, rights or economic value of physical assets through secure, verifiable digital tokens.



- **Fractional ownership:** Tokens can represent parts of high-value assets, lowering entry barriers for retail and institutional investors.
- **Reserve Bank of India (RBI) approach:** RBI views tokenisation as a technological layer that can improve market efficiency, not as a replacement for regulated finance; RBI and the **Securities and Exchange Board of India (SEBI)** have launched "**Demat 2.0**" for tokenised corporate bonds using DLT, enabling instant "**atomic**" settlement through RBI's wholesale **digital rupee (e₹)** via the **Unified Market Interface (UMI)**.
- **Difference from Small and Medium Real Estate Investment Trusts (SM REITs):** SEBI enables fractional real-estate ownership through regulated trusts, whereas blockchain tokenisation can decentralise the ownership ledger and potentially reduce intermediary costs.

Importance of RWA Tokenisation

- **Efficient Transactions:** Digital ledgers can provide transparent ownership histories, faster verification, automated compliance and lower fraud, similar to the transformation brought by the **Unified Payments Interface (UPI)** in digital payments.
- **Unlocking Dormant Wealth:** Indian household real-estate wealth is estimated at around **₹500 lakh crore**; tokenising even **5–10%** could unlock **₹25–50 lakh crore** of liquid, digitally tradable capital and connect physical wealth with retail and institutional capital markets.

Key Challenges

- **Privacy & Cybersecurity:** Permanent blockchain records raise **Digital Personal Data Protection (DPDP) Act, 2023** concerns and require strong protection against hacking, fraud and manipulation.
- **Stamp Duty & Taxation:** Unclear treatment of **fractional/repeated token transfers** and whether **Virtual Digital Asset (VDA)** tax rules apply to asset-backed **Real-World Asset (RWA)** tokens.
- **Regulatory Overlap:** **Land is a State subject**, while the **Securities and Exchange Board of India (SEBI)** and **Reserve Bank of India (RBI)** regulate financial instruments, creating jurisdictional conflicts.
- **Property-Law Conflict:** Under the **Registration Act, 1908**, tokens cannot replace registered deeds. Smart contracts may execute automatically despite **court-ordered transfer restrictions**; the **Indian Contract Act, 1872** does not specifically address blockchain self-execution.
- **Uncertain Land Titles:** Indian land records are generally **presumptive, not conclusive**; tokenising defective or disputed titles could amplify litigation and fraud.
- **Irreversibility:** Lost keys, fraud, erroneous transfers or court seizures can make blockchain assets difficult to recover.
- **Investor Protection:** Tokens must have **verifiable backing by the underlying physical asset** to prevent fraudulent or inadequately backed issuance.

Measures for Safe Adoption

- **Unified Regulation:** Centre and States should establish common rules connecting State-level land ownership with digital tokens regulated by SEBI/RBI.



Only assets with **verified, dispute-free titles** should be tokenised, supported by transparent ownership records, disclosures and mechanisms for disputes, fraud and lost digital keys.

- **Maharashtra as a Pilot:** The DELTA Act can serve as a pilot for States such as **Karnataka, Tamil Nadu and Delhi**, particularly given their large real-estate markets.
- **Digital Public Infrastructure (DPI):** Integrate tokenisation with systems such as **UPI and Account Aggregators** for interoperability, identity verification and secure financial settlement.
- **Broader Asset Classes:** After establishing a real-estate framework, tokenisation can expand to **digitised debt, privately held gold, agricultural commodities and carbon credits**, deepening capital markets.
- **Centralised Stamp-Duty Mechanism:** States can adopt the approach under the amended **Indian Stamp Act, 1899**, where stamp duty on dematerialised securities is collected centrally through stock exchanges and depositories and subsequently distributed to States.

Conclusion: India should combine **verified land titles, unified regulation, investor protection, cybersecurity and Digital Public Infrastructure** to develop RWA tokenisation safely, while using pilot projects and international regulatory experience to gradually expand tokenisation across asset classes.

STUDENT'S
NOTES

Test Your Knowledge

Prelims Corner

With reference to Real-World Asset (RWA) tokenisation in India, consider the following statements:

1. ULPIN provides a unique geo-referenced identification number for land parcels.
2. Tokenisation of an asset automatically converts a blockchain token into a legally registered title to that asset.
3. Land is a State subject, while financial-market regulation primarily involves central regulators such as the Securities and Exchange Board of India (SEBI) and Reserve Bank of India (RBI).
4. SVAMITVA uses drone-based mapping to provide property cards in rural inhabited areas.

Which of the statements given above are correct?

(a) 1, 3 and 4 only
(b) 1 and 2 only
(c) 2, 3 and 4 only
(d) 1, 2, 3 and 4

Answer: (a)

Mains Corner

Q. "Real-world asset tokenisation can transform India's property and financial markets, but its success depends on resolving legal, regulatory and investor-protection challenges." Discuss.

(15 marks, 250 words)

15. POINTERS FOR PRELIMS

15.1. HELICASE: THE DNA SEPARATOR

Context: New studies have improved understanding of how **Deoxyribonucleic Acid (DNA) replication** begins at the molecular level.

- Helicase is an enzyme that **unwinds and separates DNA's two strands**, enabling genetic information to be copied. DNA forms a **double helix**, with complementary bases connected by **hydrogen bonds**.
- **Need for Unwinding:** DNA strands must separate during replication so each can serve as a template. Replicative helicases load near **replication origins** and move along DNA using energy from **nucleotide hydrolysis**.
- **Base-Pair Separation:** Helicase movement destabilises complementary base-pair interactions and exposes individual DNA strands.
- **Replication Fork:** DNA unwinding creates a **Y-shaped replication fork** where replication machinery operates.
- **Topoisomerases:** Unwinding produces torsional stress and supercoiling, which **topoisomerases** relieve ahead of the replication fork.
- **New DNA Synthesis:** Each separated parental strand serves as a template for synthesising a **complementary DNA strand**.
- **Replication Regulation:** DNA replication begins at the correct

cell-cycle stage through tight molecular regulation.

- **CMG Activation:** Research has clarified how inactive **MCM2–7 double hexamers** become active **CMG helicases**, linking helicase activation with initial DNA melting and unwinding.

15.2. OLDEST DATED BIOSIGNATURE EVIDENCE IN INDIAN ROCK

Context: A **Proceedings of the National Academy of Sciences (PNAS)** study found compelling evidence of microbial life around **3.5 billion years ago** in eastern India.

- **Ancient Microbial Life:** Multiple chemical and geological indicators suggest microbial life existed around **3.5 billion years ago** in the **Singhbhum Craton**.
- **Discovery Site:** Evidence came from **carbon-bearing banded chert** at **Bhitardari**, within the Singhbhum Craton across parts of **Jharkhand and Odisha**.
- **Chert:** A hard, fine-grained, silica-rich rock capable of preserving organic material for billions of years.
- **Singhbhum Craton:** One of India's oldest geological formations, preserving evidence of crust formation dating back **over 4 billion years**.
- **Zircon Dating:** Scientists examined eight zircon crystals; four indicated

approximately **3,497 million years (3.5 billion years)**. These zircons likely originated from **volcanic ash deposited during chert formation**, helping date the rock.

- **Carbon Isotopes:** The rock's carbon-isotope composition showed patterns associated with **biological carbon fixation**, indicating a biological origin.
- **Organic Matter:** Analysis identified the carbon as **degraded organic matter**, rather than later inorganic contamination, supporting ancient microbial activity.

15.3. GROWING HEALTH BURDEN OF SALMONELLA

Context: A Lancet study estimated **4.9 million typhoid cases in India in 2023**, highlighting overlooked non-typhoidal Salmonella infections and rising antimicrobial resistance.

