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For UPSC CSE mains examination



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Features :

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Most complete coverage of major
News Papers editorials

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Peace with peace: On preventive detentions

Source: The post “Peace with peace: On preventive detentions” has been created based on “Peace with peace: On preventive detentions”, published in “The Hindu” on 16th June 2026.

UPSC Syllabus: GS 2 -Polity & Governance

Context: Preventive detention is the power to detain a person before a crime occurs if there is reasonable apprehension that the person may pose a threat to public order. The Allahabad High Court, in *Chander Pal Singh v. State of Uttar Pradesh*, highlighted concerns regarding the misuse of preventive detention and its impact on personal liberty.

Issues Associated with Preventive Detention in India

1. Preventive detention receives less judicial scrutiny than ordinary criminal proceedings, making it more vulnerable to misuse.
2. The broad and subjective standards used in preventive detention laws can gradually transform them into instruments for depriving people of liberty.
3. High Court observations described the practice as a “highly irresponsible” deprivation of personal liberty in certain cases.
4. Executive magistrates often create cases based on arguably minor apprehensions, resulting in arbitrary detentions.
5. The case highlighted that preventive detention was invoked against a petitioner who had challenged a Dalit advocate, raising concerns about misuse for non-serious disputes.
6. Data presented before the court showed that around 2,500 people were reportedly subjected to preventive detention proceedings in Ghaziabad between April 2025 and April 2026, indicating extensive use of such powers.
7. Frequent use of preventive detention can undermine constitutional safeguards and weaken public confidence in the rule of law.

Significance of the Allahabad High Court Judgment

1. The judgment condemned the implementation of preventive incarceration in neighbourhood and property disputes.
2. The court required executive magistrates to justify their decisions, thereby strengthening accountability.
3. The judgment encouraged constitutional challenges to unlawful preventive detention.
4. The court proposed a compensation framework for victims of wrongful detention.
5. The judgment recognised that preventive detention may impose prohibitive and unaffordable bond conditions on individuals.
6. It criticised the direct imposition of restrictions under the directions of police authorities.
7. The ruling drew support from the Supreme Court's observations in *Sonam Wangchuk v. NSA*, which emphasised that dissent cannot be treated as a crime and that the state remains responsible for maintaining peace.

Challenges in Implementing Reforms

1. Compensation may not always be available because victims often fail to challenge detention orders within prescribed time limits.
2. Government authorities may be reluctant to recover compensation amounts from erring officials through disciplinary proceedings.

3. Executive magistrates are part of the state administration and may be influenced by police assessments of threats to public order.
4. Administrative dependence can affect the impartial exercise of preventive detention powers.

Measures for Reform

1. Judicial scrutiny of preventive detention proceedings should be strengthened.
2. Executive magistrates should be required to provide detailed and reasoned justifications for detention orders.
3. A robust compensation mechanism should be established for victims of unlawful detention.
4. Accountability mechanisms should ensure recovery of compensation from officials responsible for wrongful detention where appropriate.
5. Clear guidelines should be framed to prevent the use of preventive detention in minor neighbourhood and property disputes.
6. Greater institutional independence and oversight should be introduced to reduce undue administrative influence on magistrates.

Conclusion: Preventive detention is an exceptional power intended to preserve public order, but its misuse can seriously undermine personal liberty. Strengthening judicial oversight, ensuring accountability, and implementing the reforms suggested by the Allahabad High Court can help balance public order with constitutional freedoms.

Question: Preventive detention is often criticised as a threat to personal liberty. In the light of the recent Allahabad High Court judgment, examine the issues associated with preventive detention in India and suggest measures for reform.

Source: [The Hindu](#)

Technology drives India-France strategic convergence

Source: The post “Technology drives India-France strategic convergence” has been created based on “Technology drives India-France strategic convergence”, published in “The Hindu” on 16th June 2026.

UPSC Syllabus: GS 2 -International Relations

Context: India and France have elevated their strategic partnership by placing technology and innovation at the centre of bilateral cooperation. The meeting between Prime Minister Narendra Modi and French President Emmanuel Macron on the sidelines of the AI Action Summit in Paris highlighted the growing importance of technology-driven collaboration.

Technology as the New Pillar of India-France Relations

1. India and France jointly inaugurated the India-France Year of Innovation 2026 to strengthen cooperation in technology and innovation.
2. The leaders launched the “Bharat Innovates” event in Nice to connect Indian start-ups with global investors and venture capital funds.
3. Prime Minister Modi participated in VivaTech Summit in Paris, Europe’s largest technology and start-up event, demonstrating the expanding technology partnership.
4. The partnership is increasingly focusing on emerging technologies rather than being confined to traditional sectors.

Key Areas of Technological Cooperation

1. Artificial Intelligence has emerged as a major area of collaboration between the two countries.
2. Both nations are strengthening cooperation in space technology and related research.
3. Collaboration is expanding in health care and biotechnology sectors.
4. The two countries are working together on green technologies and sustainable development initiatives.
5. France possesses significant strengths in aerospace, AI, robotics, biotechnology, health care, green technology and semiconductor industries.
6. India can benefit from French expertise while contributing its own advantages in digital public infrastructure, start-up innovation and biotechnology.

Institutional Mechanisms for Cooperation

1. The two countries launched the “Innovate” and “Vivatech” initiatives to facilitate private-sector collaboration.
2. These initiatives aim to promote substantive collaborative arrangements between industries and innovators on both sides.
3. Greater engagement between start-ups, investors and research institutions is expected to deepen innovation-led growth.

Defence, Space and Africa Cooperation

1. The leaders are expected to review progress in defence partnerships and identify future areas of strategic cooperation.
2. Cooperation in civil nuclear energy remains an important component of bilateral ties.
3. Both countries seek progress in joint programmes related to small modular reactors.
4. India and France are exploring collaboration in human flight programmes.
5. The two countries are expected to coordinate their approach towards Africa through the India-France Roadmap on the Blue Economy and the India-Africa Forum Summit.

Global and Geopolitical Significance

1. The India-France partnership reflects a shared commitment to strategic autonomy.
2. Both countries seek to contribute to global stability amid increasing geopolitical uncertainty.
3. India and France can play an important role in shaping discussions on global governance and emerging technologies.
4. Their cooperation can contribute to maintaining a multipolar world order.
5. As major democratic powers, both nations have a responsibility to promote stability, innovation and sustainable development.

Challenges in India–France Strategic Partnership

1. Differences in regulatory frameworks and standards can slow the implementation of technology partnerships.
2. High costs and technological complexities may delay collaboration in advanced sectors such as semiconductors, aerospace and nuclear energy.
3. Geopolitical uncertainties, including conflicts in Ukraine and West Asia, can affect strategic priorities and economic cooperation.
4. Competition from other major powers and strategic alignments may influence the pace of bilateral cooperation.
5. Limited private-sector integration and inadequate research linkages can constrain innovation-led collaboration.

6. Delays in execution of joint projects may reduce the effectiveness of announced initiatives.
7. Variations in intellectual property regimes and data governance approaches can create operational challenges.
8. Connectivity and market access barriers may hinder deeper business-to-business engagement.

Way Forward

1. Both countries should institutionalise regular high-level dialogues on emerging technologies and innovation.
2. Greater collaboration should be promoted between universities, research institutions and start-up ecosystems.
3. Joint research and development funds should be established in areas such as AI, semiconductors, biotechnology and green technology.
4. The private sector should be encouraged to participate actively through investment facilitation and innovation partnerships.
5. Defence and space cooperation should be expanded through joint production, technology transfer and co-development projects.
6. Faster implementation of existing agreements and roadmaps should be prioritised to achieve tangible outcomes.
7. India and France should strengthen coordination in multilateral forums on issues related to technology governance and global security.
8. Cooperation in Africa, the Indo-Pacific and the Blue Economy should be deepened to enhance their global strategic influence.
9. Both countries should leverage their shared commitment to strategic autonomy to promote a stable and multipolar world order.

Conclusion: Technology and innovation have become central drivers of India-France strategic convergence. By expanding cooperation in emerging technologies, defence, space and global governance, India and France can further strengthen their strategic partnership and contribute to a stable and multipolar international order.

Question: Technology and innovation are emerging as the new pillars of India-France strategic partnership. Discuss in the context of recent developments in bilateral relations.

Source: [The Hindu](#)

Supreme Court on Economic Contribution of Homemakers

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

Introduction

The Supreme Court's 2026 judgment highlighted a long-standing gap in accident compensation law. Although courts had recognised the value of unpaid domestic work for many years, existing methods could not fully capture the contribution of homemakers. While deciding a motor accident compensation case, the Court examined the economic value of domestic labour and the need for a more realistic framework to assess such loss.

Background of the Case

1. **Death of a homemaker in a road accident:** The case arose from the death of a homemaker, Reshma, in a road accident in Haryana in 2001.
2. **Compensation awarded by lower courts:** The Motor Accident Claims Tribunal awarded ₹2.42 lakh in 2003, which was later increased to ₹8.43 lakh by the Punjab and Haryana High Court in 2024.
3. **Issue before the Supreme Court:** The family challenged the compensation, arguing that it did not adequately value the homemaker's contribution to the household and family.
4. **Supreme Court's 2026 judgment:** In its 2026 judgment, the Supreme Court held that the compensation awarded by the lower courts did not adequately reflect the homemaker's contribution to the family. It consequently enhanced the compensation to ₹62.77 lakh.

Compensation under the Motor Vehicles Act

1. **Right to compensation after death in accidents:** The Motor Vehicles Act, 1988 allows the family of a person who dies in a road accident to claim compensation from the responsible party.
2. **Compensation linked to income:** Courts calculate compensation using the deceased person's income, future prospects, deductions for personal expenses, and an age-based multiplier.
3. **Role of the multiplier:** The multiplier estimates the number of years the deceased would likely have continued supporting the family.
4. **Challenge in valuing homemakers' contribution:** Homemakers do not have salary records, payslips, or tax returns. This creates difficulty in assigning an income value for compensation.
5. **Use of notional income:** Courts generally use notional income, an assumed income figure, to recognise that unpaid domestic work has economic value.
6. **Importance of starting income figure:** The income figure chosen at the beginning largely determines the final compensation amount because all later calculations depend on it.

Judicial Evolution in Valuing Homemakers' Contribution

A. Lata Wadhwa v. State of Bihar (2001)

- **Recognition of Economic Value:** The Supreme Court held that the services rendered by homemakers cannot be ignored while awarding compensation. It approved a notional income of Rs 3,000 per month for homemakers aged 34–59 years.
- **Foundation for Compensation Calculation:** The decision became an important benchmark for valuing unpaid domestic work. Alongside this, the Motor Vehicles Act treated a non-earning person as having an annual income of Rs 15,000.

B. Arun Kumar Agarwal v. National Insurance Co. Ltd. (2010)

- **Beyond Household Chores:** The Court held that a homemaker's contribution extends beyond cooking and cleaning. She manages the household, cares for children, and supports the overall functioning of the family.

- **Unique and Invaluable Services:** The Court described a homemaker's services as "invaluable" and stated that they cannot be equated with those of a paid domestic worker. It also recognised her role in enabling other family members to pursue education and employment.

C. National Insurance Co. Ltd. v. Pranay Sethi (2017)

- **Standardisation of Compensation:** The Constitution Bench laid down uniform rules for calculating compensation. It standardised additions for future prospects and fixed amounts under heads such as consortium, funeral expenses, and loss of estate.
- **Persistent dependence on notional income:** Despite judicial recognition, compensation calculations continued to rely mainly on notional income figures without fully valuing domestic labour.

Why Existing Compensation Framework Was Inadequate

1. **Notional income captured only part of the contribution:** The Court observed that assigning a fixed income figure could not fully reflect the wide range of work performed by homemakers.
2. **Large share of unpaid domestic work by women:** The **National Statistical Office Time Use Survey (2019)** showed that women spend more than **7 hours daily** on unpaid domestic work, compared to less than **3 hours for men**.
3. **Significant contribution to the economy:** Unpaid caregiving and domestic work contribute an estimated 15–17% of India's GDP, even though it is not counted in official GDP calculations.
4. **Loss of household management:** A homemaker manages the daily functioning of the household. Her absence creates a direct disruption in family life.
5. **Loss of the child's first teacher:** Children lose daily guidance, learning, values, language development, and personal care that cannot be fully replaced through paid arrangements.
6. **Loss of support for the earning spouse:** The earning family member loses the domestic support system that helped them focus on work and livelihood activities.
7. **Contribution is both economic and social:** The Court held that a homemaker's role is neither purely economic nor purely non-economic because it combines both dimensions.
8. **Consortium could not fill the gap:** The existing head of loss of consortium compensates emotional loss but does not account for the economic value of domestic care and household management.

Supreme Court's Recognition of Unpaid Domestic Labour (2026)

1. **Homemakers recognised as economic entities:** The Court held that homemakers are not dependents alone but economic contributors whose work sustains families and society.
2. **Homemakers as nation builders:** The Court described homemakers as nation builders because they support families, nurture future generations, and enable economic productivity.

3. **Creation of "Loss of Domestic Care":** A new compensation head called Loss of Domestic Care was introduced to recognise unpaid domestic labour.
4. **Minimum value fixed at ₹30,000 per month:** The Court fixed ₹30,000 per month as the baseline value of domestic care provided by a homemaker.
5. **Conditions for application:** The benefit applies when there is loss of household support, maternal guidance to children, and support to the spouse or parents.
6. **Replacement of the notional income approach:** Where these conditions are satisfied, ₹30,000 per month becomes the starting point for compensation calculations.
7. **Additional benefit for working homemakers:** If the homemaker also had paid employment, the amount is added to her actual income.
8. **Periodic revision mechanism:** The amount will increase by 10% every three years, following the same schedule used for consortium.
9. **Recognition beyond emotional loss:** The Court clarified that loss of domestic care is separate from consortium because it compensates economic loss rather than emotional loss.

Concern over Delay in Motor Accident Cases

1. **Extraordinary delay in compensation disputes:** The case remained pending for nearly 25 years, causing prolonged hardship to the affected family.
2. **Long pendency in High Courts:** A review of over 120 motor accident appeals showed an average pendency of about 8 years at the High Court level.
3. **Delay weakens the idea of fair compensation:** The Court observed that compensation loses much of its value when families wait decades for relief.
4. **Priority to older pending cases:** The Court directed High Courts to take up the oldest motor accident appeals on a priority basis.
5. **Need for dedicated benches:** High Courts were asked to expand specialised benches wherever necessary to handle accident compensation matters efficiently.
6. **Use of summary procedures:** Tribunals were directed to adopt summary procedures to ensure quicker disposal of compensation claims.

Conclusion

The judgment marks an important step in recognising the economic value of unpaid domestic labour. By creating the head of "loss of domestic care", the Supreme Court addressed a long-standing gap in compensation law. The ruling provides a more realistic method for valuing homemakers' contribution, recognises them as economic entities, and highlights the need for timely disposal of motor accident claims.

Question for practice:

Evaluate the significance of the Supreme Court's 2026 judgment in recognising the economic contribution of homemakers and addressing gaps in accident compensation law.

Source: Indian Express

India-France Innovation Roadmap 2030

UPSC Syllabus: Gs Paper 2- International Relations

Introduction

India and France adopted the **India-France Innovation Roadmap 2030** on **17 February 2026** after elevating their ties to a **Special Global Strategic Partnership** and launching the **India-France Year of Innovation 2026**. Built on the **Horizon 2047 Roadmap**, **Viksit Bharat 2047**, and **France 2030**, the roadmap aims to deepen cooperation in technology, research, education, health, startups, and innovation. It seeks to promote economic resilience, sustainable development, strategic autonomy, and technological sovereignty.

Innovation Roadmap 2030: Vision and Strategic Objectives

1. **Innovation as a Driver of National Development:** Innovation is recognized as a foundation for economic resilience, sustainable development, strategic autonomy, and technological and industrial sovereignty in both countries.
2. **Alignment of Long-Term National Visions:** The roadmap brings together India's **Viksit Bharat 2047** vision and France's **France 2030** strategy to create a future-oriented innovation partnership.
3. **Focus on Critical and Emerging Technologies:** Both countries aim to advance co-development in critical and emerging technologies and strengthen trusted technology ecosystems.
4. **Promoting Shared Prosperity:** Cooperation is designed to deliver practical outcomes for people, the planet, and long-term economic growth.
5. **Investment in Disruptive Innovation:** The partnership seeks to create new opportunities for investment and collaboration in disruptive and advanced technologies.
6. **Strengthening Strategic Autonomy:** The roadmap supports independent technological capabilities while reducing vulnerabilities in strategic sectors.

Major Areas of Cooperation under the Innovation Roadmap 2030

A. Trusted AI and Digital Cooperation

1. **Safe and Trustworthy AI Systems:** India and France will promote AI systems that respect democratic values, human rights, and sustainable development while reducing discrimination and misinformation.
2. **AI Governance and Standards:** Regulators, standards bodies, and technical experts will cooperate on interoperable and risk-based approaches to AI governance, including frontier and generative AI models.

3. **Child Safety in the Digital Environment:** Both countries will prioritize child safety through privacy-preserving age assurance, safety-by-design systems, and outcome-based safety standards for AI applications interacting with children.
4. **Privacy-Preserving Data Sharing:** India's **Data Empowerment and Protection Architecture (DEPA)** and France's trusted data systems will support secure and consent-based data sharing for research, healthcare, and public services.

