ForumIAS

7 PM COMPILATION

3rd and 4th Week September, 2025

Features of 7 PM compilation

- **Comprehensive coverage of a given current topic**
- **Provide you all the information you need to frame a good answer**
- **Critical analysis, comparative analysis, legal/constitutional provisions, current issues and challenges and best practices around the world**
- **Written in lucid language and point format**
- **Wide use of charts, diagrams and info graphics**
- **Best-in class coverage, critically acclaimed by aspirants**
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- **Best cost-benefit ratio according to successful aspirants**

INDEX

Insolvency & Bankruptcy Code – Features, Achievements & Limitations – Explained Pointwise 2
FRBM Act – Provisions, Significance & Challenges – Explained Pointwise 5
Finance Commission – Functions, Achievements & Challenges – Explained Pointwise 8
World Trade Organization – Relevance & Challenges – Explained Pointwise 12
India–Nepal Relations: Navigating the 2025 Political Crisis 16
MSME – Significance & Challenges – Explained Pointwise 19
Industrial Revolution 4.0 – Significance & Challenges – Explained Pointwise 23
Tourism Sector – Significance & Challenges – Explained Pointwise 27
IT Sector in India – Significance & Challenges – Explained Pointwise 33
Aviation Sector in India – Opportunities & Challenges – Explained Pointwise 38
Energy Security – Significance & Challenges – Explained Pointwise 42
High Value Crops – Significance & Challenges – Explained Pointwise 47
Fertiliser Sector in India – Significance & Challenges – Explained Pointwise 50

Insolvency & Bankruptcy Code – Features, Achievements & Limitations – Explained Pointwise

Source: ET Government

Introduction:

- The Insolvency and Bankruptcy Code (IBC), enacted in 2016, is a landmark reform that consolidated and modernized India's insolvency framework.
- Its main aim is to provide a unified, time-bound process for resolving insolvency and bankruptcy of corporates, individuals, and partnership firms, thereby improving overall financial sector health and creditor confidence.
- Insolvency refers to a situation where individuals or companies cannot repay back their outstanding debt obligations.
- Bankruptcy refers to a legal status declared by a court of competent jurisdiction for a person or entity that is insolvent i.e. unable to pay off debts.

Key Features of IBC:

- IBC covers individuals, companies, LLPs, and partnership firms under a single, consolidated framework, merging multiple earlier laws.
- Strict timelines: Resolution must be completed in 180 days (extendable to 330 days in special cases, including litigation). Special provisions for small companies and startups (90 days + 45 days).
- Committee of Creditors (CoC): Takes charge of decision-making during insolvency; professional insolvency resolution professionals are appointed to manage proceedings.
- Insolvency and Bankruptcy Board of India (IBBI): Regulates professionals and agencies, sets standards, and oversees proceedings.
- Adjudicating Authorities:

- National Company Law Tribunal (NCLT) for companies/LLPs.
- Debt Recovery Tribunal (DRT) for individuals/partnerships.

- Cross-border Insolvency Provisions: Includes enabling provisions for handling insolvency of multinational companies operating in India.

Objectives of IBC:

- **Consolidation & Amendment of Insolvency Laws:** Merge and streamline multiple, outdated insolvency and bankruptcy laws under a single, comprehensive code for individuals, companies, LLPs, and partnership firms.
- **Facilitate time-bound resolution:** Ensure fast and predictable outcomes for insolvency cases (180–330 days), minimizing value erosion and maximizing asset recovery for creditors.
- **Maximise Value of Assets:** Prevent value depletion for stressed companies or individuals by encouraging restructuring, sale, or liquidation in a manner that realizes maximum possible returns.
- **Promote Entrepreneurship:** By making exit easy and non-punitive, IBC encourages risk-taking, business innovation, and investment, fostering a dynamic entrepreneurial ecosystem.
- **Protect interests of Creditors & other Stakeholders:** Structure processes to balance the interests of financial creditors, operational creditors, employees, government dues, and other stakeholders fairly.
- **Improve Ease of Doing Business:** By offering clarity, predictability, and a speedy resolution process, IBC elevates India's reputation for contract enforcement and dispute management, making it more attractive for investment.
- **Reduce NPAs & Boost Credit Supply:** Provide an effective mechanism for addressing bad loans and stressed assets, strengthening the financial system and allowing for more responsible credit creation.
- **Establishment of Regulatory Mechanism:** Establish the Insolvency and Bankruptcy Board of India (IBBI) to regulate insolvency professionals and agencies, ensuring ethical, efficient, and accountable practice.

Why was IBC needed?

1. **Fragmented & Outdated Insolvency Laws:** Prior to IBC, insolvency and bankruptcy were governed by multiple, overlapping laws and forums, causing confusion, delays, and high costs for resolution. Lack of clarity led to conflicting legal interpretations and inefficiency in resolving business distress.
2. **Prolonged Resolution Time & Value Erosion:**
   - Average insolvency resolution in India took over 4 years, in contrast to 1–1.5 years in developed countries.
   - Long proceedings caused value erosion of assets and discouraged genuine business restructuring.
3. **Mounting NPAs & Stressed Assets:** Banks and financial institutions suffered from rising non-performing assets (NPAs) and mounting bad debts. Ineffective recovery mechanisms left creditors with little recourse and led to growing economic risks.
4. **Poor Ease of Doing Business:**
   - India's low ranking in the World Bank's Ease of Doing Business index was partly due to cumbersome exit processes for distressed firms.
   - Investors and entrepreneurs were deterred by unpredictable and costly insolvency procedures.
5. **Strengthening Credit Discipline & Market Confidence:** The absence of strong recovery laws allowed for poor credit discipline and willful defaulting, harming India's banking sector and overall business climate.
6. **Need for Modern, Unified, Creditor-friendly Framework:**
   - Global best practices demanded a unified, quick, and transparent framework that empowers creditors and ensures fair outcomes for all stakeholders.

- Encouraging entrepreneurship, risk-taking, and a robust financial market needed time-bound exits and non-punitive resolution processes.

Achievements of IBC:

1. **Improved Recovery Rates & Resolution Timelines:**
   a. Average recovery rate for creditors has increased to 32–45%, up from ~20% before IBC.
   b. Strict timelines (180–330 days) have accelerated stressed asset resolution and asset value preservation.
2. **Rescue & Settlement of Companies:**
   a. As of March 2025, IBC has helped rescue 1,194 companies through resolution plans and led to creditors recovering ₹3.89 lakh crore.
   b. Over 30,000 cases (worth ₹13.8 lakh crore) were settled before admission, showing IBC's deterrent effect against defaults.
3. **Dominant Recovery Channel:** IBC contributed 48% of all bank recoveries in FY 2023–24, outperforming SARFAESI (32%), DRTs (17%), and Lok Adalats (3%).
4. **Behavioral Change & Improved Credit Discipline:**
   a. The threat of losing control over businesses via IBC has prompted debtors to repay dues and improved overall credit discipline in the banking system.
   b. Pre-admission settlements indicate companies now act early to resolve distress.
5. **Strengthening Banking Sector & Asset Quality:** Significant contribution to reducing non-performing assets (NPAs): gross NPAs declined from 11.2% in March 2018 to 2.8% in March 2024. Banks have freed up locked capital for redeployment and healthier lending.
6. **More Robust Credit Market:** IBC has made the Indian market more attractive to investors, especially in distressed asset deals, creating greater transparency and predictability.

Challenges/Limitations of IBC:

1. **Case Backlog & Delays:**
   a. Despite strict timelines (180–330 days), real-world resolution frequently exceeds deadlines due to limited judicial capacity, procedural complexities, and multiple legal challenges.
   b. Limited benches at National Company Law Tribunal (NCLT) and appellate tribunals create bottlenecks.
2. **Low Recovery for Certain Assets:** Although average recovery improved, some sectors and cases deliver lower-than-expected recoveries, especially where asset quality is poor or liquidation proceeds are limited for e.g. Agricultural and service-based enterprises often face distinct liquidation challenges.
3. **Structural Issues in Credit Markets:**
   a. Banks exhibit risk aversion, preferring secured over unsecured lending, and delay initiating insolvency to maximize loan lifetimes, reducing early resolution incentives.
   b. Non-Banking Financial Companies (NBFCs) and informal creditors remain less integrated into the insolvency framework.
4. **Delay in Resolution Plan Approvals:** Resolution plans sometimes face resistance, litigation, or withdrawal, causing significant delays and uncertainty for creditors and employees.
5. **Impact on MSMEs & Startups:** The insolvency process can be costly and intimidating for small and medium enterprises and startups, which may opt for informal settlements or closure.
6. **Incomplete Creditor Participation:** Non-financial creditors often feel underrepresented or sidelined in decision-making by the Committee of Creditors (CoC), impacting consensus and fair resolutions.

Way Forward:

1. **Strengthen Judicial & Institutional Capacity:**
   a. Expand the number of dedicated NCLT benches and National Company Law Appellate Tribunal (NCLAT) members to reduce case backlog and expedite resolution.

   b. Enhance training for judges, insolvency professionals, and related authorities to handle complex insolvency cases efficiently.
2. **Simplify Legal & Procedural Framework:**
   a. Streamline multiple legal provisions and reduce overlaps with sector-specific laws to minimize litigation and conflicting appeals.
   b. Introduce fast-track insolvency resolution mechanisms for MSMEs and startups with simplified procedures.
3. **Improve Credit Participation & Transparency:**
   a. Ensure fair representation and participation of operational creditors and minority stakeholders in the Committee of Creditors (CoC).
   b. Promote transparency in resolution processes and encourage stakeholder consultations to build trust and consensus.
4. **Enhance Awareness & Capacity Building:**
   a. Launch nationwide awareness campaigns for debtors, creditors, and businesses about the benefits and processes of IBC.
   b. Increase the pool of qualified insolvency professionals and upgrade their skill sets through continuous professional development programs.
5. **Foster Early Insolvency Detection & Resolution:**
   a. Encourage early identification of financial distress through improved credit monitoring systems.
   b. Facilitate pre-insolvency frameworks and corporate debt restructuring schemes to prevent insolvency where possible.
6. **Leverage Technology for Efficiency:**
   a. Strengthen information utilities and digital platforms for collecting and authenticating financial data.
   b. Implement technology-enabled case management and monitoring systems to ensure transparency and real-time updates.

Conclusion:
IBC is a crucial piece of economic legislation that has modernized India's bankruptcy laws, providing a much-needed framework for resolving financial distress and promoting a more robust and transparent credit market.

UPSC GS-3: Economics
Read More: The Hindu

FRBM Act – Provisions, Significance & Challenges – Explained Pointwise

Source: Jagran Josh

Introduction:

- FRBM Act stands for **Fiscal Responsibility and Budget Management Act** enacted in 2003, aims to promote fiscal discipline, transparency, and accountability in the management of India's finances.
- The Fiscal Responsibility and Budget Management Act, 2003 is regulated by the Department of Economic Affairs, Ministry of Finance.
- Fiscal Responsibility and Budget Management Act, 2003 ensure inter-generational equity in fiscal management and long-term macro-economic stability by reducing fiscal deficit. It was enacted for effective conduct of monetary policy and prudential debt management consistent with fiscal sustainability.
- FRBM Act mandates the following statements to be laid before the Parliament along with the Budget:
    - Macro-economic Framework Statement.
    - Medium Term Fiscal Policy Statement.
    - Fiscal Policy Strategy Statement.
- The **Fiscal Responsibility and Budget Management Committee** was constituted under the chairmanship of N.K.Singh to review the government's fiscal performance and make recommendations to FRBM Act.

FRBM Act: Provisions:

The Central Government shall:

- Take appropriate measures to limit the fiscal deficit up to 3% of gross domestic product by the 31st March, 2021.
- **Endeavor** to ensure that:
    - The General Government (Centre + State) debt does not exceed 60%.
    - The Central Government debt does not exceed 40% of gross domestic product by the end of financial year 2024-2025.
- Not give additional guarantees with respect to any loan on security of the Consolidated Fund of India in excess of one-half per cent of gross domestic product, in any financial year.
- Endeavour to ensure that the fiscal targets specified in clauses (a) and (b) are not exceeded after stipulated target dates.

FRBM Act: Amendments:

Since the enactment of the FRBM act in 2003, it has been amended 4 times – 2004, 2012, 2015 & 2018. The FRBM Act and the Rules underwent more significant changes during the 4th Amendment, in 2018.

N.K. Singh Committee Recommendations:

1. **Debt to GDP ratio:** The Committee suggested using debt as the primary target for fiscal policy. A debt to GDP ratio of 60% should be targeted with a 40% limit for the centre and 20% limit for the states.
2. To achieve the targeted debt to GDP ratio, it proposed yearly targets to progressively reduce the fiscal and revenue deficits till 2023.
3. The Committee proposed to create an autonomous **Fiscal Council** with a Chairperson and two members appointed by the centre.
4. The Committee noted that under the FRBM Act, the government can deviate from the targets in case of a national calamity, national security or other exceptional circumstances notified by it.
5. **Escape Clause:** The government may be allowed to deviate from the specified targets upon the advice of the Fiscal Council in the following circumstances:
    a. Considerations of national security, war, national calamities and collapse of agriculture affecting output and incomes.
    b. Structural reforms in the economy resulting in fiscal implications.
    c. Decline in real output growth of at least 3% below the average of the previous four quarters. These deviations cannot be more than 0.5% of GDP in a year.
6. The Committee recommended that the 15th Finance Commission (which was also led by N.K.Singh) should be asked to recommend the debt trajectory for individual states.

Significance of FRBM Act:

1. **Fiscal discipline**: The FRBM Act promotes fiscal discipline by setting up the targets for reducing the fiscal deficit and by mandating the constitution of a Fiscal Responsibility and Budget Management Committee (FRBMC) to review the government's fiscal performance.
2. **Fiscal transparency**: The FRBM Act promotes transparency and accountability of public finances through publication of various reports, such as the annual budget, the medium-term fiscal policy statement, and the Fiscal Policy Strategy Statement.
3. **Macroeconomic stability**: The FRBM Act aims to maintain macroeconomic stability by ensuring that the government's fiscal policies are sustainable and do not lead to high levels of public debt.
4. **Investor confidence**: The FRBM Act helps to boost investor confidence in the Indian economy by transparency and compliance and demonstrating the government's commitment to fiscal discipline and macroeconomic stability.
5. **Long-term planning**: The FRBM Act requires the government to present a medium-term fiscal policy statement and an FPSS, which helps in long-term planning and ensures that the government's fiscal policies are aligned with its future economic goals.
6. **Inter-Generational Equity:** FRBM Act emphasizes the responsibility of the government to maintain fiscal prudence so that future generations are not burdened by excessive debt.

Issues with FRBM Act:

1. **Frequent Deviations and Use of Escape Clause:**
    a. The government often fails to meet deficit and debt targets, invoking broad escape clauses in times of economic stress, natural disasters, or revenue shortfalls, undermining the Act's credibility.
    b. During major events (e.g., pandemic, GST introduction), targets have been postponed and reset several times.
2. **Rigid Fiscal Targets v/s Growth Needs:** Fixed deficit targets (like 3% of GDP) can be too inflexible during downturns, limiting the government's ability to stimulate the economy with increased spending when needed.
3. **Weak Enforcement & Accountability:**

a. No strong penalties or incentives for non-compliance; governments face limited consequences for missing targets.
b. Parliamentary and independent oversight are not always rigorous, allowing deviations to go unchecked.

4. **Transparency & Classification Issues:**
    a. Governments sometimes manipulate fiscal data by shifting expenditures off-budget, creative accounting, or reducing spending on critical social services to achieve targets.
    b. Lack of clarity in what qualifies as "revenue expenditure" or "capital expenditure" can obscure true fiscal positions.
5. **Impact on States and Fiscal Federalism:**
    a. Centralized fiscal authority has led to tension with states, who argue that FRBM impinges on their fiscal autonomy and lacks sensitivity to their varying needs.
    b. States are pressured to adhere to union-dictated deficit targets, even when their economic situations differ.

Way Forward:

1. **Introduce a Credible Debt Anchor:** Shift focus from rigid fiscal deficit targets to a debt-to-GDP ratio anchor (such as the 60% general government debt recommended by the N.K. Singh Committee), aligning with best international practices and ensuring inter-generational equity.
2. **Strengthen Escape Clauses & Trigger Mechanisms:** Clearly define and limit the use of escape clauses only for major shocks (pandemics, disasters, financial crises), with transparent triggers and conditions to prevent frequent fiscal slippage or misuse.
3. **Revise Fiscal Deficit Target Periodically:**
    a. Make fiscal targets more flexible, revising them in response to macroeconomic changes, business cycles, and structural reforms while protecting spending on key priorities.
    b. Allow phased fiscal consolidation to minimize adverse effects on the social sector and capital investment.
4. **Improve Centre-State Coordination:** Evolve joint targets and monitoring frameworks for deficit and debt, tailored to state-specific needs, reducing centre-state tensions and fostering cooperative federalism.
5. **Enhance Transparency & Accountability:** Ensure full disclosure of off-budget borrowings, guarantees, and contingent liabilities to avoid creative accounting and hidden fiscal risks.
6. **Establish Fiscal Council:** Set up an independent Fiscal Council to assess compliance, review projections, and advise on fiscal policy, increasing credibility and transparency.
7. **Prioritise the Quality of Expenditure:** The FRBM Act has traditionally focused on controlling the quantity of government spending, but the quality of that spending is just as important. The Act should distinguish between **revenue expenditure** (like salaries and subsidies) and **capital expenditure** (like building roads, ports, and power plants).

Conclusion:
FRBM Act is central to India's fiscal discipline and macroeconomic stability. However, it should shift from a rigid rule-based system into a dynamic and credible tool that ensures both fiscal discipline and sustainable economic growth.

Read More: Economic Times
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Finance Commission – Functions, Achievements & Challenges – Explained Pointwise

Introduction:

- Finance Commission is a constitutional body established under Art 280 of the Indian constitution.

- It is a non-permanent body and is constituted by the President for a term of 5 years or earlier.
- Its function is to maintain fiscal federalism by recommending the distribution of tax revenues between the central and state governments.

Functions of the Finance Commission:

- **Tax Revenue Distribution:** Recommends the sharing of net tax proceeds between the Union and States, and among the States themselves (income tax, GST, etc.):
  - **Vertical Devolution:** Recommending the percentage of central taxes and duties that should be shared with the states. This is the division of funds between the Union and the states.
  - **Horizontal Devolution:** Laying down the principles for the distribution of the shared funds among the individual states. The commission uses a formula based on various criteria, such as population, area, forest and ecology, and tax effort, to ensure a fair allocation.
- **Grants-in-Aid:** Suggests principles for grants-in-aid to support states that may not generate adequate revenue, ensuring essential services like health and education and promoting social welfare.
- **Strengthening Local Governance:** Advises measures to augment the Consolidated Fund of States to support Panchayats and Municipalities, strengthening local self-government.
- **Fiscal Discipline & Stability:** Reviews and recommends policies for fiscal consolidation, expenditure efficiency, and sustainable debt management at both Union and State levels.
- **Contemporary Fiscal Challenges:** Addresses emerging issues such as disaster management financing, impact of GST, and public sector reforms, as referred by the President.
- **Promotes Cooperative Federalism:** Encourages consultation and collaboration between Centre and States on financial matters for balanced development.

