



CURRENT AFFAIRS

FEBRUARY 2026

TOPICS

- ◆ PM MITRA Scheme
- ◆ Labour Reforms
- ◆ Integrated programme for the Textile sector
- ◆ Union Budget
- ◆ Scheme for setting up plastic parks



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Foreword

Dear Aspirants,

This magazine by the Plutus IAS team is designed in such a fashion that it holistically covers all the relevant and important topics for the Civil Services Exam to make aspirants exam-ready. Plutus IAS Current Affairs Magazine is a secondary source of information; the newspaper will remain the primary source for the preparation of Current Affairs.

Now, Current Affairs are no longer merely current; they are Contemporary Affairs. Questions asked in both Prelims as well as the Mains assess the conceptual clarity of an aspirant. This magazine is prepared with the aim of helping you understand the interlinkages of both Static and Dynamic news events and internalize the concepts required to crack this examination.

The Plutus IAS team wishes you all the best. Prepare for the UPSC Civil Services Examination with a calm, composed, or serene mind and some patience to crack this examination in one go.

Team
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Sources:

The Hindu | The Indian Express | The Economic Times | Press Information Bureau | PRS Legislative Research | IDSA: Institute for Defense Studies and Analysis | Yojana and Kurukshetra | Lok Sabha and Rajya Sabha Debates.

OUR TOP RANKERS



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FEBRUARY 2026

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EASE OF DOING BUSINESS: INDIA'S ONGOING REGULATORY TRANSFORMATION



WHY IN THE NEWS?

Ease of Doing Business (EoDB) is a key pillar of India's economic reform strategy and growth agenda. The Union Budget 2026–27 emphasizes digital trade facilitation, tax certainty, reduced compliance and litigation, trust-based customs, and an investment-friendly tax regime. These reforms build on a decade of regulatory improvements aimed at simplifying procedures, enhancing transparency, and strengthening investor confidence.

Their impact is evident in rising investment and business activity. India attracted USD 748.38 billion in FDI between 2014 and 2025, a 143 percent increase over the previous period. Active registered companies also grew from 1.55 lakh in 2020–21 to 1.98 lakh in 2025–26, a 27 percent rise. Continued EoDB reforms, aligned with the Viksit Bharat @2047 vision, will support global value chain integration and industry-led growth.

BUDGET FOCUS ON EASE OF DOING BUSINESS

The Union Budget 2026–27 strengthens India's Ease of Doing Business framework by improving tax certainty, reducing compliance burden, and promoting trust-based governance. Key reforms include rationalisation of Minimum Alternate Tax (MAT), simplification of dispute resolution mechanisms, and decriminalisation of minor procedural offences.

The Budget also introduces digital customs and logistics reforms through integrated digital systems and risk-based clearance mechanisms. These reforms aim to reduce transaction costs, improve operational efficiency, and make business processes faster and more transparent.

Budget Initiatives on Ease of Doing Business

- Single, interconnected digital window for cargo clearance approvals
- Non-compliance goods to be cleared after online registration, duty payment
- PROIs permitted higher equity investment in listed Indian companies under Portfolio Investment Scheme
- Tax buyback for shareholders as Capital Gains
- Framework for immunity from penalty, prosecution in cases of underreporting extended to misreporting
- Decriminalisation of non-production of books of account and documents
- Customs Integrated System to be rolled out in 2 years
- Phased expansion of AI-enabled non-intrusive scanning to cover all major ports.
- MAT proposed to be made final tax, with final tax reduced to 14%
- Integrated assessment, penalty proceedings via common order
- Immunity from prosecution for non-immovable foreign assets < ₹20 lakh
- Duty deferral period enhanced from 15 to 30 days

UNION BUDGET 2026-27
Focus on Ease of Doing Business

RATIONALISATION OF PENALTIES AND PROSECUTION

The Budget simplifies penalty and prosecution procedures by introducing integrated assessment and penalty proceedings through a single order. Interest on penalties during appeals will not be charged, and pre-payment requirements have been reduced from 20 percent to 10 percent.

Taxpayers will be allowed to update their returns even after reassessment proceedings by paying an additional 10 percent tax. The framework for

immunity from penalties and prosecution has been extended to include cases of misreporting, provided the required additional tax is paid.

Minor offences such as non-production of books of accounts and certain TDS compliance requirements will be decriminalised and replaced with monetary penalties. Technical defaults will be treated as fee-based violations rather than criminal offences. Remaining prosecutions will be graded based on the severity of the offence, with imprisonment limited to two years and provisions for converting imprisonment into fines.

Immunity from prosecution has also been granted retrospectively from October 1, 2024, for non-immovable foreign assets below ₹20 lakh.

TRUST-BASED CUSTOMS SYSTEMS

The duty deferral period for Tier 2 and Tier 3 Authorised Economic Operators (AEOs) has been increased from 15 days to 30 days. This system allows businesses to clear imported goods first and pay customs duty later. This mechanism improves working capital management and supports just-in-time manufacturing.

Eligible manufacturer-importers will also receive the same duty deferral benefits. The validity period of advance rulings issued by customs authorities has been extended from three years to five years, providing greater certainty and improving business planning.

Trusted importers will receive preferential treatment, reduced inspections, and faster cargo clearance. Electronically sealed export cargo will be cleared directly from factory to ship. Customs warehousing systems will shift to operator-centric models using self-declarations, electronic tracking, and risk-based audits, reducing compliance burden and delays.



NATIONAL SINGLE WINDOW SYSTEM (NSWS)

The National Single Window System provides a digital platform for business approvals. It integrates

approvals from 32 central departments and 32 state governments. It provides access to over 698 central and 7,435 state approvals.

Since its launch, the system has granted more than 8,29,750 approvals. It improves efficiency, transparency, and reduces approval timelines.

Other Digital Platforms

- **The PARIVESH 3.0 platform** supports environmental clearance and compliance monitoring through integrated data systems and AI-based tools.
- **The e-Gram SWARAJ portal** provides complete digital profiles of Gram Panchayats and improves transparency in local governance and development planning.

STATE-LEVEL REFORMS

States and Union Territories have removed more than 47,000 compliance requirements through simplification, digitisation, and decriminalisation.

States have simplified land use approvals, building regulations, labour laws, and environmental clearances. Self-certification and third-party approvals have reduced delays and improved efficiency.

These reforms have improved investment implementation and business efficiency.

BUSINESS REFORMS ACTION PLAN (BRAP)

The Business Reforms Action Plan has been implemented since 2015 to improve regulatory transparency and simplify procedures. The eighth edition, BRAP 2026, continues to strengthen reforms at state and district levels.

States such as Kerala, Tamil Nadu, and Andhra Pradesh have introduced digital approvals, land reforms, and streamlined industrial approval systems.

STRUCTURAL AND FINANCIAL REFORMS

Structural reforms have focused on regulatory simplification, institutional consolidation, and technology-driven governance across financial markets, taxation, labour, banking, and environmental regulation. Reforms in insurance,

securities, GST, labour codes, and public sector banking aim to reduce compliance burdens, enhance transparency, improve access to finance, strengthen regulatory certainty, and promote competition, creating a more efficient and resilient business ecosystem.

Regulatory Measures

The Reserve Bank of India reorganised its regulatory framework by consolidating over 9,000 circulars into 238 function-specific Master Directions. Out of 9,446 circulars, 3,809 have been subsumed and 5,673 deemed obsolete, improving regulatory clarity and reducing compliance burdens to enhance EoDB.

Sabka Bima Sabki Raksha (Insurance Reforms)

The 2025 Amendment to insurance laws revised the Insurance Act, LIC Act, and IRDAI Act to improve citizen protection, deepen insurance penetration, and facilitate sector growth. Key measures include allowing up to 100% FDI in insurance companies, one-time registration for intermediaries, raising limits for IRDAI approval on equity transfers from 1% to 5%, and reducing Net Owned Funds requirement for foreign reinsurers from ₹5,000 crore to ₹1,000 crore. The Indian Insurance Companies (Foreign Investment) Amendment Rules, 2025 further rationalise conditions for insurers and intermediaries.

Credit Assessment Model (CAM)

Launched by public sector banks in 2025, CAM uses digital footprints to assess MSME credit. Between April and December 2025, over 3.96 lakh MSME loans worth ₹52,300 crore were sanctioned. The model improves EoDB by enabling automated loan appraisal, objective decision-making for all applications, model-based limit assessment for both new and existing MSME borrowers, and integration with credit guarantee schemes.

LABOUR REFORMS

The consolidation of 29 Central labour laws into four Labour Codes has significantly enhanced Ease of Doing Business by simplifying compliance, reducing approval timelines, and providing greater operational flexibility, particularly for MSMEs.

The Codes have prescribed a 30-day time limit for granting permission for factory construction or expansion and reduced the overall approval timeline from 90 days to 30 days.

They simplify contract labour norms by exempting contractors employing fewer than 50 workers from licensing, and introduced electronic single registration, a single return, and single all-India licences valid for five years with deemed approvals.

The Codes replaced six existing boards with a single national tripartite board, enabled compounding of offences through graded monetary fines, replaced criminal penalties with civil penalties, and mandated a 30-day notice period for compliance before legal action.

They also increased thresholds for lay-off, retrenchment, closure, and Standing Orders to 300 workers, providing greater operational flexibility to establishments without prior approvals.

GST 2.0

GST reforms introduced in September 2025 strengthen Ease of Doing Business by simplifying tax slabs, reducing rates across key sectors, thus lowering tax incidence and improving price competitiveness. The move towards a simplified two-rate structure lowers compliance and transaction costs, while rate rationalisation improves affordability and supports entrepreneurship.

The impact is reflected in the expansion of the tax base, with registered taxpayers increasing from about 60 lakhs in 2017 to over 1.5 crore in November 2025, indicating deeper formalisation. Further, correction of inverted duty structures in labour-intensive and agri-input sectors such as textiles and fertilisers has reduced costs and working capital pressures, easing business operations.

CONCLUSION

India's Ease of Doing Business environment continues to improve through regulatory simplification, digitalisation, and trust-based governance. The Union Budget 2026–27 strengthens tax certainty, reduces compliance burden, and promotes investment.

These reforms have increased investment, business growth, and economic formalisation. They will continue to strengthen India's competitiveness and

support long-term economic development under the Viksit Bharat @2047 vision.

Prelims question:

1. Which of the following measures introduced in Union Budget 2026–27 aim to improve Ease of Doing Business in India?

1. Rationalisation of Minimum Alternate Tax (MAT)
2. Digital customs and risk-based clearance systems
3. Consolidation of 29 Central labour laws into 4 Labour Codes
4. Increase in FDI limit for insurance companies to 100%

Select the correct answer:

- A) 1 and 2 only B) 2, 3 and 4 only
C) 1, 2, 3 and 4 D) 1 and 3 only

Answer: C

Mains Question:

Q. “Examine how the Union Budget 2026–27 strengthens Ease of Doing Business in India and its potential impact on investment and economic growth.” (250 words)

STRENGTHENING THE TEXTILE INDUSTRY IN INDIA



WHY IN THE NEWS?

The Union Budget 2026–27 places the textile sector at the centre of India’s growth strategy, emphasising scale, employment generation, exports, rural livelihoods, and sustainable manufacturing. As one of India’s oldest and most diverse industries, textiles are deeply rooted in centuries-old traditions and continue to play a vital role in the country’s economic development.

The textile sector is a labour-intensive industry and serves as a major driver of job creation, export growth, rural development, and industrial

expansion. Recognising its strategic importance, the Budget prioritises scaling up manufacturing in textiles and other frontier sectors.

India possesses significant intrinsic strengths in textiles. It is the world’s largest cultivator of cotton by acreage, the largest producer of jute, and the second-largest producer of silk and cotton. India is also a major global hub for man-made fibres (MMF) and the second-largest producer of polyester and viscose fibres.



INTEGRATED PROGRAMME FOR THE TEXTILE SECTOR

To strengthen the entire textile value chain from fibre to fashion and from village industries to global markets the Government has announced a comprehensive Integrated Programme structured around five key components:

1. National Fibre Scheme

This scheme aims to promote self-reliance across the fibre spectrum by supporting natural fibres such as silk, wool, and jute, along with man-made and new-age fibres. It seeks to:

- Reduce import dependence
- Promote diversification beyond cotton
- Encourage innovation in advanced textile materials
- Strengthen India’s capability in specialised and high performance textiles

2. Textile Expansion and Employment Scheme

This component focuses on modernising traditional textile clusters by providing:

- Capital support for machinery and technology

upgrades

- Establishment of common testing and certification centres
- These measures are expected to improve productivity, enhance quality compliance, and generate large-scale employment.

3. National Handloom and Handicraft Programme

Existing handloom and handicraft schemes will be integrated into a unified national programme to:

- Support weavers and artisans
- Improve incomes and market linkages
- Preserve India's textile heritage
- Financial assistance will also be provided for promoting natural dyes and establishing dye houses under the Mega Cluster Development Programme and Special Infrastructure Projects.

4. Tex-Eco Initiative

The Tex-Eco Initiative promotes environmentally sustainable and globally competitive textile manufacturing. It aligns domestic production with international sustainability standards and facilitates access to emerging green markets.

5. Samarth 2.0

Samarth 2.0 is an upgraded skill development programme designed to modernise the textile skill ecosystem. It focuses on collaboration between industry and academic institutions to ensure availability of skilled manpower across the textile value chain.

Integrated Programme for the Textile Sector

- **National Fibre Scheme** for self-reliance in natural fibres, man-made fibres, and new-age fibres
- **Textile Expansion and Employment Scheme** to modernise traditional clusters
- **National Handloom and Handicraft Programme** to integrate & strengthen existing schemes
- **Tex-Eco Initiative** for globally competitive and sustainable textiles & apparels
- **Samarth 2.0** to modernize and upgrade textile skilling ecosystem

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MEGA TEXTILE PARKS AND TECHNICAL TEXTILES

The Government has announced the establishment of Mega Textile Parks to provide integrated infrastructure, improve scale efficiencies, and enhance value addition.

These parks will also promote technical textiles, which have applications in:

- Medical sector
- Defence
- Infrastructure
- Industrial manufacturing
- Technical textiles represent a high-growth segment with strong global demand.

MAHATMA GANDHI GRAM SWARAJ INITIATIVE

This initiative aims to strengthen khadi, handloom, and handicrafts sectors by focusing on:

1. Market linkages and branding
2. Training and skilling
3. Quality improvement
4. Modernisation of production processes.

It will also support rural youth and align with the One District One Product (ODOP) initiative.

EXPORT PROMOTION MEASURES

To support textile exports, the Government has extended the export obligation period from six months to twelve months for textile and leather exporters using duty-free imported inputs.

This measure will:

1. Improve working capital management
2. Provide operational flexibility
3. Enhance export competitiveness

India is currently the 6th largest exporter of textiles and apparel globally, with approximately 4% share in global exports.

Textile exports increased from USD 35.87 billion in FY24 to USD 37.75 billion in FY25 despite global trade challenges. Export growth was observed across multiple countries, including the UAE, Egypt, Japan, Germany, France, and the UK.

LIQUIDITY SUPPORT FOR TEXTILE MSMEs

To strengthen MSMEs, the Government has enhanced the Trade Receivables Discounting System (TReDS), an electronic platform that enables financing of MSME receivables.

Key measures include:

1. Mandatory use of TReDS by CPSEs
2. Credit guarantee support through CGTMSE
3. Integration of Government e-Marketplace (GeM) with TReDS
4. Introduction of receivables as asset-backed securities

Over ₹7 lakh crore has already been facilitated through TReDS.

Additionally, a ₹10,000 crore SME Growth Fund has been introduced to support future "Champion SMEs."

CONTRIBUTION OF THE TEXTILE SECTOR TO THE ECONOMY

India's textile industry has an estimated size of USD 179 billion and contributes significantly to the economy:

- a).2% of GDP
- b).11% of manufacturing Gross Value Added (GVA)
- c).8.63% of total exports

The sector provides employment to over 45 million people, making it the second-largest employment generator after agriculture.

MAJOR GROWTH DRIVERS

PM MITRA Scheme

The Government has approved 7 Mega Integrated Textile Region and Apparel (PM MITRA) Parks with an outlay of ₹4445 crore.

Key highlights:

₹27,434 crore investment potential

Infrastructure works worth ₹2590 crore underway

Employment generation of 3 lakh persons per park

Production Linked Incentive (PLI) Scheme

The PLI Scheme promotes production of MMF apparel, fabrics, and technical textiles. It aims to

enhance competitiveness, attract investment, and create employment.

Cotton Sector Reforms

The Government has introduced several reforms, including:

1. Kapas Kisan mobile app for farmer registration
2. Kasturi Cotton Bharat Programme
3. Quality Control Order improvements

The cotton sector supports around 6 million farmers and millions of workers across the value chain.

Sustainability and Labour Reforms

Efforts are underway to promote sustainability and circular economy practices, including procurement of upcycled textile products.

Labour reforms under the new Labour Codes provide:

- Improved worker welfare
- Streamlined compliance
- Better workplace safety and social security

GST rationalisation in textiles has also reduced costs, boosted exports, and supported employment.

FUTURE OUTLOOK AND VISION 2030

India's textile exports currently stand at approximately ₹3 lakh crore. The Government has set a Vision 2030 target of increasing exports to ₹9 lakh crore.

Trade agreements such as the India - EU Free Trade Agreement will provide:

1. Zero duty access for textile exports
2. Reduction of tariffs by up to 12%

These measures will significantly boost exports and global competitiveness.

The Government's policy direction focuses on:

1. Scaling up manufacturing
2. Promoting technical textiles
3. Supporting MSMEs and artisans
4. Enhancing sustainability
5. Strengthening global value chain integration

CONCLUSION

India's textile sector is at a critical stage of transformation, supported by strong production capabilities, rising exports, and sustained policy support.

The Union Budget 2026–27 strengthens the entire textile value chain—from fibre production and manufacturing to skill development and sustainability.

With continued emphasis on scale, innovation, and global integration, the textile sector is well-positioned to drive economic growth, generate employment, support rural livelihoods, and reinforce India's position as a leading global textile hub.

Prelims question:

Q. With reference to the Integrated Programme for the Textile Sector announced in the Union Budget 2026–27, consider the following statements:

1. The National Fibre Scheme aims to promote both natural fibres and man-made fibres.
2. Samarth 2.0 focuses on providing credit support to textile MSMEs.
3. Tex-Eco Initiative promotes sustainable textile manufacturing aligned with global standards.
4. The Textile Expansion and Employment Scheme includes support for technology upgradation.

Which of the statements given above are correct?

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

Answer: (a)

Mains Question:

Q. Examine the role of the textile sector in India's economic growth. How will recent

policy measures such as PM MITRA Parks, PLI Scheme, and Integrated Textile Programme help India achieve its Vision 2030 export target ?
(250 words)

STRENGTHENING INDIA'S CHEMICAL MANUFACTURING



WHY IN THE NEWS ?

India is the sixth-largest producer of chemicals globally and possesses considerable potential to expand its footprint in global chemical value chains, particularly in high-value and specialty segments. The sector continues to be a major contributor to industrial growth and exports, supported by well-established manufacturing hubs and clusters across Gujarat, Odisha, Andhra Pradesh, and Tamil Nadu. These clusters have attracted significant investment and generated large-scale employment. Building on this strong foundation, there is growing scope to enhance sectoral competitiveness through better infrastructure integration, regulatory simplification, and strengthened environmental compliance mechanisms.

In this context, the Government's proposal in the Union Budget 2026–27 to establish dedicated Chemical Parks represents a forward-looking, infrastructure-driven, supply-side intervention. With a budgetary allocation of ₹600 crore in BE FY 2026–27, the initiative aims to provide integrated plug-and-play industrial infrastructure and coordinated governance mechanisms. These parks are expected to reduce project implementation timelines, lower capital costs, promote cluster-based synergies, and create globally competitive chemical manufacturing ecosystems while supporting sustainable and inclusive growth.

UNION BUDGET 2026–27: STRENGTHENING DOMESTIC CHEMICAL MANUFACTURING

The Union Budget 2026–27 has introduced a new scheme to support States in establishing three dedicated Chemical Parks through a challenge-based selection process, backed by an allocation of ₹600 crore in BE FY 2026–27. These parks are envisioned as cluster-based manufacturing ecosystems supported by shared infrastructure and common

utilities. The initiative marks the first dedicated budgetary support for chemical park infrastructure and aims to strengthen domestic production capacity, improve supply-chain integration, and reduce import dependence in the chemicals sector.

CHEMICAL INDUSTRY: OVERVIEW

India's chemical industry forms a critical pillar of the manufacturing ecosystem by supplying essential inputs to key sectors such as agriculture, pharmaceuticals, textiles, automobiles, and construction. The sector contributes approximately 7 percent to the national GDP. India ranks as the third-largest chemical producer in Asia and manufactures more than 80,000 products across segments such as bulk chemicals, specialty chemicals, agrochemicals, petrochemicals, polymers, and fertilisers.

Among these, specialty chemicals have emerged as a key growth segment, driven by India's strong process engineering capabilities, cost advantages, and expanding innovation base. Reflecting its structural significance, the Economic Survey 2025–26 highlights that the chemical sector contributed 8.1 percent to manufacturing Gross Value Added in FY24. The production of major chemicals and petrochemicals increased from 45,638 thousand metric tonnes in FY16 to 58,617 thousand metric tonnes in FY25, registering a CAGR of 2.8 percent.

WHAT ARE CHEMICAL PARKS?

Chemical Parks are planned industrial clusters specifically designed for chemical and petrochemical manufacturing, where multiple manufacturing units operate within a common ecosystem supported by world-class infrastructure and shared services.

STRATEGIC FOCUS OF CHEMICAL PARKS



The Chemical Parks initiative is designed as a comprehensive infrastructure-led supply-side intervention aimed at strengthening the structural foundation of the chemical sector by enabling scale, efficiency, and sustainability.



CURRENT LANDSCAPE AND RATIONALE FOR CHEMICAL PARKS

India's chemical industry has benefited significantly from cluster-based development initiatives such as Plastic Parks, Bulk Drug Parks, and Petroleum, Chemicals and Petrochemicals Investment Regions (PCPIRs). These initiatives have demonstrated the advantages of shared infrastructure, anchor investments, and coordinated planning.

Building on these successful models, the proposed Chemical Parks aim to provide an integrated platform covering the entire chemical value chain, including bulk chemicals, specialty chemicals, and downstream industries.

By offering plug-and-play infrastructure, common utilities, integrated logistics support, and streamlined regulatory clearances, the initiative is expected to:

1. Reduce project gestation periods and capital investment requirements
2. Promote economies of scale and strengthen backward and forward linkages
3. Improve environmental management and industrial safety through shared facilities
4. Enhance India's competitiveness in domestic and international chemical markets

Together with Plastic Parks, Bulk Drug Parks, and PCPIRs, Chemical Parks create a cohesive

policy framework for cluster-driven industrial development. Supported by targeted policy measures, technological adoption, innovation, and sustainability initiatives, this integrated approach is expected to deepen domestic manufacturing capabilities and strengthen India's position in global chemical value chains.

SCHEME FOR SETTING UP PLASTIC PARKS

Plastic Parks are a key component of India's strategy to promote plastic recycling, manage plastic waste, and support the polymer industry. A plastic park is a specialised industrial zone developed for plastic processing industries. The Department of Chemicals and Petrochemicals launched this scheme in 2013–14 to consolidate and strengthen the plastic processing industry, promote investment, enhance production and exports, and generate employment opportunities.

To support research and innovation in polymer and plastic technologies, the Department has established 13 Centres of Excellence across national institutions. The scheme provides central grant assistance of up to 50 percent of the project cost, subject to a maximum limit of ₹40 crore per park. So far, 10 Plastic Parks have been approved across States including Assam, Madhya Pradesh, Odisha, Jharkhand, Tamil Nadu, Uttarakhand, Chhattisgarh, Karnataka, and Uttar Pradesh.

SCHEME FOR PROMOTION OF BULK DRUG PARKS

Bulk drugs form the backbone of pharmaceutical manufacturing and are essential for ensuring affordable and accessible healthcare. As the pharmaceutical sector expands, ensuring uninterrupted availability of high-quality bulk drugs and scaling up production capacity during emergencies has become increasingly critical.

To strengthen domestic manufacturing capacity and reduce dependence on imports, the Government launched the Promotion of Bulk Drug Parks Scheme in 2020. The scheme aims to reduce production costs, improve competitiveness, and address infrastructure gaps through the development of shared common infrastructure.

Under the scheme, three Bulk Drug Parks have been approved in Gujarat, Himachal Pradesh, and Andhra Pradesh, with a total outlay of ₹3,000 crore.

The scheme supports the creation of Common Infrastructure Facilities such as:

- Central Effluent Treatment Plants (CETPs)
- Solid waste management systems
- Storm water drainage networks
- Common solvent storage and recovery systems
- Warehousing facilities
- Dedicated power substations and distribution networks
- Water treatment and supply systems
- Steam generation and distribution networks
- Cooling and energy distribution systems
- Common logistics infrastructure
- Advanced testing laboratories and research centres
- Emergency response centres
- Industrial safety and hazardous operations audit facilities
- Centres of Excellence

PETROLEUM, CHEMICALS AND PETROCHEMICAL INVESTMENT REGIONS (PCPIRS)

PCPIRs are specifically delineated investment regions designed to promote domestic and export-oriented chemical and petrochemical manufacturing. These regions integrate manufacturing units with utilities, logistics, environmental protection infrastructure, and administrative services, enabling comprehensive industrial development.

Currently, PCPIRs have been developed in Andhra Pradesh (Visakhapatnam), Gujarat (Dahej), and Odisha (Paradeep).

Collectively, Plastic Parks, Bulk Drug Parks, PCPIRs, and Chemical Parks represent India's transition towards cluster-based industrial development focused on scale, efficiency, and sustainability. While Plastic Parks and Bulk Drug Parks have demonstrated success in specific segments, Chemical Parks extend this integrated approach across the entire chemical value chain.

STRENGTHENING ENVIRONMENTAL MANAGEMENT AND INDUSTRIAL SAFETY

As India expands its chemical manufacturing capacity, managing environmental impacts and

industrial safety risks becomes increasingly important. Robust environmental management systems and high safety standards are essential for sustainable sectoral growth.

Green initiatives such as Carbon Capture, Utilisation, and Storage (CCUS), launched in December 2025, play a crucial role in reducing industrial carbon emissions by capturing and reusing or safely storing carbon dioxide. The Union Budget 2026–27 has announced an allocation of ₹20,000 crore over five years to support the development and deployment of CCUS technologies across emission-intensive industries, including the chemicals sector.

In this context, Chemical Parks provide an enabling platform for implementing such climate initiatives. By offering shared environmental infrastructure, utilities, and coordinated governance mechanisms, these parks facilitate cost-effective deployment of CCUS and other clean technologies. The clustering of manufacturing units allows efficient emissions management, waste treatment, and energy optimisation, thereby lowering compliance costs and improving environmental performance.

CONCLUSION

The establishment of three dedicated Chemical Parks marks a major step towards strengthening India's domestic chemical manufacturing ecosystem through a targeted infrastructure-driven approach. By providing cluster-based plug-and-play facilities supported by shared utilities and integrated infrastructure, the initiative addresses long-standing structural challenges related to scale, value chain integration, and global competitiveness.

Aligned with the priorities outlined in the Union Budget 2026–27, the initiative is expected to attract investment, support import substitution, integrate MSMEs into organised value chains, generate employment, and promote environmentally sustainable manufacturing practices. Additionally, the Budget's emphasis on CCUS complements the Chemical Parks initiative by supporting low-carbon technological innovation, while the parks provide the infrastructure required for cost-effective deployment.

Together, these initiatives are expected to strengthen supply-chain resilience and reinforce India's emergence as a globally competitive and reliable hub for chemical manufacturing.

Prelims question:

Q. With reference to the proposed Chemical Parks announced in Union Budget 2026–27, consider the following statements:

1. Chemical Parks aim to provide plug-and-play infrastructure for chemical manufacturing.
2. The scheme is intended to reduce import dependence in the chemicals sector.
3. The Government plans to establish five Chemical Parks under the scheme.

Which of the statements given above is/are correct?

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

Mains Question:

Q. Discuss the significance of Chemical Parks in strengthening India's domestic manufacturing ecosystem. How can such parks help improve industrial competitiveness and environmental sustainability? (250 words)

**INDIA TRANSITIONS
TOWARDS A HIGH-GROWTH
AND RESILIENT ECONOMY**



WHY IN THE NEWS?

India enters FY26 with strong economic momentum, supported by stable macroeconomic fundamentals, sustained policy support, and broad-based sectoral performance. Despite a challenging global environment marked by geopolitical tensions, financial market volatility, and uneven global recovery, the Indian economy has demonstrated notable resilience. Robust growth, historically low inflation, improving labour market indicators, and strengthening external and financial buffers underline this performance.

Coordinated fiscal, monetary, and structural policies have reinforced macroeconomic stability while

supporting investment, consumption, and inclusion. The emerging macroeconomic environment reflects an economy that is consolidating recent gains while strengthening the foundations for sustained, inclusive, and resilient growth.

State of the Economy

GROWTH OUTLOOK: GDP AND DEMAND CONDITIONS

India's growth outlook remains robust, underpinned by strong macroeconomic fundamentals and broad-based demand momentum. As per the First Advance Estimates, real GDP and Gross Value Added (GVA) are projected to grow by 7.4% and 7.3%, respectively, in FY26.

A strong agricultural performance has bolstered rural incomes and consumption, while improving urban demand—supported by tax rationalisation measures—signals a broadening of the consumption base. India's potential growth is estimated at around 7%, with real GDP growth for FY27 projected in the range of 6.8–7.2%, reflecting sustained medium-term growth capacity despite global headwinds.

INFLATION TRENDS AND OUTLOOK

India recorded the lowest inflation rate since the inception of the CPI series, with average headline inflation at 1.7% during April–December 2025, driven by disinflation in food and fuel prices.

Among major Emerging Market and Developing Economies (EMDEs), India witnessed one of the sharpest declines in headline inflation in 2025 compared to 2024—by about 1.8 percentage points. In December 2025, the RBI revised its FY26 inflation forecast downward from 2.6% to 2.0%, supported by a good kharif harvest and healthy rabi sowing. The IMF projects inflation at 2.8% in FY26 and 4.0% in FY27, while the RBI projects headline inflation of 3.9% and 4.0% for Q1 and Q2 of FY27, respectively.

Overall, the inflation outlook remains benign, supported by favourable supply-side conditions and the gradual pass-through of GST rate rationalisation.

SECTORAL DRIVERS OF GROWTH

Agriculture: Stabilising Rural Demand

- Agriculture and allied activities continue to play a stabilising role in India's growth cycle by supporting rural incomes and consumption. The

sector is estimated to grow by 3.1% in FY26, supported by a favourable monsoon during H1 FY26. Agricultural GVA expanded by 3.6% in H1 FY26, compared to 2.7% in H1 FY25, reflecting improved crop performance.

- Allied activities, particularly livestock and fisheries, recorded stable growth of 5–6%, contributing to resilience and diversification within the rural economy.

Industry and Manufacturing: Momentum Builds

- Industrial activity is expected to gain momentum in FY26, with the industrial sector projected to grow by 6.2%, up from 5.9% in FY25. The sector recorded growth of 7.0% in H1 FY26, exceeding both H1 FY25 growth and the pre-COVID trend.
- Manufacturing emerged as a key growth engine, with GVA growth accelerating to 7.72% in Q1 and 9.13% in Q2 of FY26, signalling a structural recovery. Government initiatives, particularly Production Linked Incentive (PLI) schemes across 14 sectors, have catalysed investment of over ₹2.0 lakh crore, generated incremental production exceeding ₹18.7 lakh crore, and created more than 12.6 lakh jobs as of September 2025.
- India's innovation ecosystem has strengthened, with its Global Innovation Index rank improving to 38th in 2025, up from 66th in 2019.

Services: The Dominant Growth Engine

- The services sector continued to lead growth, expanding by 9.1% in FY26, compared to 7.2% in FY25. Services' share in GDP rose to 53.6%, while its share in GVA reached a historic high of 56.4% in H1 FY26.
- India became the world's seventh-largest services exporter, with its share in global services trade increasing from 2% in 2005 to 4.3% in 2024. The sector remains the largest recipient of FDI, supported by resilient domestic demand and steady export momentum.

EMPLOYMENT AND LABOUR MARKET TRENDS

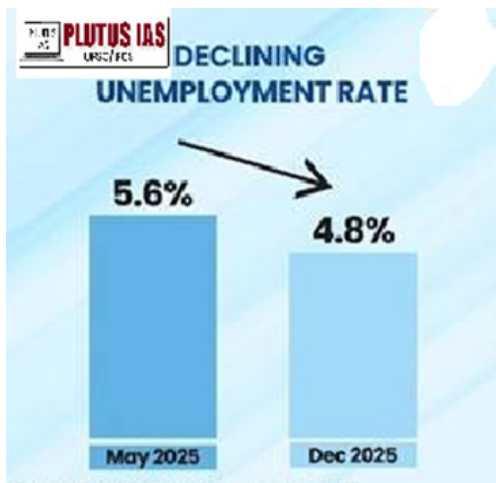
India's labour market demonstrated resilience alongside economic expansion. In Q2 FY26, total employment stood at 56.2 crore, with the creation of 8.7 lakh new jobs over the previous quarter.

PLFS indicators show strengthening labour conditions:

LFPR rose to 56.1%

- Female LFPR increased to 35.3%
- WPR rose to 53.4%
- Unemployment rate declined to 4.8%

The Annual Survey of Industries (FY24) reported a 6% increase in organised manufacturing employment, adding over 10 lakh jobs. As of January 2026, the e-Shram portal registered over 31 crore unorganised workers, with women accounting for more than 54%, strengthening targeted welfare delivery.



TRADE PERFORMANCE AND EXTERNAL SECTOR

On the trade front, India's total exports reached record levels of USD 825.3 billion in FY25 and USD 418.5 billion in H1 FY26, driven by strong growth in services exports and sustained momentum in non-petroleum, non-gems and jewellery merchandise exports.

India's integration into global trade has deepened steadily, marked by diversification of markets and a services-led export profile. India's share in global merchandise exports increased from 1% in 2005 to 1.8% in 2024, reflecting improved competitiveness and global integration.

According to UNCTAD's Trade and Development Report 2025, India ranks third among countries in the Global South in terms of the diversity index of trade partnerships, after China and the UAE. India's index score of 3.2 exceeds that of all countries in the Global North, underscoring its resilience to

tariff uncertainties, supply-chain disruptions, and evolving global trade dynamics.

Services exports emerged as a key growth engine, reaching an all-time high of USD 387.5 billion in FY25, registering a robust 13.6% year-on-year growth. This performance reinforced India's position as a global hub for technology, business, and professional services, with rising demand across IT services, financial services, and other knowledge-intensive segments.

External sector buffers remained strong. Foreign exchange reserves stood at USD 701.4 billion as of 16 January 2026, providing an import cover of around 11 months and covering over 94% of external debt, thereby enhancing India's ability to withstand external shocks.