- **Types of Infection:** **Salmonellosis** is caused by *Salmonella* bacteria and broadly includes **typhoidal and non-typhoidal Salmonella (NTS)** infections.
- **Typhoidal Salmonella:** *Salmonella Typhi* and *Salmonella Paratyphi* cause **typhoid and paratyphoid (enteric fever)**.
- **Non-Typhoidal Salmonella:** NTS primarily causes **gastroenteritis** but can cause severe **bloodstream infections**, especially among vulnerable groups.
- **Transmission Routes:** Typhoid spreads mainly through **faecally contaminated food and water**, while NTS follows an **animal-food-environment cycle** involving poultry, eggs, meat and contaminated food.
- **Symptoms:** Common symptoms include **prolonged fever, abdominal pain, diarrhoea, nausea and vomiting**.
- **Diagnosis:** **Blood culture** remains the primary diagnostic test for suspected typhoid and should preferably precede antibiotic treatment.
- **Vaccination:** The **World Health Organization (WHO)** recommends **typhoid conjugate vaccines (TCV)** from **six months of age**.

15.4. INDIA'S SPACE LAUNCH COST

Context: A peer-reviewed **Economics Letters** study covering over six decades of launches

estimated India's **2025 LEO launch cost at USD 13,302/kg**, against the **global average of USD 3,868/kg**. India's estimated cost exceeded **Europe (USD 9,897)**, **Russia (USD 6,682)**, **China (USD 5,809)**, **Japan (USD 5,287)** and the **US (USD 3,225) per kg**.

Reason Behind India's High Launch Cost

- **Limited Economies of Scale:** Frequent reliance on **smaller launch vehicles** spreads fixed launch costs across relatively smaller payloads, raising per-kg costs.
- **Low Launch Frequency:** Insufficient launch frequency limits **learning effects and scale economies**; significant cost reductions since 2010 were mainly observed in the **US and Europe**.

Dependence on Foreign Launch Providers

- **Limited Heavy-Lift Capacity:** Domestic launch constraints have led some Indian satellite operators to rely on foreign providers, particularly **SpaceX's Falcon 9**.
- **GSAT-N2 Example:** In **November 2024**, NewSpace India Limited launched the **4,700-kg GSAT-N2** on Falcon 9 from Cape Canaveral because it exceeded **LVM-3's payload capability**, while Arianespace lacked an operational launcher.
- **Start-up Reliance:** **Pixxel** and **Digantara** used SpaceX rideshare missions, while **GalaxyEye** also booked Falcon 9 launch slots.

15.5. NANCY GRACE ROMAN SPACE TELESCOPE

Context: NASA's next-generation flagship observatory will study **dark energy, dark matter, cosmic expansion, gravitational physics and exoplanets**.

- Named after **Nancy Grace Roman**, NASA's first Chief Astronomer, who shaped its space astronomy programme and is called the **"Mother of the Hubble Space Telescope."**
- It will complement the **Hubble Space Telescope (1990)** and **James Webb Space Telescope (2021)** through wider and deeper cosmic surveys.
- It will operate near the **Sun-Earth Lagrange Point 2 (L2)**, about **1.6 million km from Earth**.

- **Data & Speed:** Roman will survey the universe nearly **1,000 times faster than Hubble**, generating about **1.4 terabytes of data daily**.

15.6. MAGNETAR STUDY REVEALS SPACE VACUUM MAY NOT BE EMPTY

Context: A Nature study published in August 2026 reported evidence of **vacuum birefringence**, a phenomenon predicted by **Quantum Electrodynamics (QED)**, using observations of a highly magnetised neutron star called a **magnetar**.

- **Vacuum Birefringence:** Vacuum birefringence is a quantum phenomenon in which an extremely strong **magnetic field makes space vacuum behave like a crystal**, altering the propagation and polarisation of light.
- **Quantum Basis:** Quantum Electrodynamics (QED) suggests that vacuum contains **virtual particles**, including electron-positron pairs, arising through quantum fluctuations; under extreme magnetic fields, these particles affect **light propagation and polarisation**.
- **Origin of Prediction:** Werner Heisenberg and Hans Heinrich Euler predicted vacuum birefringence in the **1930s**, based on quantum electrodynamics.
- **Magnetic Field Requirement:** The effect becomes detectable only under magnetic fields around **88 trillion times stronger than Earth's magnetic field**, far beyond the capability of **artificial magnets**.
- **Magnetars** are highly magnetised **neutron stars** formed when the core of a massive star collapses and possess the **strongest known magnetic fields in the universe**, making them natural laboratories for studying vacuum birefringence.

15.7. BHUTAN ACHIEVES RABIES ELIMINATION MILESTONE

Context: Bhutan became the **1st country in WHO South-East Asia Region** to eliminate **dog-transmitted rabies as a public health problem**.

- **Elimination Criteria:** Requires **zero human deaths from dog-transmitted rabies for at least 2 years**, alongside effective **surveillance, vaccination and**

control mechanisms to prevent re-emergence.

- Rabies is a **viral zoonotic disease** caused by the **rabies virus**, a **neurotropic virus of the Lyssavirus genus**.
- It affects the **central nervous system**, causing fatal **encephalitis** after symptom onset, and is classified as a **Neglected Tropical Disease (NTD)**. Once clinical symptoms appear, rabies is **virtually 100% fatal**.
- Transmitted mainly through **saliva of infected animals**, especially via **bites, scratches**, or contact with broken skin/mucous membranes.
- **Human-to-human transmission** is extremely rare and has mainly occurred through **organ transplantation**.
- **India** continues to face a significant rabies burden, largely associated with **dog bites**.

15.8. NATIONAL CONFERENCE ON QUALITY & SAFETY OF BIOSIMILARS

Context: Indian Pharmacopoeia Commission (IPC) organised a national conference in **Bengaluru** on quality, safety and regulatory evaluation of **biosimilars**.

- IPC also released **Indian Pharmacopoeia Reference Substance (IPRS) for Enoxaparin Sodium** for bioassays.
- **Biosimilars:** Highly similar versions of approved **biological medicines**, with comparable safety and efficacy.
- **IPC: Autonomous institution under Ministry of Health and Family Welfare;** develops standards for medicines and strengthens pharmaceutical quality infrastructure.
- **IPRS:** Authenticated reference material used for **accurate and consistent pharmaceutical testing**.
- **Biopharma SHAKTI:** Announced in **Union Budget 2025–26** with **₹10,000 crore over 5 years** to strengthen India's biologics and biosimilars ecosystem and reduce import dependence.
- **Biological medicines** are produced from living organisms or their cells and include products such as **vaccines, monoclonal antibodies, hormones and therapeutic proteins**.
- **Biosimilar vs generic:** Generics are chemically identical copies of small-molecule drugs, whereas

biosimilars are **highly similar but not structurally identical** to complex biological medicines.

15.9. ADVISORY ON REGULATION OF STEM CELL THERAPY

- **Government Advisory:** Union Health Ministry directed States/UTs to regulate **stem cell therapy strictly**, allowing standard care only for **Ministry-approved indications**, following the SC's January 2026 *Yash Charitable Trust* judgment.
- **Autism Spectrum Disorder (ASD):** Stem cell therapy for ASD is permitted only within **approved clinical trials** and cannot be marketed as standard commercial treatment.
- **Approved Uses:** Standard care is restricted to approved conditions, including specific **blood cancers and haematological disorders**.
- **Clinical Trial Standards:** Trials must follow **National Guidelines for Stem Cell Research (NGSCR), 2017**, issued jointly by **ICMR and DBT**.
- **Action Against Clinics:** Violations may attract penalties and cancellation of registration under **Sections 32 & 40, Clinical Establishments Act, 2010**.
- **Professional Misconduct:** NMC treats unauthorised administration, promotion or advertising beyond approved indications as **professional misconduct**, inviting disciplinary action by State Medical Councils.

About Stem Cell Therapy

Definition: Regenerative medicine using stem cells/derivatives to **repair, regenerate or replace damaged tissues**, exploiting cellular repair mechanisms.