Composition of Finance Commission:

- It consists of 1 chairman and 4 members.
- Qualification of the members of the commission is decided by the Parliament.
- The chairman must have had experience in public affairs.
- Other 4 members:
  - Should be qualified to be a judge of a High Court.
  - Have special knowledge of finance and government accounts.
  - Have wide experience in financial matters and in administration.
  - Have special knowledge of economics.

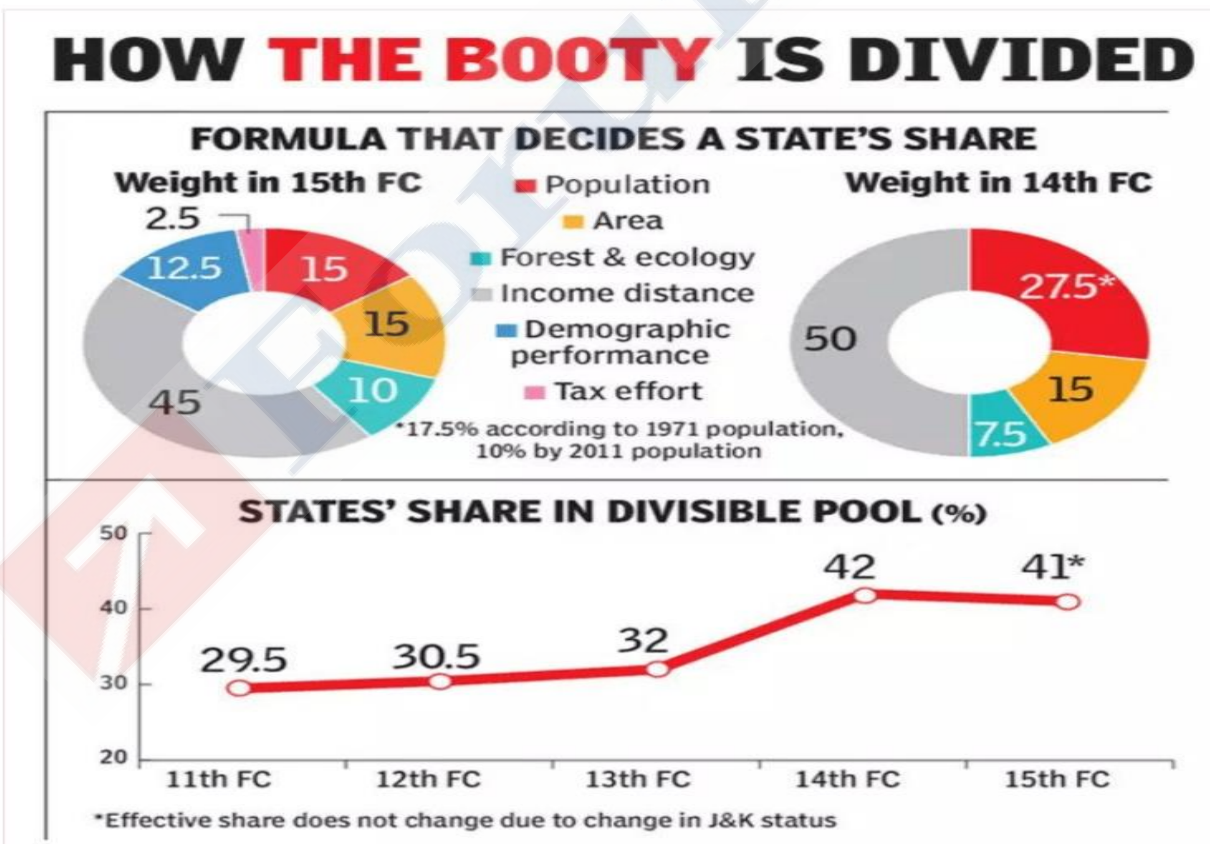
Implementation & monitoring of finance commission's recommendations:

- The recommendations of FCs are **advisory in nature and not binding** on the Union government. However, they are **usually accepted with minor modifications** or deviations.
- The Union government **notifies the acceptance** of the recommendations **through a Presidential Order,** which also specifies the period for which they are valid (usually five years).
- The Union government also **tables an explanatory memorandum in Parliament,** stating the action taken on the recommendations and the reasons for any deviation.
- The implementation and monitoring of the recommendations are **done by various ministries and departments** at the Union and state levels, **depending on the subject matter and the conditions** attached to the transfers.

Recommendations of 15th Finance Commission:

- 15th finance commission tenure is from 2020-26.

- The recommendations for FY 2020-21 & 2021-26 include vertical devolution of 41% to the states and 1% for the erstwhile state of J&K.
- The only change for 2020-21 and 2021-26 is: Income distance reference period for 2020-21 is 2015-2018 and for 2021-26 is 2016-19.
- Horizontal devolution is based on 6 indicators:
  1. 45% to income distance.
  2. 5% for demographic performance.
  3. 15% to population [2011 census]
  4. 10% to Area
  5. 10% to forest and ecology
  6. 5% to tax and fiscal efforts
- Principles for grant-in-aids/performance incentives to states are based on 4 areas:
  1. Social sector such as health, education
  2. Rural economy such as agriculture, roads
  3. Governance and administrative reforms
  4. Reforms in power sector
- Local body grants include total grants Rs 4.36 lakh crore with 2.4 lakh crore for rural and 1.2 lakh for urban.
- **Disaster Risk Management Corpus Fund** by Centre and the States in the ratio of 90:10 percent for NE and Himalayan states and 75:25 for other states.
- **Modernisation Fund for Defence and Internal Security (MFDIS)** with the total corpus of 2.4 lakh crore and 1.5 lakh crore from consolidated fund of India.



Achievements of the Finance Commission:

1. Introducing tax devolution as a major component of vertical transfers, **increasing the share of states from 10% to 42% over time.**
2. Introducing performance-based incentives for states to encourage **fiscal discipline, population control, forest conservation, power sector reforms, etc.**
3. **Introducing disaster relief funds for states and local bodies** for enhancing their preparedness and response capacity for natural calamities.
4. **Introducing grants for local bodies** strengthening their fiscal autonomy and accountability for delivering basic services.
5. Introducing **grants for specific sectors** such as health, education, justice delivery, statistical system, etc. addressing critical gaps and needs in these areas.

Challenges/Limitations of Finance Commission:

1. **Data Gaps and Quality Issues:** The finance commission relies on official data sources to assess the fiscal situation and performance of the Union and states, but these data are often incomplete, inconsistent or outdated.
2. **Centre v/s State:**
    a. The Commission must navigate conflicting interests between central and state governments, local bodies, civil society, etc.
    b. Rising centralization and demands for more state fiscal autonomy create tensions in resource sharing.
3. **Limited Implementation & Monitoring Power:**
    a. Finance Commission recommendations are advisory and not binding. Actual implementation depends on the Union and states, often leading to delays, non-compliance, or misuse of recommended grants.
    b. The Commission has no direct enforcement or oversight ability; accountability is limited.
4. **Resource v/s Responsibility imbalances:**
    a. Frequently faces situations where states have growing expenditure responsibilities but limited revenue mobilization capacity, making equitable sharing highly complex.
    b. Handling vertical and horizontal imbalances, especially with newer challenges like GST revenue sharing and compensation, adds complexity.
5. **Overlap with GST Council:** Intersecting jurisdictions with the GST Council, especially in tax pool size and distribution, pose coordination challenges for effective fiscal federalism.
6. **Limited Role in 3rd-tier Governments:** Recommendations regarding Panchayats and Municipalities are based only on State Finance Commission reports, restricting the Finance Commission's direct impact on grassroots fiscal empowerment.
7. **Changing Economic Contexts & Inequality:** Balancing regional disparities, post-pandemic fiscal health, disaster response, and new urban infrastructure demand requires dynamic and sometimes contentious negotiations.

Way Forward:

1. **Improve Data Quality:**
    a. Establish robust, comprehensive data-sharing mechanisms between the Centre, States, and local bodies for accurate, timely fiscal and economic data.
    b. Leverage technology and auditing to ensure transparency and reliability of data underpinning recommendations.
2. **Enhance Accountability & Compliance Mechanisms:**
    a. Introduce mechanisms to promote adherence to the Finance Commission's recommendations, such as monitoring frameworks, fiscal performance audits, and incentive-linked transfers.
    b. Strengthen Parliamentary oversight and involve independent fiscal institutions in evaluating compliance and impact.
3. **Strengthen Fiscal Federalism through Balanced Approach:**

    a. Balance revenue sharing and expenditure responsibilities transparently, considering states' fiscal capacity, needs, and development levels.
    b. Foster cooperative federalism by regularly consulting states and stakeholders to reconcile conflicts and expectations.
4. **Improve Coordination with GST Council & Local Bodies:**
    a. Develop integrated fiscal management frameworks involving the GST Council to harmonize revenue sharing and policy coherence.
    b. Increase the Finance Commission's role in empowering Panchayats and Urban Local Bodies through better mandates and funding models.
5. **Focus on Outcome-oriented & Developmental Measures:**
    a. Align transfers with performance and developmental outcomes to ensure effective use of resources.
    b. Encourage states to adopt long-term fiscal sustainability plans and reform agendas through incentivized grants.
6. **Institutional Strengthening:**
    a. Expand the Commission's secretariat capacity with fiscal, economic, and legal experts for deeper analysis.
    b. Engage academic and policy research institutions for evidence-based recommendations and impact assessments.

UPSC: GS-3: Economics

World Trade Organization – Relevance & Challenges – Explained Pointwise

One of the major global headwinds casting a shadow on the international trade is the 'reciprocal tariffs' which have been imposed by the US President Donald Trump to punish the countries, including some of the closest trading partners of America. These tariffs, also known as the 'Trump Tariffs', have been compared to the **Smoot-Hawley Tariffs** of 1930 – which is believed to had hastened the slide into the Great Depression. However, unlike the 1930s, the world today has an international organization, called WTO, regulating the international trade according to a rule-based order. However, many have also argued that the WTO has lost its relevance in the present period. Thus, in this article we will try to discuss the achievements of WTO, the challenges that it is currently facing & what could be the reforms that should be brought in it.

What is WTO?

The World Trade Organization (WTO) is the primary international organization governing the rules of trade between nations. It was established in 1995, replacing the **General Agreement on Tariffs and Trade (GATT)**, which had been in effect since 1948.

Principles: The WTO operates on several core principles such as:

- **Non-discrimination:**
    - **Most-Favoured-Nation (MFN):** Treating all trading partners equally.
    - **National Treatment:** Treating foreign products, services, and nationals no less favorably than domestic ones.
- **Reciprocity:** Countries should aim to lower trade barriers in exchange for similar concessions from other countries.
- **Trade Liberalization:** Gradual reduction of tariffs and quotas.
- **Binding Commitments:** Countries' commitments to open markets are binding and enforceable.
- **Transparency:** Member countries are required to publish their trade regulations. WTO collects and shares trade information among members.
- **Dispute Settlement:** Provides a legal and institutional framework for resolving trade conflicts

Umbrella	AGREEMENT ESTABLISHING WTO		
	Goods	Services	Intellectual property
Core principles	**GATT**	**GATS**	**TRIPS**
Additional information	Agreements and annexes for another goods	Services annexes	
Market access commitments	Commitments of member countries are scheduled	Commitments of member countries are scheduled (and MFN exemptions)	
Dispute settlement	**DISPUTE SETTLEMENT**		
Transparency	**TRADE POLICY REVIEWS**		

Source: WTO, 2021

Source: WTO

What have been the achievements of WTO?

1. Facilitation of International Trade- Binding rules for global trade in goods and services have facilitated dramatic growth in cross-border business activity. The real volume of world trade has expanded by 2.7 times since the inception of WTO.

2. Forum for Negotiations: It serves as a platform for countries to negotiate new trade agreements and address trade-related issues, promoting ongoing trade liberalization.

3. Reduction in Tariffs- After the creation of WTO, average tariffs have almost halved, from 10.5% to 6.4%. This has facilitated the growth of International trade.

4. Boost to national incomes- Accession to WTO has given a lasting boost to national income of several developing economies.

5. Rise of global value chains- The predictable market conditions fostered by the WTO have combined with improved communications to enable the rise of global value chains. Trade within these global value chains today accounts for almost 70% of total merchandise trade.

6. Reduction in poverty- The free and fair trade principles has also contributed to reduction in world poverty levels. Taking into account, the World Bank's $1.90 threshold for extreme poverty, the poverty level has fallen from ~33.33% in 1995 to ~10% today.

7. Dispute settlement: The Dispute Settlement Body (DSB) of WTO provides a rules-based system to resolve trade conflicts. It has handled over 600 disputes, many involving major powers like the US, EU, and China. It has helped in avoiding the trade wars and ensures compliance with international norms so far.

8. Support for Developing Nations: WTO has provided technical assistance, training, and special provisions to developing countries which has helped them in developing their capacities. It has allowed longer timeframes and flexibilities to them in implementing trade agreements. It has also launched the **Aid for Trade** initiative to help the least-developed countries (LDCs).

9. Trade Policy Review: The WTO reviews national trade policies to ensure transparency and compliance with WTO regulations, fostering greater openness in trade practices.

What are the challenges and key areas of reforms for WTO today?

The WTO was expected to perform 3 functions – the negotiating function, the dispute settlement function, and the trade monitoring function. It has been struggling to perform any of them.

1. Stalemate in Trade Negotiations (Doha Round Failure): The Doha Development Round, launched in 2001, aimed to improve trade conditions for developing countries. It failed to reach consensus due to deep disagreements between:

- Developed nations (pushing for access to developing markets)
- Developing nations (seeking agricultural subsidies reform).

The failure reflects the WTO's inability to adapt to evolving global dynamics.

2. Bias Towards Developed Countries: WTO rules are often seen as favoring the economic interests of rich nations. Developed countries continue to provide massive agricultural subsidies (e.g., EU, US), while pressuring developing nations to open up markets. This has led to growing North-South tensions within the WTO framework.

3. Rising Protectionism and trade restrictions:

- MFN (Most Favoured Nation) principle is the bedrock of WTO & hence it was included as Article 1 in the Agreement. However, many countries (especially developed countries) are now stepping away from the MFN because according to them the trade liberalization has not happened as much as they were expecting, Moreover, they are finding it easier to negotiate on tariffs bilaterally by signing FTAs rather than at WTO.
- Trade restrictions by the developed and advanced economies has affected international trade (~$747 billion in global imports), and postponement of investment by businesses. WTO has not evolved into a forum to find a solution out of such kind of economic crisis.

4. Failure of dispute resolution mechanism (DSM)- There has been a lack of consensus among the members regarding the reforms of the Appellate Body. The appointment of nominees to WTO's appellate body has at times been blocked by developed countries, paralyzing the WTO as a judge and enforcer of global trade rules. ***For ex-*** *US has been blocking appointments to the Appellate Body since 2019.*

5. Trade distortion by misusing the Special and Differential Treatment (S&DT)- Provisions for agricultural and industrial subsidies have been misused by many developed countries, causing trade distortions. High income countries like South Korea and China have mis-utilised the concessions of developing countries, as developing countries are defined based on 'self-declaration'.

6. Shift to Plurilateral Agreements- There has been a shift towards plurilateral agreements like the TPP Agreement. Plurilateral Agreements favour developed countries more as they are able to push their interests (developing countries have less negotiating power) unlike WTO where all agreements happen through consensus.

7. Lack of consensus- WTO works on the principle of consensus-based decision making which often leads to deadlock & inaction. Moreover, there is lack of consensus on WTO reforms. For e.g. on one hand, the countries of Global South demand rationalization of fisheries subsidies, handholding of their public stockholding programs. On the other hand, developed nations have put their old obligations on the back-burner and are pushing the WTO to form rules on e-commerce, an area where they have a clear edge. Due to slow bureaucratic process of WTO, it takes years to complete the negotiations & bring reforms, making the WTO too slow to respond to modern trade issues like: E-commerce, Digital services, Climate-related trade policies.

8. Lack of Support for Least Developed Countries (LDCs): Despite promises, LDCs struggle to access global markets due to: Complex rules, High compliance costs & Limited representation in negotiations. WTO has not fully delivered on its development agenda.

9. Lack of Transparency: WTO negotiations are often criticized for being opaque, with limited input from civil society and smaller countries. The process is seen as undemocratic, favoring the interests of richer members.

10. China-factor: WTO has been criticized to allow China to flood the global markets with its cheap exports, but simultaneously restricted access to its domestic markets. WTO rules were highly inadequate to anticipate that how one country can produce more than 50% of steel & would flood the market & able to distort the trade – without violating the WTO rules, but clearly undermining the integrity of multilateral trading system.

11. India-specific challenges:

- WTO required the participating members to reduce their domestic subsidies on agriculture sector. However, agriculture is a politically sensitive issue for any government in India. Moreover, for country like India, which relies on domestic production, to limit its subsidies to just 10% will limit its developmental needs & raise food security concerns.
- India's large-scale public stockholding programs for food security have been contentious at the WTO, as other members argue these programs distort global trade. The "Peace Clause" offers temporary protection, but a permanent solution remains elusive, leaving India's food security policies vulnerable to challenge.
- India has opposed recent plurilateral initiatives (agreements among subsets of WTO members) on issues such as investment facilitation, arguing there is no mandate for such negotiations. This stance has isolated India and is seen as obstructing the WTO's ability to address emerging trade topics like digital trade, climate, and labor standards.
- India's competitive advantage in services (IT, finance, education) is often hampered by barriers in developed markets, including visa restrictions (e.g., H-1B visas in the US). Negotiations under the General Agreement on Trade in Services (GATS) have not yielded sufficient gains for India's service exporters.
- The WTO's TRIPS agreement poses challenges for India's generic pharmaceutical industry, which is vital for affordable medicines both domestically and globally. Stringent patent rules can restrict India's ability to produce generics, impacting public health.
- Developed countries frequently use non-tariff barriers, such as sanitary and phytosanitary (SPS) measures and technical barriers to trade (TBT), which Indian exporters find costly and difficult to comply with. These requirements often necessitate significant investment in infrastructure and standards compliance, putting Indian producers at a disadvantage.
- India often faces an asymmetry in negotiating power against developed countries, making it challenging to advance its interests effectively. To counter this, India builds coalitions with other developing countries, but this sometimes leads to a perception of obstructionism.

What are the suggested WTO reforms?

1. Dispute Settlement System Revival:

- **Restore Appellate Body Functionality:** Simplify procedures, reduce costs, and improve transparency. Clearer timelines, stricter compliance with rulings, and safeguards against overreach.
- **De-politicization of Appointment process-** The appointment process to dispute settlement body should be made independent of political control.
- **Interim Solutions:** Some members propose alternative dispute resolution mechanisms (e.g., mediation) while addressing Appellate Body paralysis.
- **Dispute settlement reform-** Expanding the Appellate Body panel from seven to nine judges, redefining membership of the Appellate Body from part-time to full-time, and allocating more resources to the Appellate Body Secretariat.