B. Academic Mobility and Talent Development

1. **STEM Education and Research Cooperation:** Greater investment in STEM education, research partnerships, talent mobility, and institutional collaboration will prepare future generations for global challenges.
2. **Target of 30,000 Indian Students in France:** Both sides recognize the importance of France's goal of welcoming **30,000 Indian students by 2030** and strengthening people-to-people ties.
3. **Expansion of Mutual Recognition of Qualifications (MRQ):** The existing **2018 MRQ agreement** will be strengthened to cover more academic fields, regulated professions, and emerging technology sectors.
4. **Support for Advanced Academic Collaboration:** Expanded recognition frameworks will encourage dual-degree programmes, doctoral co-supervision, and greater academic mobility.
5. **Institutional Exchanges and Research Partnerships:** Educational institutions from both countries will deepen cooperation through student exchanges and collaborative research initiatives.

C. Innovation-Led Growth and Technological Sovereignty

1. **Industry-Academia Collaboration:** Governments, industries, startups, universities, and research institutions will work together to promote innovation-led growth.
2. **Resilient and Trusted Supply Chains:** Cooperation will support stronger and more reliable supply chains in strategic sectors.
3. **Startup and Innovation Exchange:** The **India-France InnoXchange Bridge** will create a research and entrepreneurship corridor linking innovation ecosystems in both countries.
4. **Access to Innovation Ecosystems:** Startups will gain structured access to research laboratories, technology platforms, investors, innovation clusters, and collaboration programmes.
5. **Support for SMEs:** Both countries will explore greater interaction between small and medium enterprise ecosystems to encourage innovation, employment, and inclusive growth.

D. Sectoral Cooperation in Aerospace, Space and Health

1. **Aeronautics Training Partnership:** A **Franco-Indian Campus for Aeronautics Training and Careers** will be established in Kanpur with support from MSDE to develop skills in the aerospace sector.
2. **Expanding Space Cooperation:** India and France will deepen cooperation in Earth observation, human space exploration, and future Low Earth Orbit missions.

3. **Space Ecosystem Connectivity:** The **Bengaluru Space Expo (7–9 September)** and the **International Space Summit in Paris (9–10 September)** will help strengthen links between the two countries' space sectors.
4. **Health Innovation and AI Research:** Both countries will use AI and research collaboration to develop solutions for global health challenges.
5. **Consent-Based Health Data Sharing:** Building on cooperation between **ICMR** and France's **Health Data Hub (HDH)**, both sides will develop secure and scalable data-sharing frameworks.

Key Institutional Platforms

1. **CEFIPRA as a Flagship Research Mechanism:** The **Indo-French Centre for the Promotion of Advanced Research (CEFIPRA- Centre Franco-Indien pour la Promotion de la Recherche Avancée)** will continue to support scientific cooperation with greater focus on innovation and strategic technologies.
2. **India–France Innovation Network (IFIN):** IFIN will serve as a major platform connecting researchers, innovators, startups, investors, and institutions from both countries.
3. **Potential Joint Governance Structure:** Both countries may establish a joint Indo-French steering committee to support the long-term governance of IFIN.
4. **Franco-Indian Campus in Life Sciences for Health (FIC-LSH):** This platform will continue to support cooperation in biomedical sciences, health research, and innovation.
5. **Joint Science and Technology Cooperation:** Reciprocal access to laboratories, research networks, and scientific institutions will strengthen collaborative research.
6. **Startup Collaboration Platforms:** Cooperation through **Station-F**, **FRIND-X**, and related innovation initiatives will support entrepreneurs and emerging technologies.

Strategic Significance of the Roadmap

1. **Making Innovation a Core Pillar of Bilateral Relations:** The roadmap places innovation at the centre of the India–France partnership and broadens cooperation beyond traditional sectors.
2. **Strengthening Technological Sovereignty:** Joint development of technologies helps both countries build independent and trusted technological capabilities.
3. **Creating Trusted Digital Ecosystems:** Cooperation in AI governance, child safety, and privacy-preserving data sharing promotes responsible technology development.
4. **Building Long-Term Talent Partnerships:** Academic mobility, qualification recognition, and research exchanges strengthen human capital links between the two countries.
5. **Addressing Global Challenges Through Innovation:** Collaboration in health, AI, space, and research supports practical solutions to international challenges.
6. **Promoting Inclusive and Sustainable Growth:** The roadmap supports innovation-driven growth while benefiting people, industry, and society.

Conclusion

The **India–France Innovation Roadmap 2030** provides a structured framework for cooperation in AI, research, education, health, startups, aerospace, and space. Guided by mutual trust, democratic values, and strategic autonomy, it seeks to strengthen technological sovereignty, expand innovation partnerships, and build trusted ecosystems. The roadmap also supports practical solutions to global challenges and shared prosperity.

Question for practice:

Discuss the main features and significance of the India–France Innovation Roadmap 2030.

Source: PIB

Solar-Integrated Transport Infrastructure for Clean Energy Transition

Source: The post “Solar-Integrated Transport Infrastructure for Clean Energy Transition” has been created based on “Solar-Integrated Transport Infrastructure for Clean Energy Transition”, published in “Indian Express” on 17th June 2026.

UPSC Syllabus: GS 2 -Economy

Context: India’s energy transition is entering a new phase where transport infrastructure is emerging as a source of clean energy alongside its traditional role as an energy consumer. In this context, **Rail/Road-Integrated Photovoltaics (RIPV)** has gained attention as an innovative solution that integrates renewable energy generation with existing transport networks.

About Rail/Road-Integrated Photovoltaics (RIPV):

RIPV involves integrating solar photovoltaic (PV) systems into transport infrastructure such as railway tracks, station roofs, highway medians, road dividers, viaducts, and safety barriers. By utilizing existing transport corridors for solar power generation, it reduces land requirements while supporting renewable energy production, decarbonization, and India’s net-zero goals.

Significance of RIPV for India’s Energy Transition

1. Optimum Utilisation of Existing Infrastructure

- RIPV allows solar panels to be installed along railway corridors, highways, and transport structures.
- It eliminates the need for dedicated land acquisition, which is a major constraint in India.

2. Supports Renewable Energy Targets

- Indian Railways aims to achieve net-zero emissions by 2030 and add around 30 GW of renewable energy capacity.
- RIPV can contribute significantly towards India’s non-fossil fuel capacity expansion goals.

3. Huge Untapped Potential

- Studies under the Indo-German Solar Partnership estimate over **150 GW** of RIPV potential.
- Railway corridors account for around **79 GW**, while highways account for around **75 GW**.

4. Reduction in Transmission Losses

- Electricity is generated close to the point of consumption such as traction substations and logistics hubs.

- b. This improves energy efficiency and reduces transmission losses.

5. Supports Green Mobility

- a. RIPV can provide renewable power for electric railway operations.
- b. It can also power EV charging stations along highways through locally generated clean energy.

6. Freight and Transport Decarbonisation

- a. Helps meet the growing electricity demand arising from electrified transport systems.
- b. Reduces dependence on fossil fuels and contributes to climate goals.

7. Successful Pilot Projects

- a. Delhi Metro's vertical solar plant at Okhla Vihar station.
- b. Solar-on-track pilots by NCRTC and Indian Railways.
- c. NHAI's plan to install solar panels on elevated sections of the Delhi-Dehradun Expressway.

Challenges in Implementation

1. Institutional and Regulatory Issues

- a. Lack of established design standards and regulatory frameworks.
- b. Limited experience of agencies in integrating solar systems with transport infrastructure.

2. Safety and Operational Concerns: Need for clear guidelines regarding safety, security, maintenance, and operations.

3. Financial Constraints

- a. RIPV systems require additional supporting structures.
- b. Initial installation costs are higher than those of conventional solar projects.

4. Approval and Coordination Challenges: Multiple stakeholders such as Indian Railways, NHAI, state agencies, and energy departments require coordination.

5. Need for Large-Scale Demonstration

- a. Existing projects remain small-scale pilots.
- b. Wider deployment requires successful large-scale demonstrations.

Way Forward

1. The government should formulate clear technical standards, safety protocols, and design guidelines to ensure the uniform and safe deployment of RIPV systems across highways and railway corridors.
2. Large-scale demonstration projects should be undertaken across different geographical regions to assess the technical feasibility, operational performance, and economic viability of RIPV systems under Indian conditions.
3. Dedicated financing mechanisms and innovative public-private partnership (PPP) models should be developed to reduce the high initial costs associated with RIPV installations.
4. Policy support similar to initiatives such as **PM Surya Ghar Muft Bijli Yojana** and **PM-KUSUM** should be extended to RIPV projects to encourage wider adoption and investment.
5. Coordination among agencies such as Indian Railways, NHAI, state governments, and renewable energy institutions should be strengthened to ensure smoother approvals and implementation.
6. RIPV infrastructure should be integrated with EV charging networks, logistics hubs, and traction substations so that locally generated renewable energy can be efficiently utilised.
7. Continuous monitoring of ongoing pilot projects should be undertaken, and successful models should be replicated across national highways and railway networks to achieve scale.

Conclusion: RIPV represents a land-neutral and scalable solution that can simultaneously support renewable energy generation and transport decarbonisation. If supported through robust policies, financing, and large-scale implementation, it can become a key pillar of India's clean energy transition and sustainable infrastructure development.

Question: Rail/Road-Integrated Photovoltaics (RIPV) can transform India's transport infrastructure from an energy consumer into a clean energy producer." Discuss its significance for India's energy transition, along with the challenges in its implementation.

Source: Indian Express

Ship Recycling Credit Note Scheme

Source: The post "Ship Recycling in India and the New Green Recycling" has been created based on "Credit note buoys up ship recyclers", published in "Business Line" on 17th June 2026.

UPSC Syllabus: GS 2 -Governance

Context: India has operationalised its **new Ship Recycling Credit Note Scheme** by issuing the first-ever credit note, marking a major step toward promoting green ship recycling and boosting domestic shipbuilding.

About The Ship Recycling Credit Note Scheme

1. It has been launched under the government's maritime development package.
2. It aims to promote environmentally sound ship recycling and strengthen domestic shipbuilding.
3. Under the scheme, ship owners receive a credit note equivalent to 40% of the scrap value when vessels are recycled at certified Indian facilities.

Significance of the Ship Recycling Credit Note Scheme

1. Promotes Sustainable Ship Recycling

- a. The scheme encourages recycling of ships in certified facilities that comply with international environmental and safety standards.
- b. It supports environmentally sound disposal of hazardous materials and waste.

2. Supports Circular Economy

- a. The scheme facilitates recovery and reuse of valuable materials such as steel and other metals from end-of-life vessels.
- b. It enhances resource efficiency and reduces dependence on virgin raw materials.

3. Strengthens India's Global Leadership

- a. India already handles around 30% of the world's ship recycling activity.
- b. The scheme further enhances India's position as a global hub for sustainable ship recycling.

4. Encourages Domestic Shipbuilding

- a. Credit notes can be redeemed against the purchase of vessels built in Indian shipyards.
- b. This creates demand for domestically manufactured ships and supports the Make in India initiative.

5. Aligns with International Commitments

- a. The scheme complements the implementation of the Hong Kong International Convention (HKC) for safe and environmentally sound ship recycling.

- b. It promotes worker safety, environmental monitoring, and pollution control.

6. Improves Ease of Doing Business

- a. A unified digital ship recycling portal enables seamless application, tracking, and issuance of credit notes.
- b. This increases transparency and reduces procedural delays.

Challenges

1. Weak Shipbuilding Capacity

- a. India accounts for less than 1% of the global shipbuilding market, while China dominates the sector.
- b. Limited manufacturing capacity affects the effectiveness of the credit note scheme.

2. Short Validity Period: The three-year validity of credit notes may not align with the long gestation period of ship acquisition decisions.

3. Execution and Delivery Concerns: Indian shipyards must demonstrate their ability to deliver vessels on time and at competitive costs.

4. Global Market Slowdown: Higher freight rates and geopolitical uncertainties have reduced the number of ships available for scrapping.

5. Skilled Workforce Shortage: A significant number of skilled Indian shipbuilding workers have migrated overseas for better opportunities.

Way Forward

1. The validity period of ship recycling credit notes should be extended to four to six years to better align with global ship acquisition cycles.
2. A pre-approval mechanism should be introduced so that ship owners can assess eligibility and potential benefits before recycling their vessels.
3. The government should provide completion guarantees, vendor cluster support, training assistance, and milestone-linked incentives to strengthen shipyard capabilities.
4. Efforts should be made to attract skilled Indian maritime workers from abroad through relocation support, skill recognition, and long-term employment opportunities.
5. Continued investments in digitalisation, ease of doing business, and infrastructure development should be undertaken to improve India's competitiveness in both shipbuilding and ship recycling.

Conclusion: The Ship Recycling Credit Note Scheme represents an important step towards integrating sustainability, circular economy principles, and industrial development in the maritime sector. With stronger shipbuilding capabilities, skilled manpower, and supportive policy measures, India can emerge as a leading global hub for both green ship recycling and shipbuilding.

Question: Discuss the significance of the Ship Recycling Credit Note Scheme in promoting sustainable maritime development in India. Examine the challenges that need to be addressed for achieving India's shipbuilding and ship recycling ambitions.

Source: [Business Line](#)

Drone Revolution and Modern Warfare

UPSC Syllabus: Gs Paper 3- Science and Technology

Introduction

For decades, military power was measured by expensive platforms such as tanks, fighter aircraft, missiles, artillery, and warships. Recent conflicts in Ukraine and West Asia have challenged this model by demonstrating the growing importance of commercially derived drones, rapid innovation, and AI-enabled systems. Drones now perform surveillance, targeting, precision strikes, logistics, and electronic warfare. Their widespread use is creating a continuously visible and interconnected battlespace, fundamentally changing military operations, strategy, and battlefield superiority.

Emergence of the Drone Revolution

1. **Shift from Platform-Based Warfare:** Traditional military superiority relied on advanced platforms and large defence budgets. Drones have reduced the advantage enjoyed by armies possessing expensive equipment.
1. **Drones as Multi-Role Systems:** Modern drones perform **ISR, target acquisition, precision strikes, artillery spotting, logistics support, and electronic warfare**. They have moved from support assets to core combat tools.
2. **Persistent Battlefield Visibility:** Drones continuously monitor battlefields. Frontline and rear areas are increasingly exposed to detection and attack.
3. **Rapid Detection and Engagement:** Targets can now be located, tracked, and struck within a short period. Concealment and safe movement have become much harder.
4. **Continuous Battlespace:** Modern warfare is becoming an interconnected battlespace where no position remains completely secure and no area is beyond operational reach.

Ukraine and the Evolution of Drone Warfare

1. **Industrial-Scale Drone Conflict:** The Ukraine war evolved from a conventional conflict into the world's first large-scale drone-intensive war within two years.
2. **Civilian Drones Turned Weapons:** Commercial drones originally designed for photography and mapping were converted into reconnaissance and strike systems.
3. **Rise of FPV Drones:** Low-cost **First Person View (FPV)** drones became precision-guided weapons. Their accuracy, manoeuvrability, and affordability transformed battlefield operations.
4. **Cost Advantage:** First Person View (FPV) strike drones costing a few hundred dollars can destroy military equipment worth millions, changing the economics of warfare.
5. **Diverse Drone Ecosystem:** Ukraine employs FPV strike drones, bomber drones, interceptor drones, loitering munitions, and long-range attack drones for different missions.
6. **Deep-Strike Capability:** Drone systems now target logistics hubs, airbases, supply routes, and critical infrastructure far beyond frontline positions.
7. **Fibre-Optic Drone Innovation:** Fibre-optic FPV drones use cables instead of radio links. This makes them highly resistant to electronic jamming and interference.

Global Expansion of Drone Warfare

1. **Hezbollah's Drone Architecture:** Hezbollah relies mainly on Iranian-supplied systems such as **Ababil, Mohajer, and Shahed drones** for reconnaissance and strike operations.
2. **Use of Fibre-Optic Drones:** Hezbollah has also adopted fibre-optic FPV drones to operate effectively despite extensive Israeli electronic warfare measures.
3. **Israel's Counter-Drone Systems:** Israel has developed layered counter-drone networks combining radar, electronic warfare systems, AI-enabled technologies, and specialised interception platforms.
4. **Integrated UAV Operations:** Israel combines long-endurance surveillance drones, armed **Unmanned Aerial Vehicle (UAV)**, and loitering munitions to support rapid reconnaissance and strike missions.
5. **Iran's Distinct Drone Strategy:** Iran uses drones not only for tactical purposes but also for deterrence, coercion, and regional power projection.
6. **Regional Drone Network:** Through indigenous systems and support to partners in Iraq, Syria, Lebanon, and Yemen, Iran can threaten military bases, infrastructure, and naval assets at relatively low cost.