- **Stem Cells:** **Undifferentiated cells** characterised by **self-renewal and differentiation** into specialised cell types.
- **Embryonic Stem Cells:** **Pluripotent cells** derived from embryos, capable of developing into almost any body cell.

- **Adult Stem Cells:** Found in tissues such as **bone marrow and fat**; generally **multipotent**, producing a limited range of cell types.
- **Induced Pluripotent Stem Cells (iPSCs):** Adult cells **genetically reprogrammed** to acquire embryonic stem-cell-like pluripotency.
- **Perinatal Stem Cells:** **Multipotent cells** obtained from **placenta, umbilical cord blood and amniotic fluid**.

15.10. INDIA'S FIRST SOIL CARBON PAYMENTS INITIATIVE

- **Farm-Level Carbon Market:** **2,500+ smallholder farmers in Punjab and Haryana** receive digital payments for adopting **regenerative agricultural practices** under the 'Aadi' farmer carbon programme.
- **Launch:** Grow Indigo launched the programme in 2019, with technical guidance from Indian Council of Agricultural Research (ICAR), linking sustainable farming with additional income.
- **Regenerative Practices:** During 2019–2022, farmers adopted Direct Seeded Rice (DSR), reduced tillage and crop-residue management to improve soil health and reduce greenhouse-gas emissions.
- **Farmer Payments:** Farmers receive payments based on their share of carbon credits generated from their fields, with initial payments ranging from ₹3,000–₹15,000.

CULTURE

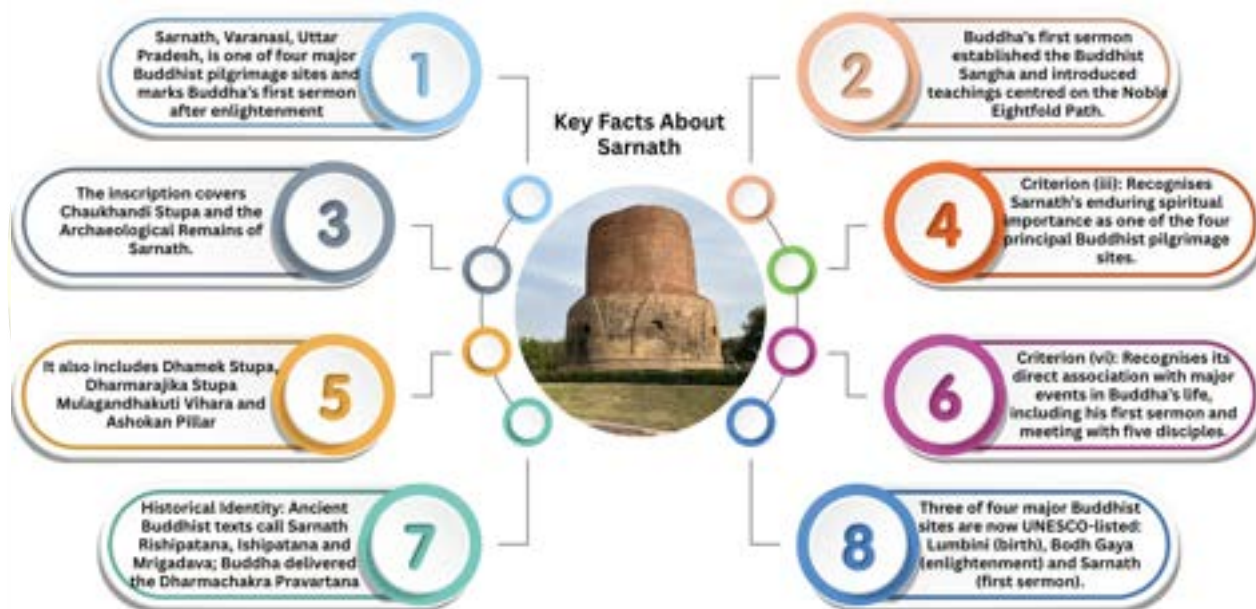
STUDENT'S
NOTES 

1. SARNATH'S PATH TO THE WORLD HERITAGE LIST

Context: The **Ancient Buddhist Site of Sarnath** was inscribed on the **UNESCO World Heritage List** during the **48th World Heritage Committee Session** in **Busan, South Korea**. This recognition raised India's UNESCO World Heritage properties to **45**, making it the **6th largest globally** and **2nd in the Asia-Pacific region**.

UNESCO World Heritage List

- **Purpose:** UNESCO identifies, protects and preserves cultural and natural heritage of exceptional value under the **1972 World Heritage Convention**.
- **Global Status:** As of **July 2026**, the List contains **1,273 properties across 173 countries—991 cultural, 240 natural and 42 mixed**.
- **Convention Membership:** The World Heritage Convention has **196 States Parties**, making it among the most widely accepted international heritage frameworks.



India's Expanding World Heritage Portfolio

- **Current Status:** As of **July 2026**, India has **45 UNESCO properties—37 cultural, 7 natural and 1 mixed**.
- **First Inscriptions:** India's UNESCO journey began in **1983** with **Agra Fort, Taj Mahal, Ajanta Caves and Ellora Caves**.
- **Recent Additions:** **Maratha Military Landscapes of India** was inscribed at the **47th Session in Paris**, followed by **Sarnath** at the **48th Session in Busan**.
- **Future Pipeline:** India's **Tentative List** contains **69 properties**, forming the preliminary pool for future nominations.

Government Initiatives for Heritage Conservation

- **Antiquity Repatriation:** Government agencies have facilitated the return of **669 antiquities**, including **656 since 2014**, such as **Chola-period Shiva Nataraja, Saint Sundarar with Paravai and Somaskanda**.
- **Adopt a Heritage 2.0:** Launched in **2017** and revamped in **2023**, it enables **private companies, PSUs, NGOs, trusts and societies** to develop visitor amenities through CSR and other contributions.

- **Gyan Bharatam Mission:** Launched in **2025**, it promotes manuscript **preservation, digitisation and accessibility** through modern technology and digital repositories.
- **Manuscript Digitisation:** The **National Manuscript Survey (2026)** identified over **1.19 crore manuscripts**, with **4.40 lakh+ digitised manuscripts** accessible through the Gyan Bharatam portal.
- **Abhilekh Patal:** The **National Archives of India** digitises historical records through the Abhilekh Patal portal.
- **National Mission on Monuments and Antiquities (NMMA):** Implemented under ASI, it develops a national database of **monuments and antiquities** for conservation planning, monitoring and prioritisation.

Conclusion: Sarnath's UNESCO recognition affirms India's **civilisational and spiritual heritage**, strengthening cultural diplomacy while reinforcing the need for **technology-enabled conservation and intergenerational heritage preservation**.

Test Your Knowledge	
Prelims Corner Q1. Consider the following statements regarding UNESCO World Heritage Sites: 1. The World Heritage Convention seeks to protect both cultural and natural heritage of outstanding universal value. 2. A property on a country's Tentative List is automatically eligible for inscription on the World Heritage List. 3. India's Tentative List serves as a pool of properties that may be considered for future nomination. Which of the statements given above are correct? A. Only one B. Only two C. All three D. None Answer: B	Mains Corner Q. UNESCO World Heritage recognition can enhance India's cultural diplomacy and promote heritage-led development, but it also creates greater responsibilities for conservation and sustainable management. Discuss in the context of Sarnath and India's expanding World Heritage portfolio. (15 marks, 250 words)

2. RANI AVANTI BAI LODHI

- **Early Life & Administration:** Born on **16 August 1831** at **Manakhedi, Seoni (Madhya Pradesh)** to zamindar **Rao Jujhar Singh and Krishna Bai**; trained in **horse riding, sword fighting and administration**. Married **Vikramaditya Singh**, son of Ramgarh King **Lakshman Singh**, and assumed Ramgarh's administration during his illness, with sons **Aman Singh and Sher Singh**.
- **Resistance to British Rule:** After the British placed Ramgarh under the **Court of Wards**, declaring the ruler incapable and heirs minors, Avanti Bai **expelled British-appointed officials**, opposed revenue orders and urged farmers to reject colonial instructions. During the **Revolt of 1857**, she mobilised rulers, zamindars and landlords through letters carrying **two black bangles**, urging resistance. On **23 November 1857**, her forces defeated British troops led by **Mandla Deputy Commissioner Waddington at Kheri**.
- **Martyrdom & Legacy:** When British forces attacked Ramgarh in **March 1858**, she **chose self-sacrifice over surrender**. She symbolises **women's leadership, regional resistance, courage, self-respect and anti-colonial mobilisation**; her legacy is commemorated through memorials and institutions, including the **Rani Avanti Bai Lodhi Women's Battalion of Uttar Pradesh Provincial Armed Constabulary (PAC), Badaun**.