2. Special and Differential Treatment (SDT) Reform:

- **Objective Criteria:** Replace self-declared developing-country status with metrics like GDP per capita, trade share, and human development indicators.
- **Graduation Mechanism:** Phase out SDT benefits for advanced developing economies (e.g., G20 members) while retaining protections for LDCs

3. 30 for 30- India had earlier issued a comprehensive proposal called "30 For 30". It was to bring at least 30 operational improvements to the WTO before the Organization completes 30 years, that is by 1 January 2025. A year long cooling-off period before hiring a diplomat in any role in the organization, resolving old issues before picking up new ones, and a time-bound work programme to make dispute settlement more accessible for developing countries are some of the suggested operational improvements.

4. New rules on emerging trade domains- There must be consensus based new agreements on emerging trade domains like electronic commerce, investment facilitation, domestic regulation in services. It will make trade more efficient and predictable in cutting-edge sectors of the economy.

5. Increasing participation in global trade- Efforts must be made to make it easier, safer and viable for women and smaller businesses to participate in global trade. This would help make trade more inclusive.

6. Reforming the voting process- Clear guidelines must be spelt as to when a country may use its veto power. Veto usage needs to be weighed against the interests of all, and in light of the WTO's mandate.

7. Independent panel as arbiter- An independent panel could play the role of arbiter, evaluating the competing claims and helping to overcome the political deadlock.

8. Increasing transparency- WTO members should proactively disclose their subsidies to develop trust and transparency among WTO members.

Conclusion:
However, despite these challenges, WTO remains essential, but without real reforms, its influence will continue to decline, and global trade may become more fragmented and unstable. WTO reform is not just about fixing broken systems—it's about revitalizing global trust in a fair and inclusive multilateral trading order.

Read More: The Hindu
UPSC Syllabus GS2: Important international institutions, agencies & fora.

India–Nepal Relations: Navigating the 2025 Political Crisis

India–Nepal relations, rooted in deep historical, cultural, and strategic ties, face a critical juncture following the violent Gen Z-led protests in Nepal. These protests toppled the elected government, dissolved Parliament, and installed former Chief Justice Sushila Karki as interim Prime Minister until the March 2026 elections. While India supported the constitutional order, the unrest raises concerns over stability in the shared border region.

What is the Background of the Nepal Crisis and Its Implications for India?

1. Trigger of Protests: In early September 2025, widespread Gen Z-led protests erupted in Nepal. The protests were against poor governance, entrenched corruption, and authoritarian measures by the CPN-UML-led government. One such measure was the banning of 23 social media websites, which was seen as an intolerance toward dissent.

2. Escalation and Violence: The protests turned violent. Seventy-four people were killed, and key institutions, including Parliament and the Supreme Court, were attacked. Buildings were burned, and vital documents destroyed, causing severe economic losses estimated at over NPR 10 billion.

3. Government Collapse: The crisis forced Prime Minister KP Sharma Oli to resign. This led to the unconstitutional dissolution of Parliament, violating Article 76 of Nepal's 2015 Constitution. Sushila Karki, a respected former Chief Justice, was appointed interim Prime Minister on September 12, 2025, with the backing of protest leaders.

4. Interim Setup: Karki became Nepal's first female Prime Minister. She pledged to address corruption and hold elections by March 5, 2026. The negotiations involved President Ram Chandra Paudel and Army Chief Ashok Raj Sigdel. Karki also appointed anti-corruption ministers, including Rameshwar Prasad Khanal (Finance) and Kulman Ghising (Energy).

5. Implications for India: As a key stakeholder, India monitored the unrest closely. Ambassador Naveen Srivastava attended Karki's swearing-in ceremony. The crisis carries risks of spillover effects, such as refugee influxes across the open border, and potential exploitation by anti-India elements, echoing the 2006 Madhesi movement.

What is the Importance of India–Nepal Relations?

1. Historical and Cultural Ties: India and Nepal share a deep-rooted civilisational bond through Hinduism and Buddhism, reflected in sacred sites like Pashupatinath Temple and Lumbini. The 1950 Treaty of Peace and Friendship institutionalised these ties. Over 8 million Nepalis live in India, and the presence of Gurkha regiments in the Indian Army reinforces enduring people-to-people and military links.

2. Strategic Significance: Sharing an open 1,770 km border, Nepal plays a critical role in India's Himalayan security architecture. As a buffer state between India and China, its geopolitical orientation directly affects India's regional stability. India's support during Nepal's 2006 transition to democracy further highlights its strategic involvement.

3. Economic Interdependence: India is Nepal's largest trading partner, accounting for over 60–65% of Nepal's trade (USD 8.5 billion in 2024). India provides petroleum, electricity, and essential commodities, while Nepal's vast hydropower potential offers clean energy opportunities for India. Remittances from 600,000 Nepali workers in India sustain Nepal's economy.

4. Developmental Partnership: India has provided more than USD 1.5 billion in aid since 2008, including post-2015 earthquake reconstruction, road and railway projects, and education and health infrastructure. These initiatives enhance mutual resilience and highlight India as Nepal's primary development partner.

5. Political and Governance Cooperation: Nepal's political stability is crucial for India's Neighborhood First Policy. Since the adoption of federalism in 2015, India's assistance in capacity building, governance reforms, and democratic consolidation has been vital for ensuring internal stability and inclusive development in Nepal.

6. Geopolitical Relevance: With China's growing influence through BRI projects like Pokhara Airport, India–Nepal relations serve as a counterbalance to external pressures in South Asia. Strengthening bilateral ties enables India to secure its northern frontier while ensuring Nepal's balanced and sovereign foreign policy choices.

What Are Key Areas of Cooperation in India–Nepal Relations?

1. Trade and Investment: Bilateral trade reached USD 8.5 billion in 2024, with India as Nepal's largest partner and top FDI source. Integrated Check Posts (Birgunj, Bhairahawa) and the Motihari–Amlekhgunj petroleum pipeline enhance efficiency, while machinery, petroleum, and hydropower dominate exchange.

2. Energy and Hydropower: India and Nepal aim to develop 10,000 MW of hydropower projects by 2030–35, including the 456 MW Arun-3 project (2024). The 400 kV Dhalkebar–Muzaffarpur line enables surplus electricity exports, positioning Nepal as a renewable energy hub for South Asia.

3. Connectivity and Infrastructure: India's USD 1.5 billion Line of Credit supports cross-border railways (Jayanagar–Kurtha, Jogbani–Biratnagar), highways (East–West Highway upgrades), and post-earthquake road reconstructions. Upcoming digital and air connectivity projects aim to further integrate the two economies and boost tourism.

4. Defence and Security: Under the 1950 Treaty of Peace and Friendship, over 30,000 Gurkhas serve in the Indian Army. Annual joint exercise 'Surya Kiran' and USD 50 million military aid strengthen border security, counter-insurgency operations, and intelligence-sharing against cross-border threats.

5. Development and Capacity Building: India supports more than 200 small development projects (USD 100 million) in health, education, and water. Over 1,500 scholarships are awarded annually, COVID-19 vaccine supplies (10 million doses), and projects like the Bir Hospital upgrade highlight India's role in human capital and healthcare.

6. Cultural and People-to-People Ties: An open border and rupee trade facility facilitate visa-free movement and economic exchanges. Cultural initiatives—Ramayana and Buddhist Circuits, yoga exchanges, and the India–Nepal Joint Commission—deepen civilisational bonds and strengthen trust.

What Are the Challenges in India–Nepal Relations?

1. Political Instability and Governance Deficits: Frequent government changes, including the 2025 crisis and Parliament dissolution, undermine policy continuity. Weak institutions, corruption, and democratic backsliding create uncertainty, slowing long-term bilateral projects and inviting external interference.

2. Rise of Nationalism and Anti-India Sentiments: Episodes like the 2020 map row over Kalapani–Lipulekh–Limpiyadhura and perceptions of the 2015 blockade fuel distrust. Gen Z protests and monarchist echoes amplify anti-India rhetoric, often mobilised by political elites and social media.

3. Expanding Chinese Footprint: Nepal's growing engagement with China's Belt and Road Initiative (BRI), including USD 3 billion in loans and projects like the Trans-Himalayan Railway, increases Beijing's influence. This challenges India's traditional primacy and heightens strategic competition in the Himalayas.

4. Economic Asymmetry and Trade Imbalances: India remains Nepal's largest trade partner, but the USD 6 billion trade deficit creates perceptions of exploitation. Delays in hydropower imports, tariff barriers, and over-reliance on remittances from India expose Nepal's economic vulnerabilities.

5. Water Resource and Environmental Disputes: River-sharing disagreements, like delays in the Mahakali Treaty, hinder irrigation and hydropower cooperation. Climate-driven floods in shared river basins threaten 15 million people, making water management a persistent friction point in bilateral ties.

6. Border Management and Security Concerns: The 1,770 km open border facilitates movement but also enables USD 1 billion worth of smuggling annually, human trafficking, and illegal migration. Unresolved disputes, such as Lipulekh–Kalapani, further strain border cooperation and mutual trust.

What Can Be the Way Forward?

1. Strengthening Democratic Institutions: India should support Nepal's constitutional order and federal experiment by providing technical assistance through the Election Commission of India. Promoting free and fair 2026 elections while engaging Gen Z leaders through youth exchanges will build resilience against instability.

2. Deepening Economic Engagement: Expanding investments in hydropower, agriculture, tourism, and IT can generate jobs and reduce migration pressures. A Bilateral Economic Partnership Agreement (BEPA) covering services, e-commerce, and trade diversification will address the USD 6 billion trade deficit sustainably.

3. Enhancing Connectivity and Infrastructure: Accelerating BBIN projects, cross-border railways (Jayanagar–Kurtha), and highways (Hulaki Highway extension) will boost regional integration. Linking Nepal to Act East supply chains ensures it benefits from India's growing connectivity with Southeast Asia.

4. Security and Border Management: Strengthening joint patrolling along the 1,770 km open border with drone surveillance, biometric tracking, and e-border posts can curb smuggling and trafficking. Expanding Gurkha recruitment, joint training, and intelligence-sharing will enhance defence cooperation.

5. Managing the China Factor: India should offer transparent grants-based financing for sustainable infrastructure as alternatives to BRI loans. Promoting India–Nepal–China trilateral dialogues and strengthening BIMSTEC connectivity platforms will prevent zero-sum rivalries and enhance regional balance.

6. Cultural and People-Centric Diplomacy: Expanding 2,000 annual scholarships, pilgrim circuits (Ramayana and Buddhist), and cultural festivals will strengthen soft power. Setting up skill-development centres in Nepal can address migration challenges while reinforcing India–Nepal civilisational bonds.

Conclusion

Nepal's 2025 political turmoil challenges India–Nepal ties rooted in shared history and geography. Despite instability and external pressures, mutual dependence offers opportunities for renewal. By bolstering democracy, deepening trade, and fostering dialogue, India can help steer Nepal toward stability. Their intertwined futures demand cooperation over interference, shaping "Naya Nepal" and a resilient partnership.

Read more- IE
UPSC Syllabus- GS 2- Indian and Its Neighborhood Relations

MSME – Significance & Challenges – Explained Pointwise

The Micro, Small, and Medium Enterprises (MSME) sector is a crucial pillar of the Indian economy, contributing significantly to industrial output, employment generation, and exports. In 2023-24, MSME-related products accounted for 45.73% of India's total exports. Often termed the backbone of the economy, MSMEs are instrumental in realizing the vision of Atmanirbhar Bharat (Self-Reliant India).

What are MSMEs?

- **MSMEs**: These are enterprises engaged in the production, processing, and preservation of goods and commodities. These businesses are classified based on their investment in plant and machinery (for manufacturing) or equipment (for service enterprises), along with their annual turnover.
- **MSME Regulation in India**: MSMEs are regulated under the Micro, Small & Medium Enterprises Development (MSMED) Act, 2006. In 2007, the Ministry of Small Scale Industries and the Ministry of Agro and Rural Industries were merged to form the Ministry of Micro, Small & Medium Enterprises.

What is the role of MSMEs in India's economic growth?

1. **Job Creation & Livelihood Opportunities:**
    - MSMEs are the largest source of non-agricultural employment in India, providing jobs primarily to semi-skilled and unskilled workers.
    - Government programs like PM Vishwakarma and Mudra Yojana have expanded self-employment prospects.
    - Currently, more than 1 crore registered MSMEs employ nearly 7.5 crore people across the country.
2. **Contribution to GDP & Industrial Development:**
    - MSMEs play a pivotal role in India's economic framework, accounting for around 30% of the GDP and 45% of the total manufacturing output.
    - They play a crucial role in industrial clusters by supplying raw materials and intermediates to large industries.
    - The Udyam portal has streamlined the formalization of MSMEs, promoting a more structured and organized industrial sector.
3. **Rural Development:** 51% of MSMEs are located in rural areas. In contrast to large corporations, MSMEs have aided in the industrialization of rural areas at a low capital cost. The sector has made significant contributions to rural socio-economic growth while also supplementing major industries.
4. **Enhancing Exports & Foreign Exchange Reserves:**
    - In 2023-24, MSMEs contributed 45.73% of India's total exports, reinforcing their vital role in international trade.
    - Schemes such as the Government e-Marketplace (GeM) and the Production-Linked Incentive (PLI) program have strengthened MSMEs' integration into global supply chains.
5. **Advancing Digital & Technological Innovations:**
    - Initiatives like the Open Network for Digital Commerce (ONDC) are fostering digital transformation within the MSME sector.
    - Currently, 72% of MSME transactions are conducted digitally, enhancing financial inclusion and operational efficiency.

6. **Social Inclusion:** According to the Annual Report of The Ministry of MSMEs (2021-22), the socially backward groups owned almost 66.27% of MSMEs. In rural areas, almost 73.67% of MSMEs were owned by socially backward groups.

Statement No. 2.4: Percentage Distribution of enterprises by social group of owner in rural and urban Areas.

Sector	SC	ST	OBC	Others	Not known	All
Rural	15.37	6.70	51.59	25.62	0.72	100.00
Urban	9.45	1.43	47.80	40.46	0.86	100.00
All	12.45	4.10	49.72	32.95	0.79	100.00

Source: Annual Report, Ministry of MSMEs (2021-22)

7. **Promoting Women & Social Entrepreneurship:**
   - Women-led MSMEs are contributing to gender equality and economic empowerment.
   - Under the Mudra Yojana, loans worth ₹32.36 lakh crore have been sanctioned, benefiting 51.41 crore entrepreneurs, with 68% of them being women.

What are various government initiatives for MSMEs?

1. **Revised Classification Criteria:** To help MSMEs scale operations and access better resources, the investment and turnover limits for classification have been increased by 2.5 times and 2 times, respectively.

Rs. in Crore	Investment		Turnover	
	Current	Revised	Current	Revised
Micro Enterprises	1	2.5	5	10
Small Enterprises	10	25	50	100
Medium Enterprises	50	125	250	500

Source: PIB

2. **Udyam Registration Portal:** Provides simplified, online registration giving MSMEs formal recognition, essential for availing benefits across schemes.
3. **Enhanced Credit Availability:**
   - **Mudra Loan Scheme:** It was launched in April, 2015 for providing loans up to INR 10 lakh to the non-corporate, non-farm small/micro enterprises. It encompasses 3 financing loans: *Tarun* (loans up to INR 10 Lakhs), *Kishore* (loan up to INR 5 Lakhs), *Shishu* (loan up to INR 50,000).
   - **Credit Guarantee:** The credit guarantee cover for micro and small enterprises has been increased from ₹5 crore to ₹10 crore, enabling an additional credit infusion of ₹1.5 lakh crore over five years.
   - **Credit Cards for Micro Enterprises:** A customized Credit Card scheme to provide ₹5 lakh in credit to micro enterprises registered on the Udyam portal.
   - **Credit Guarantee Trust Fund for Micro and Small Enterprises (CGTMSE)**: It provides collateral-free credit to the micro and small enterprise sector.
   - **Special Credit Linked Capital Subsidy Scheme (SCLCSS)**: This scheme was launched to help the enterprises in the services sector meet various technology requirements. It also has a

provision to grant 25% capital subsidy for procurement of plant & machinery and service equipment through institutional credit to MSMEs owned by SC/ST entrepreneurs without any sector specific restrictions on technology upgradation.

4. **Raising and Accelerating MSME Performance (RAMP)**: The scheme aims at strengthening institutions and governance at the Centre and State, improving Centre-State linkages and partnerships and improving access of MSMEs to market and credit, technology upgradation and addressing issues of delayed payments and greening of MSMEs.
5. **Skill Development:**
    - **A Scheme for Promotion of Innovation, Rural Industry & Entrepreneurship (ASPIRE)**: The objectives of this scheme are to create new jobs, promote entrepreneurship culture in the country, and promote innovation in the MSME sector.
    - **Entrepreneurship and Skill Development Programmes (ESDP)**: Under this, the Ministry of MSME has been organising several programmes focussing on the process of improving skills and knowledge of entrepreneurs, and enhancing the capacity to develop, manage and organise a business venture.
6. **Scheme of Fund for Regeneration of Traditional Industries (SFURTI)**: The objectives are to organise traditional industries and artisans into clusters to make them competitive and provide support for their long-term sustainability, enhance marketability of products of such clusters, build innovative products, improve technologies etc.
7. **Entrepreneurship & Inclusion:**
    - **Stand-Up India:** Loans of ₹10 lakh–1 crore to support women and SC/ST entrepreneurs in setting up new businesses.
    - **First-Time Entrepreneurs Scheme:** Loans up to ₹2 crore and capacity-building for disadvantaged groups.
    - **PM Vishwakarma:** Focuses on enabling traditional artisans and craftspeople through training and access to markets, with special financial support.
8. **Technology & Quality Upgradation:**
    - **MSME Sustainable (ZED) Certification Scheme:** Encourages sustainable and high-quality manufacturing with incentives for adopting energy efficiency and zero-defect practices.
    - **Credit Linked Capital Subsidy Scheme (CLCSS):** Supports technology upgradation for MSMEs to make them globally competitive.
9. **Public Procurement Policy for MSMEs:** Mandates 25% of government and PSU procurement from MSMEs, giving them market access.

Digital Initiatives in the MSME Sector

- **Udyog Aadhar Memorandum**: It is a 1-page **online registration system** for MSMEs based on **self-certification**.
- **MSME Databank**: It enables the Ministry of MSME to **streamline and monitor the schemes** and pass on the benefits directly to MSMEs. MSMEs can update their enterprise information as and when required.
- **MY MSME**: It is a web-based application module in the form of a mobile app to facilitate the MSMEs to enjoy benefits of various schemes.
- **MSME *Sampark***: It is a digital platform wherein jobseekers (students or trainees of MSME Technology Centres) and recruiters can register themselves for mutually beneficial interactions.
- **MSME *Sambandh***: For effective implementation of the Public Procurement Policy, Central Ministries and Public Sector Enterprises (CPSEs) must procure 25% annual procurement from MSEs. The Ministry of MSME has launched MSME Sambandh.
- **MSME *Samadhaan***: This portal gives information about pending payments with the Central Ministries, State Governments, with respect to micro and small enterprises (MSEs).
- **MSME *Sambhav***: It is a national-level awareness programme to push economic growth by promoting entrepreneurship and domestic manufacturing.
- **Grievance Monitoring**: The Ministry of MSME has started an **MSME internet grievance monitoring system** (e-Samadhan) to help track and monitor the grievances and suggestions.