Changing Economics and Industrial Structure of War

1. **Economics Driving the Revolution:** The drone revolution is shaped as much by economics as technology. Cheap systems increasingly challenge expensive military platforms.
2. **From Hardware to Production Capacity:** Military success increasingly depends on the ability to produce, adapt, deploy, and counter drones at scale.
3. **Hybrid Force Structures:** Tanks, artillery, and air power remain important. However, they must now operate alongside large numbers of low-cost autonomous systems.
4. **Decentralised Manufacturing Model:** Ukraine built a distributed ecosystem of nearly **1,500 small and medium-sized enterprises** instead of relying on a few large defence factories.
5. **Rapid Innovation Cycles:** Frontline feedback is quickly converted into software upgrades and hardware improvements. Innovation cycles have been reduced from years to weeks.
6. **Mass Production Capability:** Ukraine's decentralised production network is estimated to manufacture around four million drones in 2025.
7. **Global Defence Exports:** Ukraine is moving beyond battlefield use and is creating defence export networks focused on drones, electronic warfare tools, and related technologies.
8. **Cost Asymmetry in Air Defence:** Expensive interceptor missiles face economic challenges against cheap drones. A **\$4 million interceptor** used against a **\$40,000 drone** creates an unsustainable defence model.

AI, Autonomy and Future Warfare

1. **War of Systems, Not Platforms:** Future military competition will focus on integrated systems that combine sensing, communication, decision-making, targeting, and adaptation.
2. **AI-Supported Operations:** AI is increasingly assisting surveillance, targeting, communications, battlefield awareness, and operational coordination.
3. **Humans Moving Away from the Frontline:** Robots and drones are expected to perform dangerous battlefield tasks before human soldiers are deployed.

4. **Humans 'On the Loop':** Future operations may involve humans supervising autonomous systems rather than approving every individual action.
5. **Electronic Warfare Pressure:** Jamming often disrupts communication links. This encourages the development of systems capable of operating independently.
6. **Precision Mass Warfare:** Cheap drones, sensors, and GPS technologies have made it possible to combine large-scale attacks with high targeting accuracy.
7. **Changing Battlefield Arithmetic:** Russia aims to produce **1,000 Shahed drones daily**, while annual interceptor production remains far lower, highlighting the growing importance of scale.

Challenges, Risks and Implications for Future Warfare

1. **Proliferation to Non-State Actors:** Falling costs make precision-strike capabilities accessible to smaller states, proxy groups, and non-state actors.
2. **Pressure on Deterrence Systems:** Wider access to offensive technologies can impose significant costs on stronger adversaries and complicate deterrence.
3. **Faster Escalation Risks:** Cheap precision weapons shorten response times and blur distinctions between conventional war, hybrid conflict, and grey-zone competition.
4. **Governance and Ethical Concerns:** Increasing autonomy in military systems raises questions regarding human oversight and accountability in combat decisions.
5. **Information and Social Media Effects:** Drone footage is increasingly shared in real time, creating new links between warfare, intelligence gathering, and public information.
6. **Supply Chain Vulnerabilities:** Drone ecosystems remain dependent on global supply chains, including critical components such as lithium batteries and neodymium magnets.
7. **Adaptability as a Strategic Advantage:** Military advantage is increasingly shifting toward actors that can learn, innovate, scale production, and adapt faster than their opponents.

Conclusion

The drone revolution is transforming warfare by shifting military power from expensive platforms toward low-cost, scalable, and rapidly adaptable systems. While conventional weapons remain important, success increasingly depends on innovation, production capacity, AI integration, and operational flexibility. As military power becomes more decentralised, the ability to learn, adapt, and scale quickly will shape future conflicts.

Question for practice:

Examine how the drone revolution is transforming modern warfare by reshaping battlefield operations, military strategies, and the economics of conflict.

Source: The Hindu

The Long-Term Implications of the U.S.-Iran Deal

UPSC Syllabus: Gs Paper 3- International Relation

Introduction

The Memorandum of Understanding (MoU) between Iran and the United States has ended immediate hostilities and opened a 60-day negotiation process. Though the agreement offers hope for reducing tensions, major disputes over Iran's nuclear programme, sanctions, and the Strait of Hormuz remain unresolved. The deal marks only the beginning of a difficult diplomatic process. Its success or failure will influence West Asian stability, global energy markets, regional power balances, and India's strategic and economic interests.

Why the U.S.-Iran Deal Emerged

1. **Military Stalemate and Mutual Realisation:** Both sides recognised that their asymmetric wars were militarily unwinnable. A lasting solution required political negotiations rather than continued confrontation.
2. **Economic Costs of the Conflict:** The Hormuz blockades caused economic attrition and disrupted global trade and energy flows. The rising costs of conflict increased pressure for a negotiated settlement.
3. **Fear of Wider Regional Escalation:** Iran signalled that future conflict could expand beyond the region, including renewed disruption around the Bab el-Mandeb Strait. This raised concerns about broader instability.
4. **Domestic Political Pressures:** Growing public dissatisfaction emerged in both countries due to the economic and political costs of prolonged hostilities. Their actions also alienated supporters and neighbouring states.
5. **Loss of International Credibility:** Both nations appeared increasingly irresponsible and vindictive before the international community. This weakened their moral standing and encouraged diplomatic engagement.
6. **Need for Diplomatic Space:** The official statements from Tehran and Washington were measured and avoided triumphalism. Both acknowledged the complexity of negotiations and the need for a gradual process.

Key Challenges to a Lasting Settlement

1. **Iran's Nuclear Programme:** The United States wants a stronger agreement than the JCPOA and seeks restrictions on Iran's enriched uranium. Iranian hardliners strongly oppose such demands.
2. **Control of the Strait of Hormuz:** Iran's assertion of sovereignty over the Strait remains one of the most difficult issues. Its earlier closure created severe disruptions in global energy markets.
3. **Sanctions and Frozen Assets:** Negotiations must address U.S. sanctions and the release of more than **\$100 billion** in frozen Iranian assets. These issues remain central to any final settlement.
4. **Regional Security Disputes:** The crisis in Lebanon, the presence of U.S. military bases, and demands for reparations remain unresolved. These issues add complexity to the negotiations.
5. **Competing External Influences:** Israel and GCC states influence U.S. calculations, while China and Russia maintain strong links with Tehran. Pakistan's role as mediator also introduces additional interests.
6. **Economic Reconstruction Proposals:** Reports suggest discussion of a **\$300 billion** reconstruction fund involving U.S. companies. Such proposals reflect the transactional nature of current diplomacy.

7. **Internal Resistance in Iran:** Sections of Iran's political establishment view the draft agreement as excessive compromise. Hardline groups continue to distrust negotiations with Washington.

Emerging Geopolitical Shifts

1. **Limits of Military Superiority:** The conflict exposed the limits of advanced military power and air superiority. Iran countered through asymmetric warfare, resilient command structures, and strategic planning.
2. **Renewed Importance of Multilateralism:** The failure of coercive diplomacy may encourage greater reliance on negotiations and collective approaches to conflict resolution.
3. **Focus on Strategic Vulnerabilities:** Countries are likely to pay greater attention to maritime choke points, supply-chain resilience, and preventive diplomacy.
4. **Stronger Emphasis on Leadership Security:** Governments may invest more in protecting political leadership, command systems, and continuity of governance during crises.
5. **Changing Security Assumptions:** Long-held assumptions about military dominance and quick conflict resolution have been challenged. Future strategies may increasingly focus on resilience rather than overwhelming force.
6. **Reassessment by Major Powers:** The conflict exposed the costs and limits of aggressive military approaches. It may encourage greater caution in the use of force by major powers.

Energy Security and the Future of the Global Economy

1. **Hormuz as a Global Energy Chokepoint:** The closure of the Strait of Hormuz created one of the largest energy disruptions in modern history. It exposed the vulnerability of global energy supply chains.
2. **Pressure on Hydrocarbon Markets:** Even with the return of peace, depleted reserves and supply uncertainties may continue affecting oil markets. Volatility could remain a long-term challenge.
3. **Acceleration Towards Peak Oil Dynamics:** Sustained high prices may reduce demand and accelerate the shift towards a future where global oil demand begins to decline.
4. **Need for Strategic Energy Reserves:** The crisis demonstrated the importance of maintaining larger strategic petroleum reserves to manage future disruptions.
5. **Push Towards Clean Energy:** Repeated disruptions have strengthened the case for diversification away from fossil fuels. Clean energy gains additional strategic importance.
6. **Economic Impact Beyond the Region:** Energy disruptions affected trade, inflation, and economic stability across many countries. The consequences extended far beyond West Asia.

Regional Realignments and a Changing Iran

1. **Erosion of U.S. Security Credibility:** GCC states felt inadequately protected during the conflict despite their strategic ties with Washington. This has weakened confidence in the U.S. security umbrella.

2. **Reassessment by Gulf States:** The GCC may reconsider its security arrangements and geopolitical alignments. Internal divisions, including the Saudi-Emirati rivalry, may complicate collective responses.
3. **Accommodation Driven by GCC Divisions:** Differences within the GCC, especially the Saudi-Emirati rivalry, may push some Gulf states to engage Iran individually rather than act collectively.
4. **Possible Weakening of Shia Militia Networks:** Iran's influence over Shia militias, particularly in Iraq, may weaken over time. This could allow stronger Arab and tribal political identities to re-emerge.
5. **Iran's Evolving Deterrence Strategy:** A section of Iran's leadership increasingly views control over the Strait of Hormuz as a stronger deterrent than nuclear ambiguity.
6. **Costs of Nuclear Confrontation:** Iran's nuclear strategy has imposed direct costs estimated at **\$100 billion**, while sanctions have multiplied the economic burden.
7. **Competing Narratives Within Iran:** The leadership presents the deal as proof that Iran resisted external pressure and preserved the regime. However, hardliners remain sceptical, while many citizens judge the agreement by its impact on prices, sanctions relief, and the risk of another war.
8. **Risk of Non-State Violence:** Weakening of Iran and its proxies may create space for militant and extremist organisations. Regional instability could continue through underground conflicts and proxy wars.

Implications for India

1. **Relief for Energy Supplies:** Reopening the Strait of Hormuz can improve the flow of oil and gas supplies to India. It can also reduce pressure on oil prices, inflation, and the rupee.
2. **Exposure of Energy Dependence:** The conflict highlighted India's dependence on West Asia, which supplies about **50% of its crude oil, 70% of LPG, and nearly 90% of LNG imports**.
3. **Revival of Chabahar Connectivity Plans:** A durable agreement and easing of sanctions can help India resume energy purchases from Iran and continue developing **Chabahar Port** and the **International North-South Transport Corridor (INSTC)**.
4. **Need for Diplomatic Balancing:** India has maintained ties with the U.S., Israel, Iran, and Arab states. The crisis reinforced the importance of balancing these relationships while protecting national interests.
5. **Protection of Overseas Interests:** Stability in West Asia remains important because millions of Indians live and work in Gulf countries that were affected by the conflict.
6. **Trade and Economic Benefits:** A sustainable peace can ease disruptions in shipping and trade. However, normal traffic through the Strait may take weeks or months to fully recover.

Way Forward

1. **Sustain Political Negotiations:** Lasting peace requires continued dialogue on difficult issues such as Iran's nuclear programme, sanctions, regional security, and the Strait of Hormuz.
2. **Develop Creative Compromises:** Both sides need solutions that allow them to protect their core interests while claiming diplomatic success at home.

3. **Ensure Stable Energy Routes:** Countries must strengthen strategic reserves, diversify energy sources, and reduce dependence on vulnerable maritime chokepoints.
4. **Build Regional Security Mechanisms:** Greater cooperation among regional states is needed to reduce tensions and prevent future disruptions in West Asia.
5. **Address Iran's Economic Concerns:** Progress on sanctions relief, reconstruction, and economic recovery can strengthen support for the agreement within Iran.
6. **Prevent the Rise of Non-State Actors:** Regional powers must prevent militant groups and proxy networks from exploiting instability created by the conflict.
7. **Promote Strategic Autonomy:** Countries affected by the crisis, including India, should continue pursuing independent policies that safeguard their long-term economic and strategic interests.

Conclusion

The U.S.-Iran MoU provides an important opening for diplomacy, but it does not resolve the deeper disputes that caused the conflict. The negotiations will determine the future of sanctions, Iran's nuclear programme, and the Strait of Hormuz. Regardless of the final outcome, the conflict has already altered regional alignments, exposed vulnerabilities in global energy security, and reinforced the need for political solutions over military confrontation.

Question for practice:

Examine the significance of the U.S.-Iran deal and discuss its long-term implications for West Asia, the global economy, and India.

Source: The Hindu

India's Emergence as a Leading Supplier of Seafarers

Source: The post "India's Emergence as a Leading Supplier of Seafarers" has been created based on "Every fifth seafarer is now an Indian: How India's maritime workforce became dominated by non-officer crew", published in "Indian Express" on 18th June 2026.

UPSC Syllabus: GS 3 -Economy

Context: India's maritime workforce has expanded from **62,267 active seafarers in 2010** to more than **3.07 lakh in 2024**. Alongside this growth, the composition of Indian seafarers has shifted significantly towards **non-officer crew (ratings)**, making India one of the world's leading suppliers of maritime manpower.

Changing Composition of India's Seafaring Workforce

1. **Shift from Officers to Ratings:** The officer-to-rating ratio changed from **60:40 in 2010** to **35:65 in 2024**. This is significantly different from the global ratio of **45:55**.
2. **Rapid Growth of Nautical Workforce:** Engineering crew increased from **25,844 to 1,00,792** between 2010 and 2024. Nautical crew expanded from **36,423 to 2,07,109** during the same period.
3. **Expansion of Operational and Service Roles:** About **50% of non-engineering personnel** in 2024 worked as cooks, hospitality staff, cleaners, painters, cruise staff, wipers, and lookout personnel. Their share was less than **37%** in 2010.

4. Rise in Skilled Ratings: The number of **Bosuns** increased from **0** to **4,324**, and the number of **Able Seamen** increased from **708** to **16,568**.

5. Decline in Officer-Level Share: Personnel working as **third officers or above** declined from **46%** of nautical crew in 2010 to less than **20%** in 2024.

Significance for India

1. Economic Importance: India contributes nearly **17% of the global seafaring workforce**. Almost **one in every five seafarers globally is Indian**.

2. Employment Generation: Expansion of ratings has created large-scale employment opportunities for Indian youth.

3. Global Maritime Presence: Around **90% of Indian seafarers work on foreign-flagged vessels**, demonstrating international demand for Indian manpower.

4. Strategic Relevance: Indian seafarers are critical to global trade, energy transportation, and maritime supply chains.

Challenges

1. Skill Concentration in Lower-Ranked Jobs: Increasing employment is concentrated in operational and service roles rather than highly skilled technical positions.

2. Vulnerability to Geopolitical Risks: Large numbers of Indian seafarers work in conflict-prone regions such as the **Persian Gulf** and **Gulf of Oman**.

3. Dependence on Foreign-Flagged Vessels: About **90%** of Indian seafarers are employed on foreign vessels, making them vulnerable to global market fluctuations.

4. Career Progression Constraints: Ratings often face challenges in obtaining training, certification, and sea-time required for promotion to officer ranks.

5. Welfare and Safety Concerns: Maritime conflicts, piracy threats, abandonment by shipowners, and uncertain working conditions affect seafarer welfare.

Way Forward

1. Promote Officer-Level Training: Expand advanced nautical and marine engineering education to increase officer representation.

2. Strengthen Skill Upgradation Pathways: Create structured mechanisms for ratings to progress into officer cadres through certification and training support.

3. Expand Maritime Education Infrastructure: Improve capacity and quality of maritime academies and simulation-based training facilities.

4. Enhance Seafarer Welfare Mechanisms: Strengthen insurance, legal protection, emergency evacuation, and grievance redressal systems.

5. Increase Indian Shipping Capacity: Promote Indian-flagged vessels under initiatives such as the **Maritime India Vision 2030** to reduce dependence on foreign employers.

6. Improve Maritime Security Cooperation: Strengthen diplomatic engagement and naval cooperation to safeguard Indian seafarers in strategic maritime regions.

Conclusion: India's rise as a major maritime manpower supplier reflects its growing role in the global shipping industry. However, the increasing dominance of ratings over officers presents challenges related to skill development, career progression, and strategic influence. A balanced approach focusing on officer training, workforce welfare, and maritime capacity building is essential for sustaining India's leadership in the global maritime sector.

Question: India has emerged as one of the largest suppliers of maritime manpower globally. Examine the changing composition of India's seafaring workforce. Discuss the challenges associated with this trend and suggest suitable measures to strengthen India's maritime workforce.

Source: [Indian Express](#)

Put Indian students' health at the centre of nation-building

Source: The post "Put Indian students' health at the centre of nation-building" has been created based on "Put Indian students' health at the centre of nation-building", published in "Indian Express" on 18th June 2026.

UPSC Syllabus: GS 2 -Economy

Context: India's aspiration of becoming a **Viksit Bharat** depends on the quality of its human capital. Physical fitness, mental well-being, healthy nutrition, and emotional resilience among students form the foundation of a productive workforce, demographic dividend, innovation ecosystem, and sporting excellence.

Importance of Student Health for Nation-Building

1. Foundation of Human Capital

- a. Healthy children perform better academically and develop stronger cognitive abilities.
- b. Good health enhances productivity and employability in later life.

2. Realisation of Demographic Dividend

- a. A healthy youth population is essential to convert India's demographic advantage into economic growth.
- b. Poor health outcomes can transform a demographic dividend into a demographic burden.

3. Improved Learning Outcomes: Adequate nutrition, sleep, and physical activity improve concentration, memory, and classroom performance.

4. Better Mental Health

- a. Emotional well-being reduces anxiety, stress, depression, and behavioural issues among students.
- b. Mentally healthy students are more resilient and socially adaptable.