3. SARATCHANDRA CHATTOPADHYAY

Context: **150th birth anniversary** of renowned Bengali writer **Saratchandra Chattopadhyay (1876–1938)** was observed.

- **Born:** 15 September 1876, **Hooghly, Bengal Presidency**.
- **Died:** 16 January 1938, **Kolkata**.
- **Literary contribution:** Major **Bengali novelist and short-story writer**, known for social realism, especially the lives of **rural Bengal and marginalised sections**.

- **Major works:** *Parineeta* (1914), *Devdas* (1917), *Srikanta* (1917–33), *Choritrohin* (1917), *Pather Dabi* (1926).
- **Social themes:** Critiqued **patriarchy, caste discrimination, superstition and rigid social customs**; portrayed women's struggles and aspirations.
- **Nationalism:** *Pather Dabi* portrayed **revolutionary activities against British rule**.
- **Political association:** President, **Howrah District Congress Committee (1921–1936)**.
- **Reach:** His works have been translated into several **Indian and foreign languages** and adapted into films.
- **Pather Dabi:** Its revolutionary-nationalist content led to its **prohibition by the British colonial government**.

4. BIRTH ANNIVERSARY OF ACHARYA VINOBA BHAVE

Context: Recently, the **Prime Minister paid tribute to Acharya Vinoba Bhave** on his birth anniversary, recalling his **message of 'Jai Jagat'**, which placed humanity above social, political and geographical boundaries.

- **Vinayak Narahari Bhave**, known as **Acharya Vinoba Bhave**, was born on **11 September 1895 at Gagode, Bombay Presidency**.
- He developed early interest in **spirituality, Sanskrit, Bhagavad Gita and Upanishads**.
- Vinoba met **Mahatma Gandhi on 7 June 1916** and joined his Ashram, embracing **non-violence, equality, austerity and village development**.
- On **8 April 1921**, Gandhi assigned him to **Wardha Ashram**, where he published *Maharashtra Dharma* on the Upanishads.
- **Mama Phadke**, an Ashram member, gave him the name **"Vinoba."**
- Participated in the **Non-Cooperation Movement**, promoted **Swadeshi and Khadi**, and joined the **Nagpur Flag Satyagraha (1923)**.
- While imprisoned in **Dhulia Jail in 1932**, he delivered Bhagavad Gita discourses later published as *Gita Pravachane*.
- Gandhi selected Vinoba as the **first Individual Satyagrahi in 1940** for non-violent resistance against British rule.
- Vinoba advanced **Sarvodaya**, emphasising universal welfare, **social equality, decentralisation, non-violence and self-reliant villages**.
- In **1951**, Vinoba undertook a peace trek through violence-affected **Telangana**. At **Pochampalli**, a landlord voluntarily donated land after Vinoba appealed for land for landless people. This donation marked the beginning of the **Bhoodan (Land Gift) Movement**.
- Major literary works include *Swarajya Sastra*, *Geeta Pravachane* and *Teesri Shakti (The Third Power)*.
- Became the first recipient of the **Ramon Magsaysay Award for Community Leadership in 1958**. Received the **Bharat Ratna posthumously in 1983**.
- Died on **15 November 1982 at Paunar, Wardha district, Maharashtra**.

5. POINTERS FOR PRELIMS

5.1. 1,800-YEAR-OLD SARASWATI IDOL AND ANCIENT MUSICAL LEGACY

Context: An iconographic study of an 1,800-year-old Saraswati idol from Madhya Pradesh offers insights into ancient Indian music and the Malava community's cultural history.

- The sculpture is officially recognised as **Madhya Pradesh's oldest Saraswati idol holding a musical instrument**. Excavated in the **1980s at Manasa town, Neemuch district**, the black sandstone idol dates to the **2nd century CE** and now rests in the **Ujjain Museum**.

- **Malava Connection:** Dating to the **Malava era**, the sculpture offers insights into the cultural history and musical traditions of the **Malava community**.
- **Ancient Instrument:** Saraswati is shown playing the **Vakra-Veena**, a sweeping, arched, harp-like instrument representing an early Indian string tradition.
- **Malava History:** Roman historian **Quintus Curtius Rufus** recorded the Malavas' fierce resistance against **Alexander the Great** in *Historiae Alexandri Magni*.

- **Southern Migration:** The Malava community subsequently migrated southwards towards the **Mandsaur region**.
- **Early Harp Evidence:** Arched harps appear in **Bronze Age rock paintings** at **Nimbu Bhoj Cave near Pachmarhi**, showing their ancient Indian presence.
- **Gupta-Era Depiction:** The instrument was later prominently depicted on **gold coins of Gupta emperor Samudragupta (330–376 CE)**.

5.2. RAMON MAGSAYSAY AWARDS 2026

Context: The **Ramon Magsaysay Award Foundation (RMAF)** honoured **Tommy Koh (Singapore)**, **Runa Khan (Bangladesh)** and **Bo Kyi (Myanmar)** for outstanding contributions to Asian society.

About Ramon Magsaysay Award

- **Established:** Founded in **1958**, the award recognises individuals and organisations advancing **human development** and addressing complex societal challenges. It is regarded as “**Asia’s Nobel Prize**”.
- **Selection & Recognition:** RMAF selects awardees annually, who receive a **medallion, certificate and cash prize**.
- **Since 2009:** The award discontinued fixed categories, except **Emergent Leadership**, which continues with support from the **Ford Foundation**.

5.3. ARANMULA UTHRATTATHI BOAT RACE

Context: **Aranmula Uthrattathi Vallamkali** is among Kerala’s oldest boat races, held annually on the **Uthrittathi asterism** during **Chingam (August–September)**.

- **Location:** The event takes place on the **Pamba River in Pathanamthitta district**, at heritage village **Aranmula**.
- **Temple Association:** Linked to **Aranmula Sree Parthasarathy Temple**, dedicated to **Lord Krishna**, the race forms part of temple traditions and **Onam celebrations** as a religious offering.
- **Sacred Boats:** **Palliyodams** are distinctive, taller sacred snake boats.
- **Vanchippattu:** Oarsmen accompany the race with traditional boat songs (**Vanchippattu**), enhancing its ritual and cultural character.

- **Traditional Songs:** **Kuchelavritham, Bheeshmaparvam** and **Santhanagopalam** are among the traditional compositions associated with the event.
- **Aranmula Heritage:** Aranmula is also renowned for the **GI-tagged Aranmula Kannadi**, a distinctive traditional metal mirror craft.

5.4. 6TH WORLD NOMAD GAMES

Context: The Prime Minister of India attended the **6th World Nomad Games in Bishkek, Kyrgyzstan**, strengthening India’s cultural and strategic engagement with Central Asia.