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What are the challenges faced by the MSME Sector?

1. **Lack of Formalisation**: Almost 86% of the country's manufacturing MSMEs are unregistered. Only about 1.1 crore of the 6.3 crore MSMEs are registered with the Goods and Services Tax (GST) regime, and the number of income tax filers is even lower. As a result of limited availability and access to data, as well as legacy underwriting methods, the credit requirements of Indian MSMEs have largely gone unmet.
2. **Access to Technology**:
    - The majority of MSMEs use outdated technology that prevents them from keeping up with the modern world. Adoption of new technology and training employees is difficult and expensive, especially in manufacturing where both physical equipment and software are involved.
    - Lack of access to IT education contributes to the technological gap.
    - Another significant factor is a **lack of awareness**, which **reduces willingness to invest in advanced technology solutions**.
3. **Cumbersome Registration Process:** Lengthy registration procedures and inefficient single-window clearance systems create bureaucratic hurdles for MSMEs, delaying their formalization and operational setup.
4. **Lack of Awareness About Government Schemes:** Many MSMEs struggle to navigate the complex landscape of government schemes due to inadequate awareness and poor coordination between the Centre and States.
5. **Financial Constraints:** Limited access to institutional finance, stringent collateral requirements, and high interest rates make it difficult for MSMEs to secure the funds necessary for expansion and modernization.
6. **Export-Related Challenges:** Poor infrastructure, inadequate trade facilitation, and difficulty in meeting Environmental, Social, and Governance (ESG) standards restrict MSME participation in global markets.
7. **Labour Shortages and Skill Gaps:** A lack of skilled workers, wage disparities across regions, and inefficient training centers result in low productivity and reduced competitiveness for MSMEs.

What should be the way forward?

1. **Strengthening Credit Access & Financial Support:**
    - Expand collateral-free lending via fintech platforms and alternative credit assessment models.
    - Mandate strict payment timelines under the MSME Samadhan portal to ensure timely dues from large corporations and government agencies.
    - Enhance the role and reach of MUDRA and SIDBI to facilitate easier credit access.
    - Develop tailored fintech solutions and promote financial literacy programs for MSMEs.
2. **Reducing Compliance Burden & Regulatory Bottlenecks:**
    - Implement single-window clearance for faster approvals and streamlined processes.
    - Establish state-level MSME facilitation councils for quicker grievance redressal.
    - Simplify GST registration and reduce the frequency of regulatory amendments to ensure ease of doing business.
    - Set up a dedicated MSME Coordination Council to streamline policy implementation and address sector-specific challenges.
3. **Enhancing Digital & Technological Adoption:**
    - Facilitate adoption of AI, IoT, and automation through MSME technology hubs.
    - Launch Digital MSME 2.0 to improve cybersecurity, cloud computing access, and digital marketing capabilities.
    - Strengthen the Credit Linked Capital Subsidy Scheme (CLCSS) to support MSMEs investing in advanced technologies.
    - Promote MSME Innovation & Incubation Hubs in collaboration with academic and research institutions.
4. **Workforce Development & Skilling Initiatives:**
    - Ensure uniform labor wages and introduce affordable labor insurance schemes for MSME employees.

- Align skill training programs under Skill India, PMKVY, and NAPS to address MSME workforce needs.
- Promote women entrepreneurs through targeted vocational training and credit linkage schemes.

5. **Infrastructure Development & Cluster-Based Growth:**
    - Strengthen MSME clusters under the Micro & Small Enterprises – Cluster Development Programme (MSE-CDP).
    - Encourage Public-Private Partnerships (PPPs) to set up Common Facility Centers (CFCs) for shared resources.
    - Develop MSME Industrial Parks with subsidized utilities, logistics support, and better last-mile connectivity.

Conclusion:

MSMEs can play a vital role in growth of the economy as India enters the *Amrit Kaal* phase. They can help in inclusive and balanced development and make India a global manufacturing hub. The Government has been supporting the MSMEs through various initiatives, the need is to focus on the implementation and realizing the outcomes.

UPSC GS-3: Economics
Read More: India Today

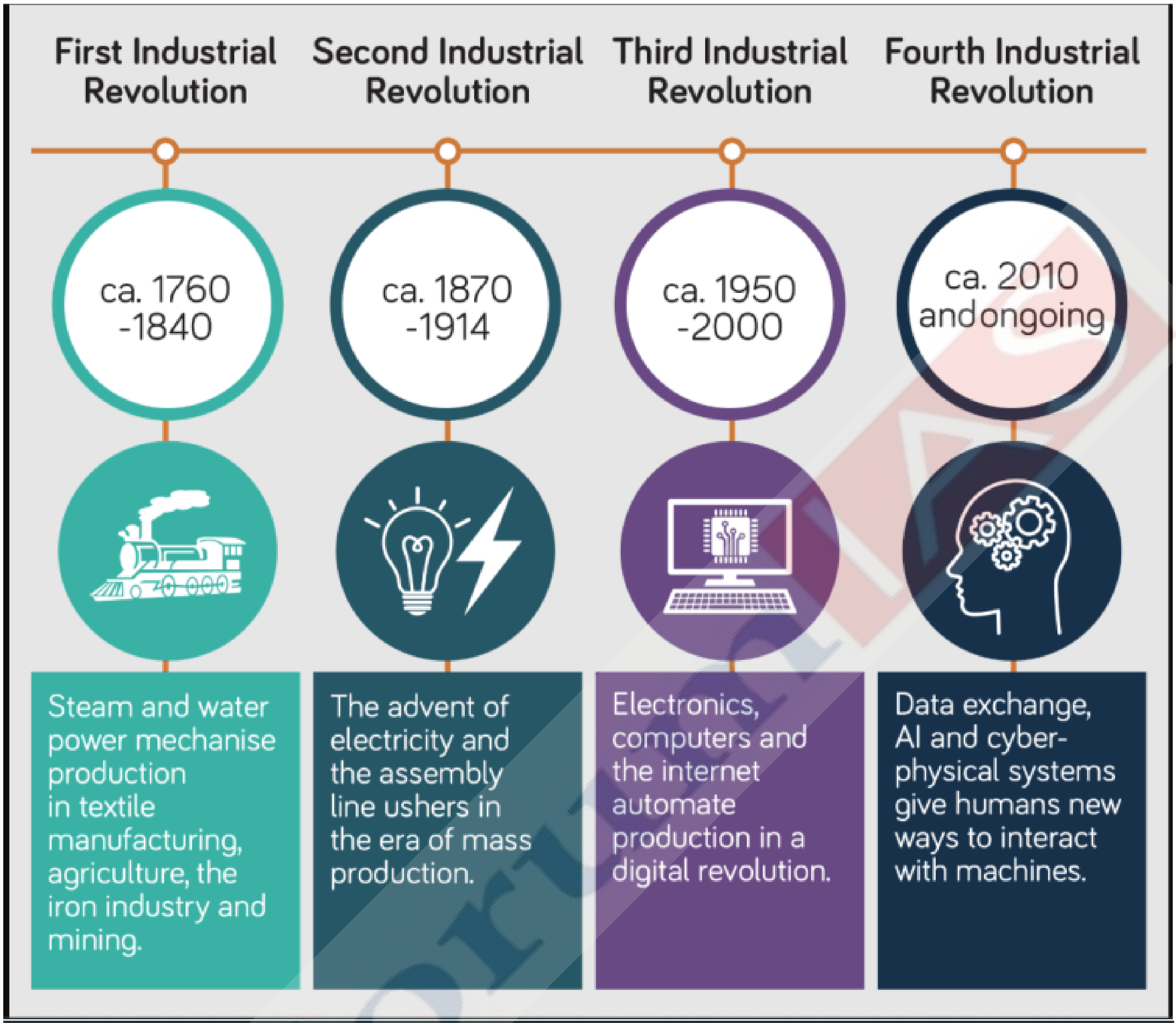
Industrial Revolution 4.0 – Significance & Challenges – Explained Pointwise

Industrial Revolution 4.0 refers to the fourth industrial revolution related to manufacturing and chain production. It is driven by breakthroughs in digital technologies, such as artificial intelligence, robotics, 3D printing, the IoT, Big Data etc. It's not just about a single technology, but the fusion of digital, physical, and biological worlds, blurring the lines between them.

Introduction:

- The term was coined by Klaus Schwab, founder of the World Economic Forum (WEF) in 2016.
- 4IR means the digital transformation of the manufacturing industry by new technologies such as artificial intelligence, additive manufacturing, augmented/virtual reality, and the Internet of Things (IoT).
- It is also used to refer to the concept of "smart factories"–which are fully connected cyber-physical systems that merge the physical and digital aspects.

Stages of Industrial Revolution:



Source: Neos Network

Technologies driving 4IR:

1. **AI & Machine Learning:** Artificial intelligence (AI) is a set of technologies that can reason and learn to solve problems or perform tasks that traditionally require human intelligence. It powers innovations like autonomous vehicles, advanced healthcare diagnostics and personalized customer experiences.
2. **Big Data & Analytics:** A significant underlying driver of the revolution, Big Data and analytics refers to collecting and analysing vast volumes of data to reveal trends and insights. Big Data is improving operational efficiencies and changing decision-making in business and wider society.
3. **IoT:** The Internet of Things (IoT) refers to the network of interconnected devices that exchange data over the internet. A key 4IR technology, IoT enables advances like industrial automation, smart homes and real-time health monitoring.
4. **Cloud Computing:** Cloud computing is the on-demand delivery of computing services like apps, storage and networking over the internet. Cloud services allow businesses to rapidly innovate and scale operations without investing in their infrastructure.
5. **Robotics & Automation:** Advanced robotics enables sophisticated robots, including humanoid assistants, to perform complex high-precision tasks independently with high precision. These robots

can play vital roles in manufacturing, healthcare and customer service, often enhancing productivity and safety.

6. **AR & VR:** Augmented reality (AR) overlays digital images on the world around you. In contrast, virtual reality (VR) creates an alternative, computer-generated environment that you interact with. These technologies are set to provide immersive experiences for education, remote collaboration and customer service.
7. **Biotech & Nanotech:** Biotechnology uses living organisms, or their derivatives, to develop products or technologies. Nanotechnology refers to manipulating materials at a molecular level, creating new materials for medicine and engineering.
8. **Quantum computing:** Using the principles of quantum mechanics, quantum computers can operate at exponentially faster speeds than traditional computers. This enables us to solve complex problems in fields like material science and cryptography.
9. **Blockchain:** Blockchain is a decentralised ledger technology that ensures transactions aren't tampered with. Underpinning cryptocurrencies like Bitcoin, blockchain is also used for digital ID verification, smart contracts and supply chain management.
10. **3D Printing:** 3D printing uses computer-aided design to create three-dimensional objects by layering materials like plastics, composites or biomaterials. Also known as additive manufacturing, 3D printing revolutionises production by enabling rapid prototyping and customised manufacturing, reducing waste and costs.

Impact of 4IR:

Economy	1. Integrating tech like AI, robotics and automation enables businesses to boost productivity and efficiency. This can lead to higher production, faster product innovation, enhanced customer service and reduced costs. 2. 4IR is set to drive innovation in products and services, transforming existing industries or creating new business models. Advanced manufacturing techniques will allow greater personalisation of products and services. 3. 4IR is set to displace some traditional manufacturing and routine white-collar jobs. However, they'll also create new jobs in high-tech industries, data analysis and cybersecurity.
Society	1. To meet the demands of this new economy, education will have to adapt. Schools and higher education must focus on STEM education and lifelong learning to enable individuals for future jobs. 2. Advances in healthcare, personalised medicine and smart infrastructure will likely improve older people's life expectancy and quality of life. 3. Proliferation of internet-connected mobile devices and the rise of IoT gives us unprecedented connectivity. This enables near real-time data exchange globally, fostering collaboration and competition. 4. However, access to advanced technologies varies across communities and countries. Owners and investors in new technologies are poised to gain significant wealth. As a result, the rapid pace of technological change could exacerbate existing wealth and digital divides.
Government	1. Governments will have new ways of interacting with citizens to address these challenges. For e.g. e-government services and smart cities are already used in the UK to enhance public services. 2. Emerging technologies can threaten fundamental freedoms. Across the globe, dictators find new ways to monitor and control their populations. And rapidly

	evolving technological innovation increases the risk of war and the means to wage it.
Environmen t	1. Renewable energy, smart manufacturing and new sustainable practices can mitigate environmental impacts. 2. Together with new technologies like carbon emissions management, they can help us tackle climate change. 3. Increase in energy consumption from AI and cloud computing, electronic waste and the depletion of resources could degrade the environment if not managed properly.

Various government initiatives taken by India to promote 4IR:

1. In 2020, the Union Ministry of Heavy Industries launched the Smart Advanced Manufacturing and Rapid Transformation Hub (SAMARTH) scheme, which brings together manufacturers, vendors, and customers to make them aware of 4IR technologies.
2. In the 2022 Budget Speech, Finance minister Nirmala Sitharaman announced new 4IR-driven projects, including Drone Shakti, to encourage start-ups that will facilitate the use of drone services.
3. In the field of education, the DESH Stack ecosystem which will use blockchain technology to make the process of skill acquisition transparent and efficient would be announced.
4. India even has a 4IR centre in Mumbai run by WEF, which is closely working with several state governments.
5. The Centre has recently come up with the Fourth Industrial Revolution for Sustainable Transformation (FIRST) Cancer Care model in which 4IR technologies would be used to provide better healthcare for cancer patients.
6. India is also exploring digital twin technology (Creating a complex virtual model that is the exact counterpart of a physical thing) for creating models.
7. The pan-India 3D maps programme was launched for 100 smart cities so that 4IR-based projects, such as driverless cars, will become easier to implement.

Challenges of 4IR:

1. **Job Displacement & Workforce Disruption:**
   - Automation and AI threaten to displace routine and manual jobs, creating employment shifts and skill mismatches.
   - The need for reskilling and upskilling is urgent but challenging to implement at scale globally
2. **Digital Divide & Inequality:**
   - Unequal access to technology and digital infrastructure risks exacerbating socio-economic and regional inequalities.
   - Vulnerable populations may be left behind due to lack of digital literacy and connectivity.
3. **Cybersecurity & Privacy Concern:**
   - Increased interconnectivity raises vulnerabilities to cyberattacks, data breaches, and misuse of personal data.
   - Balancing innovation with privacy rights and data protection regulations is a complex challenge.
4. **Ethical & Governance Issues:**
   - AI decision-making, surveillance technologies, and bioengineering raise profound ethical questions.
   - Existing legal and regulatory frameworks struggle to keep pace with technological advances, creating governance gaps.
5. **Environmental Impact:** Energy-intensive data centers, electronic waste, and demand for rare minerals raise sustainability issues.

Way Forward:

1. **Focus on Skill Development & Education:**
    - Launch large-scale reskilling and upskilling programs emphasizing digital literacy, AI, robotics, and emerging technologies for workers across all sectors.
    - Promote STEM education and lifelong learning to prepare future generations for the changing job market.
2. **Bridge the Digital Divide:**
    - Expand affordable broadband and digital infrastructure to underserved rural and marginalized communities.
    - Provide access to digital tools and training to ensure equitable participation in the digital economy.
3. **Develop robust cybersecurity frameworks:**
    - Strengthen national cybersecurity policies and capabilities to protect critical infrastructure and personal data.
    - Enforce data privacy laws aligned with global best practices while fostering innovation.
4. **Establish Ethical & Legal Frameworks:**
    - Create multi-stakeholder platforms to develop ethical codes of conduct for AI, biotechnology, and data use.
    - Update regulatory frameworks to keep pace with rapid technological advances and mitigate risks.
5. **Prioritise Environmental Sustainability:**
    - Integrate green technologies and circular economy principles in 4IR deployment.
    - Encourage energy-efficient data centers, sustainable sourcing of materials, and e-waste recycling.

Conclusion:
The 4IR is a complex and transformative period. It's a journey that will require adaptability and a focus on responsible innovation to ensure its benefits are shared widely.

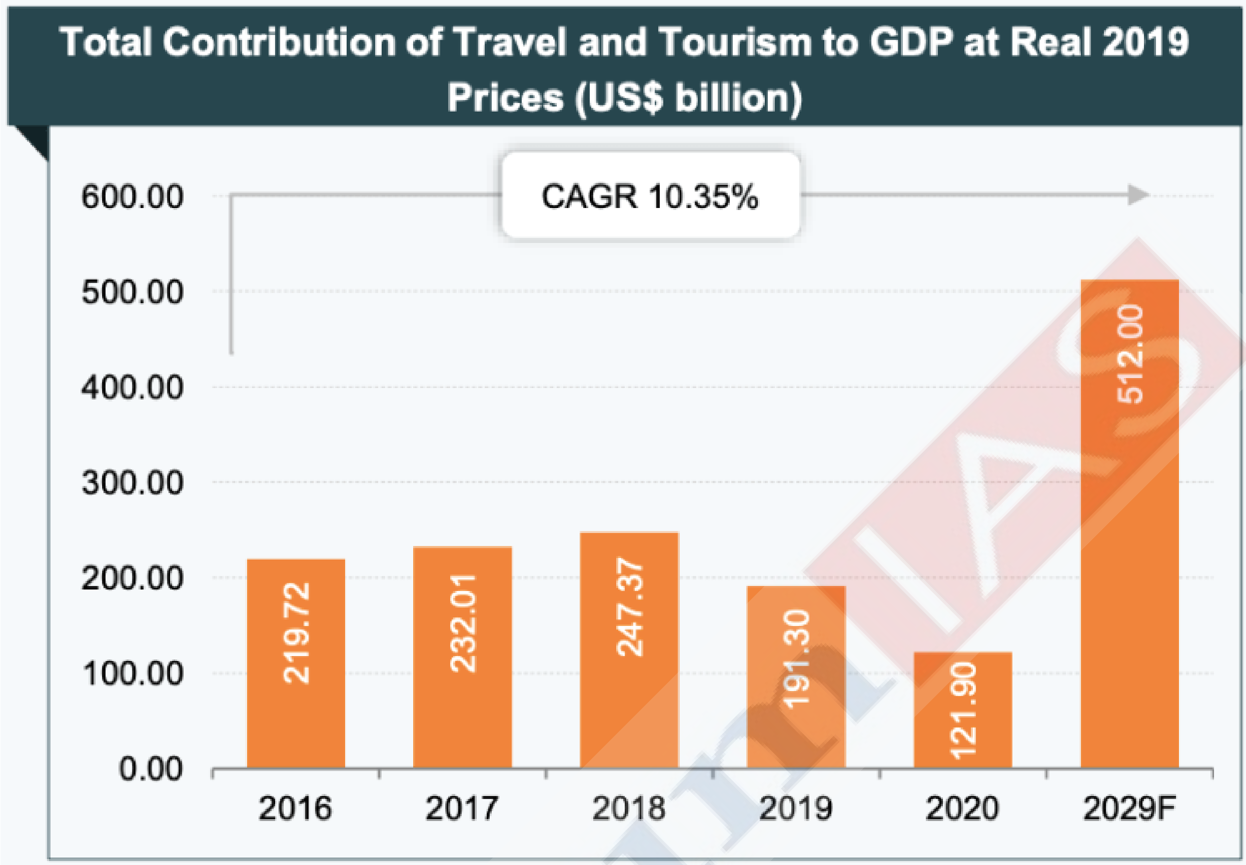
UPSC GS-3: Economics – Industrial Policy
Read More: World Economic Forum

Tourism Sector – Significance & Challenges – Explained Pointwise

The tourism sector is a broad and dynamic industry encompassing all the businesses and services that facilitate travel, leisure, and recreation. It's one of the world's largest economic sectors, connecting people to new places, cultures, and experiences.