5. Sporting and National Excellence: Regular physical activity contributes to fitness, discipline, and athletic performance, supporting India's sporting ambitions.

6. Long-Term Public Health Benefits: Healthy habits developed in childhood reduce the future burden of obesity, diabetes, cardiovascular diseases, and mental disorders.

Challenges

1. Rising Childhood Obesity: Increased consumption of junk food and ultra-processed foods is contributing to obesity and lifestyle diseases.

2. Excessive Screen Time: Growing dependence on smartphones and digital entertainment reduces physical activity and affects attention spans.

3. Sleep Deprivation: Academic pressure and excessive gadget use are leading to poor sleep quality among students.

4. Declining Physical Activity: Limited playgrounds, urban lifestyles, and exam-oriented education reduce opportunities for exercise and sports.

5. Mental Health Concerns: Academic competition, body shaming, social media pressure, and peer comparison contribute to stress and anxiety.

6. Inadequate Health-Focused School Ecosystem: Many schools lack structured programmes for nutrition, fitness, mental health counselling, and health education.

Way Forward

1. Integrate Health into School Curriculum: Institutionalise daily physical activity, yoga, sports, and health education within school schedules.

2. Promote Holistic Wellness Practices: Encourage yoga, meditation, pranayama, and mindfulness to improve self-control, focus, and emotional balance.

3. Improve Nutritional Environment: Ensure healthy canteen options, nutritious meals, and awareness regarding balanced diets.

4. Address Mental Health Systematically: Establish counselling services and regular mental health screening in schools.

5. Regulate Screen Usage: Promote digital literacy and healthy screen-time practices among students and parents.

6. Create Supportive School Culture

- a. Conduct awareness programmes against body shaming, bullying, and discrimination.
- b. Foster empathy, inclusiveness, and body positivity.

7. Strengthen Parent-School Collaboration: Sensitise parents regarding sleep, nutrition, physical activity, and the mental well-being of children.

Conclusion: A developed India cannot be built on unhealthy minds and bodies. Investing in student health through nutrition, physical fitness, mental well-being, and value-based education is an investment in India's future human capital. Placing children's health at the centre of public policy is essential for achieving the vision of **Viksit Bharat** and sustainable nation-building.

Question: Students' health is India's national capital." Discuss the importance of physical and mental well-being among school children for achieving the goals of Viksit Bharat. Examine the challenges and suggest measures to place student health at the centre of nation-building.

Source: [Indian Express](#)

Water Security is Central for a Viksit Bharat

UPSC Syllabus: Gs Paper 3- Indian economy and Infrastructure

Introduction

Water security is vital for human dignity, public health, agriculture, economic growth, and environmental sustainability. It is also a key requirement for achieving the vision of Viksit Bharat. India faces growing pressure on its water resources due to population growth, urbanisation, climate change, and limited freshwater availability. In recent years, the country has adopted a more integrated approach that connects drinking water, sanitation, conservation, river rejuvenation, and climate resilience within a single water security framework.

India's Water Security Challenge

1. **Limited Freshwater Resources:** India has nearly **18% of the world's population** but only about **4% of global freshwater resources**. This creates constant pressure on available water resources.
2. **Declining Water Availability:** Rising population has reduced per capita water availability significantly over time. Water stress already affects large sections of the population.
3. **Seasonal Rainfall Pattern:** Nearly **70% of annual rainfall occurs within three months**, making water availability highly uneven across seasons.
4. **Growing Urban Pressure:** Rapid urbanisation is increasing demand for drinking water and sanitation services. By 2050, an additional **416 million people** are expected to live in Indian cities.
5. **Climate-Related Risks:** Climate change is increasing the frequency of floods and droughts. Changing weather patterns are creating new challenges for water management.
6. **Economic Importance of Water:** Water-dependent sectors contribute roughly **half of India's economic value added** and employ nearly **70% of the workforce**, making water security critical for development.

Shift Towards Integrated Water Management

1. **From Fragmented to Holistic Planning:** Water challenges were earlier addressed through separate programmes. The focus has now shifted towards an integrated approach covering multiple dimensions of water management.
2. **Water as a National Priority:** Water is now treated as a shared national priority involving governments, departments, states, and local communities.
3. **Connected Water Ecosystem:** Drinking water, sanitation, groundwater recharge, river conservation, irrigation efficiency, wastewater reuse, and climate resilience are increasingly viewed as interconnected issues.
4. **Community Participation:** Public participation has become an important element of water conservation and management efforts. Community involvement is helping improve outcomes on the ground.
5. **Focus on Long-Term Resilience:** Investments in the water sector are being viewed as investments in national resilience rather than only developmental expenditure.

Key Pillars of India's Water Security Transformation

A. Jal Jeevan Mission

1. **Expansion of Household Tap Water:** Rural tap water coverage increased from about **3.23 crore households (17%)** at launch to more than **15.8 crore households**, covering over **81% of rural India**.
2. **Target of Universal Coverage:** The government is working towards achieving **100% rural tap water coverage by 2028**.

3. **Benefits for Women and Families:** Household water supply has helped save more than **5.5 crore person-hours daily**, allowing time to be used for education, livelihoods, childcare, and economic activities.
4. **Health and Economic Benefits:** Access to safe drinking water has reduced water-borne diseases and lowered **out-of-pocket health expenditure** for households. This has improved both public health and household financial security.

B. Swachh Bharat Mission (SBM)

1. **Behavioural Change and Public Participation:** The sanitation movement showed that behavioural change and public participation can be achieved on a large scale.
2. **Public Health Gains:** According to the **World Health Organisation**, SBM-Grameen helped avert more than **3 lakh diarrhoea deaths** between 2014 and October 2019.
3. **Dignity and Safety:** Household toilets improved dignity, privacy, and safety, particularly for rural women.
4. **Beyond Open Defecation-Free Status:** SBM-Grameen 2.0 focuses on sustainable solid and liquid waste management.

C. Water Conservation and Groundwater Recharge

1. **Jal Sanchay Jan Bhagidari Initiative:** More than **1.55 crore rainwater harvesting and groundwater recharge structures** had been created by **31 May 2026**.
2. **Improving Groundwater Conditions:** Assessments show better groundwater recharge and a reduction in over-exploited assessment units in several regions.
3. **Environmental Recovery:** Conservation efforts combined with community participation have helped reduce environmental stress.

D. River Rejuvenation and Water Infrastructure

1. **Ken-Betwa River Linking Project:** India's first major river interlinking project is progressing to provide water to the water-scarce Bundelkhand region.
2. **Namami Gange Programme:** The programme demonstrates that environmental restoration and development can progress together.
3. **Expansion of Sewage Treatment:** Over the past decade, **4,260 MLD** of sewage treatment capacity has been created.
4. **Improved Water Quality:** Biochemical Oxygen Demand reduced from **26 TPD in 2017** to **10.75 TPD in 2024**, while effluent discharge declined from **349 MLD** to **265.56 MLD**. Monitoring shows pH and dissolved oxygen levels now meet bathing criteria at all monitored locations.

Emerging Innovations and Best Practices

1. **Hybrid Annuity Model (HAM):** Under Namami Gange, wastewater projects use HAM to ensure long-term treatment performance and compliance with effluent standards.
2. **Performance-Based Service Delivery:** Models in Karnataka and Shimla link payments with service quality, efficiency, water supply continuity, and operational performance.
3. **24×7 Water Supply Initiatives:** Urban and rural projects have demonstrated that continuous and pressurised water supply can be achieved through better management systems.
4. **Water Reuse and Circular Economy:** Cities such as Chennai and Surat are expanding treated wastewater reuse, reducing pressure on freshwater resources.
5. **Digital and Data-Based Management:** Use of real-time monitoring, remote sensing, satellite imagery, weather forecasts, and water information systems is improving planning and resource management.

Way Forward

1. **Improve Water-Use Efficiency:** Greater efficiency is needed in water consumption across sectors to reduce pressure on limited resources.
2. **Promote Recycling and Reuse:** Expansion of wastewater treatment and reuse can support long-term water security.
3. **Strengthen Water Governance:** Better management, accountability, and coordination are needed across water institutions.
4. **Enhance Climate Resilience:** Water systems must be prepared to manage increasing flood and drought risks.
5. **Encourage Citizen Participation:** Long-term success will require sustained public involvement in conservation and water management efforts.

Conclusion

Water security is a critical pillar of Viksit Bharat. India's experience shows that drinking water supply, sanitation, groundwater recharge, river conservation, wastewater management, and climate resilience cannot be addressed separately. Sustained investment, community participation, and integrated water management are essential for securing water resources, improving quality of life, and building long-term national resilience.

Question for practice:

Discuss how India's integrated approach to drinking water, sanitation, water conservation, groundwater recharge, and river rejuvenation is strengthening water security and contributing to the vision of Viksit Bharat.

Source: [The Hindu](#)

Innovate or be Eaten: On India and an Innovative Ecosystem

UPSC Syllabus: Gs Paper 3- Science and Technology

Introduction

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Innovation is becoming a key determinant of economic strength, national security, and technological sovereignty. As global competition in critical technologies intensifies, India must move beyond being a user of technology and become a creator of globally relevant solutions. The country's strong talent base, growing startup ecosystem, and expanding innovation infrastructure provide a solid foundation. However, achieving the vision of **Viksit Bharat** requires deeper technological capabilities, stronger innovation ecosystems, and sustained support for talent, capital, and research.

India's Emerging Innovation Potential

1. **Strong Talent and Leadership Presence:** Indian and Indian-origin professionals have demonstrated exceptional managerial and technical capabilities in leading some of the world's most advanced technology businesses. This shows India's ability to contribute to global innovation at the highest level.
2. **Bharat Innovates 2026 as a Showcase Platform:** Bharat Innovates 2026 in France demonstrated that globally competitive innovations can be developed in India through patient startup incubation and support in strategic sectors.
3. **Expansion of Innovation Participation:** The first innovation decade expanded participation through startups, incubators, digital public infrastructure, research missions, student hackathons, and new funding pathways.
4. **Need to Move Towards Innovation Depth:** Future progress should be measured by capabilities mastered, critical dependencies reduced, stronger participation in global value chains, and large-scale societal impact.

Institutional Architecture for Innovation

1. **Government-Led Innovation Framework:** India has developed a dedicated innovation ecosystem through initiatives such as **Startup India**, IndiaAI Mission, Anusandhan National Research Foundation (ANRF), Innovations for Defence Excellence (iDEX), Biotechnology Industry Research Assistance Council (BIRAC), Indian National Space Promotion and Authorization Centre (IN-SPACe), Semicon India, Atal Tinkering Labs, and the Research, Development and Innovation (RDI) Fund. These initiatives have made frontier technology a key part of national development.
2. **Role of Higher Education Institutions:** Institutions such as the **Indian Institutes of Technology (IITs)** and the **Indian Institute of Science (IISc)**, supported by the Ministry of Education, serve as important centres for deep-tech research, talent development, and startup incubation.
3. **Expansion of Innovation Participation:** Startups, incubators, digital public infrastructure, research missions, student hackathons, and new funding channels have widened participation in innovation across sectors.
4. **Foundation for the Next Innovation Phase:** The first innovation decade created the necessary platform for innovation growth. The next phase must focus on building deeper technological capabilities and reducing critical dependencies.

Opportunities for India in the Global Innovation Landscape

1. **Innovation as a Strategic Necessity:** Technology now influences a nation's position in trade, diplomacy, and security. Innovation can strengthen competitiveness, reduce vulnerabilities, and create capabilities that are difficult to replace.
2. **Emerging Opportunities in Deep Technologies:** While frontier AI and semiconductor leadership require enormous investments, significant opportunities remain in areas such as space exploration, defence, material sciences, clean energy, and digital infrastructure.
3. **Building Technologies the World Uses:** India has shown strength in adopting and adapting technology. The next opportunity lies in creating technologies, platforms, and systems that become globally relevant.
4. **Strategic Sovereignty Through Innovation:** Innovation can help India reduce technological dependence and strengthen its position in critical technology value chains without pursuing isolation.
5. **Global Collaboration as a Growth Multiplier:** Partnerships with like-minded countries can accelerate technological progress. The India-France Year of Innovation reflects collaboration based on complementary strengths and mutual benefit.
6. **India as a Global Innovation Laboratory:** India's scale and development challenges create opportunities to build solutions that can serve both domestic needs and global markets.

Challenges in Building a World-Class Innovation Ecosystem

1. **Limited Ability to Compete in Capital-Intensive Technologies:** Frontier sectors such as advanced AI and semiconductors require investments worth tens of billions of dollars, creating entry barriers for many countries.
2. **Need for a Stable Capital Environment:** Innovation requires predictable tax policies, fair business conditions, and venture capital that can support exploratory and high-risk ideas.
3. **Talent Retention Challenges:** India must ensure that highly skilled professionals see long-term opportunities within the country rather than seeking better prospects elsewhere.
4. **Quality of Life Constraints:** Clean air, urban green spaces, affordable housing, and reliable public transport remain important factors in attracting and retaining talent.
5. **Low Industrial R&D Intensity:** India's industrial research and development investment remains below international standards, limiting the creation of original technologies.
6. **Dependence on External Technologies:** Many critical technologies, standards, manufacturing processes, and supply-chain components remain outside India's control.
7. **Risks Associated with Artificial Intelligence:** AI can improve governance and diagnostics but may also disrupt employment, increase bias, and widen inequalities if not carefully managed.

Way Forward

1. **Shift from Technology Adoption to Technology Creation:** India must focus on owning critical intellectual property, scientific knowledge, design capabilities, manufacturing processes, standards, data, and customer access.
2. **Build Innovation Mastery in Priority Sectors:** Innovation efforts should focus on areas where India has strong domestic demand, talent advantages, strategic needs, and opportunities for global competitiveness.
3. **Use Policy Support in Emerging Sectors:** In early-stage sectors, government should create demand, absorb developmental risks, and support innovation through structured procurement and long-term investment.
4. **Strengthen Industry-Led Innovation:** As sectors mature, industry should lead through R&D investments, startup partnerships, strategic investments, and ecosystem development.
5. **Promote Startup-MSME-Industry Integration:** Large enterprises should integrate startups and MSMEs into supply chains and provide engineering expertise, quality systems, and market access.
6. **Develop Ecosystem-Based Innovation:** Success in sectors such as semiconductors and electric vehicles requires coordinated development of design, manufacturing, materials, software, financing, and customers.
7. **Pursue Strategic International Partnerships:** India should collaborate with trusted partners from a position of confidence to reach technological frontiers faster while preserving strategic sovereignty.
8. **Ensure Inclusive and Responsible Innovation:** AI adoption should create new opportunities, support reskilling and redeployment, and ensure that technological change benefits all sections of society.

Conclusion

India's innovation journey must move from participation to mastery. Success will depend on building original technologies, reducing critical dependencies, strengthening innovation ecosystems, and focusing on strategic sectors where India can create lasting advantages. By combining innovation, collaboration, and technological capability, India can emerge as a globally influential innovation power and advance the vision of **Viksit Bharat**.

Question for practice:

Evaluate India's potential to become a global innovation leader and discuss the key challenges and measures needed to build a world-class innovation ecosystem.

Source: [The Hindu](#)

India's Graduate Employability Challenge

Source: The post "India's Graduate Employability Challenge" has been created based on "India's Graduate Employability Challenge", published in "The Hindu" on 19th June 2026.

UPSC Syllabus: GS 3 -Economy

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Context: India has experienced an unprecedented expansion in higher education over the last decade, resulting in a large increase in the number of graduates. However, job creation has not kept pace with the growth in the supply of graduates, leading to concerns regarding employability and graduate unemployment.

Reasons for the Employability Challenge

1. Growing Gap Between Graduate Supply and Job Creation

- a. The number of graduates, particularly engineering graduates, has increased rapidly while employment opportunities have grown at a slower pace.
- b. The IT sector, which was previously the largest recruiter of engineering graduates, has significantly reduced hiring.
- c. Although sectors such as banking, financial services, defence, and space technologies have expanded recruitment, they have not generated sufficient jobs to absorb the increasing number of graduates.
- d. Recent investments in semiconductors, advanced manufacturing, and technology sectors are largely capital-intensive and therefore create limited employment.

2. Impact of Technological Change and AI

- a. Artificial Intelligence is transforming skill requirements across industries.
- b. Employers increasingly expect graduates to work with AI systems, validate AI-generated outputs, and solve complex technological problems.
- c. Universities have not adapted their curricula quickly enough to meet changing industry demands.
- d. Consequently, many graduates enter the labour market with skills different from those required by employers.

3. Skill Mismatch

- a. Many graduates possess strong academic credentials but lack practical exposure to laboratories, manufacturing environments, teamwork, and real-world problem-solving.
- b. Employers often need to provide substantial additional training before graduates can contribute effectively.
- c. Industry-linked training programmes remain inadequate.

4. Manufacturing Not Generating Expected Employment

- a. Manufacturing is increasingly being transformed by automation, robotics, and Industry 4.0 technologies.
- b. Modern factories require fewer workers and supervisors even as production expands.
- c. As a result, manufacturing employment has not increased at the pace many expected.

5. Limited Innovation and R&D Opportunities

- a. India has traditionally focused more on manufacturing products designed elsewhere rather than creating its own technologies.
- b. The number of advanced research, design, and product-development jobs remains lower than the number of qualified graduates.

