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CREATING CIVIL SERVANTS FOR THE NATION

Summary of



Economic
Su ₹ vey
2025-26

By our Expert Team



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About

Economic Survey of India 2025-26

It reviews the country's economic performance over the past year.

It analyzes key sectors, identifies challenges, and suggests policy measures to boost growth.

The Department of Economic Affairs (DEA) under the Ministry of Finance prepares the Economic Survey.

A team led by the Chief Economic Adviser (CEA) authors the document, combining data analysis, research, and policy recommendations.

The inaugural Economic Survey was presented in 1950-51 as part of the Union Budget. Since 1964, it has been delinked from the Budget and is now presented separately during the Budget Session, generally a day before the Union Budget. However, during election years or exceptional circumstances, the timeline may shift.

Highlights of the Economic Survey 2025-26

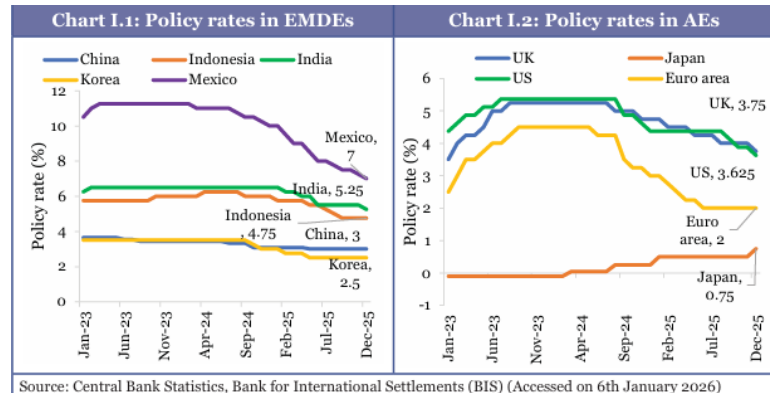
1. State Of The Economy: Pushing The Growth Frontier
2. Fiscal Developments: Anchoring Stability Through Credible Consolidation
3. Monetary Management And Financial Intermediation: Refining The Regulatory Touch
4. External Sector: Playing The Long Game
5. Inflation: Tamed And Anchored
6. Agriculture And Food Management: Raising Productivity, Securing Income And Ensuring Food Security
7. Services: From Stability To New Frontiers
8. Industry's Next Leap: Structural Transformation And Global Integration
9. Investment And Infrastructure: Strengthening Connectivity, Capacity And Competitiveness
10. Environment And Climate Change: Building A Resilient, Competitive And Development-Driven India
11. Education And Health: What Works And What's Next
12. Employment And Skill Development: Getting Skilling Right
13. Rural Development And Social Progress: From Participation To Partnership
14. Evolution Of The Ai Ecosystem In India: The Way Forward
15. 15) Urbanisation: Making India's Cities Work For Its Citizens
16. Part 1) From import substitution to strategic resilience and strategic indispensability
Part 2) Building strategic resilience and strategic indispensability: The role of the state, the private sector and the citizens

STATE OF THE ECONOMY: PUSHING THE GROWTH FRONTIER

1. GLOBAL ECONOMIC ENVIRONMENT: FRAGILE AND DIVERGING

1.1 Growth and Inflation Dynamics

- **Resilience amid Uncertainty:** Global activity showed short-term resilience despite US tariff impositions in April 2025, as trade agreements lowered effective tariff rates and front-loading of exports occurred.
- **Divergent Trajectories:**
- **Advanced Economies (AEs):** Growth projected at 1.8% for 2025 (upward revision), but inflation remains above 2% targets (40 bps higher than initial projections).
- **Emerging Markets (EMDEs):** Growth projected higher at 4.2% for 2025, with inflation declining further.
- **Regional Variations:**
 - US growth driven by AI investment (accounting for nearly half of GDP growth in recent quarters), accompanied by sticky inflation and rising unemployment.
 - Europe shows mixed growth with Germany, Italy, and France moderate while Spain outperforms.
 - China faces deflationary pressures from the property sector crisis despite strong merchandise exports.