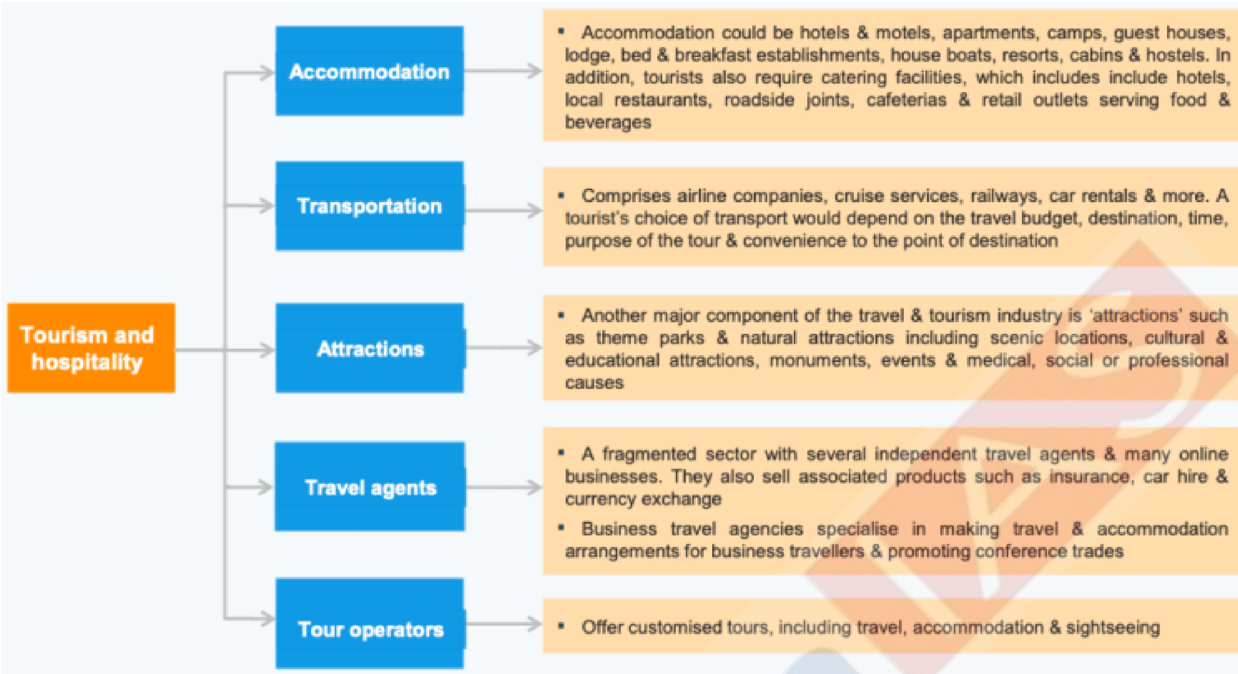
What is the current status of the Tourism Sector in India?

- Before the onset of the pandemic, the contribution of the tourism sector to India's GDP had reached ~US$ 250 billion in 2018. However, the contribution had fallen to US$ 122 billion in 2020 due to the pandemic. In 2025, tourism contributed about $231.6 billion to GDP (approx. 7%), making India the world's 8th largest tourism economy. The sector is projected to reach 4th position globally within the next decade.



Source: IBEF

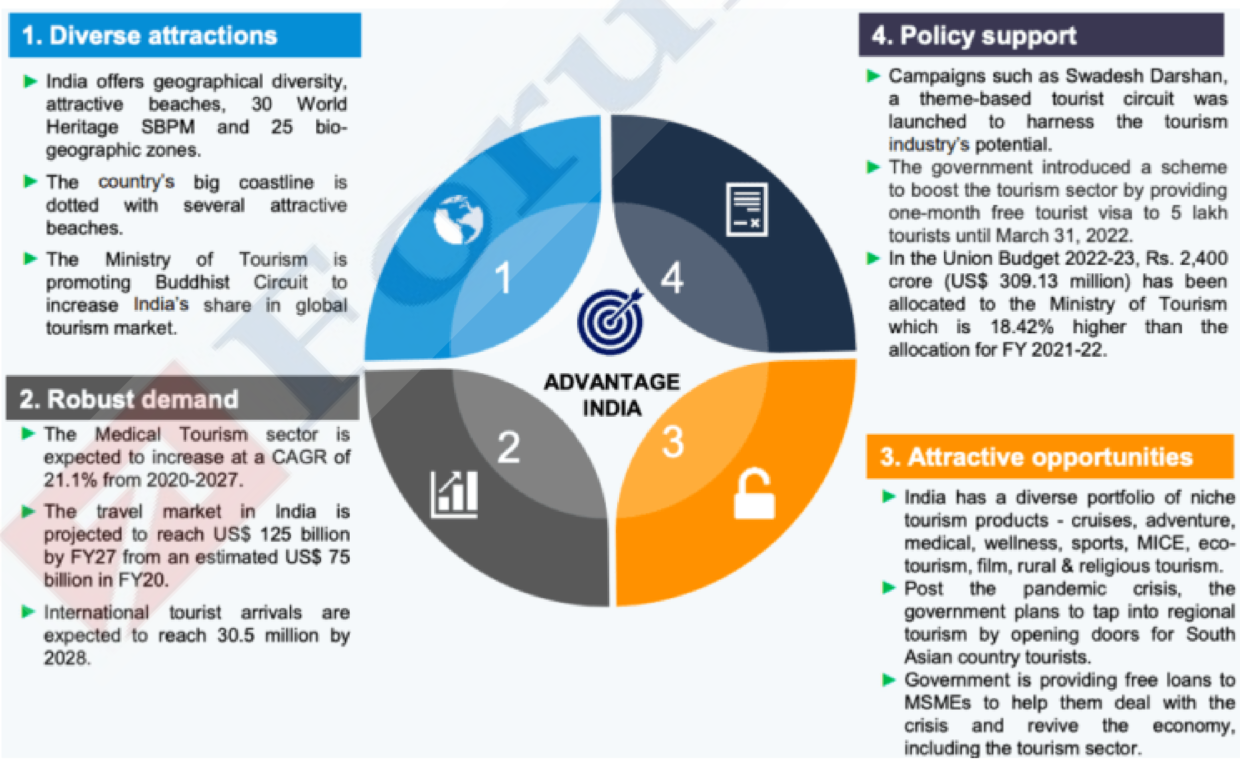
- The share of Tourism to GDP has hovered around ~5-6%.
- With post-pandemic recovery, the tourism industry is expected to reach US$ 512 billion by 2028.
- International tourist arrivals are expected to grow from 17.7 million (2024) to 19.2 million in 2025 (8.6% increase). Tourism revenue is forecasted to rise 9.5% to $43.7 billion.
- Tourism Sector is the third-largest foreign exchange earner for the country in 2019.
- By 2028, Indian tourism and hospitality is expected to earn US$ 50.9 billion.
- India was ranked 39th in the **Travel & Tourism Competitiveness Report 2024** published by the World Economic Forum.
- The Economic Impact 2019 Report published by the World Tourism and Travel Council (WTTC) has noted that between 2014-19, India witnessed the strongest growth in the number of jobs created (6.36 million), followed by China (5.47 million) and the Philippines (2.53 million).
- The Indian tourism sector accounts for 42 million jobs, which is 8% of the total employment in the country. By 2029, it is expected to account for about 53 million jobs. The tourism sector provides diverse opportunities for jobs like in hospitality/hotels/accommodation, transportation, tour guides, travel operations etc.



Source: IBEF

What are the driving factors of the Tourism Sector in India?

The Tourism Sector in India is driven by various factors like diverse attractions, robust demand (like for medical tourism) and attractive opportunities.



Source: IBEF

What is the significance of the Tourism Sector?

1. **Economic Contribution**:

- Tourism contributes approximately 7% to India's GDP, generating foreign exchange earnings of around $43.7 billion in 2025.
- It spurs growth in allied sectors such as hospitality, transport, handicrafts, and retail, amplifying economic impact.

2. **Employment Generation:**
   - The sector provides direct and indirect employment to about 42 million people, making it a vital source of livelihood, especially in rural and semi-urban areas.
   - It supports diverse skill levels—from unskilled workers to high-end professionals.
3. **Cultural & Heritage Preservation:**
   - Tourism incentivizes the conservation of India's rich cultural heritage, historic monuments, art forms, and traditional crafts by generating revenue and global interest.
   - Pilgrimage and heritage tourism help sustain religious traditions and local communities.
4. **Regional Development & Inclusive Growth:**
   - Tourism drives infrastructure development in tier-2 and tier-3 cities, promoting balanced regional growth.
   - Community-based and rural tourism empower local populations, improve quality of life, and reduce urban migration.
5. **Forex Earning:** Tourism is a significant source of foreign exchange, supporting India's balance of payments.

What are the challenges faced by the Tourism Sector in India?

1. **Awareness**:
   - Despite promotional campaigns by the Government, the awareness regarding India as a tourist destination remains low. Even among domestic tourists, the choice is limited to few popular destinations which remain overcrowded, while many other potential places receive low footfalls of tourists.
   - The information portals and centres are poorly managed. There is a lack of promotional campaigns in foreign countries. The absence of online branding campaigns fail to provide information to attract tourists.
2. **Infrastructure and Safety**:
   - Many popular destinations lack air connectivity, especially in the hilly regions.
   - There is a lack of proper hygienic facilities in many places. Lack of cleanliness is off-putting to many tourists.
   - There are safety concerns especially among foreign visitors because of few cases of harassment. Poor experience of some tourists leads to bad word-of-mouth information impacting perception of potential tourists.
3. **Communication**: Many tourists face communication problems while in India. This makes them dependent on tourist guides or travel operators to curate their travel in India.
4. **Lack of Skilled Manpower**: There is dearth of skilled manpower especially multi-lingual tour guides or hotel staff. The sector is dominated by small unorganized players who can't spend on skilling their employees or sensitising them to cultural values of the foreign tourists. This impacts tourist experience.
5. **Visa Process**: The Government started the e-visa process (online) which has led to an increase in foreign tourists. However, the visa-on-arrival facility is limited to very few countries, limiting foreign tourists.
6. **Currency Fluctuations**: Another issue is the fluctuations in the currency exchange rates. The inability to know the value of a currency means that long-range tourism prices are especially hard to predict and the fallout from this monetary instability is already impacting multiple tourism support systems.
7. **Environmental & Sustainability Concerns:** Over-tourism causes environmental degradation, pollution, resource depletion, and waste management challenges at popular sites.
8. **Seasonality of Tourism Demand:** Demand fluctuates seasonally, leading to underutilized infrastructure and unstable income for providers during off-peak periods.

What steps have been taken for the development of the Tourism Sector in India?

1. **Infrastructure**:
    - The Government has been increasing investments in strengthening the country's road and rail networks and promoting port development is a significant driver for the growth of the Tourism sector.
    - The **Adarsh Station Scheme** is helping modernize railway stations.
    - The Regional Connectivity Scheme – **UDAN** (*Ude Desh ka Aam Nagrik*), is helping make air travel more economical and widespread to hitherto unserved routes.
    - The ***Swadesh Darshan*** and **PRASHAD** schemes aim to stimulate growth in niche tourism segments such as religious, heritage, wellness, medical, adventure, MICE, wildlife etc. Under the Swadesh Darshan Scheme, the Government has launched several theme based circuits like Buddhist circuit which covers destinations associated with the life of Lord Buddha.
2. **Promotional Campaign**: Promotional activities such as the **Incredible India 2.0** campaign focuses on niche tourism products including yoga, wellness, luxury, cuisine wildlife among others. "**Find the Incredible You**" Campaign focuses on the promotion of niche tourism products of the Country on digital and social media.
3. **Information Helpline**:
    - The government has introduced the concept of **e-tourist and e-medical visas** which has helped increase inbound tourists to the country.
    - Additional initiatives such as ***Atithi Devo Bhava***, a 24×7 multi-lingual Tourist Helpline, among others have helped improve the **safety and security** of tourists.
    - On a pilot basis, an '**Incredible India Helpline**' has been set up to guide the tourists.
4. **Safety**: The Ministry of Tourism has adopted a code of conduct for safe tourism, which contains a set of guidelines to encourage tourism activities to be undertaken with respect to basic rights like dignity, and safety of both tourists and local residents, in particular women and children.
5. **Investment**: The government allows 100% Foreign Direct Investment in the Travel and Tourism sector through the automatic route to increase investments across the sector. More recently, the GST rate cut on hotel room tariffs across the board has been a positive move for the industry and is expected to boost the sector's competitiveness globally.
6. **Cleanliness and Hygiene**:
    - A major cleanliness campaign has been launched under the ***Swachh Bharat*** movement for **protecting and preserving the sanctity of monuments of national heritage**.
    - The Ministry of Tourism has also launched an awareness campaign to ensure cleanliness of surroundings and help create a ***Swachh Bharat, Swachh Smarak***.
7. **Assistance to States**: Financial assistance to states, including places of religious importance, for various tourism projects in consultation with them subject to availability of funds, inter-se priority, liquidation of pending utilisation certificates and adherence to the scheme guidelines.
8. **Digital Database**: In September 2021, the Government launched **NIDHI 2.0** (National Integrated Database of Hospitality Industry), a scheme which will maintain a **hospitality database** comprising accommodation units, travel agents, tour operators and others. NIDHI 2.0 will **facilitate digitalisation of the tourism sector** by encouraging hotels to register themselves on the platform.
9. **Skill Development**:
    - The Ministry of Tourism has introduced the **Incredible India Tourist Facilitator** (IITF) and **Incredible India Tourist Guide** (IITG) **Certification Programme** to create an online learning platform of well-trained tourist facilitators and guides across the country.
    - The Ministry of Tourism had launched an initiative called **SAATHI (System for Assessment, Awareness & Training for Hospitality Industry)** by partnering with the Quality Council of India (QCI) in October 2020. The initiative was focused on effective implementation of guidelines/SOPs issued with reference to COVID-19 for safe operations of hotels, restaurants, and other units.

What should be the way forward?

1. **Infrastructure Expansion & Modernisation:**

- Accelerate development of transport connectivity (roads, railways, airports) to underserved and emerging tourist destinations.
- Upgrade accommodation, sanitation, and visitor facilities, focusing on quality and accessibility.

2. **Promotional Campaigns:** The government should continue to promote India's diversity and rich heritage to re-establish its position as a tourist paradise. The promotional campaigns should target both domestic and foreign tourists. Similarly, the extent of theme-based tourist circuits can be expanded.
3. **Skill development & Capacity Building:**
   - The **skilling initiatives should be scaled-up.** The tourism sector has a potential to provide a lot of livelihood opportunities in smaller cities/towns (below tier-2 level). It can help address the issue of jobless growth.
   - Expand training programs for frontline workers, hospitality professionals, and local guides to uplift service standards.
4. **Sustainable Tourism:** There is a need to balance the promotion of tourism with safeguarding the physical, social, and cultural environment in the destination areas. The government should also **promote green and sustainable tourism** to tackle issues relating to water crisis, pollution, waste management, etc.
5. **Policy & Regulatory Reforms:** The Government should further reform the tourist visa norms and processes to facilitate tourism. The Government should also explore the possibility of expanding the visa-on-arrival facility.
6. **Emerging Segments of Tourism:** The focus should also be on supporting and promoting the emerging segments of tourism.

Source: IBEF. Emerging Segments of Tourism.

Conclusion:

The tourism sector is a powerful force for both economic development and cultural connection. It has huge untapped potential in India. The multiplier effect associated with the tourism sector can help raise the income levels and ensure inclusive growth. A burgeoning tourism industry can prove to be vital in ensuring India's transition to a high income economy.

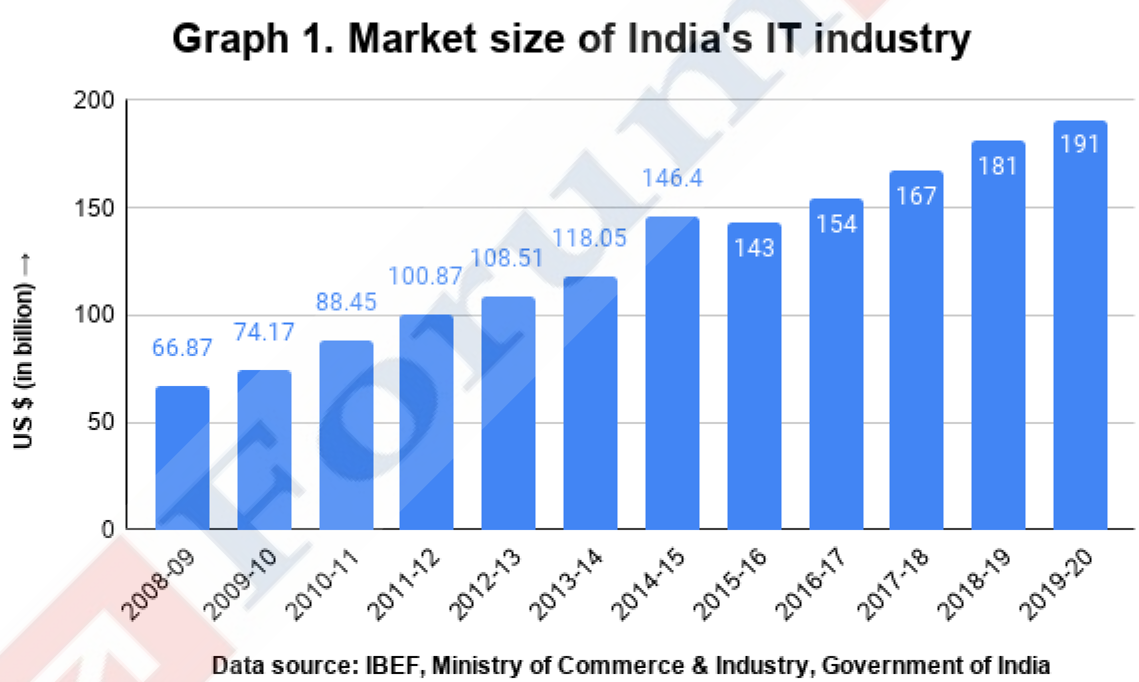
Syllabus: GS III, Indian Economy and issues related to growth.
Source: The Hindu, Hindustan Times, IBEF

IT Sector in India – Significance & Challenges – Explained Pointwise

The Indian Information Technology (IT) sector is a cornerstone of the country's economy, renowned for its strong export-oriented services and a rapidly evolving domestic market. The industry has shown remarkable resilience and adaptability, transitioning from a focus on traditional services to a hub for high-value, digital-first solutions.