India also remained the world's largest recipient of remittances, with inflows reaching USD 135.4 billion in FY25, offering critical support to the current account balance. Notably, the rising share of remittances from advanced economies reflects the growing global presence of skilled and professional Indian workers.

Industrial Output: IIP and Core Sector Performance

Industrial activity gathered further momentum in December 2025, with broad-based improvement reflected across both the Index of Industrial Production (IIP) and the Index of Eight Core Industries (ICI).

The ICI measures production performance across eight key sectors—coal, crude oil, natural gas, refinery products, fertilizers, steel, cement, and electricity—and serves as a leading indicator of industrial activity. These sectors together account for 40.27% of the total weight of the IIP.

The IIP expanded by 7.8% in December 2025, marking its highest growth in over two years, following robust growth of 7.2% (RE) in November 2025. Manufacturing remained the primary driver, growing by 8.1%, while Mining and Electricity recorded growth of 6.8% and 6.3%, respectively.

Within manufacturing, strong momentum was observed in technology- and mobility-linked segments:

- **Computer, electronic and optical products:** 34.9%

- **Motor vehicles, trailers and semi-trailers:** 33.5%
- **Other transport equipment:** 25.1%

On the core sector front, cement production surged by 13.5% YoY, followed by steel at 6.9%, reflecting sustained demand from construction and infrastructure activities. Other core industries also recorded positive growth, including electricity (5.3%), fertilizers (4.1%), and coal (3.6%), reinforcing the recovery across energy- and input-intensive sectors.



Overall, the synchronised improvement in the IIP and ICI indicates strengthening industrial fundamentals, supported by sustained infrastructure spending, resilient domestic demand, and steady expansion across core and manufacturing industries.

FISCAL DEVELOPMENTS

Strengthened Fiscal Credibility and Rating Upgrades

Prudent fiscal management has enhanced confidence in India's macroeconomic and fiscal framework, reflected in three sovereign credit rating upgrades in 2025 by Morningstar DBRS, S&P Global Ratings, and Rating and Investment Information (R&I), Inc. These upgrades recognise improved revenue buoyancy, credible fiscal consolidation, and sustained public investment.

Improvement in the Centre's Revenue Receipts

The Centre's revenue receipts increased from an

average of about 8.5% of GDP during FY16–FY20 to 9.2% of GDP in FY25 (PA). This improvement was primarily driven by buoyant non-corporate tax collections, which rose from around 2.4% of GDP in the pre-pandemic period to approximately 3.3% of GDP in the post-pandemic period, reflecting higher formalisation, compliance, and income growth.

Expansion of the Direct Tax Base

The share of direct taxes in total tax revenue increased from 51.9% pre-pandemic to 55.5% post-pandemic, reaching 58.8% in FY25 (PA). The direct tax base expanded steadily, with income tax return filings rising from 6.9 crore in FY22 to 9.2 crore in FY25. This expansion reflects improved tax compliance, greater use of digital tools in tax administration, and the entry of a larger number of individuals into the tax net as incomes rose.

GST Performance and Transaction Activity

Gross GST collections during April–December 2025 amounted to ₹17.4 lakh crore, registering a 6.7% year-on-year growth and broadly tracking nominal GDP trends. High-frequency indicators point to strong underlying transaction activity, with cumulative e-way bill volumes increasing by 21% YoY during the same period, indicating robust movement of goods and sustained economic activity.

Rise in Effective Capital Expenditure

The government's effective capital expenditure rose from an average of 2.7% of GDP in the pre-pandemic period to about 3.9% post-pandemic, and further to 4.0% of GDP in FY25. This sustained increase underscores the continued emphasis on public investment as a key driver of growth and crowd-in of private investment.

Support to States' Capital Spending (SASCI)

Through the Special Assistance to States for Capital Expenditure (SASCI), the Centre incentivised States to maintain capital expenditure at around 2.4% of GDP in FY25, strengthening sub-national investment and supporting balanced regional development.

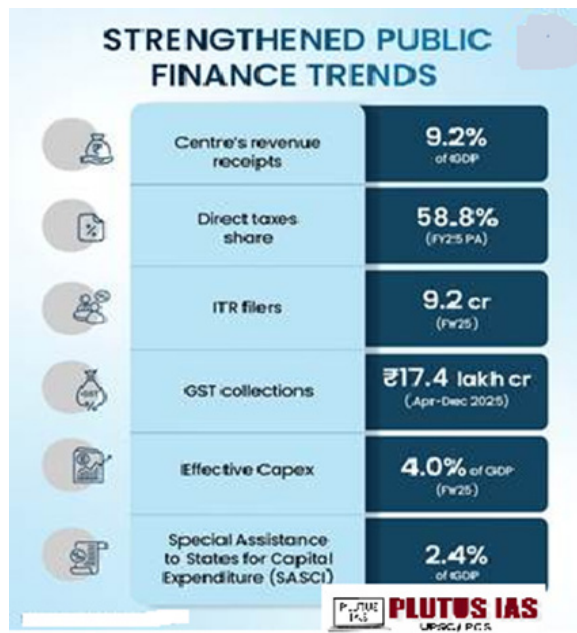
Trends in State Governments' Fiscal Deficit

The combined fiscal deficit of State Governments remained broadly stable at around 2.8% of GDP in the post-pandemic period, similar to pre-pandemic levels, but rose to 3.2% of GDP in FY25, reflecting emerging pressures on State finances amid higher

expenditure commitments.

Reduction in General Government Debt Ratio

India reduced its general government debt-to-GDP ratio by about 7.1 percentage points since 2020, while continuing to maintain elevated levels of public investment. This reflects a calibrated approach combining fiscal consolidation with growth-supportive expenditure.



FINANCIAL SECTOR AND MONETARY DEVELOPMENTS

India’s monetary and financial sectors recorded strong performance during FY26 (April–December 2025), despite heightened uncertainty in global financial markets. In an increasingly fragmented global financial environment, India’s robust regulatory framework, institutional resilience, and growing reliance on domestic financial channels played a stabilising role. Supported by proactive monetary management and effective financial intermediation across channels, the financial system remained stable and well-positioned to absorb external shocks.

Monetary Policy Actions and Liquidity Management

- In response to evolving macroeconomic and financial conditions, the Reserve Bank of India’s Monetary Policy Committee (MPC) cumulatively reduced the policy repo rate by 100 basis points between April and December 2025, bringing it to 5.25%. These calibrated reductions were

aimed at improving credit flow, stimulating investment, and supporting overall economic activity.

- Complementing policy rate cuts, the RBI reduced the cash reserve ratio (CRR) by 100 basis points to 3.0% during September–November 2025. In addition, the RBI injected durable liquidity of ₹2.39 lakh crore through open market operations (OMOs) during April–May 2025, followed by further OMO purchases of ₹1 lakh crore and a 3-year USD/INR buy-sell swap of USD 5 billion in December 2025.
- As a result, system liquidity remained in surplus, averaging ₹1.89 lakh crore in FY26 (up to 8 January 2026), compared to a marginal surplus of ₹1,605 crore in FY25, reflecting an accommodative liquidity environment.

Monetary Aggregates and Credit Transmission

- Reserve money growth moderated to 2.9% by December 2025, from 4.9% in December 2024. However, CRR-adjusted reserve money growth increased to 9.4%, compared to 6.2% a year earlier, reflecting the expansionary monetary stance.
- Broad money (M3) growth accelerated to 12.1%, up from 9% a year ago, indicating that banks effectively utilised the liquidity released through CRR reductions. This expansion was driven primarily by growth in aggregate bank deposits, the largest component of broad money.
- The money multiplier rose to 6.21 in December 2025, from 5.70 a year earlier, signalling improved financial intermediation and efficient transmission of liquidity within the banking system.

Banking Sector Performance and Credit Dynamics

- The banking sector strengthened further in FY26, with gross non-performing asset (GNPA) ratios declining to multi-decadal lows and net NPAs reaching record low levels. The capital-to-risk-weighted assets ratio (CRAR) of scheduled commercial banks (SCBs) remained robust at 17.2% as of September 2025, underscoring strong capital adequacy.
- Bank profitability improved further. Profit after tax of SCBs increased by 16.9% in FY25 and by 3.8% year-on-year as of September 2025. Return

on equity stood at 12.5%, while return on assets reached 1.3%, reflecting enhanced operational efficiency.

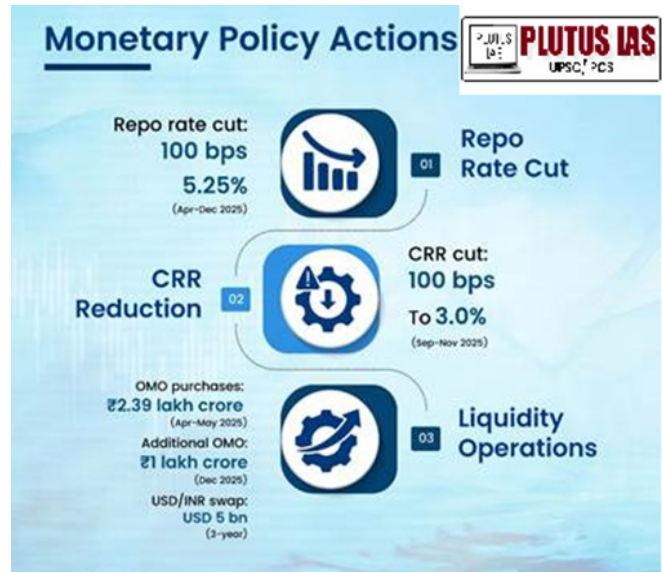
- After moderating earlier in FY26, credit growth regained momentum, with outstanding SCB credit expanding by 14.5% (YoY) in December 2025, compared to 11.2% in December 2024. December 2025 recorded the highest year-on-year growth rates for both bank credit and non-food credit during FY26.
- Credit growth to MSMEs remained particularly robust, expanding by 21.8% in November 2025. Within this segment, micro and small enterprises recorded credit growth of 24.6% (YoY), up sharply from 10.2% in November 2024, highlighting improved access to formal finance.

Improving Financial Inclusion Metrics

- The RBI's Financial Inclusion (FI) Index, which tracks progress across 97 indicators spanning access, usage, and quality of financial services, improved from 64.2 in March 2024 to 67.0 in March 2025. The improvement reflects sustained gains in banking outreach, digital payments, credit access, insurance penetration, and pension coverage.

Capital Markets and Household Financialisation

- Capital markets continued to play an expanding role in capital formation. During FY26 (up to December 2025), total resource mobilisation from primary markets stood at ₹10.7 lakh crore. Over the five-year period from FY22 to FY26 (till December 2025), primary markets mobilised ₹53 lakh crore through equity and debt issuances.
- Household financial savings increasingly shifted towards market-linked instruments. Individual investors' share in equity ownership rose to 18.8% by September 2025, while household equity wealth increased by approximately ₹53 lakh crore between April 2020 and September 2025. The share of equity and mutual funds in annual household financial savings increased from about 2% in FY12 to over 15.2% in FY25, reflecting deeper financialisation and growing investor participation.



CONCLUSION

Macroeconomic trends in FY26 reflect an economy characterised by stability alongside momentum. Growth remains broad-based across agriculture, industry, and services, while inflation has moderated and labour market conditions have improved. A strong external sector, robust fiscal consolidation combined with sustained capital expenditure, and a resilient financial system provide buffers against global uncertainties. Together, these developments position India favourably for sustained, inclusive, and resilient medium-term growth.

Prelims question:

Q. Consider the following statements regarding India's economic performance in FY26 :

1. India recorded its lowest CPI inflation since the inception of the CPI series during April–December 2025.
2. Services sector accounts for more than half of India's GDP and GVA.
3. India's foreign exchange reserves provide import cover of more than 10 months.
4. The Index of Eight Core Industries has a weight of more than 50% in the Index of Industrial Production.

Which of the statements given above are correct ?

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

Answer: A

Mains Question:

- Q. Examine the significance of declining inflation and improved labour market indicators for inclusive growth in India. (250 words)

**MODERNISING INDIA'S
 STATISTICAL SYSTEM:
 ALIGNING ECONOMIC
 MEASUREMENT WITH A
 TRANSFORMING ECONOMY**



WHY IN THE NEWS?



India's statistical system is undergoing a comprehensive modernisation to capture the realities of a fast-changing economy. Since the last base year revision in 2011–12, the Indian economy has witnessed profound structural shifts—rapid expansion of the services sector, increasing formalisation under the Goods and Services Tax (GST), growing digitalisation of business models, and changes in consumption and production patterns. These transformations have generated demand for more timely indicators, finer geographic granularity, and improved measurement of the informal and services sectors. In response, the Government of India has initiated a series of coordinated reforms aimed at strengthening the quality, credibility, relevance, and accessibility of official statistics. These reforms span base year revisions of major

indices, improvements in sectoral measurement, labour market statistics reforms, technological upgrades in survey methods, and enhanced data dissemination and transparency.

NATIONAL ACCOUNTS BASE YEAR REVISION

Need for Periodic Base Year Updates

Periodic base year revisions are essential to ensure that GDP and other macroeconomic indices reflect the current structure of the economy and prevailing relative prices. Over time, economic structures evolve due to technological change, sectoral shifts, and changes in consumer behaviour. Rebasing allows the incorporation of new data sources, updated methodologies, and improved coverage of emerging sectors. Further, base year revisions facilitate alignment with international best practices recommended by institutions such as the UN Statistical Commission, ensuring methodological soundness and global comparability, particularly in areas such as the digital economy and supply-use tables.

REVISION OF GDP BASE YEAR (2011–12 TO 2022–23)

One of the most significant reforms is the revision of the GDP base year from 2011–12 to 2022–23. Over the past decade, India's economy has transformed substantially, with the emergence of new industries such as renewable energy and digital services, alongside shifts in investment patterns and productivity.

The revision enables better capture of the true contribution of fast-growing sectors and technological advancements. Extensive digitisation has also unlocked rich administrative data sources—such as GST data, PFMS, and e-Vahan—which are now being integrated into national accounts to improve accuracy and granularity.

RATIONALE FOR SELECTING 2022–23

The year 2022–23 was chosen as the new base year as it represents the most recent “normal” year following the disruptions caused by the COVID-19 pandemic during 2019–21. GDP will continue to be compiled using the production/income and expenditure approaches, though with methodological refinements in both nominal and real estimates.

REVISION OF CONSUMER PRICE INDEX (CPI) BASE YEAR

The Consumer Price Index (CPI), a key indicator of inflation, is being revised with a new base year of 2024. The revision draws upon data from the Household Consumption Expenditure Survey (HCES) 2023–24, enabling an updated consumption basket and expenditure weights for rural and urban areas. This revision aims to improve the relevance and accuracy of inflation measurement, enhance methodological transparency, and strengthen the basis for monetary and fiscal policymaking.

PROCESS AND INSTITUTIONAL OVERSIGHT

The CPI revision process commenced in early 2023 under the guidance of an Expert Group comprising representatives from RBI, government ministries, academia, and international organisations such as the IMF and World Bank. It involved a structured, multi-stage process including sample verification, price collection, and stakeholder consultations.

REVISION OF INDEX OF INDUSTRIAL PRODUCTION (IIP)

The Index of Industrial Production (IIP), a key monthly indicator of industrial activity and an important input for estimating manufacturing GVA, is also being rebased to 2022–23. The revision seeks to update sectoral coverage, revise item weights, improve factory representation, and adopt enhanced methodologies, ensuring consistency with the revised National Accounts.

TIMELINE FOR RELEASE OF NEW SERIES

The Ministry of Statistics and Programme Implementation (MoSPI) has announced a clear rollout schedule:

- **GDP (Base 2022–23):** 27 February 2026
- **CPI (Base 2024):** 12 February 2026
- **IIP (Base 2022–23):** 28 May 2026

These releases are expected to enhance confidence in official statistics and improve economic policymaking, monetary management, and business planning.

IMPROVING MEASUREMENT OF INFORMAL AND SERVICES SECTORS

Annual Survey of Unincorporated Sector Enterprises (ASUSE)

ASUSE captures data on unincorporated non-agricultural enterprises, a major source of employment and local entrepreneurship. To address data gaps in the incorporated services sector, the NSO conducted a pilot Annual Survey of Service Sector Enterprises (ASSSE), focusing on indicators such as GVA, capital formation, and employment.

Quarterly Bulletins on Unincorporated Sector Enterprises (QBUSE)

From 2025, QBUSE has been introduced to provide quarterly estimates on scale, composition, and employment, improving the timeliness of data while complementing annual ASUSE reports.

LABOUR MARKET STATISTICS REFORM (PLFS)

The Periodic Labour Force Survey (PLFS) has undergone major reforms in 2025 to enhance frequency and granularity:

Monthly national-level labour indicators introduced from January 2025
Quarterly rural coverage added alongside urban estimates
Select state-level estimates enabled



CROSS-CUTTING DATA REFORMS: GRANULARITY AND DIGITALISATION

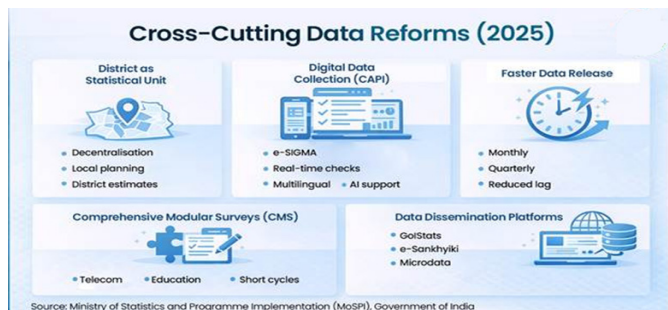
District as a Statistical Unit

From January 2025, districts have been adopted as the basic statistical stratum in NSS surveys, enabling district-level estimates for ASUSE and PLFS and supporting decentralised, evidence-based planning.

Digital Data Collection

Surveys are now conducted using CAPI through the e-SIGMA platform, featuring real-time validation, multilingual support, and AI-enabled chatbots. This has significantly improved data quality and reduced publication lags:

- **Annual results:** 90–120 days
- **Quarterly results:** 45–60 days
- **Monthly results:** 15–30 days



MODERN DATA DISSEMINATION PLATFORMS

Data accessibility has been enhanced through platforms such as:

- GoStats Mobile App (June 2025)
- e-Sankhyiki Portal (June 2024) with over 136 million records
- Revamped Microdata Portal (2025), developed with World Bank support

CONCLUSION

India’s recent statistical reforms represent a decisive shift towards a more responsive, credible, and policy-relevant statistical system. By updating base years, strengthening sectoral measurement, reforming labour statistics, and embracing digital and granular data practices, the Government has aligned official statistics with the evolving structure of the economy. Together with improved transparency and stakeholder engagement, these reforms reinforce trust in official data and

provide a robust foundation for evidence-based policymaking in a complex and dynamic economic environment.

Prelims question:

Q. With reference to recent reforms in India’s statistical system, consider the following statements:

1. The GDP base year is being revised from 2011–12 to 2022–23 to better capture structural changes such as digitalisation and expansion of services.
2. The revised Consumer Price Index (CPI) will use 2024 as the new base year, drawing weights from the Household Consumption Expenditure Survey (HCES) 2023–24.
3. The Index of Industrial Production (IIP) will be rebased to 2022–23 and released before the revised GDP series.

Which of the statements given above is/are correct?

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

Answer: A

Mains Question:

Q. Discuss the significance of recent reforms in India’s statistical system in improving the quality and policy relevance of economic data. (250 words)

**INDIA’S PETROLEUM
INDUSTRY: ENSURING
ENERGY SECURITY WHILE
ENABLING A CLEAN ENERGY
TRANSITION**



WHY IN THE NEWS?

India’s petroleum industry forms the backbone of the country’s energy architecture and economic momentum. Encompassing upstream (exploration

and production), midstream (transportation and storage), and downstream (refining, distribution, and marketing) activities, the sector supplies critical fuels such as petrol, diesel, LPG, aviation turbine fuel and petrochemical feedstocks. As a key pillar of India's energy basket, the petroleum industry not only ensures energy security for a fast-growing economy but also underpins industrial growth, mobility, agricultural productivity, and household energy access.

In an era marked by geopolitical uncertainties, volatile global oil markets, and climate imperatives, India's petroleum sector is simultaneously managing conventional energy demands and steering a calibrated transition towards cleaner and alternative fuels.

HISTORICAL EVOLUTION OF INDIA'S PETROLEUM INDUSTRY

The origins of India's petroleum sector date back to 1867, when the first oil well was drilled in Digboi, Assam, making India one of the earliest oil-producing countries in the world. The post-Independence phase saw institutional consolidation with the establishment of public sector enterprises such as ONGC (1956) and Indian Oil Corporation (1959), which laid the foundation for self-reliance in exploration, refining and distribution.

Economic liberalisation in the 1990s marked a turning point, opening the sector to private and foreign investment. Landmark policy initiatives like the National Exploration Licensing Policy (NELP) and later the Hydrocarbon Exploration and Licensing Policy (HELP) catalysed exploration activity and technological modernisation. Over time, India transitioned from a modest refining base to a globally competitive refining hub.

STRUCTURE AND SCALE OF THE INDUSTRY

Refining Infrastructure

India currently operates:

- 19 PSU refineries
- 3 private sector refineries
- 1 joint venture refinery

The country's total refining capacity has expanded from 215 MMTPA in 2014 to 256.816 MMTPA in

2024, placing India among the top four refining nations globally. Mega-refineries such as Jamnagar (Gujarat)—the world's largest refining complex—underscore India's global competitiveness.

RESOURCE BASE

India possesses:

- 651.8 million metric tonnes of recoverable crude oil
- 1,138.6 billion cubic metres of recoverable natural gas
- These reserves are distributed across 26 sedimentary basins, with increasing emphasis on frontier and deep-water exploration.

ECONOMIC CONTRIBUTION AND EMPLOYMENT GENERATION

1. The petroleum industry is a significant contributor to India's macroeconomic performance:
2. Gross Value Added (GVA) from coke and refined petroleum products increased from ₹1.56 lakh crore (2012–13) to ₹2.12 lakh crore (2022–23).
3. The sector supports millions of direct and indirect jobs across exploration, refining, logistics, retail and petrochemicals.
4. It catalyses growth in allied industries such as fertilizers, plastics, synthetic fibres, transport and infrastructure.

FOREIGN TRADE AND GLOBAL STANDING

1. India has emerged as a net exporter of refined petroleum products, leveraging surplus refining capacity and strategic geography.
2. India is the 7th largest exporter of refined petroleum products
3. Major export destinations include South Asia, Africa and Europe
4. Special Economic Zones (SEZs) for refineries have enhanced export competitiveness

According to the International Energy Agency (IEA), India is projected to be the largest contributor to global oil demand growth up to 2030, reinforcing its centrality in global energy markets.

TECHNOLOGICAL ADVANCEMENTS AND DIGITALISATION

Technological innovation has been instrumental in enhancing efficiency and sustainability:

1. Enhanced Oil Recovery (EOR) techniques to maximise output from ageing fields
2. AI, data analytics and digital twins for exploration, reservoir management and refinery optimisation
3. Adoption of green refining technologies to reduce emissions and water usage

GOVERNANCE AND POLICY REFORMS

India has undertaken far-reaching regulatory reforms to improve ease of doing business and investor confidence:

Oilfields (Regulation and Development) Amendment Act, 2024: Introduces a single licence for all hydrocarbons Ensures long-term policy stability

Simplification of approvals: Reduction from 37 approvals to 18, with self-certification for several processes

HELP regime: Revenue-sharing model, open acreage licensing, and pricing freedom

INDIA’S TRANSITION TOWARDS GREENER FUELS

Initiative	Objective / Focus	Key Targets & Achievements	Strategic Significance
Ethanol Blending Programme (EBP)	Reduce fossil fuel dependence and vehicular emissions by blending ethanol with petrol	<ul style="list-style-type: none"> • Target: 20% blending by 2025–26 • Ethanol supply rose from 38 crore litres (2013–14) to 707+ crore litres (2023–24) • 2nd highest ethanol blending globally 	<ul style="list-style-type: none"> • Cuts crude oil imports • Enhances farmer income (sugarcane, grains) • Supports climate commitments (NDCs)
SATAT Initiative (Sustainable Alternative Towards Affordable Transportation)	Promote Compressed Biogas (CBG) production from organic waste	<ul style="list-style-type: none"> • Feedstock: agricultural residue, cattle dung, municipal solid waste • Enables decentralised waste-to-energy 	<ul style="list-style-type: none"> • Clean transport fuel • Additional income for farmers • Circular economy & rural employment
National Green Hydrogen Mission	Establish India as a global hub for green hydrogen	<ul style="list-style-type: none"> • Target: 5 MMTPA green hydrogen by 2030 • Investment potential: ₹8 lakh crore • Employment: ~6 lakh jobs • CO₂ reduction: ~50 MMT annually 	<ul style="list-style-type: none"> • Deep decarbonisation of hard-to-abate sectors • Energy security & export potential (gre

FUTURE OUTLOOK AND TARGETS

Key Area	Target
Refining Capacity	309.5 MMTPA by 2030
Ethanol Blending	20% by 2025–26
Green Hydrogen	5 MMTPA by 2030
Exploration Acreage	1 million sq. km by 2030

SOCIAL AND DEVELOPMENTAL IMPACTS OF THE PETROLEUM SECTOR

1. **Universal Energy Access:** Expansion of LPG coverage under Pradhan Mantri Ujjwala Yojana (PMUY) has reduced energy poverty and improved household energy security.
2. **Rural Development and Infrastructure:** Expansion of city gas distribution (CGD), gas grids, and bio-energy projects supports rural connectivity and decentralised growth.

3. **Employment Generation:** The petroleum value chain—exploration, refining, pipelines, marketing—creates skilled and semi-skilled industrial employment.
4. **Skill Development:** Growth of refineries, petrochemicals, and downstream industries enhances technical training and workforce upskilling.
5. **Women Empowerment:** Access to clean cooking fuels reduces drudgery, indoor air pollution, and health risks for women, improving social outcomes.
6. **Human Development Outcomes:** Affordable and reliable energy access boosts health, education, productivity, and overall social equity.

CHALLENGES FACING INDIA'S PETROLEUM SECTOR

1. **High Import Dependence:** Over-reliance on imported crude oil exposes the economy to external supply disruptions and geopolitical risks.
2. **Global Price Volatility:** Fluctuating international oil prices impact inflation, fiscal stability, and subsidy burdens.
3. **Environmental Concerns:** Petroleum consumption contributes significantly to air pollution and greenhouse gas emissions.
4. **Stranded Asset Risk:** Rapid global energy transition threatens long-term viability of fossil-fuel-based infrastructure investments.
5. **Climate Commitments:** Balancing petroleum expansion with India's NDCs, net-zero targets, and sustainable development goals remains complex.
6. **Policy Coordination Challenges:** Ensuring coherence between energy security, economic growth, and environmental sustainability requires long-term strategic planning.

CONCLUSION

India's petroleum industry occupies a strategic and transitional position in the country's development trajectory. While it continues to underpin economic growth, industrialisation, mobility, and energy access, the sector is simultaneously adapting to the realities of climate change and global energy

transition. Policy reforms such as HELP and the 2024 Oilfields Amendment Act have strengthened governance and investment confidence, while technological adoption and diversification into biofuels and green hydrogen signal long-term adaptability.

Prelims question:

Q. With reference to India's petroleum industry, consider the following statements:

1. India is among the top five countries globally in terms of total refining capacity.
2. The Hydrocarbon Exploration and Licensing Policy (HELP) provides a uniform licensing system for all types of hydrocarbons.
3. The Strategic Petroleum Reserves of India are maintained entirely by private oil marketing companies.
4. India ranks second globally in ethanol blending with petrol.

Which of the statements given above are correct?

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

Answer: A

Mains Question:

Q. India's petroleum industry is simultaneously ensuring energy security and facilitating a transition towards cleaner fuels. Examine the economic, strategic and environmental significance of India's petroleum sector in this context. (250 words)

UNION BUDGET 2026: AN IN-DEPTH ANALYSIS OF PRIORITIES, POLICIES, AND IMPACT



WHY IN THE NEWS?

The Union Budget 2026–27 marks a significant shift in India's pharmaceutical strategy by placing

biopharma and biologic medicines at the core of healthcare and manufacturing policy. This reflects the government's recognition that the future of medicine lies increasingly in biotechnology-driven therapies, especially in the context of rising non-communicable diseases (NCDs) and global demand for advanced biologics. By prioritising biopharma, the Budget aims to move India up the pharmaceutical value chain—from a global supplier of low-cost generics to a centre for innovation-led, high-value biologic medicines, strengthening both public health outcomes and economic growth.

WHAT IS BIOPHARMA?

Biopharma, or biopharmaceuticals, refers to medicines developed and manufactured using living biological systems such as human or animal cells, microorganisms, fungi or enzymes. Unlike conventional chemically synthesised drugs, biopharmaceuticals are produced using biotechnology-based processes, making them more complex, targeted and precise. Examples include: Vaccines, Monoclonal antibodies, Gene and cell therapies, Recombinant proteins and modern insulin, Biosimilars

UNION BUDGET 2026–27: BIOPHARMA SHAKTI INITIATIVE

Component	Key Provisions (Union Budget 2026–27)	Significance
Biopharma SHAKTI Initiative	<ul style="list-style-type: none"> National mission with ₹10,000 crore outlay over 5 years Strengthens end-to-end biopharma ecosystem – R&D, manufacturing, clinical trials, regulation 	<ul style="list-style-type: none"> Reduces import dependence Positions India as a global hub for biologics & biosimilars
Human Resource Capacity Expansion	<ul style="list-style-type: none"> Establishment of 3 new NIPERs Upgradation of 7 existing NIPERs 	<ul style="list-style-type: none"> Addresses shortage of highly skilled manpower Supports research, manufacturing & regulatory expertise
Clinical Research Infrastructure	<ul style="list-style-type: none"> Development of 1,000+ accredited clinical trial sites across India 	<ul style="list-style-type: none"> Boosts capacity for advanced biologics trials Makes India a preferred global destination for ethical clinical research
Regulatory Capacity Building	<ul style="list-style-type: none"> Strengthening CDSCO Induction of specialised scientific & technical personnel 	<ul style="list-style-type: none"> Ensures faster approvals Enhances global regulatory alignment for complex biologics

WHY THIS MATTERS

The Budget integrates manufacturing scale, skilled manpower, clinical research capacity and regulatory credibility into a unified framework. This signals a clear intent to:

- Shift India from cost-based competitiveness to innovation-driven leadership
- Improve domestic access to affordable biologic therapies
- Enhance India's credibility in global pharmaceutical governance

GOVERNMENT INITIATIVES STRENGTHENING INDIA'S BIOPHARMA ECOSYSTEM

National Biopharma Mission (NBM) – Innovate in India (i3)

- Launched in 2017, with a total outlay of ₹1,500 crore, co-funded by the World Bank.
- Implemented by BIRAC under the Department of Biotechnology (DBT)
- Aims to transform India into a \$100 billion biotech industry and capture 5% of global pharma share.

Key Achievements:

- Support to 101 projects involving 150+ organisations and 30 MSMEs
- Creation of 1,000+ jobs, including scientists and researchers
- Development of vaccines (HPV, dengue), biosimilars (cancer, diabetes), diagnostics and medical devices
- Support for Genome India Programme (10,000 genome sequencing)

NBM AS A CATALYST FOR HEALTH INNOVATION

1. Enabled indigenous development of affordable technologies such as:
2. India's first domestically developed MRI scanner (Voxel Grids Innovations)
3. India's first biosimilar of Liraglutide for Type-2 diabetes (Levim Lifetech)
4. Supported the world's first DNA-based COVID-19 vaccine (ZyCoV-D)
5. Established extensive clinical trial networks, IP facilitation and incubation centres

**BIRAC-LED INNOVATION SUPPORT**

Established 95 bio-incubation centres across India

Key schemes:

- **Biotechnology Ignition Grant (BIG)** – up to ₹50 lakh

- **SEED Fund** – early equity support
- **LEAP Fund** – commercialisation support
- **जीविकारे (Jeevikare)** – Amrit Grand Challenge for digital health innovations

MANUFACTURING AND INDUSTRIAL STRENGTHENING

- PLI Scheme for Pharmaceuticals
- Bulk Drug Parks Scheme
- Strengthening of Pharmaceutical Industry (SPI) Scheme

These measures aim to:

- Reduce import dependence on APIs
- Upgrade MSMEs to global manufacturing standards
- Strengthen supply chain resilience and export competitiveness

PRIP SCHEME, BIOE3 POLICY AND BIO-RIDE

- PRIP Scheme (₹5,000 crore): Supports R&D in new drugs, biosimilars, precision medicine and MedTech.
- BioE3 Policy (2024): Focus on biomanufacturing, Bio-AI hubs and sustainable innovation.
- Bio-RIDE Scheme (₹9,197 crore): Integrates R&D, entrepreneurship, biomanufacturing and biofoundries.

CONCLUSION

The Union Budget 2026–27 reflects a coherent and forward-looking policy approach to building a resilient biopharma ecosystem spanning research, innovation, manufacturing and entrepreneurship. As India's disease burden shifts toward chronic and non-communicable conditions, access to advanced biologic therapies becomes critical for long-term health security. The Biopharma SHAKTI initiative, backed by substantial financial commitment and institutional reforms, represents a decisive step in this direction. By strengthening domestic capabilities in biologics and biosimilars, enhancing regulatory credibility and expanding clinical research infrastructure, the initiative reinforces India's ambition to emerge as a global biopharma manufacturing and innovation hub.

Prelims question:

Q. With reference to the Biopharma SHAKTI Initiative announced in Union Budget 2026–27, consider the following statements:

1. It aims to strengthen India's end-to-end ecosystem for biologics and biosimilars.
2. It includes expansion of NIPERs and development of nationwide clinical trial infrastructure.
3. It is implemented by the Central Drugs Standard Control Organisation (CDSCO).

Which of the statements given above is/are correct?

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

Answer:

Mains Question:

Q. Discuss the significance of the Biopharma SHAKTI Initiative announced in the Union Budget 2026–27 in transforming India's pharmaceutical sector. How does it align with India's broader healthcare and manufacturing objectives? (250 words)

INDIA'S RARE EARTH STRATEGY: MANUFACTURING, CORRIDORS AND GLOBAL INTEGRATION

**WHY IN THE NEWS?**

India is taking decisive steps towards self-reliance in critical and strategic materials by building a domestic ecosystem for Rare Earth Permanent Magnets (REPMs)—high-performance magnets that are indispensable for electric vehicles, wind turbines, electronics, aerospace and defence systems. Recognising their strategic importance, the Government approved a ₹7,280 crore REPM Manufacturing Scheme in November 2025 to

establish 6,000 MTPA of integrated capacity, covering the entire value chain from rare-earth oxides to finished magnets. Complementing this industrial push, the Union Budget 2026–27 announced the creation of Dedicated Rare Earth Corridors in mineral-rich coastal states. Together, these initiatives reflect India's long-term vision under Atmanirbhar Bharat, Net Zero 2070 and Viksit Bharat @2047, while positioning the country as a credible player in global advanced-materials value chains.

