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Current Affairs

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JUNE 2026

La Excellence — IAS Academy —

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PREFACE

Current Affairs JUNE, 2026

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MONTHLY MAGAZINE
JUNE 2026

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1. POLITY & GOVERNANCE

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1.1. Pedestrian Rights as a Fundamental Right

Context:

Recently, the Supreme Court declared that walking on properly marked and maintained footpaths is a **fundamental right**. The ruling came in a case involving a five-year-old boy who was killed by a truck while walking to school in Karnataka. The Court held that pedestrian safety must receive priority over the convenience of motor vehicles.



Explanation:

What the Supreme Court Held:

- Wherever a road is built, authorities **must provide** and maintain a clearly marked **footpath.**
- This is an **enforceable public duty** and not an optional municipal service.
- The **right of pedestrians** to use footpaths must override the convenience of motor vehicles.
- The Court described walking as a **basic human activity** closely connected with life and liberty.

Do You Know?

Beyond pedestrian safety, the Supreme Court has expanded Article 21 (Right to Life) to include several other rights not explicitly written in the Constitution:

- Right to Clean Air and Water
- Right to Health
- Right to Livelihood
- Right to Shelter
- Right to Privacy
- Right to Education

Problems Faced by Pedestrians:

- Many Indian cities do not have continuous and safe footpaths.
- Existing pavements are often blocked by parked vehicles, vendors, utility poles, construction material and waste.
- Road widening generally gives more space to vehicles while reducing space for walkers.
- Children, elderly persons, persons with disabilities and low-income workers face greater danger.

Why Law Alone Is Not Enough?

- A legal right has little meaning if governments do not build and maintain footpaths.
- The **Street Vendors Act, 2014** shows that laws may fail when surveys, vending zones and town vending committees are not properly created.
- Public smoking declined through regular awareness campaigns and immediate fines, not only through legal restrictions.
- Similarly, pedestrian safety needs public awareness and a culture that respects walkers.

Space for Notes

Need for Balanced Implementation:

- The judgment should not be used only to remove vendors and poor workers from public spaces.
- Sudden eviction may destroy livelihoods and make streets accessible only to richer groups.
- Cities should create regulated vending areas while keeping enough space for pedestrians.
- Governments must fund continuous pavements, crossings, lighting, ramps and accessible street design.

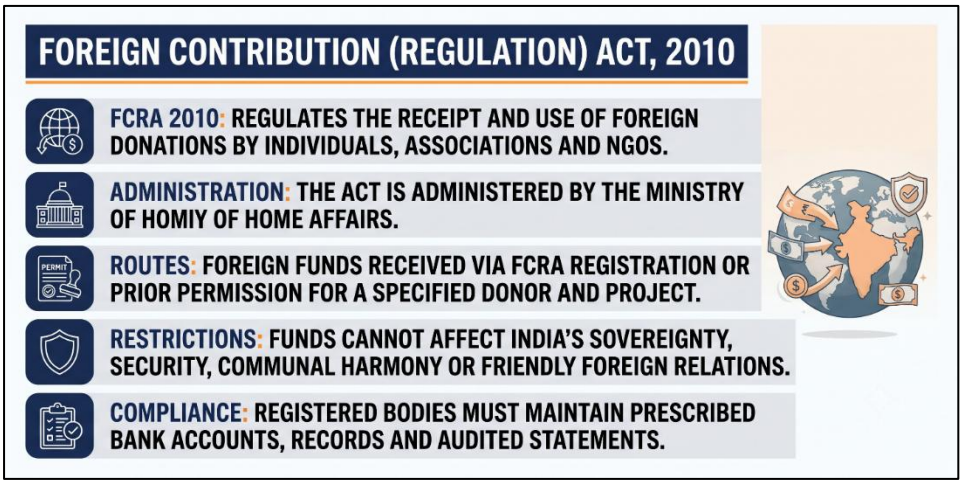
Conclusion:

The judgment gives constitutional recognition to safe walking. However, compensation after accidents cannot replace prevention. The right will become meaningful only when governments build inclusive and well-maintained footpaths.

1.2. Regulation of Foreign Contributions to NGOs

Context:

The Union government has strengthened regulation of foreign contributions received by NGOs through revised disclosure and compliance requirements. The FCRA Amendment Bill, 2026 seeks stronger transparency, accountability and national-security oversight, while raising concerns about civil society autonomy.



Activities, Registration and Disclosure:

- Organisations must register under social, economic, educational, cultural or religious categories.
- Social activities include health, sanitation, nutrition, rehabilitation, child welfare and disaster relief.
- Economic activities cover livelihood generation, agriculture, skill development, entrepreneurship and financial or digital inclusion.
- Educational, cultural and religious activities include schools, scholarships, research, think tanks, civic awareness, heritage conservation, museums, Indian arts, languages, religious education and preservation of traditions.
- Organisations must disclose their geographical scope, websites, social-media accounts, digital platforms and annual publications.
- Key functionaries include directors, trustees, partners, governing-body members, the Karta of a Hindu Undivided Family and persons controlling the organisation.

Space for Notes

Compliance, Penalties and State Control:

- New applicants must follow revised rules, while existing organisations must comply within the prescribed period.
- Violations may attract penalties, including a minimum fine of ₹1 lakh in specified cases.
- Suspension or cancellation of registration can directly affect funds, assets and ongoing welfare projects.
- Foreign-funded assets such as schools, hospitals, vehicles, buildings and equipment may come under state-designated control after suspension or cancellation.

Democratic and Welfare Concerns:

- NGOs supplement state capacity in health, education, nutrition, child welfare, disaster relief and remote-area service delivery.
- Excessive executive discretion may affect advocacy, rights-based work, religious management, property rights and associational autonomy.
- Relevant constitutional values include Articles 19, 25, 26 and 300A.
- The central issue is balancing national security with democratic freedoms and organisational independence.

Conclusion:

Foreign contribution regulation is necessary to prevent misuse of overseas funds and protect national interest. However, compliance powers must remain proportionate, transparent and subject to oversight. Regulation should prevent misuse without weakening legitimate welfare and humanitarian work.

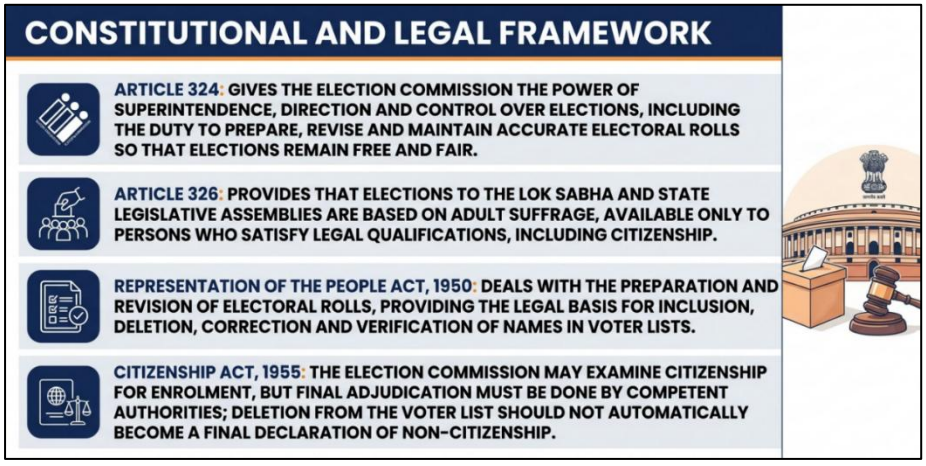
Mains Practice Questions:

Q. The regulation of foreign contributions seeks to balance national security with the constitutional freedom of association. Examine the key provisions of the Foreign Contribution (Regulation) Act (FCRA), 2010 and discuss the challenges arising from its implementation. (15 Marks, 250 Words)

1.3. Supreme Court Upholds Special Intensive Revision (SIR) of Electoral Rolls

Context:

The Supreme Court has upheld the Special Intensive Revision of electoral rolls, stating that preparation and purification of voter lists is part of the Election Commission's constitutional duty. The Court held that citizenship is a necessary condition for inclusion in electoral rolls, but cases involving doubtful citizenship must be referred to the competent authority under the Citizenship Act.



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Why Electoral Roll Revision Matters?

Electoral rolls are the foundation of representative democracy. If ineligible persons are included, the fairness of elections is affected. At the same time, if genuine citizens are wrongly deleted, their democratic right to participate in elections is harmed. Therefore, voter-list revision must balance two goals: **purity of electoral rolls** and **protection of eligible voters**.

What the Supreme Court Clarified:

- The Election Commission can conduct intensive revision of electoral rolls as part of its constitutional responsibility.
- Citizenship is a condition precedent for voter enrolment.
- The Election Commission can verify citizenship-related questions for the limited purpose of voter-list inclusion or exclusion.
- However, the Election Commission cannot finally determine citizenship in the strict legal sense.
- Names deleted on citizenship-related grounds must be referred to the competent authority under the Citizenship Act.
- The revision exercise must follow fairness, transparency and procedural safeguards.
- The Court treated clean electoral rolls as essential to the idea of free and fair elections.

Key Concerns:

- **Risk of Wrongful Exclusion:** Large-scale revision may wrongly exclude genuine citizens, especially poor persons, migrant workers, elderly voters, women, marginalised communities and those lacking formal documents.
- **Citizenship Versus Voting Eligibility:** A person may be removed from the electoral roll for failure to satisfy enrolment conditions, but that does not automatically mean the person has legally lost Indian citizenship. Citizenship determination requires a separate statutory process.
- **Administrative Burden:** Intensive revision involves huge verification work. If done hastily, it may create errors, confusion and litigation.
- **Political Sensitivity:** Voter-list revision can become politically controversial if people believe it targets particular regions, communities or social groups. Therefore, neutrality and transparency are essential.

Significance of the Judgment:

- The judgment strengthens the Election Commission's authority to maintain accurate voter lists. It also recognises that electoral purity is part of free and fair elections. At the same time, by requiring referral of doubtful citizenship cases to competent authorities, it protects individuals from arbitrary citizenship-related consequences.
- The ruling therefore creates a balance: the Election Commission can verify voter eligibility, but it must remain within constitutional and statutory limits.

Way Forward:

- The Election Commission must issue clear guidelines on documents, deadlines and verification procedure.
- No name should be deleted without notice and reasonable opportunity of hearing.
- Appeal and grievance redressal mechanisms must be simple, local and time-bound.
- Vulnerable groups should be helped through special camps, local-language communication and doorstep assistance where necessary.

- Technology may be used for efficiency, but human verification must remain central.
- Political parties, civil society and observers should be allowed to monitor the process within legal limits.
- Cases involving doubtful citizenship must be referred to competent authorities and not decided finally through electoral roll revision alone.

Conclusion:

The judgment underlines that clean electoral rolls are essential for democracy, but so is the protection of every eligible citizen's voting right. The Election Commission has the constitutional duty to maintain accurate voter lists, yet this power must be exercised with fairness, transparency and due process. The real test lies in ensuring that electoral purification does not become democratic exclusion.

Mains Practice Question:

Q. **Examine the constitutional and legal framework governing preparation and revision of electoral rolls in India.** (10 Marks, 150 Words)

1.4. Assam Uniform Civil Code Bill and Tribal Exemptions

Context:

The Assam Assembly has passed a **Uniform Civil Code (UCC) Bill** to regulate matters such as marriage, divorce, inheritance, live-in relationships and related civil issues. The Bill has generated debate because of concerns over exemptions for tribal communities and the relationship between uniform law and customary practices.

Explanation:

- **Uniform Civil Code (UCC)** means a common set of personal laws for citizens in matters such as marriage, divorce, inheritance, adoption and succession.
- It is mentioned under **Article 44** of the Constitution as a **Directive Principle of State Policy**, asking the State to endeavour to secure a UCC.
- The Assam Legislative Assembly passed the **Uniform Civil Code (UCC) Bill, 2026** on May 27, 2026, making it the third state in India to adopt such legislation (After Uttarakhand and Gujarat).
- The bill mandates a common civil framework for marriage, divorce, succession, and live-in relationships, with a key focus on prohibiting polygamy and establishing gender-equal inheritance rights.

Key Features of the Assam UCC Bill, 2026:

- **Polygamy Ban:** Prohibits polygamy with up to 7 years of imprisonment.
- **Mandatory Registration:** Compulsory registration of marriages and divorces within 60 days.
- **Live-in Relationships:** Mandatory registration of live-in relationships within one month.
- **Marriage Age:** Sets the uniform legal age for marriage at 21 years for men and 18 years for women.
- **Inheritance:** Ensures equal property rights for sons, daughters, and spouses.
- **Exclusion of Scheduled Tribes (STs):** The Bill explicitly excludes Scheduled Tribes to respect their customary laws and protect constitutional rights.

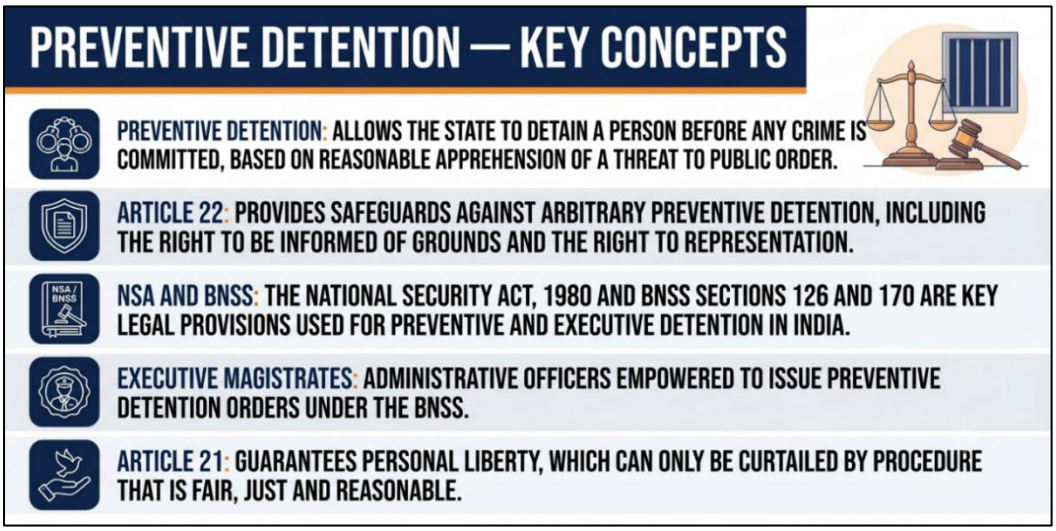
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1.5. Misuse of preventive detention powers by the state

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Context:

The Allahabad High Court, in Chander Pal Singh, highlighted systematic misuse of preventive detention powers in Uttar Pradesh. Around 2,500 people were detained in Ghaziabad between May 2025 and April 2026 without substantive criminal charges, prompting the court to critique the use of public order as a pretext to suppress individual liberty.



Explanation:

1. The Core Problem:
   - Preventive detention powers are being used routinely, detaining people without substantive criminal charges.
   - In Chander Pal Singh, a physically challenged Dalit advocate was arrested over a petty neighbour dispute with no credible threat to public order.
   - This occurred despite a **2021 State policy** designed to guide and limit such powers.
2. Specific Abuses Identified:
   - Magistrates cited unspecified **"communal tensions"** to jail protesters without credible evidence.
   - Authorities imposed **unaffordable bonds** for release, effectively imprisoning poor detainees even when legally entitled to bail.
   - Preventive powers were misused in neighbourhood and property disputes where no genuine threat to public order existed.
3. Court Directions:
   - Executive magistrates must **justify decisions** with specific, credible grounds.
   - **Compensation for unlawful detention** can be recovered from the salary of the concerned magistrate or police officer after a disciplinary hearing.
   - Appellate courts must actively scrutinise the **compensation framework** to ensure meaningful accountability.
4. Broader Significance:
   - The ruling implicitly critiques detention of activists like **Sonam Wangchuk** under NSA, challenging the use of "peace" as pretext to silence dissent.
   - It may apply to workers and activists detained under **BNSS Sections 126 or 170** without valid grounds.
   - The state must **maintain peace with peaceful means**, not by imprisoning those who question it.

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5. Challenges in Implementation:
    - The executive has historically been **reluctant to penalise its own personnel**, making salary-based recovery difficult.
    - Executive magistrates' careers depend on maintaining "peace" as the state defines it, creating institutional pressure against independent decision-making.

Conclusion:

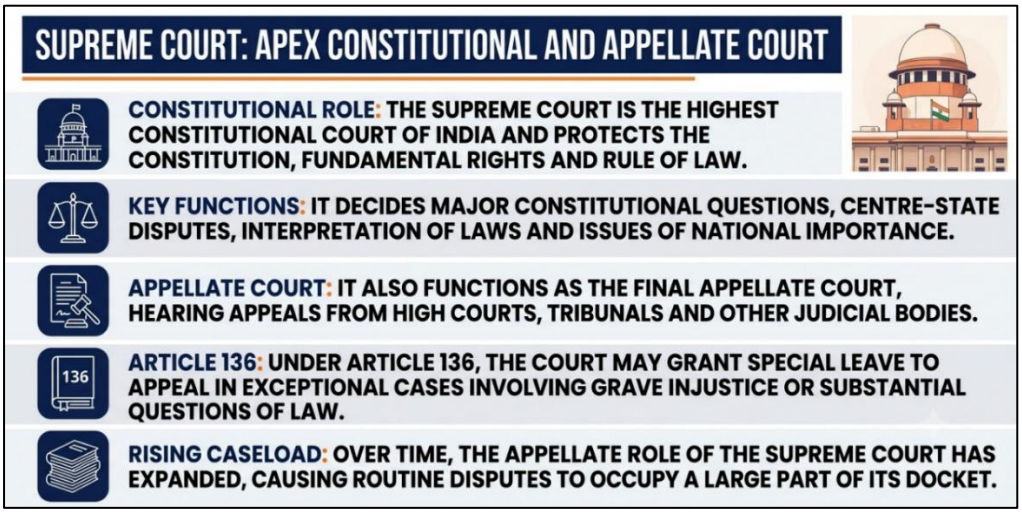
Preventive detention powers exist to protect public order, not suppress dissent or resolve petty disputes. The ruling is a significant corrective, but genuine implementation requires administrative accountability and judicial vigilance. The state must internalise that peace cannot be maintained by sacrificing the very liberty it is meant to protect.

1.6. Supreme Court Pendency and Judicial Capacity

Context:

The **Supreme Court (Number of Judges) Amendment Ordinance, 2026**, promulgated by the President, increases the sanctioned strength of the Supreme Court from **34 to 38 judges**. This step has been taken in the background of rising pendency before the Court. However, increasing judges alone cannot solve the pendency problem unless it is supported by deeper procedural and institutional reforms.

Background:



Explanation:

Increasing Judge Strength: Limited Solution:

- More judges can help constitute more Benches and may increase the number of cases heard.
- However, pendency is not only due to shortage of judges but also due to excessive inflow of cases.
- If routine appeals continue to enter the Court in large numbers, additional judges will provide only temporary relief.

Additional and Ad hoc Judges:

- **Additional Judges (Article 224(1))**: The President can appoint Additional Judges to a High Court for up to two years to clear temporary arrears or handle a surge in case inflow - distinct from permanent judicial appointments.
- **Ad hoc Judges (Article 128 for the Supreme Court; Article 224A for High Courts)**: These provisions allow the Chief Justice, with the President's consent, to recall retired judges temporarily to help manage pendency.

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Ordinance Route Criticised:

- The use of the ordinance route for increasing the Supreme Court's sanctioned strength has been criticised because such a matter could have been placed before Parliament through the ordinary legislative process.
- Since ordinance-making power is meant for urgent situations, using it for a structural judicial reform may raise concerns about bypassing parliamentary debate and scrutiny.

Need to Regulate Special Leave Petitions:

- Special Leave Petitions under Article 136 were meant to be used sparingly.
- Their frequent use has turned the Supreme Court into a regular appellate forum in many ordinary cases.
- The Court should admit SLPs mainly where there is grave injustice, conflicting High Court rulings, important legal questions or wider public importance.

Risk of Conflicting Judgments:

- More judges may lead to more Division Benches functioning simultaneously.
- If similar questions are decided differently by different Benches, legal uncertainty may increase.
- Proper coordination, grouping of similar cases and timely reference to larger Benches are necessary.

Government Litigation Burden:

- The government is one of the largest litigants in India.
- Unnecessary appeals by government departments add heavily to pendency.
- A clear National Litigation Policy is required to prevent repetitive, weak and avoidable government litigation.

Institutional Reforms Required:

- The Court needs stricter case filtering at the admission stage.
- Frivolous and repetitive cases should be discouraged.
- Written submissions should be used more effectively.
- Oral arguments in routine matters should be time-bound.
- Better listing, case management and Bench coordination are essential.
- Judicial appointments should also improve diversity, including representation of women on the Bench.

Conclusion:

Increasing the strength of the Supreme Court may reduce immediate pressure, but it is not a complete solution to pendency. The real answer lies in controlling the inflow of routine cases, reforming SLP admission, improving case management, reducing government litigation and preserving the Supreme Court's role as a constitutional court.

Mains Practice Question:

Q. Increasing the sanctioned strength of judges can provide temporary relief to judicial pendency, but structural reforms are essential for long-term judicial efficiency. Discuss. (10 Marks,150 Words)

1.7. Delhi Gymkhana Club Land Lease and Government Land Administration

Context:

The Union Housing and Urban Affairs Ministry's Land and Development Office has asked the Delhi Gymkhana Club to vacate its 27.3-acre premises near Safdarjung Road, citing national security and public-interest grounds. The issue highlights rules governing government land, leasehold property, urban land administration and institutional land use in Delhi.

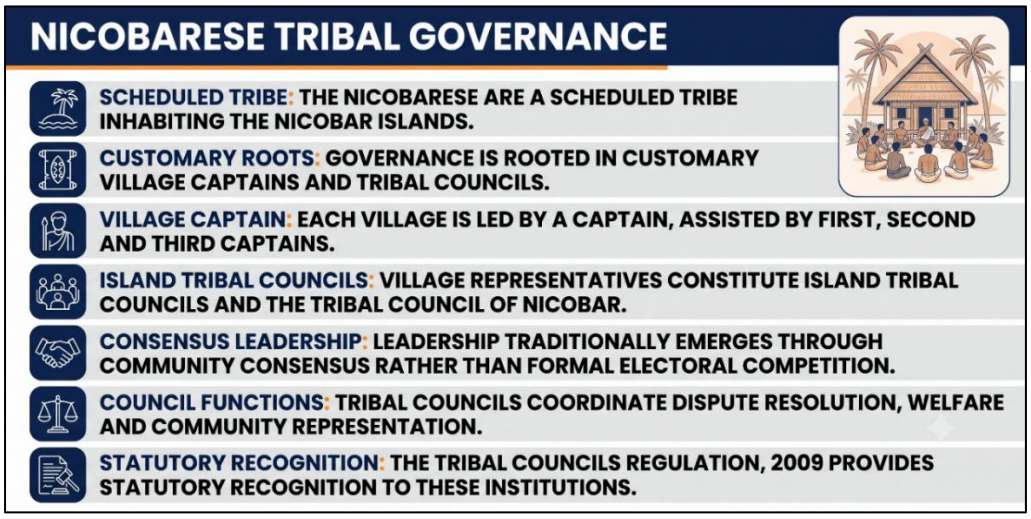
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- The Delhi Gymkhana Club is one of India's most exclusive and historic social clubs. Founded in 1913 as the "Imperial Delhi Gymkhana Club" for British officials, it is now an elite center of influence catering to senior bureaucrats, military officers, and senior professionals, often symbolizing old-money privilege.
- The land is administered by the **Land and Development Office (L&DO)** under the Union Ministry of Housing and Urban Affairs.
- After Independence, the Union government inherited colonial land assets in Delhi and leased land for residential colonies, institutions, clubs, political parties and public purposes.
- In Delhi, many properties are held as **leasehold land**, where the government remains the owner and the occupier gets limited rights subject to lease conditions.
- The government may allow **freehold conversion** in some cases, but strategic, institutional and public-purpose lands are often retained under government control.
- Lease clauses may permit **re-entry**, meaning the government can resume possession if land is required for public purpose, national security, infrastructure or violation of lease terms.
- The controversy also involves issues of **urban governance, public land use, elite colonial institutions, lease violations, public trust doctrine** and **planned development** in the National Capital Territory.

1.8. Formalisation of Elections and Resettlement in Great Nicobar: Tribal Self-Governance and Development

Context:

The Andaman and Nicobar Administration has proposed draft electoral rules for Nicobarese Village and Tribal Councils while initiating the Resettlement and Rehabilitation (R&R) census for the Great Nicobar mega-infrastructure project. Together, these developments have brought tribal governance, resettlement and indigenous institutions into focus.

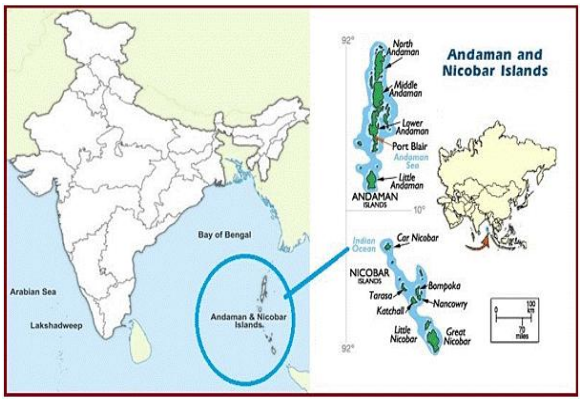


Draft Electoral Reforms:

- The draft rules propose formal elections for Village and Tribal Councils.
- They introduce constituency delimitation, electoral rolls, nomination procedures, voting, counting, fixed terms and defined institutional responsibilities.
- The proposal also provides reservation of seats and leadership positions for women.

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Implications:



- Leadership selection may shift from consensus-based processes to ballot-based elections.
- Customary authority may become more legally standardised and bureaucratic.
- Community legitimacy may increasingly derive from electoral mandates rather than traditional consensus.
- Competitive political processes may replace customary community meetings.
- The reforms aim to improve transparency, accountability, standardised leadership selection, representation and implementation of welfare programmes.
- Concerns include weakening customary institutions, increased factionalism, reduced community ownership and erosion of indigenous autonomy and cultural practices.
- The debate highlights the relationship between democratic procedures, tribal autonomy and customary self-governance.

Great Nicobar Resettlement Census:

- The Administration has initiated the mandatory R&R census for the ₹92,000 crore Great Nicobar project, which includes a container port, international airport and tourist township, with a master plan extending to 2050.
- The census identifies affected families, verifies land and livelihood records, and determines compensation under the Land Acquisition and Rehabilitation Act, 2013.
- The present exercise covers families affected by trunk infrastructure, including the trunk road.
- Affected families must submit 24 categories of identity, residence, land ownership and livelihood documents.
- The project has raised concerns regarding displacement of the Shompen, a Particularly Vulnerable Tribal Group (PVTG), and ecological impacts on the biodiversity-rich island near the Malacca Strait.

Conclusion:

The proposed electoral reforms and the Great Nicobar R&R process represent significant institutional changes affecting Nicobarese communities. They combine governance reforms with large-scale development planning. Both developments place tribal institutions, representation and resettlement at the centre of public policy.

1.9. Right to be forgotten vs Open Justice

Context:

A recent Delhi High Court judgment has recognised that the right to be forgotten flows from the constitutional right to privacy under Article 21. The Court permitted de-indexing of certain judicial records from name-based searches where continued digital visibility caused disproportionate harm to individuals who had been acquitted, discharged, or whose proceedings had been quashed or settled. This has revived the larger debate on how India should balance informational privacy with open justice and public interest.

Space for Notes

Background:

- Open justice requires courts and judicial records to remain publicly accessible for transparency, accountability and public understanding of law.
- The right to privacy, recognised in K.S. Puttaswamy case (2017), includes informational privacy and control over personal data.
- Digitisation has made judicial records permanently searchable through search engines, legal databases and automated archives.



Explanation:

- **Meaning of the right to be forgotten:** The right to be forgotten allows individuals to seek removal, masking or reduced visibility of personal information when continued public access no longer serves a legitimate public purpose. In judicial records, this mainly concerns persons who are acquitted, discharged, or whose cases are quashed or settled.
- **Meaning of de-indexing:** De-indexing does not destroy the judgment or erase the legal record. It only prevents a person's name from becoming a permanent retrieval key on search engines or legal databases. The judgment may still remain available through case number, court records or legal issues.
- **Privacy and dignity dimension:** A person who has been legally cleared may still suffer social stigma, employment loss, reputational damage and personal hardship because old allegations remain easily searchable online. This creates a form of continuing punishment despite acquittal or closure of proceedings.
- **Open justice dimension:** Judicial records are official records of the State. They help citizens scrutinise courts, understand legal reasoning, study precedents, examine institutional accountability and preserve the historical record of the administration of justice.
- **Public interest concern:** Excessive de-indexing may weaken transparency, obstruct legal research and create selective invisibility. It may also allow powerful persons to reduce public scrutiny in cases involving public office, breach of trust, serious offences or matters affecting women and children.
- **Problem of incomplete digital memory:** The deeper issue is often not discoverability, but incompleteness. Online records may highlight accusations or earlier proceedings without clearly showing acquittal, discharge, quashing or settlement. This creates a misleading digital identity.
- **Need for digital accuracy:** Courts, registries, search engines and legal databases should ensure that records are regularly updated and displayed with proper context. Search results should prominently reflect the final legal outcome, not merely the existence of past allegations.

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- **Balanced framework:** A proportionate approach should preserve official records while allowing limited de-indexing or anonymisation in deserving cases. Relief may be justified in private disputes or cases ending in acquittal, but should be restricted where overriding public interest exists.

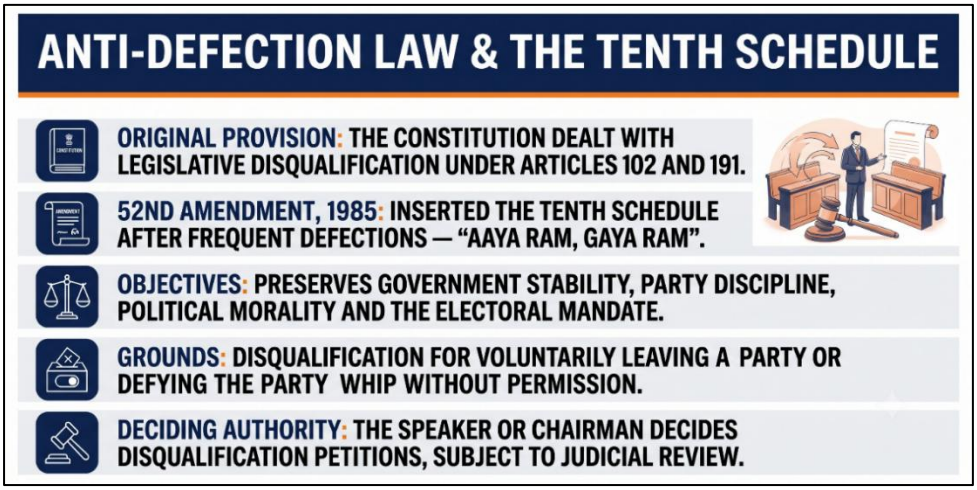
Conclusion:

The right to be forgotten is necessary to protect dignity, reputation and informational privacy in the digital age. However, judicial records also serve transparency, accountability and public memory. India needs a balanced model based on contextual accuracy, limited de-indexing and preservation of the complete legal record.

1.10. Anti-Defection Law: Stability, Legislative Freedom and the Merger Debate

Context:

India's anti-defection law was enacted to curb party-switching, horse-trading and unstable governments. Repeated resignations, delayed rulings and large-scale shifts of allegiance have exposed major loopholes, especially in relation to mergers in Parliament and State Legislatures.



Explanation:

Split, Merger and Political Manipulation:

- The original framework protected both splits and mergers.
- The 91st Constitutional Amendment Act, 2003 removed protection for a split by one-third of legislators.
- Paragraph 4 still protects a merger supported by at least two-thirds of the legislature party.
- This creates a paradox: small-scale defections attract punishment, while organised mass shifts may secure protection.
- Political actors may also use collective resignations, re-election, ministerial appointments and entry into another party to avoid the law's purpose.

Legislature Party versus Political Party:

- A legislature party consists of elected representatives within a House.
- A political party is the wider organisation with its constitution, leadership, ideology, workers, symbol and voters.

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- The unresolved constitutional question is whether two-thirds of legislators can themselves produce a merger or receive protection only after the original political party formally merges.
- Allowing legislators alone to claim merger protection may revive the earlier split logic and weaken party identity and electoral accountability.

Democratic and Institutional Concerns:

- Frequent party whips restrict independent judgment, constituency representation, debate and dissent.
- The law strengthens party leadership and may make legislators more accountable to the party high command than to voters or constitutional principles.
- Since the presiding officer usually belongs to a political party, concerns arise regarding impartiality.
- Delayed decisions can affect confidence motions, government formation and the remaining term of the House.
- In *Kihoto Hollohan v. Zachillhu*, the Supreme Court upheld the Tenth Schedule but subjected the presiding officer's decision to judicial review.

Reform Options:

- Restrict the whip to confidence motions, no-confidence motions and essential financial business.
- Transfer disqualification decisions to an independent constitutional authority and prescribe a fixed time limit.
- Preserve safeguards against inducement-driven defections while allowing principled legislative dissent.

Conclusion:

The law has supported stability but weakened legislative independence and internal party democracy. Reform must distinguish principled dissent from opportunistic switching. Clear judicial interpretation of the merger exception is essential to protect both elected governments and electoral mandates.

1.11. Women's representation in India's Supreme Court.

Context:

Recently, the appointment of another woman judge to the Supreme Court renewed discussion on women's low representation in the higher judiciary. Despite progress in law and education, women still face a "glass ceiling" in reaching the top courts. The issue is whether India needs a clear gender quota or written policy to ensure fair representation.



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Background:

- The **Supreme Court of India** has historically had very few women judges.
- Women lawyers face barriers in career growth, senior designation, visibility and judicial appointments.
- Direct appointment from the Bar to the Supreme Court is rare for women.
- Many countries have introduced reforms to ensure gender diversity in constitutional courts.
- Representation matters because courts decide issues affecting the whole society, including women and marginalised communities.

Explanation:

Present Problem:

- Women remain seriously under-represented in India's Supreme Court.
- Even after recent appointments, the number of women judges is very low compared to male judges.
- Short tenures also reduce women's chances of entering important decision-making bodies such as the Collegium.
- This shows that symbolic appointments are not enough.

Global Examples:

- Belgium introduced a gender quota requiring at least one-third representation of each sex in its constitutional court.
- South Africa has adopted diversity-based (racial, gender) reforms, and top courts in countries such as Canada, Germany, South Africa and Belgium are moving close to 50% women representation.