Introduction:

- The IT industry mainly encompasses IT services, IT-enabled services (ITES), e-commerce (online business), Software and Hardware products. This industry is also instrumental in creating infrastructure to store, process and exchange information for important business operations and other organisations.
- **Industry Size:** Total IT spending in India is forecast to reach $160 billion in 2025, with major boosts in software, cloud, cybersecurity, and digital infrastructure.



Source: IBEF

Evolution of Indian IT Sector:

Early Foundations (1960s–1980s)	• **1960s–70s**: Computers introduced in government & research institutions (ECIL, TCS founded in 1968). • **1980s**: Entry of private players (Infosys 1981, Wipro 1980s pivot to IT). • Policies liberalized for computer imports and software development.

	• Focus was on **mainframes, hardware maintenance, and custom software**.
Export & Outsourcing Era (1990s)	• 1991 Economic Reforms → liberalization, deregulation, foreign investment. • Rise of software services exports to the US & Europe. • Y2K problem (1999–2000) boosted Indian IT firms (Infosys, Wipro, TCS, Satyam) as global clients outsourced fixes. • Creation of STPI (Software Technology Parks of India) for tax incentives and infrastructure. • IT exports became a major foreign exchange earner.
Global Delivery & BPO Boom (2000s)	• **IT-enabled services (ITES)** and **BPO/KPO** sectors grew (call centers, back-office, financial services). • India became known as the **"back office of the world."** • Emergence of **NASSCOM** as industry voice. • IT hubs like **Bangalore, Hyderabad, Pune, Gurgaon** expanded rapidly. • Multinationals (IBM, Accenture, Microsoft) set up Indian R&D centers.
Digital Transformation Era (2010s)	• Move from low-cost coding → end-to-end IT solutions, consulting, analytics, and R&D. • Growth in cloud computing, AI, machine learning, mobility, IoT, and cybersecurity. • Indian IT companies became global giants: TCS, Infosys, Wipro, HCL. • Startup ecosystem boom (Flipkart, Paytm, Ola, Zomato) strengthened IT innovation. • Government initiatives like Digital India (2015) pushed e-governance, fintech, and digital infrastructure.
New Age IT (2020s–Present)	• Focus shifted to **automation, AI, blockchain, 5G, quantum computing, green IT**. • COVID-19 pandemic accelerated **remote work, cloud adoption, and digital services demand**. • Indian IT firms now deliver **high-value consulting & product engineering**, not just outsourcing. • Expanding into **semiconductors, SaaS, and platform-based models.** • India has become the **world's largest sourcing destination**, with ~55% market share of global outsourcing.
Current Scenario	• IT & BPM sector = **~7.5% of India's GDP**. • IT services exports > **$190 billion** annually.

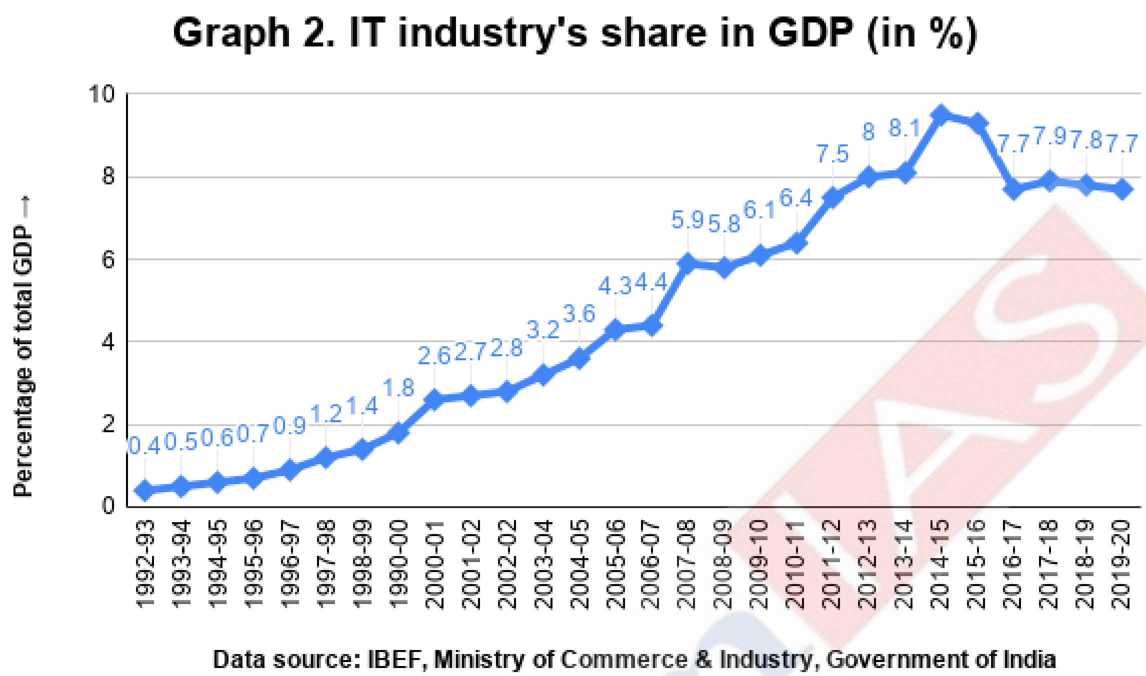
	• India is now moving from being a **service hub** → to a **global innovation and product development hub**.

Distribution of IT Industry:

Source:

Significance of IT Sector:

1. **GDP Contribution:** The IT sector contributed about 7.5% to India's GDP in FY23 and is projected to reach 10% by FY25.



Source: IBEF

2. **Economic Growth:** The IT-based services and products have become indispensable for flourishing any business enterprise and accomplishing success. This industry has a conspicuous impact in improving the productivity of almost every other sector of the economy, it also has huge potential for further accelerating the growth and economic development.
3. **Export Revenue:** IT and IT-enabled services (ITeS) exports are expected to reach $224 billion in FY25, and could surpass $300 billion in FY26.
4. **Employment Generation:** The sector supports over five million direct jobs and drives indirect employment through startups and digital platforms. IT hiring is expected to grow by 15–20%, with over 150,000 fresher hires in 2025.
5. **Global Leadership:** India remains the top offshoring destination worldwide. Over 67 Software Technology Parks of India (STPIs) and 100% FDI support foreign investment.
6. **Innovation & Start-up Ecosystem:**
   - The IT sector is at the core of India's start-up boom and innovation ecosystem, powering rapid advances in AI, fintech, healthtech, and other emerging fields.
   - India's robust Digital Public Infrastructure (DPI), including platforms like the Unified Payments Interface (UPI) and Aadhaar, is creating new opportunities. IT companies are leveraging this infrastructure to build scalable solutions for fintech, e-commerce, and other sectors within the country.

Government initiatives for IT Sector:

1. **Digital India Mission:** Launched in 2015, Digital India transforms governance and public services through digital infrastructure, e-governance, digital payments, and broadband for all.
2. **Production Linked Incentive (PLI) Scheme:** To reduce India's reliance on imports and boost domestic manufacturing, the **Production Linked Incentive (PLI) scheme** for IT hardware and electronics was introduced. The scheme provides financial incentives to companies based on their incremental sales from products manufactured in India.

3. **National Policy on Software Products:** Promotes domestic software product development, innovation, start-up growth, and export competitiveness.
4. **Startup India Initiative:** The **Startup India** initiative, while not exclusively for the IT sector, has provided a significant boost to technology startups. It offers various benefits, including tax exemptions, streamlined registration processes, and funding support.

Challenges faced by the IT Sector:

1. **Talent and Skills Gap:** There is a constant demand for skilled professionals, particularly in emerging technologies like AI, machine learning, and data science. Companies are actively focusing on upskilling their existing workforce and hiring for specialized roles to meet this demand.
2. **Low on Innovation:**
    - Predominant focus on outsourcing rather than creating intellectual property (IP).
    - Indian IT giants (TCS, Infosys, Wipro) prioritize human resource deployment over technological innovation.
    - Despite a 55% share in global outsourcing, India lacks global software products comparable to Google or OpenAI.
3. **Absence of long-term technology vision:**
    - Companies **prioritise dividends over investing** in long-term research and development (R&D).
    - **Risk aversion** leads to missed opportunities in **emerging fields like AI, blockchain, and automation.**
    - In contrast, countries like **China** invest heavily in cutting-edge technologies.
4. **AI blind spot:**
    - Limited investment in AI, with industry leaders underestimating the feasibility of building cost-effective Large Language Models (LLMs). **DeepSeek's** success proves AI models can be developed for under $7 million.
    - **Underrepresentation of Indian languages in AI datasets** (only 3% of global web data), hindering AI models from effectively serving Indian users.
5. **Overreliance on Global Capability Centres (GCCs):**
    - GCCs, despite hiring Indian engineers, **retain innovation and IP abroad.**
    - These centres **diminish revenues for Indian IT firms** and may **exploit tax loopholes** through transfer pricing.
6. **Dependence on American digital firms:**
    - India failed to develop **indigenous tech giants** despite having early industry leaders.
    - Unlike **China,** which fostered **domestic alternatives (Baidu, WeChat, Tencent),** India's market is dominated by foreign platforms.
    - **Weak policy support for homegrown companies** has exacerbated this reliance.
7. **Low Data centre capacity:**
    - India's data centre capacity stands at **1GW,** significantly lagging behind the **US's 20GW.**
    - Reliance on foreign data hosting **limits India's sovereignty over data-driven innovations.**
8. **Weak Start-up culture:**
    - Start-ups focus **mainly on services (e.g., Zomato, Swiggy)** rather than deep-tech solutions.
    - Investors prefer **low-risk ventures,** unlike in the US or China where venture capital supports high-risk, innovative technologies.

Way Forward:

1. **Accelerate Skill Development:**
    - Expand advanced training in AI, data science, cybersecurity, cloud, and other in-demand skills through industry-academia-government collaboration.
    - Promote continuous learning, reskilling, and upskilling to bridge the talent gap and reduce attrition.
2. **Fostering innovation and risk-taking:**

   - Shift from a service-oriented model to **product-based innovation.**
   - Encourage companies to **reinvest profits into R&D** rather than distributing them solely as dividends.
3. **Promoting indigenous AI and deep-tech development:**
   - Develop **AI models in Indian languages** to cater to local users.
   - Invest in **cost-effective solutions** like open-source models (e.g., DeepSeek).
4. **Building a robust Start-up ecosystem:**
   - Government to incentivise deep-tech start-ups through **funding and procurement policies.**
   - Support for venture capital investment in **high-risk, high-reward ventures.**
5. **Strengthening data sovereignty:**
   - Expand India's data centre capacity to reduce dependence on foreign infrastructure.
   - Implement policies to **retain data within national borders** for security and innovation benefits.
6. **Ease of Doing Business:**
   - Simplify regulations, incentivize R&D, streamline FDI policies, and reduce compliance burdens to attract investment and outcomes-based innovation.
   - Foster coordination between central and state governments for uniform digital policy implementation.

Conclusion:
True leadership in IT will only come when India embraces a **culture of innovation, risk-taking, and long-term vision**.

UPSC GS-3: Economics
Read More: Hindustan Times

Aviation Sector in India – Opportunities & Challenges – Explained Pointwise

Aviation Sector in India has experienced significant growth in recent years. India has become the third-largest domestic aviation market in the world. According to the International Air Transport Association (IATA), by the year 2030, India is expected to overtake China and the United States as the world's largest air passenger market. However, the aviation sector in India also faces numerous challenges, as highlighted by the recent insolvency of Go First Airlines and grounding of Spice jet aircrafts on account of safety concerns.

Created By Forum IAS

Status of Aviation Sector in India:

- India's aviation industry has experienced significant growth in the past 9 years.
- India is the third-largest domestic aviation market globally, with domestic air passenger traffic reaching 131.7 lakh in August 2025.
- Indian aviation also contributed 5% of the GDP, creating a total of 4 million jobs. In addition to it, there is a 72 billion dollars gross value-added contribution to GDP by this industry.

- The Indian aviation fleet consists of over 860 aircraft, accounting for around 2.4% of the global fleet, and total operational airports increased from 74 in 2014 to 162 in 2025.
- Passenger traffic from January to April 2025 showed significant growth (nearly 10% year-on-year), led by low-cost carriers (64.3% market share).

What is The Potential of Aviation Sector In India?

1. **Increased Market Size of Indian Aviation Sector-** According to IATA, India is expected to surpass the aviation sector of the United States and China by 2030. This will make India a lucrative market for airlines and related businesses.

2. **Promotes Balanced Economic Growth-** Passenger airlines and air cargo overcome geographic barriers by connecting remote areas which are alienated from the mainstream. For ex- Development of North-East due to enhanced airline connectivity.

3. **Growth of Tourism sector-** Aviation industry function as a growth pole by promoting spill-over & trickling-down of economic growth. For Ex- Aviation sector gives a boost to tourism sector which in turn drives the supporting infrastructure in a region, like roads, railways, hotels, markets. This helps in providing employment opportunities to the locals.

4. **Boost to manufacturing sector-** India's expanding aviation sector offers potential for the growth of maintenance, repair, and overhaul (MRO) facilities, as well as the development of a domestic aerospace manufacturing industry. For ex- Enhanced employment opportunities in aerospace engine maintenance.

5. **FDI in the Expansion of Infrastructure-** Booming aviation sector has attracted significant FDI to the tune of around ~3 bn dollars in the development of aerospace infrastructure like airports, arrow bridges, airstrips. For ex- Greenfield airport development like Navi Mumbai, Noida (Jewar) airport and expansion of Bengaluru airport.

6. **Increased Employment opportunities-** The growth of aviation sector in India has created a need for skilled professionals, including pilots, cabin crew, and maintenance staff. For ex- Indian scheduled operators are likely to require 10,900 additional pilots by FY30 (IATA projection).

What are The Challenges With India's Aviation Sector?

1. **Increase in number of Grounded Unsafe Aircrafts –** Airlines like Air India, Spice Jet, Go Air, and IndiGo face issues of poor financial performance due to grounded unsafe aircrafts. For ex– Over 160 aircraft are currently grounded which represents about a quarter of the total fleet size of Indian carriers.

2. **Supply Chain Disruptions-** Delays in aircraft deliveries and supply chain issues with original equipment manufacturers (OEMs) has hindered the industry's capacity to meet growing demand.

3. **Duopoly in Indian Aviation Market-** India's domestic aviation market is heading in the direction of a duopoly of market leader IndiGo (60% market size) and the Tata group airlines (20% market size).

4. **Heavy Financial Losses-** Indian airlines are projected to record a consolidated loss of $1.6 to 1.8 billion in FY24, due to heavy financial bleeding of Go first, Spice Jet and Jet Airways.

5. **Operational Disruptions due to crew shortage-** Lack of skilled pilots, maintenance engineers, and cabin crew members have led to operational disruptions like increase in turn-around time of airlines.

6. **Low per-capita penetration of domestic air travel-** India's per capita penetration of domestic air travel (0.13 seats deployed per capita) remains significantly lower than countries like China (0.49) and Brazil (0.57). This indicates the failure of aviation industry in India to tap the maximum potential of domestic air market.

7. **Inflated Projections-** Airlines in India often announce ambitious growth plans without adequately analysing their financial security, infrastructural and personnel requirements. For Ex- Failure of Kingfisher, Jet Airways and Go First on account of inflated projections.

8. **Regulations acting as barriers-** Tough entry barriers for new entrants, high fuel prices on account of high taxes on ATF (Air Turbine Fuel) and monopoly of inefficient public sector airports have all acted as barriers in the rapid growth of the airlines sector.

9. **Policy Lacunae-** The Aircraft Act, 1934 and Aircraft Rules, 1937 have not kept pace with modern technology in aerospace. This has led to increased costs of the industry's operation and ultimately affected passenger growth.

10. **Poor rural connectivity-** With mega airports controlling air and ground space, there has been challenge of enhancing the rural air connectivity. For ex- Less number of flights to tier 2 and tier 3 towns despite the UDAN scheme.

11. **Environmental Concerns-** The Indian aviation industry faces increasing pressure to reduce its carbon footprint and adopt sustainable practices (The Carbon Offsetting and Reduction Scheme for International Aviation or CORSIA). This has also posed a challenge for growth and expansion of the airline sector.

12. **Aviation Safety:** The recent crash of Air India Airline in Ahmedabad into a residential area that led to the killing of more than 240 people & is considered as one of the worst airline disasters.

Read More- CORSIA

What are The Government Initiatives For Aviation Sector In India?

National Civil Aviation Policy, 2016	This aims to improve the international footprint of India-based airline services. Airlines can commence international operations, provided they deploy 20 aircrafts or 20% of their total capacity (whichever is higher) for domestic operations.
UDAN Scheme	This aims to expand access to air travel for Tier 2 and Tier 3 cities and shift the traffic pattern away from Metro routes.
DigiYatra	Paperless, biometric-enabled air travel to enhance passenger convenience.
Open sky policy	Aims to liberalise the aviation sector in India by opening the airport sector to private participation. Currently, 6 PPP airports are being developed and 60% of airport traffic is handled under PPP.
Open Sky Air Service Agreement	Open Sky Air Service Agreement allows for airlines from the two countries to have an unlimited number of flights as well as seats to each other's jurisdictions. India has signed these agreements with multiple nations like the US, Greece, Jamaica, Japan, Finland, Sri Lanka.
FDI Policies, Tax and Duty cuts	100% FDI is being allowed under the automatic route for greenfield projects, whereas 74% FDI is allowed under automatic route for brownfield projects. 100% tax exemption has been provided for airport projects for a period of 10 years. Indian aircraft Manufacture, Repair and Overhaul (MRO) service

	providers have been completely exempted from customs and countervailing duties.
GAGAN (GPS-Aided Geo-Augmented Navigation)	Developed jointly by AAI and ISRO, GAGAN is India's own Satellite-Based Augmentation System (SBAS). Operational since 2015, it enhances the accuracy and integrity of GPS signals, improving navigation, especially for approach and landing, and enabling precision approaches at non-instrumented airports, thereby significantly enhancing safety, particularly in challenging terrains.
Bhartiya Vayuyan Adhiniyam, 2024	This is a landmark piece of legislation that came into effect on January 1, 2025, replacing the nearly century-old Aircraft Act of 1934. It modernizes India's aviation system, aligning it with contemporary needs and global standards (like the Chicago Convention and ICAO).