- **Origin:** The **2012 Bishkek Declaration** by Kyrgyzstan, Azerbaijan, Kazakhstan and Türkiye established the **World Nomad Games (WNG)**.
- **Evolution:** First held in **2014**, WNG became a **United Nations-recognised biennial platform**, involving **90+ countries** across Central Asia, Türkiye and Kazakhstan.
- **Sports Programme:** Traditional disciplines include **Kok Boru, Kurash, Goresh, Mongol Bokh, archery and Toguz Korgool**.
- **India’s 2026 Participation:** India fielded a record **87-member contingent** in **Kurash, Goresh, Mongol Bokh, Kok Boru and Toguz Korgool**.
- **Kok Boru:** A traditional Kyrgyz horseback game resembling polo, UNESCO-recognised as **Intangible Cultural Heritage of Humanity in 2017**.

5.5. SAPTAKOTESHWAR TEMPLE

Context: Archaeological remains dating to the **14th–16th centuries** were discovered during restoration of the old **Saptakoteswar Temple** site on **Divar Island, Goa**. Restoration along the pathway between **Koti Tirth and Madhavachi Talli** revealed evidence of **successive temple construction and reconstruction phases**.

- **Shaivite Tradition:** The temple is dedicated to **Lord Shiva** and is an important centre of **Shaivite tradition in the Konkan region**.
- **Kadamba Connection:** The temple was associated with the **Kadamba dynasty (10th–14th century CE)**.
- Following destruction during earlier periods, the temple was **reconstructed**.

during the Vijayanagar period, preserving its religious significance.

- **Portuguese Period:** During Portuguese rule in Goa, the temple was destroyed and the Shiva Linga was displaced.
- **Maratha Restoration:** Chhatrapati Shivaji Maharaj revived the temple tradition and reconstructed the temple in 1668.
- **Legend Behind the Name:** Local tradition states that seven sages worshipped Shiva here, after which he appeared as Saptakoteswar. *Sapt* means seven, while *Koteswar* refers to the Lord of crores.
- **Cultural Significance:** The temple reflects Goa's layered cultural heritage, incorporating influences from the Kadamba, Vijayanagar, Portuguese and Maratha periods. It also represents the continuity of Shaivite traditions in the Konkan region.

5.6. GOLLALA GUDI TEMPLE

Context: The Archaeological Survey of India (ASI) has declared the historic Gollala Gudi Temple in Telangana a Monument of National Importance.

- **Location:** Located at Palampet village, Mulugu district, Telangana, southwest of the Kakatiya Rudreshwara (Ramappa) Temple, a UNESCO World Heritage Site.
- **Period:** Built during the 12th–13th centuries CE under the Kakatiya Dynasty.
- **Kakatiya Dynasty:** A major Telugu dynasty that ruled the eastern Deccan from the 12th–14th centuries, centred in present-day Telangana and Andhra Pradesh, with territories extending into parts of Karnataka, Tamil Nadu and Odisha.

Architectural Features

- **Trikutalaya Plan:** Features three shrines (garbhagrihas) connected to a central pillared mandapa.
- **Main Deity:** The central sanctum houses a Shiva Lingam, while external walls contain sculptural niches depicting Hindu deities.
- **Carvings:** Doorways and entablatures feature carved hamsas (swans) and intricate jali (latticework).

- **Detached Shrines:** Two shrines in front of the main temple are guarded by carved dvarapalas (door guardians).

5.7. DHIRAJ BOMMADEVARA: ARCHERY WORLD CUP FINAL 2026

Context: Indian recurve archer Dhiraj Bommadevara became the first Indian male archer to win the men's individual recurve title at the Archery World Cup Final 2026.

- The event was held in Saltillo, Mexico, where Bommadevara defeated Japan's Junya Nakanishi in the final.
- Bommadevara is the second Indian archer overall to win an individual Archery World Cup Final title. Dola Banerjee was the first, winning the women's recurve title in 2007 at Dubai.
- According to World Archery, Bommadevara is ranked World No. 4 in Recurve Men (RM).
- The Archery World Cup Final is organised by World Archery, the international governing body for the sport.
- The Hyundai Archery World Cup was launched in 2006 as an annual international circuit.

5.8. ANANT NAG SELECTED FOR DADASAHEB PHALKE AWARD 2024

Context: Veteran Kannada actor Anant Nag has been selected for the Dadasaheb Phalke Award 2024, India's highest cinema honour; it will be presented at the 72nd National Film Awards Ceremony on 22 September 2026.

- **Major Works:** Kannada debut: *Sankalpa*; Hindi debut: *Ankur*; also known for *Malgudi Days* and acclaimed Kannada cinema.
- **Public Service:** Served in the Karnataka Legislative Council (1988–1994) and Legislative Assembly (1994–1999); also served as Minister of State for Bangalore City Development.
- **Dadasaheb Phalke Award:** Instituted in 1969, it recognises outstanding contributions to the growth and development of Indian cinema.
- **Origin and Components:** Named after Dadasaheb Phalke, director of India's first full-length feature film, *Raja Harishchandra* (1913); comprises a Swarna Kamal medallion, shawl and ₹10 lakh cash prize.

SCHEMES IN NEWS

1. PM SVANIDHI

Context: PM SVANidhi completed one year of restructuring, expanding beyond working-capital loans toward formal finance, digital inclusion, social security, capacity building and entrepreneurship.

Key Facts About PM SVANidhi

- The Ministry of Housing and Urban Affairs (MoHUA) launched PM SVANidhi in June 2020 for collateral-free credit and digital financial inclusion.
- **Pandemic Support:** Introduced during Covid-19, the scheme reduced vendors' dependence on informal lenders and encouraged formal banking access.
- **Scheme Type:** PM SVANidhi is a **100% centrally funded Central Sector Scheme** implemented by MoHUA.
- **Target Beneficiaries:** It covers urban, peri-urban and rural **street vendors, hawkers, 'thelewalas' and informal service providers** operating within **Urban Local Bodies (ULBs)**.
- **First Credit Tranche:** Vendors receive collateral-free working-capital loans up to **₹15,000**, repayable within **12 months**.
- **Second Credit Tranche:** Timely or early repayment enables loans up to **₹25,000**, with an **18-month repayment period**.
- **Third Credit Tranche:** Further repayment enables credit up to **₹50,000**, with a **36-month tenure** and **no prepayment penalty**.
- **Interest Subsidy:** Standard non-Non-Performing Asset (NPA) accounts receive **7% annual interest subsidy**, transferred quarterly through **Direct Benefit Transfer (DBT)**.
- **Digital Incentive:** Beneficiaries can receive monthly **digital-transaction cashback up to ₹100**, encouraging cashless payments.
- **City Region Approach:** Inclusion of **Census Towns** expands geographical coverage and brings more vendors into formal credit and livelihood systems.

Eligibility

- **ULB-Recognised Vendors:** Eligible vendors possess a **Certificate of Vending or Identity Card** issued by ULBs.
- **Surveyed Vendors:** Identified or left-out vendors can qualify through a verified **LoR from the ULB or Town Vending Committee (TVC)**.
- **Peri-Urban/Rural Vendors:** Vendors operating within municipal jurisdictions can qualify with an authorised **LoR**.

SVANidhi se Samriddhi

- **Welfare Integration:** MoHUA's SVANidhi se Samriddhi initiative maps beneficiaries' socioeconomic profiles and connects families with **eight core central welfare schemes**.
- **Schemes Covered:** It facilitates access to **Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJJBY)**, **Pradhan Mantri Suraksha Bima Yojana (PMSBY)**, **Pradhan Mantri Jan Dhan Yojana**, **Building and Other Construction Workers (BoCW) registration**, **PM Shram Yogi Maandhan Yojana**, **One Nation One Ration Card (ONORC)**, **Janani Suraksha Yojana** and **PM Matru Vandana Yojana (PMMVY)**.

2. 12 YEARS OF PRADHAN MANTRI JAN DHAN YOJANA

Context: Pradhan Mantri Jan Dhan Yojana (PMJDY), India's flagship **National Mission for Financial Inclusion**, completed **12 years (2014–2026)**.