Why Quota is Being Suggested?

- Indian judicial appointments already consider representation from different High Courts and regions.
- Therefore, gender representation can also be treated as a valid factor.
- A 33.3% women representation policy can help correct historical exclusion.
- It can make the judiciary more inclusive, legitimate and socially representative.

Need for Inclusive Representation:

- Gender diversity should also include women from the Bar, minority communities, SC/ST and OBC backgrounds.
- This will ensure that representation is not limited to elite sections.
- A constitutional amendment to **Articles 124 and 217** may be considered to reflect gender and social diversity in Supreme Court and High Court appointments.

Way Forward:

- Until constitutional reform happens, the Supreme Court can adopt a written policy for at least **33.3% women judges**.
- Targeted appointments must be planned rather than left to chance.
- The appointment process should actively identify and elevate capable women lawyers and judges.

Conclusion:

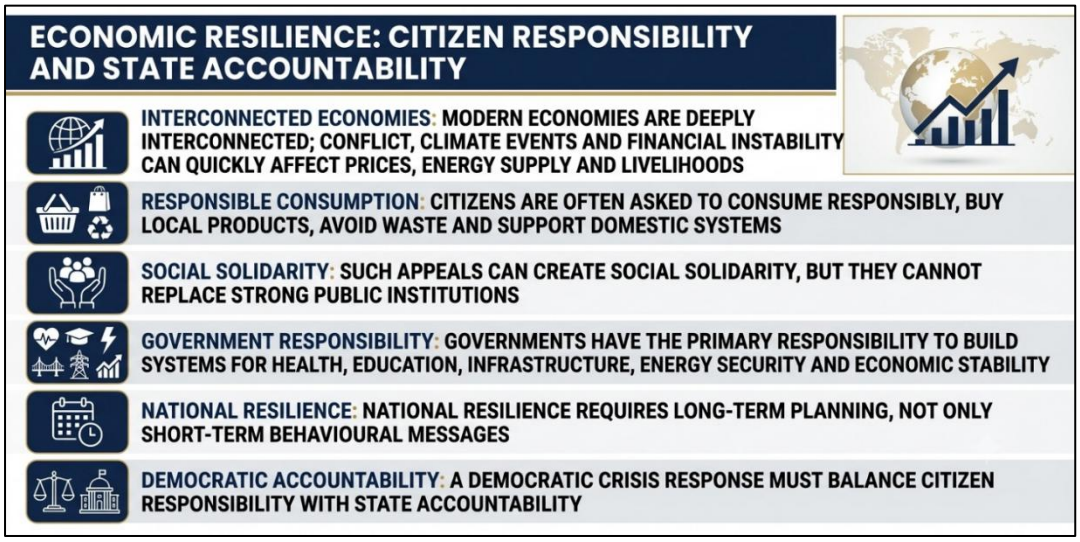
Women's low representation in the higher judiciary is not merely a numbers problem; it reflects structural barriers in the legal system. India needs a clear roadmap to ensure gender diversity in the Supreme Court and High Courts. A fair judiciary must reflect the diversity of the society it serves.

1.12. Global Crises Need Strong Institutions, Not Just 'Citizen Sacrifice'

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Context:

Prime Minister Narendra Modi recently appealed to citizens to embrace restraint, self-reliance and responsible consumption amid global uncertainty caused by conflict, energy insecurity and supply-chain disruptions. While such appeals encourage civic discipline, long-term national resilience also requires strong institutions, transparent governance and structural preparedness.



Explanation:

The Problem:

- **Shifting burden to citizens:** During crises, responsibility is often placed mainly on individuals to sacrifice, adjust and remain resilient.
- **Weak institutional preparedness:** Health systems, emergency response, public transport, urban planning and social protection remain inadequate in many areas.
- **Consumption nationalism is limited:** Buying local or reducing consumption can help, but it cannot solve deeper problems like unemployment, inflation or supply-chain dependence.
- **Rising inequality:** Poor and informal workers cannot bear crisis costs in the same way as wealthier citizens because they lack savings and social security.
- **Climate and urban stress:** Heat, pollution, water scarcity, poor housing and shrinking green spaces need structural solutions, not only lifestyle advice.
- **Low public trust:** When governments do not communicate transparently, citizens become uncertain and misinformation increases.
- **Weak democratic dialogue:** Criticism is sometimes treated as anti-national, reducing public debate and course correction.

Way Forward:

- **Strengthen public systems:** Invest more in health care, disease surveillance, nutrition, education, emergency preparedness and social security.
- **Build economic resilience:** Reduce excessive dependence on external supply chains through domestic manufacturing, innovation and skill development.
- **Promote inclusive protection:** Support vulnerable groups through employment security, affordable essentials and targeted welfare during crises.

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- **Improve urban governance:** Invest in public transport, green spaces, water bodies, heat action plans and climate-resilient infrastructure.
- **Support research and innovation:** Strengthen Indian universities, scientific institutions and technology ecosystems to build true self-reliance.
- **Ensure transparent governance:** Governments must communicate honestly, share data, allow expert advice and build public trust.
- **Protect democratic debate:** Open criticism, media freedom and institutional independence help democracies correct mistakes during crises.

Conclusion:

Citizen discipline and responsible consumption are important, but they cannot become substitutes for governance. A strong nation is built when citizens cooperate and governments deliver transparent, capable and accountable institutions. Real resilience comes from shared responsibility, with the state carrying the larger duty of structural preparedness.

1.13. Double Burden of Malnutrition in India

Context:

A recent Vellore-based child nutrition study has highlighted that Indian children may face both undernutrition and overweight risks early in life. The findings suggest that public health strategies designed mainly to fight undernutrition need to also address rising obesity and diet-related non-communicable diseases.

Explanation:

- Malnutrition includes both undernutrition and overnutrition, making it a broad public health challenge.
- According to WHO, undernutrition includes wasting, stunting, underweight and deficiencies of essential vitamins and minerals.
- Overnutrition includes overweight, obesity and diet-related risks that increase chances of diabetes, hypertension and cardiovascular diseases.
- India faces a double burden of malnutrition, where undernourishment and obesity can coexist within the same population, community or household.
- NFHS-6 findings indicate that child nutrition indicators have improved compared to earlier surveys, but uneven progress and regional variation continue.
- The study highlights that thinness and obesity may begin during school age, especially between seven and nine years.
- Poor diet quality, ultra-processed foods, sugary drinks, low physical activity and poverty-linked food choices contribute to this nutritional transition.
- Public health programmes such as ICDS, Mid-Day Meal/PM POSHAN, PDS and POSHAN Abhiyaan need to address both calorie deficiency and unhealthy excess calories.

1.14. National Sports Tribunal under National Sports Governance Act, 2025

Context:

The Ministry of Youth Affairs and Sports has invited applications for appointment of two Members to the National Sports Tribunal.

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Explanation:



- The National Sports Tribunal (NST) is a statutory body created under the National Sports Governance Act, 2025.
- It is meant to hear and adjudicate disputes arising in the field of sports governance.
- Its headquarters is located in New Delhi.
- Members are expected to be persons of eminence with knowledge and experience in sports, public administration and law.
- Such tribunals help provide specialised, faster and institutional dispute resolution.
- Sports disputes may involve governance of sports bodies, selection issues, administrative decisions and compliance with statutory norms.
- The development reflects the increasing formalisation and regulation of sports administration in India.
- The nodal ministry is the Ministry of Youth Affairs and Sports.
- The **National Sports Governance Act, 2025** seeks to regulate sports governance, improve transparency, ensure institutional accountability and provide structured dispute resolution.

1.15. National Health Accounts and High Out-of-Pocket Health Expenditure in India

Context:

The latest National Health Accounts figures show that despite some increase in government health spending, Indian households still bear a high burden of healthcare costs. Out-of-pocket expenditure remains nearly half of current health expenditure, raising concerns over financial protection and healthcare equity.

Explanation:

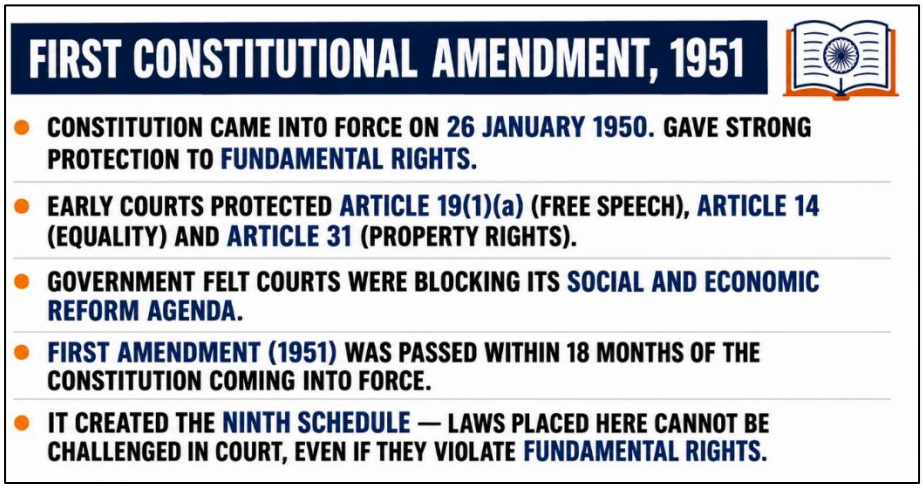
- **National Health Accounts (NHA)** estimate how health expenditure flows in India across government, households, insurance and private providers.
- **Current Health Expenditure (CHE)** refers to spending on healthcare goods and services, excluding capital expenditure.
- **Government Health Expenditure (GHE)** has increased to 1.43%, but it remains below the **National Health Policy target of 2.5% of GDP**.
- **Out-of-pocket expenditure (OOPE)** means direct spending by households on treatment, medicines, diagnostics and hospitalisation.
- High OOPE can push families into **poverty, debt and delayed treatment**.
- Private hospitals and household payments still form a major part of India's health financing.
- Government schemes like **PM-JAY** aim to reduce catastrophic health expenditure but insurance coverage remains limited.
- Low spending on **preventive care** is a concern, especially with rising **non-communicable diseases**.

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1.16. First Amendment and its implications for democracy and civil liberties

Context:

Recently, India completed 75 years of the **First Constitutional Amendment, 1951**. It was passed after courts struck down government actions on free speech, reservations and land reforms. It remains important because it changed the balance between **Fundamental Rights**, Parliament and State power.



Explanation:

Why the Amendment Was Brought?

- The Supreme Court protected newspapers such as *Organiser* and *Cross Roads* from government censorship.
- These judgments limited the government's power to control newspapers and public opinion.
- The Madras government continued the pre-Independence policy of reserving college seats for non-Brahmins, backward communities and other social groups. This communal reservation order was challenged before the Supreme Court.
- In Champakam Dorairajan State of Madras (1951), the Supreme Court struck down the above order for violating Article 29(2). Parliament responded through the First Constitutional Amendment, inserting Article 15(4) to permit special provisions for backward classes, Scheduled Castes and Scheduled Tribes.
- The Bihar Land Reforms Act, 1950 sought to abolish zamindari and other intermediaries. After the Patna High Court invalidated its discriminatory compensation provisions under Article 14, Parliament introduced Articles 31A and 31B and the Ninth Schedule to protect land-reform laws from constitutional challenges.
- Collectively, these judgments convinced the government that the Constitution was becoming an obstacle to its social and economic reform agenda.

What the Amendment Changed?

- It added new grounds like **public order, national security, incitement and foreign relations** to restrict free speech.
- It gave constitutional support to **reservations and affirmative action** for socially and educationally backward classes, SCs and STs.
- It protected **land reform laws** from easy legal challenges by landowners, especially in cases related to property rights.
- It created the **Ninth Schedule**, where selected laws could be placed to protect them from ordinary judicial review.

Why It Is Debated?

- The amendment reduced the strength of Fundamental Rights very early in India's democracy.
- It allowed Parliament to change the Constitution to overcome unfavourable court judgments.
- The Ninth Schedule created a method to shield laws from courts, even when rights were affected.
- Critics argue that it expanded State power at the cost of civil liberties.

Long-Term Impact:

- It created a precedent for using constitutional amendments to protect government policies.
- It influenced later debates on press freedom, sedition, public order and State control.
- It showed the continuing tension between majority rule and constitutional limits.
- Its legacy remains relevant whenever governments argue that legislative will should prevail over rights-based objections.

Conclusion:

The First Amendment was introduced to support social reform and protect government policy. However, it also weakened civil liberties and expanded State power. Its legacy shows that social justice and constitutional freedom must be balanced carefully.

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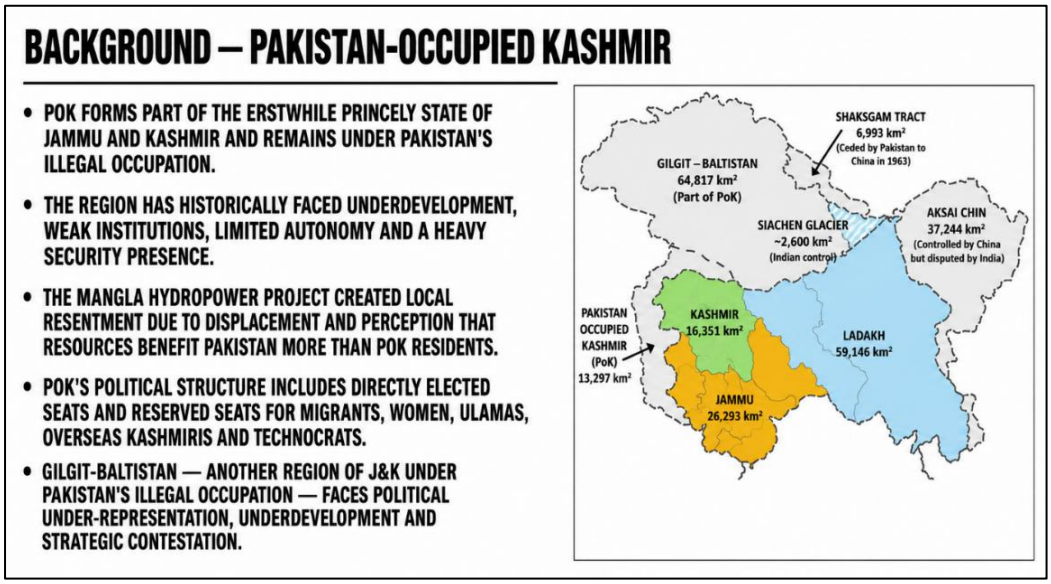
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2. INTERNATIONAL RELATIONS

2.1. Political Unrest and Representation Crisis in PoK

Context:

Pakistan-occupied Kashmir is witnessing major protests marked by public anger, state crackdown and political tension. The immediate trigger is linked to the issue of Assembly seats reserved for migrants from Jammu and Kashmir settled in Pakistan. However, the unrest reflects deeper grievances over representation, economic distress, resource control and historical neglect.



Explanation:

Economic Grievances:

- The protests initially emerged over rising electricity bills and shortages of subsidised wheat.
- Residents argue that PoK generates hydropower but continues to face high electricity tariffs.
- Public anger has also increased against the privileges enjoyed by officials amid wider economic hardship.
- Long-standing underdevelopment, unemployment and weak delivery of basic services have intensified resentment.

Democratic Representation:

- The central controversy concerns 12 Assembly seats reserved for Jammu and Kashmir migrants settled in different parts of Pakistan.
- Elections to these seats are conducted outside PoK, including in Punjab and Sindh.
- Local residents argue that these seats allow Islamabad to influence the composition of the PoK Assembly.
- In a 53-member Assembly, PoK voters directly elect only 33 members, creating a perceived democratic deficit.
- There is also resentment that funds for these representatives come from PoK's resources despite local voters not electing them.

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Political Mobilisation and State Response:

- The protests are led by the Joint Awami Action Committee, formed by traders, professionals and civil society actors.
- Authorities have responded through bans, arrests, stringent charges and police action.
- The crackdown has attracted criticism from India and concern among sections of the PoK diaspora, especially in the United Kingdom.

Wider Strategic Significance:

- Developments in PoK are linked to the broader issue of Jammu and Kashmir under Pakistan's illegal occupation.
- Gilgit-Baltistan has also witnessed grievances over political status, economic neglect and representation.
- The China-Pakistan Economic Corridor passes through Gilgit-Baltistan, which India has consistently opposed.

Conclusion:

The PoK protests combine immediate economic distress with deeper historical and political grievances. The issue of reserved seats has become a symbol of democratic deficit, federal control and unequal representation. The unrest also highlights continuing instability in areas of Jammu and Kashmir under Pakistan's illegal occupation.

Mains Practice Question:

Q. Assess the strategic significance of Pakistan-occupied Kashmir and Gilgit-Baltistan in the context of India-Pakistan relations and regional geopolitics.

(15 Marks, 250 Words)

2.2. India–Venezuela Cooperation and Global South Partnership

Context:

The Acting President of Venezuela, Delcy Rodríguez, met Prime Minister Narendra Modi on June 4, 2026. The discussions focused on expanding cooperation in energy, critical minerals, technology, agriculture, health and people-to-people ties.

Explanation:



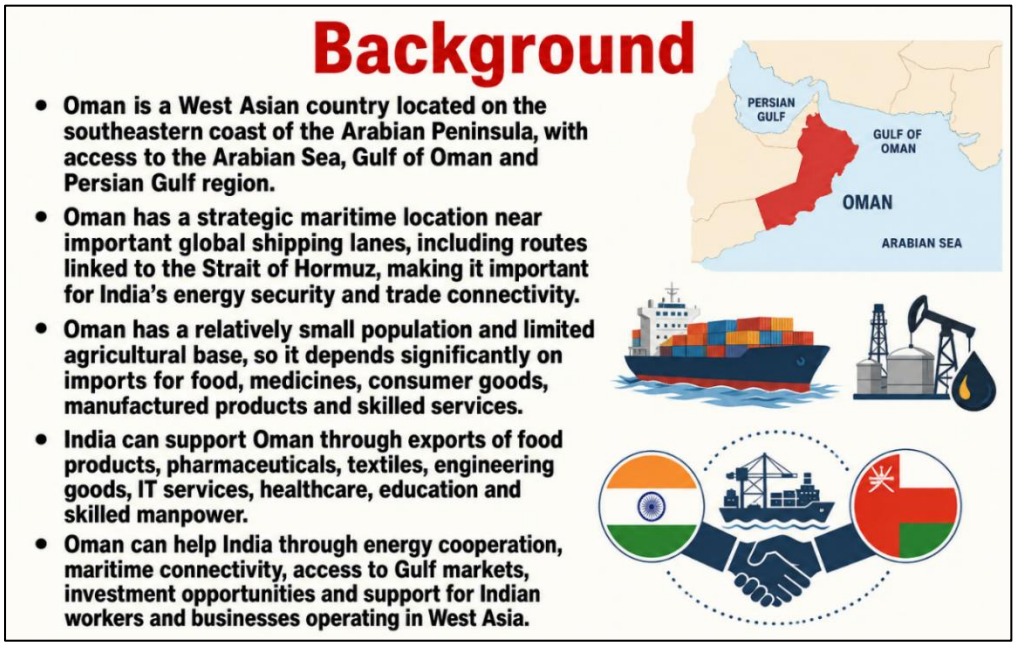
- Venezuela is a South American country located on the northern coast of the continent, with coastline along the Caribbean Sea and the Atlantic Ocean.
- Its capital is Caracas, and it is known for having one of the world's largest proven crude oil reserves.
- India–Venezuela relations are important in the context of energy security, as India has historically imported crude oil from Venezuela.
- Cooperation in critical minerals is significant because minerals are essential for renewable energy, electric vehicles, electronics and strategic technologies.
- The meeting also reflects India's wider outreach to Latin America as part of its diversified foreign policy.
- Venezuela is relevant to the Global South discourse, where developing countries seek greater voice in global trade, finance, energy and technology governance.
- People-to-people ties; health, agriculture and technology cooperation can strengthen bilateral relations beyond oil trade.

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2.3. India–Oman Trade Pact and Its Economic Promise

Context:

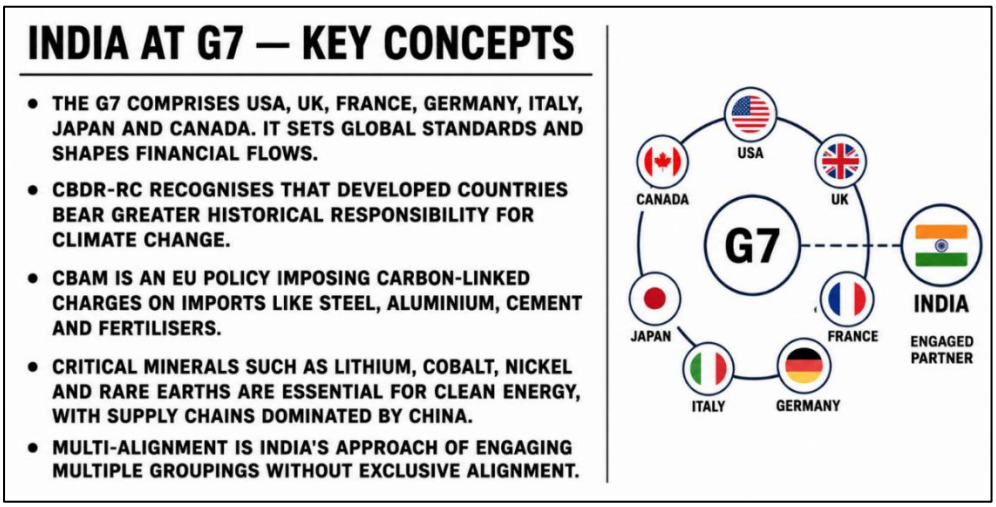
India and Oman are moving towards a **Comprehensive Economic Partnership Agreement (CEPA)** to deepen trade, investment and services cooperation. The pact is expected to reduce tariffs, expand market access and create opportunities for Indian farmers, factories, MSMEs and professionals. It is also significant because India is seeking reliable trade partners amid global uncertainty, supply chain disruptions and rising protectionism.



2.4. India's role at the G7 Summit

Context:

Prime Minister attended the G7 Summit at Evian-les-Bains, France, engaging on economic security, AI, energy transition, climate finance and development. India participates as an invited partner, using the platform to represent shared concerns of emerging economies. In a world where G7 discussions harden into global norms, early engagement is a strategic imperative.



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Explanation:

1. **Critical Minerals and Supply Chain Security:**
   - India and G7 share interest in securing critical mineral supplies and reducing **supply-chain dependence on China.**
   - India's market size and processing capacity make it a key node in emerging global mineral partnerships.
2. **Artificial Intelligence and Digital Governance:**
   - AI raises questions of **governance, safety, standards and energy demand** through data centre proliferation.
   - India's experience with **DPI (Digital Public Infrastructure)** gives it credibility in shaping global AI governance frameworks.
3. **Energy Security:**
   - India embodies the **dual reality** of expanding renewable deployment while remaining guided by affordability and energy security.
   - India can credibly represent the developing world's position on the pace and financing of the clean energy transition.
4. **Climate Finance and Development:**
   - Developed countries agreed at **Baku (2024)** to mobilise at least **$300 billion annually by 2035**, but this falls short of needs and arrives largely as loans rather than grants.
   - India must emphasise **CBDR-RC** (Common but Differentiated Responsibilities and Respective Capabilities) and advocate for reform of **multilateral development banks (MDBs).**
5. **CBAM and Trade Concerns:**
   - **CBAM** (Carbon Border Adjustment Mechanism) disproportionately impacts developing-country producers including India, whose industries remain coal-dependent due to lack of adequate finance and technology.
   - Critics argue CBAM functions as a **trade barrier** protecting European industries rather than a genuine climate instrument.
6. **Economic Security:**
   - Advanced economies increasingly use **sanctions, coercive tools and forced trade measures** that contradict free-trade principles they profess.
   - India's interest lies in **resilience that broadens options** rather than fragmentation that narrows them.
7. **India's Strategic Position:**
   - India's G7 participation, months before hosting the **BRICS Summit**, reflects **multi-alignment** rather than exclusive bloc alignment.
   - India must engage early to influence standards on technology, supply chains and minerals **before they harden into global norms.**

Conclusion:

The G7 Summit offers India a strategic platform to shape emerging global norms on AI, climate finance, trade and critical minerals. India's multi-alignment approach and development credentials uniquely position it to bridge the G7 and the Global South. In a world where today's discussions become tomorrow's rules, shaping those rules is a national interest imperative.

Mains Practice Question:

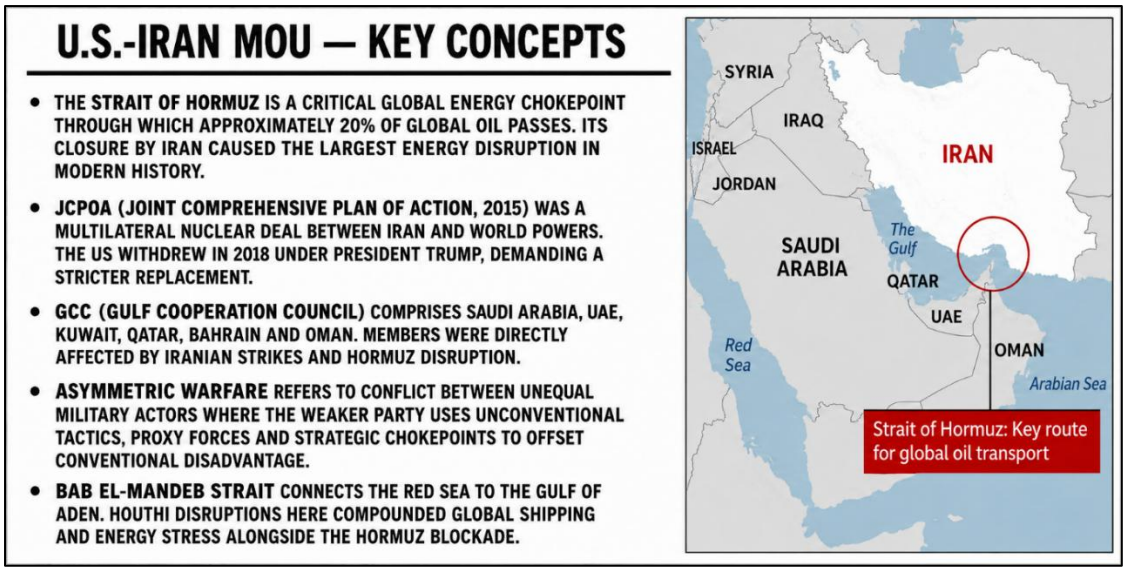
Q. Climate finance, critical minerals and digital governance have emerged as key areas of cooperation between India and the G7. Examine their significance for India's strategic and economic interests. (15 Marks, 250 Words)

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2.5. U.S.-Iran MoU and the Geopolitics of West Asia.

Context:

A U.S.-Iran Memorandum of Understanding (MoU) adopted in June 2026 provides for cessation of hostilities and a 60-day negotiation window. Unresolved issues including nuclear enrichment, Hormuz sovereignty and proxy networks make a durable settlement uncertain.



Explanation:

1. Background and Core Issues:
   - Both sides recognised asymmetric wars were **militarily unwinnable**; both lost international credibility and faced domestic discontent.
   - Key unresolved demands include lifting **US sanctions**, releasing **$100 billion in frozen assets**, Iran's **nuclear enrichment programme** and its **sovereignty claim over the Strait of Hormuz**.
   - External influencers include **Israel and Gulf Cooperation Council (GCC)** on the US side and **China, Russia and Pakistan** on Iran's side.
2. Long-Term Geopolitical Shifts:
   - **Limits of American hyperpower**: The conflict exposed the limits of US military dominance, air power doctrine and coercive diplomacy against asymmetric tactics and chokepoint leverage.
   - **Multilateralism revival**: Failure of ad-hoc coercive diplomacy may restore multilateral frameworks as the preferred mode of conflict resolution.
   - **GCC realignment**: US failure to protect GCC states from Iranian retaliation without prior consultation has seriously undermined American credibility as a **security guarantor**; GCC states are reassessing geostrategic alignments.

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- **Iran's deterrence shift:** A growing minority in Iran's leadership now views **Hormuz control as a more potent deterrence than nuclear ambiguity**, signalling a potential strategic doctrinal shift.
- **Energy implications:** Sustained disruption accelerates **peak oil** scenarios, underscores the need for **strategic petroleum reserves** and hastens the global clean energy transition.

3. **Residual Risks:**
   - Pro-Iran militias in Iraq and Lebanon may go underground, waging proxy conflicts against perceived enemies.
   - Weakening of Iran's proxy network may create a power vacuum, giving a second wind to **Sunni non-state actors** including Islamic State, al-Qaeda, Hamas and IS-Khorasan.
   - For India, Hormuz and **Bab el-Mandeb disruptions** directly threaten energy security, reinforcing the need for higher **strategic petroleum reserves** and accelerated renewable energy transition.

Conclusion:

The U.S.-Iran MoU is a fragile first step in a deeply volatile region. The geopolitical realignments triggered by this conflict will reshape West Asian and global energy architecture for decades.

Mains Practice Question:

Q. Examine how the U.S.-Iran rivalry has shaped the geopolitical and security architecture of West Asia. What are its implications for India's strategic interests?

(15M, 250 words)

2.6. Neglected Displacement Crises and Global Humanitarian Attention Gap

Context:

The Norwegian Refugee Council has listed **Sudan, Democratic Republic of Congo and Colombia** among the world's most neglected displacement crises. The report highlights that global attention and resources are often diverted towards nationalism, rearmament and conflicts in wealthy regions.

Explanation:

- Displacement crisis refers to the forced movement of people due to conflict, violence, persecution, disasters, climate stress or economic collapse.
- Displaced persons may be refugees, internally displaced persons (IDPs) or asylum seekers, depending on whether they cross an international border.
- Refugees are protected under the 1951 Refugee Convention and its 1967 Protocol, but India is not a party to these instruments.
- Internally Displaced Persons (IDPs) remain within their own country and do not receive the same international legal status as refugees.
- Norwegian Refugee Council (NRC) is an international humanitarian organisation that works for displaced people affected by conflict and crisis.

Space for Notes

- Sudan faces displacement due to civil war and armed conflict; DR Congo due to militia violence and resource conflicts; Colombia due to armed groups, drug violence and internal conflict.
- Neglected crises receive low media attention, weak diplomatic focus and inadequate humanitarian funding.

2.7. Challenges to the Enforcement of International Law

Context:

International law is meant to regulate the conduct of states and protect global peace, sovereignty, human rights and common resources. However, recent conflicts and crises show that powerful states often violate international norms with limited consequences, weakening trust in the rules-based international order.



Explanation:

1. Erosion of Legal Norms:
   - The international order was built to prevent war, aggression and unchecked state power.
   - However, conflicts in different regions show repeated violations of sovereignty, territorial integrity and humanitarian principles.
   - When powerful states act without accountability, international law appears selective and weak.
2. Violations across Regions:
   - Military interventions, territorial aggression, cross-border attacks and blockades have weakened the prohibition on the use of force.
   - Civilian bombings, sieges, starvation, chemical weapon use and forced displacement have challenged humanitarian law.
   - Human rights violations such as mass detention, torture, cultural erasure, suppression of protests and ethnic violence continue in many countries.

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3. **Weakening of Maritime, Arms-Control and Environmental Norms:**
   - Disputes in the South China Sea, Strait of Hormuz and other maritime zones show pressure on UNCLOS and freedom of navigation.
   - Arms-control regimes have weakened due to the collapse or uncertainty of treaties related to nuclear and missile systems.
   - Environmental law is also under stress due to climate inaction, illegal deforestation, biodiversity loss and weak regulation of deep-sea mining.
4. **Vacuum in Enforcement and Way Forward:**
   - International law depends on consent, reciprocity and collective enforcement, but these mechanisms weaken when powerful states refuse compliance.
   - Institutions such as the UN Security Council often remain paralysed due to great-power rivalry and veto politics.
   - International courts face limits of jurisdiction, selective cooperation and weak enforcement capacity.
   - The way forward lies in strengthening multilateral institutions, improving accountability mechanisms, reducing selective application of law, and building a global political culture that values restraint over unilateral power.

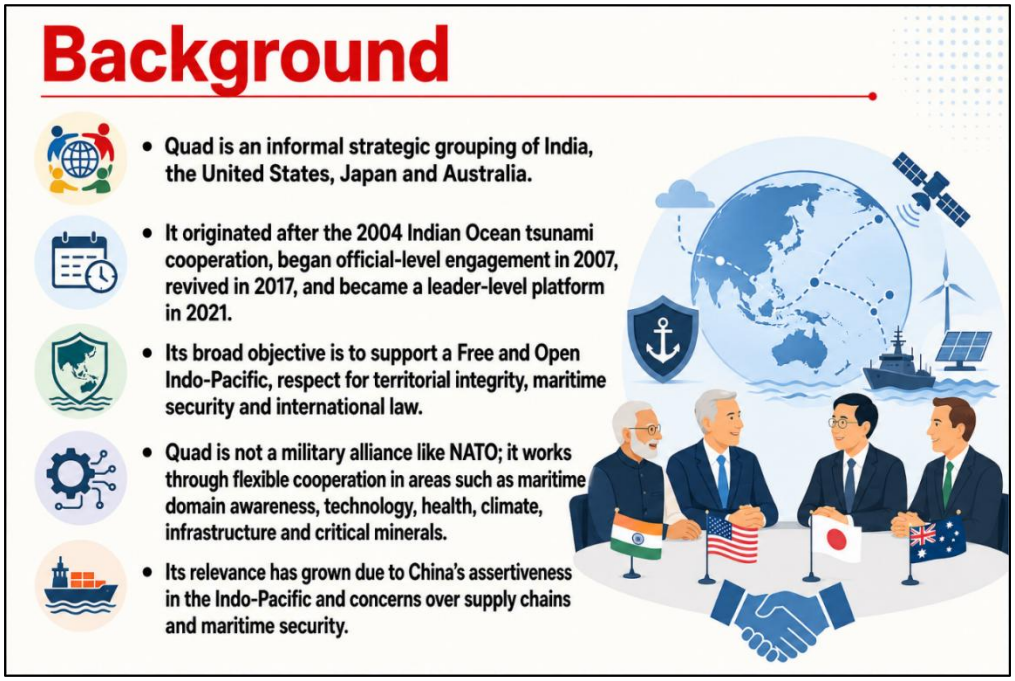
Conclusion:

International law is imperfect, but it remains the strongest defence against global disorder. The need is to rebuild respect for legal norms so that power does not become the only basis of international conduct.