STRATEGIC IMPORTANCE OF RARE EARTH PERMANENT MAGNETS (REPMS)

Rare Earth Permanent Magnets are among the strongest and most efficient magnets available, characterised by high magnetic strength, thermal stability and compact size. These properties make them essential for:

1. Electric mobility (EV traction motors)
2. Renewable energy (wind turbine generators)
3. Electronics and automation
4. Aerospace and defence systems
5. Precision instruments and sensors

As India scales up clean energy, advanced manufacturing and strategic capabilities, secure access to REPMS becomes a strategic necessity, not merely an industrial requirement. Domestic production enhances supply chain resilience, reduces import dependence and strengthens India's competitiveness in high-technology sectors.



INDIA'S RARE EARTH RESOURCE BASE

India possesses a substantial geological endowment of rare-earth minerals, providing a strong foundation for downstream manufacturing.

Key Resource Indicators

1. **Monazite Deposits:** 13.15 million tonnes of monazite. Containing ~7.23 million tonnes of Rare Earth Oxides (REO)
2. **Geographical Distribution:** Coastal beach sands, teri/red sands and inland alluvium across Odisha, Kerala, Andhra Pradesh, Tamil Nadu, West Bengal, Gujarat, Maharashtra and Jharkhand
3. **Hard-Rock Resources:** 1.29 million tonnes of in-situ REO resources identified in Gujarat and Rajasthan
4. **Exploration Expansion:** GSI has identified 482.6 million tonnes of rare-earth ore resources through 34 exploration projects

NEED FOR ACCELERATED INVESTMENT

Despite abundant resources, India remains heavily import-dependent for permanent magnets, with China supplying nearly 60–80% by value and 85–90% by quantity (2022–25). Demand for REPMs is expected to double by 2030, driven by rapid growth in electric vehicles, renewable energy, electronics and defence manufacturing.

This widening demand–supply gap makes it imperative for India to:

1. Expand domestic manufacturing capacity
2. Invest in processing and refining technologies
3. Secure long-term supply chains for strategic sectors

BUDGET PUSH: MANUFACTURING AND CORRIDOR-BASED DEVELOPMENT

Rare Earth Permanent Magnet (REPM) Manufacturing Scheme

Approved on 26 November 2025, the scheme aims to establish a fully integrated domestic REPM ecosystem.

1. **Total Outlay:** ₹7,280 crore

2. **Capacity Creation:** 6,000 MTPA of sintered REPMs
3. **Beneficiaries:** Up to five entities selected through global competitive bidding
4. **Incentives:** ₹6,450 crore sales-linked incentives (5 years) ₹750 crore capital subsidy for advanced facilities
5. **Timeline:** 2-year gestation period, 5-year incentive disbursement linked to production
6. **Objective:** Ensure reliable domestic supply for EVs, renewables, electronics, aerospace and defence.

UNION BUDGET 2026–27: DEDICATED RARE EARTH CORRIDORS

The Budget announced Rare Earth Corridors in Odisha, Kerala, Andhra Pradesh and Tamil Nadu to promote:

1. Mining and beneficiation
2. Processing and refining
3. Research and development
4. Advanced manufacturing

These corridors will leverage coastal mineral resources, boost regional economies, strengthen R&D ecosystems and integrate India more deeply into global advanced-materials value chains.

ROLE OF IREL (INDIA) LIMITED

The corridor strategy builds upon the existing institutional base of IREL (India) Limited, operating under the Department of Atomic Energy since 1963.

Processing capacity: 10 lakh tonnes per annum

Key facilities:

1. **Rare Earth Extraction Plant** – Odisha
2. **Rare Earth Refining Unit** – Aluva, Kerala

ALIGNMENT WITH NATIONAL PRIORITIES

- **Atmanirbhar Bharat:** Reduced dependence on Chinese imports for critical magnets
- **Clean Energy & Net Zero 2070:** REPMs enable EVs and wind energy
- **National Security:** Assured supply for defence, aerospace and strategic technologies

Policy Reforms:

- **MMDR Act (Amended 2023):** Private participation and critical minerals focus
- **National Critical Minerals Mission (2025):** Sustainable and secure supply chains

STRENGTHENING GLOBAL MINERAL PARTNERSHIPS**Bilateral Cooperation**

India has signed agreements with Australia, Argentina, Zambia, Mozambique, Peru, Zimbabwe, Malawi and Côte d'Ivoire to secure long-term access to critical minerals.

Multilateral Engagement

1. Minerals Security Partnership (MSP)
2. Indo-Pacific Economic Framework (IPEF)

These platforms support technology cooperation, investment and supply chain diversification.

Role of KABIL

Khanij Bidesh India Limited (KABIL) — a JV of NALCO, HCL and MECL — focuses on overseas mineral assets. Its agreement with CAMYEN (Argentina) for lithium brine exploration marks a significant step in external resource security.

CONCLUSION

India's rare earth strategy reflects a holistic shift from resource possession to value-chain leadership. The ₹7,280 crore REPM Manufacturing Scheme and Dedicated Rare Earth Corridors announced in Union Budget 2026–27 together create an integrated framework spanning mining, processing, research and manufacturing. These initiatives reduce import dependence, secure clean-energy and defence supply chains, and align with the national vision of Atmanirbhar Bharat, Net Zero 2070 and Viksit Bharat @2047. Backed by global partnerships and institutional reforms, India is steadily positioning itself as a reliable and competitive player in advanced materials and critical minerals value chains.

Prelims question:

- Q. With reference to Rare Earth Permanent Magnets (REPMs) and India's recent policy initiatives, consider the following statements:**

1. Rare Earth Permanent Magnets are critical for electric vehicle motors and wind turbine generators.
2. India currently imports the majority of its permanent magnet requirements, mainly from China.
3. The Rare Earth Permanent Magnet Manufacturing Scheme aims to create integrated capacity covering the entire value chain from rare-earth oxides to finished magnets.
4. Dedicated Rare Earth Corridors announced in the Union Budget 2026–27 are proposed only in inland mineral-rich states.

Which of the statements given above are correct?

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

Answer: A

Mains Question:

- Q. Discuss the strategic significance of REPMs, India's resource potential, and examine how policy initiatives such as the REPM Manufacturing Scheme and Dedicated Rare Earth Corridors contribute to India's goals of Atmanirbhar Bharat, clean energy transition, and strategic autonomy. (250 words)**

**GATI SHAKTI
CARGO TERMINALS:
ENHANCING EFFICIENCY,
SUSTAINABILITY, AND
TRADE COMPETITIVENESS**

**WHY IN THE NEWS?**

India's logistics sector has witnessed a remarkable transformation in recent years, with logistics costs now reduced to 7.97% of GDP, bringing the nation closer to global benchmarks. This achievement reflects sustained reforms, integrated planning, and digital adoption, which together are reshaping the logistics ecosystem to be more efficient, cost-effective, and future-ready.

At the heart of this transformation is the PM Gati Shakti National Master Plan, which integrates railways, highways, ports, and airports into a unified framework. This multimodal approach enhances industry competitiveness, supports initiatives like Ease of Doing Business and Make in India, and promotes balanced regional growth. A key pillar of this vision is the development of Gati Shakti Cargo Terminals (GCTs), modern hubs designed to streamline freight operations and strengthen India’s position as a global trade hub.

GATI SHAKTI CARGO TERMINALS (GCTS): AN OVERVIEW



A cargo terminal is a facility where goods are loaded, unloaded, and transferred between trains and other transport modes. Previously, freight in India moved in a fragmented manner across roads, railways, and ports, causing delays, congestion, and higher costs. The GCT initiative addresses these challenges by creating integrated multimodal hubs, reducing handling time, emissions, and overall logistics costs.

Developed under the GCT Policy, 2021 of the Ministry of Railways, GCTs operate with Engine-On-Load (EOL) systems, ensuring that locomotives remain at the terminal during loading/unloading, minimizing detentions, and optimizing railway infrastructure. Equipped with mechanized loading systems and silos, GCTs enhance efficiency and reliability, while promoting rail transport, which is more energy-efficient and environmentally sustainable compared

to road freight.

KEY FEATURES OF GCTS

- Multimodal Connectivity:** Seamlessly links railways with roads, ports, and airports, enabling smooth cargo movement.
- Private Sector Participation:** Encourages investment, innovation, and capacity expansion.
- Simplified Approval Processes:** Time-bound clearances accelerate terminal development.
- National Priority Alignment:** Supports Ease of Doing Business, Make in India, and Atmanirbhar Bharat.
- Regional Development:** Terminals are strategically located to ensure inclusive economic growth.

GATI SHAKTI CARGO TERMINAL POLICY, 2021

Introduced on 15 December 2021, the policy aims to:

- Accelerate modern cargo terminal development and upgrade existing facilities.
- Encourage private participation through incentives like cost exemptions, rail infrastructure support, and freight rebates.
- Align terminal development with industry demand, promoting India as a global logistics hub.

Key incentives include:



- Waivers for departmental charges, land license fees, and commercial staff costs.

- Railways maintain common-user traffic facilities.
- Terminals handling over 1 million tonnes outward traffic get a 10% freight rebate.
- Maintenance of tracks, signaling, and OHE by Railways.
- Surplus railway land can be developed under Rail Land Development Authority (RLDA) provisions.

PROGRESS AND ACHIEVEMENTS

Since inception:

- 306 GCT proposals approved, 118 commissioned with 192 million tonnes per annum capacity.
- Mobilised ₹8,600 crore in private investment.
- Freight revenue increased fourfold between 2022–23 and 2024–25.
- Rail transport has shifted 2,672 million tonnes of freight from roads since 2014, saving 143.3 million tonnes of CO₂.

STRATEGIC TERMINALS DRIVING LOGISTICS GROWTH

- Manesar, Haryana:** India's largest automobile GCT at Maruti Suzuki's plant, with a capacity to handle 4.5 lakh vehicles annually, connected to Patli Railway Station through a 10 km dedicated rail link.
- Northeast Terminals (Moinarband and Cinnamara, Assam):** Handle coal, containers, fertilizers, petroleum products, and food grains, strengthening regional trade. Six new terminals under construction, including Baihata, Habaipur, and Jogighopa.
- New Sanjali, Gujarat:** First GCT built on private land along the Western Dedicated Freight Corridor, enhancing multimodal and high-speed cargo movement.

WAY FORWARD FOR GATI SHAKTI CARGO TERMINALS

- Enhanced Private Sector Participation:** Encourage greater investment and collaboration with private players to accelerate the development and operational efficiency of GCTs. Public-private partnerships will expand capacity, bring innovation, and ensure timely project execution.

- Strategic Terminal Expansion:** Identify and develop new GCT locations based on industry demand, regional growth potential, and connectivity needs, ensuring balanced development across states and regions.
- Advanced Digital Integration:** Leverage the Gati Shakti digital platform for real-time cargo tracking, predictive analytics, and data-driven logistics management to enhance operational efficiency and transparency.
- Eco-Friendly Freight Solutions:** Promote the shift from road to rail, reducing carbon emissions, energy consumption, and congestion, aligning with India's sustainability and decarbonisation goals.
- Global Competitiveness and Industry Responsiveness:** Build a world-class logistics ecosystem that meets international standards, supports industrial growth, enhances India's trade competitiveness, and ensures responsive freight services for evolving market demands.

CONCLUSION

Gati Shakti Cargo Terminals represent a transformative step in modernizing India's logistics sector. By combining infrastructure development, digital integration, and private participation, they address long-standing inefficiencies, reduce costs, and promote sustainability. As these terminals expand, they are poised to make India's logistics network faster, greener, and globally competitive, reinforcing the country's role as a key player in global trade.

Prelims question:

- Q. Which of the following is/are correct regarding Gati Shakti Cargo Terminals (GCTs)?**
 - GCTs operate with Engine-On-Load (EOL) systems.
 - They are developed under the PM Gati Shakti National Master Plan and GCT Policy, 2021.
 - They focus solely on road transport logistics.

Options:

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

Answer: A**Mains Question:**

- Q. Discuss the significance of Gati Shakti Cargo Terminals in modernizing India's logistics sector and their role in enhancing economic competitiveness. (250 words)**



INDIAAI MISSION: POWERING INCLUSIVE, SOVEREIGN AND CITIZEN-CENTRIC ARTIFICIAL INTELLIGENCE FOR VIKSIT BHARAT 2047



WHY IN THE NEWS?



India is in the news for accelerating inclusive and citizen-centric AI adoption through the IndiaAI Mission, backed by ₹10,300+ crore investment and large-scale GPU deployment. Initiatives like Bhashini, BharatGen, and AIKosh highlight India’s focus on affordable, multilingual, and sovereign AI, integrating

AI into governance, agriculture, healthcare, and education in line with Viksit Bharat 2047.

INDIAAI MISSION: BUILDING THE FOUNDATIONS OF SOVEREIGN AI

Approved in March 2024, the IndiaAI Mission (₹10,371.92 crore) aims to position India as a global leader in responsible and inclusive AI.

WHAT IS A GPU?

A Graphics Processing Unit (GPU) is a high-performance chip that accelerates AI workloads such as model training, image processing, and large-scale data analysis.

UNDERSTANDING ARTIFICIAL INTELLIGENCE

Artificial Intelligence refers to the capability of machines to perform tasks that traditionally require human intelligence, such as learning, reasoning, perception, decision-making, and language understanding. AI systems rely on:

- Large datasets
- Advanced algorithms
- Machine Learning (ML) and Deep Learning
- Large Language Models (LLMs)

Over time, AI systems continuously improve through feedback loops, enabling them to generate insights, automate processes, and deliver personalised services at scale.

INDIA’S AI ECOSYSTEM: CURRENT LANDSCAPE

Overall AI Ecosystem Snapshot

Indicator	Status / Data
Tech Sector Revenue	USD 280+ billion
Global Capability Centres (GCCs)	1,800+ total

AI-focused GCCs	500+
Total Startups	~1.8 lakh
Startups leveraging AI	~89% of new startups
Firms with AI maturity at scale (BCG)	26%
Enterprises actively adopting AI	87%
NASSCOM AI Index Score	2.45 / 4

SECTORAL LEADERS IN AI ADOPTION

Sector	Role in AI Adoption
BFSI	AI-driven risk assessment, fraud detection, customer analytics
Healthcare	Diagnostics, telemedicine, drug discovery
Industrial & Automotive	Predictive maintenance, automation, smart manufacturing
Retail & Consumer Goods	Demand forecasting, personalization, supply-chain optimization

GLOBAL STANDING: INDIA AS AN AI POWERHOUSE

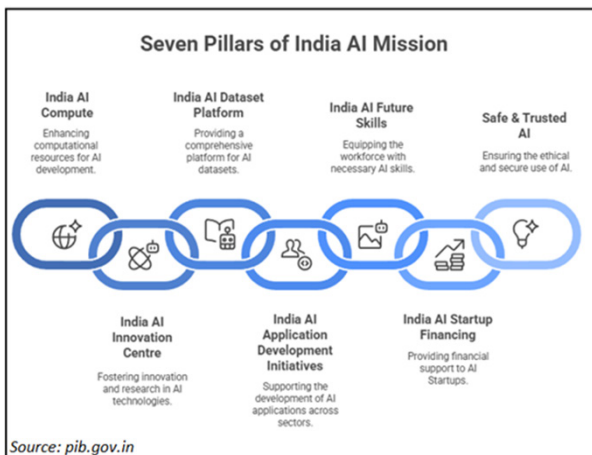
According to the Stanford Global AI Vibrancy Tool 2025, India ranks 3rd worldwide in AI competitiveness, driven by:

- A strong STEM talent pool
- Expanding research and startup ecosystem
- Robust digital public infrastructure
- Progressive AI governance frameworks

SEVEN PILLARS OF THE INDIAAI MISSION

Pillar	Key Features & Achievements
1. IndiaAI Compute	<ul style="list-style-type: none"> • 38,000 GPUs onboarded (vs initial target of 10,000) • Subsidised access at ~₹65/hour • Enables low-cost AI innovation for startups, academia, and MSMEs

2. IndiaAI Application Development	<ul style="list-style-type: none"> • AI solutions for healthcare, agriculture, climate, governance, education • 30 applications approved (by July 2025) • Sectoral hackathons like CyberGuard AI
3. AIKosh – National AI Dataset Platform	<ul style="list-style-type: none"> • 5,500+ datasets, 251 AI models across 20 sectors • 3.85 lakh+ visits and 26,000 downloads • Lowers entry barriers for AI developers
4. IndiaAI Foundation Models	<ul style="list-style-type: none"> • Indigenous Large Multimodal Models (LMMs) in Indian languages • Key players: Sarvam AI, BharatGen (IIT Bombay), Gnani AI • Ensures data sovereignty and cultural contextualisation
5. IndiaAI Future Skills	<ul style="list-style-type: none"> • Fellowships for 13,500 scholars (UG, PG, PhD) • AI & Data Labs in Tier 2/3 cities • 570-lab national network under development
6. IndiaAI Startup Financing	<ul style="list-style-type: none"> • IndiaAI Startups Global Programme • Supports international expansion • Europe partnerships with Station F and HEC Paris
7. Safe and Trusted AI	<ul style="list-style-type: none"> • Emphasis on bias mitigation, explainability, privacy, and AI auditing • Establishment of the IndiaAI Safety Institute



AI IN GOVERNANCE, ECONOMY, AND DAILY LIFE

- Healthcare:** AI-enabled diagnostics, telemedicine, disease prediction. Collaborations with ICMR, UK, Singapore. Ethical AI through HealthAI participation
- Agriculture:** AI-driven pest surveillance, weather forecasting, crop advisories, Tools like Kisan e-Mitra Boosts farmer income and climate resilience
- Education & Skilling:** AI curriculum under NEP 2020 AI modules from Class VI onwards DIKSHA, YUVAi programmes enhance inclusivity
- Governance & Justice:** AI in e-Courts Phase III, Multilingual translation of judgments, Enhanced transparency and access to justice
- Climate & Disaster Management:** AI-based cyclone prediction (Advanced Dvorak Technique), MausamGPT for real-time climate advisories

EMPLOYMENT AND THE AI DEBATE

Contrary to fears, AI is reshaping—not replacing—jobs:

- AI workforce projected to grow from 6.5 lakh to 12.5 lakh by 2027
- Strong demand for data scientists, AI engineers, model trainers
- FutureSkills PRIME: 18.5 lakh registrations

AI FOR INCLUSIVE SOCIETAL DEVELOPMENT (INDIA)

Aspect	Key Details
Policy Anchor	NITI Aayog – AI for Inclusive Societal Development (October 2025)

Target Group	~490 million informal workers
Objective	Leverage AI to enhance livelihoods, social security, and economic inclusion



Key AI Enablers

Tool / Mechanism	Role in Inclusion
Voice-first Interfaces	Overcomes literacy and language barriers
Micro-credentials	Enables skill recognition and employability
Smart Contracts	Ensures transparent and timely payments
Digital Payments	Expands financial inclusion and formalisation

Digital ShramSetu Mission (Proposed)

Feature	Description
Nature	National mission for informal sector digitisation
Technologies	AI, blockchain, digital public infrastructure
Goal	Scalable deployment of frontier technologies for worker empowerment

Implementation Roadmap

Phase	Timeline	Focus
Phase I	2025–26	Mission design & stakeholder alignment
Phase II	2026–27	Governance and institutional setup
Phase III	2027–29	Pilot projects and impact evaluation
Phase IV	2029 onwards	Nationwide rollout

CONCLUSION

India’s AI journey reflects a balanced synthesis of innovation, inclusion, and governance. Through strategic investments, indigenous model development, ethical frameworks, and mass skilling, India is leveraging AI as a development multiplier rather than a disruptive force. Initiatives such as the IndiaAI Mission, BharatGen, Bhashini, and Digital ShramSetu demonstrate how technology can deepen democracy, enhance productivity, and expand opportunity. As India advances towards Viksit Bharat 2047, Artificial Intelligence will remain a cornerstone—driving growth while ensuring that no citizen is left behind.

Prelims question:

Q. With reference to the IndiaAI Mission, consider the following statements:

1. The IndiaAI Mission aims to develop indigenous Large Multimodal Models trained on Indian datasets and languages.
2. AIKosh is a national platform that integrates government and non-government datasets to support AI innovation.
3. Under the IndiaAI Compute Pillar, high-end GPUs are provided to startups and academia at market-determined commercial rates.
4. Safe and Trusted AI under the IndiaAI Mission focuses on issues such as bias mitigation, explainability, and privacy-preserving machine learning.

Which of the statements given above are correct?

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

Answer: B

Mains Question:

Q. Artificial Intelligence is emerging as a key enabler of inclusive growth and digital governance in India. In this context, examine the objectives and significance of the IndiaAI Mission and evaluate how it contributes to India’s vision of Viksit Bharat 2047

(250 words)

ELECTRONICS COMPONENTS MANUFACTURING SCHEME (ECMS): STRENGTHENING INDIA’S ELECTRONICS VALUE CHAIN



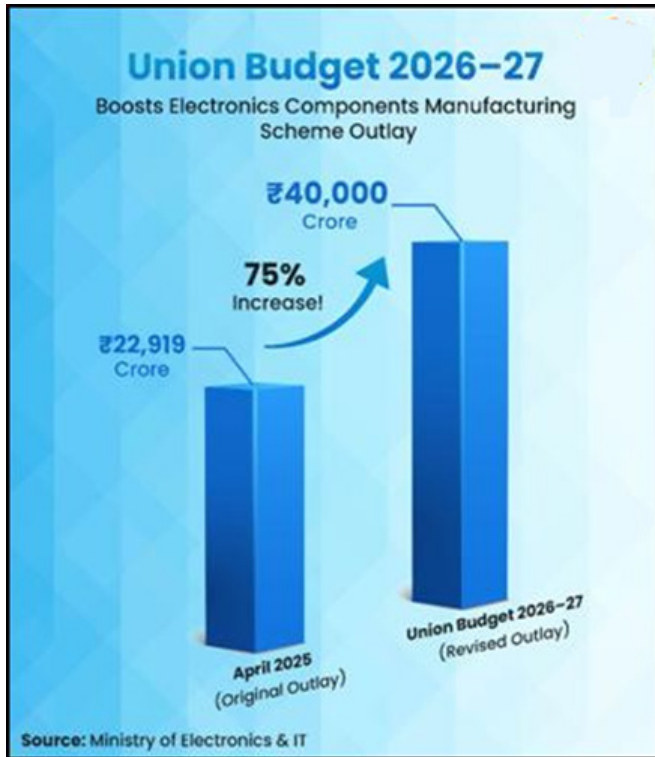
WHY IN THE NEWS?

India’s electronics manufacturing sector has entered a decisive phase of structural transformation. The Union Budget 2026–27 has significantly enhanced the outlay of the Electronics Components Manufacturing Scheme (ECMS) to ₹40,000 crore, signalling a strong policy commitment to deepening domestic manufacturing capabilities and reducing import dependence. Over the past decade, India has emerged as a major electronics manufacturing hub, registering nearly a six-fold increase in production, creating around 25 lakh jobs, and strengthening its integration with global value chains.

ELECTRONICS: EMERGING AS INDIA’S LEADING EXPORT SECTOR

As highlighted in the Economic Survey 2025–26, electronics has emerged as India’s third-largest and fastest-growing export category in 2024–25, rising sharply from the seventh position in 2021–22. During the first half of FY 2025–26, electronics exports stood at USD 22.2 billion, placing the sector on track to become India’s second-largest export item. India’s electronics production expanded from

₹1.9 lakh crore in 2014–15 to ₹11.3 lakh crore in 2024–25, reflecting a six-fold increase. Exports grew even faster, from ₹38,000 crore to ₹3.27 lakh crore, an eight-fold rise over the same period. This growth has been employment-intensive, generating approximately 25 lakh jobs nationwide.



MOBILE MANUFACTURING: THE FLAGSHIP SUCCESS STORY

Mobile phone manufacturing has been the primary driver of India’s electronics transformation. Production in this segment surged from ₹18,000 crore in 2014–15 to ₹5.45 lakh crore in 2024–25, marking a 28-fold increase. India is now the world’s second-largest mobile phone manufacturer, with over 300 manufacturing units, compared to just two in 2014. Exports of mobile phones have shown exceptional growth, rising 127 times from ₹1,500 crore in 2014–15 to ₹2 lakh crore in 2024–25. In the first five months of FY 2025–26 alone, smartphone exports reached ₹1 lakh crore, registering a 55 per cent year-on-year growth. This shift from heavy import dependence to near self-reliance underscores the effectiveness of India’s electronics policy ecosystem.



OVERVIEW OF THE ELECTRONICS COMPONENTS MANUFACTURING SCHEME (ECMS)

The Electronics Components Manufacturing Scheme was notified on 8 April 2025 with an initial outlay of ₹22,919 crore, a tenure of six years, and an optional one-year gestation period. The scheme aims to create a self-sustaining electronics component manufacturing ecosystem by attracting domestic and global investments, promoting higher domestic value addition, and integrating India into global electronics value chains. ECMS complements the India Semiconductor Mission (ISM) by strengthening upstream and downstream linkages in the electronics ecosystem. Its focus includes the domestic manufacturing of critical components, sub-assemblies, and raw materials. As of December 2025, expected investment commitments under ECMS stand at ₹1,15,351 crore, nearly double the original target. The scheme is projected to generate ₹10.34 lakh crore worth of production over six years, with an estimated incentive outgo of ₹41,468 crore. It is also expected to create 1.41 lakh direct jobs, significantly exceeding initial projections.

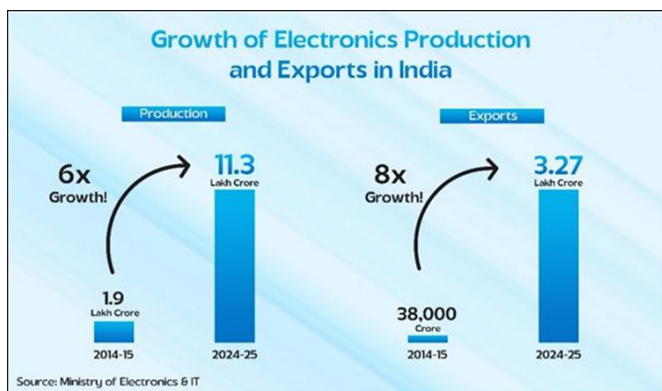
Parameter	Target under ECMS	Expected Outcomes (As per applications received)
Investment	Rs. 59,350 crore	Rs. 1,15,351 crore (-2X)
Production	Rs. 4,56,500 crore	Rs. 10,34,751 crore (-2.2X)
Employment	91,600 persons	1,41,801 persons (-1.5X)
Incentive Outgo	Rs. 22,805 crore	Rs. 41,468 crore (-1.8X)

Source: Ministry of Electronics and IT

APPROVED PROJECTS AND INDUSTRIAL SPREAD

Since its launch, ECMS has received strong industry participation. A total of 46 projects across 11 states have been approved, involving cumulative investments of ₹54,567 crore and a projected production value of ₹3.67 lakh crore. These projects are expected to generate direct employment for around 51,000 workers.

The approved units will manufacture a wide range of components, including multi-layer PCBs, camera modules, connectors, oscillators, optical transceivers, and enclosures for mobile phones and IT hardware. Approvals have been granted in three tranches, with the third tranche alone accounting for the bulk of investments and employment, reflecting growing industry confidence.



COMPLEMENTARY GOVERNMENT INITIATIVES

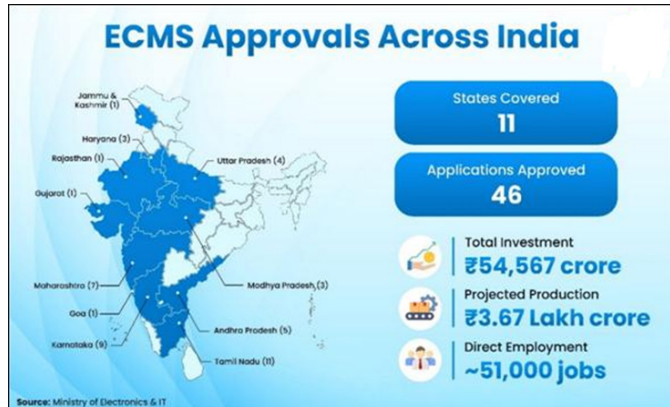
ECMS operates alongside a broader ecosystem of policy support for electronics manufacturing. The Production-Linked Incentive (PLI) Scheme, with an outlay of ₹1.97 lakh crore, has played a key role in attracting investment and boosting exports. Since FY 2020–21, India has received over USD 4 billion in FDI in electronics manufacturing, with nearly 70 per cent contributed by PLI beneficiaries. The Modified Electronics Manufacturing Clusters (EMC 2.0) scheme has strengthened manufacturing infrastructure by approving 11 EMC projects and 2 Common Facility Centres across 10 states, with a projected investment of ₹1.46 lakh crore and employment potential of 1.8 lakh jobs.

CONCLUSION

The Electronics Components Manufacturing Scheme has emerged as a cornerstone of India’s electronics manufacturing strategy. The enhanced outlay of ₹40,000 crore in Union Budget 2026–27 reflects a clear policy resolve to deepen domestic capabilities, strengthen value chains, and enhance export competitiveness. By mobilising large-scale investment, generating employment, and fostering technological capability, ECMS reinforces India’s emergence as a credible global hub for advanced electronics manufacturing and supports the broader goal of Atmanirbhar Bharat in high-technology sectors.

Prelims question:

Q. With reference to the Electronics Components Manufacturing Scheme (ECMS), consider the following statements:



EXPECTED OUTCOMES IN FY 2026–27

The scheme is expected to deliver tangible results in FY 2026–27 as approved projects become operational. By the end of the financial year, ECMS is projected to generate:

- ₹11,156 crore in investments
- ₹29,024 crore in production
- 19,240 new jobs

1. ECMS aims to promote domestic manufacturing of electronic components and sub-assemblies to enhance value addition.
2. The scheme complements the India Semiconductor Mission by strengthening upstream and downstream linkages.
3. ECMS provides incentives only for final assembly of electronic goods.
4. The Union Budget 2026–27 enhanced the outlay of ECMS to ₹40,000 crore.

Which of the statements given above are correct?

- A. 1, 2 and 4 only B. 1 and 3 only
 C. 2 and 4 only D. 1, 2, 3 and 4

Answer:

Mains Question:

Q. The Electronics Components Manufacturing Scheme (ECMS) marks a strategic shift in India’s electronics manufacturing policy. Discuss its objectives, expected outcomes, and its significance in strengthening India’s position in global electronics value chains.

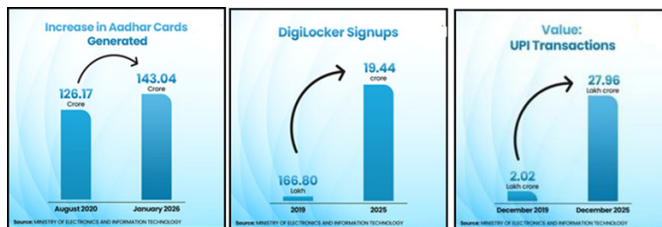
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**INTERNATIONAL DATA
 PRIVACY DAY: SAFEGUARDING
 TRUST IN INDIA’S
 POPULATION-SCALE DIGITAL
 GOVERNANCE**



WHY IN THE NEWS?

International Data Privacy Day, observed annually on 28 January, underscores the global importance of protecting personal data and privacy in an increasingly digital world. Also known as Data Protection Day, it commemorates the signing of Convention 108 in 1981 by the Council of Europe—the world’s first legally binding international treaty on data protection. In the digital age, where data has emerged as a critical economic and governance resource, privacy is no longer a peripheral concern but a foundational pillar of democratic and responsible digital governance.



INDIA’S EXPANDING DIGITAL FOOTPRINT AND THE PRIVACY IMPERATIVE

India’s rapid digitalisation has fundamentally transformed interactions between citizens and the State. Digital platforms today underpin service delivery, financial inclusion, healthcare access, participatory governance, and economic transactions at population scale. This transformation has generated immense efficiency and accessibility, but it has also amplified the privacy and cybersecurity imperative.

Scale and Reach of Digital Public Infrastructure (DPI)

1. UPI has revolutionised real-time digital payments, becoming a global benchmark for interoperable fintech systems.
2. Paperless governance platforms have streamlined public service delivery.
3. MyGov, with over 6 crore users, has strengthened participatory governance.
4. eSanjeevani has enabled more than 44 crore telemedicine consultations, expanding access to healthcare.

Digital Inclusion at Population Scale

1. India is now the world’s third-largest digitalised economy, supported by:
2. 101.7 crore broadband subscribers (as of September 2025),
3. An average of 1,000 minutes spent online per user, and
4. One of the world’s lowest data costs at \$0.10 per GB (2025)

STRENGTHENING PRIVACY AND CYBERSECURITY

The scale that enables inclusion also increases vulnerability to data misuse, cyber fraud, and privacy breaches. Recognising this, the Government has

significantly strengthened India's cybersecurity and data protection ecosystem, including an allocation of ₹782 crore in the Union Budget 2025–26 for cybersecurity initiatives aimed at safeguarding digital public infrastructure. Observing International Data Privacy Day reinforces India's commitment to privacy by design, institutional accountability, and public awareness, ensuring that digital growth remains secure and sustainable.

NATIONAL DATA PRIVACY AND SECURITY READINESS

Information Technology Act, 2000

The IT Act, 2000 remains the cornerstone of India's cyber legal framework. It provides legal recognition to electronic records and digital signatures, enabling e-governance and digital commerce. The Act also establishes key cybersecurity institutions such as CERT-In, and empowers the State through provisions related to authentication, adjudication, content blocking, and cyber incident management (Sections 3, 3A, 6, 46, 69A, and 70B).

IT (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021

These Rules mandate due diligence, grievance redressal, and accountability for intermediaries such as social media platforms, search engines, online marketplaces, and internet service providers, thereby fostering a safer and more transparent online ecosystem.

DIGITAL PERSONAL DATA PROTECTION (DPDP) FRAMEWORK

DPDP Act, 2023

Enacted in August 2023, the DPDP Act governs the processing of personal data collected digitally or digitised from offline sources. It adopts a SARAL approach—Simple, Accessible, Rational, and Actionable—to ensure ease of compliance while protecting individual privacy. A key institutional feature is the Data Protection Board of India, responsible for enforcement, inquiry into data breaches, and ensuring corrective action. At its core, the Act places citizens at the centre by recognising them as Data Principals, empowered with clearly defined rights and protections.

Rights of Citizens under the DPDP Act

1. Right to give or refuse consent

2. Right to know how data is collected and used
3. Right to access, correct, update, and erase personal data
4. Right to nominate a representative
5. Mandatory redressal within 90 days
6. Timely intimation during data breaches
7. Special protections for children and persons with disabilities

DPDP Rules, 2025

Notified in November 2025, the DPDP Rules, 2025 operationalise the Act by strengthening enforcement mechanisms, enhancing organisational accountability, and curbing misuse of personal data. Together, the Act and Rules provide regulatory clarity, balancing privacy protection with innovation and economic growth.