What is PMJDY?

- **Launch & Objective:** Launched in **August 2014**, PMJDY provides affordable access to **savings, deposits, remittances, credit, insurance and pensions**.
- **Account Access:** A **Basic Savings Bank Deposit (BSBD)** account can be opened at bank branches or **Business Correspondent (Bank Mitra)** outlets by individuals without another account. PMJDY operates under the **Department**

of Financial Services, Ministry of Finance.

Key Benefits

- **Zero-Balance Banking:** BSBD accounts require **no initial deposit** and impose no penalty for maintaining zero balance.
- **Savings Incentive:** PMJDY deposits earn **regular savings-account interest**, encouraging formal saving habits.
- **Small Account:** “Chota Khata” enables account opening without complete formal documentation; validity is **12 months**, extendable by another 12 months after proof of OVD application.
- **RuPay Access:** Account holders receive a domestic **RuPay debit card** for ATM withdrawals and digital payments through **Point of Sale (PoS)/e-commerce**.
- **Accident Insurance:** RuPay provides **₹2 lakh accident cover** for accounts opened after **28 August 2018**; earlier accounts receive ₹1 lakh. **National Payments Corporation of India (NPCI)** pays the premium.
- **Overdraft Facility:** After six months of satisfactory operation, one account holder per household, preferably a woman, can access **up to ₹10,000 overdraft**.
- **Scheme Convergence:** PMJDY accounts enable **Direct Benefit Transfer (DBT)**, **Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJJBY)**, **Pradhan Mantri Suraksha Bima Yojana (PMSBY)**, **Atal Pension Yojana (APY)** and **Micro Units Development & Refinance Agency Bank (MUDRA)** benefits.

3. NATIONAL ANIMAL DISEASE CONTROL PROGRAMME (NADCP)

Context: The Government highlighted **National Animal Disease Control Programme (NADCP)** achievements in livestock health through vaccination, surveillance and digital management.

- NADCP administered **147.16 crore Foot and Mouth Disease (FMD) vaccine doses**, benefiting **8.04 crore farmers**.
- FMD outbreaks declined from **132 in 2019 to 40 in 2025**, while **Brucellosis** outbreaks fell from **22 to 15**.

- These interventions strengthen India’s livestock-health ecosystem and disease-control capacity.

Key Facts about NADCP

- Launched in **September 2019**, the flagship scheme aims to control and eradicate **FMD and Brucellosis** through nationwide vaccination.
- **Vaccination Coverage:** Targets **100% FMD vaccination** of cattle, buffaloes, sheep, goats and pigs. Ensures **100% Brucellosis vaccination** for female bovine calves aged **4–8 months**.
- **Eradication Target:** FMD outbreaks have fallen **over 60% from pre-NADCP levels**, supporting India’s goal of **FMD eradication by 2030**.
- **Funding Pattern:** As a **Central Sector Scheme**, the Central Government provides **100% funding to States/Union Territories (UTs)**.
- **Disease Surveillance:** Uses **sero-surveillance, sero-monitoring, outbreak investigation, virus identification and impact assessment** to measure disease prevalence and vaccine effectiveness.
- **Digital Livestock Records:** Livestock are **ear-tagged, registered and digitally recorded on the Bharat Pashudhan Portal** for disease monitoring.
- **Vaccinator Incentive:** Provides vaccinators a minimum remuneration of **₹3 per vaccination dose**, supporting effective field implementation.

4. PRADHAN MANTRI FORMALISATION OF MICRO FOOD PROCESSING ENTERPRISES SCHEME

Context: Ministry of Food Processing Industries organised **PMFME Bazaar** at India Habitat Centre, New Delhi, showcasing micro food enterprises nationwide.

Key Features of PMFME Scheme

- **Launched on 29 June 2020**, PMFME is a **Centrally Sponsored Scheme** under **Atmanirbhar Bharat Abhiyaan**. It seeks to **formalise micro food enterprises, improve competitiveness and support entrepreneurs** through financial, technical and business assistance.
- **Common Infrastructure:** Provides **35% credit-linked capital subsidy** up to **₹3 crore** for **FPOs, FPCs,**

cooperatives, SHGs, federations and government agencies creating processing facilities, value-chain infrastructure or incubation centres.

- Beneficiaries contribute at least 10%, while banks finance the balance.
- **Individual Units:** Individuals, proprietorships, partnerships, FPOs, NGOs, cooperatives, SHGs and private companies receive 35% credit-linked subsidy, capped at ₹10 lakh per unit, for new or upgraded units.
- **One District One Product (ODOP):** Promotes economies of scale in procurement, common services and marketing while strengthening value chains.
- **SHG Seed Capital:** Provides ₹40,000 per SHG member for working capital and small tools, capped at ₹4 lakh per SHG.
- **Branding & Marketing:** Provides 50% financial assistance to groups of FPOs, SHGs, cooperatives and Special Purpose Vehicles (SPVs) of micro food enterprises.

5. PER DROP MORE CROP (PDMC)

Context: The Government highlighted Per Drop More Crop (PDMC), which promotes water-efficient irrigation and higher agricultural productivity.

Key Features of PDMC

- **Scheme Evolution:** Started as the Centrally Sponsored Scheme for Micro Irrigation (2006), upgraded to National Mission on Micro Irrigation (NMMI) in 2010–11.
- Became part of National Mission on Sustainable Agriculture (NMSA) under On Farm Water Management (OFWM) in 2014–15.
- Implemented under Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) as PDMC during 2015–16 to 2021–22.
- Since 2022–23, implemented under Pradhan Mantri Rashtriya Krishi Vikas Yojana (PM-RKVY).
- **Farmer Assistance:** Financial support covers micro-irrigation installation up to 5 hectares per beneficiary. Small and marginal farmers: 55% assistance; other farmers: 45%.

- **Focus Areas of PDMC:** Precision Irrigation, Fertigation, Water-Stressed Areas, Irrigation Convergence,

Implementation Structure

- **National Level:** Under PM-RKVY, the National Stewardship Council (NSC).
- **State Level:** The State Level Sanctioning Committee (SLSC) approves plans, while the Inter-Departmental Working Group (IDWG) coordinates departmental implementation.
- **District Level:** The District Level Implementation Committee (DLIC) oversees field execution.

6. PRADHAN MANTRI FASAL BIMA YOJANA (PMFBY)

Context: With ₹12,200 crore allocated for 2026–27, PMFBY strengthens farmer resilience, income stability and climate-resilient agriculture.

Key Features

- Launched on 18 February 2016, PMFBY provides affordable crop insurance against natural calamities and production risks.
- **Farmer Premium:** Farmers pay 2% for Kharif and 1.5% for Rabi foodgrain and oilseed crops, while commercial and horticultural crops attract up to 5%.
- **Premium Sharing:** Remaining premiums are shared 50:50 by Centre and States, with a 90:10 ratio for North-Eastern and Himalayan States.

Risk Coverage

- **Covered Risks:** Area-based insurance covers drought, floods, inundation, cyclones, hailstorms, lightning, pests and diseases affecting standing crops.
- **Prevented Sowing:** Farmers unable to sow despite cultivation expenses can receive claims up to 25% of the sum insured.
- **Post-Harvest Protection:** Harvested crops kept cut-and-spread for drying remain covered for 14 days against specified cyclones, unseasonal rainfall and other notified events.
- **Localised Calamities:** Individual farm losses from hailstorms, landslides, inundation, cloudbursts and natural fires receive coverage under specified conditions.

- **Excluded Risks:** War, nuclear risks, riots, theft, negligence, preventable risks and specified post-harvest conditions remain outside PMFBY coverage.