2.8. Quad's Struggle to Find Momentum Amid Divergent Interests

Context:

The 11th Quad Foreign Ministers' Meeting successfully concluded on May 26, 2026, in New Delhi. The Meeting reaffirmed cooperation among **India, Australia, Japan and the United States** for a free, open and rules-based Indo-Pacific. However, the grouping is facing difficulty in maintaining momentum because members are pursuing different strategic, economic and geopolitical priorities.



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Explanation:

1. **Key Outcomes of the Meeting:**
   - The members agreed to strengthen maritime cooperation through initiatives such as **Indo-Pacific Maritime Security Collaboration**, **Maritime Domain Awareness**, and a **Quad-at-Sea Ship Observer Mission**.
   - They finalised cooperation on **critical minerals**, energy security and infrastructure.
   - A first Quad infrastructure project in **Fiji** was announced, showing focus on the Pacific Islands.
2. **Strategic Differences within Quad:**
   - The United States increasingly views Quad through the lens of Indo-Pacific strategy and China competition.
   - India seeks to balance China concerns with strategic autonomy and avoids joining a direct anti-China alliance.
   - Australia is concerned about China's pressure but remains economically linked to Beijing.
   - Japan supports Quad due to security tensions in the East and South China Seas.
3. **Challenges before Quad:**
   - Members differ on issues such as Iran, Russia, West Asia, trade, sanctions and tariffs.
   - Lack of coordination during major conflicts weakens the image of unity.
   - Delay in holding high-level summits may suggest reduced political momentum.
   - The grouping risks becoming symbolic if practical cooperation does not expand.
4. **Way Forward:**
   - Quad should focus on practical areas such as maritime security, critical minerals, clean energy, health, technology and resilient supply chains.
   - It must avoid appearing as a rigid military bloc and instead remain a flexible platform for regional public goods.
   - Better consultation among members is necessary to prevent contradictory policies.

Conclusion:

The Quad remains important for stability and cooperation in the Indo-Pacific. However, its effectiveness will depend on whether members can move beyond broad statements and align their actions on concrete regional priorities.

2.9. OPCW Finds Undeclared Chemical Weapons in Syria

Context:

The Organisation for the Prohibition of Chemical Weapons has reported the discovery of undeclared chemical weapons and related equipment in Syria. The finding raises concerns about compliance with international disarmament obligations under the Chemical Weapons Convention.

Explanation:

- **Chemical weapons** are toxic chemicals or delivery systems used to cause death, injury or incapacitation through chemical action.
- They may include **nerve agents, blister agents, choking agents and blood agents.**
- The **Chemical Weapons Convention (CWC)** prohibits the development, production, stockpiling, transfer and use of chemical weapons.

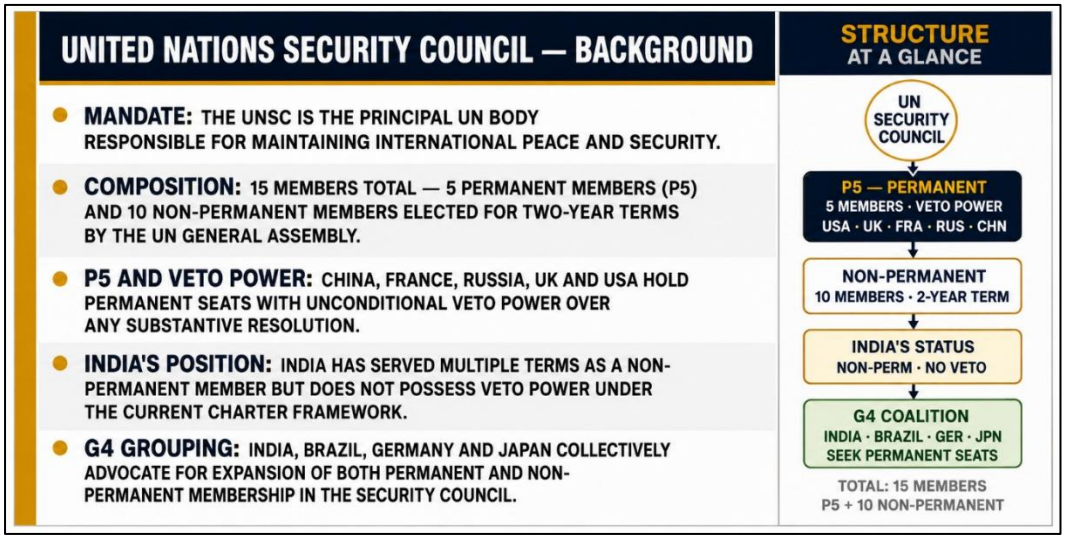
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- The **Organisation for the Prohibition of Chemical Weapons (OPCW)** is the implementing body of the CWC.
- OPCW conducts **inspections, verification, destruction monitoring and investigation of alleged chemical weapon use**.
- Syria joined the CWC in 2013 after allegations of chemical weapon use during its civil war.
- A country must declare its chemical weapon stockpiles, production facilities and related equipment to the OPCW.
- **Undeclared stockpiles** indicate possible violation of treaty obligations and weaken global non-proliferation norms.
- Chemical weapons are considered **weapons of mass destruction** because they can cause large-scale civilian casualties.

2.10. India's Claim for Permanent Membership of the UN Security Council

Context:

Recently, the demand for reform of the **United Nations Security Council (UNSC)** and India's inclusion as a permanent member has gained renewed attention. The Council continues to reflect the power structure created after the Second World War, despite major changes in global politics.



Explanation:

Need for Reform:

- The UNSC reflects the world of 1945 rather than present geopolitical realities.
- Asia has about 60% of the global population, but only China has a permanent seat.
- Africa and Latin America also lack permanent representation.
- Broader membership would improve the Council's legitimacy and credibility.

India's Claim:

- India is the world's largest democracy and represents nearly one-sixth of humanity.
- It is a major economy influencing trade, technology, energy and development finance.
- It has one of the world's largest armed forces, significant defence capabilities and a credible nuclear triad based on deterrence.
- India's inclusion would strengthen the representation of developing countries and Asian security interests.

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Contribution to Global Governance:

- India has been a major contributor to United Nations peacekeeping operations since 1948 and has suffered significant casualties.
- It supports maritime security, freedom of navigation and the **United Nations Convention on the Law of the Sea (UNCLOS).**
- Through the **International Solar Alliance**, its G20 presidency and *Vasudhaiva Kutumbakam*, India has promoted climate action and cooperation between developed and developing countries.

Obstacles to Reform:

- Existing permanent members may resist changes that could reduce their influence.
- The G4 proposes six new permanent seats, including two each for Asia and Africa.
- Earlier reform increased non-permanent seats from six to ten but did not change permanent membership.
- Consensus-based decisions can also create informal vetoes by allowing members to delay statements and sanctions.

Conclusion:

India's inclusion would make the UNSC more representative and aligned with present global realities. It would recognise India's contribution to peace, development and multilateralism. Reform is essential for the Council's continued relevance.

Mains Practice Question:

Q. **"The present structure of the United Nations Security Council reflects the geopolitical realities of 1945 rather than the twenty-first century." Discuss.**

(10M, 150 Words)

2.11. India expanded its nuclear arsenal in 2025, says SIPRI

Context:

According to Stockholm International Peace Research Institute (SIPRI) Yearbook 2026, India modestly expanded its nuclear arsenal in 2025, increasing its stockpile from around 180 to 190 warheads. The report highlights India's focus on longer-range delivery systems amid tensions with China and Pakistan.



Explanation:

- SIPRI is a Sweden-based institute studying arms control, disarmament and global military expenditure.
- Nuclear arsenal includes nuclear warheads and delivery systems such as missiles, aircraft and submarines.
- India follows credible minimum deterrence and a declared No First Use nuclear doctrine.
- India's nuclear delivery capability is based on the nuclear triad: land-based missiles, aircraft and sea-based platforms.
- SIPRI noted rising nuclear modernisation by all nuclear-armed states.
- India was the 5th largest military spender in 2025 after the US, China, Russia, and Germany.
- India was the second-largest importer of major arms during 2021-25 after Ukraine.

2.12. New Nepal and India's Diplomatic Balancing Act

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Context:

India and Nepal share a historically close relationship based on geography, culture, economy, religion and people-to-people ties. However, the rise of new political actors and youth-driven politics in Nepal has created a need for India to recalibrate its diplomatic approach. India must ensure that its engagement is seen as respectful partnership rather than dominance, especially in the backdrop of increasing Chinese influence.

Background:



Explanation:

- **Changing political landscape:** Nepal's politics is no longer controlled only by traditional parties and old political networks. New leaders and parties represent younger voters, urban aspirations and anti-establishment sentiment. India must engage this new political class seriously.
- **Limits of old diplomacy:** India has traditionally dealt with long-term political actors in Nepal. However, relying only on established elites may reduce India's ability to understand new political moods, public opinion and youth nationalism.
- **Perception challenge:** A major diplomatic problem is that India's role is sometimes viewed in Nepal as overbearing. Past disputes related to constitutional issues, border concerns and economic disruptions have strengthened this perception among some sections.
- **Need for respectful engagement:** India should project itself not as a dominant power but as an equal and reliable partner. Smaller neighbours value sovereignty, dignity and non-interference, especially when dealing with a much larger country.
- **Development diplomacy:** India's approach should focus on visible benefits such as digital connectivity, UPI linkages, road and rail connectivity, energy cooperation, hydropower, trade facilitation, tourism and employment.
- **Strategic importance:** Nepal is vital for India's Himalayan security, border management, river systems, cultural diplomacy and regional stability. Instability or anti-India sentiment in Nepal directly affects India's security and neighbourhood policy.

- **China factor:** China can exploit anti-India sentiment by projecting itself as an alternative development and strategic partner. Therefore, India must avoid arrogance and prevent diplomatic space from being ceded to Beijing.

Conclusion:

India–Nepal relations are old and deeply rooted, but they cannot be taken for granted. A changing Nepal requires India to combine strategic sensitivity, economic cooperation and respectful diplomacy. India's goal should be to make Nepal view India as a trusted partner, not as a bullying neighbour.

Mains Practice Question:

Q. Examine how development diplomacy and people-to-people engagement can strengthen India–Nepal relations amid changing geopolitical realities in South Asia. (15 Marks, 250 Words)

Space for Notes

3. ECONOMY

Space for Notes

3.1.AI company valuations and technology investment bubbles

Context:

SpaceX has completed the largest IPO in history, listing on Nasdaq in June 2026, while Anthropic and OpenAI remain in confidential filing stages for their own public listings. These moves open the AI boom's financial gains - until now confined to private investors - to public markets, amid serious debate over whether valuations reflect real business fundamentals.



Explanation:

The Three Major Listings:

- SpaceX has listed, while Anthropic and OpenAI are simultaneously pursuing public listings at historically high valuations, collectively representing the largest concentration of AI-linked IPO activity ever seen.
- SpaceX has evolved from a rocket launch startup into a company spanning space transportation, Starlink satellite internet, and AI infrastructure, with a self-identified total addressable market of $28.5 trillion.

Valuation Concerns and the Bubble Debate:

- SpaceX priced its IPO near a $1.75 trillion valuation, but its stock has since fallen sharply, undercutting confidence in mega-cap tech listings.
- Investors are seen placing overly optimistic bets on unproven AI-linked businesses and future growth projections.
- SpaceX's economic moat is rated narrow and indeterminate, with uncertainty around its Colossus I and II data centre commercialisation.
- AI computational infrastructure in orbit remains largely speculative, with no proven revenue model.
- Unlike Tesla's 2010 IPO - centred on a tangible product - SpaceX's valuation rests heavily on Starlink's projected growth and AI economics.
- The broader concern is AI-washing: linking business models to AI without demonstrating actual revenue or profit fundamentals.
- Most generative AI gains have so far accrued to private investors and venture capital; SpaceX's listing offers the first direct entry point for public investors, with Anthropic and OpenAI expected to follow.

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How Indian Investors Can Participate:

- Indian residents cannot directly participate in US IPOs through domestic demat accounts but may do so via overseas brokerage accounts funded under the RBI's Liberalised Remittance Scheme (LRS).
- Under LRS, Indian residents can remit up to $250,000 per financial year for permissible capital and current account transactions, including foreign IPO investments.
- Chances of allotment remain low, as roughly 70% of US IPO allocations go to institutional investors; shares can alternatively be purchased post-listing on public exchanges.

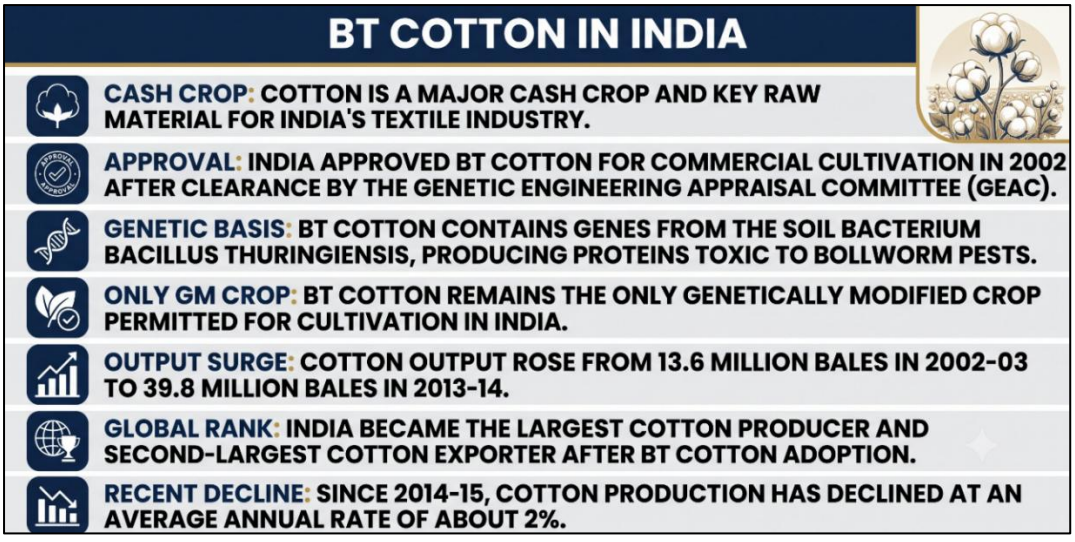
Conclusion:

SpaceX's completed listing, alongside the pending filings by Anthropic and OpenAI, marks a structural shift in how AI-driven value moves from private capital networks to public markets. However, SpaceX's sharp post-listing price swing raises legitimate concerns about speculative excess. Their long-term success will depend on translating technological ambition into verifiable financial performance.

3.2. Cotton Productivity Mission and Challenges

Context:

In 2026, the Union Cabinet approved the **Mission for Cotton Productivity** with an outlay of **₹5,659 crore** for the period **2026-27 to 2030-31**. The mission aims to raise India's cotton lint productivity from **441 kg/hectare** to **755 kg/hectare by 2031**, amid concerns over falling output, rising imports and stagnating yields.



Explanation:

Why Cotton Productivity Mission Was Needed?

- India's cotton yields have stagnated despite a large cultivated area.
- Domestic cotton production has slowed, affecting farmers, textile mills and export competitiveness.
- India shifted from being a major exporter to importing about **4 million bales in 2025-26**.
- The mission seeks to restore productivity, farmer income and raw material security for the textile sector.

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Role of Bt Cotton in India:

- The first Bt cotton hybrids used the **cry1Ac gene** to resist bollworm attacks.
- In **2006**, GEAC approved **Bollgard II**, which contained two stacked genes for stronger pest resistance.
- Bt cotton helped reduce bollworm damage and contributed to rapid production growth.
- However, over time, pest resistance, climate stress and technological stagnation reduced its effectiveness.

Why Cotton Production Declined:

- Next-generation cotton technologies such as **Bollgard II with Roundup Ready Flex** and **Bollgard III** were developed but not released.
- Regulatory uncertainty slowed commercialisation of advanced genetic technologies.
- Seed price controls and reduced trait fees weakened incentives for private research and innovation.
- Farmers faced rising problems of pest resistance, weeds, climate stress and stagnant yields.
- Weak seed quality, limited extension support and inadequate value-chain infrastructure also affected productivity.

Way Forward:

- India must develop **climate-resilient, pest-resistant and high-yielding cotton varieties**.
- Public research institutions, universities and private companies should collaborate in cotton biotechnology and seed innovation.
- Farmers need timely access to certified and high-quality seeds.
- Extension services must deliver scientific advisories, weather information and best farming practices.
- Cotton ginning, storage, processing and marketing infrastructure should be modernised.
- The mission must be implemented through outcome-based monitoring and convergence with existing agricultural schemes.

Conclusion:

The Cotton Productivity Mission is important for farmers, textile industries and India's export competitiveness. However, higher productivity cannot come only through financial allocation. India needs science-led reforms, better seed technology, supportive regulation and stronger value chains to revive cotton production.

Mains Practice Question:

Q. **India's cotton productivity challenge is not merely an agricultural issue but also a technological and regulatory issue. Discuss.**

3.3. IS 20201:2026 for Community Seed Bank Management

Context:

The Bureau of Indian Standards (BIS) has released IS 20201:2026 – Community Seed Bank Management Requirements to standardise the functioning of Community Seed Banks across India. The standard aims to conserve indigenous crop varieties, strengthen agrobiodiversity, enhance climate resilience, and contribute to Sustainable Development Goal (SDG) 2 (Zero Hunger)

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Explanation:



- Community Seed Banks (CSBs) are locally managed institutions that collect, conserve, multiply and distribute traditional and indigenous seeds.
- They play a key role in conserving agrobiodiversity, genetic resources and climate-resilient crop varieties.
- Indigenous landraces often possess traits such as drought tolerance, pest resistance and adaptability to local conditions.
- CSBs support in-situ conservation, seed sovereignty, food security and sustainable agriculture.
- The new BIS standard (IS 20201:2026) provides guidelines for seed collection, storage, documentation, quality assurance and community participation.
- The initiative aligns with SDG 2 (Zero Hunger), climate adaptation, biodiversity conservation and sustainable livelihood goals.

3.4. Solar firms move High Court over 'unreasonable' ALMM List-II rule affecting new solar projects

Context:

Solar industry associations from Karnataka, Kerala and Tamil Nadu have moved the Karnataka High Court against a Centre's rule requiring most new solar projects commissioned after June 1, 2026 to use domestically made solar cells.

Explanation:

- **ALMM** stands for the Approved List of Models and Manufacturers, a compulsory regulatory framework established by India's Ministry of New and Renewable Energy (MNRE).
- ALMM framework ensures that solar and renewable equipment used in government-backed or subsidized projects meets strict quality, efficiency, and domestic-sourcing standards.
- The ALMM framework classifies components into various sub-lists.
- ALMM List-I covers approved domestic solar module manufacturers, while ALMM List-II covers domestic solar cell manufacturers.
- Solar modules are made by assembling solar cells, which convert sunlight into electricity through the photovoltaic effect.
- India has high solar module capacity, but relatively lower upstream solar cell manufacturing capacity.
- The mandate aims to reduce import dependence, especially on China, and promote Atmanirbhar Bharat, energy security and domestic value addition.
- However, India's domestic cell capacity is still limited and costlier, which may raise project costs, delay solar projects, and make earlier bids commercially unviable. Industry concerns include price disparity, supply shortage, project delays and tariff impact.

3.5. Cabinet Approves ₹10,000 Crore ATF Price Stabilisation Fund

Context:

The Union Cabinet has approved a one-time ₹10,000 crore budgetary support to oil-marketing companies to stabilise Aviation Turbine Fuel prices. The move aims to protect airlines and passengers from fuel price shocks caused by rising crude oil prices and West Asia tensions.

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Explanation:

- Aviation Turbine Fuel (ATF) is the specialised fuel used by jet aircrafts and forms a major part of airline operating costs.
- ATF is formed during the refining of crude oil. Hence, ATF prices are linked to international crude oil prices and global supply disruptions.
- West Asia war tensions increasing crude oil & ATF prices because the region is central to global oil production and transport routes.
- Higher ATF prices raise airline costs and may lead to flight cancellations, reduced routes and higher airfares.
- The fund will provide interest-free advances to oil-marketing companies such as IOC, BPCL and HPCL.
- Airlines will procure ATF from participating OMCs until the support amount is recovered.
- Once ATF prices moderate, the differential amount will be recovered and returned to the government.
- The fund is designed as a self-sustaining revolving mechanism.

3.6. Index of Services Production with 2024–25 Base Year

Context:

The Ministry of Statistics and Programme Implementation will release the first Index of Services Production for April 2026 on July 14, 2026. The index will measure short-term changes in India's services-sector output with 2024–25 as the base year.

Explanation:



- Index of Services Production is a new macroeconomic indicator to track monthly growth in the services sector.
- It will act as the services-sector counterpart of the Index of Industrial Production, which measures industrial output.
- It will be released with a 60-day lag, generally on the 29th day of every month.
- The first release will cover April 2026 data and will be published on July 14, 2026.
- It is prepared by the Ministry of Statistics and Programme Implementation.
- The methodology was finalised with a Technical Advisory Committee constituted in May 2025.
- It will help improve tracking of services-led growth, GDP estimates, high-frequency economic monitoring and policy planning.

3.7. India's Aquatic Animal Production and Seafood Export Growth

Context:

The FAO's State of World Fisheries and Aquaculture 2026 report (SOFIA 2026) and MPEDA's FY 2025–26 trade data together highlight India's rising strength in aquatic production and seafood exports.

Space for Notes

Key Concepts:

- Aquaculture means farming aquatic organisms under controlled conditions. It includes aquatic animals such as fish, shrimp, crabs and molluscs, and aquatic plants such as algae and seaweeds.
- Capture fisheries involve harvesting naturally occurring wild aquatic animals.
- Capture fisheries include marine capture from seas and oceans, and inland capture from rivers, lakes, reservoirs and wetlands.
- The FAO is a United Nations specialised agency headquartered in Rome. SOFIA is its biennial flagship fisheries report.

India's Global Position:

- India produced 9% of global aquatic animals in 2024 and ranked second after China.
- It ranked first in inland water catches with 2.2 million tonnes.
- India ranked second in aquaculture and contributed 12% of global farmed output.

Record Seafood Exports:

- India's seafood exports reached a record ₹73,890 crore ($8.46 billion) in FY 2025–26.
- Frozen shrimp remained the dominant export item because of strong global demand.
- Other major exports included fish, squid, cuttlefish and dried marine products.
- The United States, China, the European Union and Japan were major markets.
- The Marine Products Export Development Authority, under the Ministry of Commerce and Industry, promotes the sector.

Conclusion:

India's dual strength in production and exports reinforces its role in global food security and the blue economy. Sustained growth will depend on balancing export competitiveness with resource sustainability.

3.8. India to Replace WPI with Producer Price Index

Context:

India launched a new Producer Price Index (PPI) framework and a revamped Wholesale Price Index (WPI) series on June 15, 2026. The Department for Promotion of Industry and Internal Trade (DPIIT) shifted both metrics to an updated 2022-23 base year, replacing the previous 2011-12 benchmark.

Explanation:

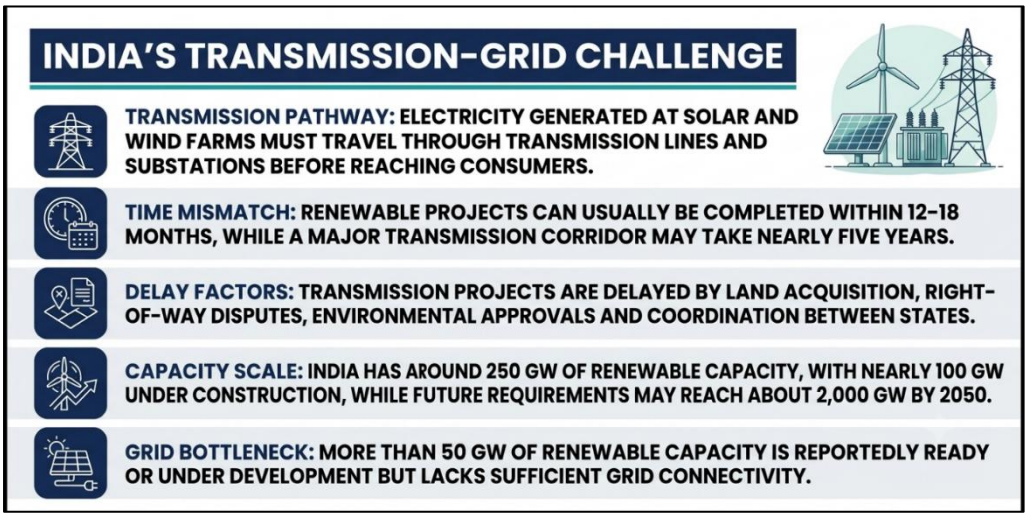
- The government will run WPI and PPI simultaneously for five years, after which WPI will be fully discontinued by 2031.
- The new series includes Output PPI, Trial Input PPI, and Services PPI to provide a more realistic picture of price movements in the economy.
- The revised WPI basket expanded from 697 to 957 items, adding categories such as solar, wind, and nuclear electricity.
- Wholesale Price Index measures price changes at the wholesale level and was previously used for inflation tracking and price escalation clauses.
- Producer Price Index measures price changes from the producer's point of view and is considered closer to global inflation measurement practices.
- Output PPI tracks prices received by producers for goods and services they sell.
- Input PPI (trial basis) tracks prices paid by producers for raw materials and intermediate inputs.
- Services PPI covers seven services: Banking, Securities Transactions, Insurance, Pension Fund Management, Railways, Air (Passenger), and Telecom.

3.9. India's Renewable Power and the Transmission-Grid Challenge

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Context:

Solar and wind power have become India's cheapest sources of new electricity, costing nearly ₹3.5 per unit. However, many completed renewable-energy projects cannot supply electricity because transmission lines and substations are not ready. India must therefore expand renewable generation and grid infrastructure together.



Explanation:

Major Problems:

- Mismatch in project timelines: Renewable plants are constructed much faster than transmission lines. For example, a solar park may be completed in Rajasthan within 18 months, but it cannot supply electricity if the transmission corridor connecting it to demand centres is still under construction.
- Underuse of transmission lines: Solar projects generate mainly during the day. Their transmission connections remain partly unused during evenings and nights.
- Location mismatch: Large solar and wind projects are often located far from cities and industries where electricity demand is concentrated. This requires long-distance transmission.
- Variable generation: Solar output falls after sunset, while wind generation changes with weather conditions. Without storage and balancing arrangements, the grid may face sudden shortages or excess supply.
- Limited substation capacity: Even when transmission lines exist, nearby substations may not have enough capacity to receive and distribute additional renewable electricity.
- Old transmission technology: Conventional conductors may sag during high temperatures, reducing their ability to carry electricity precisely when summer demand is high.
- Poor coordination: Renewable parks, storage facilities, transmission corridors and substations are often planned separately, leading to delays and stranded power.

Better Use of Existing Infrastructure:

- Batteries placed near solar and wind farms can store surplus electricity and supply it during evenings and peak-demand hours. This could help accommodate nearly 400 GW of additional clean energy.

Space for Notes

- Old or high-cost coal plants often operate below capacity but possess strong transmission connections. Renewable projects located nearby can share these links and potentially support around 100 GW of additional capacity.
- Projects near existing substations can be connected more quickly and cheaply. With batteries, such locations could enable over 100 GW of renewable power.
- Replacing conventional wires with high-temperature, low-sag conductors can nearly double carrying capacity without constructing new towers or acquiring fresh land.
- Together, storage, shared connections, substation-based projects and reconductoring could unlock nearly 1,000 GW within the existing grid network.

Policy Measures:

- New transmission lines should use advanced conductors and be designed to integrate storage.
- Renewable zones, substations and transmission corridors should be planned together.
- States should require suitable renewable projects to include battery storage.
- Procurement should consider long-term efficiency, not merely the lowest initial cost.

Conclusion:

India's renewable-energy challenge is no longer limited to producing cheap electricity; it also involves transporting and balancing it reliably. Better use of existing infrastructure, storage and modern conductors can reduce delays. Coordinated grid planning is essential for affordable and round-the-clock clean power.

Mains Practice Question:

Q. **Examine the challenges associated with integrating large-scale renewable energy into India's electricity grid. Suggest suitable technological and policy measures to address them.** (15M, 250 Words)

3.10. India Becomes the World's Leading Ship-Recycling Nation

Context:

India became the world's largest ship-recycling nation in 2025, accounting for 35.4% of global recycling, according to UNCTAD. It achieved the ship-recycling target of Maritime India Vision 2030 five years ahead of schedule.

Explanation:

- Ship recycling involves dismantling end-of-life vessels to recover steel, machinery and other reusable materials.
- It supports the circular economy by reducing waste and returning scrap metal to productive use.
- India's major ship-recycling centre is Alang-Sosiya in Gujarat, one of the world's largest ship-breaking clusters.
- The Recycling of Ships Act, 2019 regulates safe and environmentally sound ship recycling in India.
- It aligns domestic law with the Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships.
- The Convention was adopted under the International Maritime Organization; India ratified it in 2019.

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3.11. Assam - Nagaland Mineral Oil Operations MoU

Context:

The Centre, Assam and Nagaland signed a tripartite MoU to facilitate mineral oil operations in the Assam–Nagaland boundary areas. The agreement aims to promote energy exploration, investment and cooperative federalism in the Northeast.

Explanation:

- Assam and Nagaland share boundary areas that have long witnessed administrative disputes affecting oil and gas exploration.
- The MoU enables coordinated mineral oil operations in disputed/boundary areas through Centre–State cooperation.
- It is linked to India's energy security, domestic hydrocarbon production and reduction of import dependence.
- Northeast India has significant oil, natural gas and mineral reserves, especially in Assam, Nagaland and surrounding basins.
- The agreement reflects cooperative federalism, resource-sharing, conflict resolution and regional economic development.
- It also connects with Northeast development, peace accords, AFSPA reduction, investment and Act East Policy

3.12. PMKVY and Skill Development Implementation Gaps

Context:

Parliament's Public Accounts Committee has criticised the implementation of the Pradhan Mantri Kaushal Vikas Yojana after citing findings of the CAG audit report. The concerns include mismatch between training and market demand, poor placement outcomes, weak planning, and fraudulent certification cases.

Explanation:

- Pradhan Mantri Kaushal Vikas Yojana (PMKVY) is the flagship skill development scheme of the Ministry of Skill Development and Entrepreneurship (MSDE).
- It was launched in 2015 to provide industry-relevant skill training to Indian youth and improve their employability.
- The scheme is implemented mainly through training partners, sector skill councils and certification agencies under the skill development ecosystem.
- CAG is a constitutional authority under Article 148 and audits government expenditure to ensure accountability and financial propriety.

Public Accounts Committee (PAC):

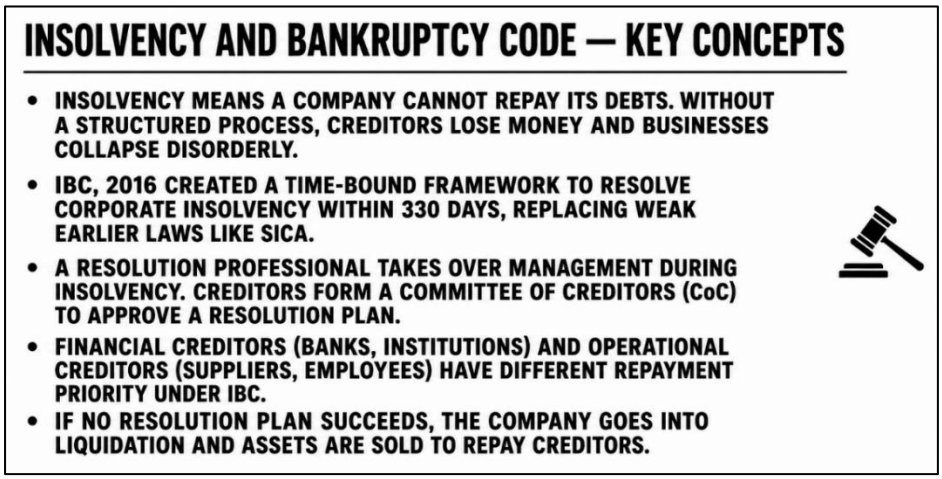
- Established in 1921 under the Government of India Act, 1919.
- Comprises 22 members (15 Lok Sabha, 7 Rajya Sabha); one-year term; no Minister can be a member.
- Chairperson appointed by the Lok Sabha Speaker; convention since 1967 reserves the post for the Opposition.
- Examines Appropriation Accounts, Finance Accounts, and CAG audit reports to ensure public money is spent legally and efficiently.
- CAG is often called the committee's "friend, philosopher, and guide."

3.13. Equity in Corporate Insolvency Resolution

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Context:

When a company cannot repay its debts, it becomes **insolvent**. India's IBC, 2016 created a structured, time-bound process to resolve such situations. The 2026 Amendment introduces Creditor-Initiated Insolvency Resolution Process (CIIRP) as a faster alternative, but its restricted access raises fairness concerns.



Explanation:

1. Core Problem:
   - Companies enter markets easily but face long delays when exiting through formal insolvency, called the **Chakravyuha Challenge**.
   - Litigation and procedural gaps slow **CIRP (Corporate Insolvency Resolution Process)**, destroying business value in the process.
   - Under CIRP, a **Resolution Professional** takes over management and creditors form a **Committee of Creditors (CoC)** to approve a resolution plan.
   - If no plan succeeds, the company goes into **liquidation** and assets are sold to repay creditors.
2. What CIIRP Does:
   - Unlike CIRP, where management loses control immediately, **CIIRP** lets existing management continue under a **resolution specialist's supervision**.
   - It reduces court involvement, preserves business continuity and enables faster restructuring.
   - It is a less disruptive alternative for companies facing short-term financial stress.
3. The Vidarbha Industries Issue:
   - Earlier, **National Company Law Tribunal** (NCLT) could accept or reject insolvency applications even when debt and default were clearly proven.
   - The 2026 Amendment replaces **"may"** with **"shall"**, making admission compulsory when debt and default are proven through **information utility records**.
   - This protects creditors but may pressure companies facing only temporary cash flow problems.
4. Restricted Access Concern:
   - CIIRP can only be started by **"notified financial institutions"**, creating an unfair hierarchy among creditors.

Space for Notes

- Smaller financial creditors and operational creditors are forced into the more aggressive CIRP just to recover money.
- The **Swiss Ribbons** judgment justified the financial-operational creditor distinction under **Article 14**, but this new sub-classification within financial creditors lacks similar legal justification.
- Concentrating power in notified institutions weakens **Inter-Creditor Agreements** and makes restructuring less fair.

5. **Way Forward:**
   - A **Universal CIIRP** should allow any financial creditor backed by **51% of total financial debt** to initiate proceedings.
   - This replaces institutional identity with **financial exposure** as the basis for initiation.
   - Both **US Chapter 11** and **UK Part 26A** follow this principle – access based on financial stake, not regulatory status.