Measures Required

1. Industry and academia should collaborate closely in curriculum design, internships, and skill development.
2. Universities should place greater emphasis on practical training and industry exposure.
3. India should significantly increase investment in research and development.
4. Greater focus should be placed on indigenous design, innovation, and product development.
5. Entrepreneurship should be promoted to encourage graduates to become job creators.

6. Stronger support should be provided for startups, particularly deep-technology ventures.
7. Education, industrial, and employment policies should be aligned to meet future workforce requirements.

Conclusion: India is not merely facing a graduate surplus but a mismatch between education outcomes and labour market needs. Strengthening employability, promoting innovation, enhancing industry-academia collaboration, and encouraging entrepreneurship are essential for ensuring that economic growth translates into productive employment opportunities for graduates.

Question: Is India producing more graduates than the economy can absorb? Examine the reasons for the growing employability challenge and suggest measures to improve graduate employment outcomes.

Source: [The Hindu](#)

NFHS-6 reveals progress amid nutrition challenges

Source: The post “NFHS-6 reveals progress amid nutrition challenges” has been created based on “NFHS-6 reveals progress amid nutrition challenges”, published in “The Hindu” on 19th June 2026.

UPSC Syllabus: GS 3 -Economy

Context: Recently released National Family Health Survey (NFHS-6) presents a mixed picture of child nutrition in India. While several health and service-delivery indicators have improved, progress in reducing child malnutrition remains slow, highlighting the need for focused interventions.

Key Findings of NFHS-6

Improvements in Health and Nutrition Indicators

1. The prevalence of stunting among children declined from 35.5% to 29.3%, indicating an improvement in long-term nutritional status.
2. Institutional births increased to nearly 90%, ensuring safer deliveries and better maternal and child health outcomes.
3. About 91% of deliveries were attended by skilled medical personnel, improving access to professional healthcare during childbirth.
4. Around 95% of mothers received at least one antenatal care visit, reflecting better maternal healthcare coverage.
5. Full vaccination coverage among children aged 12–23 months increased to 87%, reducing the risk of vaccine-preventable diseases.
6. Improvements in healthcare access, immunisation, maternal education, housing, drinking water, and sanitation have contributed significantly to better child health outcomes.

Persistent Nutrition Challenges

1. Wasting among children has shown limited improvement, except in cases of severe wasting.
2. Only about 50% of newborns were breastfed within one hour of birth, despite its importance for child survival and nutrition.
3. Approximately 60% of children aged 6–8 months received solid or semi-solid foods as recommended.
4. Only 15% of children aged 6–23 months received an adequate and diversified diet.
5. Delayed initiation of complementary feeding after the annaprashana stage (6–12 months) continues to contribute to growth faltering among children.

6. Maternal time poverty limits the ability of mothers to provide adequate care and feeding to their children.
7. Although around 30% of women reported engaging in paid work, their unpaid domestic and caregiving responsibilities remain substantial.
8. Processed and packaged foods are becoming increasingly affordable and preferred, while nutritious foods such as pulses, fruits, vegetables, and nuts remain relatively expensive.

Measures Required

1. Strengthen Infant and Young Child Feeding

- a. Timely initiation of breastfeeding and appropriate complementary feeding practices should be actively promoted.
- b. Mothers should receive continuous counselling on nutrition and childcare during the first 1,000 days of a child's life.

2. Empower Frontline Nutrition Workers

- a. ASHAs and Anganwadi Workers (AWWs) should be trained to improve anthropometric data collection, monitoring, and analysis.
- b. Nutritionists and data analysts should be recruited at the district level to strengthen nutrition planning and implementation.
- c. Digital tools should be used for nutrition counselling, growth monitoring, and programme evaluation.

3. Improve Behaviour Change Communication

- a. Culturally appropriate nutrition education should be provided to families and communities.
- b. Counselling should emphasize the use of locally available, affordable, and nutritious foods.

4. Promote Convergence and Community Action

- a. Child nutrition should be made a regular agenda item in Gram Sabha and Panchayat meetings.
- b. Investments should be made to improve drinking water facilities, sanitation infrastructure, and Anganwadi centres.

5. Address Gender Dimensions

- a. Childcare services and crèche facilities should be expanded to support working mothers.
- b. Men should be encouraged to participate actively in childcare and household responsibilities.
- c. Reducing women's unpaid care burden can help improve child feeding practices and overall child well-being.

Conclusion: NFHS-6 demonstrates significant improvements in healthcare service delivery and maternal-child health indicators. However, improvements in health services alone are insufficient to address India's persistent nutrition challenges. A preventive, community-based, and multi-sectoral approach is required to improve feeding practices, empower women, and strengthen nutrition-sensitive interventions. Sustained efforts in these areas are essential for achieving long-term improvements in child nutrition and human development.

Question: NFHS-6 reveals progress in maternal and child health indicators, yet child nutrition remains a major challenge in India." Examine the key findings of NFHS-6 and suggest measures to address persistent malnutrition.

Source: [The Hindu](#)

Atmanirbhar AI

UPSC Syllabus: Gs Paper 3- Infrastructure and Science and Technology

Introduction

Artificial Intelligence is emerging as a major source of economic power, technological leadership, and national security. Recent restrictions on access to advanced AI technologies have highlighted the risks of dependence on foreign platforms. For India, Atmanirbhar AI requires building Sovereign AI capabilities across the entire value chain—energy, infrastructure, compute, models, and applications. Strengthening these capabilities is essential for strategic autonomy, economic competitiveness, and achieving the vision of Viksit Bharat 2047.

Understanding Sovereign AI: The Foundation of Atmanirbhar AI

1. **Meaning of Sovereign AI:** Sovereign AI is a nation's ability to build, control, and govern its AI ecosystem across data, models, compute, infrastructure, and policy according to its own interests and laws.
2. **Strategic and Economic Importance:** AI is expected to contribute significantly to global economic growth. Countries with sovereign AI capabilities will retain economic value and strategic autonomy.
3. **Control of the AI Stack:** AI self-reliance depends on five connected layers—**Energy, Infrastructure, Compute, Models, and Applications**. Weakness in any layer increases dependence on external players.
4. **Importance for Critical Sectors:** Defence, healthcare, telecom, finance, energy, and governance are becoming AI-driven. Sovereign AI helps protect national interests in these sectors.
5. **Need for Indigenous Models:** India's linguistic and cultural diversity requires AI systems tailored to Indian languages, sectors, and regulations.

India's AI Ecosystem and Progress

1. **IndiaAI Mission:** The government approved the **IndiaAI Mission** with a budget of ₹10,371.92 crore. It aims to make India a global leader in Artificial Intelligence.
2. **Growing AI Ecosystem:** India's technology sector is projected to cross **USD 280 billion** in annual revenue. More than **6 million people** are employed in the technology and AI ecosystem.
3. **Startup and Enterprise Adoption:** India has around **1.8 lakh startups**, and nearly **89% of new startups** use AI. About **87% of enterprises** actively use AI solutions.
4. **Global AI Standing:** According to Stanford University's 2025 Global AI Vibrancy Tool, India ranks **3rd globally in AI competitiveness** and is among the leading countries in AI skills, capabilities, and policy development.
5. **Compute Infrastructure Expansion:** India has expanded AI infrastructure from an initial target of 10,000 GPUs (Graphics Processing Unit) to **38,000+ GPUs**, available at subsidised rates for researchers and startups.

6. **Semiconductor Development:** Domestic semiconductor manufacturing is expanding, while initiatives such as Semicon 2.0 and indigenous chip development aim to reduce external dependence.
7. **Data and Digital Infrastructure:** AIKosh hosts **5,500+ datasets** and **251 AI models** across 20 sectors. Large investments are also strengthening domestic data-centre capacity.

Government Initiatives Promoting Atmanirbhar AI

1. **Seven Pillars of IndiaAI Mission:** The mission focuses on compute infrastructure, application development, datasets, foundation models, future skills, startup financing, and safe AI adoption.
2. **Development of Foundation Models:** IndiaAI has selected multiple startups and research groups, including **Sarvam AI** and **BharatGen**, to develop indigenous AI models.
3. **BHASHINI and Language Inclusion:** BHASHINI supports **20 Indian languages** and uses AI-based translation and speech technologies to improve digital access.
4. **Centres of Excellence:** Centres of Excellence have been established for healthcare, agriculture, sustainable cities, and education to promote AI-based innovation.
5. **Talent Development:** The IndiaAI Future Skills programme supports **500 PhD scholars, 5,000 postgraduates, and 8,000 undergraduates** while expanding AI labs across the country.
6. **Startup and Innovation Support:** IndiaAI Startup Financing and global accelerator programmes support AI startups and help them expand internationally.
7. **AI Impact Summit and Create in India Mission:** The India AI Impact Summit highlighted India's commitment to AI innovation and indigenous AI development. The proposed Create in India Mission aims to strengthen existing capabilities and build a future-ready talent pipeline.

AI and National Security

1. **AI as a Force Multiplier:** AI strengthens intelligence, surveillance, autonomous systems, logistics, cyber defence, and command-and-control operations.
2. **Operational Use in Defence:** During **Operation Sindoor**, AI enabled real-time multi-source data fusion. Around **23 AI applications** supported operational activities.
3. **Defence AI Institutions:** The Defence AI Council (DAIC) and Defence AI Project Agency (DAIPA) guide AI adoption across the armed forces.
4. **Role of DRDO:** The **Defence Research and Development Organisation (DRDO)**, its **Centre for Artificial Intelligence and Robotics (CAIR)**, and **DRDO Young Scientists Laboratory–Artificial Intelligence (DYSL-AI)** have developed **more than 75 AI-based defence products** covering surveillance, automation, robotics, and cybersecurity.
5. **Innovation Ecosystem:** The **Innovations for Defence Excellence (iDEX)** framework and the Army AI Incubation Centre connect startups, academia, industry, and the armed forces to promote indigenous innovation.

6. **Trustworthy AI Framework:** The **Evaluating Trustworthy Artificial Intelligence (ETAI) Framework** promotes AI systems that are reliable, safe, secure, transparent, and fair for military applications.

AI for Governance, Inclusion and Public Services

1. **Healthcare Applications:** AI supports disease detection, medical imaging, telemedicine, and personalised healthcare services, especially in remote areas.
2. **Agriculture Support:** AI helps farmers through weather forecasting, pest detection, crop monitoring, and advisory services such as Kisan e-Mitra.
3. **Education and Skilling:** AI is being integrated into school education, DIKSHA, and programmes such as YUVAi to improve learning and future skills.
4. **Governance and Justice Delivery:** AI supports translation of judgments, automated filing, scheduling, and multilingual legal services under the e-Courts initiative.
5. **Weather and Disaster Management:** AI-based systems improve forecasting of rainfall, fog, lightning, cyclones, and climate-related events.
6. **Inclusive Development:** NITI Aayog's **AI for Inclusive Societal Development** report focuses on empowering **490 million informal workers** through frontier technologies.

Challenges to Achieving Atmanirbhar AI

1. **Dependence on Foreign Technologies:** India still relies on external technologies in advanced chips, AI hardware, and some critical infrastructure.
2. **Limited Advanced Semiconductor Capability:** Domestic manufacturing is expanding, but India remains behind leading countries in advanced semiconductor technologies.
3. **Low Private R&D Investment:** Many firms continue to depend on innovations developed elsewhere instead of investing heavily in frontier research.
4. **High Energy Requirements:** AI infrastructure requires continuous and reliable power, increasing the need for renewable and nuclear energy investments.
5. **Military Integration Gaps:** India lacks a unified inter-service data platform and advanced Joint All-Domain Command and Control capability.
6. **Ethical and Regulatory Concerns:** Questions remain regarding accountability, human oversight, privacy, bias mitigation, and autonomous weapon systems.

Way Forward

1. **Strengthen Sovereign Models:** Indigenous foundation models must be scaled for Indian languages, sectors, and governance needs.

2. **Expand Compute and Semiconductor Capacity:** Investments in GPUs, chips, edge computing, and secure cloud infrastructure should continue.
3. **Promote Research and Innovation:** Greater support is needed for R&D, academia-industry collaboration, and innovation-led entrepreneurship.
4. **Encourage Private Sector Participation:** Industry must invest more actively in frontier AI development and advanced technologies.
5. **Build Skilled Human Resources:** AI education, fellowships, skilling programmes, and regional AI labs should be expanded further.
6. **Adopt Balanced Regulation:** AI governance should protect citizens while encouraging innovation and responsible technology deployment.

Conclusion

Atmanirbhar AI is central to India's economic growth, technological sovereignty, and national security. Significant progress has been made through the IndiaAI Mission, indigenous AI models, compute infrastructure, defence innovation, and AI-enabled public services. However, long-term success will depend on strengthening every layer of the AI stack. As AI becomes a defining force of global power, building Sovereign AI capabilities will be essential for achieving Viksit Bharat 2047.

Question for practice:

Examine the significance of Atmanirbhar AI for India and discuss the key initiatives, challenges, and measures required to achieve Sovereign AI capabilities.

Source: [Businessline](#)

Restricting Telegram in India – A Wrong Message

UPSC Syllabus: Gs Paper 2- Governance

Introduction

The Government of India temporarily restricted Telegram ahead of the NEET-UG 2026 re-examination, citing concerns over paper leak claims, examination-related fraud, and misleading content circulating on the platform. The move included limiting access to Telegram and disabling its message-editing feature for a specified period. The decision triggered a wider debate on platform accountability, examination security, freedom of expression, proportionality of state action, and the effectiveness of broad digital restrictions in addressing examination-related misconduct.

Why Did the Government Restrict Telegram?

1. **Concerns Over Paper Leak Claims:** Authorities stated that several Telegram channels were claiming to possess leaked NEET question papers and offering access to such material for money. NTA maintained that no question paper existed outside the secured examination process.

2. **Monitoring of Suspected Fraud Networks:** NTA said it had monitored channels allegedly linked to organised cheating and cyber fraud networks. These channels were accused of spreading misleading claims and fraudulent offers.
3. **Temporary Restriction During the Examination Period:** The Ministry of Electronics and Information Technology directed that Telegram access be restricted in India until **22 June 2026**. The measure covered the re-examination period and its immediate aftermath.
4. **Disabling the Message Editing Feature:** Telegram was directed to disable editing of already-posted messages until **30 June 2026**. Authorities argued that this feature had allegedly been misused to create misleading proof of paper leaks.
5. **Previous Enforcement Measures Were Considered Inadequate:** Authorities stated that several channels, groups, and bots had already been removed. The restriction was imposed after these actions were considered insufficient to address the problem.
6. **Action Under the Information Technology Act:** The government issued the restriction under **Section 69A of the Information Technology Act, 2000**. NTA described the measures as limited in duration and linked to examination security.
7. **Law Enforcement Action Against Suspected Fraud:** The Indian Cyber Crime Coordination Centre (I4C) reportedly facilitated the removal of numerous channels, groups, and bots. Authorities also referred to arrests and investigations linked to alleged examination-related fraud.

Concerns Regarding Telegram's Role and Accountability

1. **Alleged Delay in Responding to Harmful Content:** Government officials alleged that Telegram failed to act swiftly against channels spreading misleading NEET-related content. This became a major reason for increased scrutiny of the platform.
2. **Large-Scale Circulation of Misleading Content:** Authorities claimed that several channels were allegedly promoting false paper leak claims and collecting money from candidates and families through such promises.
3. **Message Editing Feature Came Under Scrutiny:** NTA claimed that channel administrators could edit older messages while retaining original timestamps. According to the agency, this feature was allegedly used to create misleading evidence of paper leaks.
4. **Absence of a Local Accountability Structure:** Telegram does not have a local office or a senior executive responsible for India operations. This has raised concerns regarding regulatory engagement and accountability.
5. **Questions Over Compliance with Lawful Requests:** If Telegram delayed responding to lawful government requests, questions arise regarding whether it fulfilled its responsibilities as an intermediary under Indian law.
6. **Telegram's Defence on Content Removal:** Telegram stated that it had identified and disabled more than **900 URLs** linked to illegal NEET-related content. The platform maintained that action had already been taken against harmful material.

Criticism of the Restriction

1. **Platform-Wide Restriction May Not Eliminate Fraud:** Critics argue that restricting Telegram does not automatically stop examination fraud. Individuals involved in such activities can move to other platforms.
2. **Restrictions Can Be Circumvented:** Fraudsters can continue operating through VPN services and other technological tools. This raises doubts about the practical effectiveness of the restriction.
3. **Impact on Legitimate Users:** Millions of users rely on Telegram for educational, professional, business, and personal communication. These users face disruption despite having no connection to alleged fraud.
4. **Educational Activities Are Also Affected:** Many students and educators use Telegram for study material, discussion groups, and communication with coaching institutions. The restriction affects these legitimate uses.
5. **Collective Burden on Lawful Users:** Critics argue that the actions of a limited number of users should not result in restrictions affecting an entire platform and its user base.
6. **Constitutional Concerns Over Broad Restrictions:** The mere existence of unlawful activity on a platform does not automatically justify restricting a medium used lawfully by millions of people.
7. **Questions of Proportionality:** Critics contend that the response appears broader than the specific problem it seeks to address. They argue that less restrictive measures could have been explored.