1.2 Policy and Financial Conditions

- **Monetary Policy Divergence:** Central banks shifting from tightening to neutral/accommodative stances at varying speeds.
- **Fiscal Pressures:** Primary deficits in major economies remain above pre-pandemic levels (except Brazil and India). Long-term borrowing costs elevated, with US 30-year bond yields peaking at 5.15% in May 2025.
- **Investment Flows:** As per the United Nations Conference on Trade and Development's (UNCTAD) World Investment Report 2025, Global FDI flows declined 11% YoY in 2024, with capital concentrated in AI supply chains and semiconductor manufacturing. While FDI flows in most developed countries fell, they rose by 19.7% in the US.
 - Among the top 10 highest-value greenfield projects announced in 2024, four were in semiconductor manufacturing, with three of them located in the United States.

1.3 Economic Statecraft and Geopolitical Risks

- **Resurgence of Statecraft:** Economic tools increasingly used for foreign policy/national security objectives (export controls, tariffs, sanctions) rather than purely economic goals.
- **Strategic Competition:** Trade wars, critical mineral restrictions, and friend-shoring/near-shoring trends reshaping global value chains.
- **Imperative for India:** Need to cultivate "strategic indispensability" by offering critical goods/services that partners cannot easily substitute, reducing vulnerability to coercive measures.

2. INDIAN ECONOMY: TRENDS AND PERFORMANCE

2.1 Growth Overview

- **Robust Expansion:** First Advance Estimates (FAE) for FY26 place real GDP growth at **7.4%** and GVA growth at **7.3%**, making India the fastest-growing major economy for the fourth consecutive year.
- **Demand Diversification:** Growth driven by domestic demand (consumption and investment), with external demand providing incremental support.

2.2 Demand-Side Drivers

Private Final Consumption Expenditure (PFCE)

- Share in GDP rose to **61.5%** in FY26 (highest since FY12), growing 7.5% in H1 FY26.
- Supported by low inflation, tax rationalization, and strong rural consumption (79.2% rural households reported increased consumption in NABARD survey).
- High-frequency indicators (Q3 FY26): Passenger vehicle sales up 20.5%, domestic air passengers up 5.3%, UPI transactions up 28.7%.

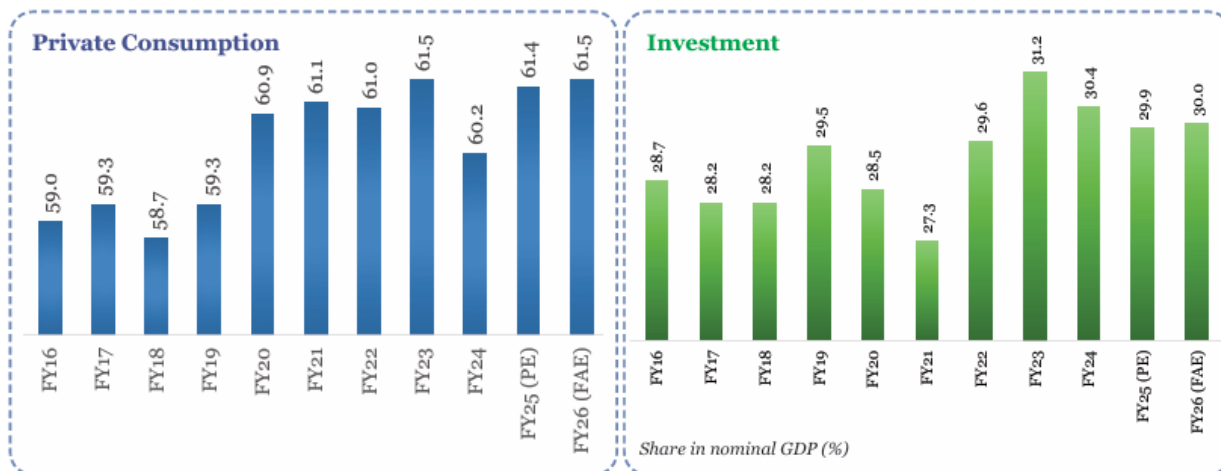
Gross Fixed Capital Formation (GFCF)

- Estimated share of **30.0%** of GDP in FY26; grew 7.6% in H1 FY26 (above pre-pandemic average of 7.1%).
- Private investment revival evident: Corporate announcements totaled ₹14.6 lakh crore in H1 FY26 vs ₹7.9 lakh crore in H1 FY25.
- Supporting indicators: Non-food bank credit up 14.4% (Q3), capital goods imports up 13.4%, capacity utilization above long-term average (74.8%).