Conclusion:

India's insolvency system needs speed, fairness and value preservation. Limiting CIIRP access to select institutions weakens the reform's broader impact. A universal, exposure-based model can make India's insolvency framework more balanced and globally competitive.

3.14. Challenges in India's FTAs

Context:

India now has 15 Free Trade Agreements covering 27 countries. Another nine agreements are under negotiation, and once finalised, India's FTA partners would cover around 69 countries and nearly 75% of India's exports. This makes FTAs central to India's trade policy, but India's past experience shows four major challenges that demand careful attention.



Explanation:

1. **Challenge One: Rising Trade Deficit:**
   - India's FTA experience shows that imports from partner countries have often increased faster than exports.
   - After some agreements, India's trade deficit with partners such as ASEAN, Japan and South Korea widened significantly.
   - This means that tariff reduction alone does not guarantee export growth unless Indian firms are globally competitive.

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- The core problem is that partner countries often use India's large market more effectively than India uses their markets.
- Therefore, India must evaluate whether each FTA will genuinely expand exports or merely increase cheaper imports.

2. **Challenge Two: Low Utilisation of FTA Benefits:**
   - Many Indian exporters do not fully use the tariff concessions available under FTAs.
   - This happens due to complex paperwork, rules of origin requirements, certification procedures and lack of awareness among exporters.
   - Small and medium enterprises often avoid FTA procedures because the compliance burden is higher than the expected tariff benefit.
   - As a result, India may negotiate tariff concessions but fail to convert them into actual export gains.
   - Better exporter awareness, digital certification, trade facilitation and sector-specific support are necessary.
3. **Challenge Three: Inverted Duty Structure:**
   - An inverted duty structure occurs when raw materials or intermediate goods face higher duties than finished products.
   - Under such conditions, finished goods from FTA partners enter India at low or zero duty, while Indian manufacturers pay higher input costs.
   - This makes domestic manufacturing less competitive.
   - Sectors such as chemicals, plastics, metals, electronics and engineering goods can be affected.
   - India must align industrial tariffs with FTA commitments to protect domestic value addition.
4. **Challenge Four: Relocation of Manufacturing:**
   - If it becomes cheaper to manufacture in partner countries and export duty-free to India, companies may shift production abroad.
   - This creates the risk of "Make in ASEAN, sell in India" instead of "Make in India".
   - Third-country firms may also route goods through FTA partners to access India's market indirectly.
   - Strong rules of origin, anti-circumvention checks and domestic production incentives are essential.
   - FTAs should support India's manufacturing base, not weaken it.

India–Oman CEPA as a Smart FTA Example:

- The India–Oman CEPA provides opportunities in textiles, chemicals, engineering goods, pharmaceuticals, food products, services and professional mobility.
- Oman's strategic location near the Gulf, Arabian Sea and East Africa can help India use it as an export and logistics gateway.
- Ports such as Sohar, Duqm and Salalah can support Indian trade with Gulf and African markets.

Conclusion:

India should pursue FTAs, but with stronger economic strategy and domestic preparedness. Future agreements must correct tariff distortions, improve FTA utilisation, prevent import dependence and strengthen manufacturing. The India–Oman CEPA shows that FTAs can be beneficial when market access is combined with services mobility, logistics advantage and strategic connectivity.

Mains Practice Question:

Q. **Free Trade Agreements can accelerate economic growth, but their benefits depend on domestic competitiveness. Discuss.** (10M, 150 Words)

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3.15. HDFC Bank's Dollar Bond Issue and Its Significance

Context:

HDFC Bank has raised $750 million, approximately ₹7,000 crore, through five-year senior unsecured dollar-denominated bonds in the international market. The successful issue reflects strong foreign-investor confidence in the bank and highlights the growing ability of Indian banks to access global debt markets.

Explanation:

- **Bond issue:** A bond is a debt instrument through which a bank borrows money from investors. The bank pays interest during the bond's tenure and repays the principal amount at maturity.
- **Key features:** The bonds mature in June 2031 and are listed on the India International Exchange and NSE IFSC at GIFT City. The proceeds will support general banking activities, particularly overseas operations.
- **Coupon rate:** The bonds carry a fixed annual coupon rate of 5.067%, payable semi-annually. Thus, an investor holding bonds worth $1,000 would receive approximately $50.67 annually as interest.
- **Senior unsecured bonds:** "Senior" means these bondholders receive repayment before subordinated or junior debt holders if the bank is liquidated. "Unsecured" means that no specific asset has been pledged as collateral; repayment depends primarily on the bank's financial strength and creditworthiness.
- **Credit quality:** The bonds received investment-grade ratings of Baa3 from Moody's and BBB from S&P, indicating a relatively low risk of default.

Advantages of Dollar-Denominated Bonds:

- Provide access to a large and diversified global investor base.
- Supply foreign currency for overseas lending, trade finance and expansion.
- Reduce dependence on domestic deposits and borrowing markets.
- Improve the international visibility of Indian banks.

Disadvantages and Risks:

- Rupee depreciation increases the domestic cost of interest and principal repayment.
- Borrowing costs are affected by US interest rates and global volatility.
- International issuance involves additional regulatory and compliance costs.

Significance:

- The issue demonstrates confidence in India's banking system and the GIFT City financial ecosystem. It may encourage other well-rated Indian banks to raise foreign funds, diversify liabilities and expand overseas, while carefully managing currency and repayment risks.

3.16. Jio Platforms Files DRHP for India's Largest Proposed IPO

Context:

Jio Platforms has filed its Draft Red Herring Prospectus (DRHP) with SEBI for an IPO comprising a fresh issue of up to 27 crore equity shares. The offering may raise ₹35,000–₹40,000 crore, potentially making it India's largest IPO.

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Explanation:

- An Initial Public Offering (IPO) is the first sale of an unlisted company's shares to the public in the primary market.
- **Draft Red Herring Prospectus (DRHP):** A preliminary document filed by a company with the market regulator before an IPO, containing business and financial details but not the final issue price or number of shares.
- It is filed with the Securities and Exchange Board of India (SEBI), the statutory regulator of India's securities market.
- Under the book-building process (a market-driven price discovery mechanism), investors place bids within a specified price band. The final IPO price is determined based on the demand received at different price levels. For example, if an IPO has a price band of ₹100–₹120 and most investors bid at ₹118–₹120, the final issue price may be fixed close to ₹120.
- A fresh issue creates new shares, raises capital for the company and dilutes existing ownership.
- An Offer for Sale (OFS) involves existing shareholders selling shares; the company receives no proceeds.
- Jio proposes a fresh issue and plans to use a major part of the proceeds to repay its subsidiary's debt.
- After allotment, shares are listed and traded in the secondary market.

3.17. Price Support Scheme Procurement for Pulses and Oilseeds

Context:

The Centre has approved large-scale procurement of pulses and oilseeds under the Price Support Scheme (PSS) in Uttar Pradesh, Gujarat, Tamil Nadu and Haryana. The move aims to ensure MSP benefits to farmers and protect them from distress sales when market prices fall.

Explanation:

Understanding MSP and PSS:

- Minimum Support Price (MSP) is the assured price announced by the government before the sowing season to protect farmers from a sharp fall in market prices.
- MSP by itself is only an announced price - it does not guarantee an actual buyer. The **Price Support Scheme (PSS) is the implementation mechanism** that makes MSP effective: it is activated when market prices fall below MSP, triggering direct government procurement of the crop from farmers at the MSP rate.
- PSS mainly covers pulses, oilseeds and copra - as distinct from cereals like wheat and rice, which have separate procurement systems.
- PSS operates under the broader PM-AASHA framework, which brings together multiple price-support mechanisms for farmers.
- Procurement under PSS is carried out by designated agencies such as NAFED, along with other state/central agencies.
- Procurement of moong, urad and groundnut has been approved across the four states.
- Uttar Pradesh is the biggest beneficiary, with MSP procurement worth more than ₹1,490 crore.

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3.18. Quality Control Order (QCO) on Cotton Bales

Context:

The Ministry of Textiles has rescinded the 2023 Quality Control Order on cotton bales, after the government suspended the 11% import duty on cotton till October 30, 2026.

Explanation:



- A Quality Control Order (QCO) mandates that notified products must conform to specified Bureau of Indian Standards (BIS) norms.
- QCOs are issued under the BIS Act, 2016 by the concerned Ministry or Department in consultation with BIS.
- Covered products must carry the Standard Mark / ISI Mark, where applicable.
- QCOs aim to ensure quality control, consumer safety, prevention of sub-standard imports and standardisation of products.
- Non-compliance with QCO provisions attracts penalties under the BIS Act, 2016.
- The rescinded QCO applied to cotton bales, which are compressed units of processed cotton used by the textile and spinning industry.

3.19. National Stock Exchange (NSE) IPO and India's Capital Markets

Context:

The National Stock Exchange (NSE) has revived plans for an Initial Public Offering (IPO), which could become one of India's largest public issues. Market estimates suggest the IPO may significantly increase NSE's valuation and place it among India's most valuable listed companies.

Explanation:

- The National Stock Exchange (NSE) is India's largest stock exchange and was established in 1992 to modernize the securities market.
- NSE introduced electronic screen-based trading, improving transparency, efficiency, and nationwide market access.
- The benchmark index of NSE is the NIFTY 50, which tracks the performance of major listed companies.
- An Initial Public Offering (IPO) is the process through which a private company offers its shares to the public and becomes a listed company.
- NSE's IPO is expected to be conducted through an Offer for Sale (OFS), where existing shareholders sell their shares rather than the company issuing new shares.
- Stock exchanges facilitate capital formation, price discovery, liquidity, and efficient allocation of savings into investments.
- In India, stock exchanges are regulated by the Securities and Exchange Board of India (SEBI).
- India's major stock exchanges are the National Stock Exchange and BSE.

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3.20. Land Port Management System (LPMS)

Context:

Union Home Minister and Minister of Cooperation, Shri Amit Shah to launch Land Port Management System (LPMS).

Explanation:

- Land ports are designated border points on India's land boundaries where cargo and passengers cross, with customs, immigration, security and logistics facilities.
- They function like airports/seaports, but for land borders; examples include Attari on India–Pakistan border, Petrapole on India–Bangladesh border, Raxaul on India–Nepal border and Moreh on India–Myanmar border.
- The recent government decision is to launch the Land Port Management System (LPMS), a digital platform to integrate land port operations.
- LPMS will enable slot booking, payments, cargo/passenger tracking, single-window clearances and real-time information sharing, improving trade facilitation and smart border management.

3.21. LTCG Tax Waiver on FII Investments in Government Bonds

Context:

The Government of India has promulgated an ordinance waiving the 12.5% Long-Term Capital Gains tax on Foreign Institutional Investor investments in government bonds. The exemption will take effect from April 1, 2026, aiming to make Indian government securities more attractive to overseas investors.

Explanation:

- Foreign Institutional Investors / Foreign Portfolio Investors invest in Indian financial assets such as equities, bonds and government securities.
- Government Securities / G-Secs are debt instruments issued by the Central or State governments to borrow money from the market.
- Long-Term Capital Gains tax is imposed on profits earned from selling capital assets held for a specified long period.
- Waiving LTCG tax on government bonds can improve post-tax returns for foreign investors.
- This may help attract global capital into Indian debt markets and improve liquidity in G-Secs.
- Higher foreign participation can support government borrowing and deepen India's bond market.
- However, foreign bond inflows may also be affected by currency risk, interest rate movements, global liquidity and India's macroeconomic stability.

3.22. India Slips to 7th in Global Stock Market Capitalisation Ranking

Context:

India has slipped to the seventh position in global stock market capitalisation rankings, while South Korea has moved ahead due to a sharp AI-led rally. The rise of semiconductor and AI-linked firms in Taiwan and South Korea has boosted their equity markets significantly.

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Explanation:



- Stock market capitalisation refers to the total value of all listed companies in a stock market and is calculated as share price multiplied by outstanding shares.
- Countries with large market capitalisation usually reflect strong corporate growth, investor confidence, liquidity and depth of financial markets.
- India's market capitalisation has been affected by foreign portfolio investor outflows, pressure on IT and AI-related sectors, and a weaker rupee.
- South Korea and Taiwan have benefited from the global Artificial Intelligence boom, especially through semiconductor companies.
- Samsung, SK Hynix and TSMC are major global players in memory chips, advanced semiconductors and AI hardware supply chains.
- Semiconductors are critical for AI, smartphones, electric vehicles, defence systems and high-performance computing.
- Rankings were compiled and reported by **Bloomberg**. The United States holds the top spot in global stock market capitalization, commanding over $75 trillion and accounting for approximately half of the world's total equity value.

3.23. Kirthai-II Hydroelectric Project on the Chenab River

Context:

The Forest Advisory Committee of Ministry of Environment has recommended in-principle forest clearance for diverting about 197 hectares of forest land for the revised 820-megawatt Kirthai-II Hydroelectric Project in Jammu and Kashmir. The clearance requires measures for biodiversity conservation, habitat management and animal movement.

Explanation:

- Kirthai-II is a run-of-the-river hydroelectric project proposed on the Chenab River in Padder tehsil of Kishtwar district, Jammu and Kashmir.
- It is situated downstream of Kirthai-I and upstream of the Kiru Hydroelectric Project, forming part of the Chenab basin's cascading hydropower development.
- The project will be implemented by Chenab Valley Power Projects Limited, a joint venture involving NHPC Limited and the Jammu and Kashmir power-development corporation.
- The Forest Advisory Committee is constituted under Section 3 of the Van (Sanrakshan Evam Samvardhan) Adhiniyam, 1980 to advise the Union Government on forest diversion.
- Stage-I clearance is conditional approval; final or Stage-II clearance follows compliance with stipulated conditions.
- Under the Indus Waters Treaty, 1960, the Chenab is classified as a Western River, along with the Indus and Jhelum.
- Key ecological concerns include tree felling, Chilgoza Pine habitat, Himalayan fauna and the need for an animal-passage plan

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3.24. RBI Permits Loans Against FCNR(B) Deposits Mobilised under Swap Facility

Context:

The Reserve Bank of India has clarified that Indian banks, including their overseas branches, may extend loans to non-residents against eligible FCNR(B) deposits. This permission supplements the existing lending provisions and aims to encourage foreign-currency inflows.

Explanation:

- FCNR(B) means Foreign Currency Non-Resident (Bank) Account, a term-deposit facility available to NRIs and eligible persons of Indian origin.
- Deposits are maintained in permitted foreign currencies; therefore, depositors are protected from rupee exchange-rate risk.
- Both the principal and interest are fully repatriable, meaning they can be transferred abroad.
- FCNR(B) deposits generally have maturities ranging from one to five years.
- Banks may grant loans against such deposits by creating a lien, under which the deposit serves as collateral until repayment.
- Swap mechanism: The bank gives the foreign currency received through eligible FCNR(B) deposits to the RBI and receives rupees in return; at maturity, the RBI returns the foreign currency to the bank at the pre-agreed exchange rate, protecting the bank from exchange-rate risk.
- Under a foreign-exchange swap, currencies are exchanged temporarily and reversed later at a predetermined rate.
- The RBI's swap facility reduces banks' hedging costs, encouraging them to mobilise more foreign-currency deposits.
- Higher FCNR(B) inflows can strengthen banks' foreign-currency resources and support India's forex reserves and external-sector stability.

3.25. RBI's Record Surplus Transfer and its Fiscal Significance

Context:

The RBI has approved a record **₹2.87 lakh crore surplus transfer** to the Union government for FY26. This highlights the growing fiscal role of the central bank, as earnings from foreign assets, reserve management and securities holdings increasingly support government finances.

Explanation:

- The Reserve Bank of India (RBI) is India's central bank responsible for monetary policy, inflation control, currency management, foreign exchange reserves and financial stability.
- RBI earns income from interest on government securities, foreign currency assets, forex transactions and reserve management.
- After meeting expenses and risk provisions, the remaining amount is transferred to the Centre as surplus/dividend.

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- Such transfers help the government manage fiscal deficit, borrowing needs and expenditure, but may raise debates on central bank independence.
- The RBI follows the Economic Capital Framework, revised after the Bimal Jalan Committee, to decide risk buffers and surplus transfer.
- Since RBI surplus is non-tax revenue of the Union, it is not automatically shared with States under fiscal devolution.

3.26. Central Banks to Raise Gold Reserves: World Gold Council Survey 2026

Context:

The World Gold Council's 2026 Central Bank Gold Reserves Survey says central banks worldwide are likely to accumulate more gold over the next one year. The trend is driven by geopolitical and economic uncertainty, while India's RBI has also expanded its gold reserves between FY24 and FY25.

Explanation:

- World Gold Council (WGC) is a market development organisation for the gold industry; its Central Bank Gold Reserves Survey tracks central banks' views on gold holdings. The World Gold Council (WGC) is headquartered in **London, United Kingdom**.
- India is not a member nation, as the WGC is a non-profit trade association and market development organization whose members are **gold mining companies**, rather than countries.
- The 2026 survey says central banks remain very positive on gold, seeing it as a growing part of reserve portfolios.
- Central banks have accumulated an average of 1,000 tonnes of gold annually over the past four years, much higher than the 500-tonne average of the preceding decade.
- Gold buying has increased due to geopolitical tensions, US dollar volatility, Fed rate expectations, and sustained central bank demand.
- In India, gold prices rose about 40% in 12 months, mainly due to central bank buying and rupee depreciation against the U.S. dollar.
- RBI's gold reserves rose from 822.1 tonnes in FY24 to 879.58 tonnes by end-FY25, and marginally to 880.52 tonnes in FY26.

3.27. DigiDukaan: Digitising India's Kirana-Based General Trade Ecosystem Through ONDC

Context:

DPIIT and ONDC (Open Network for Digital Commerce) convened a CPG (Consumer Packaged Goods) Roundtable to discuss DigiDukaan.

Explanation:

- DigiDukaan is an ONDC-linked initiative aimed at digitising kirana stores for B2B procurement.
- It seeks to modernise India's General Trade ecosystem, which includes over 1.4 crore kirana stores.

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- General Trade accounts for nearly 75–80% of FMCG (Fast-Moving Consumer Goods) sales in India.
- The initiative helps retailers through direct procurement, better scheme visibility, improved fill rates and working capital management.
- It supports distributors by enabling order digitisation, collection digitisation, wider reach and improved retailer coverage.
- It helps FMCG brands access retailer demand signals, secondary sales data and scheme tracking.
- ONDC is an open digital commerce network designed to democratise digital commerce in India.
- ONDC is an initiative of the Department for Promotion of Industry and Internal Trade (DPIIT) launched in 2021 to create an open, interoperable digital commerce network.
- FMCG refers to products that are sold quickly at relatively low cost, such as food items, beverages, toiletries, detergents and packaged consumer goods.

3.28. Paraquat Herbicide Ban in Telangana

Context:

Telangana has banned the manufacture, sale, distribution and use of paraquat, a highly toxic herbicide linked to numerous deaths and poisoning cases, particularly among farmers and agricultural workers. The move has renewed attention on pesticide regulation, occupational safety and public health concerns associated with hazardous agrochemicals.

Explanation:

- Paraquat is a non-selective, fast-acting contact herbicide used for controlling weeds in agricultural fields, plantations and non-crop areas.
- It belongs to the bipyridyl group of herbicides and acts by disrupting photosynthesis, causing rapid destruction of plant tissues.
- Paraquat is considered one of the most toxic pesticides to humans; ingestion, inhalation or prolonged skin exposure can cause severe poisoning and death.
- The chemical primarily damages the lungs, kidneys and liver, often leading to irreversible pulmonary fibrosis and multi-organ failure.
- Due to its high toxicity, several countries have imposed restrictions or bans under pesticide safety regulations, while debates continue regarding its agricultural utility versus health risks.
- In India, pesticides are regulated under the Insecticides Act, 1968 and administered through the Central Insecticides Board and Registration Committee (CIBRC).
- The issue highlights the broader challenge of balancing agricultural productivity, weed management, farmer welfare, public health and environmental safety through evidence-based pesticide governance.

3.29. India's Record Workers' Remittances in FY26

Context:

India's inward remittances crossed $100 billion in FY26, reaching a record level and reinforcing the country's position as the world's largest recipient of remittances.

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Explanation:

- Remittances are cross-border transfers of money by migrants to their families or beneficiaries in their home country.
- In the Balance of Payments (BoP), remittances are recorded under Secondary Income Transfers in the Current Account.
- The United States, United Arab Emirates, United Kingdom, Saudi Arabia, Canada, Oman, Qatar and Australia are among the major source countries.
- India has remained the world's largest remittance recipient for several years, followed by countries such as Mexico, China and the Philippines.
- Remittances help finance the Current Account Deficit (CAD), support household consumption, education, healthcare and investment.
- The Reserve Bank of India (RBI) compiles remittance data through BoP statistics and surveys on inward remittance flows.
- Long-term sustainability of external accounts requires growth in exports, manufacturing competitiveness and productive investment, as remittances are primarily income transfers rather than export earnings.

3.30. Fully Accessible Route

Context:

Foreign Portfolio Investors invested ₹8,794 crore in government securities under the Fully Accessible Route after tax exemptions on interest income and capital gains.

About Fully Accessible Route:

- Fully Accessible Route is a channel through which non-residents can invest in specified Government Securities.
- It was introduced by the Reserve Bank of India in 2020.
- Under FAR, eligible government securities are opened fully to Foreign Portfolio Investors.
- Investments under FAR are not subject to the usual investment limits applicable to FPIs in government securities.
- It covers specified Central Government securities notified by the RBI from time to time.
- FAR helped enable the inclusion of Indian government bonds in major global bond indices.
- It supports deeper bond markets by attracting foreign capital into India's government securities market.

3.31. BHAVYA Portal

Context:

Union Minister of Commerce & Industry, Shri Piyush Goyal, Launches BHAVYA Portal to fast-track the development of 100 investment-ready, world-class industrial parks across India (Under BHAVYA Scheme).

Explanation:

- BHAVYA (Bharat Audyogik Vikas Yojana) is a flagship industrial infrastructure scheme aimed at developing 100 plug-and-play industrial parks to create world-class, future-ready manufacturing ecosystems across India.
- The scheme will be implemented over a six-year period starting from 2026–27, with around 50 parks to be developed in the first phase.

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- It builds upon the success of industrial smart cities under the National Industrial Corridor Development Programme (NICDP) and represents a next-generation expansion of the industrial corridor model.
- Scheme will adopt a competitive model under which States will be encouraged to submit detailed project proposals highlighting their industrial strengths, availability of land, investor interest and sectoral potential.
- It will seek to ensure that industrial parks are designed according to the specific needs of different sectors and investors, making them more attractive destinations for domestic and global investments.

3.32. Mission Senehjori for Assam Muga Silk

Context:

The Union Minister for Development of North Eastern Region launched **Mission Senehjori** to promote Assam's Muga silk as a global luxury textile brand. The mission aims to strengthen the Muga silk value chain through a cluster-based approach.

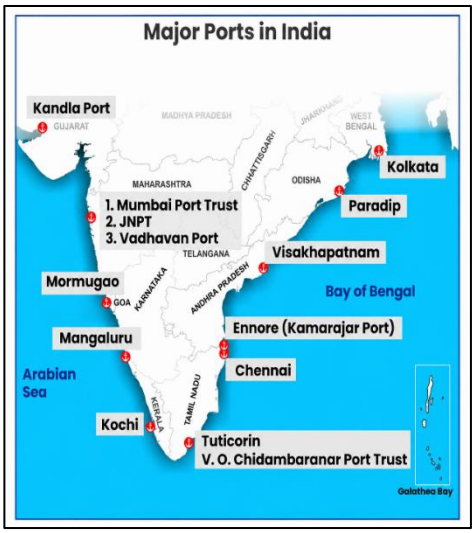
Explanation:

- Muga silk is a rare golden-yellow silk mainly produced in Assam and is known for natural shine, durability and high value (India produces four major types of natural silk: Mulberry, Tasar, Muga, and Eri).
- It is produced by the silkworm Antheraea assamensis, which is largely endemic to the North-East region.
- Assam's Muga silk has a Geographical Indication tag, linking it to its unique regional origin and traditional production system.
- Mission Senehjori focuses on making Muga silk globally competitive through branding, cluster development, value addition and luxury textile promotion.
- A cluster-based approach brings farmers, reelers, weavers, entrepreneurs and markets together for better productivity and income.
- The initiative supports Atmanirbhar North East, traditional livelihoods, women's employment and export potential.

3.33. Logistics Port Performance Index (LPPI)

Context:

The Logistics Port Performance Index (LPPI) is a national benchmarking framework launched by India's Ministry of Ports, Shipping and Waterways (MoPSW) under the Sagar Aankalan initiative.



Explanation:

- It is designed to evaluate, rank, and improve the operational efficiency, transparency, and global competitiveness of both major and non-major Indian ports.
- The index aligns closely with the PM Gati Shakti National Master Plan and the National Logistics Policy to minimize trade bottlenecks and lower logistical costs.

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4. Environment and Ecology

4.1. Climate Extremes and Resilience

Context:

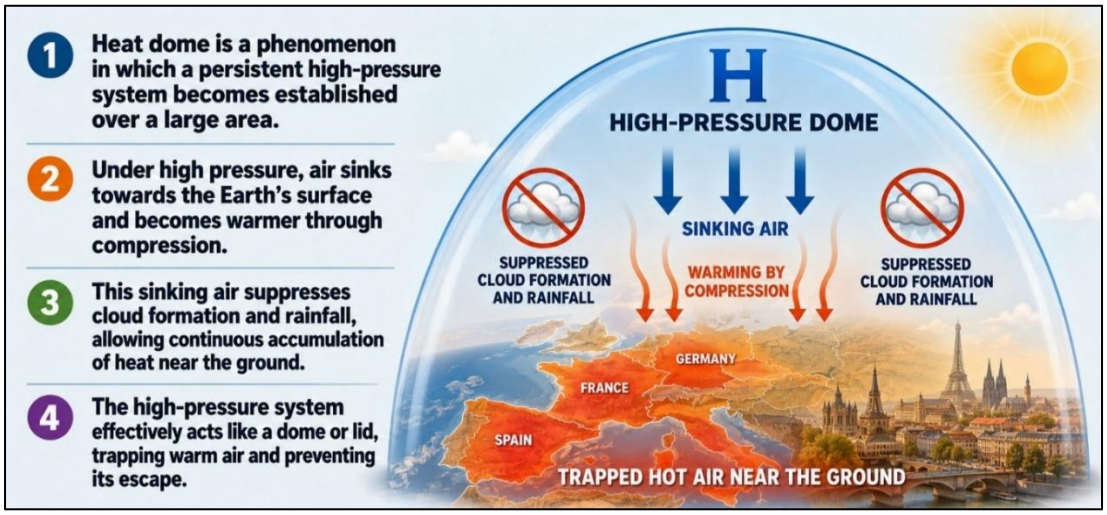
India's weak and uneven monsoon and Europe's record heatwaves show the rising impact of climate extremes. These events also show that losses depend on social preparedness, infrastructure strength and public-health resilience.

Southwest Monsoon and Indian Vulnerability:

- The southwest monsoon supplies nearly **75% of India's annual rainfall** and is critical for farming, groundwater, reservoirs and hydropower.
- By June 24, **537 of 740 districts** had rainfall deficits above 20%, covering nearly **77% of India's area**.
- The deficit was linked to weak monsoon currents, poorly developed low-pressure systems and an unfavourable Madden-Julian Oscillation (MJO) phase, rather than El Niño.
- Poor rainfall can reduce crop output, farm income, rural demand, groundwater recharge and hydropower generation.
- India's preparedness has improved through reservoir storage, water-conservation infrastructure and solar and wind energy.

Heatwaves, Heat Domes and Europe:

- A heatwave is a prolonged period of unusually high temperatures.
- Europe recorded severe heat: Britain reached **36.1°C**, Paris **40.9°C**, and France up to **44.3°C**.
- The immediate cause was a persistent high-pressure system called a **heat dome** or **Omega Block**.
- In a heat dome, sinking air warms by compression, suppresses cloud formation and rainfall, and traps hot air near the ground.
- The heatwave caused deaths, school closures, transport delays, pressure on electricity systems and reduced nuclear power generation due to cooling-water constraints.



Climate Whiplash, El Niño and Local Heat Risk:

- Climate whiplash means sudden shifts from one weather extreme to another, such as cold to heat, drought to flood, or dry conditions to intense rainfall.

- El Niño is warming of the equatorial Pacific Ocean that can weaken the Indian monsoon and reduce seasonal rainfall.
- El Niño increases risk but does not guarantee monsoon failure, as the Indian Ocean Dipole, monsoon depressions and regional conditions also matter.
- Urban heat islands intensify heat through concrete, roads, buildings, vehicles, air-conditioning exhaust and reduced vegetation.
- Heat action plans need local thermal maps, ward-level data, real-time monitoring, cool roofs, shaded spaces, drinking water access and work-hour changes.

Conclusion:

India's monsoon deficit and Europe's heatwave show that climate risk is both regional and global. Strong forecasts, resilient infrastructure, public-health planning and local data monitoring are essential. Climate policy must prepare for both rainfall failure and extreme heat.

Mains Practice Question:

Q. Examine the causes and consequences of extreme heat events such as heatwaves and heat domes. Suggest measures to enhance climate resilience in urban areas.

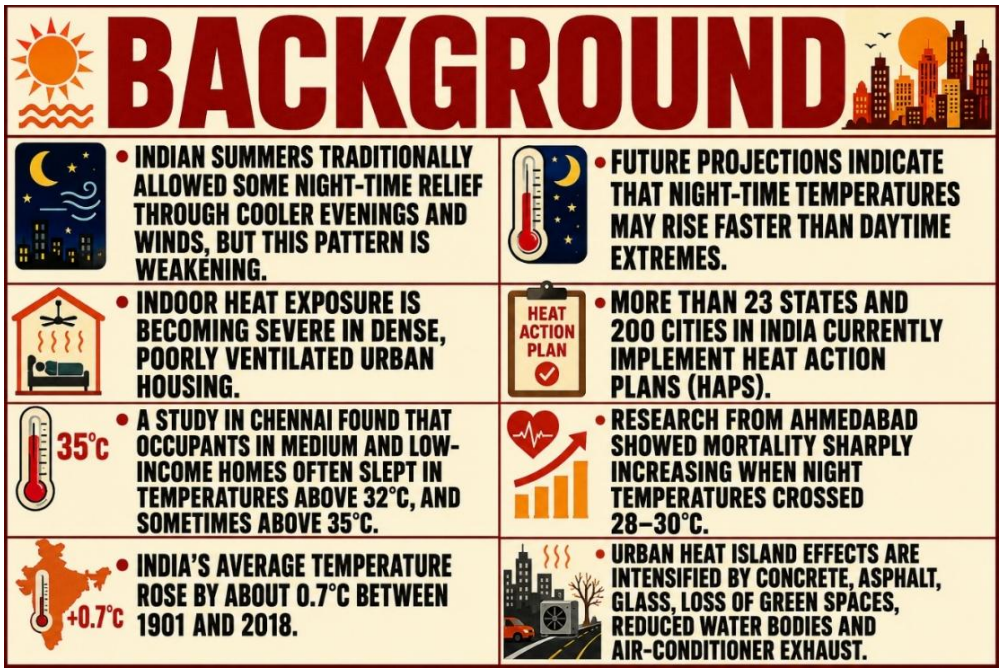
15M, 250 Words.

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4.2. Warmer Nights and India's Growing Heat Crisis

Context:

Warmer nights are emerging as a serious public-health challenge in India's urban summers. Unlike daytime heatwaves, high night-time temperatures deny the human body the cooling period needed for recovery, especially among low-income households without ventilation or air-conditioning.



Explanation:

Public Health Impact:

- Cooler nights help the body recover from daytime heat stress.
- When nights remain hot, heat exposure becomes continuous and prolonged.

Space for Notes

- This can cause sleep discomfort, fatigue, reduced productivity, cardiac stress, respiratory complications and kidney-related problems.
- Elderly people, children, outdoor workers, construction labourers, vendors and gig workers are highly vulnerable.

Urban Housing and Inequality:

- Many urban households live in small, cramped and poorly ventilated homes.
- Low-income groups often lack access to air-conditioning or quality cooling systems.
- Dense housing clusters reduce air corridors and trap heat inside residential areas.

Heatwaves versus Perennial Heat:

- Heatwaves are specific events declared under defined temperature criteria.
- Extreme heat, however, is becoming a constant summer condition.
- Rising night-time temperatures may remain dangerous even when formal heatwave conditions are absent.

Governance and Planning Gaps:

- Heat Action Plans usually focus on early warnings, advisories, cooling centres and emergency coordination.
- Many plans suffer from weak funding, poor enforcement and inadequate attention to long-term adaptation.
- Urban planning must include ventilation, green spaces, cool roofs, reflective coatings and low-cost passive cooling solutions.

Conclusion:

Warmer nights convert summer heat from a daytime discomfort into a round-the-clock health burden. India's response must shift from heatwave management alone to long-term heat-resilient housing, urban design and public-health planning.

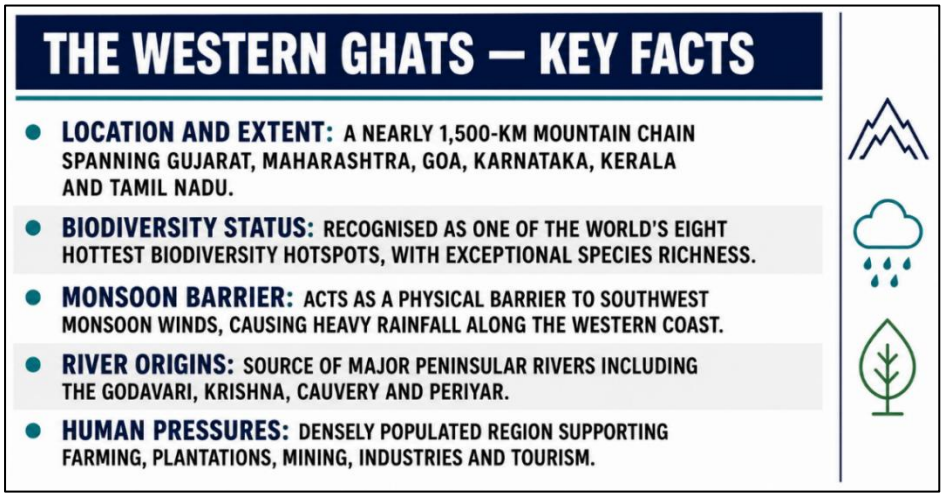
Mains Practice Question:

Q. Warmer nights are turning urban heat into a round-the-clock public-health crisis. Discuss with reference to Indian cities. (10 Marks,150 Words)

4.3. Western Ghats Conservation and Development Debate

Context:

Indian government is finally moving to finalize the Ecologically Sensitive Area (ESA) notification for the Western Ghats across six states, imposing strict bans on mining, quarrying, and polluting industries in these fragile regions. The push for ecological conservation comes after a 12-year stalemate, with the government adopting a phased approach to resolve state-level disputes and local concerns.