ADDITIONAL NATIONAL MEASURES FOR DATA SECURITY

1. CERT-In for proactive cybersecurity incident response
2. Indian Cyber Crime Coordination Centre (I4C) for national coordination against cybercrime
3. National Cyber Crime Reporting Portal (NCRP) and Helpline 1930 for citizen-centric reporting
4. Cyber Fraud Mitigation Centre (CFMC) for real-time inter-agency response
5. Platforms like Sahyog, Suspect Registry, and indigenous cybersecurity tools by C-DAC
6. National Cyber Forensic Laboratories for investigation and prosecution support
7. Capacity-building initiatives such as CyTrain, Cyber Commando Programme, ISEA, and CSPAI
8. Cyber Swachhta Kendra for citizen awareness and malware mitigation

CONCLUSION

International Data Privacy Day highlights a fundamental truth: trust is the cornerstone of digital governance. As India's digital public infrastructure continues to shape governance, service delivery, and everyday life, protecting personal data is not merely a technical necessity but a democratic imperative. Through the DPDP framework, strengthened cybersecurity institutions, sustained budgetary support, and citizen-centric initiatives, India is steadily building a secure, ethical, and future-ready digital ecosystem. Observing Data Privacy Day reinforces the shared responsibility of the Government, digital platforms, and citizens in safeguarding digital rights and ensuring that India's digital transformation remains inclusive, resilient, and citizen-centric.

Prelims question:

Q. With reference to data protection and cybersecurity in India, consider the following statements:

1. The Digital Personal Data Protection Act, 2023 applies only to data collected through online platforms.
2. The Data Protection Board of India is responsible for enforcement and inquiry into personal data breaches.
3. CERT-In is the national nodal agency for responding to cybersecurity incidents under the IT Act, 2000.
4. The DPDP Rules, 2025 aim to balance personal data protection with innovation and ease of compliance.

Which of the statements given above are correct?

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

Answer: A

Mains Question:

Q. Data privacy has emerged as a democratic imperative in India's population-scale digital

governance." Discuss in the context of India's expanding digital public infrastructure and the Digital Personal Data Protection framework. (250 words)

CHIPS TO START-UP (C2S) PROGRAMME: INDIA'S DESIGN-LED SEMICONDUCTOR TRANSFORMATION



WHY IN THE NEWS?

India's semiconductor chip design ecosystem is in the news due to the rapid scaling up of government-led skill and design initiatives under MeitY, particularly the Chips to Start-up (C2S) Programme and the Design Linked Incentive (DLI) Scheme. With nearly 400 organisations—including 305 academic institutions and 95 startups—now engaged, these initiatives aim to bridge the global semiconductor talent gap, strengthen design-led innovation, and position India as a key player in the global semiconductor value chain amid rising demand for AI, advanced electronics, and high-performance computing.



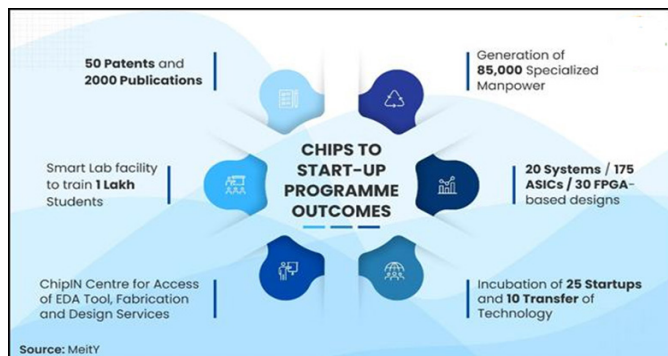
OVERVIEW: CHIPS TO START-UP (C2S) PROGRAMME

The Chips to Start-up (C2S) Programme is a flagship capacity-building initiative launched by MeitY in 2022, with a total outlay of ₹250 crore over five years, covering academic institutions across the country.

The programme aims to develop 85,000 industry-ready professionals across undergraduate, postgraduate, and doctoral levels, including:

1. 200 PhD scholars engaged in advanced chip design research
2. 7,000 M.Tech graduates specialising in VLSI or Embedded Systems
3. 8,800 M.Tech graduates from computer, communication, and electronic systems disciplines with focused VLSI exposure

4. 69,000 B.Tech students trained through VLSI-oriented coursework



5. Generating 50 patents

6. Supporting 2,000 focused research publications

PROGRAMME APPROACH AND IMPLEMENTATION

The C2S Programme adopts a hands-on, end-to-end learning model, providing students with practical exposure to chip design, fabrication, and testing. This is achieved through structured training programmes conducted in collaboration with industry partners, supported by continuous mentorship and access to advanced infrastructure.

Beyond human resource development, the C2S Programme seeks to catalyse innovation and entrepreneurship by:

1. Incubating 25 semiconductor start-ups
2. Enabling 10 technology transfers
3. Providing access to SMART laboratory facilities
4. Training over one lakh students

Participants gain access to state-of-the-art Electronic Design Automation (EDA) tools, semiconductor foundries, testing facilities, and high-performance computing resources. Students undertake R&D projects to design and develop Application-Specific Integrated Circuits (ASICs), Systems-on-Chip (SoCs), and Intellectual Property (IP) cores, enabling them to bridge theoretical learning with real-world semiconductor design workflows.

INSTITUTIONAL PARTICIPATION FRAMEWORK FOR SEMICONDUCTOR CHIP DESIGN (INDIA)

Tier / Category	Institutions / Organisations Covered	Key Support Provided	Major Activities	Outcomes / Exposure
Core Academic Institutions	100+ Participating Academic Institutions	Project funding, EDA tools, specialised training	R&D projects in chip design & fabrication (2–5 years); curriculum integration; labs; student projects; short-term courses	End-to-end exposure to chip design, fabrication, testing; development of indigenous chip solutions
Other Participating Organisations	200+ Academic & Training Organisations	Access to EDA tools and training support	Curriculum instruction; short-term courses; hands-on labs; design projects	Exposure to standard chip design flows using advanced EDA tools
National Design Infrastructure	ChipIN Centre, C-DAC Bengaluru (serving 300+ institutions)	Advanced design facilities; industry-grade EDA tools	Regular industry-led training programmes; hands-on design workshops	High-quality skill development; industry-aligned chip design capability
Capacity Building & Skill Labs	SMART Labs, NIELIT (including Calicut; pan-India access)	Centralised hardware resources; certification platforms	Short-term courses; certification programmes; practical training	Scalable nationwide access to semiconductor design training

Technology Enablement – EDA Tools	Global EDA & tech partners	Advanced design & simulation software	Chip architecture design, verification, testing, and optimisation	Industry-standard design competence
Technology Enablement – Foundry Access	SCL Mohali, IMEC, MUSE Semiconductors	Fabrication and prototyping access	Tape-out, fabrication, testing & validation	Functional chip prototypes; IP creation



CHIPIN CENTRE: NATIONAL ENABLER UNDER THE C2S PROGRAMME

The ChipIN Centre at C-DAC Bengaluru serves as one of India’s largest shared semiconductor design infrastructure facilities for academic institutions and start-ups. It provides comprehensive support across the entire chip design lifecycle, including access to commercial EDA tools, compute infrastructure, IP libraries, and technical mentorship.

Role of ChipIN Centre

- Design Collection and Fabrication:** Student chip designs from C2S institutions are collected and aggregated every three months and sent to Semiconductor Laboratory (SCL), Mohali, for fabrication using 180 nm technology.
- Design Verification:** The Centre verifies designs for fabrication readiness, supports iterative improvements, and aggregates approved designs onto shared wafers for cost-effective fabrication.
- Fabrication and Delivery:** SCL Mohali fabricates, packages, and returns chips to institutions, enabling students to validate designs on silicon.
- Technical Support:** The ChipIN Centre provides continuous centralised support, having addressed 4,855 support requests to date.

KEY OUTCOMES OF THE C2S PROGRAMME

The Chips to Start-up Programme has delivered measurable outcomes across capacity building, infrastructure access, and hands-on design enablement:

- ~1 lakh individuals from 400 organisations (300 academic institutions and 95 startups) utilised shared national EDA infrastructure
- 175+ lakh hours of EDA tool usage recorded
- 6 shared wafer runs conducted at SCL Mohali
- 122 chip design submissions from 46 institutions
- 56 student-designed chips successfully fabricated, packaged, and delivered
- 265+ industry-led training sessions conducted
- 75+ patents filed by participating institutions
- 500+ IP cores, ASICs, and SoC designs under development across defence, telecom, automotive, consumer electronics, and industrial sectors
- Deployment of centralised and distributed FPGA boards for prototyping and validation
- Access to high-performance computing via the PARAM Utkarsh supercomputer

INSTITUTIONAL FRAMEWORK SUPPORTING THE C2S PROGRAMME

India’s chip design ecosystem under C2S is supported by a coordinated institutional framework integrating policy direction, infrastructure enablement, and industry collaboration.

MINISTRY OF ELECTRONICS AND IT (MEITY)

MeitY provides overall policy direction, funding support, and programme oversight. Through initiatives such as C2S, it seeks to address structural gaps in India’s semiconductor ecosystem and enable domestic firms to move up the global value chain.

CENTRE FOR DEVELOPMENT OF ADVANCED COMPUTING (C-DAC)

C-DAC operates the ChipIN Centre, providing shared access to EDA tools, high-performance computing, IP libraries, and technical mentoring. It manages design onboarding, verification, and fabrication coordination.

SEMI-CONDUCTOR LABORATORY (SCL), MOHALI

SCL facilitates fabrication and packaging of academic chip designs under shared wafer runs, providing students with critical exposure to post-fabrication testing and validation. Together, these institutions ensure equitable access to national infrastructure, strengthen academia–industry linkages, and build a sustained pipeline of industry-ready chip designers.

CONCLUSION

Semiconductors have emerged as a strategic foundation for innovation, economic growth, and national security. Leadership in chip design and talent development is increasingly central to global technological competitiveness. The Chips to Start-up Programme represents a decisive step in India's semiconductor journey. By combining large-scale skill development, hands-on design experience, and access to national infrastructure, the programme is empowering students, researchers, startups, and entrepreneurs to contribute meaningfully to indigenous chip design and innovation. These efforts are strengthening India's talent base, advancing technological self-reliance, and positioning the country as a credible and competitive hub in the global semiconductor ecosystem.

Prelims question:

Q. With reference to the Chips to Start-up (C2S) Programme, consider the following statements:

1. The C2S Programme is implemented by the Ministry of Electronics and Information Technology (MeitY) to build indigenous semiconductor chip design capacity.
2. Under the programme, student-designed chips are fabricated through shared wafer runs at the Semi-Conductor Laboratory (SCL), Mohali.
3. The programme exclusively focuses on undergraduate-level training and does not cover postgraduate or doctoral research.
4. The ChipIN Centre at C-DAC Bengaluru provides shared access to industry-grade Electronic Design Automation (EDA) tools.

Which of the statements given above are correct?

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

Answer: A

Mains Question:

Q. Semiconductors have emerged as a strategic pillar for economic growth, technological sovereignty, and national security. In this context, examine the objectives, institutional framework, and significance of the Chips to Start-up (C2S) Programme in strengthening India's semiconductor chip design ecosystem.

(250 words)



REPEALING AND AMENDING ACT, 2025: LEGISLATIVE HOUSEKEEPING FOR A MODERN INDIA



WHY IN THE NEWS?

Every legal system is a living record of its past, and India's statute book is no exception. Over time, it accumulated numerous laws that once served a purpose but gradually lost relevance. Some dated back to 1886, while others were temporary amendment Acts that had already exhausted their utility. As governance modernises—through digital administration, updated postal services, and streamlined procedures—such outdated laws increasingly became a source of interpretational burden rather than legal clarity. Against this backdrop, the Repealing and Amending Act, 2025 steps in as a thoughtful legislative editor, undertaking a quiet but essential clean-up of India's statute book.

A BALANCED APPROACH: REPEAL AND AMEND

The Act adopts a two-pronged approach—repealing obsolete enactments while amending core laws to remove inconsistencies and update statutory references.

- **First Schedule:** Lists 71 Central Acts (1886–2023) that are repealed permanently because they are obsolete, redundant, or have served their limited purpose.
- **Second Schedule:** Specifies targeted amendments to important existing laws to modernise language, correct drafting errors, and align provisions with present-day administrative realities.

Did You Know?

Since 2014, India has repealed over 1,500 obsolete Central laws, significantly simplifying the legal framework and improving ease of governance.

CLEARING THE STATUTE BOOK

1. Colonial-era enactments and laws superseded by newer legislation.
2. Amendment Acts whose changes are already absorbed into principal Acts, Acquisition and nationalisation laws that have completed their intended objectives.
3. By removing such legislative clutter, the Act improves legal certainty and navigability of statutes.

REFINING THE LEGAL FRAMEWORK THROUGH TARGETED AMENDMENTS

1. **Modernisation of official communication:** In the Code of Civil Procedure, 1908 and the General Clauses Act, 1897, outdated references like “registered post” are replaced with “speed post with registration and proof of delivery”, aligning legal procedure with contemporary India Post services.
2. **Indian Succession Act, 1925:** Section 213 is removed, eliminating community-based disparities in probate requirements and enhancing equality and uniformity in succession law.
3. **Disaster Management Act, 2005:** The term “prevention” is substituted with “preparation”, accurately reflecting the operational mandate of disaster management authorities and strengthening institutional clarity.

LEGISLATIVE OBJECTIVES OF THE AMENDMENTS

Broadly, the amendments serve three key objectives:

1. Modernisation of administrative and procedural references.
2. Equity and fairness by removing discriminatory or outdated provisions.
3. Clarity and consistency in statutory language to reduce litigation and ambiguity.

SAVINGS CLAUSE: ENSURING CONTINUITY AMID REPEALS

A critical feature of the Act is its Savings Clause, which ensures that legal clean-up does not disrupt continuity:

1. Existing rights, liabilities, obligations, and proceedings remain unaffected.
2. Past actions taken under repealed laws continue to remain valid.
3. Jurisdiction of courts, legal procedures, customary practices, privileges, offices, and appointments remain intact.
4. Repealed laws are not revived indirectly.

CONCLUSION

The Repealing and Amending Act, 2025 performs the understated yet vital task of legislative housekeeping. It clears away laws that no longer belong, refines those that still matter, and aligns India's legal framework with the needs of a modern, dynamic economy. By replacing redundancy with relevance and ambiguity with coherence, the Act reinforces the principle that laws must evolve with society—remaining living instruments of governance rather than relics of the past.

Prelims question:

Q. With reference to the Repealing and Amending Act, 2025, consider the following statements:

1. The Act repeals certain Central laws that have become obsolete, redundant, or have served their temporary purpose.
2. It amends the Code of Civil Procedure, 1908 to replace "registered post" with "speed post with registration and proof of delivery".

3. The Act removes Section 213 of the Indian Succession Act, 1925 to ensure uniformity in probate requirements.
4. Repeal under the Act extinguishes all rights, liabilities, and legal proceedings arising under the repealed laws.

Which of the statements given above are correct?

- A. 1, 2 and 3 only B. 1, 3 and 4 only
C. 2 and 4 only D. 1, 2, 3 and 4

Answer: A

Mains Question:

Q. The Repealing and Amending Act, 2025 reflects legislative housekeeping essential for good governance. Discuss the significance of the Act in improving legal clarity, administrative efficiency, and continuity in India's governance framework. (250 words)

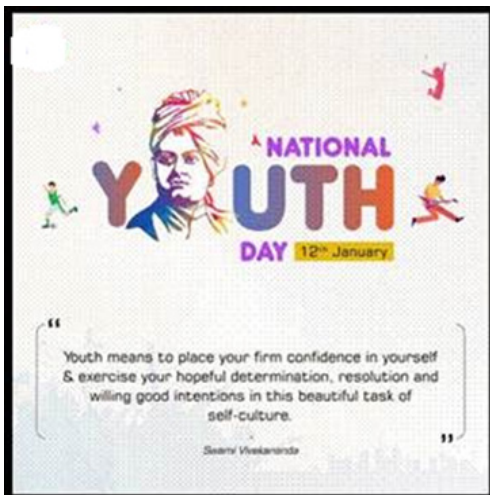
**NATIONAL YOUTH DAY 2026:
EMPOWERING INDIA'S
YOUTH AS PARTNERS IN
NATION-BUILDING**



WHY IN THE NEWS?

National Youth Day 2026 is being observed on 12 January across India to commemorate the birth anniversary of Swami Vivekananda, whose ideals of youth-led nation-building, character formation, and self-confidence continue to guide India's development discourse. The day has gained renewed policy relevance in the context of India's demographic advantage, with over 65% of the population below 35 years, and the government's long-term vision of Viksit Bharat @2047. This year, National Youth Day is in the news due to the government's intensified focus on youth as key stakeholders in governance and development, reflected in the expansion and convergence of youth-centric initiatives under the Ministry of Youth Affairs and Sports, in coordination with other ministries. Programmes promoting skill development, entrepreneurship, civic engagement,

digital literacy, fitness, and national service are being highlighted as instruments to transform the demographic dividend into a productive and inclusive growth engine.



YOUTH ENGAGEMENT, LEADERSHIP AND CIVIC PARTICIPATION

Mera Yuva Bharat (MY Bharat)

A flagship institutional innovation, Mera Yuva Bharat (MY Bharat) is an autonomous, technology-driven platform under the Ministry of Youth Affairs and Sports. Launched by the Prime Minister on 31 October 2023, it embodies the spirit of “Yuva Shakti se Jan Bhagidari” by connecting youth with opportunities for volunteering, experiential learning, leadership, and skill development.

As of November 2025, over 2.05 crore youth registrations have been recorded, with more than 14.5 lakh volunteering opportunities created. MY Bharat integrates 16,000+ youth clubs and 60,000+ institutional partners, including government bodies, educational institutions, NGOs, and private sector players. The platform’s digital tools—such as verified digital IDs, opportunity matching, and real-time impact dashboards—enable transparent and measurable civic participation.

The launch of the MY Bharat Mobile App (October 2025) further strengthened outreach through multilingual support, AI-driven chatbots, voice-assisted navigation, digital certificates, and smart CV builders, making youth engagement mobile-first and inclusive.

To deepen digital empowerment, MY Bharat 2.0 was initiated through an MoU with the Digital India

Corporation in June 2025. The upgraded platform integrates career services, mentorship hubs, and Fit India modules, reinforcing youth readiness for future challenges.



NATIONAL SERVICE AND YOUTH LEADERSHIP PLATFORMS

National Service Scheme (NSS)

Since its launch in 1969, the National Service Scheme (NSS) has remained a cornerstone of youth-led community service. Today, NSS spans 657 universities and over 20,000 colleges, engaging nearly 3.9 million volunteers annually. Through programmes such as National Integration Camps, adventure training, and social awareness drives, NSS fosters social responsibility, national integration, and leadership.

Viksit Bharat Young Leaders’ Dialogue (VBILD)

Reimagined from the National Youth Festival, the Viksit Bharat Young Leaders’ Dialogue has emerged as a national platform for youth-driven policy ideas and innovation. The second edition (January 2026, Bharat Mandapam) brings together nearly 3,000 participants, including international delegates. Anchored in a four-stage challenge process, the initiative reflects the transition from symbolic youth participation to substantive policy engagement.



EDUCATION, SKILLS AND EMPLOYABILITY

Skill India Mission

Launched in 2015, the Skill India Mission has empowered over 6 crore Indians, addressing skill

gaps through PMKVY, JSS, NAPS, and ITI-based training. The restructured Skill India Programme (2022–26) integrates these schemes under a unified framework with an outlay of ₹8,800 crore.

PMKVY, the backbone of short-term skilling, has trained over 1.64 crore candidates by October 2025, with a growing focus on emerging technologies such as AI, robotics, drones, and IoT. The evolution to PMKVY 4.0 marks a shift towards on-the-job training and industry-linked pathways, enhancing employability and inclusion.

PM-SETU and ITI Reforms

Launched in October 2025, PM-SETU aims to modernise 1,000 government ITIs with an investment of ₹60,000 crore, aligning vocational education with global industry standards. Its hub-and-spoke model, coupled with industry management, represents a structural reform in India's skilling architecture.

ENTREPRENEURSHIP AND ECONOMIC EMPOWERMENT

Youth empowerment is incomplete without economic opportunity.

1. Startup India has recognised nearly 2 lakh startups, decentralising innovation to Tier-II and Tier-III cities.
2. The Startup India Seed Fund Scheme addresses early-stage funding gaps through a national incubator network.
3. Pradhan Mantri MUDRA Yojana, completing a decade in 2025, has sanctioned over 53 crore collateral-free loans, nurturing grassroots entrepreneurship.
4. The newly announced Pradhan Mantri Viksit Bharat Rozgar Yojana (₹1 lakh crore) aims to generate 3.5 crore jobs, directly linking youth employment with national growth.

HEALTH, FITNESS AND HOLISTIC WELL-BEING

1. Recognising that human capital thrives on well-being, the Government has adopted a holistic health approach.
2. The Fit India Movement promotes active lifestyles through mass participation initiatives.
3. Rashtriya Kishor Swasthya Karyakram (RKSK) addresses adolescent health across nutrition,

mental health, substance misuse, and NCD prevention.

4. The Youth Spiritual Summit and Kashi Declaration (2025) underscore a youth-led movement for mental wellness and drug-free living, integrating spiritual values with social responsibility.

CONCLUSION

As India marks National Youth Day 2026, the message is unambiguous: the nation's future is being shaped by the energy, innovation, and commitment of its youth. From classrooms and campuses to startups, villages, armed forces, and volunteer platforms, young Indians are no longer passive recipients of policy—they are drivers of transformation. Inspired by Swami Vivekananda's ideals, India's youth empowerment framework combines opportunity with responsibility, growth with character, and ambition with service. As the country advances towards 2047, India's youth stand not merely as inheritors of the future—but as its architects and custodians.

Prelims question:

Q. With reference to Mera Yuva Bharat (MY Bharat), consider the following statements:

1. It is an autonomous, technology-driven platform under the Ministry of Youth Affairs and Sports.
2. It aims to connect youth with opportunities for volunteering, leadership development, and experiential learning.
3. MY Bharat 2.0 integrates career services, mentorship hubs, and Fit India modules.
4. Participation in MY Bharat is restricted only to students enrolled in higher educational institutions.

Which of the statements given above are correct?

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

Answer: A

Mains Question:

Q. Discuss the role of recent government initiatives in strengthening youth engagement, leadership, and nation-building in the context of Viksit Bharat @2047.

(250 words)

PRAGATI: A PARADIGM SHIFT TOWARDS REAL-TIME, ACCOUNTABLE AND COOPERATIVE GOVERNANCE



WHY IN THE NEWS?

PRAGATI (Pro-Active Governance and Timely Implementation), launched in 2015, represents one of India’s most transformative governance innovations. Designed as a technology-enabled, high-level decision and monitoring platform, PRAGATI enables the Prime Minister to directly review and resolve bottlenecks in critical infrastructure projects, flagship schemes, and citizen grievances in real time, in partnership with States and Union Ministries. More than a review mechanism, PRAGATI reflects a fundamental shift in India’s governance culture—from fragmented, process-driven administration to time-bound, outcome-oriented and accountable execution. By breaking bureaucratic inertia and institutional silos, it operationalises the spirit of “Minimum Government, Maximum Governance”.

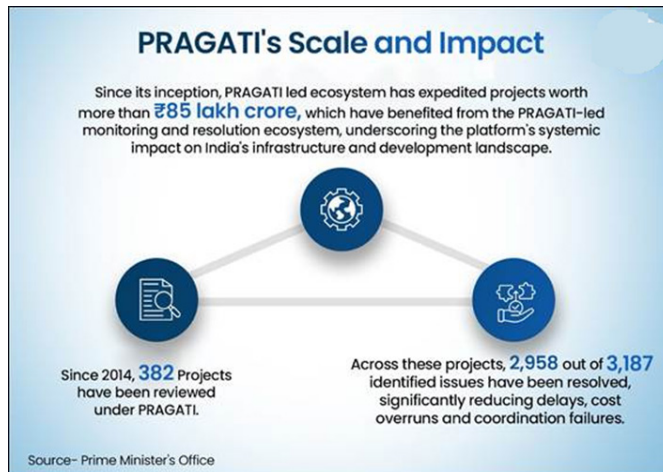
WHY PRAGATI WAS NEEDED

India’s public project ecosystem was historically characterised by:

1. Chronic time and cost overruns
2. Multi-agency and Centre–State coordination failures
3. Delays due to land acquisition, forest clearances and litigation
4. Weak accountability for decision-making and follow-up

Several nationally significant projects—conceived as early as the 1990s—remained stalled for decades. PRAGATI emerged as a systemic corrective, placing

accountability at the highest political level and ensuring that delays were addressed through coordinated, time-bound action rather than procedural diffusion.



WHAT IS PRAGATI: CONCEPT AND DESIGN

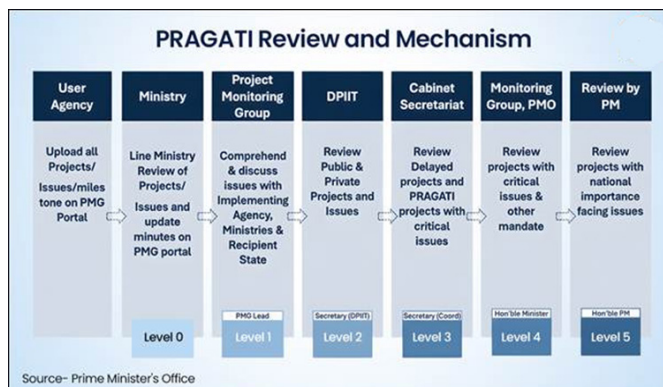
PRAGATI is a distinctive, integrated and interactive digital governance platform that combines:

1. Digital dashboards
2. Video conferencing
3. Geo-spatial (GIS) technologies

This allows the Prime Minister to:

1. Access real-time project data
2. Visually verify on-ground progress
3. Directly engage with responsible officials
4. Fix responsibilities and timelines instantly

PRAGATI also integrates national digital platforms such as PM GatiShakti, PARIVESH, PM Ref Portal and the Project Monitoring Group (PMG), creating a single source of truth for project monitoring and grievance redressal.



ORIGIN AND EVOLUTION: FROM SWAGAT TO PRAGATI

PRAGATI draws inspiration from SWAGAT, launched in Gujarat in 2003 when Narendra Modi was Chief Minister. SWAGAT pioneered:

1. Online grievance submission and tracking
2. Video-based citizen–government interaction
3. Monthly reviews chaired by the Chief Minister
4. Transparency and accountability in public service delivery

After assuming office as Prime Minister in 2014, this discipline of technology-backed accountability was scaled nationally. PRAGATI expanded the scope from individual grievances to complex, multi-agency projects, particularly those stalled due to Centre–State or inter-ministerial dependencies.

Thus, PRAGATI represents not merely a digital upgrade, but a structural reform in governance execution.



INSTITUTIONAL ARCHITECTURE AND REVIEW MECHANISM

Component	Details
Apex-Level Leadership	PRAGATI meetings are chaired by the Prime Minister of India
Participants	Chief Secretaries of States and Secretaries of Union Ministries participate through video conferencing
Structured Follow-Up	Cabinet Secretariat monitors major infrastructure projects
	Line Ministries oversee schemes and grievance redressal
	Prime Minister's Office (PMO) ensures continuous supervision and follow-up

Issue Escalation Mechanism	Routine matters are resolved at the Ministry/Department level
	Complex and critical issues are escalated to the PRAGATI platform
Decision Tracking	Decisions are digitally recorded, with fixed timelines and clearly assigned accountability

STRENGTHENING COOPERATIVE FEDERALISM

PRAGATI institutionalises cooperative federalism in practice, not merely in principle:

1. Centre and States deliberate on a single platform
2. Officials are answerable in real time
3. Ownership of outcomes replaces fragmented responsibility

This has significantly improved:

1. Inter-ministerial coordination
2. Centre–State trust
3. Speed of decision-making in large public projects

IMPACT ACROSS INFRASTRUCTURE AND SOCIAL SECTORS

PRAGATI has accelerated progress across:

1. Roads, highways and economic corridors
2. Railways and strategic connectivity projects
3. Power generation and transmission
4. Airports, ports and logistics infrastructure
5. Gas pipelines and energy networks
6. Healthcare infrastructure, including AIIMS
7. Water resources and irrigation projects

Projects delayed for 10–25 years—such as Bogibeel Bridge, Navi Mumbai International Airport, Jammu–Srinagar rail link, AIIMS Jammu and Guwahati, Mumbai Trans Harbour Link and major thermal power projects—were unlocked through sustained PRAGATI oversight.

PRAGATI AS A MULTI-DIMENSIONAL INSTRUMENT OF SUSTAINABLE DEVELOPMENT (ECONOMIC, SOCIAL, AND ENVIRONMENTAL IMPACT)

Dimension	Role of PRAGATI	Key Outcomes / Impact
Economic Dimension	<ul style="list-style-type: none"> Reduces cost overruns caused by project delays Brings productive infrastructure assets online faster Improves efficiency and returns on public investment Supports logistics efficiency and balanced regional growth 	<ul style="list-style-type: none"> Faster economic multiplier effects Increased employment generation Higher private investment confidence
Social Dimension	<ul style="list-style-type: none"> Ensures faster delivery of infrastructure projects Improves last-mile connectivity, especially in remote and border areas Enhances access to social infrastructure 	<ul style="list-style-type: none"> Better access to healthcare and education Improved livelihood opportunities Reduction in regional and social disparities
Environmental Dimension	<ul style="list-style-type: none"> Fast-tracks environmental clearances without compromising safeguards Uses PM GatiShakti's GIS-based planning to map forests, wildlife corridors and eco-sensitive zones Enables early alignment corrections and mitigation planning Promotes digital governance through virtual reviews 	<ul style="list-style-type: none"> Minimised environmental conflicts Reduced carbon emissions due to digital reviews Ensures rapid yet responsible development

GOVERNANCE AND ADMINISTRATIVE CULTURE

PRAGATI has strengthened governance by:

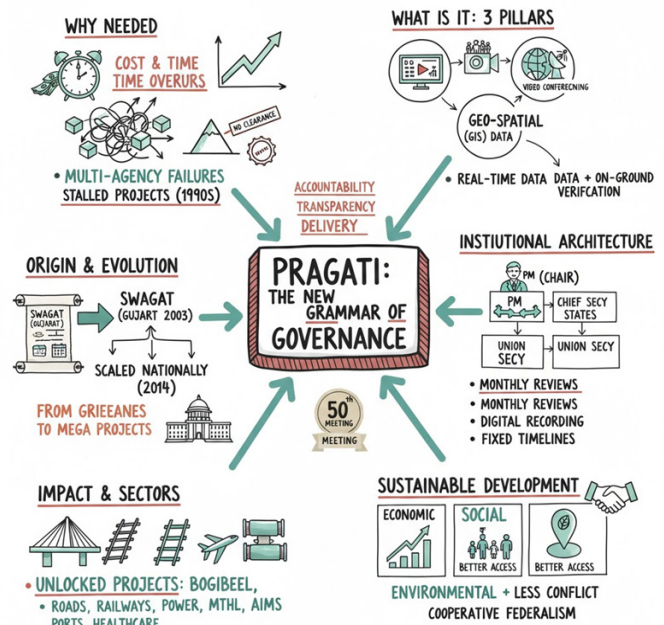
1. Enforcing transparency and time-bound accountability
2. Encouraging inter-government collaboration
3. Promoting outcome-based administration
4. Creating a culture of delivery rather than procedural compliance

PRAGATI @ 50: A GOVERNANCE MILESTONE

The 50th PRAGATI meeting symbolises a decade of governance transformation:

1. Review of projects worth over ₹40,000 crore
2. Coverage across roads, railways, power, water resources and coal
3. Participation of multiple States under a unified framework

CONCLUSION



PRAGATI stands as a defining example of technology-enabled, leadership-driven and cooperative governance. By combining political authority, digital

tools and federal collaboration, it has converted stalled ambitions into completed assets and restored public confidence in the State's capacity to deliver. In essence, PRAGATI is not merely a platform—it is a new grammar of governance, where decisions are timely, accountability is visible, and outcomes matter.

Prelims question:

Q. With reference to PRAGATI (Pro-Active Governance and Timely Implementation), consider the following statements:

1. PRAGATI is a digital governance platform that enables real-time monitoring of projects and grievance redressal by the Prime Minister.
2. It integrates digital tools such as GIS mapping, video conferencing and online dashboards.

3. PRAGATI meetings are conducted exclusively for Central Government projects without State participation.
4. It was launched in 2015 to improve coordination, accountability and timely execution of public projects.

Which of the statements given above are correct?

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

Answer: A

Mains Question:

Q. PRAGATI represents a shift from process-oriented governance to outcome-based governance in India. Discuss its role in strengthening cooperative federalism, accountability and project implementation.

(250 words)



INDIA'S GIG ECONOMY AT A CROSSROADS: WORKERS DEMAND SECURITY IN THE PLATFORM AGE



WHY IN THE NEWS?



Gig workers across India recently undertook nationwide protests and digital strikes, particularly by food delivery and logistics workers, demanding fair wages, safer working conditions, and protection from algorithmic exploitation. The issue has gained prominence amid debates on the effectiveness of the Code on Social Security, 2020, and the sustainability of India’s platform-based economy.

UNDERSTANDING THE GIG ECONOMY IN INDIA

- **Nature of Gig Work:** Gig work involves short-term, task-based employment mediated through digital platforms where workers are classified as independent contractors rather than employees.
- **Rapid Expansion:** Driven by urbanisation, smartphone penetration, and consumer demand for convenience, India’s gig economy has expanded rapidly across transport, delivery, e-commerce and freelancing.

- **Employment Potential:** It provides flexible income opportunities for youth, migrants and semi-skilled workers, especially in urban and peri-urban areas.
- **Informalisation of Labour:** Despite technological sophistication, gig work often mirrors informal sector vulnerabilities such as income volatility and lack of security.
- **Platform Dominance:** Digital platforms exercise disproportionate control over work allocation, pricing and incentives, altering traditional employer–employee dynamics.
- **Gender and Social Dimensions:** Women and marginalised groups participate less due to safety concerns, algorithmic bias and absence of caregiving support mechanisms.

KEY ISSUES FACED BY GIG WORKERS

Dimension	Key Concerns
Income	Low and unpredictable earnings, declining per-task rates
Social Security	No assured health, pension or maternity benefits
Job Security	Arbitrary ID deactivation without due process
Safety	High accident risk due to delivery-time pressures
Legal Status	Classified as contractors, not workers
Voice & Representation	No effective collective bargaining mechanisms

STRUCTURAL CAUSES BEHIND THE CRISIS

- **Contractor Classification:** Gig platforms classify workers as independent contractors or “partners” rather than employees. This

legal classification allows platforms to bypass statutory obligations such as minimum wages, provident fund, gratuity, maternity benefits and protection under labour laws like the Industrial Disputes Act. As a result, workers bear employment risks without enjoying employment rights, creating a structural imbalance in labour relations.