Arguments Presented by Telegram and Digital Rights Groups

1. **Challenge Before the Court:** Telegram challenged the government order before a court in New Delhi. It argued that the restriction was unconstitutional and disproportionate.
2. **Free Speech Concerns:** Telegram described the order as an overbroad restriction on the fundamental right to freedom of speech and expression of its users.
3. **Impact on a Large User Base:** Telegram argued that the restriction affects more than **150 million users in India**. It warned against indiscriminate suspension of digital platforms.
4. **Effect on Students and Educators:** The company stated that large numbers of students and educators depend on Telegram for study resources and communication with coaching institutions.
5. **Questioning the Ban's Effectiveness:** Telegram founder Pavel Durov argued that the restriction affects users rather than those responsible for leaking examination material.
6. **Risk of Blanket Platform Shutdowns:** Telegram argued that allowing such restrictions to continue could enable broad suspension of digital platforms in future cases.
7. **Concerns Raised by Digital Rights Groups:** Rights advocates argued that the restriction lacks transparency and may undermine free expression in the digital space.

8. **Systemic Sources of Leaks Remain Unresolved:** Digital rights groups argued that examination leaks often originate from weaknesses within the examination system, including printing, logistics, and insider access.

Way Forward

1. **Target Fraud Networks Directly:** Authorities should intensify investigation and prosecution of individuals and organised groups involved in examination-related fraud.
2. **Remove Specific Channels and Accounts:** Action against identified channels, groups, bots, and accounts can address harmful activity without affecting legitimate users.
3. **Strengthen Question Paper Security:** Greater encryption and compartmentalisation of question papers can reduce opportunities for misuse and unauthorised access.
4. **Improve Printing and Distribution Controls:** Stronger monitoring of printing, storage, transportation, and distribution processes can improve examination security.
5. **Adopt Real-Time Tracking Systems:** Digital tracking of examination materials can help identify vulnerabilities and strengthen accountability.
6. **Strengthen Accountability Across the Examination Chain:** Better accountability mechanisms can help address recurring concerns regarding examination integrity.
7. **Ensure Timely Compliance Through Due Process:** Platforms should respond promptly to lawful requests, while governments should rely on transparent and proportionate measures when addressing digital concerns.

Conclusion

Protecting the integrity of public examinations is essential, but the response must remain proportionate, effective, and consistent with constitutional principles. Concerns regarding Telegram's accountability deserve scrutiny, yet broad restrictions also affect millions of legitimate users. A lasting solution lies in stronger examination security, targeted action against suspected fraud networks, platform compliance with lawful obligations, and measures that safeguard both public trust and lawful digital communication.

Question for practice:

Evaluate the rationale behind the temporary restriction on Telegram ahead of the NEET-UG 2026 re-examination and examine the concerns it raises regarding platform accountability, constitutional rights, and examination security.

Source: [Businessline](#)

India's Cheapest Power is Here, the Grid Must Catch Up

UPSC Syllabus: Gs Paper 3- Infrastructure

Introduction

India's clean energy transition has reached a crucial stage. Solar and wind power have become the country's cheapest sources of electricity, with more than **45 GW** added in **2025**. Combined with some of the world's lowest battery costs, firm clean power can now be supplied at around **₹3.5 per kWh**. However, transmission infrastructure has emerged as the main constraint. While renewable energy projects can be completed within **12-18 months**, transmission networks often take **3-5 years**, leaving large amounts of low-cost clean energy stranded.

Why Transmission Has Become a Critical Constraint

1. **Stranded Renewable Energy Capacity:** More than 50 GW of clean energy capacity is already stranded because transmission infrastructure is not available when projects are ready for operation.
2. **Faster Growth of Renewables than Transmission:** Renewable energy projects can be developed quickly, but transmission expansion is slowed by land acquisition, multiple approvals, and limits on creating new corridors.
3. **Rising Future Electricity Demand:** India currently has around 250 GW of renewable capacity and another 100 GW under construction. The country will require nearly 2,000 GW by 2050 to meet growing electricity demand and support industrial and transport electrification.
4. **Need for Massive Grid Expansion:** Meeting future renewable energy targets will require one of the world's largest transmission expansion programmes. Building new transmission lines alone will not be sufficient.
5. **Importance of Better Grid Utilisation:** India must expand transmission infrastructure while also making better use of the network that already exists. Both approaches are necessary for the energy transition.

Unlocking the Potential of the Existing Grid

1. **Battery Storage Improves Transmission Use:** Most renewable projects currently use their transmission connections for only about 25% of the time. Batteries can store electricity and supply it during evening and night demand, increasing utilisation by two to three times.
2. **Storage Can Unlock Additional Capacity:** Deploying batteries at renewable energy sites can enable the equivalent of around 400 GW of additional clean energy without building new transmission corridors.
3. **Using Underutilised Coal Transmission Networks:** Many old or high-cost coal plants, with nearly 100 GW of capacity, operate at low utilisation despite having valuable transmission connections.
4. **Sharing Coal-Based Grid Infrastructure:** Solar and wind projects located near coal plants can use available transmission capacity when coal units are not fully operating. This can support around 100 GW of additional clean energy.
5. **New Revenue from Existing Assets:** This approach gives renewable developers access to scarce grid connections while allowing coal plant owners to earn revenue from underused transmission assets.

6. **Leveraging Existing Transmission Substations:** Many existing substations can accommodate additional renewable energy connections without requiring major new infrastructure.
7. **Combining Substations with Storage:** Adding batteries at these locations can support peak demand and improve power flow management. This can enable nearly 100 GW of additional clean energy.
8. **Upgrading Existing Conductors:** Many transmission lines still use older conductors that limit electricity flow. Replacing them with high-temperature, low-sag conductors can nearly double transmission capacity using the same towers and rights-of-way.

Creating Clean-Energy Superhighways

1. **Higher Capacity Without New Land:** Advanced conductors can nearly double transmission capacity using the same towers and rights-of-way, avoiding the need for additional land acquisition.
2. **Combining Multiple Grid Solutions:** Storage systems, shared transmission connections, existing substations, and reconductoring can work together to maximise the value of existing infrastructure.
3. **Potential to Unlock Over 1,000 GW:** These measures can collectively unlock more than 1,000 GW of clean energy within the current transmission footprint.
4. **Faster Deployment Timeline:** Most of these upgrades can be implemented within months rather than years, making them much faster than building entirely new transmission corridors.
5. **Fewer Regulatory Barriers:** Grid optimisation requires minimal permitting and fewer approvals compared to developing new transmission routes.
6. **Supporting Renewable Expansion During Grid Build-Out:** Existing grid upgrades allow new renewable projects to move forward while larger transmission projects are still being developed.
7. **Lower Cost of Grid Usage:** Better utilisation of existing assets can improve efficiency and reduce the average cost of using transmission infrastructure.
8. **Easier Renewable Energy Siting:** Locating projects near coal plants, renewable energy hubs, and substations can reduce land-related challenges while improving grid access.

Way Forward

1. **Expand Transmission Alongside Optimisation:** India must continue building new transmission infrastructure while simultaneously upgrading and optimising the existing grid.
2. **Future-Proof New Transmission Projects:** New transmission lines should be designed with advanced conductors and integrated storage to maximise long-term capacity.
3. **Higher Power Transfer from New Infrastructure:** Transmission systems built with advanced technologies can carry four to five times more clean power for a modest additional cost.

4. **Large Planned Grid Investments:** India plans to expand its transmission network by around 40% over the next decade through investments exceeding \$100 billion.
5. **Implement Storage-Linked Grid Access:** National regulations already support better use of grid connections through storage integration. States need to expand and implement these provisions.
6. **Promote Advanced Transmission Technologies:** Procurement and regulatory frameworks should encourage technologies that increase capacity without requiring new corridors.
7. **Develop Renewable Energy Zones:** Coordinated planning of renewable energy zones and transmission corridors can reduce delays related to site selection and infrastructure development.
8. **Support Industrial Demand for Reliable Power:** Efficient transmission networks are essential to provide dependable electricity to sectors such as steel, aluminium, cement, chemicals, and data centres.

Conclusion

India's renewable energy growth now depends as much on transmission capacity as on power generation. Upgrading existing grid infrastructure through storage, shared transmission use, and advanced conductors can unlock over **1,000 GW** of clean energy. Alongside strategic grid expansion, maximising the utilisation of existing networks will be critical for a reliable, affordable, and low-carbon energy future.

Question for practice:

Examine how transmission constraints are affecting India's clean energy transition and discuss the measures proposed to unlock the full potential of renewable energy through grid optimisation and modernisation.

Source: [The Hindu](#)

Regulating Tech Platforms

UPSC Syllabus: Gs Paper 3- Indian economy and Infrastructure And **Gs Paper 2-** Governance
Introduction

India's digital economy has moved beyond traditional banking channels, with financial activities increasingly taking place through large digital platforms and embedded payment ecosystems. These platforms now influence customer engagement, transaction flows, merchant access, and financial product discovery at a massive scale. As their role in shaping financial behaviour expands, the Reserve Bank of India is examining whether regulatory oversight should increasingly focus on systemic influence and ecosystem control rather than only on entities holding banking licences.

Evolution of the Digital Economy and Shift in Economic Power

1. **Financial Activity Moves Beyond Banks:** A growing share of financial activity now originates within digital platforms used for shopping, communication, transportation, subscriptions, and business operations rather than traditional banking channels.

2. **Platforms Own Customer Relationships:** The regulated financial institution often remains in the background, while platforms control the direct relationship with consumers and merchants.
3. **Shift in Economic Influence:** Historically, banks controlled deposits, underwriting, and transaction infrastructure. Today, platforms increasingly control user engagement, transaction flows, merchant access, behavioural data, and financial discovery.
4. **Control Over Financial Choices:** Platforms often determine which payment methods consumers see, which financial products merchants access, and how digital economic interactions are organised.
5. **Platforms as Financial Gateways:** Digital platforms are no longer viewed merely as software interfaces. They increasingly function as important gateways through which financial services are accessed.

Why Are Regulators Concerned?

1. **Ecosystem Control Creates Systemic Importance:** Systemic importance in the digital economy can arise from ecosystem control rather than balance-sheet size alone.
2. **Concentration of Data:** Large platforms accumulate significant volumes of customer and transaction data, increasing their influence over financial behaviour.
3. **Transaction Dependency Risks:** Consumers and merchants increasingly depend on a few dominant platforms for financial interactions, creating concentration risks.
4. **Operational Centralisation:** A disruption at a major platform can affect large numbers of users simultaneously because financial activities are concentrated within a few ecosystems.
5. **Cyber and Governance Risks:** Cyber incidents, governance failures, or operational disruptions can impact millions of consumers and merchants even when the platform is not a bank.
6. **Changing Nature of Systemic Risk:** Traditional financial risks were linked to leverage and balance sheets. Digital-era risks increasingly arise from data concentration, ecosystem influence, and operational dependency.
7. **Impact on Traditional Banks:** Tighter oversight of platforms could reduce the dominance of digital ecosystems and help restore balance between banks and platforms.

RBI's Emerging Regulatory Approach

1. **Focus on Financial Behaviour:** The RBI is increasingly concerned with who controls financial behaviour at scale rather than simply who holds a banking licence.
2. **Expanding the Regulatory Perimeter:** Regulatory attention is moving towards entities that exert significant influence over financial activity, regardless of their legal classification.

3. **Global Regulatory Alignment:** Regulators in the United States and Europe are also reassessing whether large technology ecosystems should remain outside prudential-style oversight.
4. **Technology Platforms as Infrastructure:** Payment ecosystems, super-apps, and embedded finance platforms are increasingly viewed as strategically important financial infrastructure.
5. **Systemic Influence as a Regulatory Standard:** RBI's evolving approach suggests that future oversight may increasingly be based on systemic influence rather than institutional classification.

Technology-Driven Transformation of Lending

1. **APIs Enable Real-Time Connectivity:** Application Programming Interfaces (APIs) allow secure and real-time communication among banks, fintechs, Account Aggregators, payment gateways, bureaus, and fraud monitoring systems.
2. **Faster Access to Financial Information:** Lenders can access bank transactions, GST records, cash-flow data, repayment behaviour, and identity verification within seconds.
3. **Role of Digital Public Infrastructure:** Aadhaar-based eKYC, UPI, Account Aggregators, DigiLocker, and OCEN support faster and more inclusive lending ecosystems.
4. **Consent-Based Data Sharing:** The Account Aggregator framework enables lenders to access financial information with customer consent and assess borrower behaviour dynamically.
5. **Moving Beyond Traditional Scorecards:** Real-time financial information allows lenders to evaluate borrowers using current behavioural and transactional data rather than relying only on static reports.

Modern Lending Platforms, Risk Management and Data Governance

1. **Limitations of Legacy Systems:** Many traditional systems were designed for batch processing and struggle to support high-volume and low-latency credit decisions.
2. **Features of Modern Lending Platforms:** Modern platforms support cloud-native architecture, real-time analytics, automated workflows, and AI-driven decision-making.
3. **Continuous Risk Monitoring:** Institutions can continuously monitor borrower risk instead of relying only on one-time assessments during loan origination.
4. **Early Detection of Stress Signals:** Real-time access to data helps identify cash-flow stress, sudden business declines, unusual repayment patterns, and potential fraud risks.
5. **Improved MSME Lending:** Real-time visibility into borrower behaviour can strengthen portfolio quality in sectors such as MSME lending where financial conditions change rapidly.
6. **Importance of Data Governance:** Real-time systems process large volumes of sensitive financial and personal information, making strong governance essential.

7. **RBI's Digital Lending and Cybersecurity Expectations:** RBI requires strict oversight of customer data, outsourcing arrangements, and technology infrastructure through its digital lending and cybersecurity frameworks.
8. **Data Localisation and Accountability:** Banks and regulated entities must ensure that banking and payment system data is stored and processed within India while maintaining confidentiality, integrity, availability, auditability, and control.

Conclusion

India's financial landscape is increasingly being shaped by digital platforms that influence economic activity at scale. The regulatory focus is gradually shifting from traditional institutional boundaries to ecosystem-level importance and market influence. At the same time, secure digital infrastructure, real-time lending systems, and responsible data governance will remain critical for ensuring financial stability and trust.

Question for practice:

Discuss the growing role of digital platforms as financial gateways and examine why the RBI is considering a broader regulatory approach for technology-driven financial ecosystems in India.

Source: [Businessline](#)

Moving from drone purchases to drone partnerships

Source: The post “Moving from drone purchases to drone partnerships” has been created based on “Moving from drone purchases to drone partnerships”, published in “The Hindu” on 22nd June 2026.

UPSC Syllabus: GS-3- Science & Technology

Context: India has announced a ₹2 billion drone procurement programme for domestic manufacturers. While this supports indigenous drone production, experts argue that long-term military effectiveness requires a shift from one-time drone purchases to collaborative drone partnerships that ensure continuous upgrades, maintenance, and innovation.

Drones importance for India

1. Drones offer a cost-effective solution for modern military operations.
2. Small tactical drones are significantly cheaper than conventional platforms such as tanks and fighter jets.
3. They are useful for surveillance, reconnaissance, and precision strikes.
4. The Russia-Ukraine war demonstrated the extensive military utility of drones.
5. Commercially available drones can be modified for military purposes at relatively low cost.
6. Innovation in civilian drone technology creates a large pool of technology and expertise that can be adapted for defence use.

Economic and strategic advantages of drones

1. India can achieve military objectives at lower costs through drone deployment.
2. Continuous technological advancements make drones increasingly capable.
3. The development of the civilian drone ecosystem strengthens defence innovation.
4. Indigenous manufacturing reduces dependence on imports and strengthens self-reliance.

Challenges in drone procurement

1. Drone technology evolves rapidly, making platforms obsolete quickly.
2. New threats such as electronic warfare (EW) can reduce the effectiveness of existing drones.
3. Frequent software and hardware upgrades are required to maintain operational relevance.
4. Traditional procurement systems are often slow and unsuitable for technologies that evolve continuously.

Limitations of the current procurement framework

1. Under the Defence Acquisition Procedure (DAP), procurement follows a “buy-and-use” model.
2. The DAP includes provisions for maintenance, repairs, and upgrades, but these are often insufficient for rapidly evolving drone systems.
3. The framework largely assumes that requirements remain stable over time.
4. Such an approach is not suitable for drone technologies that require constant innovation and adaptation.

Need to move from purchases to partnerships

1. Procurement should focus on long-term service contracts rather than one-time acquisitions.
2. Partnerships can ensure regular maintenance, software updates, and technological improvements.
3. Armed forces can benefit from predictable costs and assured capability upgrades.
4. Continuous collaboration between manufacturers and the military enables faster adaptation to emerging threats.
5. Such arrangements encourage innovation and strengthen the domestic drone ecosystem.

Institutional requirements

1. Existing procurement frameworks should be modified to support long-term contracts.
2. Defence organisations need mechanisms for continuous interaction with private drone companies.
3. India’s drone industry still requires substantial public investment to reach scale.
4. Political commitment is necessary to transform procurement practices from transactional purchases to strategic partnerships.

Conclusion: India’s growing drone ecosystem provides an opportunity to enhance military capabilities in a cost-effective manner. However, the rapid pace of technological change demands a shift from one-time procurement to long-term partnerships that ensure continuous innovation, upgrades, and operational effectiveness. Such a transition will strengthen both national security and the domestic drone industry.