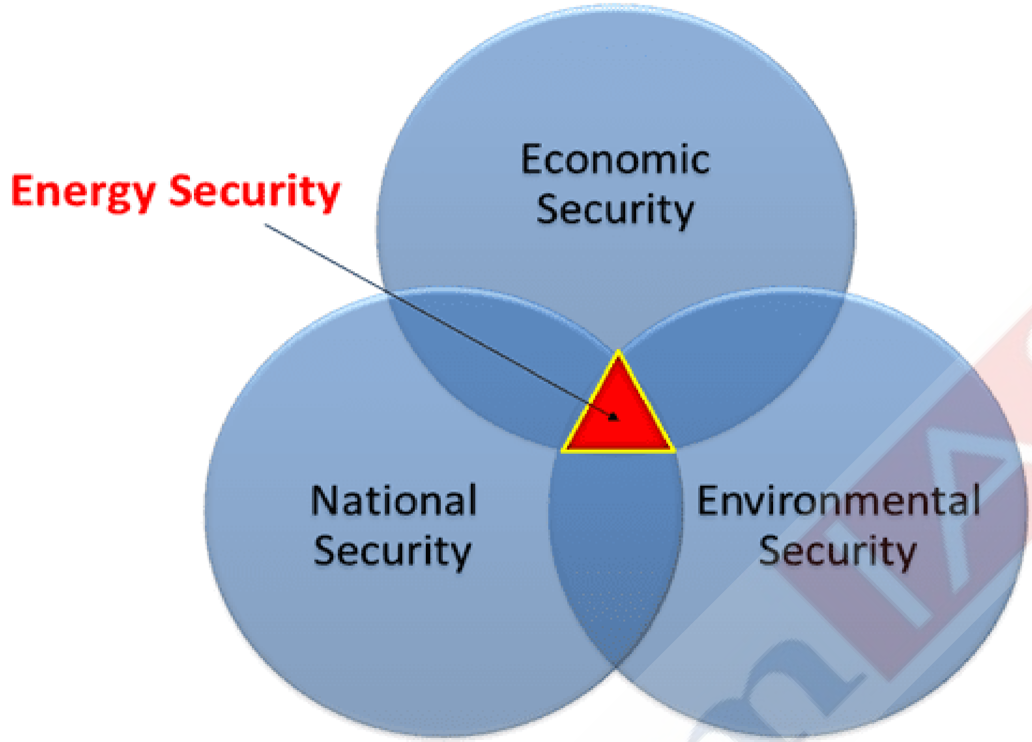
What Should be The Way Forward?

1. **Capacity Expansion:**
   - Continue development of new airports, modernization of existing ones, and upgrading air traffic management systems.
   - Strengthen regional connectivity under the UDAN scheme by incentivizing flights to underserved and remote areas.
2. **Boost Cargo & Logistics:** Develop dedicated air cargo hubs and multimodal logistics parks to support India's export-import trade.
3. **Initiate reforms in the Directorate General of Civil Aviation (DGCA)-** DGCA should be modernized, well-staffed and incentivised. DGCA should be headed by aviation professionals rather than bureaucrats.
4. **Promote 'Start-up India' initiative in the aviation sector-** Entrepreneurship must be promoted in the maintenance, repair, and overhaul (MRO) facilities of the aviation industry.
5. **Rationalisation of taxes-** Tax rationalisation must be initiated in aviation fuel taxes (State and Central, which in India are among the highest in the world), air cargo and airport operations.
6. **Safety Management Systems (SMS) Effectiveness:** Ensure that all aviation service providers (airlines, airports, MROs, ATC) have fully functional and effective SMS that are integrated into their daily operations and decision-making. Regulators should audit the effectiveness of these SMS, not just their presence.

Conclusion:
By addressing these challenges and implementing the suggested reforms, India can pave the way for a thriving aircraft leasing industry, making the country a global leasing hub and bolstering the aviation sector.

Read More- India Today
UPSC Syllabus- GS III, Infrastructure: Airports

Energy Security – Significance & Challenges – Explained Pointwise



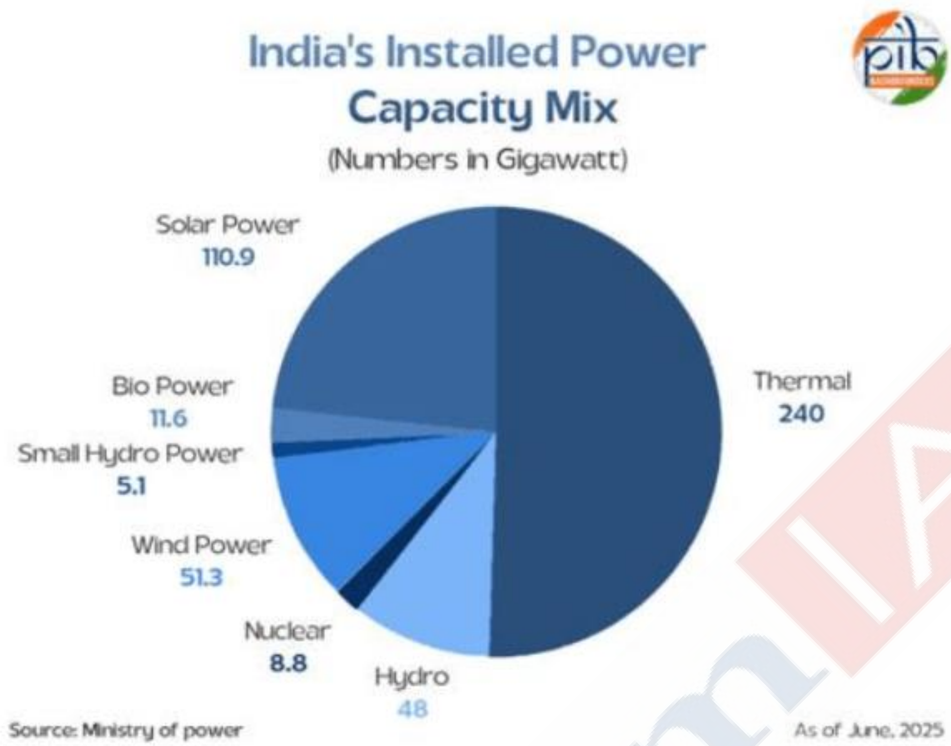
Source: Arava Institute

Introduction:

- Energy security refers to the uninterrupted availability of energy sources at an affordable price. It involves ensuring a reliable supply of energy to meet the growing demands of a nation, while managing risks such as geopolitical conflicts, supply chain disruptions, and environmental challenges.
- For India, energy security is crucial for sustaining economic growth, reducing dependency on imports, and achieving long-term sustainability.
- India currently relies heavily on fossil fuels, primarily coal, for its energy needs, which poses environmental challenges and increases dependence on imports. Renewable energy (RE), including solar, wind, and hydropower, accounts for 44% of the installed capacity but contributes only 23% to energy generation. Despite progress, the need for a diversified energy mix is critical to address rising demand and reduce carbon emissions.

Current status of India's Energy Sector:

- Total installed power capacity reached 476 GW by June 2025.
- Thermal power accounts for 50.52% of total installed capacity.
- Per capita electricity consumption increased to 1,395 kWh in 2023–24 from 957 kWh in 2013–14.
- India achieved 100% village electrification by April 2018.
- Non-fossil fuel sources contribute 49% of total capacity by June 2025.
- India ranks 4th globally in Renewable Energy Installed Capacity, 4th in Wind Power, and 3rd in Solar Power capacity.
- Solar capacity increased to 110.9 GW.
- Installed wind increased to 51.3 GW.
- Installed nuclear capacity grew to 8,780 MW, across 25 reactors.
- Hydro capacity increased to 48 GW.



Source: Ministry of Power

Significance of energy security:

1. **Economic Stability & Growth:**
    - Reliable and affordable access to energy fuels industrial production, transportation, agriculture, and services, supporting GDP growth and job creation.
    - Energy security shields the economy from global supply shocks, volatile prices, and supply disruptions, ensuring sustained development.
2. **National Security & Strategic Autonomy:**
    - Reduces vulnerability to geopolitical risks, embargoes, and external supply disruptions by diversifying energy sources and suppliers.
    - Maintaining strategic reserves (petroleum, gas, critical minerals) enhances resilience during international crises or conflicts.
3. **Technological Advancement & Competitiveness:**
    - Stable energy supply encourages investment in advanced manufacturing, digital infrastructure, and innovation in sectors like AI, data centers, and green tech.
    - Promotes Make in India initiatives and supports export competitiveness.
4. **Sustainable & Inclusive Development:**
    - Ensures universal access to clean and affordable energy, vital for alleviating poverty, improving healthcare, and providing education in rural and remote areas.
    - Drives energy transition towards renewables and cleaner fuels, supporting environmental sustainability and meeting climate commitments.
5. **Social Security & Quality of Life:** Universal, reliable access to electricity and clean cooking fuels enhances health, reduces indoor pollution, and improves standards of living, particularly for vulnerable populations.

Challenges to India's energy security:

1. **Import Dependency:** India imports over 85% of its crude oil and more than 50% of its natural gas, over 25% of the total import bill in FY24, puts pressure on rupee, inflates the trade deficit, and compromises macroeconomic stability.

2. **Strategic Imbalance:** India's reliance on Russia for 35%-40% of its crude imports, up from 2% before the Ukraine war, highlights the vulnerability of single-sourced reliance. Diversification, not substitution, defines true sovereignty.
3. **Global Market Volatility:** Geopolitical conflicts, such as the Russia-Ukraine war and the Gaza crisis, and international sanctions cause sharp fluctuations in global oil prices, impacting India's oil import bill, fiscal balance, and foreign exchange reserves.
4. **Financing Needs for Energy Transition:** According to the International Energy Agency (IEA), India requires $160 billion per year to meet its energy transition goals by 2070.
5. **Rising Energy Demand:** Driven by economic growth, population increase, urbanization, and industrialization, India's energy demand is projected to double by 2040; increase imports if domestic production cannot keep pace.
6. **Renewable Energy Intermittency:** Renewable energy sources, like solar and wind, pose challenges due to their inherent variability, uncertainty, and concentration, require continuous balance to maintain grid stability.
7. **Infrastructure Gaps:** Storage options for excess renewable capacity have not developed as quickly as renewable generation, leading to market stabilization issues.
8. **Inadequate Strategic Petroleum Reserves:** Limited buffer against supply disruptions, and their coastal concentration makes them susceptible to attacks and natural disasters.
9. **Access to Critical Inputs:** Securing critical minerals (e.g., lithium) is challenging due to their geographic concentration and long mining gestation periods.

India's Plan for Energy Security:

1. **Diversification of Energy Sources:** India aims to diversify its energy portfolio by increasing the share of renewables like solar, wind, and hydropower, along with exploring other alternatives such as nuclear energy, biomass, and waste-to-energy. The goal is to achieve 50% of installed energy capacity from renewables before 2030.
2. **Expansion of Nuclear Energy:** India is expanding its nuclear energy capacity as a clean and efficient alternative. With 25% of the world's thorium deposits, India is exploring thorium-based nuclear reactors and small modular reactor technology to enhance operational flexibility and safety.
3. **Boosting Hydropower and Cross-Border Energy Trade:** Hydropower remains a key part of India's energy strategy, with plans to expand cross-border energy cooperation with neighboring countries like Nepal and Bhutan. By importing hydropower, India seeks to enhance its energy mix and ensure stable supply, particularly during peak demand periods.
4. **Strengthening Transmission Networks:** India is focused on enhancing transmission networks to efficiently absorb and distribute increased renewable capacity. This includes expanding inter-state transmission lines and developing energy corridors to connect renewable-rich states with energy-deficient regions.
5. **Promoting Distributed Energy Generation:** India is investing in distributed energy solutions such as rooftop solar, biogas, and small-scale wind projects. These decentralized energy systems can reduce transmission losses, support rural electrification, and increase energy resilience.

Various Government Initiatives for ensuring Energy Security:

1. **Target of 500 GW non-fossil fuel capacity by 2030:** Includes solar, wind, hydro, and nuclear sources. As of 2025, installed non-fossil fuel capacity crossed 225 GW (solar 97.9 GW, wind 48.2 GW, hydro 46.9 GW, nuclear 8.2 GW). India ranks 4th globally in renewables.
2. **Solar Parks Scheme & PM-KUSUM:** Boosts grid-connected and decentralized solar power, with 50 solar parks sanctioned and solar pumps for farmers.
3. **National Green Hydrogen Mission:** Aims for 5 million tonnes annual production of green hydrogen by 2030, with incentives for electrolyser manufacturing and use in refineries, transport, and fertiliser.
4. **National Bioenergy Mission & SATAT Scheme:** Promotion of biogas, CBG, waste-to-energy plants to diversify energy sources and utilize agricultural waste.

5. **Strategic Petroleum Reserves (SPR):** India maintains reserves at Mangalore, Padur, and Vizag (5.33 million tonnes), with expansion plans at Bikaner, Mangalore (additional), Bina, Padur, and Chandikhol. These will buffer supply disruptions and build resilience. Private participation in SPR policy is encouraged.
6. **Nuclear Power Expansion:** Ambitious plan to increase nuclear capacity to 100 GW by 2047, operationalizing Bharat small modular reactors, and strengthening long-term baseload supply.

Way forward:

1. **Further Diversify the Energy Sources & Mix:**
   - India should reduce dependence on any single source or supplier by promoting alternative fuels and increasing sourcing from various global regions (e.g., Russia, Africa, U.S., Latin America).
   - India should continue to explore underutilized energy sources such as tidal, geothermal, and hydrogen fuel, which can provide sustainable alternatives. Expanding research and development in these areas can unlock new opportunities for energy security.
   - Secure the supply of critical minerals through international collaboration, long-term stockpiles, and financial strengthening of entities like KABIL.
2. **Invest in Energy Storage Solutions:** Improving energy storage technologies, like advanced batteries and pumped hydro storage, is crucial for balancing supply and demand, especially with the increasing share of renewables. Enhanced storage capacity can stabilize the grid and ensure a reliable power supply during fluctuations.
3. **Focus on Energy Efficiency and Conservation:** Adopting energy-efficient technologies and practices across industries, buildings, and transportation can significantly reduce energy demand. Policies promoting energy conservation, retrofitting, and smart grids can optimize energy use and lower dependency on imports.
4. **Strengthen International Energy Cooperation:** India should strengthen its partnerships with global energy leaders to secure access to advanced technologies, invest in joint ventures, and develop cross-border energy projects. Collaborating on research, sharing best practices, and participating in global energy markets can enhance India's energy resilience.
5. **Expand Infrastructure for Alternative Fuels:** To reduce reliance on conventional fuels, India should invest in infrastructure for alternative fuels like compressed natural gas (CNG), liquefied natural gas (LNG), and biofuels. This includes setting up fueling stations, pipelines, and processing facilities to support the adoption of cleaner alternatives.
6. **Expand Biofuels Potentials:** Ethanol blending program reduces crude imports and transfers over ₹92,000 crore to farmers, foreign exchange savings.
7. **Strengthen Nuclear energy Roadmap:** Revive thorium roadmap, secure uranium partnerships, and localize Small Modular Reactor (SMR) technologies. Nuclear power offers zero-carbon energy.
8. **Advance Utility Reforms:** Strengthen governance in distribution companies by empowering boards, enhancing financial independence, and listing state-owned utilities on stock exchanges to attract private investment.
9. **Strengthen Ecosystem:** Adopt a "whole-of-government" approach with enhanced inter-ministerial coordination and a high-level committee on resilient supply chains for energy transition.

Conclusion:

Energy security is vital for India's economic growth and environmental sustainability. By diversifying its energy mix, enhancing infrastructure, and exploring new technologies, India can build a resilient energy system that meets growing demand while reducing carbon emissions. Continued investment in renewables, nuclear energy, and cross-border cooperation will be key to securing a sustainable energy future.

UPSC GS-3: Energy
Read More: The Indian Express

High Value Crops – Significance & Challenges – Explained Pointwise

High value crops are mainly horticulture crops such as fruits, flowers, spices, vegetables & aromatic plants etc. The value of output and net returns of most of these horticulture crops is higher.

Source: Krishi Jagran

Key characteristics of of high value crops:

1. **High Market Price:** They command a premium price because of their quality, uniqueness, or limited supply.
2. **Intensive Management:** They typically require more labor, precise growing conditions, specialized skills, and controlled environments (like greenhouses or vertical farms).
3. **Perishability:** Many HVCs (like fresh herbs or berries) are highly perishable, necessitating quick, efficient logistics and access to a reliable market.
4. **Niche/Specialty Market:** They are often sold to specific markets, such as fine-dining restaurants, organic food stores, health/wellness industries, or directly to consumers.
5. **Profit per Area:** The financial return (profit) is high relative to the small amount of land or space they occupy.

Examples of High Value Crops:

Fruits	Pomegranate, dragon fruit, black rice, baby corn, mango, grapes, guava, oranges.
Vegetables	Tomatoes, onions, okra, capsicum, baby corn.
Flowers & Ornamentals	Marigold, rose, orchids

Spice & Condiments	Saffron, cardamom, turmeric, ginger, black pepper, chili.
Medicinal & Aromatic Plants	Ashwagandha, shatavari, mushrooms (esp. Ganoderma), ginseng
Oilseeds	Sunflower, groundnut (peanut), almond
Specialty or Export Crops	Cotton, organic herbs, exotic vegetables

Significance of high value crops:

1. **Doubling of Farmer Income:** High value crops (HVCs) yield much higher returns per acre than staple crops like rice or wheat, offering farmers opportunities for greater profitability and improved livelihoods. They are crucial for increasing smallholder incomes and supporting rural prosperity, which aligns with national goals of doubling farmer income.
2. **Agricultural diversification:** Shifting land from low-value staples to HVCs such as fruits, vegetables, spices, and flowers reduces risk, stabilizes farmer incomes, and helps balance food supply with demand. It also makes agriculture more resilient to market shocks and climatic variability.
3. **Employment generation:** HVC cultivation is labor-intensive and stimulates job creation in production, harvesting, processing, packaging, and marketing, particularly benefiting women and rural youth. The rise of agro-processing and supply chains for HVCs further adds off-farm employment opportunities.
4. **Export Potential:** Many Indian HVCs like spices, mangoes, pomegranates, and medicinal herbs have strong export markets, contributing significantly to the country's agri-exports and foreign exchange earnings. Enhanced value-addition and product quality increase competitiveness in global markets.
5. **Sustainable development:** HVCs can be grown in less arable or rainfed areas, thus supporting sustainable use of marginal lands and water resources. Many of them, especially perennial and medicinal plants, support better soil health, biodiversity, and climate resilience.

Challenges to high value crops:

1. **Market Access:** Poor access to organized markets and insufficient cold storage/logistics frequently lead to high post-harvest losses and distress sales.
2. **Price Fluctuations:** HVC producers often face volatile market prices due to seasonal gluts, weak supply chains, and inadequate market intelligence.
3. **High Input Cost:** HVC cultivation requires improved seeds, fertilizers, pest management, and irrigation, which can be costly and harder to access for smallholders.
4. **High Technological Requirements:** Limited knowledge of advanced agronomy, protected cultivation (greenhouses), and precision agriculture affects yields and quality.
5. **Risk & Vulnerability:** High value crops are often sensitive to weather fluctuations, pests, and diseases, and carry higher investment risks than staples. Crop insurance coverage is limited, leaving growers vulnerable to income losses during adverse years.
6. **Policy & Institutional Support:** Support for HVCs is generally less than for staple crops in terms of government subsidies, minimum support prices, and extension services.
7. **Export Barriers:** Meeting international quality and phytosanitary standards for export can be complex and costly. Farmers need better support for certification, grading, and value addition.
8. **Limited Access to Finance:** High upfront costs for planting materials, inputs, pack-houses, and processing units make access to timely credit and affordable loans essential, but such support remains patchy.