- **Algorithmic Management:** Work allocation, incentives, penalties and even deactivation are governed by opaque algorithms over which workers have no control or clarity. Rating systems and surge pricing fluctuate without transparent criteria, leading to income unpredictability. This form of digital control replaces human supervision but retains unilateral power with platforms, reinforcing asymmetrical power relations.
- **Cost Externalisation:** Platforms transfer operational costs such as fuel, vehicle maintenance, smartphones, data usage, insurance and accident liabilities onto workers. While platforms earn commission-based revenues, workers absorb economic shocks, including rising fuel prices or vehicle wear and tear. This externalisation erodes real earnings and deepens economic vulnerability.
- **Weak Regulatory Oversight:** India lacks a dedicated regulatory authority to monitor platform compliance with labour standards for gig and platform workers. Enforcement mechanisms under existing labour codes remain weak, fragmented and under-resourced. The absence of grievance redressal systems and inspection regimes limits accountability and allows exploitative practices to persist.
- **Fragmented Welfare Architecture:** Although the Code on Social Security, 2020 recognises gig and platform workers, implementation remains minimal. Welfare schemes suffer from poor registration, lack of awareness, digital exclusion and inadequate funding. Consequently, social security benefits such as health insurance or pension coverage remain largely notional rather than functional.
- **Market Competition:** Intense competition among platforms to capture market share pushes

companies to reduce operational costs. This results in lower per-task payments, withdrawal of incentives and increased performance pressure on workers. Worker welfare becomes secondary to profitability and consumer price competitiveness, triggering a race to the bottom in labour standards.

GOVERNMENT MEASURES AND POLICY FRAMEWORK

- **Code on Social Security, 2020:** The Code on Social Security, 2020 marks a significant policy shift by formally recognising gig and platform workers within India's labour law framework. It empowers the government to frame welfare schemes related to health insurance, life cover, old-age protection and maternity benefits. However, the Code stops short of defining an employer–employee relationship, limiting enforceability of rights.
- **Aggregator Contribution:** The Code introduces the concept of mandatory contributions by aggregators to a social security fund for gig and platform workers, calculated as a percentage of their annual turnover. This seeks to institutionalise shared responsibility between the state and platforms. However, absence of clear contribution rates and enforcement mechanisms has delayed operationalisation.
- **e-Shram Portal:** The e-Shram portal aims to create a unified national database of unorganised, gig and platform workers to enable targeted delivery of welfare benefits. While it enhances visibility of gig workers in policy design, issues such as digital exclusion, data accuracy and inter-linkage with welfare schemes continue to affect its effectiveness.
- **State-Level Initiatives:** Some states have taken proactive steps in the absence of central rules. Rajasthan, for instance, enacted the Rajasthan Platform-Based Gig Workers (Registration and Welfare) Act, 2023, establishing a welfare board funded through platform fees. Such initiatives reflect cooperative federalism but also risk policy fragmentation across states.
- **Draft Rules and Eligibility Norms:** Draft rules under the Code propose eligibility conditions

such as minimum days of work or income thresholds for accessing benefits. Critics argue that such criteria exclude intermittent and vulnerable gig workers, undermining the inclusive intent of social security. The debate reflects the tension between fiscal prudence and universal coverage.

- **Implementation Gaps:** Despite progressive policy intent, implementation remains weak due to delayed rule-making, limited inter-ministerial coordination and low awareness among workers and platforms. Lack of grievance redressal mechanisms and real-time monitoring further constrains outcomes, turning statutory recognition into largely symbolic protection.

WAY FORWARD

- **Minimum Earnings Guarantee:** Introduce statutory floor wages based on time, distance or task to ensure income stability.
- **Universal Social Security:** Operationalise portable and contributory benefits linked to Aadhaar and e-Shram.
- **Algorithmic Transparency:** Mandate disclosure of pay logic, ratings and task allocation mechanisms.
- **Due Process Protection:** Ensure fair hearing and appeal before account suspension or termination.
- **Occupational Safety Norms:** Regulate delivery timelines and mandate insurance and safety training.
- **Strengthening Worker Voice:** Enable collective representation through platform-level grievance redressal bodies.

CONCLUSION

The gig economy symbolises the future of work in India but also exposes the limits of market-driven flexibility without social protection. Addressing

gig workers' concerns is essential for inclusive growth, social justice and sustainable digitalisation. A balanced framework that protects worker dignity while preserving innovation will define the credibility of India's labour reforms in the digital age.

Prelims question:

Q. Consider the following statements about the gig economy:

1. Workers are generally classified as independent contractors rather than employees.
2. Social security benefits are automatically provided to all gig workers under Indian labour laws.
3. Digital platforms control work allocation and payments through algorithms.

Which of the above statements is/are correct?

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

Answer: B

Mains Question:

Q. "The gig economy in India highlights the tension between flexibility and fairness in labour markets." Comment with examples from recent protests and government policies.



REVISED NBS RATES FOR RABI 2025-26: STRENGTHENING SOIL HEALTH AND FARMER WELFARE



2. Prevent soil degradation caused by skewed fertiliser consumption
3. Encourage innovation and competition in the fertiliser market
4. Rationalise subsidy expenditure in line with global price movements

WHY IN THE NEWS?

The Nutrient-Based Subsidy (NBS) Scheme has been in the news following the Union Government’s approval and notification of revised subsidy rates for phosphatic and potassic (P&K) fertilisers for the Rabi season 2025–26. This decision aims to ensure the availability of essential nutrients at affordable prices for farmers amid global volatility in fertiliser prices and supply chains, while also promoting balanced fertilisation and correcting the excessive use of urea. The revision reflects the government’s dual focus on soil health restoration, crop productivity, and fiscal discipline, in line with its broader strategy for sustainable and climate-resilient agriculture.

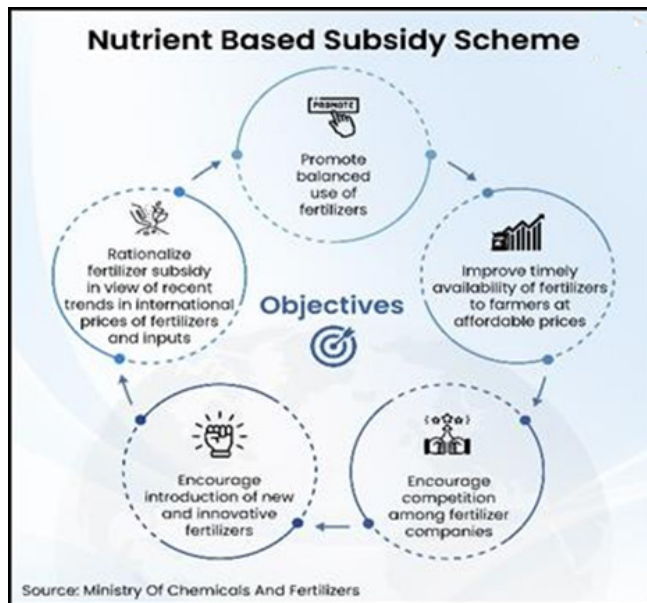
By linking subsidies to nutrient content rather than fertiliser type, the scheme empowers farmers to adopt soil- and crop-specific nutrient management practices.

GENESIS AND RATIONALE OF THE NBS SCHEME

Introduced on 1 April 2010, the NBS Scheme marked a paradigm shift from product-based subsidies to nutrient-based pricing in India’s fertiliser sector.

Key Objectives:

1. Promote balanced use of nutrients (N, P, K, S)



CORE FEATURES OF THE NUTRIENT-BASED SUBSIDY (NBS) FRAMEWORK

Feature	Key Components	Significance / Impact
1. Nutrient-Based Subsidy Structure	Subsidy provided per kg of nutrients: <ul style="list-style-type: none"> • Nitrogen (N): ₹43.02/kg • Phosphate (P): ₹47.96/kg • Potash (K): ₹2.38/kg • Sulphur (S): ₹2.87/kg 	Promotes balanced fertilisation, discourages excessive use of urea, and improves soil health and nutrient efficiency

<p>2. Expansion of Fertiliser Grades</p>	<ul style="list-style-type: none"> • 25 P&K grades till Rabi 2023–24 • 28 grades from Kharif 2024 onwards • Inclusion of fortified and complex fertilisers such as: <ul style="list-style-type: none"> – NPK (11:30:14) + Mg, Zn, B, S – Urea–SSP (5:15:0:10) – Fortified SSP (Mg, Zn, B) 	<p>Enhances micronutrient availability, corrects soil deficiencies, and improves crop yield response and sustainability</p>
<p>3. Decontrolled Pricing with Regulatory Oversight</p>	<ul style="list-style-type: none"> • Fertiliser companies fix MRPs • Government ensures prices remain reasonable • Subsidy passed on at the point of sale 	<p>Balances market efficiency with farmer protection, ensures affordability while encouraging industry competition</p>

NBS RATES FOR RABI 2025–26: KEY HIGHLIGHTS

- **Effective Period:** 1 October 2025 – 31 March 2026
 - **Estimated Budgetary Requirement:** ₹37,952.29 crore
- DAP Subsidy Increased:**
- ₹29,805/MT (Rabi 2025–26)
 - ₹21,911/MT (Rabi 2024–25)
- Strategic Significance:**
- Shields farmers from global price volatility
 - Ensures an uninterrupted nutrient supply during peak Rabi season

PROMOTION OF FORTIFIED AND SPECIALTY FERTILISERS

To tackle micronutrient deficiencies:

- **Boron:** Additional ₹300/MT
- **Zinc:** Additional ₹500/MT

This strengthens:

- Crop resilience
- Nutrient-use efficiency
- Long-term soil fertility

OPERATIONAL MANAGEMENT AND COMPLIANCE MECHANISMS UNDER NBS

Mechanism	Key Provisions	Purpose / Outcome
<p>1. Price and Cost Monitoring</p>	<ul style="list-style-type: none"> • Mandatory submission of audited cost data by fertiliser companies • MRP rationality assessed by the Department of Fertilisers (DoF) 	<p>Prevents price manipulation, ensures subsidy reflects actual costs, and safeguards farmer interests</p>
<p>2. Regulation of Profit Margins</p>	<ul style="list-style-type: none"> • Profit caps prescribed: <ul style="list-style-type: none"> – Importers: 8% – Manufacturers: 10% – Integrated units: 12% • Excess profits recovered by the government 	<p>Ensures fair returns to industry while preventing rent-seeking and fiscal leakages</p>
<p>3. Transparency at Retail Level</p>	<p>Mandatory disclosure on fertiliser bags:</p> <ul style="list-style-type: none"> • Maximum Retail Price (MRP) • Subsidy per bag and per kg • Overcharging is punishable under Essential Commodities Act, 1955 	<p>Enhances consumer awareness, strengthens accountability, and deters black-marketing</p>

DIGITAL GOVERNANCE: INTEGRATED FERTILISER MANAGEMENT SYSTEM (IFMS)

The iFMS platform ensures end-to-end transparency through:

1. Dealer registration
2. Stock and movement tracking
3. Import and production monitoring
4. DBT and MIS integration

Regular Centre–State coordination via video conferences ensures regional equity and timely grievance redressal.

ECONOMIC AND FISCAL DIMENSIONS

Subsidy Support:

1. ₹2.04 lakh crore allocated between 2022–23 and 2024–25
2. Balances farmer affordability with fiscal sustainability

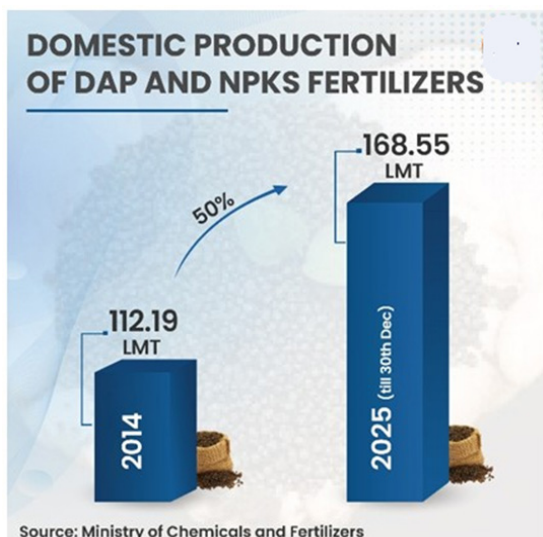
Market Impact:

1. Encourages domestic manufacturing
2. Reduces import dependence
3. Aligns subsidy policy with global fertiliser trends

MAJOR ACHIEVEMENTS UNDER NBS

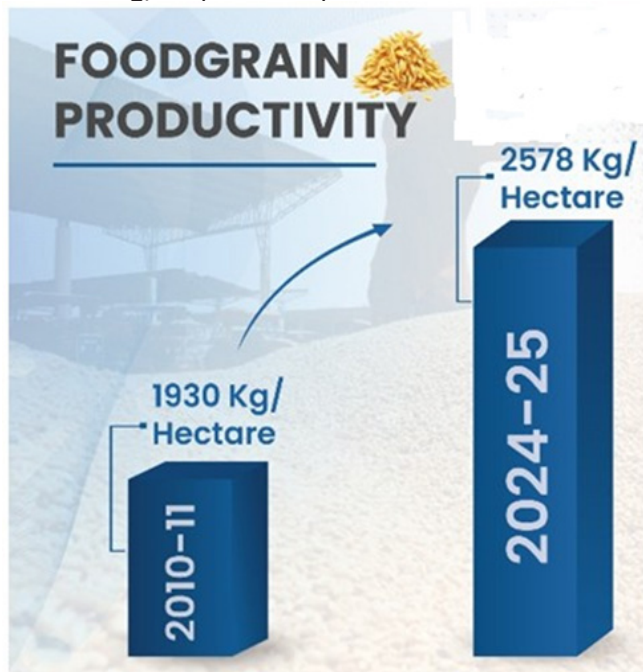
1. Growth in Domestic P&K Production

- DAP & NPKS output increased by over 50%
- From 112.19 LMT (2014) to 168.55 LMT (2025)
- Supports Atmanirbhar Bharat in fertilisers



2. Improvement in Soil Health and Crop Productivity

- Enhanced multi-nutrient availability
- Foodgrain yield increased:
 - 1930 kg/ha (2010–11)
 - 2578 kg/ha (2024–25)



ENVIRONMENTAL AND SUSTAINABILITY DIMENSION

1. Reduces nitrogen overuse and soil degradation
2. Encourages sulphur and micronutrient application
3. Supports climate-resilient and resource-efficient agriculture
4. Aligns with SDG-2 (Zero Hunger) and SDG-12 (Sustainable Consumption)

CONCLUSION

The Nutrient-Based Subsidy (NBS) Scheme has emerged as a cornerstone of India's fertiliser and agricultural policy, harmonising productivity, sustainability, and farmer welfare. The Rabi 2025–26 revisions demonstrate a responsive policy approach that balances global market realities with domestic agricultural needs. By expanding fertiliser grades, strengthening domestic production, promoting fortified nutrients, and leveraging digital governance through iFMS, the scheme has significantly improved soil health, crop yields, and fertiliser accessibility.

Prelims question:

Q. Consider the following statements regarding the Nutrient-Based Subsidy (NBS) Scheme in India:

1. Under the NBS Scheme, subsidies are provided based on the nutrient content of fertilisers rather than on individual fertiliser products.
2. The scheme covers Nitrogen, Phosphorus, Potassium and Sulphur nutrients.
3. The Maximum Retail Price (MRP) of P&K fertilisers is fixed by the Government of India.
4. Fortified fertilisers coated with micronutrients such as Zinc and Boron are eligible for additional subsidy.

Which of the statements given above are correct?

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

Answer: A

Mains Question:

Q. The Nutrient-Based Subsidy (NBS) Scheme represents a paradigm shift in India's fertiliser subsidy regime. In the context of the revised NBS rates for Rabi 2025–26, examine how the scheme promotes balanced fertilisation, soil health, and sustainable agriculture while addressing fiscal and market challenges

(250 words)

**BALANCED FERTILIZATION:
THE CORNERSTONE OF
SUSTAINABLE AGRICULTURAL
GROWTH IN INDIA**



WHY IN THE NEWS?

The Green Revolution marked a transformative phase in India's agricultural history. The introduction

of fertilizer-responsive high-yielding varieties (HYVs) of rice and wheat in the mid-1960s, supported by irrigation expansion and chemical fertilizers, enabled India to overcome chronic food shortages and achieve self-sufficiency. Foodgrain production surged, hunger declined, and rural livelihoods improved, positioning India as a global model for agricultural transformation.

Did You KNOW

Urea accounts for **55–60%** of total fertilizer consumption in India

Key Fact (Efficiency Gap)
But only **30–35%** of nitrogen is actually used by crops

Why is This a Problem?

- The balance gets lost to environment
- Causes air pollution & climate change
- Releases Nitrous Oxide, a greenhouse gas that is **300** times more potent than carbon dioxide

What should be done?

- Apply urea based on soil testing
- Match nutrients to crop requirement
- Use in combination with other nutrients

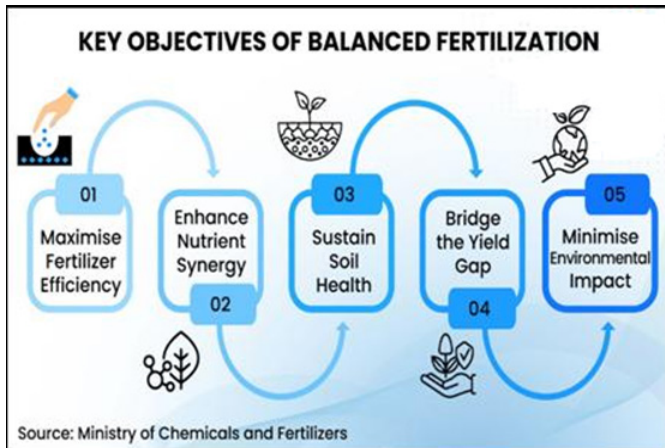
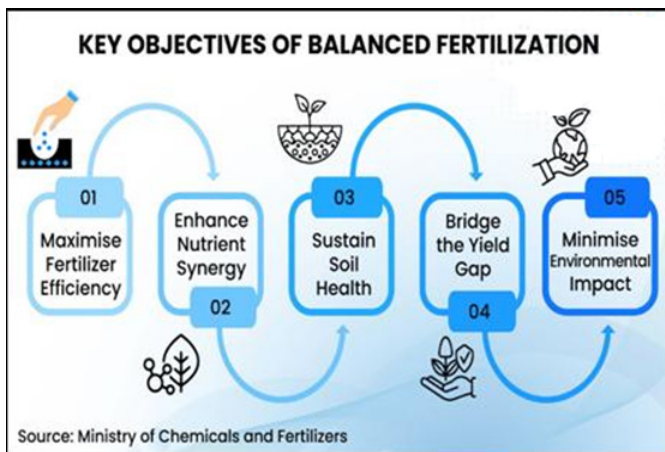
UNDERSTANDING FERTILIZERS

Fertilizers are substances of natural or synthetic origin added to soil to supply essential plant nutrients. They are broadly classified into:

- **Inorganic fertilizers:** Manufactured chemical compounds supplying nutrients in concentrated, readily available forms, allowing precise nutrient management.
- **Organic fertilizers:** Derived from natural sources such as compost, farmyard manure, crop residues, seaweed, and animal by-products. They release nutrients gradually while improving soil structure, organic carbon, and biological activity.
- **Balanced Fertilization:** Concept and Scientific Basis Balanced fertilization refers to the application of all essential plant nutrients—macronutrients and micronutrients—in

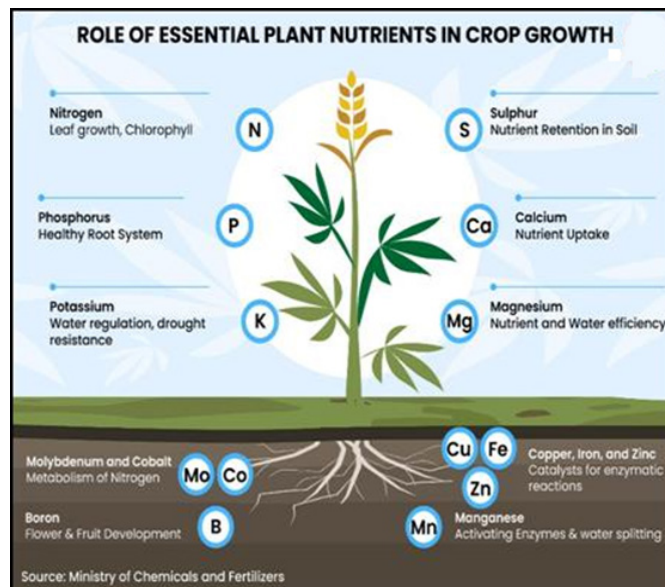
appropriate proportions, quantities, timing, and methods, based on soil fertility, crop requirements, and climatic conditions. It goes beyond the conventional NPK-centric approach and adopts a holistic nutrient management framework. The scientific foundation of balanced fertilization lies in Justus von Liebig’s Law of the Minimum, which states that crop growth is limited by the nutrient in shortest supply, regardless of the abundance of others. Excessive application of a single nutrient, therefore, cannot compensate for deficiencies in others.

- Improved soil health, including microbial activity and water-holding capacity
- Reduced environmental risks such as leaching and water pollution



BENEFITS OF BALANCED FERTILIZATION

- Higher crop productivity through optimal nutrient availability
- Improved performance of HYVs, maximising genetic potential
- Enhanced nutrient-use efficiency, reducing wastage
- Better crop quality and stress resistance



PROCESS OF BALANCED FERTILIZATION: FROM SOIL TO SOLUTION

- Integrated Nutrient Management (INM):** INM combines chemical fertilizers, organic manures, and biological inputs to ensure efficient and sustainable nutrient use. It recognises that neither chemical nor organic inputs alone can meet crop nutrient demands.
- Soil Test-Based Recommendations:** Soil testing forms the backbone of balanced fertilization. Based on nutrient status (low, medium, high), fertilizer doses are adjusted accordingly. The Soil Health Card (SHC) Scheme operationalises this approach nationwide.
- Soil Test Crop Response (STCR):** STCR links fertilizer application to targeted yields by factoring in soil fertility, crop type, and climate, preventing over- or under-application.
- Diagnosis and Recommendation Integrated System (DRIS):** DRIS assesses nutrient balance using plant tissue analysis and nutrient ratios, enabling corrective measures during crop growth.
- Site-Specific Nutrient Management (SSNM):** SSNM tailors fertilizer application to field-

level variability, applying nutrients only where deficits exist, thereby improving efficiency and reducing losses.

REGENERATIVE AGRICULTURE: A COMPLEMENTARY APPROACH

Regenerative agriculture strengthens balanced fertilization by restoring soil health through reduced tillage, crop rotation, cover cropping, mulching, and agroforestry. These practices enhance organic matter, improve nutrient retention, and reduce dependency on repeated fertilizer application. In India, regenerative approaches such as micro-irrigation, natural farming, and climate-resilient agriculture are gaining traction.



GOVERNMENT INITIATIVES PROMOTING BALANCED FERTILIZATION

- 1. Soil Health Card Scheme:** Launched in 2015, SHCs provide plot-wise soil diagnostics covering macronutrients, micronutrients, and soil properties. Over 25.5 crore cards have been distributed, enabling informed fertilizer use.
- 2. Nutrient-Based Subsidy (NBS) Scheme:** The NBS scheme promotes balanced use of N, P, K, and sulphur by linking subsidies to nutrient content.

Between 2022–23 and 2024–25, over ₹2.04 lakh crore was allocated under the scheme.

- 3. Neem-Coated Urea:** Mandatory neem coating improves nitrogen-use efficiency, reduces overuse, and lowers environmental losses.
- 4. Paramparagat Krishi Vikas Yojana (PKVY):** PKVY supports organic farming and sustainable nutrient practices, covering 16.9 lakh hectares as of October 2025.
- 5. PM-PRANAM:** This scheme incentivises States to reduce chemical fertilizer use, promoting eco-friendly alternatives. In FY 2023–24, 14 States reduced fertilizer consumption by 15.14 lakh MT.
- 6. Promotion of Nano Fertilizers:** Nano urea and nano DAP enhance nutrient absorption efficiency. Government initiatives include field demonstrations, PMKSK availability, drone-based spraying, and industry scale-up.
- 7. Customised and Fortified Fertilizers:** Subsidised fertilizers fortified with micronutrients such as zinc and boron are promoted under the NBS policy to address region-specific deficiencies.

ENFORCEMENT AND SUPPLY CHAIN INTEGRITY

To prevent diversion and misuse, the Department of Fertilizers conducted extensive enforcement drives during Kharif and Rabi 2025–26, issuing over 14,000 notices, suspending licenses, and registering FIRs. These measures ensure timely availability and protect farmer interests.

CONCLUSION

Balanced fertilization has emerged as a strategic imperative for sustaining India's agricultural productivity while addressing soil degradation, nutrient imbalance, and environmental stress. Through science-based interventions, farmer-centric schemes, and regulatory oversight, India is transitioning from input-intensive to efficiency-oriented nutrient management. Initiatives such as Soil Health Cards, Nutrient-Based Subsidy, INM, nano fertilizers, and PM-PRANAM collectively underscore the Government's commitment to restoring soil health, optimising input use, and enhancing long-term agricultural resilience. Balanced fertilization thus forms the foundation

of a productive, sustainable, and environmentally responsible agricultural future for India.

Prelims question:

Q. With reference to balanced fertilization in Indian agriculture, consider the following statements:

1. Balanced fertilization involves the application of only N, P and K fertilizers in fixed proportions.
2. Liebig's Law of the Minimum provides the scientific basis for balanced fertilization.
3. Soil Health Card Scheme aims to promote soil test-based fertilizer application.
4. Neem-coated urea improves nitrogen-use efficiency and reduces fertilizer diversion.

Which of the statements given above are correct?

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

Answer: A

Mains Question:

Q. Balanced fertilization is critical for sustaining agricultural productivity while addressing soil degradation and environmental stress in India. Discuss the concept, benefits, and government initiatives promoting balanced fertilization in India. (250 words)

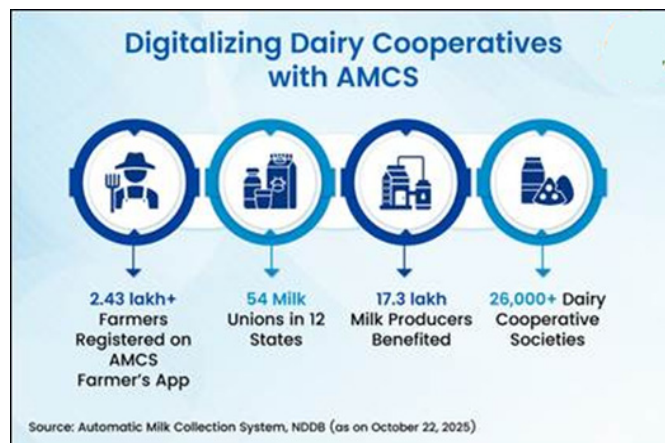
DAIRY DIGITALISATION IN INDIA: ENHANCING FARMER INCOMES, FOOD SAFETY AND CLIMATE RESILIENCE



WHY IN THE NEWS?

India's dairy sector—contributing nearly 5% to India's GDP and supporting over 8 crore rural

households—is undergoing a comprehensive digital transformation under the leadership of the National Dairy Development Board (NDDB). Through initiatives such as NDLM, AMCS, NDERP, SSMS, INAPH, i-DIS, and GIS-based milk route optimisation, the sector is being integrated into a data-driven, transparent, and resilient value chain, reinforcing India's position as the world's largest milk producer (25% of global output).



OBJECTIVES OF DAIRY DIGITALISATION

1. Improve productivity, traceability, and transparency
2. Strengthen farmer incomes and cooperative institutions
3. Enable data-driven policymaking
4. Enhance food safety, animal health, and climate efficiency
5. Align dairy growth with Digital India and Sustainable Development Goals (SDGs)

CORE DIGITAL INITIATIVES

Digital Platforms for Livestock Management & Productivity

Initiative	Core Features	Coverage / Status	Strategic Importance
National Digital Livestock Mission (NDLM)	<ul style="list-style-type: none"> Bharat Pashudhan digital ecosystem Pashu Aadhaar (12-digit livestock ID) Digital records: breeding, AI, vaccination, disease treatment, ownership & migration 1962 App & helpline for veterinary services 	35.68 crore animals tagged (Nov 2025)	<ul style="list-style-type: none"> Animal traceability & epidemic control (LSD, FMD) Enables DBT, insurance & credit Supports One Health approach
SSMS & INAPH	<ul style="list-style-type: none"> Digitisation of frozen semen dose lifecycle Compliance with Minimum Standard Protocols (MSP) Integration with RFID bull tags, labs & field data 	38 graded semen stations	<ul style="list-style-type: none"> Genetic improvement & higher milk yields Strengthens AI network Supports Rashtriya Gokul Mission



Digital Systems for Milk Procurement, Operations & Logistics

Initiative	Key Functions	Coverage / Reach	Governance & Economic Impact
Automatic Milk Collection System (AMCS)	<ul style="list-style-type: none"> Digital capture of milk quantity, fat & SNF Real-time DBT payments & SMS alerts 	<ul style="list-style-type: none"> 26,000+ DCS 17.3 lakh producers 54 unions in 12 States/UTs 	<ul style="list-style-type: none"> Eliminates manipulation & rent-seeking Reduces disputes & delays Financial inclusion of women farmers
NDDB Dairy ERP (NDERP)	<ul style="list-style-type: none"> End-to-end ERP (cow to consumer) Finance, procurement, manufacturing, QC, HR, sales Open-source Frappe ERPNext Integrated with AMCS 	<ul style="list-style-type: none"> Cooperative dairies 	<ul style="list-style-type: none"> Improves efficiency & cost control Enhances auditability Real-time management dashboards

Internet-based Dairy Information System (i-DIS)	<ul style="list-style-type: none"> • Unified MIS for procurement, sales, manufacturing & input supply 	<ul style="list-style-type: none"> • 198 milk unions • 29 marketing dairies • 54 feed plants • 15 federations 	<ul style="list-style-type: none"> • National dairy database • Performance benchmarking • Evidence-based policymaking
GIS-based Milk Route Optimisation	<ul style="list-style-type: none"> • GIS mapping & fleet optimisation • Optimised procurement & distribution routes 	Pilots in Vidarbha–Marathwada, Assam, Jharkhand, UP, MP	<ul style="list-style-type: none"> • Lower logistics cost & fuel use • Reduced carbon emissions • Climate-resilient dairy logistics

OVERALL SIGNIFICANCE OF DAIRY DIGITALISATION

- 1. Enhanced Farmer Income & Economic Security:** Digital milk collection, transparent pricing, and direct benefit transfers ensure timely payments, reduce exploitation, and enhance farmers’ income stability and bargaining power.
- 2. Trust, Transparency & Institutional Credibility:** End-to-end digitisation reduces manual manipulation, builds trust in cooperatives, and strengthens accountability across procurement, processing, and distribution systems.
- 3. Improved Food Safety & Quality Assurance:** Digital traceability, health monitoring, and quality testing improve compliance with sanitary and phytosanitary standards, strengthening consumer confidence and export readiness.
- 4. Strengthening Cooperative Federalism:** Unified digital platforms enable seamless coordination among village societies, milk unions, state federations, and national institutions, reinforcing cooperative federalism.
- 5. Support to Doubling Farmers’ Income (DFI):** Productivity enhancement, reduced transaction costs, better market access, and improved service delivery collectively support the national objective of Doubling Farmers’ Income.
- 6. Promotion of Green & Low-Carbon Supply Chains:** Optimised logistics, reduced wastage, and energy-efficient operations lower carbon footprints, advancing sustainable and climate-resilient dairy value chains.
- 7. Advancement of Sustainable Development Goals (SDGs):** Dairy digitalisation contributes to SDG 2 (Zero Hunger) through nutrition security, SDG 8 via rural livelihoods, SDG 12 through responsible production, and SDG 13 by promoting climate action.

KEY CHALLENGES IN DAIRY DIGITALISATION

- 1. Digital Divide & Low Tech Literacy:** Limited digital awareness and skills among small and marginal dairy farmers reduce effective adoption of digital platforms and services.
- 2. Inadequate Internet & Power Connectivity:** Poor rural broadband coverage and unreliable electricity supply hinder real-time data capture, payments, and system integration.
- 3. Data Privacy, Cybersecurity & Interoperability Risks:** Rising digitisation raises concerns related to data misuse, cyber threats, and lack of seamless interoperability among multiple digital platforms.
- 4. Limited Inclusion of Private & Informal Dairy Sector:** A large share of private, informal, and MSME dairies remains outside the digital ecosystem, restricting comprehensive sector-wide transformation.

WAY FORWARD FOR DAIRY DIGITALISATION

- 1. Digital Literacy & Capacity Building:** Launch large-scale digital literacy and handholding programmes for farmers, cooperative staff, and field functionaries to ensure effective adoption of digital tools.
- 2. Strengthening Rural Digital Infrastructure:** Accelerate last-mile broadband connectivity and power reliability under BharatNet, especially in dairy-intensive rural clusters.
- 3. Platform Integration & Ecosystem Approach:** Integrate dairy platforms with AgriStack, e-NAM, DBT, insurance, and credit systems to provide seamless access to markets, finance, and welfare benefits.

4. **Robust Data Protection & Cybersecurity:** Establish strong data governance, cybersecurity protocols, and interoperability standards to protect farmer data and ensure secure digital operations.
5. **Adoption of Advanced Technologies:** Leverage AI, IoT, and Blockchain for milk quality monitoring, disease surveillance, demand forecasting, and transparent supply-chain management.
6. **Inclusion of Private, Informal & MSME Dairies:** Expand digital solutions beyond cooperatives by incentivising adoption among private, informal, and MSME dairy enterprises for sector-wide transformation.

CONCLUSION

India's dairy digitalisation is transforming the sector into a transparent, efficient, and resilient value chain, benefiting over 8 crore rural households and strengthening the rural economy. NDDB-led initiatives like NDLM, AMCS, NDERP, i-DIS, and GIS-based route optimisation improve farmer incomes, cooperative efficiency, animal health, and milk quality, while reducing carbon footprints and promoting climate-resilient operations. Despite challenges such as digital divide, connectivity gaps, and data governance issues, focused measures—like digital literacy, BharatNet expansion, platform integration, and adoption of AI, IoT, and Blockchain—can ensure inclusive and sustainable growth. Overall, dairy digitalisation reinforces India's position as the world's largest milk producer while advancing Doubling Farmers' Income, Digital India, and multiple Sustainable Development Goals (SDGs 2, 8, 12, and 13).

Prelims question:

Q. With reference to dairy digitalisation initiatives in India, consider the following statements:

1. The National Digital Livestock Mission (NDLM) provides a unique digital identity to livestock through Pashu Aadhaar.
2. Automatic Milk Collection System (AMCS) enables real-time quality assessment and direct payment to farmers.
3. Internet-based Dairy Information System (i-DIS) is primarily aimed at private dairy exporters.
4. GIS-based milk route optimisation contributes to reducing carbon emissions.

Which of the statements given above are correct?