Inclusive Farmer Coverage

- **Beneficiary Categories:** Covers loanee, non-loanee, tenant farmers and sharecroppers, subject to eligibility and valid land or cultivation documents.
- **Non-Loanee Farmers:** Voluntary enrollment is permitted; they constituted around **50% of enrolled farmers on average** over the past decade.
- **Loanee Farmers:** Seasonal crop or active **Kisan Credit Card (KCC)-linked loans** are covered, with banks deducting premiums from loan amounts.
- **Eligibility:** Farmers require **insurable interest, valid land documents/tenure agreements or sowing certificates** and timely application.

7. PRADHAN MANTRI KISAN MAANDHAN YOJANA (PM-KMY)

Context: The Pradhan Mantri Kisan Maandhan Yojana (PM-KMY) completed seven years since its 2019 launch, reaffirming its role in providing old-age social security to Small and Marginal Farmers (SMFs) through a contributory pension system.

Key Features of PM-KMY

- PM-KMY is a **voluntary, contributory pension scheme** providing financial security to Small and Marginal Farmers after their working years.
- **Nodal Ministry:** It is a **Central Sector Scheme** managed by the **Department of Agriculture & Farmers Welfare, Ministry of Agriculture & Farmers Welfare**, in partnership with the **Life Insurance Corporation of India (LIC)**.
- **Eligibility:** Small and Marginal Farmers with **cultivable land up to 2 hectares**, aged **18–40 years** at enrolment, can join the scheme.
- **Assured Pension:** Subscribers receive a **minimum monthly pension of ₹3,000** after turning 60.
- **Family Pension:** After the subscriber's death, the spouse receives **50% of the subscriber's pension (₹1,500/month)**, subject to scheme conditions.

- **Matching Contribution:** The farmer and **Central Government contribute equally** to the pension fund.
- **Monthly Contribution:** Farmers entering between **18 and 40 years** contribute **₹55–₹200 per month**, based on their entry age, matched equally by the Government.
- **Exclusions:** The scheme excludes beneficiaries of **NPS, ESIC, EPFO, PM-SYM and PM-LVM**, institutional landholders, constitutional post holders, certain elected representatives, serving/retired government and PSU employees, income-tax payers and registered professionals such as **doctors, engineers, lawyers, CAs and architects**.

8. 3 YEARS OF PM VISHWAKARMA SCHEME

Context: The PM Vishwakarma Scheme completed three years in **September 2026**. The **Ministry of Micro, Small and Medium Enterprises (MSME)** marked the milestone after the scheme achieved its target of **30 lakh registered traditional artisans and craftspeople**.

- **Launched in 2023**, PM Vishwakarma rests on **Samman (Respect), Samarthya (Capability) and Samriddhi (Prosperity)**
- It provides end-to-end support to traditional artisans in the unorganised sector, strengthening the **Guru-Shishya Parampara (family-based transmission of traditional skills)**.
- It is a **Central Sector Scheme** with a **₹13,000 crore** outlay, fully funded by the Union Government for **FY 2023-24 to FY 2027-28**, and jointly implemented by the **Ministry of Micro, Small and Medium Enterprises (MSME), Ministry of Skill Development and Entrepreneurship, and Department of Financial Services, Ministry of Finance**.
- **Eligible Beneficiaries:** The scheme covers **self-employed artisans aged 18+** working with hands and tools in **18 notified traditional trades**; applicants cannot have taken similar government self-employment loans in the previous **5 years**, benefits are limited to **one family member**, and **government employees and their families are excluded**, while fully repaid **Pradhan Mantri MUDRA**

Yojana (MUDRA) and PM Street Vendor's AtmaNirbhar Nidhi (PM SVANidhi) beneficiaries remain eligible.

- Recognition and Training: Beneficiaries receive a PM Vishwakarma Certificate and Identity Card, while Basic Training (5–7 days) and Advanced Training (15+ days) provide a ₹500 daily stipend for skill enhancement.
- Credit Assistance: Collateral-free Enterprise Development Loans up to ₹3 lakh are provided in two tranches—₹1 lakh for 18 months and ₹2 lakh for 30 months—at a concessional 5% interest rate, with government interest subvention up to 8%.

9. PRADHAN MANTRI BHARTIYA JANAUSHADHI PARIYOJANA (PMBJP)

Context: The Government is expanding the Pradhan Mantri Bhartiya Janaushadhi Pariyojana (PMBJP) beyond medicines to include surgical products, medical consumables, healthcare devices and supportive-care products.

- About PMBJP: PMBJP provides quality-assured generic medicines at significantly lower prices through a nationwide network of Jan Aushadhi Kendras (JAKs), promoting affordable and accessible healthcare.
- Citizen-Focused Services: Janaushadhi Suvidha Oxo-biodegradable Sanitary Napkins cost just ₹1 per pad, while the Jan Aushadhi Sugam mobile application enables users to locate Kendras, check medicine availability and compare prices.

10. PRADHAN MANTRI AWAS YOJANA–URBAN (PMAY-U)

Context: Pradhan Mantri Awas Yojana–Urban (PMAY-U) continues to provide eligible urban households with affordable pucca houses and basic civic amenities, strengthening the Housing for All mission.

- About PMAY-U: Launched in June 2015, PMAY-U aims to provide all-weather pucca houses with basic

amenities to eligible urban households, particularly

- **Mission Period:** Initially valid until March 2022, PMAY-U was extended to 30 September 2026 to complete already sanctioned projects.
- **Beneficiary Conditions:** A beneficiary family includes husband, wife and unmarried children and must not own a pucca house anywhere in India; an adult earning member can qualify as a separate household if they do not own one, while a married couple can receive only one house, individually or jointly, and beneficiaries can use only one of the four mission verticals.
- **PMAY-U 2.0:** Launched in September 2024, PMAY-U 2.0 aims to support 1 crore additional urban poor and middle-class families during 2024–2029, with assistance up to ₹2.50 lakh per unit for construction or purchase and support for affordable rental housing.
- **Income Eligibility under PMAY-U 2.0:** The scheme covers Economically Weaker Sections (EWS) up to ₹3 lakh, Low Income Groups (LIG) ₹3–6 lakh, and Middle-Income Groups (MIG) ₹6–9 lakh annual household income.
- **Housing Achievements:** By 9 August 2026, PMAY-U and PMAY-U 2.0 had sanctioned 1.25 crore houses, with over 1 crore completed and delivered, compared with around 8 lakh urban houses completed under earlier schemes during 2005–2014.
- **Women-Centred Ownership:** PMAY-U promotes women's ownership or co-ownership; around 1 crore of the 1.25 crore sanctioned houses have been allotted to women either as female heads of households or through joint ownership.
- **Real-Time Project Tracking:** The PMAY-U Dashboard provides real-time performance indicators.
- **The Technology and Innovation Sub-Mission (TISM)** promotes innovative designs, quality assurance, green building standards and climate-responsive housing.

ETHICS

STUDENT'S
NOTES

1. CORPORATE ETHICS: FROM POWER AND OWNERSHIP TO STEWARDSHIP

Context: Tata Sons–Tata Trusts Dispute

- **Tata Sons** is Tata Group's holding company; **Tata Trusts** own about **66%** of it.
- **N. Chandrasekaran**, Executive Chairman since 2017, has a term ending **February 2027**.
- On **17 September 2026**, the Board approved his **five-year reappointment**.
- **Noel Tata** opposed, while **Venu Srinivasan** supported the decision, creating a **1–1 split**.
- The **casting vote of the meeting chairman** approved the reappointment.
- The core issue is **who has the final say in Tata Sons**: Tata Trusts cite their **special voting rights**, while Tata Sons relies on its **Articles permitting a casting vote** in a tie. Legal interpretations differ.



Key Ethical Dilemmas: The dispute illustrates that corporate ethics is not merely about **whether an action is legal**, but also whether it is **fair, transparent, institutionally responsible and ethically defensible**.