Government initiatives to promote the cultivation of high value crops:

1. **Mission for Integrated Development of Horticulture (MIDH):**
    - A centrally sponsored scheme supporting area expansion, improved varieties, subsidies for planting materials, creation of water resources, and promotion of protected cultivation (greenhouses, polyhouses).
    - Offers financial incentives for hybrid vegetables, off-season cultivation, perennial spices, cashew, cocoa, and Moringa with substantial per hectare subsidies.
2. **Operation Greens:**
    - Targets price stabilization, improved logistics, and post-harvest management for Tomato, Onion, and Potato (TOP) crops, later expanded to all fruits and vegetables.
    - Provides support for cold storage, value addition, transportation, and market linkages to protect growers from distress sales and reduce losses.
3. **Horticulture Cluster Development Programme:**
    - Focuses on geographic clusters for integrated, market-driven development of specific high value crops.
    - Strengthens exports, competitiveness, and productivity through infrastructure and technology support.
4. **National Horticulture Board:** Facilitates establishment of nurseries, pack houses, cold stores, and ripening chambers, and supports Bharat GAP certification for quality and export standards.
5. **Kisan Rail & Kisan Udaan:** Special trains and air cargo services to transport fruits, vegetables, and perishables rapidly to distant urban and export markets, with up to 50% transportation subsidy.
6. **Minimum Support Price (MSP) & Price Support Scheme:**
    - MSPs for pulses, oilseeds, nutri-cereals, and select commercial crops (including horticultural crops) set at least 1.5 times the average production cost to ensure remunerative returns.
    - Price Deficiency Payment Scheme (PDPS) and Market Intervention Scheme (MIS) support growers against price volatility for perishables and horticulture crops.

Way forward:

1. **Strengthen Market Linkages and Infrastructure:**
    - Expand direct farmer access to organized markets, contract farming, and online trading platforms such as e-NAM.
    - Scale up cold storage, pack-houses, and efficient logistics for fruits, vegetables, spices, and flowers to reduce post-harvest losses and improve bargaining power.
2. **Promote Technology Adoption & Extension Services:**
    - Increase outreach and training on advanced agronomic practices, precision farming, protected cultivation (polyhouses, greenhouses), and integrated pest management to improve productivity and quality.
    - Support Centres of Excellence and demonstration farms for capacity building and technology transfer.
3. **Expand Credit & Financial Support:**
    - Enhance timely access to affordable credit, subsidies, and crop insurance targeted for high value crop growers.
    - Encourage investment in processing, value addition, and packaging to generate higher returns and employment.
4. **Risk Management & Climate Resilience:**
    - Provide crop insurance coverage and disaster risk support specifically for horticultural and high value crops.
    - Promote climate-resilient varieties and water-efficient cultivation practices for smallholders and rainfed areas.
5. **Policy & Institutional Support:**
    - Streamline regulatory frameworks to support land aggregation, direct marketing, farmer producer organizations (FPOs), and export facilitation.

- Ensure robust extension services for high value crop promotion, grading, certification, and export market access.

6. **Focus on Quality Standards & Export Promotion:**
   - Strengthen support for quality certification, grading, and phytosanitary standards needed for domestic and international markets.
   - Invest in market intelligence and branding for Indian high value crops to boost competitiveness abroad.

UPSC GS-3: Agriculture
Read More: The Indian Express

Fertiliser Sector in India – Significance & Challenges – Explained Pointwise

Diammonium Phosphate (DAP) is a critical fertiliser containing Phosphorus which is required by the crops during early stages of root & shoot development. Farmers usually apply at the time of sowing, along with the seeds. China has been the top supplier of DAP to India, however, it has recently put restrictions on its exports, thus triggering a shortage of DAP in India.
Fertilizers are essential for India's agricultural productivity, helping to sustain high crop yields for a large and growing population. India is one of the world's largest producer, consumer & importer of fertilisers in the world. This article explores the role of the fertiliser sector, its associated challenges, and the policy reforms required to address these critical issues.

Source- PSU Watch

What is the SIGNIFICANCE of the fertilizer sector in India?

1. Ensure the availability of essential soil nutrients: The fertiliser sector has played a crucial role in sustaining India's agricultural output by ensuring the timely availability of essential nutrients such as nitrogen (N), phosphate (P), and potash (K) through both domestic production and imports. According to recent reports Indian soils suffer from acute deficiencies in essential nutrients which are listed below. These nutrient deficiencies severely affect soil fertility and crop yields:

Nitrogen Deficiency	Less than 5% of Indian soils have adequate nitrogen levels, essential for healthy plant growth.

Phosphate Deficiency	Only 40% of soils are sufficient in phosphate, an important nutrient for root development and flowering.
Potash Deficiency	32% of soils are deficient in potash, which is crucial for plant disease resistance and overall growth.
Organic Carbon Deficiency	Just 20% of soils have adequate organic carbon, which is necessary for improving soil structure and water retention.
Micronutrient Deficiencies	Soils in India also suffer from deficiencies of micronutrients such as Zinc, Iron, Sulphur, and Boron, which are critical for optimal plant growth.

2. Driving Agriculture Productivity:

- The fertilizer sector has been a key driver in India's Green Revolution and sustained agricultural growth, enabling higher cereal production to feed the growing population.
- Between 2020-21 and 2022-23, India exported 85 million tonnes of cereals and ensured food security for hundreds of millions during crises.

3. Economic Growth & Employment Generation:

- India is the second-largest consumer and third-largest producer of fertilizers globally, with domestic production steadily rising.
- The sector supports significant rural employment directly and indirectly in production, distribution, and retail networks.

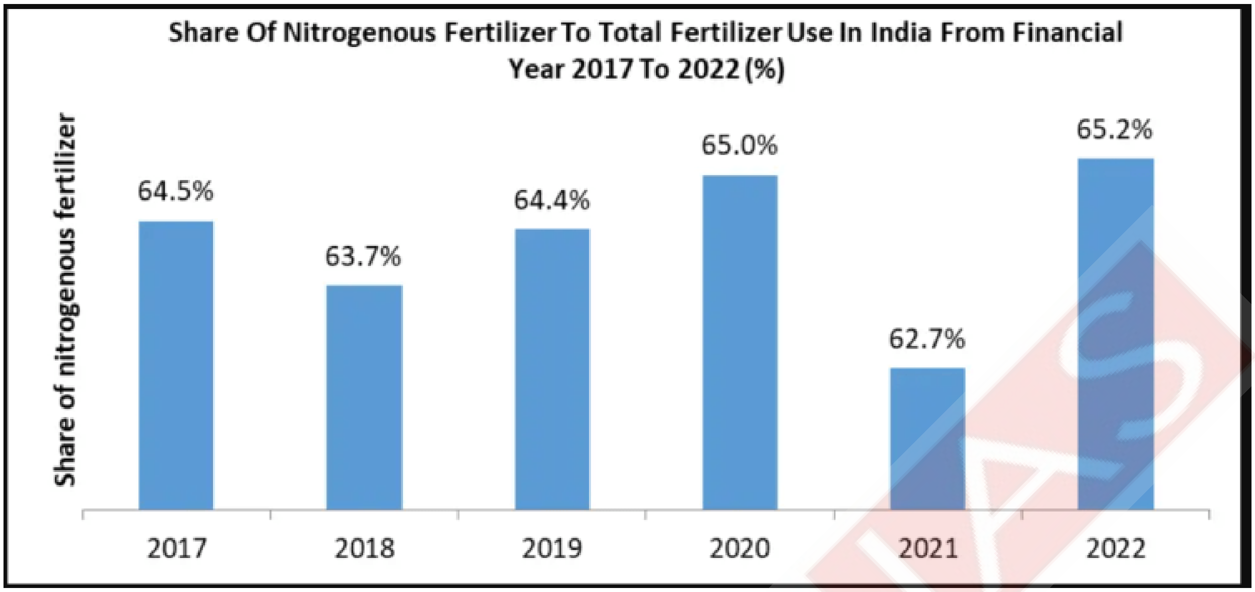
4. Driving India's Agricultural Dominance: The efforts of the fertiliser industry in supplying critical nutrients have helped India maintain its status as a global agricultural powerhouse. Between 2020-21 and 2022-23, the country exported 85 million tonnes of cereals while providing near-free grain to over 813 million people during the pandemic.

5. Sustainability Initiatives: The fertiliser sector encourages the use of advanced products like slow-release fertilisers and those fortified with micronutrients to enhance efficiency and reduce environmental impact.

6. Education and Awareness: The sector works closely with farmers to educate them about proper fertiliser application techniques, soil testing (Soil Health Card), and nutrient management for maintaining soil vitality.

What are the CHALLENGES related to fertilisers in India?

1. Imbalanced Fertiliser Use: A major issue in Indian agriculture is the overuse of nitrogen (N) fertilisers, especially urea, while other essential nutrients like phosphorus (P) and potassium (K) are underused. ***For e.g.*** *in Punjab, nitrogen use is 61% higher than recommended, but under uses potash by 89% and phosphate by 8%.* This imbalance results in green fields but lower crop yields, as plants need all three nutrients for optimal growth.



2. Low Nutrient Use Efficiency (NUE): The efficiency of fertiliser use in India is very low, with only 35-40% of fertilisers being absorbed by crops. The rest is wasted or lost to the environment, such as nitrogen escaping as nitrous oxide, a harmful greenhouse gas. This inefficiency leads to higher costs for farmers and environmental harm.

3. Issues related with fertiliser subsidy:

- **Nutrient Imbalance**: By focusing heavily on urea, the subsidy system has encouraged an imbalanced use of fertilisers, with nitrogen being overused and phosphate and potash underused. This imbalance harms soil health and reduces agricultural productivity in the long run.
- **Financial Strain on the Government**: Fertiliser subsidies are a significant financial burden on the government, amounting to ₹1.88 lakh crore, or nearly 4% of the Union budget. This high expenditure diverts resources away from other critical sectors, such as health and education.

4. Environmental Harm: Excessive and imbalanced fertilizer use has severe environmental consequences:

- **Groundwater Contamination:** Leaching of excess nitrates into groundwater, posing health risks (e.g. “blue baby syndrome”).
- **Water Body Eutrophication:** Runoff of nitrogen and phosphorus into surface water bodies (lakes, rivers) leads to algal blooms, depleting oxygen and harming aquatic life.
- **Greenhouse Gas Emissions:** Nitrous oxide (N2O), a potent greenhouse gas, is emitted from agricultural soils due to nitrogenous fertilizer use, contributing to climate change. Ammonia volatilization also contributes to air pollution and acid rain.
- **Soil Degradation:** Long-term overuse of chemical fertilizers can alter soil pH, increase salinity in some areas, and negatively impact soil microbiology and structure.

5. Fertiliser Diversion and Smuggling: A significant portion (20-25%) of subsidised urea is diverted for non-agricultural uses or smuggled out of the country. This deprives farmers of necessary fertilisers and strains government finances.

6. Neglect of Micronutrients: Micronutrients like zinc, boron, and iron are often overlooked, despite their crucial role in plant growth. Their deficiency is widespread and contributes to the decline in soil health and agricultural productivity.

7. High import dependency & Global volatility = India does not produce enough fertilizers or their raw materials to meet its domestic demand:

- **DAP:** DAP is India's 2nd most consumed fertiliser (Annual avg sale = 103.4 lt). A significant portion of the consumption comes from imports (57 lt) (because India has limited rock phosphate deposits). China has been one of the top supplier of phosphate fertiliser to India. However, China has put curbs on its exports – to ensure that its farmers has access to the product first & also to meet the growing demand for phosphate in production of EV batteries. It resulted into shortage of key fertiliser DAP in India.
- **MOP (Muriate of Potash):** India is **100% dependent on imports** for MOP, as there are no domestic potash reserves. Similarly, India imports about 90% of its phosphatic fertilizers.
- **Vulnerability to Global Price Fluctuations:** This heavy import dependence makes India highly vulnerable to geopolitical events (like the Ukraine-Russia conflict, Gaza crisis), supply chain disruptions, and fluctuations in international prices of fertilizers and their raw materials (e.g., natural gas, phosphoric acid, rock phosphate). This directly impacts the cost of fertilizers for farmers and the government's subsidy bill.

What are the various GOVERNMENT INITIATIVES related to fertilisers in India?

1. Fertiliser Subsidy: The government provides a subsidy to fertiliser producers so farmers can buy fertilisers at lower prices. The subsidy covers the difference between the cost of making or importing the fertiliser and the price farmers pay. Subsidy on 3 basic fertilisers in India- **Urea**, **DAP** and **Muriate** of Potash (MOP) is discussed below:

- **Subsidy on Urea**: Urea is the most widely produced and used fertiliser in India. It is subsidised only for agricultural use. The government pays a subsidy based on the cost of production at each plant, and urea is sold at a fixed Maximum Retail Price (MRP).The subsidized MRP of 45 kg bag of urea is Rs.242 per bag (exclusive of charges towards neem coating and taxes applicable).
- **Subsidy on Non-Urea Fertilisers**: Non-urea fertilisers, such as DAP and MOP, are generally sold at market prices, but the government has recently regulated them due to global price increases (especially after the Russia-Ukraine war). These fertilisers are covered under the **Nutrient-Based Subsidy (NBS) Scheme**. The MoP is being sold at Rs 1,500-1,600 per bag, while the price of DAP is Rs 1,350 per bag.

Fertiliser subsidy schemes:

Urea Subsidy Scheme	**a.** Under the Urea Subsidy Scheme, urea is sold at a statutorily notified uniform MRP (Maximum Retail Price). Farmers pay a subsidised price of ₹242 per 45 kg bag of urea, significantly lower than the market price. **b.** The difference between the cost of production/importation and the retail price is paid to the urea manufacturer/importer by the government as a subsidy
Nutrient-Based Subsidy (NBS) Scheme	**a.** The NBS scheme was introduced in 2010 to address the nutrient imbalance in Indian agriculture. **b.** Under this scheme, fertilisers are provided at subsidised rates based on the nutrients they contain, namely nitrogen, phosphate, potash, and Sulphur. **c.** Fertilisers fortified with secondary and micronutrients are also given additional subsidies. However, urea is excluded from the NBS scheme.

2. Direct Benefit Transfer (DBT) of Fertilizer Subsidy: 100% subsidy on various fertilizer grades is released to fertilizer companies **after actual sales are made to farmers** by retailers through Point of Sale (PoS) machines. Farmers are identified through their Aadhaar card at the retail outlet. The aim is to improve transparency, reduce diversion, ensure the subsidy reaches the intended beneficiaries, and track real-time sales data.

3. Boosting Domestic Production and Self-Sufficiency:

- **Revival of Closed Fertilizer Units:** A major focus has been on reviving defunct or sick urea fertilizer plants to increase domestic production capacity and reduce import reliance for e.g. Hindustan Urvarak & Rasayan Limited (HURL), Ramagundam Fertilizers and Chemicals Ltd (RFCL), Talcher Fertilizers Limited (TFL).
- **New Urea Policy (NUP) – 2015:** For existing gas-based urea units, this policy aimed at maximizing indigenous urea production, promoting energy efficiency, and rationalizing the subsidy burden. It has led to a significant increase in indigenous urea production.
- **Potash Derived from Molasses (PDM):** To reduce 100% import dependence for Potash, indigenous production of Potash Derived from Molasses has been encouraged and included under the NBS scheme.

4. Promoting Balanced Fertilizer Use and Soil Health:

- **Neem-Coated Urea (NCU):** The government mandated 100% neem-coating of all indigenously produced and imported urea.
- **Soil Health Card (SHC) Scheme:** Promotes soil test-based and balanced use of fertilizers, reduce overuse of chemical fertilizers, save costs for farmers, and improve soil health and productivity.
- **Promotion of Bio-fertilizers and Organic Manures:** Schemes like **Paramparagat Krishi Vikas Yojana (PKVY)**, **National Project on Organic Farming (NPOF)**, **Mission Organic Value Chain Development for North-Eastern Region (MOVCDNER)**, and **Bhartiya Prakritik Krishi Padhati (BPKP)** provide assistance and promote the use of organic fertilizers and bio-fertilizers.

5. PM Programme for Restoration, Awareness Generation, Nourishment, and Amelioration of Mother-Earth (PM-PRANAM): States/UTs receive a grant equivalent to 50% of the fertilizer subsidy saved by reducing chemical fertilizer consumption (Urea, DAP, NPK, MOP) compared to the average of the previous three years. This grant is to be used by states to promote alternative fertilizers and related assets.

6. One Nation, One Fertilizer (ONOF) / Pradhan Mantri Bhartiya Jan Urvarak Pariyojana (PMBJP): Standardize fertilizer brands, reduce farmer confusion, reduce criss-cross movement of fertilizers (thus saving freight subsidies), and ensure a uniform appearance and quality perception for subsidized fertilizers.

7. Nano Fertilizers: The government is actively promoting the adoption of nano-fertilizers, particularly Nano Urea Liquid e.g. IFFCO Nano Urea Liquid.

What can be the WAY FORWARD?

1. Rationalizing the Subsidies: The government should bring urea under the Nutrient-Based Subsidy (NBS) scheme to balance the prices of nitrogen, phosphate, and potash. This will encourage balanced fertiliser use and reduce reliance on urea.

2. Deregulating Fertiliser Prices: Allowing market forces to set fertiliser prices can remove distortions caused by price controls. Farmers should receive direct income support, such as digital coupons or cash transfers, to purchase fertilisers based on their needs.

3. Promoting Micronutrient Use: To address micronutrient deficiencies, the government should promote fertilisers enriched with micronutrients. Encouraging balanced fertiliser use, including micronutrients, is crucial for better soil health and crop yields.

4. Improving Nutrient Use Efficiency (NUE): Improving NUE is essential, which can be achieved through precision farming, better soil testing , and using technology to apply fertilisers more efficiently.

5. Direct Income Support to Farmers: Explore replacing product-specific subsidies with a system of direct income support to farmers (like PM-KISAN, but specifically tied to fertilizer use or nutrient management). This would empower farmers to choose the right fertilizers based on their soil needs, reduce distortions, and prevent diversion.

6. Diversify Import Sources: Reduce over-reliance on a few countries for raw materials (rock phosphate, phosphoric acid) and finished fertilizers (MOP, DAP). Forge long-term agreements and joint ventures with resource-rich countries beyond traditional partners, including those in West Asia, Africa, Latin America, and other regions.

7. Integrated Nutrient Management (INM): Vigorously promote INM, which combines chemical fertilizers with organic manures, bio-fertilizers, and green manures, to improve soil health and reduce reliance on synthetic inputs.

CONCLUSION:

India needs to build a fertilizer sector that is not only robust and self-sufficient but also environmentally responsible, fiscally sustainable, and ultimately contributes to long-term agricultural prosperity and food security.

Read more- Indian Express, Wikipedia
UPSC Syllabus- GS 3- Agriculture