- A. 1, 2 and 4 only B. 1 and 3 only
C. 2 and 4 only D. 1, 2, 3 and 4

Answer: A

Mains Question:

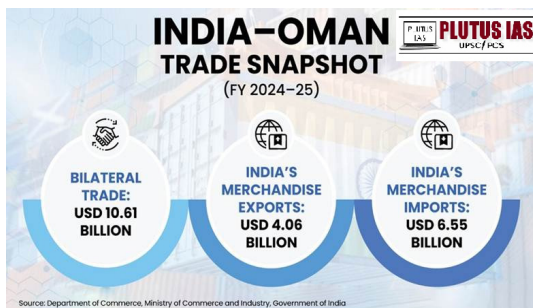
Q. India's dairy sector is undergoing a major digital transformation under the leadership of the National Dairy Development Board (NDDB). Examine the significance of dairy digitalisation, its key challenges, and suggest a way forward. (250 words)



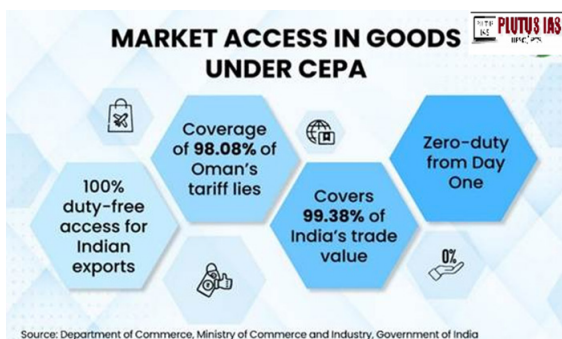
INDIA-OMAN CEPA: A STRATEGIC TRADE PACT FOR JOBS, EXPORTS AND REGIONAL INTEGRATION



WHY IN THE NEWS?



India and Oman have signed a Comprehensive Economic Partnership Agreement (CEPA) providing near-universal duty-free access for Indian exports, deeper services liberalisation, and enhanced professional mobility. The agreement aims to boost bilateral trade beyond USD 10.6 billion, strengthen MSMEs, generate employment, and deepen India's economic footprint in the Gulf region.



STRATEGIC CONTEXT OF THE INDIA-OMAN CEPA

- **New-Generation Trade Architecture** : The India-Oman CEPA represents a shift from tariff-centric FTAs to comprehensive economic integration. It simultaneously covers goods,

services, investment, mobility, and regulatory cooperation, providing predictability and legal certainty to businesses while aligning with India's evolving trade strategy.

- **Gulf-Centric Economic Engagement** : Oman occupies a strategic position in India's West Asia policy. The CEPA strengthens India's economic footprint in the Gulf by complementing energy ties with trade, logistics, manufacturing, and services cooperation, reinforcing India's role as a trusted long-term partner.
- **Trade Growth as the Trigger** : Bilateral trade reaching USD 10.61 billion in FY 2024-25 demonstrated both scale and momentum. Rising merchandise and services trade created a strong rationale for institutionalising economic engagement through a comprehensive, rules-based partnership.
- **Complementary Economic Structures** : India's diversified manufacturing and services base complements Oman's import-dependent market and diversification agenda. This structural compatibility ensures mutual gains, with India supplying competitively priced goods and skills while Oman provides stable market access.
- **Alignment with India's Trade Doctrine** : The CEPA reflects India's calibrated liberalisation approach—opening export opportunities while protecting sensitive sectors. It aligns with the twin objectives of export-led growth and domestic capacity-building under Atmanirbhar Bharat.

MARKET ACCESS IN GOODS: EXPORT EXPANSION WITH SAFEGUARDS

- **Near-Universal Duty-Free Access** : India secures 100% duty-free access in Oman across 98.08% of tariff lines, covering 99.38% of export value. Immediate implementation from Day

One provides certainty and enhances price competitiveness for Indian exporters.

- **Boost to Price Competitiveness** : Exports earlier facing duties up to 5%—worth around USD 3.64 billion—now gain a clear cost advantage. This improves margins, supports market penetration, and strengthens India’s position against non-FTA competitors.
- **India’s Calibrated Market Offer** : India liberalises 77.79% of tariff lines, covering 94.81% of imports from Oman. Simultaneously, an exclusion list protects sensitive sectors, ensuring trade openness does not undermine domestic manufacturing or farmer interests.
- **Protection of Sensitive Sectors** : Key sectors such as dairy, cereals, edible oils, petroleum products, textiles, footwear, and certain chemicals are excluded. This safeguard mechanism balances external openness with internal economic stability and employment protection.
- **Support for MSMEs and Regions** : By focusing liberalisation on competitive sectors, the CEPA benefits MSME-driven clusters across states. Enhanced exports strengthen regional economies, improve capacity utilisation, and promote geographically inclusive growth.

SECTORAL IMPACT ON MANUFACTURING AND AGRICULTURE

- **Engineering Goods as Growth Drivers** : Zero-duty access for machinery, automobiles, iron and steel, and electrical equipment enhances competitiveness. Engineering exports are projected to rise to USD 1.3–1.6 billion by 2030, benefiting MSMEs and infrastructure-linked industries.
- **Pharmaceuticals and Regulatory Ease** : Fast-tracking approvals for products cleared by USFDA, EMA, and other stringent regulators reduces approval timelines and costs. Acceptance of GMP certifications improves supply reliability and positions India as a key pharma partner.
- **Agriculture and Processed Food Gains** : Duty-free access strengthens India’s leadership in products like eggs, biscuits, butter, meat, and condiments. Rising exports support farmers,

food processors, and allied activities while maintaining safeguards for core food security items.

- **Marine Products and Coastal Employment** : Immediate duty-free access for seafood improves competitiveness of shrimp and fish exports. Given the labour-intensive nature of the sector, export growth directly supports coastal livelihoods and processing industries.
- **Textiles, Plastics, and Gems & Jewellery** : Elimination of 5% tariffs boosts labour-intensive sectors. Textile clusters, plastics MSMEs, and jewellery hubs gain export momentum, supporting employment generation and value-added manufacturing across multiple Indian states.



SERVICE TRADE AND PROFESSIONAL MOBILITY

- **Expanding Services Footprint** : Oman offers market access in 127 service sub-sectors with FTA-plus commitments. Key beneficiaries include IT, professional services, health, education, tourism, and business services where India enjoys comparative advantage.
- **Enhanced Intra-Corporate Mobility** : The ICT ceiling is raised from 20% to 50%, enabling Indian firms to deploy managerial and specialist staff. This improves operational flexibility for Indian companies operating in Oman.
- **Defined Professional Categories** : For the first time in an FTA, Oman commits to specific professional categories such as engineers, doctors, accountants, IT professionals, and

consultants. This reduces uncertainty and improves employment prospects for skilled Indians.

- **Non-Services Mobility Provision** : A unique provision extends mobility assurances to manufacturing and non-services sectors. It provides legal clarity for Indian industrial workers, supporting joint ventures and investments amid Omanisation policies.
- **Social Security Cooperation Prospects** : Future negotiations on a Social Security Agreement aim to prevent dual contributions and ensure portability of benefits, improving welfare and cost-efficiency for Indian workers and employers abroad.

REGULATORY COOPERATION: TBT AND SPS PROVISIONS

- **Understanding TBT Measures** : Technical Barriers to Trade (TBT) refer to standards, technical regulations, and conformity assessment procedures. The CEPA ensures these are non-discriminatory and aligned with international norms to avoid unnecessary trade obstacles.
- **SPS Measures and Food Safety** : Sanitary and Phytosanitary (SPS) measures govern food safety and animal and plant health. The agreement promotes transparency, science-based regulation, and cooperation to facilitate agricultural and food exports.
- **Mutual Recognition of Certifications** : Mandatory acceptance of certificates issued by India’s Export Inspection Council reduces redundant testing at Omani ports. This lowers transaction costs and improves clearance timelines for exporters.
- **Priority Sector Harmonisation** : Pharmaceuticals benefit from acceptance of GMP inspections and fast-track approvals. Halal and organic products gain from recognition of certification systems, reducing duplication and easing market entry.
- **Predictability for Exporters** : Regulatory cooperation enhances trust, reduces compliance uncertainty, and provides long-term stability. This predictability is crucial for investment decisions and sustained participation in cross-border value chains.

EMPLOYMENT, REGIONAL GAINS AND STRATEGIC OUTCOMES

- **Labour-Intensive Sector Benefits** : Textiles, food processing, marine products, leather, gems and jewellery, and light engineering gain from improved market access. These sectors have high employment elasticity, translating export growth into job creation.
- **State-Wise Export Opportunities** : Agricultural and industrial gains are spread across states such as Uttar Pradesh, Punjab, Gujarat, Tamil Nadu, Maharashtra, Andhra Pradesh, and the North-East, ensuring geographically balanced economic benefits.
- **MSME-Led Inclusive Growth** : Preferential access levels the playing field for MSMEs against larger global competitors. Improved scale, better capacity utilisation, and integration into regional supply chains strengthen MSME resilience.
- **Gateway to GCC and Africa** : Oman’s ports—Sohar, Duqm, and Salalah—position it as a logistics hub. Indian exporters can leverage Oman to access wider GCC and East African markets.
- **Long-Term Strategic Partnership** : The CEPA deepens India–Oman relations beyond trade, fostering trust, economic interdependence, and regional stability. It reinforces India’s vision of resilient supply chains and sustainable, rules-based global economic engagement.

KEY AGRICULTURAL GAINS BY STATE

Product	Major Beneficiary States
Meat	Uttar Pradesh, Punjab, Haryana, Andhra Pradesh, Maharashtra, Bihar
Eggs	Tamil Nadu, Andhra Pradesh, Telangana, Maharashtra
Sweet Biscuits	Andhra Pradesh, Telangana, Punjab, Uttar Pradesh
Butter	Gujarat, Uttar Pradesh, Maharashtra, Punjab
Sugar Confectionery	Karnataka, Uttar Pradesh, Maharashtra

Potatoes (Prepared/ Preserved)	Gujarat, Uttar Pradesh, West Bengal, Punjab, Maharashtra
Honey	Punjab, Haryana, Uttar Pradesh, West Bengal, Rajasthan, North Eastern Region

Dairy Sector	Cereals Fruits	Vegetables	Edible Oils	Oil Seeds	Natural Honey	
Products like: Milk, Cheese, Butter, Dairy Spreads, Ghee, Yogurts	Wheat, Rice, Maize, Millets	Banana, Apples, Pineapples, Orange, Mango, Grapes, Pomegranates	Tomato, Onion, Garlic, Cauliflower, Cabbage, Lettuce, Radish, Peas, Beans, Pumpkin, Bitter Guard, Bottle Guard, Lady Finger, Potatoes, Mixtures of Vegetable	Soyabean Oil, Palm Oil, Mustard Oil, Groundnut Oil, Repessed Oil, Sunflower Oil	Soyabean, Mustard, Sesame	Natural Honey

Source: Department of Commerce, Ministry of Commerce and Industry, Government of India

CONCLUSION

Overall, the India–Oman CEPA marks a balanced and forward-looking trade partnership that expands India’s export opportunities while safeguarding sensitive sectors. By boosting agriculture, manufacturing, services, and MSME participation, it strengthens employment generation, regional growth, and India’s long-term economic integration with the Gulf region.

Prelims question:

Q. With reference to the India–Oman Comprehensive Economic Partnership Agreement (CEPA), consider the following statements:

- India will receive 100% duty-free market access in Oman for more than 98% of tariff lines.
- All tariff concessions under the CEPA will be implemented in a phased manner over ten years.
- The agreement covers trade in goods, services, investment, and professional mobility.

Which of the statements given above is/are correct?

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

Answer: A

Mains Question:

Q. “Trade agreements today are instruments of strategic partnership rather than mere tariff arrangements.” Discuss this statement in the context of the India–Oman Comprehensive Economic Partnership Agreement (CEPA).

(250 words)

GLOBAL CLIMATE GOVERNANCE UNDER STRAIN: IMPLICATIONS OF US EXIT FROM UNFCCC & IPCC



WHY IN THE NEWS?

The United States has announced its withdrawal from 66 international organisations and conventions, including the UNFCCC, IPCC and International Solar Alliance, marking the first complete exit by any country from the global climate mitigation and scientific assessment framework.

EROSION OF GLOBAL CLIMATE ARCHITECTURE

- Exit from UNFCCC Framework :** The UNFCCC provides the foundational legal and institutional architecture for global climate negotiations, including COPs. US withdrawal undermines the universality, legitimacy and effectiveness of this framework, weakening collective decision-making on mitigation, adaptation and climate finance.
- Withdrawal from IPCC :** The IPCC synthesises global climate science to inform policymaking. US exit weakens scientific consensus-building, reduces research collaboration and risks politicisation of climate science, thereby impairing evidence-based global climate governance.
- Undermining Multilateralism :** The move reflects a broader retreat from multilateral institutions, privileging national sovereignty over cooperative problem-solving. Climate change, as a transboundary global commons issue, cannot be effectively addressed through unilateral or isolationist approaches.

- **Precedent Risk for Other Nations** : US withdrawal may encourage other countries to dilute commitments or disengage from climate obligations, creating a domino effect. Such precedent risks collective action failure, where individual national interests override shared global responsibilities.
- **Fragmentation of Climate Regime** : Absence of a major emitter may lead to fragmented climate arrangements, regional blocs or informal coalitions. This reduces coherence, predictability and enforceability of climate action, undermining long-term global mitigation trajectories.

IMPLICATIONS FOR GLOBAL CLIMATE ACTION

- **Slower Emission Reduction Efforts** : As the world's largest historical emitter, US non-participation significantly weakens global mitigation ambition. Reduced commitment disrupts collective emission reduction pathways necessary to achieve the 1.5°C and 2°C temperature targets.
- **Climate Finance Deficit** : US withdrawal absolves it from climate finance obligations, worsening existing funding gaps. This undermines trust between developed and developing nations and constrains financing for mitigation, adaptation and loss-and-damage mechanisms.
- **Setback to Technology Cooperation** : Global cooperation on clean technologies, innovation and knowledge transfer may suffer. Reduced US engagement can slow diffusion of advanced renewable technologies, carbon capture solutions and climate-resilient infrastructure across developing economies.
- **Weakened COP Negotiations** : COP negotiations rely on political leadership and financial commitments from major economies. US absence may reduce ambition levels, slow consensus-building and weaken outcomes, making climate agreements less effective and less binding.
- **Erosion of Trust in Commitments** : Developing countries may view climate pledges as unreliable, deepening the trust deficit. This complicates future negotiations, particularly on enhanced nationally determined contributions (NDCs) and long-term climate finance commitments.

IMPACT ON DEVELOPING COUNTRIES

- **Violation of Climate Justice Principles** : The withdrawal contradicts the principle of Common But Differentiated Responsibilities (CBDR), allowing a historically responsible nation to evade obligations, while climate-vulnerable countries disproportionately bear the costs of mitigation and adaptation.
- **Increased Adaptation Vulnerability** : Developing countries face heightened climate risks such as floods, droughts and heatwaves. Reduced international support limits their adaptive capacity, threatening livelihoods, food security and long-term developmental gains.
- **Delay in Energy Transitions** : Climate finance constraints slow renewable energy expansion and just transition efforts. Many developing economies may be forced to rely longer on fossil fuels, undermining global decarbonisation goals.
- **Weakening of Capacity-Building Efforts** : Training programmes, institutional strengthening and climate data sharing supported by multilateral mechanisms may be curtailed, affecting domestic policy formulation and implementation capacities in least developed countries.
- **Widening Global Inequality** : Unequal climate impacts and unequal access to finance may exacerbate global developmental inequalities, contradicting the goals of sustainable development and inclusive growth.

GEOPOLITICAL AND STRATEGIC DIMENSIONS

- **Emergence of Leadership Vacuum** : US retreat creates a leadership vacuum in climate diplomacy, potentially filled by the European Union, China or coalitions of emerging economies, reshaping global power dynamics in environmental governance.
- **Climate as a Strategic Arena** : Climate policy increasingly intersects with geopolitics, trade and technology. Control over green technologies and climate finance may become instruments of strategic influence.

- **Domestic Politics over Global Goods** : The decision reflects prioritisation of domestic political narratives over stewardship of global public goods, highlighting tensions between national electoral politics and long-term planetary interests.
- **Decline in US Soft Power** : Withdrawal damages US credibility and moral authority in global governance forums, weakening its ability to shape norms, rules and institutions beyond climate negotiations.
- **Normative Backsliding in Governance** : The move risks normalising disengagement from international responsibilities, undermining global norms of cooperation, accountability and rule-based multilateral order.
- **Ethics of Global Commons** : Climate change governance requires collective stewardship of shared resources. Unilateral withdrawal undermines ethical obligations toward humanity and the planet.
- **Power–Responsibility Asymmetry** : Those least responsible for emissions suffer the most impacts, while powerful emitters evade accountability, raising serious concerns of global distributive justice.
- **Science–Policy Disconnect** : Rejection of IPCC undermines the role of scientific evidence in policymaking, encouraging populist narratives over rational, data-driven governance.
- **Moral Hazard in International Law** : If powerful nations exit without consequences, compliance incentives weaken, threatening the credibility of international agreements across domains beyond climate.

IMPLICATIONS FOR INDIA

- **Opportunity for Climate Leadership** : India can strengthen its leadership role by advocating equity-based climate action, championing developing country concerns and enhancing cooperation through forums like BASIC and G-77.
- **Stress on Climate Finance Availability** : Reduced US contributions strain adaptation and mitigation financing for India, particularly for climate-resilient infrastructure, coastal protection and clean energy expansion.
- **Impact on International Solar Alliance (ISA)** : US exit from ISA may affect funding flows and technological collaboration, slowing momentum for solar energy deployment in developing countries.
- **Increased Negotiation Complexity** : India must navigate future climate negotiations carefully, balancing developmental needs, climate ambition and fairness in burden-sharing.
- **Need for Strategic Diversification** : India may deepen climate partnerships with the EU, Japan and multilateral development banks to reduce dependence on any single major power.

ETHICAL AND GOVERNANCE PERSPECTIVE

- **Inter-generational Injustice** : Avoiding mitigation responsibilities shifts climate costs to future generations, violating principles of sustainability, equity and long-term human welfare.

WAY FORWARD

- **Strengthen Climate Coalitions**: EU, India, and developing nations must sustain ambition through collective leadership.
- **Diversify Climate Finance**: Expand multilateral banks, green bonds and private climate finance.
- **Reinforce IPCC Credibility**: Safeguard scientific integrity through wider international participation.
- **Advance South-South Cooperation**: Promote technology sharing and capacity building among developing countries.
- **Reform Global Climate Governance**: Make frameworks more resilient to unilateral withdrawals.

CONCLUSION

The US withdrawal from UNFCCC and IPCC is a significant setback to global climate governance, but it also highlights the urgency of resilient multilateralism. Sustained collective leadership remains essential to effectively address the global climate crisis.

Prelims question:

- Q. With reference to the United Nations Framework Convention on Climate Change (UNFCCC), consider the following statements:

1. UNFCCC was adopted at the Rio Earth Summit in 1992.
2. All Conferences of Parties (COPs) are held under the UNFCCC framework.
3. The Paris Agreement is legally binding on all countries to achieve identical emission reduction targets.

Which of the statements given above are correct?

- A. 1 and 2 only B. 2 and 3 only
C. 1 and 3 only D. 1, 2 and 3

Answer: A

Mains Question:

Q. The withdrawal of the United States from UNFCCC and IPCC reflects a crisis of multilateralism. Examine the implications of this development for global climate governance.

THE US-VENEZUELA CRISIS AS A TEST CASE FOR GLOBAL GOVERNANCE AND STRATEGIC AUTONOMY



WHY IN THE NEWS?



US–Venezuela relations have entered a phase of serious escalation following recent US military actions, intensified sanctions, and strong diplomatic posturing against the Maduro government over alleged narco-terrorism links, democratic backsliding, and control over Venezuela’s vast oil reserves. These developments have raised concerns

regarding violation of sovereignty, erosion of international law, regional security instability in the Caribbean and Latin America, and the deepening humanitarian and migration crisis. The situation has also attracted global attention due to reactions from major powers, implications for energy markets, and its broader significance for multilateralism and global governance.

INTRODUCTION

The United States–Venezuela relationship, long characterised by ideological contestation, economic sanctions and diplomatic hostility, has entered a phase of acute escalation. Recent developments — including intensified US military actions, renewed sanctions, and the targeting of Venezuela’s political leadership — have transformed a prolonged political crisis into a serious regional and international security concern. The episode underscores the evolving nature of interventionism, sanctions diplomacy and great-power rivalry in the Western Hemisphere.

NORMATIVE–INSTITUTIONAL AND SOVEREIGNTY CHALLENGES IN U.S.–VENEZUELA RELATIONS

- **Contestation over Political Legitimacy** : The United States has consistently questioned the democratic legitimacy of the Nicolás Maduro government, citing alleged electoral irregularities, democratic backsliding, and restrictions on political opposition. This normative critique forms the basis of Washington’s refusal to recognise the Venezuelan regime as a valid representative of popular sovereignty, thereby justifying diplomatic isolation and targeted sanctions.
- **Security Narratives and the ‘Narco-State’ Discourse** : By labelling sections of the Venezuelan state as “narco-terrorist,” the U.S. has reframed the bilateral dispute within a security and counter-narcotics paradigm. This securitisation enables the application of domestic anti-drug and anti-terror laws beyond territorial boundaries, blurring the line between internal law enforcement and external intervention.
- **Sovereignty and the Westphalian Principle** : Venezuela interprets U.S. actions as a direct

assault on the Westphalian notion of sovereign equality, which grants states exclusive authority over their internal political and legal systems. From Caracas’ perspective, external attempts to influence regime legitimacy or governance outcomes undermine the foundational norms of state sovereignty.

- **UN Charter and International Legal Constraints** : Invoking Article 2(4) of the UN Charter, Venezuela argues that coercive measures imposed without explicit UN Security Council authorisation violate international law. The absence of multilateral endorsement raises concerns over selective interpretation of legal norms and the circumvention of established collective security mechanisms.
- **Implications for Multilateralism and Global Governance** : The U.S.–Venezuela standoff highlights a broader erosion of multilateral norms, where unilateral enforcement increasingly substitutes collective decision-making. This trend risks setting precedents that weaken international institutions, reduce trust in global governance frameworks, and normalise power-based interventions over rule-based international order.

GEOECONOMICS, SANCTIONS REGIMES AND ENERGY SECURITY DYNAMICS

Economic coercion remains the principal instrument of US policy towards Venezuela. Venezuela possesses the largest proven crude oil reserves in the world, making energy geopolitics central to the crisis. Since 2017, the US has imposed comprehensive financial and oil-sector sanctions, restricting Venezuela’s access to global markets, shipping insurance, and dollar-denominated transactions.

While limited sanction relaxations were attempted to incentivise democratic reforms, their reversal reflects the failure of conditional engagement strategies. These sanctions have:

- Severely constrained Venezuela’s fiscal capacity
- Accelerated economic collapse and hyperinflation
- Altered global energy flows, especially amid post-Ukraine war supply uncertainties

Simultaneously, Venezuela’s energy partnerships with China, Russia and Iran highlight how sanctions often lead to strategic realignments rather than regime compliance, complicating global energy security.

STRATEGIC–MILITARY ESCALATION AND REGIONAL SECURITY IMPLICATIONS

Dimension	United States’ Actions	Venezuela’s Response	Regional Security Implications
Naval and Military Presence	Expansion of naval deployments in the Caribbean; increased maritime patrols	Heightened coastal defence readiness; naval and air force alert status	Increased militarisation of sea lanes; risk of naval standoffs and accidents
Operational Justification	Framed as counter-narcotics and security operations under domestic law	Rejected as cover for regime-change intervention	Erosion of trust in stated security mandates; legitimacy disputes
Internal Security Measures	Strategic signalling through visible force projection	Nationwide military mobilisation; activation of civilian militias	Blurring of civil–military boundaries; risk of internal instability
Regional Surveillance and Alliances	Intelligence cooperation with regional partners, especially Colombia	Intensified surveillance of neighbouring states	Heightened cross-border tensions; strain on bilateral relations
Spillover Effects	Increased strategic footprint in Caribbean basin	Defensive posturing along borders	Instability in Colombia; strategic vulnerability of Caribbean island states
Systemic Outcome	Deterrence-oriented coercion	Defensive counter-measures	Classic security dilemma leading to regional insecurity

HUMAN SECURITY CRISIS, FORCED MIGRATION AND SOCIETAL IMPACT

The Venezuelan crisis has progressively transformed from a political and economic breakdown into a multidimensional human security emergency, challenging traditional state-centric approaches to international relations and exposing the societal costs of prolonged instability and coercive external interventions.

- **Mass Forced Displacement and Regional Demographic Stress** : Venezuela represents one of the largest peacetime displacement crises in contemporary history, with over 7.7 million Venezuelans having fled the country since 2015, according to UN estimates. The majority have migrated to neighbouring Latin American states—notably Colombia, Peru, Ecuador, Brazil, and Caribbean nations—placing immense demographic and administrative pressure on host countries. Colombia alone hosts over 2.8 million Venezuelan migrants, straining border towns, public services, and labour markets. This migration is largely distress-driven rather than opportunity-led, marking a shift from traditional South–South mobility to forced humanitarian displacement.
- **Food Insecurity, Malnutrition and Livelihood Collapse** : Economic collapse, hyperinflation, and disrupted supply chains have severely undermined food availability and affordability in Venezuela. Prior to escalation, over one-third of the population faced moderate to severe food insecurity, with sharp declines in caloric intake and nutritional diversity. Sanctions affecting oil revenues and import capacity have worsened shortages of staples, fertilisers, and fuel—critical for domestic food production and distribution. Rising unemployment and informalisation of labour have eroded household purchasing power, deepening poverty and pushing vulnerable groups—children, women, and the elderly—into chronic malnutrition.
- **Healthcare System Breakdown and Public Health Risks** : Venezuela's healthcare infrastructure has suffered systemic degradation marked by medicine shortages, equipment failure, and medical brain drain. Essential drugs for cancer, HIV/AIDS, diabetes, and maternal care remain scarce, while hospitals face electricity

and water disruptions. Preventable diseases such as measles, malaria, and diphtheria have re-emerged, reversing decades of public health gains. Migration has also generated cross-border health risks, as receiving countries struggle to extend vaccination, maternal care, and emergency services to displaced populations without adequate international support.

- **Societal Fragmentation and Erosion of Human Capital** : Prolonged crisis has fractured Venezuela's social fabric. Large-scale emigration of skilled professionals, teachers, doctors, and engineers has resulted in a sustained human capital deficit, undermining long-term recovery prospects. Family separation, child labour, school dropouts, and gender-based vulnerabilities have increased, particularly among migrant communities. Social trust in institutions has declined, while survival-oriented coping mechanisms—informal economies, remittances, and external aid dependence—have replaced stable livelihood systems.
- **Humanitarian Overstretch and Regional Governance Challenges** : The influx of Venezuelan refugees has overwhelmed regional humanitarian and governance capacities, especially in middle-income countries lacking robust asylum systems. Border regions face overcrowding, housing shortages, sanitation stress, and local resentment due to perceived competition for jobs and welfare. International humanitarian funding has remained significantly below required levels, exposing gaps in global responsibility-sharing. The crisis highlights limitations of existing regional frameworks in managing protracted displacement outside formal war zones.
- **Ethical Limits of Sanctions and Human Development Trade-offs** : The Venezuelan case underscores critical ethical and policy debates surrounding coercive foreign policy instruments. While sanctions aim to pressure political elites, their indirect effects on civilian populations—through reduced state revenues, import constraints, and welfare contraction—raise concerns of collective punishment. Measured against human development indicators such as nutrition, health, education,

and migration, sanctions demonstrate diminishing returns. The crisis questions whether state-centric security strategies can remain normatively legitimate when they exacerbate human suffering without producing political resolution.

REGIONAL RESPONSES AND GLOBAL POWER ALIGNMENTS IN THE WESTERN HEMISPHERE

Actor / Group	Core Position	Strategic Rationale	Implications for Regional Order
United States	Adopts coercive diplomacy, sanctions, and political delegitimisation of Maduro regime	Seeks regime change citing democracy promotion, counter-narcotics, and hemispheric security	Revives interventionist posture, undermines sovereignty norms, fuels polarisation
Latin American States (Fragmented Response)	Divided between non-interventionists (Mexico, Bolivia) and intervention-aligned states (Colombia, some Caribbean nations)	Balancing historical sovereignty norms (Estrada Doctrine) with migration, security, and governance concerns	Weakens regional consensus, exposes limits of Latin American multilateralism
Russia	Condemns US actions as illegal interference; supports Venezuelan government diplomatically and militarily	Challenges US unipolarity, protects strategic foothold in Western Hemisphere	Signals return of great power rivalry within US traditional sphere of influence
China	Opposes sanctions and intervention; supports dialogue and economic engagement	Protects investments, upholds non-interference principle, counters Western normative dominance	Strengthens China's Global South leadership narrative
Iran	Aligns with Venezuela against US pressure; provides energy and logistical support	Anti-US ideological alignment, sanctions circumvention cooperation	Deepens transregional security linkages, raises US security anxieties
Multilateral Organisations (UN, OAS, CELAC)	Call for restraint, dialogue, and humanitarian access	Institutional mandate to preserve peace and sovereignty	Reveal declining effectiveness of collective security mechanisms
European Union	Mixed approach: targeted sanctions combined with dialogue initiatives	Normative commitment to democracy without military intervention	Limited influence, highlights Europe's reduced strategic autonomy
Caribbean States (CARICOM)	Emphasise neutrality, mediation, and humanitarian focus	Small-state vulnerability, energy dependence, migration spillovers	Act as normative stabilisers but lack enforcement capacity

IMPLICATIONS FOR INTERNATIONAL RELATIONS THEORY, GLOBAL GOVERNANCE AND INDIA'S STRATEGIC INTERESTS

From a theoretical perspective, the crisis demonstrates:

- Realist power politics overriding liberal institutionalism
- The weakening of rules-based international order

- The instrumentalisation of human rights and security narratives

For India, the developments hold relevance in terms of:

- Upholding principles of sovereignty and non-intervention
- Ensuring safety of Indian diaspora in conflict zones
- Understanding the geopolitics of energy security and sanctions

India's calibrated response reflects its broader foreign policy approach of strategic autonomy and issue-based alignment.

WAY FORWARD

- **Revitalising Multilateral Diplomacy** : Re-engage UN and regional institutions to mediate dialogue, restore legitimacy, and prevent unilateral actions that undermine international legal order.
- **Calibrated Sanctions with Humanitarian Safeguards** : Redesign sanctions to target elites while ensuring food, medicine and essential services remain accessible to civilians.
- **Political Dialogue and Electoral Roadmap** : Facilitate inclusive negotiations leading to credible elections, institutional reforms and international monitoring to rebuild democratic trust.
- **Regional Confidence-Building Measures** : Promote security cooperation and transparency among Caribbean and Latin American states to avoid spillovers and miscalculation.
- **Humanitarian Corridors and Refugee Burden-Sharing** : Establish safe humanitarian access and equitable regional responsibility for migrants to mitigate human security fallout.
- **Energy Cooperation and Economic Stabilisation** : Encourage conditional reintegration of Venezuela into global energy markets to stabilise economy and reduce incentives for conflict.

CONCLUSION

The US–Venezuela crisis is not merely a bilateral confrontation but a microcosm of contemporary global disorder. It exposes tensions between

sovereignty and intervention, sanctions and humanitarianism, power politics and international law. As coercive diplomacy increasingly substitutes multilateral consensus, the crisis raises fundamental questions about the future of global governance and regional stability in the 21st century.

Prelims question:

Q. Consider the following statements regarding the recent US–Venezuela crisis:

1. The United States conducted limited military operations citing narco-terrorism concerns.
2. Venezuela has accused the US of violating its sovereignty under the UN Charter.
3. The UN Security Council authorized US intervention in Venezuela.
4. Venezuela possesses the largest proven crude oil reserves in the world.

Which of the above statements are correct?

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

Answer: A

Mains Question:

Q. “Unilateral interventions weaken the rules-based international order.” Examine this statement in the context of the recent US–Venezuela crisis.

EU COMPREHENSIVE STRATEGIC AGENDA 2026: TOWARDS A RESILIENT, TECHNOLOGY-DRIVEN AND RULES-BASED PARTNERSHIP



WHY IN THE NEWS?

The Joint India–EU Comprehensive Strategic Agenda, endorsed at the 16th India–EU Summit on 27 January 2026 in New Delhi, marks a decisive step in elevating the India–EU Strategic Partnership.

Coming at a time of geopolitical fragmentation, supply-chain disruptions, climate stress, and rapid technological change, the Agenda provides a forward-looking, action-oriented roadmap to deepen cooperation across economic, technological, security, connectivity, and global governance domains. It reflects the shared commitment of India and the European Union to act as trusted, predictable, and like-minded partners in shaping a stable and inclusive global order.



PROSPERITY AND SUSTAINABILITY: ANCHORING ECONOMIC RESILIENCE

1. Boosting Trade and Investment

- Timely implementation of the India–EU Free Trade Agreement (FTA), hailed as a historic milestone capable of unlocking trade, investment, and supply-chain resilience.
- Conclusion of an Investment Protection Agreement (IPA) to ensure predictability and investor confidence.
- Finalisation of a Geographical Indications (GI) Agreement, benefitting traditional Indian products and EU producers alike.
- Enhanced financial regulatory cooperation, including a structured EU–India Regulatory Dialogue on Financial Services.
- Strengthening customs cooperation and macroeconomic dialogue.

2. Strengthening Supply Chains and Economic Security

- Cooperation on semiconductors, including R&D, design, manufacturing, and resilient supply chains.

- Collaboration on critical minerals, pharmaceuticals, agrifood systems, and biotechnology.
- Expanding economic security discussions under the Trade and Technology Council (TTC), including protection of sensitive technologies.
- This reflects a shift from pure trade liberalisation to strategic economic resilience.

3. Advancing Clean Transition and Climate Resilience

- Strengthening the India–EU Clean Energy and Climate Partnership.
- Operationalising the Green Hydrogen Task Force and promoting wind energy, smart grids, and storage.
- Cooperation on industrial decarbonisation, carbon markets (India’s CCTS and EU ETS), sustainable finance, and circular economy.
- Joint efforts on climate adaptation, disaster resilience (via CDRI), water security, sustainable urbanisation, agriculture, and health systems.

TECHNOLOGY AND INNOVATION: CO-CREATING THE FUTURE

1. Critical and Emerging Technologies

The Agenda places technology cooperation at its core:

- Joint research on AI, quantum computing, semiconductors, clean tech, biotech, and space technologies.
- Establishment of India–EU Innovation Hubs and a Startup Partnership to support deep-tech scale-ups.
- Cooperation on trustworthy, human-centric AI, including collaboration between EU AI Office and India’s National AI Mission.
- Expanded cooperation on HPC, space security, and advanced semiconductor ecosystems.

2. Building a Trusted Digital Ecosystem

Key initiatives include:

- Regulatory cooperation on data protection, digital markets, online safety, and cybersecurity.
- Collaboration on Digital Public Infrastructure (DPI), leveraging India’s experience in digital identity and financial inclusion.

- Exploring interoperability between digital wallets, advanced e-signatures, and trusted telecom ecosystems including 6G cooperation.
- Together, these efforts aim to promote inclusive, secure, and interoperable digital growth.

3. Research and Knowledge Partnerships

- Deepening cooperation under Horizon Europe, with exploration of India’s association.
- Collaboration in nuclear science, advanced materials, and ITER.
- This enhances India’s integration into global knowledge networks.