- **Power vs Responsibility:** Greater control over an institution creates greater responsibility to use that power transparently and in the institution's long-term interest.
- **Ownership vs Stewardship:** Corporate ownership provides control rights, but stewardship requires treating the institution as a trust whose long-term value must be protected for employees, investors, consumers and society. This reflects Gandhi's **Trusteeship principle**.
- **Formal Authority vs Moral Authority:** Legal or board authority may permit a decision, but ethical leadership also requires integrity, fairness, transparency and institutional trust.
- **Personal Interest vs Institutional Interest:** Corporate decisions become ethically questionable when personal preferences, loyalties or rivalries influence choices that should be guided by institutional merit and stakeholder welfare.
- **Shareholder Rights vs Stakeholder Responsibility:** Corporate power should balance shareholders' interests with those of employees, consumers, government, communities and other affected stakeholders, reflecting **R. Edward Freeman's Stakeholder Theory**.
- **Procedural Legality vs Ethical Legitimacy:** A decision may be legally permissible yet ethically questionable if it lacks transparency, fairness or sufficient justification in terms of the institution's long-term interests; **law sets the minimum standard, ethics demands responsible conduct beyond compliance**.

Ethical Thinkers and Concepts

- **Mahatma Gandhi – Trusteeship:** Those controlling wealth should act as custodians of resources for wider social welfare.
- **Immanuel Kant – Duty Ethics:** Decisions should follow universal ethical principles and respect stakeholders as **ends, not merely means**.
- **Aristotle – Virtue Ethics:** Ethical corporate leadership requires virtues such as **justice, honesty, courage and practical wisdom**.
- **Jeremy Bentham and John Stuart Mill – Utilitarianism:** Corporate decisions should consider their consequences for the overall welfare of affected stakeholders.
- **John Rawls – Justice as Fairness:** Institutional arrangements should ensure fairness and prevent arbitrary concentration of benefits or burdens.
- **R. Edward Freeman – Stakeholder Theory:** Corporate responsibility extends beyond shareholders to all stakeholders affected by corporate decisions.
- **Peter Ferdinand Drucker – Social Responsibility:** Management has responsibilities beyond organisational efficiency, including its impact on society.



Strengthening Corporate Ethics

- **Independent boards and institutional checks:** Strengthen independent directors and oversight mechanisms to prevent excessive concentration of authority and ensure accountable decision-making.
- **Transparency in ownership and succession:** Ensure transparent processes for ownership, leadership succession and major appointments to strengthen institutional legitimacy and stakeholder confidence.
- **Clear governance relationships:** Clearly define the roles and responsibilities of shareholders, trusts, boards and management to prevent overlapping authority and ambiguity.
- **Conflict-of-interest disclosure:** Mandate timely disclosure of personal, financial and institutional conflicts to enable informed decisions and prevent compromised judgement.
- **Whistleblower protection and ethical dissent:** Protect individuals who report wrongdoing and create safe channels for questioning decisions that may violate ethical standards.
- **Long-term executive incentives:** Link executive compensation with sustainable institutional performance rather than short-term financial outcomes or immediate performance targets.
- **Ethics audits:** Conduct periodic ethics audits alongside financial and compliance audits to identify behavioural, governance and integrity-related risks.
- **Corporate resources as stewardship:** Treat corporate assets and resources as a stewardship responsibility, requiring decisions that protect institutional interests across generations.
- **Stakeholder-oriented decision-making:** Incorporate the interests of employees, shareholders, customers, communities and other stakeholders into strategic corporate decisions.
- **Credible ethical leadership:** Build leadership credibility through integrity, consistency, fairness and accountability, ensuring organisational values are reflected in actual conduct.

Conclusion: The broader lesson is that **corporate success cannot be measured only by profitability or legal compliance; durable institutional legitimacy requires integrity, accountability, stakeholder sensitivity and stewardship.**

STUDENT'S
NOTES

2. DELHI ₹700-CRORE MEDICAL PROCUREMENT CASE

Context: The alleged ₹700-crore Delhi medical procurement case involves suspected tender manipulation, cartelisation, fund diversion and destruction of records. Beyond financial loss, it raises concerns of public trust, healthcare access, human dignity and the ethical use of public power.

Core Ethical Issue: Alleged breach of public trust through manipulation of a system meant for public welfare. It raises concerns of:

- **Probity & integrity** — honest use of public authority.
- **Accountability & transparency** — answerability and traceability of decisions.
- **Justice & equity** — fair distribution of scarce healthcare resources.
- **Professional ethics** — duty towards patients and citizens.
- **Public trust** — treating public resources as a trust, not private opportunity.
- **Bioethics** — procurement failures can translate into patient harm.



Ethical Frameworks and Thinkers

- **Probity and Public Trust**: Public officials are trustees, not owners, and must ensure integrity, transparency, accountability, impartiality and responsible use of public resources, particularly for vulnerable citizens; Mahatma Gandhi's Trusteeship treats authority and resources as a social trust.
- **Bioethics: Tom L. Beauchamp and James F. Childress: Non-maleficence** requires preventing avoidable patient harm; **Beneficence** requires promoting safe, quality and timely care; **Justice** requires fair distribution, especially for vulnerable groups, consistent with **John Rawls' Justice as Fairness**; **Autonomy** requires informed choice, dignity and adequate healthcare information.
- **Deontology: Immanuel Kant**: Ethical conduct rests on duty, requiring honesty, impartiality, fairness and respect for law; the **Categorical Imperative** demands universally acceptable principles, while **Humanity as an End** prohibits treating citizens merely as means for private gain.
- **Utilitarianism: Jeremy Bentham and John Stuart Mill**: Decisions should maximise overall welfare; procurement corruption can cause financial loss, reduced healthcare capacity, patient suffering, inefficiency and loss of public trust; **Jeremy Bentham** emphasised the greatest happiness of the greatest number, while **John Stuart Mill** recognised higher forms of well being and human dignity.
- **Virtue Ethics: Aristotle**: Ethical governance depends on character and practical wisdom, requiring virtues such as honesty, integrity, courage, justice, compassion, temperance and responsibility to guide ethical judgement and conduct.
- **Constitutional Morality: Bhimrao Ramji Ambedkar**: Public institutions must uphold **equality, dignity, social justice, rule of law and accountability**, rather than allowing personal, sectional or institutional interests to override constitutional values.

Way Forward

- **Transparent procurement:** Competitive, documented and auditable processes.
- **Clear accountability:** Fix responsibility at every procurement stage.
- **Digital record preservation:** Secure audit trails, backups and tamper-resistant records.
- **Conflict-of-interest safeguards:** Mandatory disclosure and recusal where required.
- **Internal controls:** Segregation of duties, independent verification and regular audits.
- **Protect ethical dissent:** Safeguards for whistle-blowers and officials reporting wrongdoing.
- **Ethical emergency procurement:** Balance speed with minimum transparency and accountability safeguards.
- **Ethical institutional culture:** Build integrity, moral courage, compassion and responsibility, not merely rule compliance.
- **Patient-centric procurement:** Final test should be safe, timely, equitable and quality healthcare.



Thinkers and Concepts

- **Mahatma Gandhi:** Trusteeship, Sarvodaya, and means and ends; public resources should be treated as a social trust and used for collective welfare.
- **Immanuel Kant:** Duty, Categorical Imperative, and dignity; officials must act ethically irrespective of personal gain.
- **Aristotle:** Virtue, character, and practical wisdom; ethical administration depends on cultivated moral character.
- **Jeremy Bentham:** Greatest happiness; public decisions should maximise overall welfare.
- **John Stuart Mill:** Quality of welfare and liberty; decisions should protect dignity and broader human well being.
- **John Rawls:** Justice as Fairness; institutions should ensure fair distribution and protect disadvantaged healthcare users.
- **Bhimrao Ramji Ambedkar:** Constitutional morality, equality, and social justice; public institutions must uphold constitutional values.

Conclusion: Public administration is ultimately about people, not merely procedures or finances. Where public authority affects human life, probity becomes more than an administrative virtue—it becomes a moral obligation.



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