Question: India should move from drone purchases to drone partnerships.” Discuss the rationale behind this shift and examine the challenges associated with drone procurement and innovation in India.

Source: [The Hindu](#)

Reforming gold trade

Source: The post “Reforming gold trade” has been created based on “Reforming gold trade”, published in “Indian Express” on 22nd June 2026.

UPSC Syllabus: GS 3 -Economy

Context: Gold imports exert pressure on India's current account deficit and the rupee. In response to concerns over rising gold imports, several Asset Management Companies (AMCs) have imposed curbs on investments in Gold ETFs and gold fund-of-funds. However, such restrictions may be counterproductive from a macroeconomic perspective.

Reason behind curbs on Gold ETFs may be ineffective

1. **Gold demand is driven by deep-rooted factors.**
 - a. Indian households purchase gold due to cultural traditions, social customs, and its role as a store of value.
 - b. Therefore, restricting ETF investments is unlikely to significantly reduce overall demand for gold.
2. **Gold ETFs provide a transparent and regulated investment avenue.**
 - a. Gold ETFs are subject to regulatory oversight and taxation.
 - b. They offer investors a safer alternative to jewellery, bars, coins, and unregulated digital gold products.
3. **Restrictions can lead to ETF mispricing.**
 - a. Large investors play an important role in aligning ETF market prices with their Net Asset Value (NAV) through arbitrage.
 - b. Restrictions on direct purchases from AMCs may widen premiums and discounts, resulting in inefficient price discovery and speculation.
4. **Gold ETFs contribute only a small share of total gold demand.**
 - a. Gold ETF demand was less than 20 tonnes in the January–March quarter of 2026.
 - b. In comparison, demand for gold bars and coins reached 62 tonnes, while jewellery demand stood at 66 tonnes.
 - c. Thus, physical gold demand is the primary driver of rising imports.
5. **ETF demand is already moderating.**
 - a. Falling gold prices led to net outflows from Gold ETFs in May 2026 after a prolonged period of inflows.
 - b. This suggests that market forces were already reducing ETF demand.

Way Forward

1. The government should focus on reducing demand for physical gold rather than restricting regulated financial products.
2. Measures should be taken to mobilise and recycle the large stock of gold held by households.
3. Greater promotion of financial instruments linked to gold can reduce reliance on physical gold imports.

Conclusion: Restricting Gold ETFs may distort markets without significantly reducing gold imports. A more effective strategy would be to encourage investment through regulated financial channels and promote recycling of India's vast physical gold holdings to ease pressure on imports and the rupee.

Question: Restricting investments in Gold ETFs is not an effective solution to India's rising gold import bill. Examine.

Source: [Business Line](#)

Normative Shift in Fiscal Federalism

UPSC Syllabus: Gs Paper 2- Federalism

Introduction

Article 280 provides for the Finance Commission, whose role has traditionally been interpreted in equalisation terms. Fiscal transfers were largely designed to reduce differences in fiscal capacity and support balanced regional development across States. The **Sixteenth Finance Commission** marks an **important shift by introducing contribution to national GDP as a criterion for horizontal devolution**. This has triggered

a debate on whether fiscal transfers should primarily support weaker States or increasingly reward economic performance, fiscal discipline, and growth contribution.

Equalisation as the Traditional Foundation of Fiscal Federalism

1. **Constitutional Role of the Finance Commission:** The Finance Commission was designed to address fiscal imbalances and regional disparities among States. Its objective was to ensure reasonably comparable public services at comparable levels of taxation.
2. **Equalisation as the Guiding Principle:** Equalisation was viewed as the core principle of federal transfers. It aimed to compensate States facing fiscal disabilities and lower revenue-raising capacity.
3. **Use of Need-Based Devolution Criteria: Income distance, fiscal disability, infrastructural deficits, and demographic disadvantages** were important criteria in horizontal devolution. These factors directed larger transfers towards weaker States.
4. **Redistributive Justice in Federal Transfers:** Successive Finance Commissions and the Planning Commission treated transfers as tools for reducing inequalities. The focus remained on correcting differences in fiscal capacity and expenditure needs.
5. **Lakdawala Approach to Regional Development:** Regional planning viewed transfers as instruments for reducing spatial inequalities. The objective was not to reward existing economic strength but to support lagging regions.
6. **Limited Role of Performance Criteria:** Factors such as tax effort and fiscal discipline were gradually introduced from the Tenth Finance Commission onwards. However, equalisation remained the dominant principle.
7. **Support to Weaker States:** This framework particularly benefited economically weaker and infrastructurally disadvantaged States, including many northern and north-eastern States.

Emergence of Performance-Oriented Fiscal Federalism

1. **Introduction of GDP Contribution Criterion:** The Sixteenth Finance Commission introduced **contribution to national GDP** as a criterion in horizontal devolution. It carries a **10% weight** in the inter-se distribution formula.
2. **Recognition of Economic Contribution:** The rationale is that economically advanced States contribute significantly to national growth. Therefore, their contribution should be recognised in the transfer framework.
3. **Shift from Pure Equalisation:** The new criterion moves beyond a purely redistributive approach. It introduces a stronger link between transfers and economic performance.
4. **Replacement of Earlier Performance Measure:** Contribution to GDP replaced the earlier tax and fiscal effort criterion. This represents a significant change in the design of horizontal devolution.

5. **Retention of Vertical Devolution Share:** The Commission retained the States' share at **41% of the divisible pool**. The Union Budget 2026–27 accepted this recommendation and provided **₹1.4 lakh crore** as Finance Commission grants.
6. **Move Towards Competitive Federalism:** The new framework gives greater importance to growth and productivity. This reflects a gradual shift from equalisation-oriented federalism towards competitive federalism.

Challenges, Contradictions and Policy Concerns in the New Approach

1. **Dual Treatment of Income:** Income now enters the formula in two opposite ways. Income distance benefits poorer States, while GDP contribution benefits richer States.
2. **Weakening of Equalisation Logic:** The same economic variable is used both as a measure of disadvantage and as a reward for economic strength. This creates a conceptual inconsistency within the devolution formula.
3. **Impact on Distribution of Transfers:** Middle-income States may benefit from this dual approach. Poorer States may lose because they have both lower income and lower contribution to national output.
4. **Discontinuation of Revenue Deficit Grants:** The Commission decided not to continue **Revenue Deficit Grants (RDGs)**. The decision was based on the view that such grants may create dependence and weaken fiscal discipline.
5. **Limitations of Aggregate Fiscal Estimates:** Aggregate state surpluses may not reflect the financial difficulties of hill and north-eastern States, which face high service delivery costs and weak revenue bases.
6. **Growing Role of Cesses and Surcharges:** States receive **41% of the divisible pool**, but cesses and surcharges are excluded from sharing. As their use increases, the effective transfer to States is estimated at only **29–30% of gross tax revenue**.
7. **Difficulty in Assessing State Finances:** Variations in reporting debt, subsidies, and off-budget liabilities make fiscal comparisons difficult. As a result, claims about fiscal discipline may not always reflect the actual situation.

Impact on Less-Developed States and Regional Equity

1. **Reduced Redistributive Support:** Greater emphasis on GDP contribution may reduce the relative share of poorer States in horizontal devolution. Estimates suggested that the eight poorest States could receive about **₹14 lakh crore less** during the award period than under the earlier framework.
2. **Pressure on Developmental Expenditure:** Lower transfers may affect spending on **infrastructure, health, education, irrigation, and urban development**. These sectors are important for long-term transformation.

3. **Greater Burden on Public Investment:** Less-developed States depend heavily on transfers and borrowings for development. Reduced fiscal support may limit their ability to sustain public investment.
4. **Challenges for Structural Transformation:** Many poorer States still face low industrialisation, limited urbanisation, and weak investment. Reduced support may slow their economic transformation.
5. **Widening Regional Disparities:** The shift from equalisation towards performance-based transfers may increase differences between developed and less-developed States.
6. **Higher Fiscal Stress on Poorer States:** The withdrawal of Revenue Deficit Grants may create additional pressure on States with weak tax bases and high developmental expenditure needs.

Debate on the Future Direction of Fiscal Federalism

1. **Equity versus Performance Debate:** The central question is whether tax devolution should prioritise correcting inequalities or rewarding economic contribution. The Sixteenth Finance Commission has intensified this debate.
2. **Need to Protect Equalisation Objectives:** Equalisation seeks to ensure that citizens receive basic public services regardless of their State's fiscal capacity. This remains a key constitutional objective.
3. **Need to Protect the Divisible Pool:** The growing use of cesses and surcharges reduces the shareable tax pool. This weakens the Finance Commission's role in correcting vertical imbalances.
4. **Need for Better Incentive Design:** Experience shows that incentives linked to fiscal improvement can work. Better-designed conditions may be more effective than complete withdrawal of support.
5. **Importance of Fiscal Transparency:** Stronger fiscal coordination requires comparable and reliable state-level data. Transparency is essential for assessing solvency, debt, subsidies, and liabilities.
6. **Unresolved Issues in the Federal Framework:** Local body grants, state finance commission reports, fiscal transparency, and the divisible pool remain areas requiring further attention.

Conclusion

The Sixteenth Finance Commission marks a shift from **equalisation-oriented fiscal federalism** towards greater recognition of **economic performance and growth contribution**. While efficiency and fiscal discipline remain important, significant inter-state disparities continue to require redistributive support. The key challenge is to balance growth incentives with regional equity while preserving the constitutional vision of cooperative and inclusive federalism.

Question for practice:

Evaluate the shift from equalisation-based fiscal federalism to performance-oriented devolution under the Sixteenth Finance Commission and its impact on inter-State equity.

Source: [BussinessLine](#)

Needed, a More Equitable Intellectual Property Order

UPSC Syllabus: Gs Paper 3- Indian economy

Introduction

The U.S. decision to initiate a **Section 301 investigation** into Vietnam's intellectual property (IP) framework has revived debate on the role of IP in international trade. Vietnam's designation as a "**Priority Foreign Country**" and India's continued presence on the **USTR Priority Watch List** have raised questions about how IP compliance is assessed. The discussion now extends beyond enforcement to issues of fairness, consistency, traditional knowledge, and benefit-sharing.

USTR's IP Monitoring and Enforcement Framework

1. **Office of the United States Trade Representative (USTR):** The USTR is the U.S. agency responsible for trade policy and trade negotiations. It also monitors IP protection and enforcement practices in trading partner countries.
2. **Special 301 Report:** The USTR uses the Special 301 Report to assess IP protection and enforcement. Countries with serious concerns may face closer scrutiny.
3. **Priority Foreign Country Designation:** Vietnam was identified as a "**Priority Foreign Country**" in the **2026 Special 301 Report**. This designation reflected unresolved concerns regarding IP protection and enforcement.
4. **Priority Watch List:** India remains on the **USTR Priority Watch List** along with several developing economies. This reflects long-standing concerns raised by the United States on aspects of IP protection and enforcement.
5. **Section 301 Investigation Mechanism:** Section 301 allows the USTR to investigate foreign practices that may be unreasonable, discriminatory, or burdensome to U.S. commerce. Such investigations can lead to trade actions.

Vietnam Investigation and Questions of Fairness

1. **Reasons for Vietnam's Identification:** The USTR cited weak enforcement against **online piracy, counterfeiting, inadequate border enforcement, limited action against unlicensed software use, and lack of criminal measures against cable and satellite signal theft.**
2. **Previous Efforts to Resolve Concerns:** The United States had earlier addressed these issues through proposed **IP Work Plans in 2020 and 2023**. The concerns were also discussed during negotiations on reciprocal and balanced trade.
3. **Improvement in Enforcement Record:** Administrative enforcement violations involving IP-infringing goods and goods of unknown origin or inferior quality in Vietnam declined by **50% in 2025 compared to 2024.**
4. **Investigation Process and Timeline:** The USTR initiated the Section 301 investigation on **May 29, 2026** and requested consultations with Vietnam. A determination is generally required within **six months**, with a possible extension of **three months.**

5. **Potential Trade Measures:** Interested parties may submit comments on possible **tariff and non-tariff actions**. This shows how IP-related concerns can directly affect trade relations.

Consistency in Global IP Enforcement

1. **Legitimate Need for Enforcement:** Piracy, counterfeiting, and infringement remain genuine concerns. Effective enforcement continues to be an important part of the IP system.
2. **Uneven Application of Standards:** The continued focus on developing countries has raised questions about whether IP enforcement standards are applied equally across countries.
3. **Need for Equal Accountability:** Accountability should apply to all countries and not only to developing economies.
4. **Implications for Trade Governance:** Since IP assessments can influence trade measures, the credibility of the system depends on transparency and consistency in evaluation.

Traditional Knowledge, Genetic Resources and the WIPO Treaty

1. **World Intellectual Property Organization (WIPO):** The WIPO Treaty on Intellectual Property, Genetic Resources and Associated Traditional Knowledge (GRTR) marks an important step towards establishing mandatory international disclosure requirements for patent applicants. It aims to prevent biopiracy and ensure fair access and benefit-sharing.
2. **New WIPO Treaty:** The **WIPO Treaty on Intellectual Property, Genetic Resources and Associated Traditional Knowledge** seeks to address concerns relating to traditional knowledge and genetic resources.
3. **Disclosure Requirements:** The treaty introduces disclosure requirements regarding the origin of genetic resources and associated traditional knowledge. This aims to improve transparency in patent systems.
4. **Addressing Misappropriation:** The treaty responds to concerns regarding the misuse of genetic resources and traditional knowledge. It broadens the discussion beyond conventional infringement issues.
5. **Expanding the Scope of Scrutiny:** Scrutiny should also cover misappropriation of traditional knowledge and genetic resources.
6. **Link with Global IP Governance:** The treaty highlights that IP governance is not only about protecting rights holders but also about ensuring transparency and fairness in the use of knowledge and resources.

India's Concerns and the Need for a Balanced IP Regime

1. **Legal Framework for Intellectual Property Rights and TRIPS Compliance:** India's intellectual property regime is governed by the **Patents Act, 1970, Copyright Act, 1957, Trade Marks Act, 1999**, and the **Geographical Indications of Goods (Registration and Protection) Act, 1999**. India has aligned these laws with the **TRIPS Agreement** while retaining safeguards such as **compulsory**

licensing under the Patents Act, 1970 to balance intellectual property protection with access to essential goods and medicines.

2. **Concerns Regarding Biopiracy:** India has long raised concerns about the commercial use of biological resources and traditional knowledge without proper acknowledgement.
3. **Prior Informed Consent and Benefit-Sharing:** Concerns arise when resources and knowledge are used without prior informed consent or equitable benefit-sharing arrangements.
4. **Accountability of Institutions and Corporations:** Questions remain regarding the accountability of research institutions, corporations, and innovation systems when inventions rely on resources and knowledge originating in developing countries.
5. **Beyond Private Intellectual Property Rights:** The IP system should not be viewed only through the protection of private rights. Broader concerns also require attention.
6. **Protection of Community Knowledge Systems:** A balanced framework should support **fairness, transparency, biodiversity conservation, benefit-sharing**, and the protection of **community-held knowledge systems**.

Conclusion

The Vietnam investigation highlights the need for a more balanced intellectual property system. Effective action against piracy and infringement remains important, but equal attention is also needed for traditional knowledge, genetic resources, and benefit-sharing. As the WIPO treaty moves towards implementation, global IP governance should promote fairness, transparency, accountability, benefit-sharing, and consistent standards across countries.

Question for practice:

Discuss the need for a more equitable intellectual property order in the context of the USTR's investigation into Vietnam and growing concerns over the protection of traditional knowledge and genetic resources.

Source: [Businessline](#)

Western Ghats ESA: Conservation Plan and State Opposition

Source: The post “Western Ghats ESA: Conservation Plan and State Opposition” has been created based on “Western Ghats ESA: Conservation Plan and State Opposition”, published in “Indian Express” on 23rd June 2026.

UPSC Syllabus: GS-2- Governance

Context: The Western Ghats, stretching over 1,500 km across six states, are one of the world's eight hottest biodiversity hotspots. To balance conservation and development, the government has proposed the notification of Ecologically Sensitive Areas (ESA) based on the recommendations of the Kasturirangan Committee.

Need for ESA in the Western Ghats

1. The Western Ghats harbour rich biodiversity, including numerous endemic plant and animal species.
2. The region contains important wildlife habitats, including tiger reserves, elephant corridors, and protected areas.

3. It acts as a major watershed supporting rivers such as Godavari, Krishna, Cauvery, and Periyar.
4. The mountain chain influences the Indian monsoon by intercepting moisture-laden winds.
5. ESA status helps regulate environmentally harmful activities such as mining, quarrying, thermal power plants, and highly polluting industries.
6. Conservation of the Ghats is essential for ecological security, water security, and climate resilience.

Key Features of the ESA Proposal

1. The **Gadgil Committee (2011)** recommended declaring the entire Western Ghats region as an Ecologically Sensitive Area with stringent restrictions.
2. The **Kasturirangan Committee (2013)** adopted a balanced approach by distinguishing between natural and cultural landscapes.
3. It identified around **60,000 sq km** of biologically rich natural landscape for ESA notification.
4. The proposal seeks to ban mining, quarrying, red-category industries, thermal power plants, and large construction projects in ESA regions.
5. The Centre later proposed **56,825 sq km** as ESA through draft notifications.