Space for Notes

Explanation:

Meaning of ESA Status:

- An ESA is an environmentally fragile region where damaging activities are regulated.
- The proposal seeks to ban mining, quarrying, thermal power plants, highly polluting industries and large construction projects.
- Normal agriculture, plantations and existing settlements are not automatically banned.

Committee Recommendations:

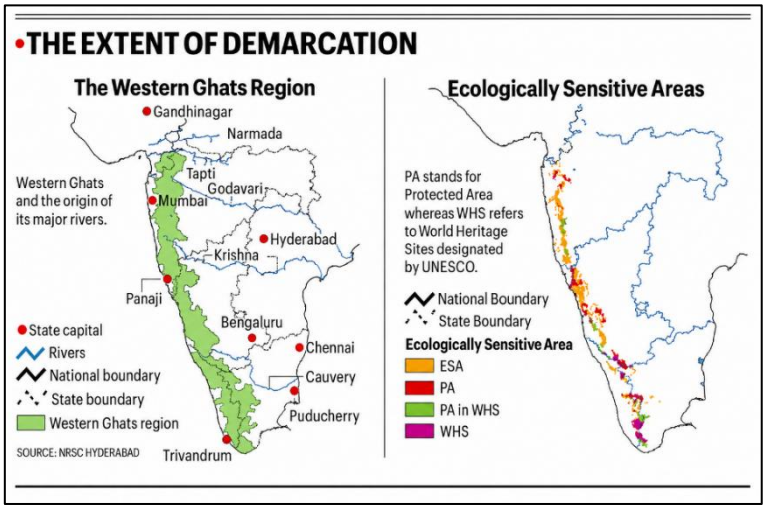
- The **Madhav Gadgil Committee (2010)** categorized **64%** of the Western Ghats into three graded Ecologically Sensitive Zones based on environmental vulnerability.
  - It divided the landscape into Zone 1, Zone 2, and Zone 3 according to their ecological sensitivity and priority for conservation.
- The **Kasturirangan Committee (2012)** later divided the Western Ghats into:
  - **Cultural landscape (63%)**, including settlements, farms and plantations.
  - **Natural landscape (ESA - 37%)**, including forests and biodiversity-rich areas.
- The Kasturirangan report is widely considered a significant dilution of the Gadgil report because it reduced the protected Ecologically Sensitive Area from 64% to just 37% in order to prioritize economic development and agriculture.

Why the Notification Is Delayed?

- The Centre has proposed about **56,825 sq km** as ESA through six draft notifications since 2014.
- States fear that restrictions may affect farming, mining, industries, construction and local development.
- Kerala seeks exclusion of plantation areas, Karnataka opposes the proposal, and Maharashtra wants several villages removed.

Recent Efforts:

- An expert committee formed in 2022 is checking village boundaries, satellite images and revenue records.
- The Centre may notify ESA boundaries State-wise instead of waiting for agreement from all six States.
- Financial incentives and **payments for ecosystem services** are also being considered.



Why the Ghats Need Protection?

- The region contains nearly **2,000 endemic plant species**, 84 fish species, 87 amphibian species, 89 reptile species, 15 bird species and 12 mammal species found only there.
- It includes **61 protected areas**, including national parks and wildlife sanctuaries.
- Its forests regulate rainfall, recharge groundwater, protect rivers and reduce soil erosion.
- Mining, quarrying, pollution and unplanned construction can increase deforestation, landslides and water insecurity.

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Conclusion:

The Western Ghats are vital for biodiversity, rivers, rainfall and local livelihoods. Their protection cannot be delayed indefinitely. A scientific, consultative and financially supported ESA framework is necessary.

Mains Practice Question:

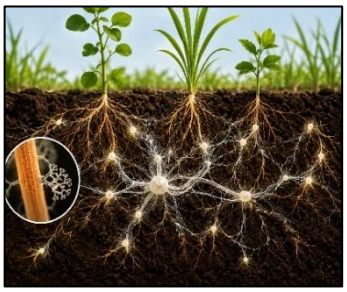
Q. **The conservation of the Western Ghats requires balancing ecological sustainability with developmental aspirations of local communities. Discuss in the context of the proposed Ecologically Sensitive Area (ESA) notification.** (10 Marks,150 Words)

4.4. Arbuscular Mycorrhizal (AM) Fungi and Global Underground Fungal Networks

Context:

A recent study published in *science* has produced the first global map of underground Arbuscular Mycorrhizal (AM) fungi networks. The study highlights their crucial role in supporting plant life, nutrient cycling, carbon sequestration, and ecosystem health.

Explanation:



- Fungi are a separate biological kingdom and play a vital role as decomposers and nutrient recyclers in ecosystems.
- Mycorrhiza refers to a symbiotic association between fungi and plant roots, benefiting both organisms.
- Arbuscular Mycorrhizal (AM) fungi penetrate plant root cells and occur in association with nearly 70% of terrestrial plant species.
- AM fungi exchange water and soil nutrients (especially phosphorus and nitrogen) with plants in return for carbohydrates produced through photosynthesis.
- Their underground thread-like structures called **hyphae** form extensive networks connecting plants and soils.
- These networks improve soil fertility, drought tolerance, nutrient uptake, and ecosystem resilience.
- AM fungi act as important carbon sinks, transferring and storing significant amounts of carbon in soils.
- Grasslands, including those in the Tibetan Plateau, South Sudan, and India, are major hotspots of AM fungal diversity.
- Conversion of natural grasslands into agricultural land threatens these underground fungal networks.

4.5. Heat Stress and Asiatic Lion Cub Deaths in Gir Forest

Context:

Eight Asiatic lion cubs in Gir Forest, Gujarat reportedly died due to heat-related stress and weakened immunity, not due to Babesia or viral infection (as previously thought). The clarification came after forest authorities conducted monitoring and disease-control measures.

Space for Notes

Explanation:

- Asiatic lions are found only in and around Gir National Park and Wildlife Sanctuary in Gujarat.
- They are listed as Endangered on the IUCN Red List and are protected under Schedule I of the Wildlife Protection Act, 1972.
- Heat stress can weaken immunity, reduce appetite, cause dehydration and increase mortality among vulnerable animals like cubs.
- Babesia is a tick-borne parasitic infection that can affect wild and domestic animals.
- Wildlife deaths require scientific investigation to distinguish between disease outbreaks, heat stress, poisoning, injury and ecological factors.
- Rising temperatures and extreme heat events make climate change an emerging wildlife conservation challenge.

4.6. Jai Prakash Narayan Bird Sanctuary Becomes India's 100th Ramsar Site

Context:

Jai Prakash Narayan Bird Sanctuary, also known as **Surha Tal** in Ballia, Uttar Pradesh, has been designated as India's **100th Ramsar site**. The wetland is important for migratory and resident birds and marks a major milestone in India's wetland conservation efforts.

Explanation:

- **Ramsar sites** are wetlands of international importance designated under the **Ramsar Convention, 1971**.
- The Ramsar Convention is an intergovernmental treaty for the conservation and wise use of wetlands.
- **Wetlands** include lakes, marshes, swamps, mangroves, floodplains, estuaries and coastal areas.
- Wetlands support **biodiversity, groundwater recharge, flood control, carbon storage and livelihood security**.
- **Jai Prakash Narayan Bird Sanctuary / Surha Tal** is located in **Ballia district, Uttar Pradesh**.
- It is rich in **avifaunal biodiversity**, including migratory and resident bird species.
- Ramsar designation helps improve conservation, monitoring, community participation and ecological management.
- India's growing Ramsar network reflects stronger focus on **wetland rejuvenation and biodiversity protection**.

4.7. Nilgiri Tahr Population Rises in Tamil Nadu

Context:

Tamil Nadu's third synchronised Nilgiri Tahr population estimation has recorded 1,364 individuals in 2026, showing a 4.68% rise over 2025. The survey was conducted under Project Nilgiri Tahr across 14 forest divisions.

Explanation:

- Nilgiri Tahr is an endangered mountain ungulate found mainly in the Southern Western Ghats of Tamil Nadu and Kerala.

Space for Notes



- It inhabits high-altitude grasslands and rocky cliffs, especially in the Nilgiris, Anamalai and other Western Ghats landscapes.
- It is the State animal of Tamil Nadu and has ecological importance in nutrient cycling in mountain ecosystems.
- It receives the highest legal protection under Schedule I of the Wildlife Protection Act, 1972.
- Its conservation is important because the Western Ghats is a global biodiversity hotspot.
- Major threats include habitat fragmentation, invasive plants, climate change, tourism pressure and human disturbance.
- Project Nilgiri Tahr aims at population monitoring, habitat restoration and long-term conservation.

4.8. New Cascade Frog Species Recorded in Nagaland

Context:

A new-to-science cascade-dwelling frog species, Amolops kamal, has been recorded from hill-stream habitats near Singrep village in Kiphire district, Nagaland, close to the Myanmar border. The discovery by Zoological Survey of India scientists highlights the hidden amphibian diversity of Northeast India.

Explanation:



- Cascade frogs generally inhabit fast-flowing hill streams, rocky streambeds and moist forest ecosystems.
- It was earlier linked with the Amolops indoburmanensis species complex, showing the importance of identifying cryptic species.
- Cryptic species are distinct species that look very similar morphologically but differ genetically or evolutionarily.
- Northeast India is part of the Indo-Burma biodiversity hotspot, known for high species richness and endemism.

4.9. Supreme Court Directions to Protect Chambal Forest Guards and Curb Illegal Sand Mining

Context:

The Supreme Court has asked Uttar Pradesh, Madhya Pradesh and Rajasthan to consider prosecution immunity for forest guards acting bona fide against illegal sand miners in the Chambal region. The Court also directed stronger surveillance, patrolling and enforcement to protect the National Chambal Gharial Sanctuary.

Explanation:

- The **National Chambal Sanctuary** extends across **Madhya Pradesh, Rajasthan and Uttar Pradesh** and protects the Chambal River ecosystem.
- It is an important habitat for **gharial, Gangetic dolphin, mugger crocodile, turtles and migratory birds.**

Space for Notes

- **Illegal sand mining** damages riverbeds, destroys nesting sites, alters river flow and threatens aquatic biodiversity.
- Forest guards and frontline officials often face physical attacks from mining mafias during enforcement operations.
- The Supreme Court used its extraordinary power under **Article 142** to issue directions for "complete justice" and environmental protection.
- The Court referred to **Section 218(3) of the Bharatiya Nagarik Suraksha Sanhita**, which allows protection from prosecution for certain bona fide official actions.
- Such immunity does not protect illegal or mala fide actions, but aims to prevent fear among officials acting in good faith.
- The issue connects **environmental governance, rule of law, wildlife protection, illegal mining, river ecology and frontline enforcement.**

4.10. Summer Air Pollution in Indian Cities

Context:

Summer air pollution is increasingly emerging as a major environmental challenge in Indian cities. Contrary to the common perception that air pollution is primarily a winter phenomenon, many cities experience significant deterioration in air quality during summer due to dust storms, ozone formation, vehicular emissions, construction activity and industrial pollution.

Explanation:

Nature of Summer Pollution:

- Summer pollution is mainly associated with **PM10 dust particles** and **ground-level ozone.**
- Hot and dry weather loosens soil, increases dust suspension and allows pollutants to travel with strong winds.
- Dust storms, especially from arid regions, can sharply increase PM10 levels in cities.
- Construction activity, road dust, vehicular movement and industrial emissions further worsen air quality.

Difference from Winter Pollution:

- Winter pollution is dominated by **PM2.5**, smoke and smog due to low temperature, weak winds and temperature inversion.
- In winter, pollutants remain trapped close to the ground.
- In summer, stronger winds may disperse some pollutants, but they also bring dust and resuspend particles.
- Therefore, summer pollution is less about stagnant smog and more about dust transport, heat-driven reactions and ozone formation.

Ozone Formation:

- Ground-level ozone is not emitted directly.
- It forms when **nitrogen oxides** from vehicles and industries react with **volatile organic compounds** from fuels, paints and solvents in strong sunlight.
- High temperatures accelerate this reaction, making ozone a major summer pollutant.
- Ozone can irritate the lungs, worsen asthma and reduce respiratory capacity.

Conclusion:

Cities must treat air pollution as a year-round challenge, not only a winter crisis. Summer action should include dust control at construction sites, road cleaning, restrictions on waste burning, cleaner transport, control of industrial emissions and ozone forecasting. Better early-warning systems and city-level heat-pollution plans are essential for protecting public health.

Space for Notes

4.11. Great Nicobar Island Project and Coral Translocation

Context:

The Zoological Survey of India (ZSI) has identified four sites on the western coast of Great Nicobar Island for the translocation of coral colonies and giant clams likely to be affected by the proposed Galathea Bay transshipment port under the Great Nicobar Island Mega Project.

Explanation:

- Great Nicobar Island is the southernmost island of India and forms part of the Nicobar Group in the Andaman and Nicobar Islands.
- The island lies close to the Malacca Strait, one of the world's busiest maritime trade routes, giving it significant strategic importance.
- The Great Nicobar Island Mega Project includes a transshipment port at Galathea Bay, an international airport, power infrastructure and township development.
- Coral reefs are marine ecosystems formed by colonies of coral polyps; they support high biodiversity and provide coastal protection.
- Coral translocation involves carefully relocating coral colonies from one site to another to mitigate impacts of developmental activities.
- Giant Clams (Tridacnidae) are large reef-dwelling molluscs protected under the Wild Life (Protection) Act, 1972, and are important components of coral reef ecosystems.
- The island hosts ecologically significant species such as the Leatherback Sea Turtle, Nicobar Megapode, Nicobar Macaque, and Robber Crab.

4.12. Climate Change, Sea-Level Redistribution and Earth's Rotation

Context:

A recent study suggests that climate change-driven redistribution of water and ice may slightly affect Earth's rotation and increase the length of a day. The study links sea-level change, melting ice sheets and mass redistribution with changes in Earth's rotational speed.

Explanation:



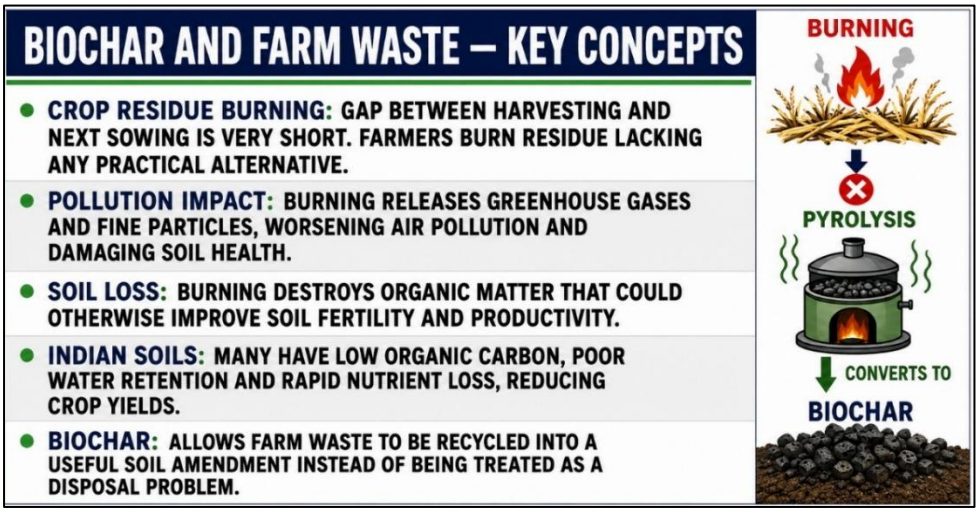
- Earth's rotation determines the **length of a day**, but it is not absolutely fixed because mass distribution on Earth keeps changing.
- When ice sheets melt and water shifts from land-based ice to oceans, Earth's mass gets redistributed.
- This works like a **spinning skater**: when arms are extended outward, rotation slows; similarly, when Earth's mass moves farther from the axis, rotation can slow slightly.
- Slower rotation means a very tiny increase in the **length of day**, measured in milliseconds or microseconds.
- Sea-level rise is caused by **thermal expansion of oceans** and melting of **glaciers, Greenland ice sheet and Antarctic ice sheet**.
- Earth's rotation is also influenced by the **Moon's tidal forces**, atmospheric circulation, ocean currents and processes deep inside Earth.
- Scientists use **palaeoclimate records**, fossils, geological evidence, climate models and deep-learning methods to study long-term sea-level changes.
- The issue shows how climate change affects not only oceans and ecosystems but also planetary-scale processes.

4.13. Biochar for Soil Health and Climate Resilience

Space for Notes

Context:

Recently, biochar has gained attention as a solution to crop-residue burning and declining soil health. Punjab and Haryana burn over 20 million tonnes of paddy straw annually, causing air pollution and loss of useful organic matter. Converting this waste into biochar can improve soil and create income for farmers.



Explanation:

What is Biochar?

- Biochar is a carbon-rich material made by heating agricultural waste in limited oxygen through **pyrolysis**.
- It decomposes slowly and stores carbon in soil for a long period.
- Its porous structure helps retain water, nutrients and useful microorganisms.

Benefits and Opportunities:

- Biochar improves **soil fertility, structure and nutrient-use efficiency**; studies suggest crop productivity rises by **10–30%** and water-holding capacity by **10–25%**.
- Trials in **Maharashtra and Kerala** using maize and coconut waste confirmed improved soil quality and drought resilience.
- It prevents emissions from residue burning and **locks carbon in soil**, while reducing dependence on costly fertilisers.
- Certified biochar projects can earn **carbon credits** - one tonne generates approximately **2 to 2.8 tonnes of CO2-equivalent credits** - creating income for farmers and rural enterprises.
- Biochar can also be made from **rice husk, sugarcane bagasse, sewage sludge and biodegradable municipal waste**, supporting the **circular economy**.
- Experiences from **Kenya, Thailand and Brazil** show that scaling biochar requires suitable **pyrolysis technology, certification systems and robust monitoring.**

Challenges and Way Forward:

- Biochar remains limited mainly to **research trials** and is unfamiliar to many farmers.
- It should be linked with **natural farming, soil-health and carbon-farming programmes.**
- Farmers need **affordable kilns, training, finance, market access and cooperative support.**

Conclusion:

Biochar can turn farm and organic waste into a valuable soil resource. It can reduce pollution, improve crop resilience and create new income opportunities. India needs an integrated policy to turn waste biomass into genuine **"black gold"**.

Mains Practice Question:

Q. Crop-residue burning is both an environmental and an agricultural challenge. Examine how biochar can contribute to air pollution control, soil restoration and carbon sequestration. Also discuss the challenges in scaling up its adoption in India. (15 Marks, 250 Words)

Space for Notes

4.14. Electrification: The Key Challenge in Achieving Climate Targets

Context:

The world cannot meet its climate targets only by building more solar and wind power plants. Fossil fuels are still directly used in transport, industries, cooking and heating, while electricity meets only about 21% of global final energy demand. Climate action therefore requires both wider electrification and cleaner electricity generation.

Background:

- Electrification means replacing the direct use of coal, oil and gas with electricity, such as replacing petrol cars with electric vehicles.
- Final energy consumption refers to the energy directly used by households, industries, transport and other consumers.
- Solar, wind, hydropower and nuclear energy mainly supply electricity; therefore, their benefits cannot reach the entire economy without electrification.
- Electricity's share in global final energy consumption increased slowly from 17.7% in 2015 to about 21% in 2025.
- A proposal discussed at the Bonn climate meeting seeks to raise this share to 35% by 2035.

Explanation:

Core Issue:

- The main problem is that the world uses too little electricity, and a large part of the electricity currently generated still comes from fossil fuels.
- Therefore, electrification alone does not automatically reduce emissions. Electricity must also be produced from clean sources.
- **Example:** Replacing a petrol car with an electric vehicle reduces petrol use. However, if the electricity used to charge the vehicle comes mainly from a coal-fired power plant, emissions are partly shifted from the car's exhaust to the power plant. The real climate benefit becomes much greater when the vehicle is charged using solar, wind, hydropower or nuclear electricity.

Why Electrification Is Necessary?

- Renewable sources mainly generate electricity, while much of the world's energy is still consumed directly as petrol, diesel, coal, natural gas or firewood.
- Transport, household heating and several industrial processes must therefore shift towards electric vehicles, electric public transport, heat pumps and electric machinery.
- Electric technologies are often more efficient than fossil-fuel alternatives and can reduce both energy use and urban pollution.

Reality Check:

- Non-fossil sources provided about 42.59% of global electricity in 2025, up from 33.57% in 2015.
- However, electricity accounted for only about 21% of final energy consumption.
- Thus, clean electricity supplied only a little over 8% of the world's total final energy needs, showing the large gap between renewable-power growth and economy-wide decarbonisation.

Space for Notes

Major Difficulties:

- Aviation, shipping, long-distance trucks and high-temperature industries such as steel, cement, glass and ceramics are difficult to electrify.
- Rapid electrification requires major expansion of renewable power, transmission grids, distribution systems, charging facilities and battery storage.
- Solar and wind are variable, making storage and flexible grids necessary for continuous supply.
- Achieving the 35% target may require around $1.2 trillion in annual investment.
- Wars, energy insecurity and rising fossil-fuel prices may push countries towards short-term fossil-fuel use instead of long-term clean investment.

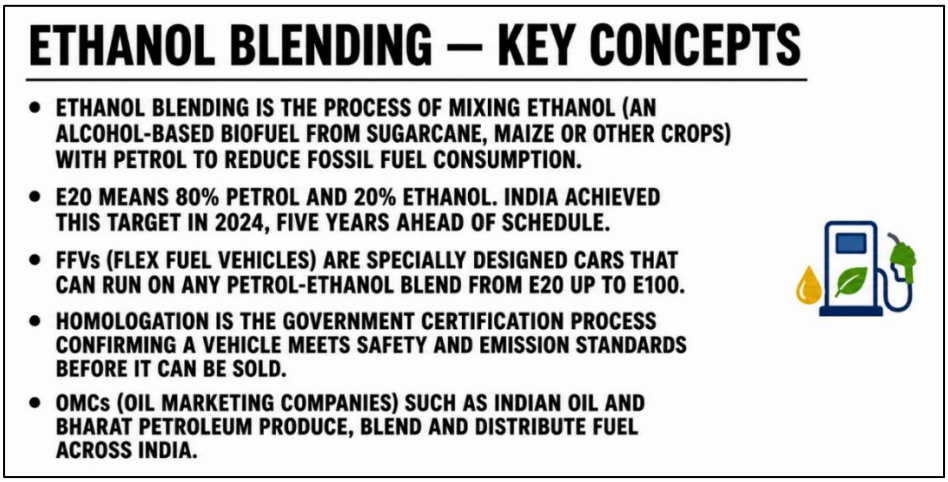
Conclusion:

Electrification is the bridge through which renewable power can replace fossil fuels across the wider economy. However, electrification without cleaner power generation will provide limited climate benefits. Renewable energy, grids, storage and end-use electrification must therefore expand together.

4.15. Energy security and challenges of higher ethanol blending

Context:

India has exempted higher ethanol-petrol blends (E22–E30) from central excise duty and proposed recognition of E85 and E100 fuels under Motor Vehicles Rules. These moves aim to reduce fossil fuel import dependence but raise serious concerns for consumers, automakers, and oil companies.



Explanation:

1. Why India is Pushing Higher Ethanol Blends?
   - India imports nearly **88.5% of its crude oil**, making it vulnerable to global price shocks and geopolitical disruptions.
   - Higher blending strengthens **energy security** and creates demand for surplus sugarcane production. It is backed by the agricultural lobby in Maharashtra and Uttar Pradesh.
   - The government plans a step-by-step transition: **E20 → E25 → E85/E100**, alongside a gradual shift to flex fuel vehicles.
2. Problems for Consumers:
   - Higher blends damage rubber parts, valves and fuel lines, especially in older and two-wheeler engines, with mileage dropping **5–12%**.

Space for Notes

- Unlike Brazil, Indian consumers **cannot choose** between fuel blends at petrol stations, making the transition involuntary.
- Consumers bear both fuel efficiency loss and vehicle damage costs with **no regulatory protection**.

3. **Problems for Automakers and Oil Companies:**
   - E25 requires fresh **engine calibration, corrosion testing** and a new **homologation** process - all within months of completing the E20 transition.
   - **OMCs** can offer only **two ethanol blends** at any time, limiting choice and creating supply chain challenges.
   - **Bureau of Indian Standards (BIS)** notified fuel standards for higher blends in May 2026, but major infrastructure adjustments are still required.
4. **The Brazil Model:**
   - Brazil launched its ethanol programme in the **1970s**, now offering blended petrol and **E100** at nearly every pump.
   - Brazilian law mandates **price discounts** for higher blends and successfully introduced **flex fuel vehicles** at scale, a structural integration India is still working toward.
5. **Way Forward:**
   - Provide **consumer choice** at petrol pumps and introduce **price incentives** for higher blends.
   - Give automakers and OMCs **adequate time and policy clarity** before mandating transitions above E20.
   - Commission **independent long-term studies** on the impact of higher blends on non-compliant vehicles.

Conclusion:

India's ethanol programme serves clear energy security and agricultural goals, but the pace of transition risks shifting costs onto consumers and manufacturers. The Brazil model demonstrates that successful ethanol integration requires consumer choice, price incentives, and industry alignment. A phased, stakeholder-inclusive transition is essential for long-term programme success.

Mains Practice Question:

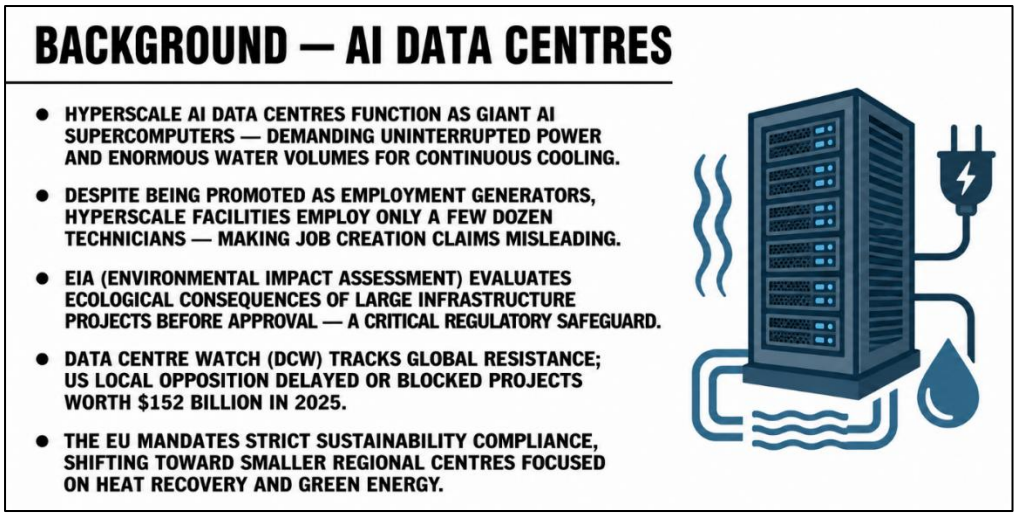
Q. **India aims to move beyond E20 towards higher ethanol blends. Critically examine the opportunities and challenges of this transition. What lessons can India draw from Brazil's ethanol programme?** (15 Marks, 250 Words)

4.16. Ecological Sustainability and Regulatory Governance of AI Data Centre Expansion

Context:

As India actively courts global data centre investments through tax concessions and land allocations, communities across the US, Europe, Latin America, and Southeast Asia are resisting such projects over unsustainable resource demands. The ecological and social costs of hyperscale AI infrastructure remain largely unaddressed in India's regulatory framework, even as organised political opposition abroad achieves measurable outcomes.

Space for Notes



Explanation:

1. Resource Demands and Ecological Impact:
   - Hyperscale facilities require intensive power and vast water volumes for cooling – straining already deficit public grids and depleted water networks.
   - Data centres are being sited on ecologically vulnerable coastal zones, farmland, and orchards, displacing communities and threatening biodiversity.
   - Ordinary consumers pay higher electricity and water tariffs while tech companies receive subsidised access to the same strained public infrastructure.
2. India's Policy Approach:
   - India's Union Budget granted data centres a 20-year tax holiday; state governments are offering power subsidies, water subsidies, and land at discounted rates.
   - The EIA was waived for a major hyperscale project in Visakhapatnam – removing a fundamental environmental safeguard.
   - India is simultaneously more water-stressed and power-deficient than countries where data centre protests are succeeding, making regulatory absence particularly concerning.
3. Global Resistance:
   - Opposition spans Santiago, Vancouver, Dublin, London, Johor, Batam, and Visakhapatnam – reflecting convergent concerns over energy consumption, water depletion, soil degradation, and farmland loss.
   - In the US, the issue has achieved bipartisan political alignment – November 2025 elections in Virginia, New Jersey, and Georgia saw significant outcomes decided on the data centre question.
   - Several US state legislatures are supporting moratoriums and pushing bills requiring water and power resource assessments before project approvals.
4. Risks and Challenges – India Specific:
   - Climate activists in India have found limited political traction; no prominent politician has publicly engaged with ecological concerns raised against hyperscale projects.
   - The dynamics of dissent differ significantly – opposition to government-backed projects risks official crackdown, limiting organised protest space.
   - Absence of a national data centre regulatory policy leaves ecological and community interests structurally unprotected.

Space for Notes

5. Policy Way Forward:
    - Reinstate mandatory EIA for all hyperscale projects, particularly in ecologically sensitive zones.
    - Shift from blanket concessions to conditional incentive frameworks tied to green energy use, water recycling, and genuine local employment generation.
    - Indian climate activists must build cross-party political coalitions, drawing from global protest models and DCW's lobbying strategies.

Conclusion:

India's deregulatory approach to data centre investment reflects a significant governance gap at a critical technological juncture. Global evidence — from US electoral outcomes to EU regulatory shifts — confirms that hyperscale AI infrastructure carries profound ecological and social costs. India must urgently build a regulatory architecture balancing technological ambition with environmental sustainability and community rights.

Mains Practice Question:

Q. AI data centres are essential for India's digital economy, but their rapid expansion raises concerns about ecological sustainability and regulatory governance. Discuss. (10 Marks, 150 Words)

4.17. Green Hydrogen Certification Portal: Strengthening India's Clean Energy Transition

Context:

Union Minister for New and Renewable Energy launched the Green Hydrogen Certification Portal to streamline transparency and regulatory compliance under the Green Hydrogen Certification Scheme

Explanation:

- The launch took place during a national workshop on the National Green Hydrogen Mission.
- Green hydrogen is clean burning hydrogen gas produced by splitting water using renewable electricity like solar or wind power.
- Green Hydrogen Certification Scheme, The Standard:
- Defines green hydrogen from plants producing hydrogen as having emissions below 2 kg CO_2 equivalent per kg of H_2.
- The Process:
- Bureau of Energy Efficiency (BEE) agencies verify plant data to issue tradeable carbon credits.

National Green Hydrogen Mission & Applications:

- The Mission India's ₹19,744 crore mission aims to produce 5 Million Metric Tonnes (MMT) of green hydrogen annually by 2030.
- It drives this transition through the SIGHT (Strategic Interventions for Green Hydrogen Transition) program, which funds local electrolyser manufacturing and clean fuel production.
- The goal is to slash fossil fuel imports and cut 50 million tonnes of annual CO_2 emissions.

Space for Notes

Key Applications:

- Industrial Feedstock: Replaces fossil-fuel-based "grey" hydrogen in oil refineries and ammonia-based fertilizer plants.
- Green Steel: Substitutes coal and natural gas in the steelmaking process to create low-carbon metal.
- Heavy Transport: Powers long-haul trucks, buses, and trains using hydrogen fuel cells for zero-emission transit.
- Energy Storage: Stores excess solar and wind power as hydrogen gas to generate electricity when the grid peaks.
- Shipping & Aviation: Converts into green methanol or sustainable aviation fuel (SAF) for clean long-distance travel.

4.18. Compressed Biogas (CBG) Blending in India's Natural Gas Network

Context:

India is on track to achieve its target of 3% blending of Compressed Biogas (CBG) with CNG and domestic PNG by FY27. The current blending level has already reached nearly 2%, supported by the expansion of CBG production plants under the government's bioenergy initiatives.

Explanation:

- Compressed Biogas (CBG) is a purified form of biogas produced from agricultural residue, cattle dung, municipal solid waste, sewage waste and organic biomass through anaerobic digestion.
- After purification and compression, CBG has properties similar to Compressed Natural Gas (CNG) and can be used as a transport fuel or for domestic and industrial purposes.
- The SATAT (Sustainable Alternative Towards Affordable Transportation) initiative, launched in 2018, promotes CBG production and marketing across India.
- CBG contributes to the circular economy by converting waste into energy while reducing methane emissions, stubble burning and landfill pollution.
- The GOBARdhan Scheme supports waste-to-wealth projects and facilitates establishment of CBG plants.
- CBG blending with PNG (Piped Natural Gas) and CNG helps reduce dependence on imported natural gas, improves energy security, and supports India's climate commitments.
- It also aids the transition towards a gas-based economy, increases farmers' income through biomass utilization, and promotes renewable energy and sustainable transportation.

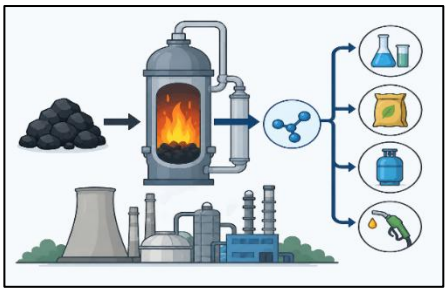
4.19. Coal Gasification and India's Import Substitution Strategy

Context:

The union Coal minister stated that coal gasification can help India substitute imports worth up to ₹3 lakh crore by producing chemicals, fertilisers and hydrogen domestically. The government has also approved a ₹37,500-crore scheme to promote surface coal and lignite gasification projects.