SECURITY AND DEFENCE: CONVERGING STRATEGIC INTERESTS

- 1. Institutionalised Security Cooperation:** Implementation of the India–EU Security and Defence Partnership (SDP). Elevation of security

consultations to an annual Security and Defence Dialogue. Conclusion of a Security of Information Agreement to enable deeper cooperation.

- 2. Defence Industrial Collaboration:** Establishment of an India–EU Defence Industry Forum. Exploration of joint initiatives in defence technology, aligned with respective legal frameworks.

- 3. Regional and Global Security:** Cooperation for a free, open, and rules-based Indo-Pacific Engagement through IPOI, IORA, and Indian Ocean Commission. Coordination on global issues including Ukraine.

- 4. Countering Terrorism and Hybrid Threats:** Enhanced counter-terrorism cooperation, AML standards, cyber and hybrid threat responses. Strengthened law enforcement ties via CBI–Europol cooperation.

CONNECTIVITY AND GLOBAL ISSUES: SHAPING GLOBAL PUBLIC GOODS (INDIA–EU STRATEGIC AGENDA 2026)

Dimension	Key Initiatives / Instruments	Strategic Significance
1. Connectivity Corridors	<ul style="list-style-type: none"> • Global Gateway – EU’s infrastructure connectivity framework • MAHASAGAR – India’s maritime connectivity vision • India–Middle East–Europe Economic Corridor (IMEC) • Green Shipping Corridors • Aviation cooperation and possible Comprehensive Air Transport Agreement • Digital connectivity via Blue Raman submarine cable 	<ul style="list-style-type: none"> • Diversifies trade routes and reduces over-dependence on chokepoints • Enhances resilient, sustainable and secure supply chains • Promotes low-carbon transport and maritime decarbonisation • Strengthens Europe–India–Indo-Pacific connectivity architecture
2. Cooperation in Third Countries	<ul style="list-style-type: none"> • Trilateral projects under India–EU Administrative Arrangement on Trilateral Cooperation • Joint initiatives in energy transition, climate resilience, green mobility and digitalisation • Collaboration through International Solar Alliance (ISA) • Support to Coalition for Disaster Resilient Infrastructure (CDRI) • Coordinated humanitarian assistance 	<ul style="list-style-type: none"> • Supports development priorities of Global South • Enhances India–EU credibility as development partners • Builds climate-resilient and disaster-ready infrastructure • Promotes rules-based and inclusive development cooperation

<p>3. Global Governance Reform</p>	<ul style="list-style-type: none"> • Coordinated engagement in UN, G20, WTO and international financial institutions • Support for reform of multilateral institutions • Joint action on climate change and Paris Agreement implementation • Cooperation on biodiversity (KMGBF), plastic pollution negotiations, ocean governance • Coordination on AI governance and global health security • Establishment of India–EU Ocean and Fisheries Dialogue 	<ul style="list-style-type: none"> • Strengthens multilateralism in a fragmented global order • Promotes fair, inclusive and representative global governance • Advances global public goods such as climate stability, biodiversity and ocean health • Positions India–EU as norm-shapers in emerging domains like AI and maritime sustainability
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ENABLERS: PEOPLE-CENTRIC AND INSTITUTIONAL FOUNDATIONS

1. **Skills, Mobility, and Education:** Legal mobility pathways, EU Talent Pool, Erasmus+, research exchanges, and recognition of qualifications. Launch of European Legal Gateway Office in India. Focus on gender balance and inclusive mobility.
2. **Mutual Understanding and Cultural Ties:** Think-tank collaboration, Track 1.5 dialogues, cultural exchanges, academic research, and youth engagement.
3. **Business and Institutional Architecture:** Creation of an EU–India Business Forum. Annual summits, strengthened TTC, and structured monitoring through the Strategic Partnership Review.

CONCLUSION

The Joint India–EU Comprehensive Strategic Agenda 2026 represents a mature, multidimensional partnership adapted to contemporary global challenges. By integrating economic resilience, technological co-creation, security cooperation, sustainable connectivity, and people-centric enablers, the Agenda moves beyond declaratory diplomacy towards actionable strategic convergence. For India, it enhances access to markets, technology, and global influence; for the EU, it strengthens engagement with a pivotal Indo-Pacific partner. Collectively, the partnership contributes to a rules-based, inclusive, and sustainable global order in an era of uncertainty.

Prelims question:

Q. With reference to the Joint India–EU Comprehensive Strategic Agenda (2026), consider the following statements:

1. The Agenda places equal emphasis on economic resilience, technology cooperation, security, connectivity, and global governance.
2. The India–EU Trade and Technology Council (TTC) serves as a key platform for cooperation on semiconductors, economic security, and emerging technologies.
3. Under the Agenda, India and the EU have agreed to replace multilateral institutions with minilateral groupings for global governance reforms.

Which of the statements given above is/are correct?

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

Answer: A

Mains Question:

Q. Discuss the significance of the Joint India–EU Comprehensive Strategic Agenda 2026 in strengthening bilateral cooperation and shaping global public goods in a changing geopolitical order. (250 words)

**INDIA-EU PARTNERSHIP:
INDIA'S GROWING
ENGAGEMENT WITH
EUROPEAN UNION**



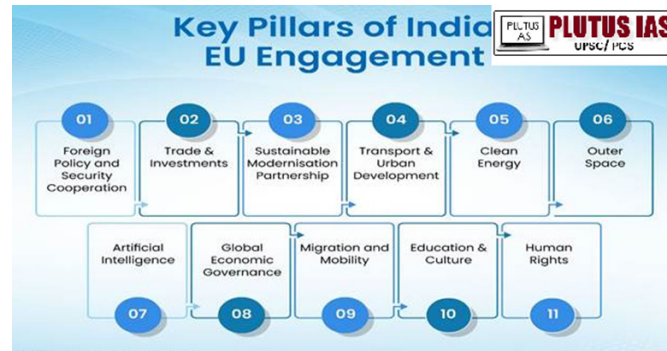
WHY IN THE NEWS?

India-EU relations have gained renewed strategic momentum as both sides step up engagement ahead of the forthcoming India-EU Summit in New Delhi. The partnership aims to revive long-pending FTA negotiations and adopt a new Joint Strategic Agenda to shape cooperation beyond the current roadmap. Collaboration spans key areas such as trade and investment, clean energy, science and technology, security and defence, digital initiatives, connectivity, space, and agriculture.

This momentum is reinforced by sustained high-level political engagement. Notably, in February 2025, the EU College of Commissioners led by President Ursula von der Leyen visited New Delhi—the first full Commission visit to a non-European partner. Leaders have also met regularly at multilateral forums, including the G7 and G20, most recently in Canada in June 2025, and remained in close contact through high-level calls in September 2025.

OVERVIEW OF INDIA-EU RELATIONS

India-EU relations are anchored in shared values and principles, including democracy, the rule of law, a rules-based international order, and effective multilateralism. The partnership spans a broad spectrum encompassing trade and investment, security and defence, climate action and clean energy, digital transition, connectivity, science and technology, and people-to-people exchanges. The European Union remains India’s largest trading partner in goods, with bilateral trade reaching approximately USD 136 billion in 2024-25. The EU is also among India’s top overall trading partners when goods and services are taken together. Guided by the ‘India-EU Strategic Partnership: A Roadmap to 2025’, adopted in 2020, the relationship continues to evolve towards greater mutual prosperity and global stability.



EVOLUTION OF INDIA-EU ENGAGEMENT

Early Foundations

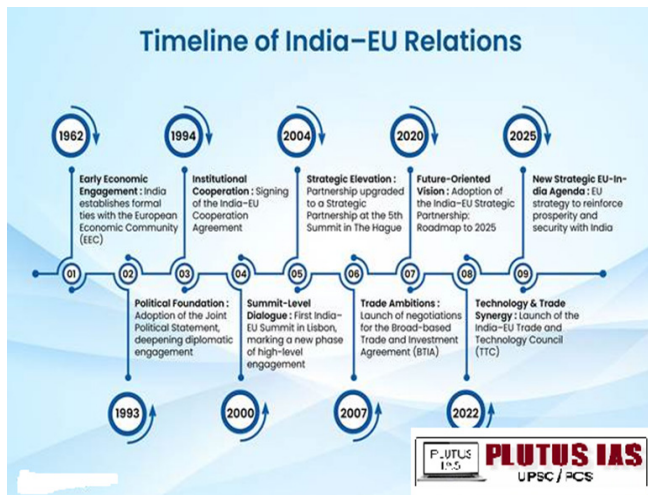
Diplomatic relations between India and the European Economic Community (EEC) date back to the early 1960s, with India among the first countries to establish formal ties in 1962. This early engagement laid the foundation for structured cooperation, culminating in the Joint Political Statement (1993) and the Cooperation Agreement (1994), which strengthened political dialogue and economic linkages.

Key Milestones in the Early 2000s

The partnership gained momentum in the early 2000s. The first India-EU Summit, held in Lisbon in June 2000, institutionalised annual high-level political dialogue. In 2004, at the fifth summit in The Hague, relations were upgraded to a Strategic Partnership, expanding cooperation beyond trade to include security, culture, and global issues.

Recent Breakthroughs

Building on this foundation, engagement has accelerated in recent years. The adoption of the India-EU Strategic Partnership Roadmap to 2025 in July 2020, the resumption of FTA and investment negotiations in May 2021, and the launch of the India-EU Trade and Technology Council (TTC) in April 2022 marked a shift towards action-oriented cooperation. The second TTC Ministerial Meeting, held in New Delhi in February 2025, further advanced collaboration in digital and green technologies, reflecting a move from dialogue to implementation.



STRATEGIC PARTNERSHIP ARCHITECTURE

Over the past decade, India-EU relations have transitioned from primarily dialogue-based engagement to strategic and operational cooperation across defence, infrastructure, investment, labour mobility, and emerging global challenges. The Roadmap to 2025 has been instrumental in guiding this evolution, leading to initiatives such as the Trade and Technology Council and the proposed Security and Defence Partnership, positioning India as a key partner for the EU in addressing climate change, supply chain resilience, and regional stability.

TRADE AND ECONOMIC COOPERATION

Trade remains a cornerstone of the partnership. Bilateral merchandise trade reached USD 136 billion in 2024-25, with EU exports to India dominated by machinery, transport equipment, and chemicals, while Indian exports to the EU include machinery, chemicals, base metals, mineral products, and textiles. Services trade has also expanded steadily. Between 2019 and 2024, Indian services exports to the EU increased from EUR 19 billion to EUR 37 billion, while EU services exports to India rose to EUR 29 billion, underscoring growing economic interdependence.

DEFENCE AND SECURITY COOPERATION

- India-EU security and defence cooperation deepened significantly in 2025. The Leaders' Statement issued during the February 2025 visit of the EU College of Commissioners agreed to explore a Security and Defence Partnership,

accompanied by discussions between the EU Commissioner for Defence and Space and India's Minister of State for Defence.

- This momentum continued with a December 2025 visit by a delegation from the Society of Indian Defence Manufacturers to Brussels, aimed at fostering defence-industrial cooperation. In September 2025, the EU Political and Security Committee, representing all 27 EU member states, undertook its first-ever visit to Asia, holding high-level meetings in India to advance strategic dialogue.
- Operational cooperation has been reinforced through joint naval exercises, including in the Indian Ocean (June 2025), Gulf of Guinea (October 2023), and Gulf of Aden (June 2021), as well as coordinated humanitarian escort operations near Somalia. In an address to the European Parliament on 21 January 2026, the EU High Representative for Foreign Affairs and Security Policy described the upcoming 16th India-EU Summit as a pivotal opportunity to deepen security cooperation, including in maritime security, cybersecurity, cyber defence, and counterterrorism.

CLEAN ENERGY AND CLIMATE COOPERATION

- Energy and climate action form a central pillar of the India-EU partnership. The Clean Energy and Climate Partnership (CECP), established in 2016, entered Phase III in November 2024, reflecting expanded cooperation. The EU has been a partner in the International Solar Alliance since 2018 and supports sustainable transport and urban mobility projects in India through the European Investment Bank.
- Cooperation also extends to offshore wind energy, gas infrastructure, methane emissions reduction, investments, and technology transfer. The EU's accession to the Coalition for Disaster Resilient Infrastructure (CDRI) in March 2021 further underscores shared climate priorities. In advanced scientific domains, India and the EU signed an R&D agreement on peaceful uses of nuclear energy with EURATOM in July 2020, and India has been an associate member of CERN since 2017.

CONNECTIVITY INITIATIVES

Connectivity has emerged as a strategic pillar of India–EU cooperation, aimed at promoting sustainable, inclusive, and resilient linkages.

- **India–EU Connectivity Partnership (2021):** Focuses on transport, digital, and energy infrastructure, facilitating the movement of goods, services, data, capital, and people.
- **Trilateral Development Cooperation (June 2025):** Enables joint development projects in third countries.
- **India–Middle East–Europe Economic Corridor (IMEC):** Announced in September 2023 on the margins of the G20 Summit in New Delhi, involving India, the EU, key European states, the Middle East, and the United States.

SCIENCE, TECHNOLOGY, AND SPACE COOPERATION

- Science and technology cooperation is anchored in the 2007 Science and Technology Cooperation Agreement, guided by a Joint Steering Committee. Collaboration spans smart grids, water, vaccines, ICT, polar science, and researcher mobility, including engagement with the European Research Council. India also participates in selected projects under the EU's Horizon 2020 programme through co-funding arrangements.
- Space cooperation has expanded significantly. Building on early collaboration through Ariane launches in the 1980s, India and the EU now cooperate closely through ISRO–ESA agreements covering Earth observation, navigation, and mission support. The successful launch of ESA's Proba-3 mission by ISRO's PSLV-XL in December 2024 and the signing of a Joint Statement of Intent on human space exploration in May 2025 highlight the growing depth of engagement.

MIGRATION AND MOBILITY

- Migration cooperation has evolved from dialogue to structured frameworks, notably the Common Agenda on Migration and Mobility (2016). The 9th High-Level Dialogue on Migration and Mobility in November 2025 advanced proposals for legal migration pathways, including a pilot European Legal Gateway Office in India.

- As of end-2024, over 931,600 Indian nationals resided in the EU, forming the largest group of EU Blue Card holders. Educational ties are equally strong, with more than 6,000 Indian students receiving Erasmus Mundus scholarships over the past two decades.

CONCLUSION

India–EU relations have matured into a strong, forward-looking strategic partnership grounded in shared values, expanding economic ties, and converging strategic interests. Rising trade, steady investment flows, and cooperation across connectivity, clean energy, digital technologies, security, and mobility demonstrate tangible outcomes.

Initiatives such as the Trade and Technology Council, Global Gateway, IMEC, and progress in FTA negotiations signal deepening institutional alignment. The invitation to the President of the European Council and the President of the European Commission for a State Visit from 25–27 January 2026 underscores India's intent to elevate the partnership as a central pillar of its global and European strategy.

Prelims question:

Q. With reference to India–European Union (EU) relations, consider the following statements:

1. The India–EU Trade and Technology Council (TTC) was launched in 2022 to promote cooperation in digital and green technologies.
2. The European Union is India's largest trading partner in goods.
3. The India–EU Connectivity Partnership was launched during the G20 Summit held in New Delhi in 2023.

Which of the statements given above is/are correct?

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

Answer: A

Mains Question:

Q. "India-European Union relations have gained renewed strategic momentum in recent years."

Discuss the key areas of cooperation between India and the EU and examine their significance for India's foreign policy.

(250 words)



SOMNATH SWABHIMAN PARV: CIVILISATIONAL CONTINUITY, CULTURAL ASSERTION AND NATION-BUILDING



WHY IN THE NEWS?



Prime Minister Narendra Modi extended greetings on the commencement of Somnath Swabhiman Parv, a year-long cultural-spiritual programme marking 75 years of the reconstruction of the Somnath Temple (1951–2026). The event commemorates Somnath’s historical resilience after repeated invasions, its reconstruction under leaders like Sardar Patel and K. M. Munshi, and its role as a symbol of India’s civilisational continuity and cultural self-respect.

SOMNATH IN INDIA’S CIVILISATIONAL MEMORY

- **Ancient Sacred Geography** : Somnath, one of the twelve Jyotirlingas, occupies a central place in India’s sacred geography, symbolising the integration of spirituality, geography and collective cultural consciousness.
- **Repeated Destruction and Rebuilding** : Despite multiple invasions since 1026 CE, Somnath was reconstructed repeatedly, reflecting an unbroken civilisational impulse to preserve faith, identity and sacred institutions.

- **Faith Beyond Physical Structures** : Somnath survived not merely as stone architecture but as a living idea, sustained through oral traditions, pilgrimages and devotional literature across centuries.
- **Symbol of Cultural Endurance** : The temple represents India’s capacity to absorb shocks, regenerate culturally and assert continuity without erasing its historical experiences.
- **Civilisational Time Scale** : Somnath’s survival over a millennium highlights India’s long-term civilisational perspective, contrasting with short-term political disruptions.

HISTORICAL CONTEXT: THE 1026 CE ATTACK AND AFTER

Aspect	Explanation
Mahmud of Ghazni’s Raid (1026 CE)	The 1026 CE attack on Somnath was part of Mahmud of Ghazni’s series of raids into the Indian subcontinent. It was driven by a combination of economic motives (temple wealth), political ambition to assert supremacy, and symbolic objectives, as Somnath was a prominent religious centre.
Political Fragmentation of Early Medieval India	The raid took place in a period marked by regional disunity and the absence of a strong central authority. Fragmented political structures and lack of coordinated defence among Indian kingdoms made important cultural and religious institutions vulnerable to external invasions.

<p>Cultural Trauma and Historical Memory</p>	<p>The destruction of Somnath became embedded in collective historical memory as a civilisational trauma. Over time, it shaped narratives of loss, resistance and revival through chronicles, oral traditions and later historical interpretations.</p>
<p>Continuity Despite Rupture</p>	<p>Despite repeated destruction, religious practices and reverence associated with Somnath continued. The temple was rebuilt multiple times, reflecting the resilience of cultural traditions and the ability of society to sustain belief systems beyond physical devastation.</p>
<p>Lessons from History</p>	<p>Somnath’s history illustrates that cultural endurance depends not only on political power but on collective belief, social continuity and the transmission of values across generations.</p>

POST-INDEPENDENCE RECONSTRUCTION AND NATION-BUILDING

- Sardar Patel’s Vision :** Sardar Vallabhbhai Patel viewed the reconstruction of the Somnath Temple not merely as a religious act but as a civilisational assertion and psychological reconstruction of a newly independent nation. For Patel, Somnath symbolised centuries of resilience despite repeated destruction and thus represented India’s capacity to reclaim dignity after colonial domination. He saw cultural confidence as essential for political unity, especially at a time when the nation was grappling with Partition trauma and integration of princely states. The reconstruction aligned with Patel’s broader nation-building project that sought to restore self-respect without fostering exclusionary nationalism.
- Role of K. M. Munshi :** K. M. Munshi played a decisive role by providing intellectual justification, organisational leadership and

ideological framing to the reconstruction effort. As a constitutionalist, freedom fighter and cultural thinker, Munshi articulated Somnath’s rebuilding as part of India’s historical continuity rather than religious revivalism. He argued that acknowledging civilisational heritage was compatible with constitutional secularism. Munshi’s stewardship of the Somnath Trust ensured transparency, public participation and non-state funding, reinforcing the idea that cultural regeneration could coexist with democratic and constitutional values.

- Inauguration in 1951 :** The inauguration of the reconstructed Somnath Temple in 1951 by President Dr. Rajendra Prasad carried deep symbolic significance. It marked the first major cultural reconstruction undertaken in independent India, signalling confidence in reclaiming heritage after centuries of political subjugation. Dr. Prasad’s participation underscored the distinction between state neutrality and cultural engagement, as he attended in his personal capacity rather than as an executive authority. The event reflected an evolving understanding of secularism rooted in Indian traditions, rather than strict separation of state and religion.
- State and Society Collaboration :** The Somnath reconstruction exemplified a collaborative model of nation-building, involving political leaders, religious trusts, historians, artisans and ordinary citizens. The state did not directly fund or control the project, thereby avoiding the charge of religious patronage. Instead, it facilitated moral support while civil society mobilised resources. This model demonstrated how public leadership could enable cultural initiatives without violating constitutional boundaries, offering a template for reconciling heritage conservation with democratic governance.
- Cultural Neutrality Debate :** The reconstruction of Somnath sparked an important debate on the nature of Indian secularism. Critics argued that involvement of political leaders blurred the line between religion and state, while proponents contended that Indian secularism is not anti-religion but equidistant from all

faiths. The episode highlighted India's unique model of principled cultural pluralism, where acknowledgment of historical and cultural symbols does not imply exclusion of minorities. Somnath thus became a case study in balancing civilisational memory, constitutional morality and inclusive nationalism.

SWABHIMAN PARV: CONTEMPORARY SIGNIFICANCE

- **Commemoration of 75 Years** : Somnath Swabhiman Parv commemorates 75 years of the temple's rededication (1951–2026), consciously linking post-Independence cultural revival with present-day national self-confidence. The milestone serves as a bridge between the nation-building ethos of early leaders and contemporary India's renewed emphasis on heritage, identity and cultural diplomacy. By revisiting the historical moment of reconstruction, the Parv situates Somnath not as a relic of the past but as a living symbol of civilisational continuity in a sovereign and self-assured India.
- **Spiritual and Cultural Programming** : The year-long celebrations are designed as a holistic cultural ecosystem, integrating spiritual practices, artistic expression and heritage education. Religious rituals coexist with classical music, dance, lectures, exhibitions and youth-oriented educational initiatives. This multidimensional programming reflects an understanding of culture as a dynamic social force rather than a static tradition, ensuring inclusivity and intergenerational transmission of heritage. The emphasis on community participation reinforces Somnath's role as a shared cultural space beyond sectarian boundaries.
- **Symbolic Events** : Events such as drone light shows, Omkar Naad (cosmic sound symbolism) and Shaurya Yatra represent a deliberate synthesis of modern technology with ancient symbolism. These spectacles communicate cultural narratives in contemporary idioms, making heritage accessible to younger and global audiences. The fusion reflects India's evolving self-image as a civilisation that embraces modernity without cultural amnesia,

projecting confidence in integrating innovation with tradition rather than treating them as opposites.

- **Public Participation and Digital Outreach** : Extensive use of social media platforms, digital storytelling and online campaigns has transformed the Parv into a participatory cultural movement rather than a location-bound religious event. Citizens contribute through virtual engagements, shared narratives and creative content, fostering a sense of collective ownership. This digital outreach aligns with India's broader push towards democratisation of heritage, where cultural memory is co-created by society rather than curated exclusively by institutions.
- **Revival of Civilisational Discourse** : At a deeper level, Somnath Swabhiman Parv reinforces contemporary discourse on civilisational resilience, historical memory and indigenous identity. It challenges colonial-era narratives that portrayed Indian history primarily through disruption and decline, instead emphasising continuity and regeneration. The Parv thus functions as a platform for re-examining India's past through its own epistemic lens, contributing to an ongoing conversation about cultural self-definition within a modern constitutional framework.

CULTURAL NATIONALISM, CONSTITUTIONAL VALUES AND HERITAGE GOVERNANCE: INTEGRATED PERSPECTIVES

- **Culture as Soft Power and National Cohesion** : Somnath illustrates how cultural heritage functions as internal soft power, strengthening social cohesion, while simultaneously enhancing India's external cultural diplomacy. By projecting a confident yet non-aggressive civilisational narrative, such heritage sites contribute to India's global image as a plural, ancient and resilient civilisation rooted in ethical traditions rather than ideological dominance.
- **Inclusive Civilisational Identity and Ethical Remembrance** : The Somnath narrative emphasises shared cultural memory and resilience, avoiding grievance-based or

exclusionary interpretations of history. Commemoration is framed as ethical remembrance—honouring endurance and regeneration rather than cultivating historical resentment. This approach aligns with India's pluralistic civilisational ethos and prevents cultural nationalism from sliding into antagonistic identity politics.

- **Faith, Secularism and Constitutional Morality :** Somnath demonstrates India's distinctive model of secularism based on equal respect for all faiths, rather than strict separation or cultural erasure. State engagement remains symbolic and facilitative, not doctrinal or coercive, reflecting constitutional morality. This balance allows faith-based heritage to be acknowledged within a democratic framework without undermining religious neutrality.
- **Leadership, Symbolism and Ethical Nationalism :** Political leadership has used Somnath symbolically to inspire confidence, unity and moral purpose, especially during periods of transition. Such symbolism, when rooted in constitutional values and inclusivity, fosters ethical nationalism—one that draws strength from culture while remaining anchored in democratic norms and social harmony.
- **Heritage as Living Tradition, Not Static Monument :** Somnath underscores the need to govern heritage as a living, practiced and socially embedded tradition, rather than as frozen archaeology. Cultural festivals, rituals, educational activities and community participation ensure relevance, continuity and adaptability. This approach strengthens intergenerational transmission and deepens societal ownership of heritage.
- **Developmental, Educational and Technological Dimensions :** Heritage initiatives around Somnath contribute to pilgrimage tourism, local economic development and employment generation, linking culture with inclusive growth. Simultaneously, digital tools—such as documentation, drones and social media—expand outreach and historical awareness, particularly among youth. Technology thus becomes an enabler of preservation, education and democratic access to cultural narratives.

WAY FORWARD

- **Institutionalise Heritage Education** – Integrate civilisational sites into school curricula to build historical consciousness.
- **Strengthen Heritage Governance** – Improve coordination between ASI, state governments and temple trusts.
- **Promote Inclusive Narratives** – Frame heritage as shared cultural capital beyond religious boundaries.
- **Leverage Technology** – Use digital platforms for virtual heritage access and documentation.
- **Community Participation** – Empower local communities as custodians of heritage.
- **Balance Development and Conservation** – Ensure tourism growth does not compromise cultural integrity.
- **Global Cultural Diplomacy** – Project sites like Somnath as symbols of India's civilisational resilience internationally.

CONCLUSION

Somnath Swabhimani Parv transcends the commemoration of a temple's reconstruction; it embodies India's enduring civilisational resilience, cultural self-confidence and ethical continuity. By linking historical memory with contemporary nation-building, the initiative reinforces the idea that India's identity is sustained not merely through political power, but through collective faith, values and an unbroken cultural consciousness that continues to inspire future generations

Prelims question:

- Q. With reference to the Somnath Temple, consider the following statements:
1. Somnath is one of the twelve Jyotirlingas of Lord Shiva.
 2. The first recorded attack on Somnath took place in 1026 CE.
 3. The reconstructed Somnath Temple was inaugurated in 1951 by President Dr. Rajendra Prasad.

4. The reconstruction of Somnath Temple after Independence was carried out entirely through government funding.

Which of the statements given above are correct?

- A. 1, 2 and 3 only B. 1, 2 and 4 only
C. 1, 3 and 4 only D. 2, 3 and 4 only

Answer: A

Mains Question:

Q. “Somnath Temple represents not merely a religious structure but the continuity of India’s civilisational ethos.” Examine this statement in the context of India’s historical experiences and post-independence nation-building.



ENVIRONMENTAL DISPLACEMENT IN COASTAL INDIA: INSTITUTIONAL FAILURES AND THE NEED FOR RIGHTS-BASED ADAPTATION



WHY IN THE NEWS?

India’s coastal areas are undergoing severe environmental and socio-economic upheaval driven by climate change. Escalating sea levels, unchecked development, and the destruction of natural habitats have uprooted numerous communities, pushing them into insecure urban job markets where they lack adequate protection and support systems.



ENVIRONMENTAL DIMENSION

- 1. Sea-Level Rise:** Villages like Satabhaya in Odisha have been submerged due to rising seas, showing direct impacts of climate change on habitation.
- 2. Coastal Erosion:** Shorelines in Tamil Nadu, Kerala, Gujarat, and Karnataka are rapidly receding, threatening settlements and infrastructure.
- 3. Loss of Mangroves:** Mangrove ecosystems that act as natural barriers are being destroyed by industrial and port developments.

- 4. Degradation of Wetlands:** Coastal wetlands and estuaries are shrinking due to encroachments, affecting biodiversity and flood regulation.
- 5. Sand Dune Disruption:** Natural sand dunes, essential for coastal stability, are flattened by construction and tourism infrastructure.
- 6. Saltwater Intrusion:** Rising seas increase salinity in soil and groundwater, making land unfit for agriculture and harming local flora and fauna.
- 7. Biodiversity Decline:** Habitat loss leads to reduced marine and coastal biodiversity, affecting ecological balance and fishing livelihoods.

SOCIO-ECONOMIC DIMENSION

- 1. Loss of Livelihoods:** Fisherfolk and farmers lose traditional means of earning due to degraded ecosystems and resource scarcity.
- 2. Unviable Agriculture:** Increased salinity and unpredictable weather make agriculture economically unfeasible for coastal farmers.
- 3. Migration to Cities:** Displaced people migrate to urban centers like Chennai, Mumbai, and Bhubaneswar in search of work.
- 4. Urban Overcrowding:** Influx of climate migrants strains urban housing, sanitation, and employment systems.
- 5. Informal Labour Entry:** Migrants are absorbed into low-paying informal sectors, such as construction or domestic work, without job security.
- 6. Lack of Social Security:** Displaced individuals often lack access to social welfare schemes, pensions, and ration cards.
- 7. Economic Marginalisation:** Migration and job loss lead to long-term poverty cycles and exclusion from mainstream economic growth.

LEGAL AND INSTITUTIONAL DIMENSION

- 1. No Legal Status for Climate Migrants:** There is no recognition or policy addressing slow-onset climate-induced displacement.
- 2. Article 21 Overlooked:** The right to life and dignity under Article 21 is undermined by inadequate legal protections for displaced persons.
- 3. Ineffective Labour Laws:** Acts like BOCW exclude informal and migrant workers from safety nets.
- 4. Poor Implementation of Disaster Laws:** The Disaster Management Act focuses on emergency response, not long-term relocation or adaptation.
- 5. Weak Enforcement of Environmental Laws:** Existing environmental laws fail to consider cumulative ecological degradation from multiple projects.
- 6. CRZ 2019 Dilution:** Coastal Regulation Zone norms have been weakened, allowing commercial expansion in ecologically sensitive areas.
- 7. Lack of Climate Risk Assessment:** Environmental clearances often ignore long-term climate vulnerabilities and social impacts.

GENDER AND VULNERABILITY DIMENSION

- 1. Disproportionate Impact on Women:** Women are more vulnerable due to social norms, lack of mobility, and limited employment choices.
- 2. Domestic Exploitation:** Many displaced women end up as domestic workers in cities where they face abuse, wage theft, and overwork.
- 3. Health and Nutrition Risks:** Displaced women face higher risks of malnutrition, poor reproductive health, and inadequate healthcare access.
- 4. Education Dropouts:** Girls in displaced families are more likely to drop out of school due to economic stress and safety concerns.
- 5. Trafficking and Bonded Labour:** Vulnerable women and children face higher risks of being trafficked or pushed into forced labour.
- 6. Lack of Gender-Sensitive Policies:** Existing relief and rehabilitation frameworks often overlook the unique needs of women and girls.

- 7. Limited Representation:** Displaced women rarely have a voice in planning, resettlement, or climate adaptation discussions.

DEVELOPMENT VS. SUSTAINABILITY DIMENSION

- 1. Infrastructure in Fragile Zones:** Mega projects like ports and power plants are being developed in ecologically sensitive coastal areas.
- 2. Sagarmala Projects:** Coastal infrastructure under Sagarmala often prioritises commerce over ecological balance.
- 3. Commercial Aquaculture:** Large-scale shrimp farming degrades land, pollutes water, and displaces small-scale fishers.
- 4. Tourism Pressure:** Beach tourism projects encroach on community land and destroy natural buffers like dunes and mangroves.
- 5. Ignored Climate Impact:** Project approvals often neglect cumulative climate-related vulnerabilities and long-term sustainability.
- 6. Short-Term Economic Goals:** Economic development focuses on GDP growth rather than equitable, climate-resilient livelihoods.
- 7. Weak Regulatory Oversight:** Lack of environmental impact monitoring allows continued ecological damage and displacement.

GOVERNANCE AND DEMOCRATIC VALUES DIMENSION

- 1. Top-Down Relocations:** Communities are relocated without proper consultation or participation, violating democratic processes.
- 2. Unplanned Rehabilitation:** Resettlement colonies lack basic infrastructure like schools, hospitals, or drinking water.
- 3. Criminalisation of Protest:** Environmental activists and community leaders face police action, arrests, and surveillance.
- 4. Suppression of Dissent:** Peaceful protests like Save Satabhaya or Ennore face legal intimidation and misinformation campaigns.
- 5. Lack of Participatory Governance:** Affected communities are rarely included in project planning or environmental assessments.

6. **Erosion of Trust in Institutions:** Repeated neglect of local voices erodes citizens' faith in democratic institutions and justice.
7. **Violation of Constitutional Rights:** Displaced communities are denied the right to be heard, resettled with dignity, or seek legal remedy.

GRASSROOTS AND CIVIL SOCIETY DIMENSION

1. **Local Movements Emerging:** Initiatives like Save Satabhaya, Pattuvam Mangrove Protection, and Ennore protests resist ecological injustice.
2. **Community Knowledge Systems:** Traditional knowledge on tides, soil, and biodiversity is used by locals to push for sustainable models.
3. **Civil Society Advocacy:** NGOs and civil groups support litigation, rehabilitation, and awareness on climate-induced displacement.
4. **Youth Engagement:** Young activists from coastal regions are emerging as voices for justice and sustainability.
5. **Legal Petitions and PILs:** Several climate and displacement issues are being taken up in courts by civil society actors.
6. **Collaborative Research:** Academic institutions partner with communities to document ecological damage and propose policy alternatives.
7. **Calls for Climate Justice:** There is a growing demand for recognizing the rights of vulnerable communities as part of climate adaptation plans.

ETHICAL AND HUMAN RIGHTS DIMENSION

1. **Right to Life Threatened:** Rising seas, forced displacement, and lack of resources threaten the basic right to life and dignity.
2. **Intergenerational Injustice:** Environmental degradation today compromises the rights and futures of coming generations.
3. **Disproportionate Suffering:** Poor, coastal, and indigenous populations bear the brunt of climate change they did not cause.
4. **Moral Responsibility of the State:** The state must uphold ethical governance by protecting the vulnerable, not just facilitating profit-driven development.

5. **Global Inequity Reflected Locally:** Coastal poor in India are victims of both global emissions and domestic policy failures.
6. **Need for Rights-Based Adaptation:** Adaptation strategies must center on human rights, not just physical infrastructure.
7. **Climate Justice as a Constitutional Duty:** Protecting life, environment, and equitable development aligns with the Directive Principles of State Policy and Fundamental Rights.