Challenges in Implementing the ESA Framework

1. Lack of consensus among Gujarat, Maharashtra, Goa, Karnataka, Kerala, and Tamil Nadu.
2. Concerns over restrictions on economic activities, industries, mining, and infrastructure projects.
3. Opposition from local communities fearing impacts on livelihoods and development.
4. Disputes regarding village boundaries, land classification, and satellite-based mapping.
5. Demands by states for further reduction of ESA boundaries.
6. Karnataka has largely opposed the Kasturirangan recommendations, while Kerala seeks exclusion of plantation and agricultural areas.
7. Balancing ecological conservation with developmental aspirations remains a major challenge.

Way Forward

1. Adopt a participatory approach involving state governments, local communities, and experts.
2. Improve ground-truthing and scientific mapping to address boundary-related disputes.
3. Provide financial incentives and compensation mechanisms for states conserving ecological resources.
4. Promote sustainable agriculture, eco-tourism, and green livelihoods in ESA regions.
5. Strengthen implementation of ecosystem service payment mechanisms.
6. Ensure a balance between conservation objectives and legitimate developmental needs.

Conclusion: The Western Ghats are critical for India's biodiversity, water security, and climate stability. A scientifically informed and stakeholder-driven ESA framework is essential to achieve sustainable development while preserving this invaluable ecological treasure for future generations.

Question: The Western Ghats are among the world's most important biodiversity hotspots. Discuss the need for Ecologically Sensitive Areas (ESA) in the Western Ghats and examine the challenges in implementing the ESA framework.

Source: [Indian Express](#)

India's Cultural Diplomacy: Promoting Heritage on the World Stage

Source: The post "India's Cultural Diplomacy: Promoting Heritage on the World Stage" has been created based on "India's Cultural Diplomacy: Promoting Heritage on the World Stage", published in "Indian Express" on 23rd June 2026.

UPSC Syllabus: GS-2- International Relations

Context: The Prime Minister of India recently gifted a Kalamkari Mahabharata painting to French President Emmanuel Macron. This hand-crafted Kalamkari painting from Andhra Pradesh showcases India's rich artistic heritage.

Introduction: India's traditional arts, handicrafts, textiles, and indigenous products reflect its rich cultural heritage. Their use as diplomatic gifts strengthens India's cultural diplomacy and enhances its soft power globally.

About India's Cultural Diplomacy and Cultural values

1. Promotion of India's Cultural Heritage

- a. The gifting of a **Kalamkari Mahabharata painting** to the French President showcased **India's ancient artistic traditions and epic heritage**.
- b. The painting represents **the traditional hand-drawn Kalamkari art of Andhra Pradesh** and demonstrates India's craftsmanship.
- c. The **Pochampally Silk Stole** highlighted **Telangana's famous Ikat weaving tradition and textile excellence**.

2. Showcasing Regional Diversity

- a. The **Kashmiri Silk Carpet** gifted to the Slovak Prime Minister represented the **renowned hand-knotted carpet tradition of Kashmir**.
- b. The **Brass Dokra Antelope Set** showcased the ancient tribal metal-casting tradition practiced in Chhattisgarh, Odisha, Jharkhand, and West Bengal.
- c. The **Thewa Motif Cufflinks** highlighted Rajasthan's unique jewellery-making craft.

3. Strengthening Cultural Diplomacy

- a. Such gifts create cultural connections between nations through shared appreciation of heritage and craftsmanship.
- b. The Dokra Antelope set symbolically connected Indian antelopes with Slovakia's Tatra Chamois, promoting cultural understanding.
- c. Traditional gifts act as ambassadors of Indian culture and values abroad.

4. Promoting Indigenous Products and Local Livelihoods

- a. Products such as **Lakadong Turmeric, Nagauri Ashwagandha, Ramban Honey, and Banarasi Silk Stoles** showcased India's regional specialties.
- b. Their international recognition supports artisans, weavers, farmers, and rural communities.
- c. It aligns with initiatives such as **Vocal for Local, Atmanirbhar Bharat**, and the promotion of GI-tagged products.

5. Demonstrating India's Knowledge Traditions

- a. The gifting of **Charaka Samhita** and **Sushruta Samhita** highlighted India's ancient scientific and medical knowledge.
- b. These texts reflect the global relevance of Ayurveda and traditional healthcare systems.

Challenges

1. Declining interest among younger generations in traditional crafts due to low incomes.
2. Competition from machine-made and counterfeit products.
3. Limited access to international markets and branding opportunities.
4. Inadequate financial support, technology adoption, and skill upgradation.
5. Risk of loss of traditional knowledge and craftsmanship over time.

Way Forward

1. Strengthen GI tagging, branding, and intellectual property protection.
2. Expand international marketing through cultural diplomacy and trade fairs.
3. Provide financial assistance, digital platforms, and market linkages to artisans.
4. Promote skill development and encourage youth participation in traditional crafts.
5. Integrate traditional arts and handicrafts with tourism and e-commerce ecosystems.

Conclusion: India's traditional arts, handicrafts, and indigenous products are powerful instruments of cultural diplomacy. Their use in diplomatic engagements strengthens India's soft power, promotes local livelihoods, and projects the country's diverse cultural and intellectual heritage on the global stage.

Question: India's traditional arts, handicrafts and GI-tagged products play an important role in promoting cultural diplomacy and soft power. Discuss with suitable examples. Also examine the challenges in preserving and promoting these traditions.

Source: [Indian Express](#)

The Challenge of India's Digital Sovereignty

UPSC Syllabus: Gs Paper 3- Science and Technology

Introduction

Digital sovereignty refers to a nation's ability to control its data, digital infrastructure, and critical technologies. Recent incidents involving compromised CCTV networks and disruption of Nayara Energy's digital services have exposed India's dependence on foreign technology platforms. As governance, commerce, and defence increasingly rely on digital systems, excessive reliance on external technologies can create strategic vulnerabilities. Strengthening digital sovereignty has therefore become important for protecting India's economic competitiveness, national security, and strategic autonomy.

Understanding Digital Sovereignty

1. **Control Over Digital Ecosystems:** Digital sovereignty requires control over how data is stored, processed, and transmitted. It also includes control over digital infrastructure and citizens' interaction with the internet.
2. **Protection from External Influence:** Digital sovereignty reduces the ability of foreign governments and corporations to influence critical national functions.
3. **Strategic Importance:** Digital infrastructure has become as important as physical infrastructure. Loss of control over digital systems can affect national decision-making and security.
4. **Technology as a Sovereignty Issue:** Modern economies and defence systems increasingly rely on software and digital networks. Control over technology therefore directly affects national sovereignty.

Why is Digital Sovereignty Important for India?

1. **Safeguarding Critical Services:** Many Indian government and business operations run on foreign-owned cloud platforms, productivity tools, and authentication systems. External actions can disrupt these services.
2. **Protecting National Security:** Modern military platforms depend heavily on software. Foreign control over critical software can create vulnerabilities during conflicts.
3. **Reducing Strategic Dependence:** The denial of precise GPS support during the 1999 Kargil conflict showed the risks of depending on foreign technologies during critical situations.
4. **Supporting Economic Stability:** Disruptions in digital services can affect trade, manufacturing, financial transactions, and public service delivery.
5. **India's Unique Strategic Challenge:** As a rising power seeking strategic autonomy, India faces greater risks from dependence on foreign-controlled technologies and digital infrastructure.

Emerging Threats to India's Digital Sovereignty

1. **Dependence on Foreign Technology Platforms:** Critical digital infrastructure often operates on platforms owned by foreign technology companies. This limits India's effective control over essential services.
2. **Data Access by Foreign Governments:** Even when data is stored in India, foreign companies may be required to share it with their home governments under existing legal frameworks.
3. **Foreign Decisions Affecting Indian Entities:** The Nayara Energy incident showed how decisions taken outside India can directly affect Indian companies' access to digital services.
4. **Cybersecurity Vulnerabilities:** The CCTV network compromise linked to foreign software demonstrated how external technologies can create security risks.
5. **Software-Controlled Defence Risks:** Foreign manufacturers may retain control over software embedded in defence systems, creating potential operational vulnerabilities.

India's Current Digital Sovereignty Landscape

1. **Growing Legal Framework:** The Digital Personal Data Protection Act, 2023, Intermediary Guidelines, and amendments to the Information Technology Act aim to strengthen control over India's digital space.
2. **Privacy as a Foundation:** The 2017 Puttaswamy judgment recognised privacy as a fundamental right and provided a constitutional basis for data protection.
3. **Success of Digital Public Infrastructure:** Aadhaar, UPI, DigiLocker, UMANG, and Common Service Centres have improved service delivery, financial inclusion, and citizen participation.

4. **Indigenous Technology Initiatives:** India has developed domestic systems such as UPI, RuPay, and its own satellite navigation system to reduce external dependence.
5. **Continuing Technology Dependence:** Despite these achievements, India still depends heavily on imported hardware, foreign software, and global technology providers.

Global Approaches to Digital Sovereignty

1. **European Efforts for Technological Independence:** France, the Netherlands, Denmark, Germany, and the European Union are reducing dependence on foreign software and cloud infrastructure.
2. **China's State-Controlled Model:** China has adopted strict data localisation, strong government oversight, and extensive control over digital infrastructure.
3. **The Great Firewall Approach:** China restricts foreign digital platforms and promotes domestic technology companies within a controlled internet environment.
4. **Expansion Through Digital Silk Road:** China exports digital infrastructure, surveillance systems, and connectivity projects to other countries through international partnerships.
5. **India's Democratic Alternative:** India seeks to combine digital sovereignty with democratic values, openness, judicial oversight, and public participation.

Key Challenges Before India

1. **Semiconductor Dependence:** India imports more than **95% of its semiconductors**, creating a major vulnerability in critical technology supply chains.
2. **Reliance on Foreign Operating Systems:** Widely used operating systems and digital platforms remain largely controlled by foreign companies.
3. **Jurisdictional and Regulatory Gaps:** Global technology firms often operate across jurisdictions, making enforcement of domestic regulations difficult.
4. **Digital Skills Shortage:** Digital talent demand is expected to reach **103 million by 2030**, while projected supply is only **74 million**.
5. **Low Research and Development Spending:** India's R&D expenditure averaged only **0.74% of GDP (2000–2020)** compared to the global average of **2.07%**.
6. **Balancing Security and Freedom:** Strengthening digital control while protecting privacy, transparency, and public trust remains a difficult challenge.

Way Forward

1. **Strengthen Indigenous Technology Ecosystems:** The success of UPI and RuPay shows that domestic alternatives can reduce vulnerabilities in critical sectors.

2. **Expand Semiconductor Capabilities:** Greater investment is needed in semiconductor manufacturing and related technology ecosystems.
3. **Promote Public-Private Innovation:** Increased private-sector participation in strategic sectors can accelerate technological development and self-reliance.
4. **Build Trusted International Partnerships:** Collaborations such as BrahMos, Micron's Gujarat facility, and participation in Pax Silica can strengthen capabilities while reducing isolation.
5. **Bridge the Digital Skills Gap:** National programmes for AI, cybersecurity, semiconductor design, and advanced technologies should be expanded.
6. **Increase R&D Investment:** Higher research spending is essential for long-term technological competitiveness and digital sovereignty.

Conclusion

Digital sovereignty is becoming central to India's economic competitiveness, national security, and strategic autonomy. While India has built strong digital public infrastructure, dependence on foreign technologies continues to create vulnerabilities. Expanding domestic technological capabilities, increasing R&D investment, and strengthening trusted partnerships will help India reduce risks while preserving democratic values, openness, and innovation.

Question for practice

Examine the challenges to India's digital sovereignty and discuss the measures needed to strengthen technological self-reliance, strategic autonomy, and national security in the digital age.

Source: [The Hindu](#)

The Need to Secure Industrial Policy Space

UPSC Syllabus: Gs Paper 3- Industrial Policy

Introduction

Industrial policy has re-emerged as a key tool of economic strategy amid geo-economic competition, technological change, and growing state support for strategic sectors. At the same time, discussions on reforming the World Trade Organization (WTO) have intensified over subsidies and other industrial policy measures. This has created a debate over how to prevent trade distortions while preserving the policy space that developing countries such as India need for industrialisation, job creation, and structural transformation.

Why Industrial Policy Has Become Important

1. **Return of State-Led Economic Strategy:** Major economies are using subsidies, local content requirements, supply-chain controls, and state-backed financing to strengthen strategic sectors.
2. **Shift in the Global Debate:** Industrial policy is now viewed as a governance issue rather than merely a market-distorting intervention.
3. **Impact on Trade Outcomes:** Industrial policy increasingly shapes competitiveness, production patterns, and global trade flows.

4. **Tool for Economic Transformation:** Developing countries use industrial policy for diversification, technological upgrading, and movement into higher value-added activities.
5. **Need for Development Flexibility:** Structural transformation requires policy flexibility to build productive capacity and support long-term growth.

Competing Perspectives on WTO Reform

1. **Developed Countries' View on Imbalances:** The US, EU, Japan, and other developed economies argue that global imbalances arise from unfair trade practices, excessive subsidies, and market distortions.
2. **Concerns Over Competitive Neutrality:** According to this view, state support and non-market interventions create surplus production and place market-based firms at a disadvantage.
3. **Push for Stronger WTO Disciplines:** Developed countries support stricter subsidy rules, stronger transparency requirements, and tighter enforcement under the **Agreement on Subsidies and Countervailing Measures (ASCM)**.
4. **Developing Countries' Perspective:** Developing economies see global imbalances as a result of structural inequalities in capital availability, technology access, productive capacity, and participation in global value chains.
5. **Industrial Policy as a Development Tool:** From this perspective, industrial policy remains a legitimate mechanism for development catch-up, industrialisation, and technological advancement.

Why Securing Industrial Policy Space Matters for India

1. **Supporting Development Transition:** India is still undergoing a major development transition. Restrictions on industrial policy could limit its ability to pursue structural transformation.
2. **Employment Generation Needs:** Flexible state support is important for creating millions of middle-class jobs needed for India's socio-economic transformation and Viksit Bharat vision.
3. **Limited Subsidy Support in Developing Countries:** Studies by the **Centre for WTO Studies**, the **Research and Information System for Developing Countries (RIS)**, and data from the **Organisation for Economic Co-operation and Development (OECD) MAGIC Database of Industrial Subsidies** show that India and other developing countries account for a small share of global industrial subsidies.
4. **Lower Support Across Sectors:** Corporate subsidies in India, Brazil, and Indonesia represent only a small fraction of revenue compared with China and remain well below levels seen in advanced European and East Asian economies.
5. **Modest Financial Assistance:** In absolute terms, industrial support provided by India remains far smaller than that provided by the US, China, and other developed economies.

Emerging Challenges in Global Rule-Making

1. **Risk of Expanding Subsidy Disciplines:** New global rules may increasingly restrict the policy options available to developing countries even when their subsidies are relatively limited.
2. **Use of Overcapacity Narratives:** The March 2026 US Section 301 investigations on manufacturing overcapacity demonstrate how concerns about overcapacity and unfair trade can be used against a wide range of countries.
3. **Broad Targeting of Countries:** These investigations covered not only major industrial powers such as China, the EU, Japan, and Korea, but also developing countries including India, Brazil, and Indonesia.
4. **Concerns About Future Competition:** There are indications that future trade rules may seek to prevent the rise of large developing economies that could emerge as major competitors.
5. **Need to Differentiate Between Countries:** A common set of rules may fail to distinguish between dominant industrial powers and developing economies that are still building productive capacity.
6. **Existing WTO Constraints:** Current rules under the **Agreement on Subsidies and Countervailing Measures (ASCM)** and the **Agreement on Trade-Related Investment Measures (TRIMS)** can restrict the use of subsidies and investment-related policy measures by developing countries during industrialisation.

Way Forward

1. **Objectively Define Industrial Dominance:** Stronger disciplines should focus on countries with significant global industrial influence. The proposed framework uses **per-capita income above \$14,000** and specific export-share thresholds to identify dominant players.
2. **Ensure Policy Flexibility for Developing Countries:** Non-dominant developing countries should receive greater freedom under WTO rules and should not face the same restrictions applied to dominant industrial economies.
3. **Maintain Limited Subsidy Restrictions:** Non-dominant developing countries should be exempt from most constraints under the **ASCM** and the **TRIMS**, while prohibited export subsidies should continue to remain restricted.
4. **Address Greater Trade Distortion Risks:** Industrially dominant countries should face stricter scrutiny. Their dominance should serve as initial evidence of their ability to distort trade, enabling provisional trade remedies.
5. **Strengthen Transparency Requirements:** Dominant countries should face stronger obligations to disclose subsidies. Hidden subsidies should trigger temporary protective measures until full disclosure is provided.
6. **Avoid Burdens on Developing Countries:** Strict compliance and reporting requirements should focus on dominant players so that developing countries and least-developed countries are not burdened by excessive obligations.

Conclusion

Industrial policy has become central to economic development and global competition. WTO reforms should therefore distinguish between dominant industrial powers and developing economies still undergoing structural transformation. A balanced framework must address genuinely trade-distorting practices while preserving the policy flexibility needed by countries like India to pursue industrialisation, employment generation, and long-term development goals.

Question for practice:

Discuss the need to secure industrial policy space for developing countries like India amid ongoing WTO reform debates and rising global protectionism.

Source: [Businessline](#)