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Explanation:



- **Coal gasification is developed to convert coal into a cleaner and more useful gaseous fuel,** instead of directly burning coal in a highly polluting manner. In this process, coal reacts with controlled oxygen/steam to produce **syngas.**
- **The main objective is to produce syngas,** which can be further used to make **methanol, ammonia, urea, hydrogen, synthetic natural gas, chemicals and liquid fuels.**
- **Syngas mainly consists of hydrogen and carbon-based gases,** especially **hydrogen (H_2), carbon monoxide (CO), carbon dioxide (CO_2)** and sometimes **methane (CH_4).**
- **It helps India use its large domestic coal reserves more productively,** especially when India depends heavily on imports for LNG, ammonia, methanol and fertiliser-related inputs.
- **Advantages include lower direct pollution than conventional coal burning,** better utilisation of low-grade coal, production of multiple industrial products, and support for energy security.
- **It also supports import substitution,** because coal-derived syngas can reduce dependence on imported natural gas, methanol, ammonia and urea-related inputs.
- **India's major goal is to gasify 100 million tonnes of coal by 2030** under the National Coal Gasification Mission.
- India is promoting coal gasification to strengthen energy security, support fertiliser and chemical industries, reduce import bills, and create a transition pathway where domestic coal is used in a cleaner and more value-added manner.

4.20. Recurring Urban Fire Tragedies: A Crisis of Governance and Safety

Context:

A recent fire in a three-storey building in Lucknow claimed at least 15 lives, exposing serious deficiencies in urban fire safety. The structure reportedly had a narrow staircase, inadequate ventilation and no proper emergency exits. The incident demonstrates how regulatory violations and administrative negligence can transform an emergency into a preventable tragedy.



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Explanation:

Factors Increasing the Loss of Life:

- A single narrow staircase can create congestion and prevent the rapid evacuation of occupants.
- The absence of emergency doors, fire-resistant exits and alternative escape routes can trap people inside buildings.
- Poor ventilation accelerates the accumulation of smoke and toxic gases, which often cause more deaths than flames.
- Congested construction and narrow approach roads may obstruct fire engines and delay rescue operations.
- Overcrowding and unauthorised commercial use increase both the probability and severity of fire incidents.

Regulatory and Governance Failures:

- Weak enforcement: Comprehensive fire-safety rules remain ineffective when inspections are irregular and violations are tolerated.
- Administrative negligence: Illegal construction, expired clearances and unauthorised changes in land use often continue without corrective action.
- Fragmented governance: Overlapping responsibilities allow departments to shift blame and delay action.
- Commercial pressures: Owners may avoid safety measures because they increase costs or reduce commercially usable space.
- Limited accountability: Responsibility is often confined to property owners, while negligent or complicit public officials escape meaningful punishment.

Required Reforms:

- Authorities must conduct regular, technology-enabled and third-party fire-safety audits.
- A unified digital database should integrate building approvals, occupancy certificates and fire clearances.
- Fire-safety certificates must be time-bound, publicly accessible and periodically renewed.
- Unsafe buildings should be closed until mandatory exits, ventilation and firefighting systems are installed.
- Governments must clearly assign institutional responsibility and penalise both violators and negligent officials.
- High-occupancy buildings should conduct evacuation drills, while urban planning must ensure access for emergency vehicles.

Conclusion:

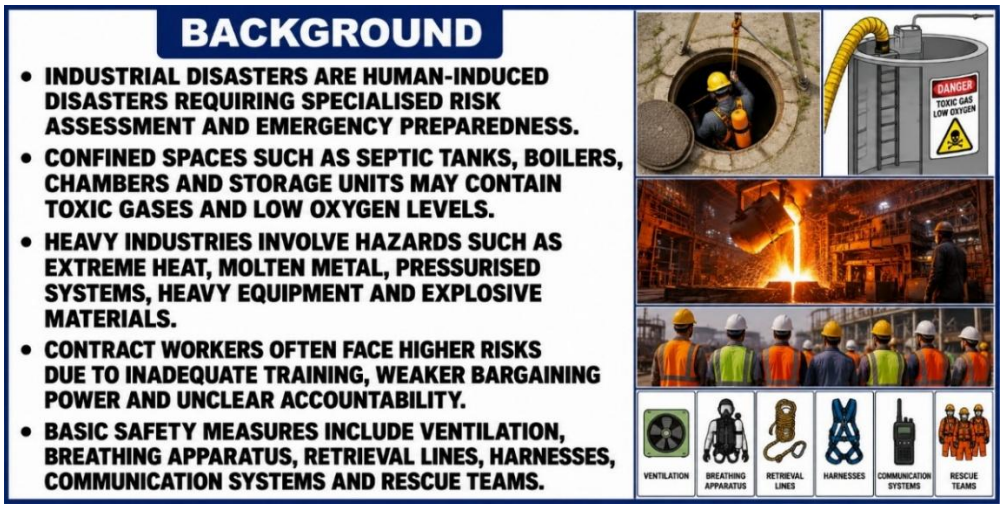
Recurring urban fires reflect unsafe urbanisation, regulatory indifference and weak institutional accountability. Existing laws can protect lives only when they are consistently enforced. Urban development must place human safety above commercial convenience and administrative complacency.

4.21. Industrial Safety and Resilient India 2047

Context:

Industrial accidents in India are often treated as isolated mishaps, but many of them are foreseeable and preventable. Deaths in confined spaces, septic tanks and heavy industrial facilities reveal recurring failures in safety management. These incidents show that the real problem lies not merely in technical risk but in accumulated organisational weaknesses.

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Explanation:

Recurring Pattern of Confined-Space Deaths:

- Many fatalities occur when workers enter hazardous spaces without protective equipment.
- Toxic gases can quickly render workers unconscious, and rescuers may also become victims if they enter without protection.
- Such deaths are rarely unforeseeable; they reflect failures of supervision, training and emergency preparedness.

Organisational Causes of Industrial Accidents:

- Accidents often result from accumulated weaknesses such as reduced staffing, heavier workloads, ageing equipment and deferred maintenance.
- Financial stress and cost-cutting may weaken safety systems in industrial units.
- Dependence on contractual labour can create fragmented responsibility and reduce investment in worker safety.

Disaster Management Dimensions:

- Prevention requires hazard identification, risk assessment, safety audits and strict prohibition of unsafe entry.
- Mitigation requires gas detectors, ventilation systems, fire-control systems, pressure-relief mechanisms and protective engineering.
- Preparedness requires mock drills, on-site and off-site emergency plans, trained rescue personnel and clear communication protocols.
- Response requires rapid rescue, medical evacuation, containment of hazards and coordination among industry, district administration, fire services and health agencies.
- Recovery requires compensation, rehabilitation, accountability, root-cause analysis and correction of safety failures.

Occupational Safety Code Perspective:

- The Occupational Safety, Health and Working Conditions Code, 2020 seeks to ensure safe and healthy working conditions.
- Employers are expected to provide safety training, protective equipment, risk information and emergency arrangements.
- Hazardous industries must adopt stricter standards for health surveillance, safety committees, welfare facilities and emergency planning.

Related Information:

- NDMA's push for "Resilient India 2047" stresses hazard-specific response frameworks and Ministry-level disaster management plans.

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- Sections 35 and 37 of the Disaster Management Act, 2005 require government action and Ministry Disaster Management Plans.
- This reinforces the need to integrate disaster risk reduction into industrial policy, labour regulation and development planning.

Conclusion:

Industrial accidents must be understood as preventable governance and management failures, not unavoidable mishaps. A resilient India requires industries to move from reactive compensation to proactive risk prevention. Strong enforcement, worker training, accountable employers and disaster-ready institutions are essential for occupational safety.

4.22. Tata Chemicals Held Liable for Damage to Gulf of Kutch Marine Sanctuary

Context:

The Gujarat High Court dismissed Tata Chemicals' claim over legacy wastewater channels at its Mithapur plant and held it responsible for ecological damage to the Gulf of Kutch Marine Sanctuary. The Gujarat Pollution Control Board (GPCB) must assess the damage and determine restoration measures and compensation.

Explanation:

- The Gulf of Kutch is an inlet of the Arabian Sea along Gujarat's coast. Its protected marine area lies in the intertidal zone along the Jamnagar coast and islands.
- It is India's first Marine National Park and includes 42 islands, coral reefs, mangroves, mudflats, creeks, estuaries and rocky shores.
- Marine national parks and sanctuaries are protected under the Wildlife (Protection) Act, 1972.
- Industrial effluent is regulated principally through the Water Act, 1974 and Environment (Protection) Act, 1986.
- GPCB is the state authority responsible for preventing and controlling water and air pollution.
- The **Polluter Pays Principle** requires the polluter to bear both compensation and ecological-restoration costs.
- Related environmental principles include the Precautionary Principle, Sustainable Development and Public Trust Doctrine.
- Mangroves act as fish nurseries, stabilise sediments and protect coral reefs from excessive sedimentation.

4.23. INCOIS launches 'NIRMAL-Sagar' initiative to combat marine pollution on World Oceans Day (8th June)

Context:

The Indian National Centre for Ocean Information Services (INCOIS) has launched "NIRMAL Sagar", a clean-ocean initiative to track marine litter in the Indian Ocean Region. It uses ocean modelling, satellite remote sensing and AI/ML tools to identify litter hotspots and forecast debris movement.

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Explanation:

- Marine litter refers to human-made waste such as plastics, fishing nets, packaging material and microplastics entering seas and oceans.
- It harms marine biodiversity, coral reefs, fisheries, coastal tourism, navigation and human health through the food chain.
- INCOIS, under the Ministry of Earth Sciences, provides ocean information services, early warnings and marine advisories.
- The initiative combines remote sensing, ocean currents, wind patterns, artificial intelligence, machine learning and ocean modelling.
- It will help in hotspot mapping, clean-up planning, debris movement forecasting and marine pollution mitigation.
- It supports India's Blue Economy, SDG 14: Life Below Water, coastal zone management and World Ocean Day objectives.

4.24. Bonn Climate Conference 2026: Financing the Fight Against Deforestation

Context:

At SB64, the 64th Session of the Subsidiary Bodies under the UNFCCC in Bonn, countries discussed how to halt deforestation by 2030. The basic debate was over who should pay for forest protection and how conservation claims should be verified.



Explanation:

- The core debate is simple: **rainforest countries want payment for protecting forests, while developed countries want strict rules before providing finance.**
- For example, countries like **Guyana and Suriname** argue that they have kept large forests standing, but the global economy rewards countries that clear forests for agriculture, mining and infrastructure.
- Their argument is that standing forests provide a global climate service by storing carbon, protecting biodiversity and regulating rainfall, so forest-rich countries should receive predictable financial support.
- They demand sovereign-level payments, results-based finance, REDD+ support and use of Article 6 carbon market mechanisms under the Paris Agreement.

- **REDD+ (Reducing Emissions from Deforestation and Forest Degradation)** is a UN-backed mechanism that provides financial incentives to developing countries for reducing deforestation, conserving forests, sustainably managing forest resources and enhancing forest carbon stocks.
- Developed countries accept the importance of forest conservation but focus more on transparency, documentation and accountability.
- The **European Union** stresses supply-chain regulation through measures such as the EU Deforestation Regulation, which seeks to restrict imports linked to deforestation.
- **Switzerland** highlights the need for strong reporting under the Enhanced Transparency Framework and warns against double counting of carbon credits.
- **France** supports market-based tools such as biodiversity credits and blended finance to attract private capital for forest protection.
- A major unresolved issue is the definition of **forest degradation**, because different countries use forests differently and ecological conditions vary widely.
- Civil society groups argue that forest finance must directly reach indigenous peoples and local communities, who are often the real protectors of tropical forests.
- Therefore, the debate involves finance, definitions, carbon-credit integrity, community land rights, benefit-sharing and climate justice.

Conclusion:

The debate is not merely about stopping deforestation; it is about sharing the cost of conservation fairly. Rainforest nations seek compensation for protecting a global ecological asset, while developed countries demand credible monitoring and accountability. A workable solution must combine predictable finance, strong transparency and community rights.

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5. GEOGRAPHY

5.1. National Critical Mineral Mission and India's Critical Mineral Auctions

Context:

The Ministry of Mines has successfully auctioned 56 critical and strategic mineral blocks and 11 Exploration Licence blocks. These auctions support the National Critical Mineral Mission by expanding domestic exploration, attracting private investment and reducing India's dependence on mineral imports.

Explanation:

- The National Critical Mineral Mission (NCMM) seeks to secure minerals essential for economic development, clean energy and national security.
- Critical minerals have high economic importance but face risks of supply disruption, import dependence or geographical concentration.
- India has identified 30 critical minerals, including lithium, cobalt, graphite, nickel, rare earth elements, vanadium and titanium.
- They are used in electric vehicles, batteries, renewable energy, electronics, semiconductors, defence, telecommunications and advanced manufacturing.
- The mission promotes domestic exploration, mining, processing, recycling, overseas mineral acquisition and strategic stockpiling.
- Mineral blocks are auctioned under the Mines and Minerals (Development and Regulation) Act, 1957 and the Mineral (Auction) Rules, 2015.
- An Exploration Licence permits systematic exploration of critical and deep-seated minerals by public or private entities.
- The mission aims to strengthen mineral supply chains, promote private participation and support India's energy transition and strategic autonomy.

5.2. Zojila Tunnel: All-Weather Connectivity Between Kashmir and Ladakh

Context:

The Zojila Tunnel is set to witness its final breakthrough, marking a major step toward all-weather road connectivity between Kashmir and Ladakh. The tunnel is strategically important for civilian mobility, economic integration and military logistics near the LAC.

Explanation:



- Zojila Pass lies on the Srinagar–Leh route and connects the Kashmir Valley with Ladakh.
- It often remains closed in winter due to heavy snowfall, avalanches and landslides.
- The 13.14-km Zojila Tunnel is a high-altitude, single-tube, bi-directional road tunnel.
- It will reduce travel time between Ganderbal and Kargil/Drass sector from about 3 hours to 20 minutes.
- It strengthens border infrastructure, strategic mobility, logistics supply, tourism and regional integration.

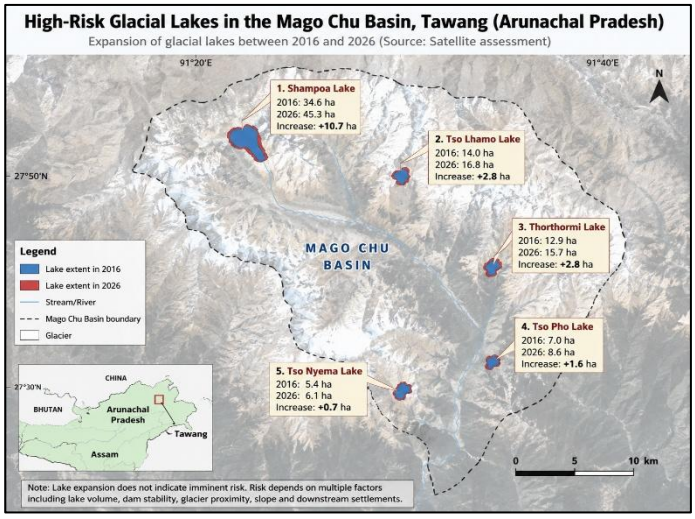
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5.3. Expansion of High-Risk Glacial Lakes in Arunachal Pradesh

Context:

A satellite assessment found that four of five National Disaster Management Authority (NDMA) identified high-risk glacial lakes in the Mago Chu Basin of Tawang in Arunachal Pradesh expanded between 2016 and 2026. Shampoa Lake grew by about 10.7 hectares since 2019; however, expansion alone does not indicate an imminent disaster.

Explanation:



- A glacial lake forms when glacier meltwater accumulates in depressions or behind natural ice or moraine dams.
- A Glacial Lake Outburst Flood (GLOF) is the sudden release of stored water after the lake's natural dam breaches or overflows.
- GLOFs may be triggered by ice or rock avalanches, landslides, earthquakes, intense rainfall, rapid melting or dam erosion.
- Glacial lakes are broadly classified as moraine-dammed, ice-dammed, erosion-formed and other glacial lakes.
- Risk depends on lake volume, expansion rate, dam stability, glacier proximity, surrounding slopes and downstream settlements not merely lake area.
- Satellite remote sensing, including optical and microwave imagery, enables repeated monitoring of inaccessible, cloud-covered Himalayan terrain.
- NDMA undertakes GLOF-risk assessment, while CWC and NRSC monitor changes in Himalayan glacial lakes using satellite data.

5.4. Jonnagiri: India's Largest Private Gold Mine

Context:

Commercial production has begun at the Jonnagiri Gold Mine in Andhra Pradesh, currently India's largest operating private gold mine. It is expected to produce about 400 kg in 2026–27, eventually increasing output to nearly one tonne annually.

Explanation:



- Jonnagiri is located in Tuggali mandal, Kurnool district, in the mineral-rich Rayalaseema region of Andhra Pradesh.
- It is an open-pit mine with an integrated gold-processing facility, developed by Geomysore Services India Private Limited.
- Around 12 tonnes of mineable gold have presently been identified, while further exploration may increase the resource base.

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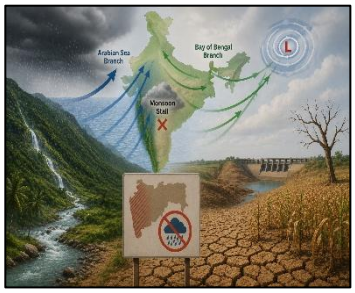
- Mineral resources indicate geological occurrence, whereas mineral reserves are the economically and legally extractable portion.
- Gold is extracted from ore through crushing, grinding, concentration and metallurgical processing before refining.
- Gold mining is regulated principally by the Mines and Minerals (Development and Regulation) Act, 1957 and associated mineral-conservation rules.
- Primary gold attracts a 4% royalty, calculated using the London Bullion Market Association price; royalty revenue accrues to the State government.

5.5. Southwest Monsoon Progress and Rainfall Deficit over Maharashtra

Context:

The southwest monsoon has stalled over Maharashtra despite advancing rapidly across much of India. This has resulted in a significant rainfall deficit in parts of western India, raising concerns for agriculture, water availability, and reservoir storage.

Explanation:



- The Southwest Monsoon is India's primary rainy season, providing nearly 75% of annual rainfall between June and September.
- It is driven by differential heating of land and sea, creating low pressure over the Indian subcontinent and drawing in moisture-laden winds from the oceans.
- The monsoon has two branches: the Arabian Sea Branch and the Bay of Bengal Branch.
- The Arabian Sea branch first strikes the Western Ghats, causing orographic rainfall on the windward side.
- Variations in monsoon rainfall are influenced by factors such as El Niño, La Niña, Indian Ocean Dipole (IOD), Madden–Julian Oscillation (MJO), pressure systems, and monsoon depressions.
- The Madden–Julian Oscillation (MJO) is an eastward-moving atmospheric disturbance that can enhance or suppress rainfall over the Indian Ocean region.
- Monsoon progress depends on the formation of low-pressure systems and depressions, particularly over the Bay of Bengal.
- The monsoon's stagnation over Maharashtra is primarily a result of weak Arabian Sea winds, absence of monsoon surges, lack of low-pressure systems and an unfavourable The Madden–Julian Oscillation (MJO) phase. However, this is a temporary atmospheric situation and does not by itself determine the rainfall outcome for the entire monsoon season.

5.6. Basalt Fibre

Context:

China is using basalt fibre-based materials in Xinjiang to protect crops and farmland from desert winds, soil erosion and salinity near the Taklamakan Desert.

Explanation:



- Basalt fibre is an eco-friendly, high-performance material made by melting volcanic basalt rock and drawing it into thin fibres.
- It is considered a cost-effective alternative to carbon fibre and glass fibre due to its strength, durability and lower environmental impact.
- It is stronger and lighter than steel, with high tensile strength, corrosion resistance and excellent thermal insulation properties.
- It can withstand high temperatures, radiation, ultraviolet exposure and corrosive chemicals, making it suitable for harsh environments.
- China used basalt fibre in the flag deployed during the Chang'e-6 lunar mission because of its ability to withstand extreme temperature fluctuations, radiation and vacuum conditions on the Moon.
- In civil engineering, it is used as basalt rebar and basalt-fibre-reinforced polymer for concrete reinforcement, especially where steel may rust.
- In automobile, aerospace and marine sectors, it is used for lightweight panels, insulation, fireproofing, exhaust systems, boat hulls and anti-corrosive pipelines.
- It is also used in fire-safety materials, protective clothing, sports goods and environmental applications such as sand barriers, windbreaks and desertification control structures.

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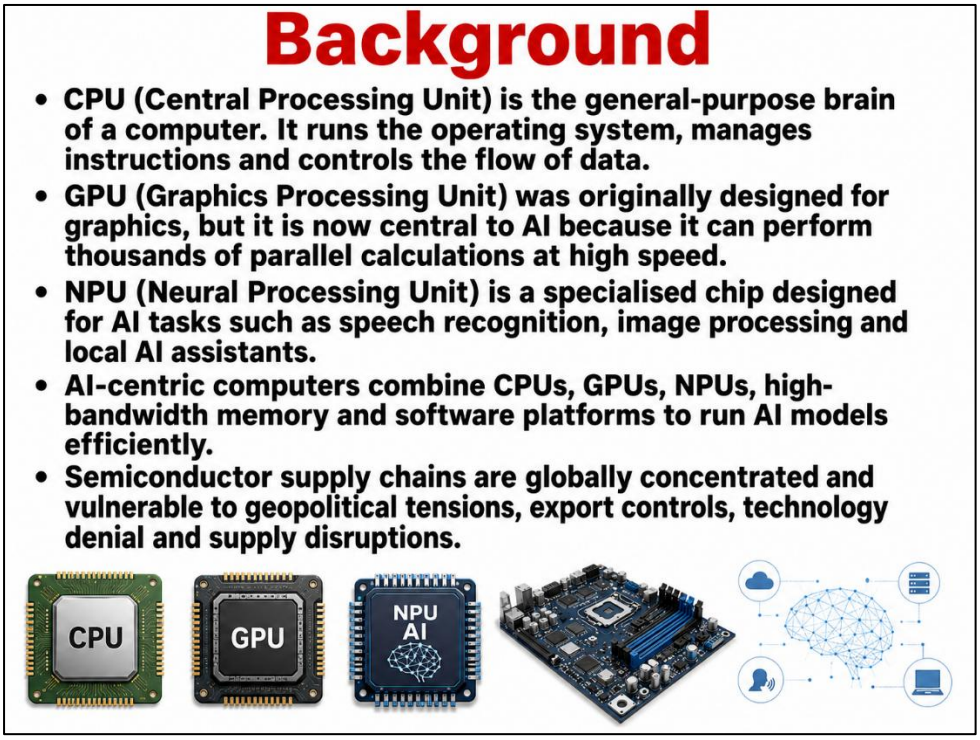
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6. Science and Technology

6.1. Nvidia's RTX Spark: Redefining AI-Powered Personal Computing

Context:

Artificial Intelligence is transforming the design of computers, the organisation of industries and the nature of geopolitical power. Modern AI systems require specialised chips, massive computing capacity, high-speed memory and secure digital infrastructure. Therefore, semiconductors are no longer only industrial inputs; they have become strategic assets linked with economic competitiveness, national security and digital sovereignty.



Explanation:

1. Shift from CPU-centric to AI-centric computing:
   - Traditional computers were largely CPU-centric because most tasks required sequential processing, such as opening applications, managing files, browsing the internet and running general software like Word and Excel.
   - AI workloads are different because they require massive parallel processing for training, inference, graphics, simulations and large language models.
   - Hence, the future computer is becoming AI-centric, where the CPU manages the system, the GPU performs large-scale parallel computation, and the NPU handles specialised AI tasks efficiently.
2. Purpose of GPU and Nvidia's advantage:
   - **Nvidia is an American semiconductor company** that became globally dominant in AI infrastructure through its powerful GPUs.
   - Nvidia's advantage came not only from hardware, but also from its **CUDA (Compute Unified Device Architecture)** software ecosystem.
   - CUDA allowed researchers and developers to use Nvidia GPUs for deep learning, scientific computing, generative AI and AI model training.
   - This hardware-software integration gave Nvidia an early advantage over traditional chipmakers and made its GPUs central to data centres and AI development.

3. **Emergence of superchips:**
   - The new race is moving towards integrated "superchips" that combine CPU, GPU, memory and high-speed interconnects.
   - Nvidia's **GB10 Grace Blackwell Superchip**, used in **DGX Spark**, represents this trend of compact AI supercomputing.
   - Such chips aim to run advanced AI models locally on laptops, desktops and workstations, reducing dependence on remote cloud servers.
   - This also marks a shift from ordinary personal computers to AI-enabled personal computing devices.
4. **New global chip race:**
   - The earlier computer-chip race was dominated by CPU leaders such as Intel.
   - The present race includes Nvidia, Intel, AMD, Apple, Qualcomm and major cloud companies competing in AI chips, personal computing, data centres and software ecosystems.
   - Future power will depend not only on chip speed, but also on memory bandwidth, energy efficiency, AI software platforms, chip design and supply-chain control.
5. **India Semiconductor Mission:**
   - India Semiconductor Mission seeks to build domestic capacity in chip fabrication, design, assembly, testing, marking and packaging.
   - It provides incentives for fabs, compound semiconductors, display fabs and design-linked support.
   - However, India still faces challenges such as high capital cost, long fab gestation, dependence on imported equipment, shortage of specialised talent and limited ecosystem depth.
   - For India, semiconductor manufacturing is important because dependence on foreign chips can create risks for electronics, defence, telecommunications, automobiles and digital infrastructure.
6. **NITI Aayog's recommendations:**
   - NITI Aayog stresses that India should not blindly chase only the most advanced chips.
   - It recommends focus on mature nodes, compound semiconductors, chip design, packaging, R&D, talent development and trusted partnerships.
   - It also calls for strategic depth, capital efficiency and import substitution in high-volume domestic segments.
   - This approach can help India move from mere assembly and import dependence towards a resilient semiconductor ecosystem.

Conclusion:

AI has made semiconductors the foundation of economic and strategic power. The global race is shifting from ordinary computing to AI-centric computing built around GPUs, NPUs and superchips. For India, success depends on patient capital, skilled manpower, design strength, trusted supply chains and a realistic semiconductor strategy.

Mains Practice Question:

Q. **Artificial Intelligence has transformed semiconductors from industrial components into strategic assets. Discuss with reference to the emerging AI chip ecosystem and India's semiconductor ambitions.** (10 Marks,150 Words)

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6.2. Bharat Innovates 2026 and India–France Deep Tech Partnership

Context:

India and France jointly launched Bharat Innovates 2026 in Nice, France to strengthen cooperation in deep technology, innovation, education and entrepreneurship. The event showcases Indian startups and technologies for global partnerships.

Explanation:

- Deep Tech refers to advanced technologies based on scientific research and engineering innovation.
- It includes AI, semiconductors, biotechnology, healthcare technology, energy, space, defence, climate tech and advanced manufacturing.
- Bharat Innovates 2026 aims to promote Indian innovations before global investors, industries, universities and policymakers.
- The event showcases technologies developed by Indian startups, innovators and higher education institutions.
- India–France cooperation already covers space, defence, nuclear energy, climate action, digital technology and education.
- Such platforms help India integrate with global innovation networks and attract investment.
- It supports India's goals of Atmanirbhar Bharat, Startup India, Digital India, Make in India and innovation-led growth.

6.3. SpaceX Initial Public Offering and the Rise of the Commercial Space Economy

Context:

SpaceX debuted on the stock market through an Initial Public Offering (IPO), with its share price surging significantly on listing and pushing Elon Musk's net worth beyond the trillion-dollar mark.

Explanation:

- SpaceX founded in 2002 by Elon Musk, SpaceX is a private American aerospace manufacturer and space transportation company.
- Headquarters: Starbase, Texas, United States.
- Objective: Reduce the cost of space transportation and enable the long-term human settlement of Mars.
- Developed the Falcon 9 and Falcon Heavy reusable launch vehicles, significantly lowering launch costs.
- Operates the Dragon spacecraft, used for cargo and crew transportation missions to the International Space Station (ISS).
- Runs the Starlink satellite constellation, providing broadband internet services through Low-Earth-Orbit (LEO) satellites.
- Developing Starship, a fully reusable super-heavy launch vehicle designed for lunar, Mars and deep-space missions.
- Became the first private company to send astronauts to the ISS under NASA's Commercial Crew Program.

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6.4. Character AI and Mental Health Risks for Young Users

Context:

Mental health professionals have warned that **Character AI platforms** may create psychological risks for young users. Such platforms allow immersive conversations with simulated personalities, which may blur the line between entertainment, companionship and emotional dependence.

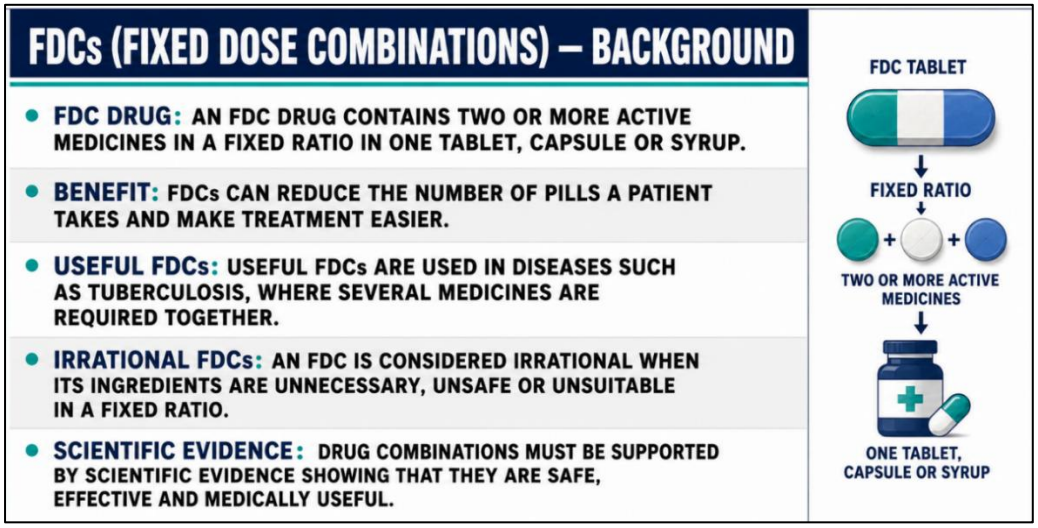
Explanation:

- Character AI refers to AI chatbots that simulate personalities such as historical figures, celebrities, fictional characters or customised companions.
- Unlike ordinary chatbots, these platforms allow users to build personalised narratives and emotional interactions.
- Such AI systems are based on generative artificial intelligence, especially large language models, which generate human-like responses.
- Young users may develop strong emotional attachment because the chatbot appears responsive, personalised and always available.
- Key concerns include psychological dependence, social isolation, parasocial relationships, reduced real-world interaction and vulnerability to harmful advice.
- The issue is linked to broader debates on AI ethics, digital safety, algorithmic accountability and child protection online.
- India's governance concerns include regulation of AI platforms, data privacy, consent, age-appropriate design and online mental health safeguards

6.5. Ban on Irrational Fixed-Dose Combination Drugs

Context:

Recently, the Union Health Ministry banned **16 Fixed-Dose Combination (FDC) drugs** after experts found that they lacked medical justification and could harm patients. These include certain antibiotics, painkillers, antispasmodics and skin medicines. Drug authorities have been directed to stop their manufacture, distribution and sale.



Explanation:

Benefits of Proper FDCs:

- They reduce the **pill burden**, especially during long-term treatment.
- They may help patients follow the full treatment schedule.
- Some medicines work better when combined in a scientifically tested ratio.

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Problems with Irrational FDCs:

- Different patients may need different doses, but the fixed ratio cannot be changed separately.
- If a patient develops an allergy, it may be difficult to identify the responsible ingredient.
- A patient may not require every drug included in the combination.
- Unnecessary medicines can cause avoidable side effects without improving treatment.

Risk of Antibiotic Resistance:

- Irrational antibiotic combinations expose bacteria to unnecessary or unsuitable medicines.
- Some bacteria may survive and develop resistance.
- This contributes to **antimicrobial resistance**, in which antibiotics become less effective against infections.
- Antibiotic-based combinations formed a significant part of the large FDC ban announced in 2016.

Government Action:

- The recent ban was based on a scientific review of safety and therapeutic usefulness.
- State Drug Controllers and enforcement agencies must ensure compliance.
- Manufacturers, importers, distributors and pharmacies must stop stocking and selling the banned medicines.

Need for Better Monitoring:

- Earlier bans were not fully effective because some prohibited medicines remained available in pharmacies.
- Authorities must conduct regular inspections and market surveillance.
- Information about banned drugs must quickly reach every manufacturer, distributor and pharmacy.
- Digital tracking, strict penalties and public awareness can improve enforcement.

Conclusion:

Banning irrational FDCs protects patients and supports evidence-based medicine. However, notification alone is not enough. Strong monitoring is necessary to remove banned medicines from the market.

6.6. China's LineShine Tops the TOP500 Supercomputer Ranking

Context:

China's **LineShine supercomputer**, installed at the National Supercomputing Centre in Shenzhen, has reportedly secured first place in the June 2026 **TOP500** ranking. The result highlights China's growing domestic capability in high-performance computing amid technological competition with the United States.

Explanation:



- A supercomputer is an extremely powerful computing system designed to perform massive calculations at very high speed.
- Its performance is commonly measured in FLOPS—floating-point operations per second.
- Petaflop means 10^{15}operations per second, while exaflop means 10^{18}operations per second.

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- Supercomputers use parallel processing, in which thousands of processors work simultaneously on different parts of a problem.
- The TOP500 is a biannual global ranking of the world's most powerful publicly benchmarked supercomputers.
- It mainly uses the LINPACK benchmark, which tests the speed of solving complex linear equations.
- Applications include weather forecasting, climate modelling, nuclear research, space science, drug discovery, artificial intelligence and fluid dynamics.
- Supercomputers require advanced processors, high-speed networks, large storage capacity and extensive cooling systems.
- Quantum computers are different: they use qubits and quantum effects rather than conventional parallel processing.

6.7. Project Nimbus and the Israel Cloud Computing Controversy

Context:

Project Nimbus, a cloud-computing contract between Israel and technology companies Google and Amazon, has sparked protests by students and employees who argue that the technology could support surveillance and military operations in the Israel–Palestine conflict.



Explanation:

- Project Nimbus is a US$1.2 billion cloud-computing and artificial intelligence (AI) contract awarded by Israel to Google Cloud and Amazon Web Services (AWS).
- The project provides cloud infrastructure, data storage, computing power and AI services to Israeli government ministries and public agencies.
- Critics allege that cloud and AI technologies may facilitate surveillance, intelligence gathering and military operations, particularly in conflict zones.

Supporters argue that cloud infrastructure is essential for government digital services, cybersecurity, public administration and data management. The companies also maintain that the project provides civilian cloud services and does not involve offensive military applications.