WAY FORWARD

1. **Legally Recognize Climate Displacement:** Develop a comprehensive legal and policy framework to recognize and protect slow-onset climate migrants as a distinct category, ensuring access to housing, social protection, and livelihoods.
2. **Reform CRZ and Environmental Regulations:** Strengthen the Coastal Regulation Zone (CRZ) norms and environmental clearance processes to integrate long-term climate risks, cumulative impacts, and community consent into planning.
3. **Ensure Rights-Based Rehabilitation:** Design and implement participatory, rights-based relocation and rehabilitation plans that guarantee basic services, infrastructure, land titles, and livelihood support for displaced communities.
4. **Expand Social Protection Coverage:** Include displaced informal workers in schemes like ESHRAM, ration distribution, health insurance, and labour protections, with special provisions for women and children.
5. **Promote Community-Based Adaptation:** Support local ecological restoration, such as mangrove replanting and wetland conservation, led by communities using traditional knowledge and inclusive planning.
6. **Strengthen Climate Governance and Accountability:** Establish transparent mechanisms for climate adaptation planning, monitoring of infrastructure projects, and grievance redressal with active civil society and community participation.
7. **Mainstream Climate Justice in Development:** Reorient coastal development strategies (like Sagarmala) to align with principles of

climate justice, equity, and intergenerational sustainability, prioritizing vulnerable populations over industrial expansion.

CONCLUSION

India’s coastal regions are at the frontline of the climate crisis, where environmental degradation and unsustainable development are displacing communities, eroding livelihoods, and intensifying vulnerabilities. This is not just an ecological emergency but a deeply human and constitutional challenge. The denial of legal recognition to climate migrants, the marginalisation of women, and the suppression of community voices expose the democratic and ethical deficit in existing governance frameworks.

Prelims Questions

Q. Which of the following statements regarding climate change impacts on India’s coastal regions is/are correct?

1. Coastal erosion in India is limited to the eastern coastline.
2. Mangroves act as natural buffers against storm surges and coastal flooding.
3. The Coastal Regulation Zone (CRZ) Notification 2019 strengthened environmental protections along the coast.
4. Saltwater intrusion due to sea-level rise affects both agriculture and groundwater quality.

Select the correct answer using the code below:

- A. 1 and 3 only B. 2 and 4 only
 C. 2, 3, and 4 only D. 1, 2, and 4 only

Answer: B

Mains Questions

Q. Discuss the multi-dimensional impact of climate change on India’s coastal communities and suggest policy measures

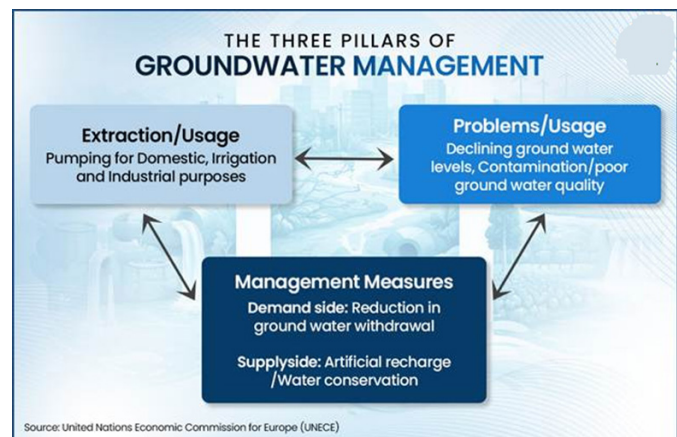
to ensure climate justice and sustainable development. (250 words, 15 marks)

GROUNDWATER GOVERNANCE IN INDIA: FROM OVER-EXPLOITATION TO SUSTAINABLE WATER SECURITY



WHY IN THE NEWS?

Groundwater constitutes nearly 99% of the Earth’s liquid freshwater and provides immense social, economic, and environmental benefits, particularly in enhancing climate resilience. In India, groundwater forms the backbone of agriculture and drinking water security, meeting nearly 62% of irrigation requirements, 85% of rural drinking water needs, and about 50% of urban demand. However, rapid population growth, intensification of agriculture, industrial expansion, and accelerating urbanisation have exerted unprecedented pressure on groundwater systems.



UNDERSTANDING GROUNDWATER SYSTEMS

Groundwater refers to freshwater that percolates through soil and rock layers and is stored underground before emerging naturally or being extracted for human use. It plays a vital role in maintaining base flow in rivers and streams and sustaining wetland ecosystems.

The underground geological formations capable of storing and transmitting groundwater in usable quantities are known as aquifers. Water from aquifers may discharge naturally through springs

or be extracted using dug wells, tube wells, and borewells, making aquifer health central to water security.

GROUNDWATER MANAGEMENT: ELEMENTS AND PRIORITIES

Groundwater management is an integral component of Integrated Water Resources Management (IWRM). It focuses on:

- Understanding the functions and uses of aquifers
- Identifying pressures and threats such as over-extraction and contamination
- Assessing the impact of management interventions on sustainability

According to UNESCO, effective groundwater management rests on four key priorities:

1. Sound scientific knowledge of aquifers
2. Strong governance and regulatory frameworks
3. Stakeholder participation and community involvement
4. Sustainable abstraction and recharge practices

WHY GROUNDWATER MANAGEMENT IS NECESSARY IN INDIA

India possesses extensive groundwater reserves, but their availability and quality vary widely across regions. In recent decades, these reserves have faced severe stress due to multiple factors:

- 1. Rising Pressure on Groundwater Systems:** Largely unregulated extraction has led to alarming declines in water tables across many regions, especially in north-western and peninsular India.
- 2. Degradation of Groundwater Quality:** Groundwater contamination from industrial effluents, mining activities, excessive fertiliser use, and naturally occurring arsenic and fluoride has emerged as a major public health and environmental concern.
- 3. Drivers of Uncontrolled Abstraction:** Affordable drilling technologies and pumping equipment have enabled widespread construction of private tube wells, even among small farmers, leading to tragedy-of-the-commons type exploitation.

Recognising these challenges, effective groundwater management has become central to India's

commitments under COP-21, climate resilience strategies, and the achievement of Sustainable Development Goals (SDGs)—particularly SDG 6 (Clean Water and Sanitation), SDG 11 (Sustainable Cities), and SDG 12 (Responsible Consumption).

GOVERNMENT INITIATIVES STRENGTHENING GROUNDWATER MANAGEMENT

To address the escalating groundwater crisis, the Government of India has adopted a multi-pronged strategy combining regulation, scientific assessment, recharge, monitoring, and community participation.

MODEL GROUNDWATER (REGULATION AND CONTROL OF DEVELOPMENT AND MANAGEMENT) BILL

- To curb indiscriminate extraction and promote sustainable practices such as rainwater harvesting and artificial recharge, the Central Government prepared a Model Groundwater Bill.
- The Bill has been adopted by 21 States and Union Territories, including Bihar, Punjab, Haryana, and Himachal Pradesh.
- The Centre promotes adoption through State Water Ministers' conferences, technical workshops, and deliberations under the National Interdepartmental Steering Committee (NISC) on Groundwater.

JAL SHAKTI ABHIYAN: CATCH THE RAIN (JSA: CTR)

Launched on World Water Day (22 March 2021), this nationwide campaign aims to transform water conservation into a people's movement.

Its five key interventions include:

1. Water conservation and rainwater harvesting
2. Geo-tagging and inventory of water bodies
3. Establishment of Jal Shakti Kendras in all districts
4. Afforestation
5. Awareness generation

JAL SANCHAY JAN BHAGIDARI (JSJB)

Launched in September 2024, JSJB operates under JSA: CTR and promotes community-led groundwater recharge through:

1. Rainwater harvesting
 3. Borewell recharge
 As of 22 January 2026, over 39.6 lakh artificial recharge and storage works have been completed under JSJB 1.0 and 2.0.

NATIONAL AQUIFER MAPPING AND MANAGEMENT PROGRAMME (NAQUIM)

Implemented by the Central Ground Water Board (CGWB), NAQUIM aims to:

- 1. Characterise aquifers
 - 2. Assess groundwater availability and quality
 - 3. Prepare detailed aquifer maps
 - 4. Develop area-specific management strategies
- NAQUIM 2.0 (2023–present) enhances data granularity up to the Panchayat level, focusing on water-stressed, coastal, urban, industrial, mining, and poor-quality groundwater regions.

MASTER PLAN FOR ARTIFICIAL RECHARGE TO GROUNDWATER – 2020

Scheme / Plan	Launch Year	Primary Focus	Key Features / Interventions	Scale / Financial Outlay	Expected / Observed Impact
Master Plan for Artificial Recharge to Groundwater	2020	Augmenting groundwater through region-specific recharge methods	<ul style="list-style-type: none"> • Surface spreading & subsurface recharge in rural areas • Rooftop rainwater harvesting in urban & hilly regions • Terrain-specific recharge techniques 	<ul style="list-style-type: none"> • 1.42 crore recharge structures proposed • Recharge potential of ~185 BCM 	<ul style="list-style-type: none"> • Large-scale enhancement of groundwater availability • Climate-resilient water management
Atal Bhujal Yojana (Atal Jal)	December 2019	Community-led groundwater management in water-stressed areas	<ul style="list-style-type: none"> • Scientific aquifer-based planning • Institutional strengthening • Incentive-based performance outcomes • Promotion of sustainable agriculture 	<ul style="list-style-type: none"> • ₹6,000 crore outlay • Implemented in 7 water-stressed states 	<ul style="list-style-type: none"> • Reduced rate of groundwater decline • Improved water-use efficiency • Behavioural change at community level
Mission Amrit Sarovar	April 2022	Creation & rejuvenation of water bodies	<ul style="list-style-type: none"> • Construction/revival of ponds (Amrit Sarovars) in every district • Convergence with MGNREGS & other schemes 	<ul style="list-style-type: none"> • ₹6,000 crore outlay • Implemented in 7 water-stressed states 	<ul style="list-style-type: none"> • Enhanced surface water storage • Improved groundwater recharge • Local water security

CONCLUSION

Groundwater is indispensable to India’s water security, food security, public health, and ecosystem stability. However, increasing pressures from over-extraction, contamination, and climate variability have made sustainable management unavoidable. Through a comprehensive and multi-layered approach—combining regulatory reforms, scientific assessment, infrastructure development, and community participation—India is transitioning towards participatory, evidence-based, and outcome-oriented groundwater governance. Initiatives led by the Ministry of Jal Shakti signal a decisive shift from exploitation to sustainability, laying

a durable foundation for long-term resilience, inclusive growth, and national development goals.

Prelims question:

Q. With reference to groundwater management in India, consider the following statements:

1. Groundwater contributes more than half of India's irrigation requirements and drinking water supply.
2. Aquifers are underground geological formations that can store and transmit groundwater.
3. The National Aquifer Mapping and Management Programme (NAQUIM) is implemented by the Ministry of Environment, Forest and Climate Change.

Which of the statements given above is/are correct?

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

Answer: A

Mains Question:

Q. Groundwater has emerged as the backbone of India's water security, yet it faces severe stress due to over-extraction and quality degradation. Discuss the need for sustainable groundwater management in India and evaluate the role of government initiatives in this regard. (250 words)

**INDIA'S EXPANDING ROLE
IN THE GLOBAL ENERGY
TRANSITION**



WHY IN THE NEWS ?

India Energy Week (IEW) 2026, being held in Goa from 27–30 January 2026, has brought global attention to India's expanding role in the global energy transition. The event highlights

India's progress in energy governance reforms, infrastructure expansion, biofuels, clean cooking, and low-carbon pathways at a time when India is projected to account for over 23% of global incremental energy demand by 2050.

INDIA'S ENERGY IMPERATIVE IN A CHANGING WORLD

Energy is central to economic growth, social development, and human well-being, supporting industry, transport, agriculture, healthcare, digital connectivity, and household needs. India, the third-largest consumer of crude oil, continues to rely on hydrocarbons for mobility and industrial activity, even as it accelerates its transition to cleaner energy.

India's energy demand is projected to grow faster than that of most major economies through 2035. To meet this demand sustainably, India has pursued Policy and regulatory reforms, Infrastructure expansion, and Cleaner and diversified energy pathways.

A key milestone was achieved in June 2025, when 50% of India's cumulative installed electricity capacity came from non-fossil fuel sources, five years ahead of its 2030 NDC target under the Paris Agreement.

HYDROCARBON ENERGY GOVERNANCE AND SECTORAL REFORMS

India's hydrocarbons sector spans upstream, midstream, and downstream segments. Reforms across the value chain aim to enhance efficiency, attract investment, and strengthen energy security while supporting a gradual energy transition.

Upstream Sector Reforms

- **Oilfield (Regulation and Development) Amendment Act, 2025:** Modernises upstream regulation, simplifies procedures, enables integrated energy development, and strengthens investor confidence.
- **Petroleum and Natural Gas Rules, 2025:** Provide a transparent and predictable framework for oil and gas exploration and production, improving ease of doing business.
- **Under the Hydrocarbon Exploration Licensing Policy (HELP):** 172 blocks covering 3.78 lakh sq km were awarded,

Attracting committed investments of USD 4.36 billion, and Boosting exploration through seismic surveys and drilling programmes.

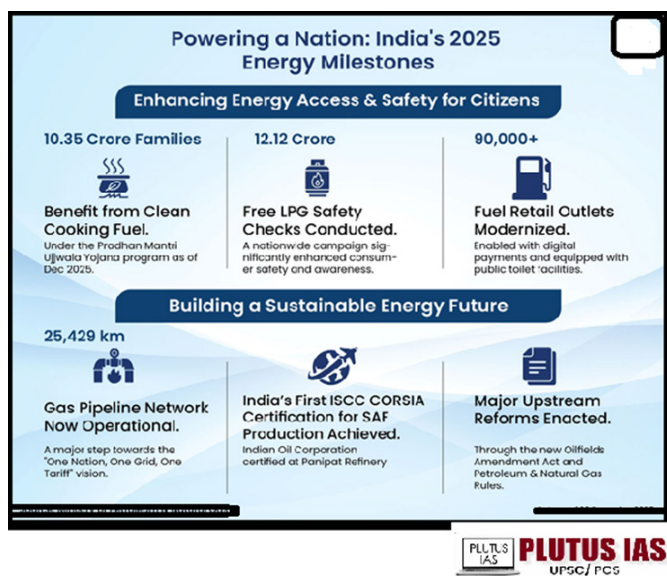
MIDSTREAM AND DOWNSTREAM REFORMS

Unified Pipeline Tariff (UPT)

Introduced in 2023 under “One Nation, One Grid, One Tariff”.

Standardises gas transportation charges across the national grid.

As of December 2025, about 90% of operational pipelines are covered, improving gas affordability and competitiveness.



STRENGTHENING ENERGY SECURITY THROUGH INFRASTRUCTURE EXPANSION

Fuel and Gas Infrastructure

- Fuel retail outlets expanded from ~52,000 (2014) to over 1 lakh (2025).
- CNG stations increased from 968 to 8,477.
- PNG household connections rose from 25 lakh to over 1.59 crore.
- Natural gas pipeline network expanded to 25,400 km, with 10,459 km under construction.
- Achieved 100% City Gas Distribution (CGD) geographical coverage.

Petroleum Marketing and Electric Mobility

- Over 90,000 retail outlets enabled with digital payments.

- 2.71 lakh POS terminals installed.
- 3,200 fuel bowsers commissioned for door-to-door delivery.
- 8,932 EV charging stations installed under FAME-II, with 18,500+ additional chargers set up by OMCs.

Logistics and Wayside Amenities

- 500+ APNA GHAR facilities for truck drivers.
- 1,064 integrated Energy Stations operational as of November 2025.

CLEAN ENERGY TRANSITION AND LOW-CARBON PATHWAYS

India is pursuing a diversified transition strategy, combining renewables with alternative and low-carbon fuels.

Biofuels and Ethanol Blending

- Foreign exchange savings of ₹1.59 lakh crore since 2014.
- Reduction of 813 lakh metric tonnes of CO₂ emissions.
- Substitution of 270 lakh metric tonnes of crude oil.
- Average ethanol blending reached 19.05% (as of July 2025).
- Target of 20% blending advanced to ESY 2025–26.

Clean Cooking Energy (PMUY)

- 10.41 crore beneficiaries as of January 2026.
- Additional 25 lakh LPG connections approved for FY 2025–26.
- Subsidy of ₹300 per 14.2 kg cylinder for up to 9 refills annually.
- Average LPG consumption increased from 3 refills (2019–20) to 4.85 refills (2025–26).
- Sustainable Aviation Fuel (SAF)

Indicative blending targets:

- 1% from 2027
- 2% from 2028
- 5% from 2030

IOCL became the first Indian company to receive ISCC-CORSIA certification for SAF production.

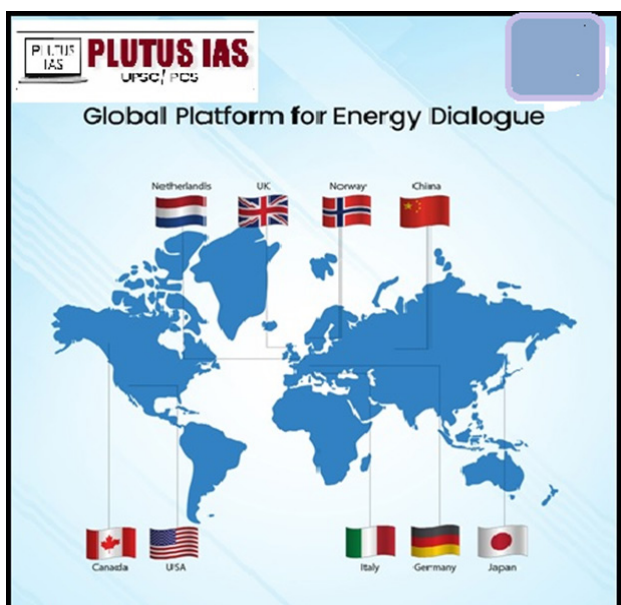
MoU signed with Air India for SAF supply.

INDIA'S GLOBAL ENERGY LEADERSHIP

India plays an active and constructive role in global energy governance through its participation in international platforms such as the Global Biofuel Alliance (GBA) and the G20 Energy Transitions Working Group. Through these forums, India shares its experience in implementing scalable, inclusive, and affordable energy transition models, particularly relevant for emerging and developing economies. This engagement enables collective learning on issues of energy access, supply diversification, affordability, and emissions reduction, while reinforcing India's commitment to cooperative and equitable global climate action.

INDIA ENERGY WEEK (IEW) 2026

India Energy Week 2026 is underway in Goa from 27–30 January 2026. Hosted by the Ministry of Petroleum and Natural Gas, the platform highlights India's expanding role in shaping global energy conversations, particularly from the perspective of emerging and developing economies. The event will see participants from over 120 countries and more than 6,500 conference delegates at a critical moment for global energy markets, geopolitics, and climate action.



Launched in 2023, India Energy Week has evolved as a platform for international dialogue across the global energy value chain. The fourth edition of the event will bring together energy ministers,

top leaders, financial institutions, international organisations, technology providers, and academic institutions to examine issues related to energy security, investment, affordability, and clean energy transition, with perspectives relevant to both emerging and advanced economies.

The IEW 2026 conference programme brings together policy-level discussions and implementation-focused exchanges through its strategic and technical tracks. These discussions will be held on varied issues such as energy security, investment mobilisation, clean energy transition, digital technologies, energy equity, and operational challenges across the energy value chain, including oil and gas, renewable energy, hydrogen, biofuels, carbon capture, power systems, and future mobility.

CONCLUSION

India's energy transition reflects a pragmatic, inclusive, and scale-driven approach. Through governance reforms, infrastructure expansion, biofuels, clean cooking initiatives, and international engagement, India has strengthened energy security while reducing emissions intensity. These developments underline India's commitment to balancing developmental needs with climate action, positioning the country as a key driver of the global energy transition.

Prelims question:

Q. Consider the following statements:

1. India achieved 50% of its cumulative installed electricity capacity from non-fossil fuel sources in 2025.
2. The Unified Pipeline Tariff (UPT) aims to standardise gas transportation charges across the national gas grid.
3. India Energy Week is organised annually by the Ministry of Environment, Forest and Climate Change.

Which of the statements given above is/are correct?

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

Answer: (a)

Mains Question:

Q. “India’s energy transition strategy emphasises scale, affordability, and inclusion while balancing energy security and climate goals.” Discuss this statement in the context of recent reforms in India’s energy sector.

(250 words)

GLACIAL LAKE OUTBURST FLOODS IN THE HIMALAYA KARAKORAM: A GROWING CLIMATE RISK



WHY IN THE NEWS

The Himalaya Karakoram region often described as the “Third Pole” due to its vast reserves of ice and snow is undergoing rapid and profound transformation under the influence of climate change. Among the most alarming consequences of this transformation is the escalating risk of Glacial Lake Outburst Floods (GLOFs). A recent scientific study published in NPJ Natural Hazards (22 January 2026) warns that while the number, size, and volume of glacial lakes have expanded sharply since 1990, the systems designed to assess, monitor, and manage associated flood risks have failed to keep pace. As a result, nearly one million people living downstream of glacial lakes across South Asia are exposed to sudden and potentially catastrophic flooding.

The study highlights a widening gap between advances in climate science and the realities of disaster governance in high mountain regions one with serious implications for ecosystem stability, infrastructure development, and human security.

UNDERSTANDING GLOFS AND THEIR RISING FREQUENCY

A Glacial Lake Outburst Flood (GLOF) occurs when a glacial lake—held back by a fragile natural dam of ice or unconsolidated moraine debris—suddenly breaches. Such failures can release millions of cubic metres of water within hours, often entraining rocks, sediment, and vegetation. This debris-laden flow dramatically amplifies

the destructive potential of GLOFs, transforming them into high-energy flood waves capable of devastating downstream valleys.

The study documents 388 GLOF events across the Himalaya–Karakoram region to date. Moraine-dammed lakes account for the largest proportion of recorded incidents, followed closely by ice-dammed lakes. Of particular concern is the growing emergence of supraglacial lakes, which form on the surface of glaciers and are inherently unstable due to rapid ice melt and internal drainage processes.

Strikingly, the Karakoram region alone accounts for more than half of all recorded GLOFs (196 events), despite hosting fewer glacial lakes than several Himalayan sub-regions. This paradox points to complex interactions between glacier dynamics, steep topography, tectonic activity, and climatic variability, underscoring the limitations of simple lake-count-based risk assessments.

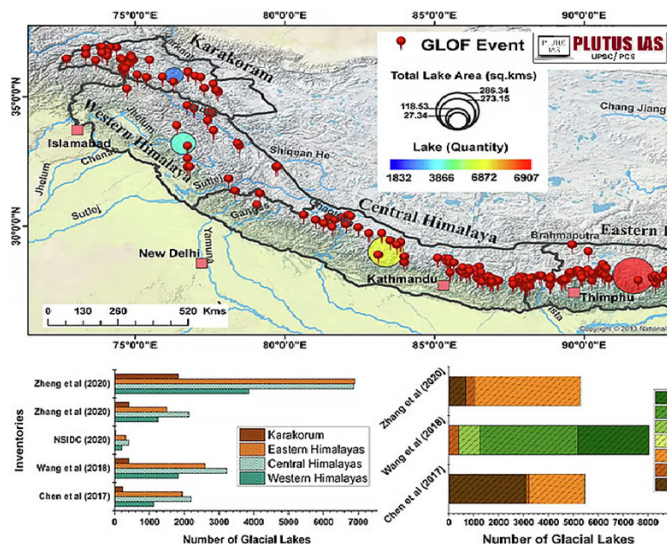


Figure - 1; Glacial Lakes in the Himalaya Karakoram

CLIMATE CHANGE AS A RISK MULTIPLIER

Climate change acts as a decisive risk multiplier in high mountain environments. The Himalaya–Karakoram region is experiencing elevation-dependent warming, a phenomenon in which temperatures rise faster at higher altitudes than the global average. This accelerates glacier thinning and retreat, fundamentally altering the cryosphere.

Since 1990.

key Findings of the Study

- The number of glacial lakes has increased by 53 per cent
- Surface area has expanded by 51 per cent
- Water volume has grown by 48 per cent

Crucially, lake-terminating glaciers are retreating significantly faster than land-terminating glaciers, reinforcing a dangerous feedback loop: glacier retreat enlarges lakes, larger lakes increase hydrostatic pressure on natural dams, and weakened dams become increasingly susceptible to sudden failure.

These fragile systems are often triggered by external shocks such as extreme rainfall events, ice or rock avalanches, earthquakes, and rapid surface melting, all of which are becoming more frequent or intense under a warming climate.

Scale of the Threat

388 GLOF events recorded across the Himalaya–Karakoram

- Karakoram: 196
- Central Himalayas: 99
- Eastern Himalayas: 72
- Western Himalayas: 21

Nearly 1 million people live within 10 km downstream of glacial lakes.

INDIA AND THE WIDER REGIONAL CONTEXT

South Asia has already witnessed the devastating consequences of GLOFs. In 2013, the Uttarakhand disaster, triggered by extreme rainfall and the failure of the Chorabari glacial lake system, resulted in thousands of deaths and widespread destruction of settlements, roads, and religious infrastructure. More recently, the 2023 Sikkim GLOF, caused by the breach of South Lhonak Lake, exposed the acute vulnerability of hydropower projects, mountain towns, and transport corridors in the eastern Himalayas.

Beyond India, Pakistan, Nepal, Bhutan, and China have all recorded significant GLOF events. River systems originating in the Himalaya–Karakoram—such as the Indus, Ganga, and Brahmaputra—cross national boundaries, making GLOFs a transboundary

climate risk. Yet, current responses remain largely national, fragmented, and reactive, rather than regionally coordinated and preventive.

PERSISTENT GAPS IN RESEARCH, MONITORING, AND PREPAREDNESS

Despite growing scientific attention, the study identifies several critical shortcomings in how GLOF risks are currently understood and managed.

Inadequate Risk Assessment

Most existing glacial lake inventories are static snapshots, failing to capture seasonal fluctuations, rapid lake expansion, or short-lived but highly dangerous lakes that can form and drain within months.

Data Inconsistencies

There is no uniform standard for defining glacial lakes. Variations in size thresholds, classification criteria, and mapping techniques across datasets make regional comparisons unreliable and undermine evidence-based policymaking.

Overreliance on Remote Sensing

Harsh terrain and climatic conditions limit field-based observations, leading to heavy dependence on satellite imagery. While invaluable, remote sensing often suffers from coarse resolution, cloud cover, and limited ground validation, especially for small or debris-covered lakes.

Neglect of Social Vulnerability

Risk assessments tend to focus on physical hazards while paying insufficient attention to downstream social vulnerability. Many exposed communities are remote, economically fragile, and poorly connected to emergency services, severely limiting their capacity to respond to sudden disasters.

Limited Early Warning Systems

Although early warning systems (EWS) have proven effective in some pilot areas, their coverage across the Himalaya remains patchy, uneven, and poorly integrated with local governance structures.

FROM HAZARD MAPPING TO RISK GOVERNANCE: THE WAY FORWARD

The study argues for a fundamental shift from reactive disaster response to anticipatory and integrated risk governance.

Key priorities include:

- Standardised and dynamic glacial lake inventories with harmonised definitions and regular updates
- Expansion of ground-based monitoring, including automatic weather stations, lake-level sensors, and community observations
- Robust early warning systems, linked to local administrations and supported by community preparedness and evacuation planning
- Mainstreaming climate risk assessments into hydropower, road construction, urban expansion, and tourism development in mountain regions
- Strengthened regional cooperation for data sharing, joint research, and transboundary disaster response
- Alignment with global frameworks such as the Sendai Framework for Disaster Risk Reduction, which emphasises prevention, preparedness, and resilience

CONCLUSION

The Himalaya Karakoram region stands at the frontline of climate-induced disasters. The rapid expansion of glacial lakes, combined with weak risk assessment and inadequate adaptation mechanisms, poses a growing threat to lives, livelihoods, and hard-won development gains across South Asia. As climate change accelerates cryospheric transformations, GLOFs must be recognised not as rare natural calamities, but as predictable and manageable risks.

Bridging the gap between science, policy, and local action is no longer optional. It is essential if the

region is to move from vulnerability to resilience in an era of warming mountains.

PRELIMS QUESTION

Q. With reference to Glacial Lake Outburst Floods (GLOFs) in the Himalaya–Karakoram region, consider the following statements:

1. Moraine-dammed lakes account for the largest share of recorded GLOF events in the region.
2. Lake-terminating glaciers retreat faster than land-terminating glaciers, increasing GLOF risk.
3. The Karakoram region has the highest number of glacial lakes in the Himalaya–Karakoram region.
4. Elevation-dependent warming refers to faster temperature rise at higher altitudes.

Which of the statements given above are correct ?

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

Answer: (a)

Mains Question:

Q. Glacial Lake Outburst Floods in the Himalaya–Karakoram region pose a transboundary climate risk. Discuss the need for regional cooperation and institutional mechanisms to address this emerging threat. (250 words)



SECURING THE DIGITAL REPUBLIC: THE ROLE OF CERT-IN IN INDIA'S CYBER RESILIENCE



WHY IN THE NEWS?

India's rapid digital transformation has fundamentally reshaped governance, commerce, and citizen engagement. Digital payments, e-governance platforms, online service delivery, and data-driven public infrastructure now form the backbone of India's socio-economic ecosystem. As digital adoption deepens, however, the exposure to cyber threats—ranging from phishing and ransomware to AI-enabled fraud and attacks on critical infrastructure—has expanded proportionately.

Recognising cybersecurity as a strategic imperative, the Government of India has instituted a comprehensive policy, institutional, and operational framework to safeguard cyberspace. At the centre of this framework stands the Indian Computer Emergency Response Team (CERT-In), operating under the Ministry of Electronics and Information Technology (MeitY) and empowered by the Information Technology Act, 2000. CERT-In provides national leadership in cyber incident response, threat intelligence, resilience-building, and secure digital practices.

INDIA'S EXPANDING DIGITAL LANDSCAPE AND EMERGING CYBER RISKS

Over the last decade, India's digital footprint has expanded exponentially. Internet connections increased from 25.15 crore in 2014 to over 100 crore by 2025, while average monthly data consumption per subscriber surged nearly 400-fold, reaching 24.01 GB, among the highest globally.

This digital infrastructure has enabled the meteoric rise of Unified Payments Interface (UPI), which processed over 21 billion transactions worth ₹27 lakh crore in December 2025 alone. While this expansion has deepened financial inclusion and service delivery, it has also widened the cyber-attack surface across banking, power, transport, telecom, and governance platforms.

Reflecting this reality, the Union Budget 2025–26 allocated ₹782 crore for cybersecurity, underlining the state's recognition of cyber resilience as a public good.

In this ecosystem, CERT-In's role is reinforced through sector-specific extensions such as:

1. CSIRT-Fin, strengthening cybersecurity in the BFSI sector through coordinated incident response and intelligence sharing.
2. CSIRT-Power, securing critical power infrastructure through audits, threat intelligence integration, and proactive mitigation.

CORE MANDATE AND FUNCTIONS OF CERT-IN

Designated as India's national nodal agency under Section 70B of the IT Act, 2000, CERT-In's mandate encompasses prevention, detection, response, and recovery from cyber incidents.

Its core functions include:

1. Promoting cybersecurity awareness among citizens and organisations
2. Facilitating automated cyber threat intelligence sharing
3. Issuing near real-time alerts on emerging threats
4. Institutionalising responsible vulnerability disclosure
5. Coordinating incident mitigation during national and international events

- Supporting cyber forensics and law enforcement investigations
- Conducting training programmes, drills, and cyber crisis simulations
- Operating Cyber Swachhta Kendras (CSKs) and a national Command & Control Centre
- Guiding organisations in cyber crisis management and preparedness planning



CERT-IN AT THE CORE OF INDIA’S CYBER RESILIENCE STRATEGY (2025 PERFORMANCE)

- National Incident Response and Intelligence:** 29.44 lakh cyber incidents handled, 1,530 alerts, 390 vulnerability notes, and 65 advisories issued. 29 CVEs identified and published, reflecting indigenous threat research capability
- Cybersecurity Audits:** 231 empanelled security audit organisations. Major audits conducted in banking, power, transport, and energy sectors, enhancing critical infrastructure resilience
- Capacity Building:** 32 specialised technical programmes and 95 awareness sessions. 20,799 officers and professionals trained across government, PSUs, and industry
- Cyber Drills and Preparedness:** 122 cybersecurity drills, including tabletop exercises. Participation from 1,570 organisations across defence, finance, space, telecom, energy, transport, IT/ITeS, and State Data Centres
- Awareness and Knowledge Dissemination:** 95 awareness programmes, covering 91,065

participants. Extensive publication of advisories, whitepapers, and technical guidelines

KEY REPORTS AND GUIDELINES (2025)

CERT-In released forward-looking documents covering emerging technologies and sectors, including:

- Smart City Cybersecurity Guidelines
- Satellite Communications Cybersecurity Advisory
- India Ransomware Report
- BFSI Digital Threat Report
- UAS Cybersecurity White Paper
- SBOM, QBOM, CBOM, HBOM, and AIBOM Guidelines (Version 2)
- Quantum Cyber Readiness White Paper
- Cyber Defence Controls for MSMEs
- “Cyber Smart Kids: Suraksha Guide”
- Cybersecurity Best Practices for Senior Citizens

INSTITUTIONAL FRAMEWORKS ANCHORED BY CERT-IN

- Cyber Swachhta Kendra (CSK):** Covers 98% of India’s digital population, tracks botnets and malware, and provides free remediation tools. Over 89.55 lakh downloads highlight its citizen-centric preventive role.



- Security Assurance Framework:** Enables audits, vulnerability assessments, penetration testing, and secure design guidelines across government and critical sectors.

3. **National Cyber Coordination Centre (NCCC):** Provides metadata-level situational awareness and real-time threat sharing with States and organisations.
4. **Sectoral and State CSIRTs:** Enable decentralised, domain-specific incident response while remaining integrated with national oversight.
5. **Cyber Crisis Management Plan (CCMP):** Ensures continuity of essential services during major cyberattacks and cyber-terror incidents.

GLOBAL RECOGNITION AND STRATEGIC SIGNIFICANCE

CERT-In's domestic capabilities have translated into global recognition:

1. Highlighted in WEF's Global Cybersecurity Outlook 2025 for AI-driven threat detection and intelligence sharing
2. Contributor to the Cyber Resilience Compass (WEF-Oxford)
3. Co-signatory to the ANSSI-led report on AI cyber-risk governance

CONCLUSION

In an era of escalating cyber risks, CERT-In remains the backbone of India's cybersecurity architecture. By integrating policy direction with operational readiness, capacity building, and international cooperation, CERT-In has significantly strengthened national cyber resilience. Its citizen-centric initiatives, sectoral coordination, and forward-looking guidelines demonstrate a comprehensive approach to securing India's digital ecosystem. Global recognition of its AI-driven innovations further reinforces India's emergence as a responsible

cyber power. Collectively, these efforts reaffirm the Government of India's commitment to a safe, trusted, and secure digital future.

Prelims question:

Q. With reference to the Indian Computer Emergency Response Team (CERT-In), consider the following statements:

1. CERT-In is the national nodal agency for responding to cybersecurity incidents under the Information Technology Act, 2000.
2. Cyber Swachhta Kendra functions under CERT-In to promote cyber hygiene among citizens by detecting botnets and malware.
3. The National Cyber Coordination Centre (NCCC) functions under the Ministry of Home Affairs.

Which of the statements given above are correct?

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

Answer: A

Mains Question:

Q. Cybersecurity has emerged as a foundational pillar of national security in the digital age." In this context, examine the role of CERT-In in strengthening India's cyber resilience.






(250 words)

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