6.8. Sound Waves in Next-Generation Computing

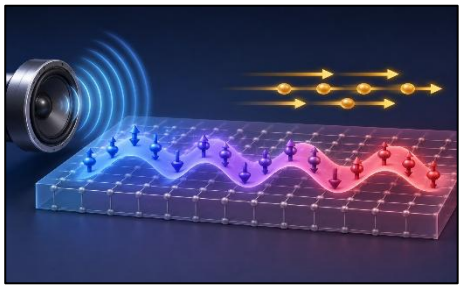
Context:

Current computers waste significant energy as heat because they rely on moving electric charge through circuits. Scientists are now exploring spintronics, a technology that uses the magnetic spin property of particles instead of electric charge to carry information. A recent breakthrough shows that sound waves can generate and control this spin-based information flow, potentially revolutionising energy-efficient computing.

Explanation:

- Traditional electronics move electrons (electric charge) through circuits to process information, but this produces substantial heat and energy loss, creating a physical barrier to making devices faster and smaller.

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- Spintronics bypasses this limitation by using the spin property of electrons (an intrinsic quantum magnetic property) to carry information, consuming far less energy than conventional charge-based systems.
- In spintronic systems, Magnons serve as information carriers. These are collective magnetic disturbances that propagate through magnetic materials, analogous to how electrons flow in normal circuits but with significantly lower energy dissipation.
- Phonons are quantised units of sound and vibration that travel through solid materials at the atomic level. Researchers have now established that phonons can directly excite and control magnons within magnetic materials.
- This phonon-magnon coupling is the central discovery. It means sound waves alone can trigger, direct and regulate spin currents inside materials without requiring any electric current input.
- The ability to control spin currents acoustically has direct applications in quantum computing, where low-energy, precise control of quantum states (qubits) is a critical requirement for stable operation.
- Beyond quantum computing, this mechanism supports development of next-generation communication technologies that transmit information with minimal signal loss and heat generation.
- The discovery advances the emerging field of Magnonics, where magnons replace electrons as primary information carriers, potentially forming the foundation of a completely new computing architecture that is faster, cooler and more energy-efficient than silicon-based systems.

6.9. Post-Quantum Cryptography for India's Critical Sectors

Context:

A Government task force has recommended that India's critical sectors such as government, defence, banking, telecom, transport and power should shift towards quantum-safe encryption. The warning is that future quantum computers may break present public-key encryption systems, risking confidential data and digital trust.

Explanation:

- **Encryption means converting readable information into secret code** so that only the authorised person or system can read it.
- **Example:** if India's defence forces send missile-location or border-surveillance data, encryption ensures enemies cannot understand it even if they intercept it.
- **The need for encryption is rising** because government, banking, telecom, transport and power systems now depend heavily on digital networks.
- **Today, normal mathematical encryption dominates global digital systems**, while **another type called quantum cryptography** is still limited to experimental, specialised and high-security uses.
- **A key property of quantum mechanics is that observing a quantum particle changes its state**; in cryptography, this can help detect if someone secretly tries to intercept a key.

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- **But quantum cryptography is costly and hardware-heavy**, so it cannot easily protect every bank, mobile tower, website, power grid and government database.
- **A third type called Post-Quantum Cryptography is therefore needed** because it can be added through software upgrades and can protect existing digital infrastructure at large scale.
- **For India, quantum-safe encryption is important** to protect national security, financial trust, citizen data and digital sovereignty.

6.10. Rising Burden of Non-Communicable Diseases in India

Context:
Non communicable diseases accounted for around 60% of all deaths in India during 2022–2024, showing a major shift in India's mortality pattern. The rise is visible not only in urban areas but also among rural populations, women and younger age groups.
Explanation:

- **Non-communicable diseases (NCDs)** are diseases that **do not spread from one person to another** through infection.
- They are generally **long-duration diseases** that develop slowly and require continuous prevention, screening and treatment.
- Major NCDs include **cardiovascular diseases, cancer, diabetes, chronic respiratory diseases, chronic kidney diseases and digestive disorders.**
- NCDs are increasing because India is undergoing an **epidemiological transition**, where infectious disease deaths decline but lifestyle-related and age-related diseases rise.
- **Ageing population** increases NCD risk because hypertension, heart disease, diabetes and cancer become more common with age.
- **Unhealthy diet**, high salt, sugar, trans fats, processed foods and low intake of fruits and vegetables increase obesity, diabetes and heart disease.
- **Physical inactivity**, sedentary jobs, urban lifestyle and reduced manual work increase metabolic disorders.
- **Tobacco, alcohol and air pollution** raise the risk of cancer, stroke, heart disease and respiratory diseases.
- **Stress, poor sleep and mental health issues** are emerging contributors, especially among working-age groups.
- NCDs are now rising even in rural India due to changing diets, pollution, tobacco use, poor screening and weak primary healthcare.

6.11. Japanese Encephalitis (JE) and Acute Encephalitis Syndrome (AES) in India

Context:
Assam has reported seven deaths due to Japanese Encephalitis (JE) and several deaths due to Acute Encephalitis Syndrome (AES) in 2026. Health authorities have clarified that JE is one of the causes of AES, but not all AES cases are caused by JE.
Explanation:

- Acute Encephalitis Syndrome (AES) is a clinical condition characterized by acute onset of fever with altered mental status, seizures, or neurological complications.
- Japanese Encephalitis (JE) is a viral disease caused by the Japanese Encephalitis Virus (JEV) and is one of the major causes of AES in India.

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- JEV belongs to the Flavivirus group, which also includes dengue, yellow fever, and West Nile viruses.
- The disease is transmitted through the bite of infected Culex mosquitoes, making it a vector-borne disease.
- Pigs act as amplifying hosts and water birds serve as reservoir hosts; humans are considered dead-end hosts.
- JE outbreaks are common during the monsoon and post-monsoon season, especially in rice-growing and waterlogged regions.
- Symptoms include high fever, headache, seizures, inflammation of the brain (encephalitis), paralysis, and neurological damage.
- Prevention relies on JE vaccination, vector control, surveillance, sanitation, and public health awareness.

6.12. Dark Patterns in India's Online Marketplaces

Context:

India's rapidly expanding digital consumer market is facing a significant threat from deceptive interface design practices known as dark patterns. A report by market research firm Datum Intelligence estimates that Indian online buyers are losing between Rs 25,000 crore and Rs 28,000 crore annually to such manipulative tactics. With 304 million online buyers, the scale of consumer harm demands urgent regulatory attention.

Explanation:

- Dark patterns are deliberately deceptive user interface designs on websites and apps that manipulate consumers into making unintended purchases, subscriptions or payments, exploiting cognitive biases rather than informing free choice.
- As per the report, 88% of India's 304 million online buyers are affected, losing approximately Rs 78 to Rs 87 per month each through practices such as hidden charges, forced add-ons, drip pricing, false urgency cues and subscription traps.
- Drip pricing is a tactic where a product is advertised at an attractively low base price, but additional mandatory charges such as platform fees, convenience fees, taxes and handling charges are revealed gradually at each step of checkout, resulting in a final price significantly higher than what the consumer originally saw. By the time the full cost is visible, the consumer is psychologically committed to completing the purchase.
- Common dark pattern tactics also include false urgency ("only 2 left!"), forced add-ons (pre-ticked items added without consent), and subscription traps (easy sign-up but deliberately difficult cancellation).
- India's Department of Consumer Affairs notified Guidelines for Prevention and Regulation of Dark Patterns in 2023 under the Consumer Protection Act, 2019, marking one of the earliest regulatory frameworks globally to specifically address dark patterns in e-commerce.

6.13. Kavach Deployment Approved for East Coast Railway

Context:

Indian Railways has approved the installation of the indigenous Kavach train-safety system across 631 route kilometres of the East Coast Railway at a cost of ₹270 crore. The project will cover six railway sections and improve the safety and reliability of passenger and freight operations.

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Explanation:



- Kavach is India's indigenously developed Automatic Train Protection (ATP) and collision-avoidance system.
- It was developed by the Research Designs and Standards Organisation (RDSO) in collaboration with Indian industry.
- The system continuously exchanges information between locomotives, railway tracks and signalling infrastructure.
- It prevents Signal Passing at Danger (SPAD), which occurs when a train crosses a stop signal without authorisation.
- Kavach automatically applies brakes when the locomotive pilot fails to respond to a danger signal or exceeds the prescribed speed.
- It helps maintain a safe distance between trains and reduces the possibility of collisions.
- The system uses LTE-based communication, radio-frequency identification devices, onboard equipment and station control units.
- It improves railway operations during poor visibility, particularly dense fog.

6.14. RudraM-II Air-to-Surface Missile Flight-Tested Successfully

Context:

DRDO and the Indian Air Force have successfully conducted flight-tests of the RudraM-II air-to-surface missile from an airborne platform. The missile achieved pin-point accuracy and validated critical subsystems under extreme release conditions.

Explanation:



- RudraM-II is an indigenously developed air-to-surface missile meant to be launched from fighter aircraft against ground-based targets.
- It has been developed by the Defence Research and Development Organisation in collaboration with the Indian Air Force.
- Air-to-surface missiles are used to strike enemy radars, command centres, air defence systems and other strategic targets from the air.
- The RudraM missile family strengthens India's stand-off strike capability, allowing aircraft to attack targets from a safer distance.
- Such weapons improve precision strike capability, reduce pilot risk and support suppression of enemy air defences.
- Successful testing validates guidance, propulsion, control systems, release mechanism and target accuracy.

6.15. Nanographene-Based Ultra-Porous Materials and Reticular Chemistry

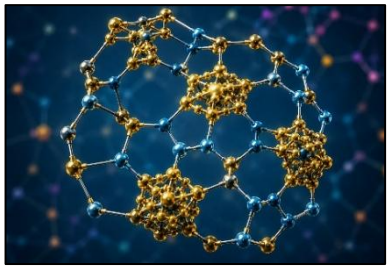
Context:

Scientists led by Nobel Laureate Omar Yaghi have developed new ultra-porous three-dimensional materials using nanographene-based molecular building blocks. The breakthrough could enable advanced gas storage, separation technologies, and next-generation functional materials.

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Explanation:

- **Nanographene** refers to very small fragments of graphene, made of carbon atoms arranged in a honeycomb-like pattern.
- **Graphene** is a single layer of carbon atoms and is known for its strength, light weight, conductivity and large surface area.
- Scientists designed a molecule called **HBC-LA12**, which has **12 connection points** arranged in a prism-like shape. These connection points allow the molecule to link with other molecules in a planned manner.



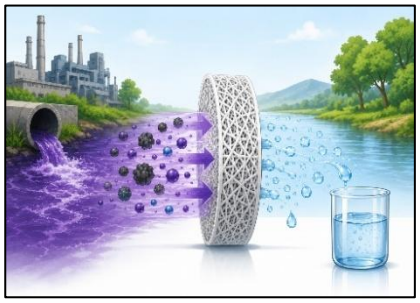
- By connecting many such molecules, scientists created two new **three-dimensional porous structures**.
- These materials are called **ultra-porous** because they contain a very large number of tiny empty spaces or pores.
- One of the new structures has a record surface area of about **5,000 square metres per gram**.
- A high surface area means more space is available for gases or molecules to attach inside the material. This is important because such materials can be used to **store gases** like hydrogen, methane or carbon dioxide.
- The breakthrough is related to **reticular chemistry**, which means designing materials by joining molecular building blocks in a planned pattern.
- Omar Yaghi is known for pioneering **metal-organic frameworks**, or **MOFs**, which are highly porous materials.
- Such materials can be useful in **clean energy, gas separation, carbon capture, water harvesting, catalysis and environmental technologies**.

6.16. Advanced Electrospun Nanofiber Membrane Technology for Sustainable Treatment of Textile Wastewater

Context:

Scientists at CSIR–Indian Institute of Chemical Technology have developed an advanced electrospun nanofiber membrane capable of efficiently removing dye pollutants from textile wastewater.

Explanation:



- Electrospun Nanofiber Membrane is developed using a blend of Polyvinylidene Fluoride (PVDF) and Polyethersulfone (PES).
- Fabricated through the electrospinning technique that produces ultrafine fibers using an electric field.
- Enhanced with Graphene Oxide (GO), Graphene Nanoplatelets (GNPs), and Metal-Organic Frameworks (MOFs).
- Achieves nearly 99.1% dye rejection efficiency against crystal violet dye.
- Possesses high surface area, interconnected porous structure, and superior permeability.
- Exhibits improved hydrophilicity, anti-fouling characteristics, and mechanical stability.
- Applications include wastewater treatment, desalination, air purification, gas separation, and biomedical filtration

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6.17. Network Survey Vehicles for Safer and Smarter National Highways

Context:
The Ministry of Road Transport and Highways has announced the deployment of Network Survey Vehicles (NSVs) across India's National Highway network. These vehicles use advanced 3D laser-based systems, GPS and imaging technology to monitor road quality and improve highway safety.

Explanation:

- Network Survey Vehicles (NSVs) are specialised vehicles used for scientific assessment of road conditions.
- They are equipped with laser profilers, high-resolution cameras, GPS, imaging systems and 3D laser sensors.
- NSVs detect potholes, cracks, rutting, unevenness, surface distress and road geometry defects.
- They help create digital road-condition maps for better planning, maintenance and monitoring.
- The technology supports data-driven highway asset management and reduces dependence on manual inspection.
- It improves riding quality, road safety, accident prevention and timely maintenance of National Highways.
- The initiative aligns with smart infrastructure, digital governance, road safety, preventive maintenance and efficient public expenditure.

6.18. James Webb Telescope Captures Weather on Exoplanet WASP-94A b

Context:
The James Webb Space Telescope (JWST) has helped scientists study weather patterns on WASP-94A b, a gas-giant exoplanet about 700 light years away. The study observed changing cloud patterns, temperature differences and atmospheric composition on the planet.

Explanation:

- Exoplanets are planets located outside our Solar System, orbiting stars other than the Sun.
- JWST studies exoplanet atmospheres using spectroscopy, where starlight passing through a planet's atmosphere reveals chemical composition. The transit method is used when a planet passes in front of its star, causing a temporary dip in starlight.
- The study found weather-like patterns, including clouds of silicate, iron and magnesium sulphide.
- Understanding exoplanet atmospheres helps scientists study planet formation, atmospheric chemistry and habitability.

6.19. Carbon Isotopes Reveal the Ancient Origin of Interstellar Comet 3I/ATLAS

Context:
Scientists studying the interstellar comet 3I/ATLAS have estimated that it formed nearly 12 billion years ago in a cold planetary system outside the Solar System. Its hydrogen and carbon isotope ratios were analysed using the James Webb Space Telescope.

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Explanation:

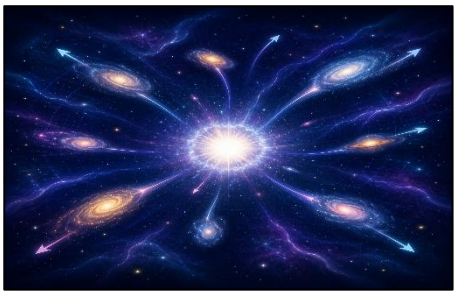
- Isotopes are atoms of the same element having the same number of protons but different numbers of neutrons.
- Examples: Hydrogen isotopes include protium or ordinary hydrogen (0 neutrons, stable), deuterium (1 neutron, stable), and tritium (2 neutrons, radioactive); Carbon includes carbon-12 (6 neutrons, stable), carbon-13 (7 neutrons, stable), and carbon-14 (8 neutrons, radioactive & used for dating); while Uranium includes uranium-234 (142 neutrons), uranium-235 (143 neutrons, fissile), and uranium-238 (146 neutrons, most abundant).
- Isotopes possess similar chemical properties but differ in atomic mass and sometimes in nuclear stability.
- Stable isotopes do not undergo radioactive decay, while radioactive isotopes decay at predictable rates.
- The relative abundance of isotopes is called the isotopic ratio or isotopic signature.
- Isotopic ratios act as natural records because they vary with temperature, radiation and the chemical environment during formation.
- Hydrogen isotopes, especially the deuterium-to-hydrogen ratio, can indicate the temperature at which water-bearing material formed.
- Carbon-isotope ratios provide clues about the gas clouds and stellar environments from which an object originated.
- Radiometric dating uses radioactive decay and half-life to determine the age of rocks and fossils.
- 3I/ATLAS is an interstellar object, meaning it originated beyond the Solar System and follows an unbound trajectory.

6.20. Universe's Expansion Still Accelerating: New Supernova Study

Context:

A new study using fresh supernova data has confirmed that the universe is still expanding at an accelerating rate. This supports the idea that **dark energy** continues to drive cosmic expansion, despite earlier doubts about the strength of evidence.

Explanation:



- The Big Bang theory explains that the universe began from an extremely hot and dense state and has been expanding ever since.
- In 1998, scientists discovered that the universe's expansion is not slowing down but accelerating, based on observations of distant Type Ia supernovae.
- **Type Ia** supernovae act as "standard candles" because their known brightness helps measure cosmic distances.
- The acceleration is mainly linked to dark energy, a mysterious force believed to make up nearly 68% of the universe.
- Dark matter adds gravitational pull, while dark energy pushes expansion outward.
- The study used improved calibration of supernova data, reducing doubts about earlier findings.

6.21. A Black Hole's Elusive Wind: Sagittarius A

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Context:

For over 50 years, astronomers suspected that Sagittarius A, the supermassive black hole at the centre of the Milky Way, was blowing powerful winds of hot gas into space but lacked direct evidence. A new study using the ALMA telescope in Chile has now provided the first definitive proof, resolving one of astrophysics' longest-standing observational puzzles.

About Sagittarius A:

- Sagittarius A is the supermassive black hole sitting at the centre of our Milky Way galaxy, millions of times more massive than the Sun, and is now confirmed to be actively blowing a wind of hot gas outward into space.
- Researchers used five years of data from the ALMA telescope in Chile to detect a large cone-shaped clearing in the gas surrounding the black hole, at least 3.2 lightyears long, formed by this outward-blowing wind.
- When gas is pulled toward the black hole, it swirls and accelerates rather than falling straight in. Friction from these swirling heats the gas to millions of degrees, eventually turning it into a superheated plasma that gets pushed outward as wind.
- This wind acts as a natural regulator of the galaxy by blowing away gas that would otherwise form too many stars. If unchecked, excessive star formation and subsequent stellar explosions could strip the galaxy of all its gas, permanently halting the Milky Way's ability to grow and evolve.

7. INTERNAL SECURITY

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7.1. Constitutional Governance and Post-Maoist Peace

Context:

Recently, the union home minister has stated that the fight against Maoism will remain incomplete until every resident of Bastar is integrated into the mainstream. The government has projected March 31, 2026 as the target for eliminating Maoist violence, while also indicating that the larger road to 2030 must focus on welfare, development and democratic integration. Therefore, the next phase in Left-Wing Extremism-affected regions must move beyond security success towards constitutional trust-building among Adivasi communities.

Background:

- Left-Wing Extremism refers to armed insurgency inspired by Maoist ideology, which seeks to overthrow the State through violent revolutionary methods.
- LWE expanded mainly in forested, mineral-rich and tribal regions due to underdevelopment, land alienation, displacement, exploitation and weak governance.
- Maoist groups used grievances related to jal, jungle and zameen to build influence among vulnerable communities.
- The State has responded through security operations, infrastructure expansion, welfare delivery, communication networks and administrative outreach.
- However, durable peace requires constitutional governance through the Fifth Schedule, PESA Act, Gram Sabha empowerment and protection of Adivasi dignity.

Explanation:

- **From security victory to social peace:** Eliminating Maoist violence may restore order, but lasting peace requires addressing the deeper causes of alienation. Welfare schemes, roads and mobile towers are important, but they cannot replace trust, dignity and participatory governance.
- **Road to 2030:** The post-2026 phase must ensure that Bastar's Adivasis experience real inclusion. The road to 2030 should focus on democratic values, cooperative governance, doorstep welfare delivery and confidence-building between the State and local communities.
- **Centrality of jal, jungle and zameen:** Adivasi aspirations are closely linked with water, forests and land. Development projects, mining, resource extraction and infrastructure expansion must respect community rights, ecological dependence and cultural identity.
- **Importance of PESA:** The Panchayats Extension to Scheduled Areas Act, 1996 was enacted to deepen self-governance in Scheduled Areas. It recognises the Gram Sabha as the foundation of local democracy and gives it authority over community resources, customs, dispute resolution and local development.
- **Gram Sabha and consent:** Gram Sabha consent is central to decisions affecting land, forests, rehabilitation and livelihoods. If consent is ignored, diluted, forged or treated as a formality, it creates mistrust and weakens constitutional governance.
- **Weak implementation challenge:** PESA has suffered due to delayed rules, bureaucratic dominance, state-level dilution and weak administrative commitment. Effective implementation requires empowering Gram Sabhas in letter and spirit.

- **Mainstreaming with dignity:** Mainstreaming should not mean cultural assimilation or lowering Adivasi aspirations. It should mean equal citizenship with respect for identity, self-governance, livelihood security and constitutional safeguards.

Conclusion:

The decline of Maoist violence must become the beginning of constitutional justice in Adivasi regions. Real peace requires the State to respect Gram Sabha authority, protect jal, jungle and zameen, and implement PESA meaningfully. Adivasi trust will be the true test of democratic governance in post-Maoist India.

Mains Practice Question:

Q. **The long-term resolution of Left-Wing Extremism lies not only in security operations but also in protecting Adivasi rights, strengthening Gram Sabhas and ensuring participatory development. Critically examine.** (15 Marks, 250 Words)

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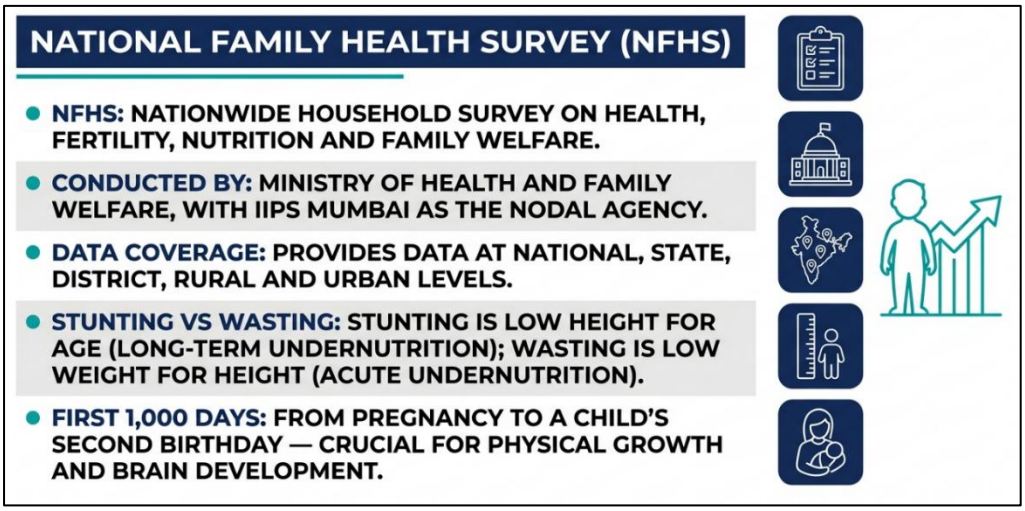
8. SOCIETY

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8.1. NFHS-6: Progress and Continuing Health Challenges

Context:

Recently, the Union Health Ministry released the **National Family Health Survey-6 (NFHS-6)**, conducted during 2023–24. It shows clear progress in institutional deliveries, antenatal care, immunisation and child nutrition. However, wasting, poor diets, rising caesarean deliveries, obesity and unequal childcare responsibilities remain major concerns.



Explanation:

Maternal and Child Health Progress:

- Institutional deliveries have crossed 90%, with public facilities accounting for about 58% of births.
- Around 95% of mothers receive antenatal care, while nearly 91% of deliveries are attended by skilled personnel.
- Iron-folic acid intake and early pregnancy check-ups have improved.
- Around 87% of children aged 12–23 months are fully immunised.
- Accredited Social Health Activists, Anganwadi Workers and Auxiliary Nurse Midwives remain important for maternal care and vaccination.

Child Nutrition:

- Stunting declined from 35.5% in NFHS-5 to 29.3% in NFHS-6.
- Severe wasting and underweight have also declined, but wasting continues to increase child mortality risks.
- Only about half of newborns are breastfed within the first hour.
- Around 60% of children aged six to eight months receive complementary food, but only 15% of children aged six to 23 months receive an adequate diet.

Maternal Time Poverty:

- Many women combine paid work, farming, household duties and childcare.
- This leaves less time for breastfeeding, timely feeding and growth monitoring.
- Weak crèche facilities force many families to depend on older relatives or siblings.

Dietary and Health Concerns:

- Household diets are shifting towards processed foods, packaged snacks and sugary drinks.

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- Access to pulses, millets, fruits, vegetables, eggs and milk remains essential.
- Caesarean deliveries are rising, especially in urban and private hospitals.
- Obesity and other non-communicable disease risks are also increasing.

Way Forward:

- Strengthen breastfeeding, complementary feeding and early detection of growth faltering.
- Improve frontline worker training, local counselling and digital support.
- Expand crèches, community childcare and shared family responsibilities.
- Panchayats should review nutrition, sanitation, drinking water and Anganwadi facilities.

Conclusion:

NFHS-6 shows important progress in maternal and child health. However, nutrition depends on food quality, healthcare, sanitation and care time. Future policy must combine preventive health, childcare, gender equality and local action.

Mains Practice Question:

Q. Discuss the significance of the National Family Health Survey (NFHS) in evidence-based policymaking for public health and human development in India.

(10M, 150 Words)

8.2. Gender inequality in contraceptive responsibility

Context:

India launched the world's first official family planning programme in 1952, yet contraceptive responsibility continues to fall disproportionately on women. NFHS-6 (2023–24) data reveals persistent structural inequities, where female sterilisation dominates and male participation remains negligible, raising serious questions about reproductive agency and gender equity.



Explanation:

1. Early Marriage and Reproductive Health:
   - **20.1%** of women aged 20–24 was married before 18; the rural figure rises to **23.3%.**
   - **6.7%** of women aged 15–19 were already mothers or pregnant — directly linking early marriage to restricted reproductive agency.
   - Early marriage functions as a reproductive health crisis, simultaneously curtailing **education, employment prospects, health outcomes, and decision-making power** of women within households and society.

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2. **Rural-Urban Divide:**
   - Urban women marry later, complete more schooling, and access wider contraceptive options.
   - Rural women face earlier marriage, lower agency, and weaker healthcare infrastructure.
   - The divide reflects deeper structural inequities in **education, healthcare access, and social norms.**
3. **Sterilisation Trends and Gender Imbalance:**
   - Contraception in India must be understood as a matter of **reproductive agency**, not merely population control — yet the data reflects the opposite in practice.
   - **Female sterilisation** accounts for **36.5%** of all contraceptive use nationally (**38.1%** rurally).
   - **Male sterilisation (vasectomy)** has declined sharply from **3.3%** in the early 1990s to just **0.3%** today — reflecting near-total absence of male contraceptive responsibility.
   - Modern reversible methods declined from **56.4% to 52.7%** between NFHS-5 and NFHS-6 — indicating regression in scientific contraceptive adoption.
   - Women frequently undergo sterilisation without **fully informed consent**, in overcrowded public facilities.
4. **Vasectomy — Medical Reality vs. Misconceptions:**
   - A vasectomy is a minor procedure under local anaesthesia sealing the **vas deferens**; patients are discharged within hours and resume normal activity within days.
   - It does not affect testosterone, sexual desire, erectile function, or physical health — contrary to widespread social stigma.
   - **Vasectomy reversal (recanalisation)** within three years carries success rates exceeding **90%**, countering the misconception of permanent irreversibility.
   - Low uptake is driven by fear of loss of libido, social stigma, poor awareness, and **social media misinformation** falsely linking vasectomy to obesity, cancer, and chronic infections.
5. **Risks and Challenges:**
   - Public health systems continue to rely on **permanent methods** over reversible contraception, limiting reproductive choice.
   - The **Prohibition of Child Marriage Act** remains weakly enforced, perpetuating early marriage and its cascading consequences on education, employment, and agency.
   - Women frequently lack **decision-making power** within family structures, making contraceptive choice a reflection of social hierarchy rather than individual agency.
6. **Policy Way Forward:**
   - Treat early marriage as a **reproductive health crisis** requiring urgent legislative enforcement and community-level intervention.
   - Shift policy focus from permanent sterilisation to **reversible, modern contraceptive methods** delivered through strengthened public healthcare infrastructure.
   - Mandate **informed consent** as a non-negotiable standard in all sterilisation procedures conducted in public health facilities.
   - Invest in **rural secondary education for girls** as the most effective long-term intervention for improving reproductive agency and employment outcomes.
   - Promote **male participation** through targeted awareness campaigns dismantling vasectomy-related stigma and normalising shared contraceptive responsibility.

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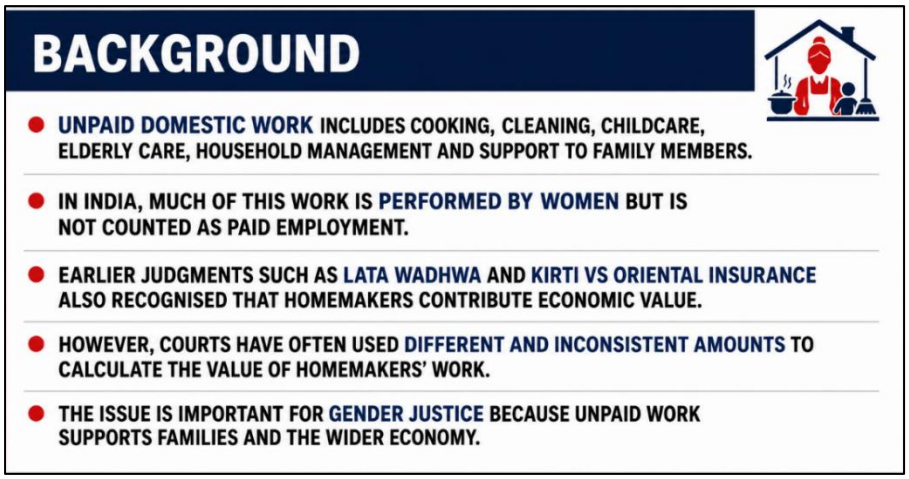
Conclusion:
India's family planning inequity demands a shift from population-control-driven sterilisation toward rights-based, reversible contraception with active male participation. Genuine reproductive agency for women is both a health imperative and a gender justice requirement.

Mains Practice Question:

Q. India's family planning policy needs to shift from a sterilisation-centred approach to a rights-based reproductive health framework. Critically analyse.

8.3. Economic Value of Unpaid Domestic Work

Context:
Recently, the Supreme Court said that the unpaid work done by a homemaker has economic value. The case was related to compensation after a road accident. This is important because household work, mostly done by women, is often treated as "non-work" simply because it is unpaid.



Explanation:

What the Court Did:

- The Supreme Court revised compensation in a motor accident case involving the death of a homemaker.
- It fixed ₹30,000 per month as the notional economic value of her domestic work.
- The Court said this amount should be increased by 10% every three years.
- If a woman also earns a salary, that salary can be added separately while calculating compensation.

Why This Matters:

- The judgment recognises that homemakers perform real and valuable work even if they do not receive wages.
- It challenges the belief that unpaid household work has no economic worth.
- It gives dignity and legal recognition to domestic labour, especially women's work.
- It may help reduce the long-standing invisibility of women's contribution within families and society.

Limits of the Judgment:

- The ruling does not create a salary, pension or employment right for homemakers.
- It applies mainly to compensation calculations in motor accident claims.
- It does not automatically convert household work into formal paid employment.
- Still, it creates strong legal reasoning for valuing unpaid care work.

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Wider Impact:

- Homemakers seeking maintenance in family law cases may use this reasoning to show the value of domestic work.
- Rural women who assist in farming, cattle care, harvesting and household duties may argue for higher recognition of their labour.
- The decision may also influence future debates on work-from-home, caregiving and shared domestic responsibilities.
- Male homemakers may also claim similar recognition in future cases.
- Insurance companies may reassess compensation risks and may prefer quicker settlements in some cases.

Conclusion:

The judgment is a major step towards correcting the economic invisibility of unpaid domestic work. It recognises that household labour has real value, even when it is not paid. The larger challenge is to build social, legal and economic systems that respect care work as essential work.

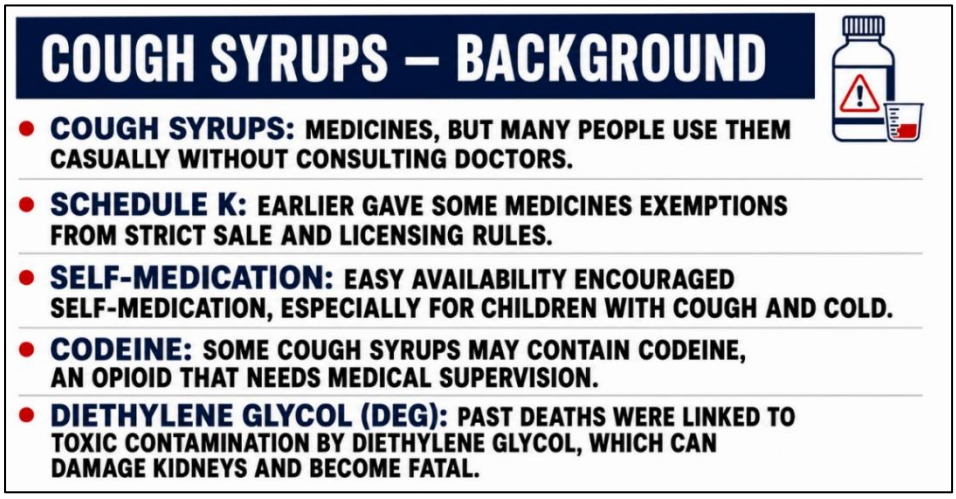
Mains Practice Question:

Q. Unpaid care work remains one of the least recognised contributors to the economy. Examine its social, economic and legal significance.

8.4. Removal of cough syrups from Schedule K.

Context:

The Centre has removed cough syrups from Schedule K of the Drugs Rules, 1945, ending relaxed sale conditions and mandating stricter prescription-based control. The move follows repeated child deaths linked to contaminated cough syrups, alongside separate concerns over rising codeine syrup misuse in states like Bihar.



Explanation:

Why the Change Was Needed?

- Several deaths in India and abroad exposed serious gaps in cough syrup regulation.
- Unsafe products reached consumers due to weak quality testing, inspections and supply-chain monitoring.
- Children are highly vulnerable, as even small amounts of toxic chemicals can cause severe harm.
- The earlier relaxed system made accountability difficult across manufacturers, sellers and regulators.

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What Has Changed Now:

- Cough syrups can no longer be sold as over-the-counter medicines under the earlier exemption.
- A doctor's prescription is now required to buy syrup-based medicines.
- This can reduce misuse, careless consumption and unsafe treatment of children.
- It also increases responsibility on doctors, pharmacists, manufacturers and regulators.

Continuing Problems:

- Prescription control alone cannot ensure safety if manufacturing quality remains weak.
- India's drug regulation involves both the Centre and States, often causing coordination gaps.
- Inspection capacity is uneven, allowing poor-quality medicines to enter the market.
- In Bihar, codeine-based syrups are being misused as alcohol substitutes amid the state's prohibition since 2016 - highlighting how prescription rules alone cannot prevent diversion and abuse. Complete alcohol prohibition also applies to Gujarat, Mizoram and Nagaland, raising similar substitution risks.
- Narcotic substances like codeine remain regulated under the NDPS Act, 1985, but enforcement gaps allow continued misuse.
- Rural areas may face difficulty due to limited access to doctors and licensed pharmacies.

Way Forward:

- India needs stricter factory inspections, regular quality testing and strong punishment for contamination.
- Adverse drug reactions and deaths must be reported quickly and transparently.
- Rural healthcare, licensed pharmacies and public awareness must be strengthened.
- State-level enforcement, especially in prohibition states, needs closer monitoring to prevent substance substitution.

Conclusion:

The new rule is a necessary step to protect public health, especially children. However, real safety needs better manufacturing checks, stronger Centre-State coordination, and vigilance against misuse patterns like Bihar's. India must move from reacting after tragedies to preventing them in advance.

8.5. Social media age ban for children - from Australia to the UK.

Context:

The UK is considering restricting social media access for children under 16, following Australia's first-of-its-kind legal enforcement of a minimum age of 16 for major platforms. Child online safety has become a major global governance debate.



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Explanation:

1. **What is the Issue:**
   - The core conflict is between children's **digital freedom** and the state's responsibility to protect childhood.
   - **Algorithm-driven design** exposes children to harmful content, compulsive use, anxiety and depression.
   - **Jonathan Haidt's "The Anxious Generation"** links excessive social media use to adolescent mental health crisis, affecting attention, cognition and sleep.
   - Governments argue **voluntary parental control** is insufficient against commercially driven, persuasive platforms.
2. **What the UK is Proposing:**
   - The UK PM has supported an under-16 ban to **"give children back childhood"**.
   - The approach may include **gaming platforms, livestreaming restrictions, stranger contact curbs** and limits on **infinite scrolling** - stricter than Australia.
   - Enforcement through **age verification** and platform responsibility under **Ofcom**, within the **Online Safety Act, 2023 (UK)** framework.
3. **Why Governments Support Such Bans?**
   - Children need protection from **addictive design, cyberbullying, sexual exploitation** and misinformation.
   - Digital platforms are now treated like **tobacco, alcohol or gambling** - age-based restrictions are considered legitimate.
4. **Concerns and Challenges:**
   - Bans may push children to **unregulated platforms**, increasing risk rather than reducing it.
   - **Age verification** raises privacy concerns requiring facial checks or digital IDs.
   - Children may bypass restrictions via **VPNs, false accounts or siblings' devices.**
   - **Freedom of expression** and **digital divide** concerns affect vulnerable and lower-income children disproportionately.
   - Deeper solutions require **algorithmic accountability** and **digital literacy** alongside bans.
5. **India's Relevance:**
   - **Karnataka and Andhra Pradesh** have discussed age-based restrictions domestically.
   - **DPDP Act, 2023** requires verifiable parental consent for children under 18 on digital platforms.
   - **IT Rules, 2021** contain child safety provisions for digital intermediaries.
   - India must balance **online safety with learning, liberty and privacy.**

Conclusion:

The under-16 social media ban marks a new phase of digital governance prioritising child protection over unrestricted platform access. Success depends on age verification, platform accountability and digital literacy. India must anchor its approach in the DPDP Act while drawing lessons from global regulatory models.

Mains Practice Question:

Q. **Social media age bans reflect the growing tension between child protection and digital freedom. Discuss.**

8.6. Regulating Junk-Food Advertising in India

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Context:

The rapid expansion of junk-food advertising across television, social media, digital games, cinemas and sporting events is shaping the dietary preferences of children and adolescents. Misleading health claims and celebrity endorsements often conceal the actual nutritional quality of products. Strong regulation is therefore necessary to protect public health and enable informed consumer choices.



Explanation:

Existing Issues:

- **Misleading Health Claims:** Advertisements highlight terms such as "baked", "natural", "multigrain", "12-grain", "fortified" or "high-fibre", while downplaying excessive sugar, fat, sodium, refined carbohydrates and additives. This creates a **health-halo effect**, making the entire product appear healthy.
- **Celebrity Endorsements:** Film stars, sportspersons and social-media influencers increase product credibility. Children may wrongly interpret such endorsements as proof that the product is nutritious or suitable for regular consumption.
- **Child-Targeted Marketing:** Cartoons, child actors, gifts, games, attractive packaging and emotional messages linking food with happiness, friendship or parental care exploit children's limited understanding of advertising.
- **Digital and Indirect Promotion:** Marketing now occurs through social-media reels, influencer content, mobile applications, online games, sports sponsorships, cinema advertising and product placements. Television-only regulation is therefore inadequate.
- **Public-Health Impact:** Regular consumption of ultra-processed foods can displace fruits, vegetables, pulses and home-cooked meals, weakening overall diet quality and creating an unhealthy food environment.
- **Limits of Nutrition Education:** Teaching healthy eating is insufficient when children remain continuously exposed to persuasive marketing at home, during entertainment and in public spaces. Healthy choices require supportive surroundings, not merely individual willpower.

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Existing Regulations and Policy Gaps:

- **Policy Recognition:** India's public-health strategies have recognised the need to restrict advertising of foods high in fat, sugar and sodium.
- **Regulatory Attention:** Courts, parliamentary bodies and policy documents have supported clearer front-of-pack labelling, advertising restrictions and fiscal measures.
- **Weak Enforcement:** The existing framework remains fragmented and relies heavily on industry disclosures, advisories and voluntary self-regulation. Monitoring, penalties and digital-platform coverage remain inadequate.

Recommendations:

- **Clear Warning Labels:** Introduce prominent front-of-pack warnings for excessive fat, sugar and sodium, and prohibit deceptive health claims.
- **Advertising Restrictions:** Prohibit or tightly regulate child-targeted advertisements, celebrity endorsements, influencer promotions, sponsorships and product placements.
- **Platform-Neutral Regulation:** Apply uniform rules across television, social media, gaming platforms, cinemas, streaming services and sporting events.
- **Healthy Food Environments:** Restrict unhealthy-food promotion around schools and promote affordable, minimally processed, nutritious and locally produced foods.
- **Stronger Legal Measures:** Establish independent monitoring, deterrent penalties and appropriate taxation. Experiences of Chile, Mexico and Brazil indicate that mandatory controls are more effective than voluntary codes.

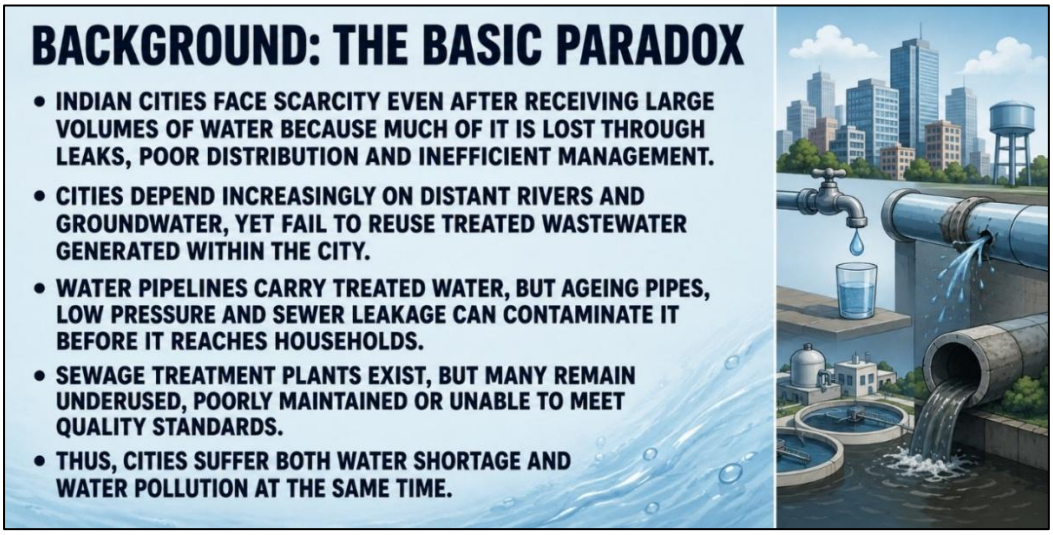
Conclusion:

Regulating junk-food advertising is not anti-business; it can redirect competition towards healthier products and responsible marketing. Consumer choice becomes meaningful only when information is transparent and children are protected from manipulation. Such regulation is therefore integral to the State's responsibility to safeguard the right to health.

8.7. Urban Water Security and the Circular Water Economy

Context:

India's cities are facing a deepening urban water crisis driven by rising heat, growing population, ageing infrastructure and poor wastewater management. The challenge is not only about the shortage of water, but also about the safety, reliability and reuse of available water. A sustainable solution requires cities to reduce losses, prevent contamination and treat wastewater as an economic resource.



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Explanation:

- **Rising urban demand:** Heatwaves and temperatures above 40°C increase domestic water demand. Cities such as Delhi, Ahmedabad, Jaipur, Bhopal and Narsinghpur reflect the pressure of extreme summer conditions on urban water systems.
- **Falling water availability:** India's annual per capita water availability is around 1,500 cubic metres and may fall closer to the water-scarcity threshold of 1,000 cubic metres in the coming decades.
- **Dependence on distant sources:** Large cities often bring water from far-off rivers and reservoirs. This increases cost, energy use and dependence on upper riparian regions.
- **Urban water contamination:** In South Delhi's affluent areas such as Gulmohar Park, Hauz Khas, Sarvodaya Enclave, Green Park, Greater Kailash and Vasant Kunj, residents reported foul smell, discoloured water, high chlorine and turbidity.
- **Role of ageing infrastructure:** old pipelines, damaged joints and corroded networks allow contamination to enter drinking water lines, especially when pipelines run close to sewer lines.
- **Low pressure and leakages:** When water pressure falls, dirty water from drains, sewage lines or surrounding soil can enter the supply network through cracks. This explains why water shortages and contamination often occur together.
- **Operational stress on water agencies:** Delhi Jal Board's network is under pressure due to rising demand, uneven supply, old pipes and frequent complaints. Tankers are often used as emergency support during shortages.
- **Need for wastewater reuse:** Treated used water can be used for agriculture, landscaping, construction, lake rejuvenation, industry and public conveniences instead of wasting freshwater.
- **City-specific reuse planning:** Delhi can prioritise peri-urban agriculture, Chennai can use treated water for lakes and water bodies, while Thane can use it for construction and industry.
- **Improving Sewage Treatment Plants (STPs):** Sewage treatment plants require better maintenance, trained personnel, energy supply, quality monitoring and prevention of industrial effluents entering domestic sewage.
- **Circular water economy:** Cities must shift from "use and dispose" to "treat, reuse and recycle", supported by private investment, decentralised treatment plants, pricing reforms, behavioural change and local-body capacity.

Conclusion:

Urban water security requires cities to manage water as a complete cycle rather than as a one-time supply service. Reducing leaks, preventing contamination and reusing treated wastewater must become core urban policy. This can make Indian cities more resilient, efficient and climate-ready.

Mains Practice Question:

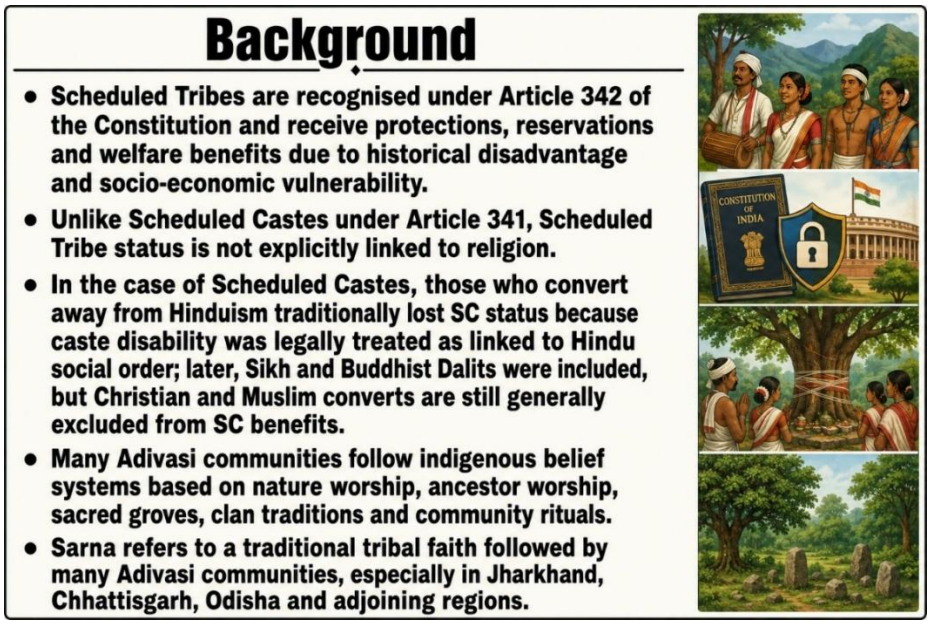
Q. Explain the concept of a circular water economy. How can wastewater reuse improve urban resilience in India?

8.8. Adivasi Identity, Religion and the Politics of Assimilation

Context:

The debate over the religious identity of Adivasis has again gained prominence due to two simultaneous developments: the demand for recognising **Sarna** or traditional tribal faith in the ongoing Census, and the demand for **delisting converted Adivasis** from the Scheduled Tribe category. The issue is not merely religious; it involves constitutional interpretation, tribal identity, reservation benefits, cultural autonomy and political mobilisation.

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Explanation:

1. Meaning of the Delisting Demand:
   - Delisting means removing converted Adivasis from the Scheduled Tribe list.
   - Supporters argue that Adivasis who convert to Christianity or Islam no longer follow traditional tribal faith and should not receive ST benefits.
   - Critics argue that tribal identity is based on birth, ethnicity, community, customs, language, ancestry and shared historical experience.
   - Therefore, conversion may change religious belief, but it does not automatically erase tribal identity.
2. Constitutional Distinction between SCs and STs:
   - The debate often wrongly applies the Scheduled Caste logic to Scheduled Tribes.
   - SC status has historically been tied to caste oppression within the Hindu social structure, though Sikh and Buddhist Dalits were later included.
   - ST status is different because tribal identity is not based on caste hierarchy but on community, culture, geography, ethnicity and historical marginalisation.
   - Therefore, the legal basis for denying SC benefits after certain conversions cannot automatically be extended to STs.
3. Judicial Understanding of Tribal Identity:
   - Courts have recognised that tribal identity is primarily ethnic and community-based, not merely religious.
   - The Kartik Oraon case is important because the Patna High Court held that an Oraon remains an Oraon even after conversion.
   - The Court noted that converted Adivasis may continue to follow clan practices, festivals, customs and collective community concerns.
   - This supports the view that Adivasi identity can survive religious conversion.
4. Sarna and Separate Religious Recognition:
   - Many Adivasi groups argue that they should not be forced into categories such as Hindu, Christian, Muslim or “others” in the Census.
   - The demand for a separate Sarna code reflects the desire to recognise Adivasi faith as a distinct indigenous tradition.
   - It is linked to cultural dignity, statistical visibility and protection of tribal belief systems.

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5. "Adivasi" versus "Vanvasi":
   - The term **Adivasi** means original inhabitant and carries a historical and political identity linked to land and indigeneity.
   - The term **Vanvasi**, meaning forest dweller, is criticised because it reduces tribal identity to geography.
   - This debate matters because language shapes how society and the state understand tribal communities.
6. Political Mobilisation around Tribal Religion:
   - The delisting issue has become a site of political mobilisation by different organisations.
   - Some groups claim that Adivasis are part of a broader Hindu civilisational framework.
   - Sarna and Christian Adivasi groups argue that such claims weaken the distinctiveness of tribal identity.
   - Hence, the debate is not only about reservation benefits but also about who defines Adivasi culture and faith.
7. Real Issues Facing Adivasis:
   - Excessive focus on conversion may divert attention from real & urgent tribal concerns.
   - These include land alienation, mining displacement, weakening of gram sabhas and poor implementation of the Forest Rights Act.
   - Other issues include unemployment, poor health facilities, delayed scholarships, weak education and inadequate student hostels.

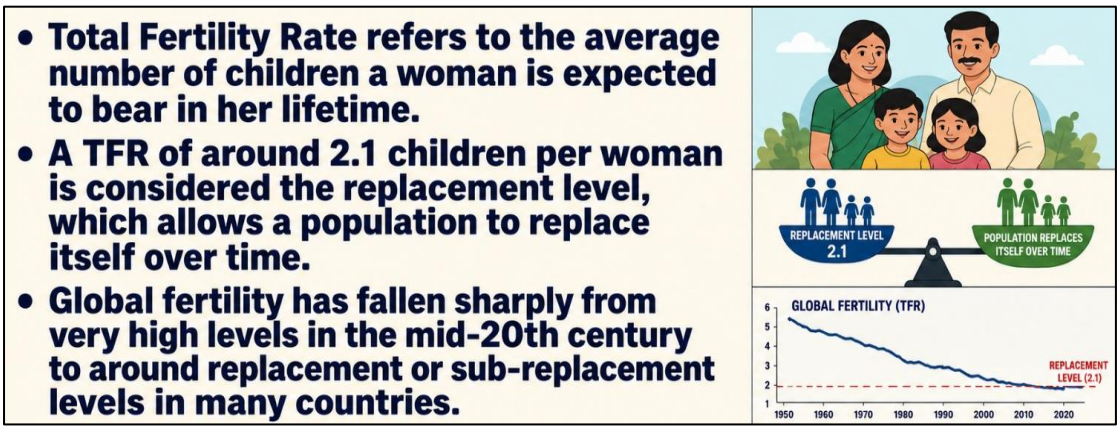
Conclusion:

The delisting debate reflects a larger contest over Adivasi identity. Since ST identity is rooted in community, ethnicity, culture and historical disadvantage, conversion alone should not automatically erase it. A democratic approach must protect Adivasi faith traditions, land rights, forest rights and cultural autonomy.

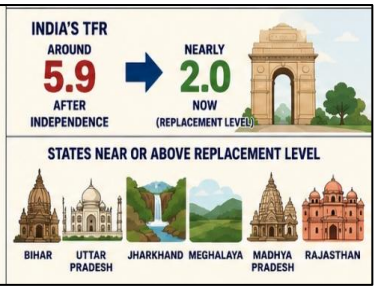
8.9. Global Fertility Decline: Causes, Consequences and Policy Responses

Context:

Across the world, fertility rates have declined sharply over the past few decades, affecting both developed and developing societies. The earlier concern of uncontrolled population growth is increasingly being replaced by worries about ageing populations, shrinking workforces and rising welfare burdens. India too is moving from a high-fertility society to one where many states are already below replacement level.



- **India's TFR has declined from around 5.9 after Independence to nearly 2.0, reaching replacement level faster than earlier expectations.**
- **Within India, only a few states such as Bihar, Uttar Pradesh, Jharkhand, Meghalaya, Madhya Pradesh and Rajasthan remain near or above replacement level.**



Explanation:

1. Factors Behind Fertility Decline:
   - **Economic factors:** Urban living has increased the cost of housing, education, healthcare, nutrition and childcare. As a result, larger families are increasingly seen as economically difficult.
   - **Women-centric factors:** Higher female education, workforce participation, delayed marriage, career aspirations and greater autonomy have reduced early and repeated childbearing.
   - **Developmental factors:** Improved child survival, contraception, maternal healthcare and social security reduce the perceived need for large families.
   - **Family and social factors:** nuclear families, limited housing space, weaker community support and demanding work cultures have made child-rearing more difficult.
   - **Cultural and psychological factors:** Marriage and parenthood are no longer viewed as compulsory life goals. Individual freedom, lifestyle choices and future anxieties increasingly shape reproductive decisions.
   - **Technological factors:** Digital lifestyles, reduced face-to-face socialisation and changing relationship patterns may contribute to delayed marriage and lower fertility.
2. Consequences:
   - Low fertility increases the share of elderly people and reduces the future working-age population.
   - It may create labour shortages, lower productivity and increase dependence on migration or automation.
   - It raises pension, healthcare and social-security burdens on governments.
   - It increases demand for elder care, family-support systems and age-friendly infrastructure.
3. India-Specific Challenges:
   - India's demographic dividend is still available, but the window is narrowing.
   - Regional imbalance may grow as some states age faster while others remain relatively younger.
   - A rising elderly population will require stronger healthcare, pensions and social-care systems.
4. Policy Response:
   - India should avoid coercive population-control measures because fertility is already falling naturally.
   - Policy must focus on education, skilling, jobs, women's workforce participation and healthcare.
   - Family-friendly systems such as childcare, parental leave, flexible work and affordable housing are needed.
   - India must also prepare for ageing through geriatric care, pension coverage and community support.

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Conclusion:

Declining fertility is a structural demographic transformation driven by economic, social and cultural changes. India still has a demographic dividend, but this window is narrowing and must be used through human-capital development. The correct response is not coercive population policy, but evidence-based planning for both youth empowerment and an ageing society.

Mains Practice Question:

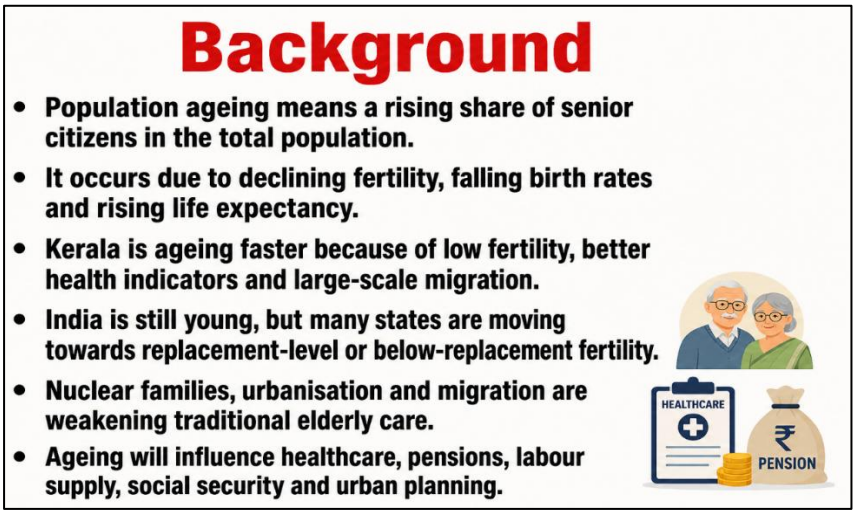
Q. Global fertility decline represents a structural demographic transition rather than merely a population issue. Discuss its causes and socio-economic consequences.

(10M, 150 Words)

8.10. India's Ageing Challenge: From Demographic Dividend to Demographic Transition

Context:

Kerala government has taken the decision to create a dedicated department for elderly welfare. This has triggered a wider Indian debate on whether population ageing can gradually convert India's demographic dividend into a demographic burden.



Explanation:

Demographic Dimension:

- India's large working-age population currently supports economic growth.
- However, declining fertility may reduce the future labour force.
- A rising elderly population will increase the dependency ratio.
- Southern states may face ageing-related pressures earlier than northern states.

Healthcare Dimension:

- Elderly citizens need geriatric care, chronic disease management and rehabilitation.
- Demand for mental health care, palliative care and home-based care will increase.
- Public health systems must prepare for long-term non-communicable diseases.

Economic Dimension:

- Pension, insurance and welfare expenditure may rise.
- Families may face higher out-of-pocket spending on elderly care.
- At the same time, the care economy can create jobs in nursing, assisted living and home care.

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Social Dimension:

- Migration and nuclear families may leave many elderly people without daily support.
- Loneliness, neglect and financial insecurity can become serious social concerns.
- Women may face a higher unpaid care burden unless care services are formalised.

Governance Dimension:

- India needs stronger elderly welfare laws and better implementation.
- Social security coverage must expand, especially for informal workers.
- Cities should become age-friendly through accessible transport, housing and public spaces.
- State-specific policies are needed because ageing is uneven across India.

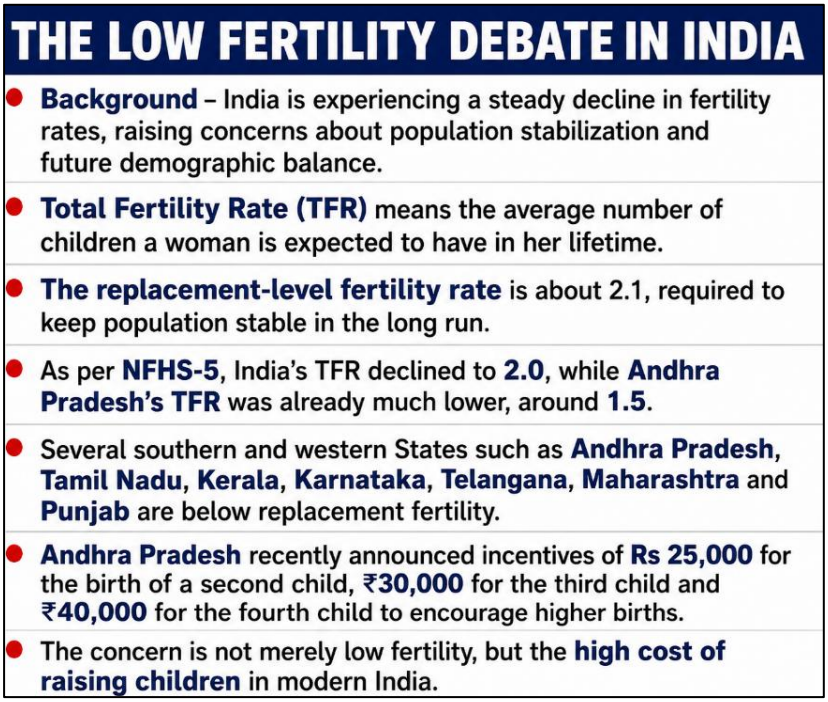
Conclusion:

Population ageing is not only a welfare concern but a major developmental challenge. India must use its present demographic dividend to build healthcare, social security and care-economy systems for dignified ageing.

8.11. Andhra Pradesh's Population Policy: A Misplaced Solution

Context:

India is entering a new demographic phase where many States are facing fertility rates below the replacement level. **Andhra Pradesh** has responded by announcing **cash incentives for third and fourth children**, but the deeper issue is whether **financial rewards can overcome the real economic and social barriers to larger families.**



Explanation:

Why fertility is falling?

- Fertility decline is not only due to "lack of desire" for children, it is mainly linked to **economic insecurity and social change.**
- Couples today face high costs of **schooling, private healthcare, rent, nutrition, transport and childcare.**

- Urbanisation, migration, nuclear families and women's education have also changed family preferences.
- Women often bear the major burden of pregnancy, childcare, domestic work and career sacrifice, making larger families difficult.

Explanation:

Economic Barriers Are Stronger than Cash Incentives:

- Families today do not decide family size only on the basis of tradition or social pressure.
- Decisions are shaped by income, job security, housing cost, education cost, healthcare cost and childcare availability.
- A one-time cash incentive is too small when compared to the long-term cost of raising a **child for 18–20 years.**

Childbirth and Healthcare Costs Are High:

- Institutional deliveries increasingly occur in private hospitals, especially in urban areas.
- **C-section deliveries are also high in private facilities**, increasing the cost of childbirth.
- Therefore, the incentive may not even cover a significant part of delivery-related expenditure.

Household Consumption Burden Is Rising:

- Raising children requires continuous spending on food, education, healthcare, clothing, housing space and transport.
- In both rural and urban areas, the monthly expenditure required for a larger family is far higher than the proposed incentive.

Fertility Decline Is Linked to Social Change:

- Fertility falls when women become more educated, urbanisation rises, child survival improves and aspirations increase.
- Couples increasingly prefer fewer children so that they can invest better in each child's health and education.

Global Experience Shows Limited Success:

- Countries such as **Japan and South Korea have tried financial incentives**, but fertility rates have remained very low.
- This shows that once fertility decline becomes **linked to lifestyle, work culture, housing and gender roles**, cash transfers alone are insufficient.

Better Policy Direction:

- **Andhra Pradesh** needs affordable **childcare, maternity support, flexible work, women's employment security, affordable housing and public healthcare.**
- Pronatalist policy must reduce the real cost of parenting rather than only rewarding childbirth.

Conclusion:

Andhra Pradesh's concern over declining fertility is valid, but a narrow cash incentive is unlikely to change family-size decisions. A sustainable fertility policy must support young families through affordable living, gender-sensitive workplaces, childcare infrastructure and stronger public services.

Mains Practice Question:

Q. **Critically examine the effectiveness of cash incentives as a policy instrument to address below-replacement fertility, with reference to Andhra Pradesh's recent population policy.** (15M, 250 Words)

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9. HISTORY&CULTURE

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9.1. Nihang Sikhs: Beliefs, Distinctive Tradition and Gatka

Context:

A group of Nihang Sikhs recently ended a three-day standoff at a gurdwara in Rudraprayag district, Uttarakhand. The incident has brought attention to the identity, beliefs, attire and martial traditions of the Nihang community.

Explanation:

- Nihang Sikhs are a traditional armed order within Sikhism, historically associated with the Khalsa and the defence of the Sikh faith.
- The term *Nihang* is commonly understood to signify a fearless, detached and courageous warrior.
- Their traditions are closely linked to Guru Gobind Singh, the tenth Sikh Guru, and the establishment of the Khalsa in 1699.
- Nihangs follow the Sikh Rehat Maryada, maintain the Five Ks and emphasise bravery, discipline, equality, service and protection of the oppressed.
- They are recognised by their blue robes, high turbans or *dumallas*, steel bracelets and traditional weapons such as swords, spears and chakrams.
- Some Nihang groups maintain mobile camps called chhaunis and participate prominently in Hola Mohalla celebrations.
- Gatka is a traditional Sikh martial art involving coordinated movements with sticks, swords and other weapons.
- Gatka combines physical training, self-defence, discipline, agility and ceremonial martial display.

9.2. Rakhigarhi Skeletons and Scientific Study of the Harappan Civilization

Context:

The Archaeological Survey of India (ASI) has sent nearly 5,000-year-old human skeletons excavated from Rakhigarhi in Haryana for DNA analysis, anthropological examination, and facial reconstruction. The study aims to provide insights into the ancestry, health, lifestyle, and physical appearance of people belonging to the Harappan Civilization.

Explanation:



- Rakhigarhi (Haryana) is the largest known site of the Indus Valley Civilization (IVC)/Harappan Civilization in India and one of the most important archaeological sites in South Asia.
- The Harappan Civilization flourished around 2600–1900 BCE and is known for urban planning, drainage systems, trade networks, and standardized weights and measures.
- Archaeological Survey of India (ASI) is the premier organization responsible for archaeological research, excavation, and conservation of heritage sites in India.
- Burial practices, grave goods, and cemetery remains are important archaeological evidence for understanding social organization, beliefs, and cultural traditions.
- Paleo-environmental studies reconstruct past climate, vegetation, and ecological conditions to understand how ancient societies adapted to their environment.

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9.3. Prehistoric Rock Art and Human Activity in Aravalli Region

Context:

A wildlife trail in Gurugram's Aravalli forests has led to the discovery of cup-shaped depressions, geometric engravings, game-board-like patterns, stone tools and a large foot engraving. Experts suggest that the site shows continuity of human activity from early tool-making traditions to later symbolic, ritual and social life.

Explanation:

- Aravalli Range is one of the oldest fold mountain systems in the world and has several prehistoric and archaeological sites.
- Petroglyphs are images, symbols or designs carved, engraved or pecked on rock surfaces.
- Cupules are cup-shaped depressions made on rocks and are among the earliest forms of rock art.
- Palaeolithic tools such as hand axes and cleavers indicate early human tool-making and survival activities.
- Acheulean tradition is linked with Lower Palaeolithic stone tools, especially bifacial hand axes.
- Rock art may reflect symbolic behaviour, ritual practices, social communication and cognitive development.
- Game-board-like engravings indicate possible later social or recreational activities.
- Such findings help trace the transition from basic survival activities to complex cultural and symbolic life.

9.4. Jharkhand Megaliths and Threat from Mining

Context:

Jharkhand's megalithic sites, including **Chokahatu in Ranchi district**, are facing neglect and damage due to open-cast coal mining and developmental projects. These sites are important archaeological and sociological markers of tribal culture and ancestor worship.

Explanation:

- Megaliths are large stone structures used by ancient and tribal communities for burial, memorial and ritual purposes.
- They are found across India, especially in Jharkhand, Chhattisgarh, Odisha, Northeast India, Deccan and South India.
- Jharkhand's megaliths are closely linked with Adivasi traditions, ancestor worship, clan memory and sacred landscapes.
- Chokahatu megalithic site near Ranchi is considered one of the important tribal megalithic landscapes.
- Mining, urbanisation and infrastructure projects threaten such heritage sites.
- These sites show continuity between archaeology and living tribal culture.
- Some of the most important megalithic sites in India include Brahmagiri and Maski (Karnataka), Adichanallur (Tamil Nadu), Junapani (Maharashtra), Dolmenkal (Telangana), Hire Benakal (Karnataka), and Mao (Manipur).

9.5. India–China Joint UNESCO Nomination for Xuanzang's Records and Shared Heritage

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Context:

India and China are discussing a joint UNESCO nomination of "The Great Tang Records on the Western Regions", based on the travels of the Chinese Buddhist monk Xuanzang (Hsuan Tsang) in 7th-century India. The initiative reflects efforts by BRICS countries to promote collaborative nominations for shared cultural heritage.

Explanation:

- Xuanzang (602–664 CE) was a Chinese Buddhist monk, scholar, and traveller who visited India during the reign of Harshavardhana.
- He spent about 17 years in India, studying Buddhism and collecting manuscripts.
- Xuanzang studied at Nalanda University, one of the world's greatest ancient centres of learning.
- His work, "The Great Tang Records on the Western Regions" (Da Tang Xiyu Ji), provides valuable information on the political, social, economic, and religious conditions of 7th-century India.
- UNESCO promotes protection of cultural and natural heritage through programmes such as World Heritage Sites, Intangible Cultural Heritage (ICH), and the Memory of the World Programme.
- Joint nominations allow multiple countries to safeguard and promote shared cultural traditions and historical records.
- Other heritage elements discussed include Panchatantra, Sowa-Rigpa (Traditional Tibetan Medicine), and Buddhist cultural linkages across Asia.

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