External Demand

- Exports of goods and services grew 5.9% in H1 FY26; share in GDP stable at 21.5%.
- Services exports provided a stable anchor amid volatile goods trade.

Private Consumption and Investment are Drivers of India's Growth



2.3 Supply-Side Performance

Agriculture

- Growth estimated at **3.1%** for FY26 (3.6% in H1).
- Supported by favorable monsoon and stable livestock/fisheries growth (5-6%) offsetting volatile crop production.
- Rabi sowing progress: Wheat and gram areas 1.9% and 5.1% higher than last year.

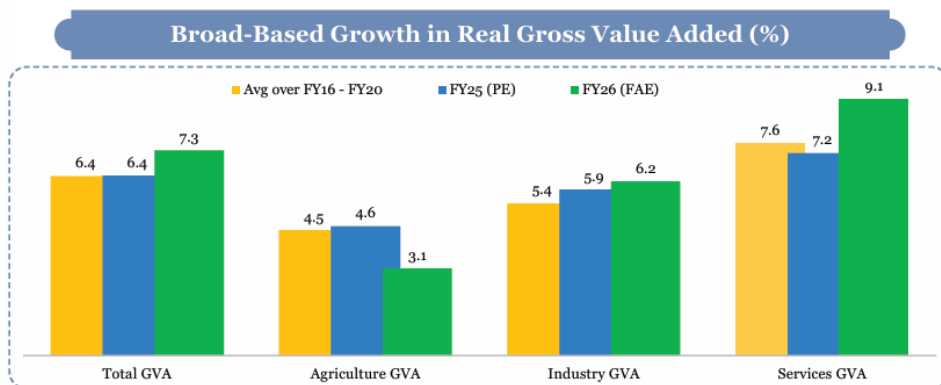
Industry

- Overall growth: **6.2%** (up from 5.9% in FY25).

- **Manufacturing:** Strong 7.0% growth in FY26 (8.4% in H1), driven by improved capacity utilization and resilient demand. Real share in GDP is stable at 17-18% (nominal share decline due to relative price effects).
- **Mining:** Contracted 1.8% in H1 due to weather disruptions.
- **Construction:** Grew 7.4% in H1, supported by sustained public capital expenditure.

Services

- Growth accelerated to **9.1%** in FY26 (9.3% in H1), exceeding pre-pandemic averages.
- All sub-segments (financial, public administration, trade/transport) grew above 8%, with financial services leading at 9.9%.



Nowcasting Model: Dynamic Factor Model predicts Q3 FY26 growth at 7%, using 17 high-frequency indicators.

- A nowcasting model estimates the current or very near-future state of an indicator (like GDP, inflation, or disease rates) using high-frequency, real-time data to bridge gaps in lagging official reports.
- It uses techniques like dynamic factor models, Bayesian vector autoregression (BVAR), or machine learning to process diverse, timely inputs.

3. MACROECONOMIC FUNDAMENTALS

3.1 Inflation Dynamics

- **Marked Easing:** Headline CPI inflation declined to **1.7%** (April-December FY26), driven by sharp disinflation in vegetables/pulses and favorable base effects.
- **Core Inflation:** Persistent at 4.3% due to precious metal prices; excluding gold/silver, underlying inflation materially softer at 2.9%.
- **Outlook:** Benign trajectory expected due to supply-side conditions and GST rationalization pass-through.

3.2 Fiscal Policy

- **Consolidation Path:** Central government on track to achieve fiscal deficit target of **4.4%** of GDP in FY26 (62.3% of budget target achieved by November 2025).

- **Quality of Spending:** Capital expenditure share increased from 12.5% (FY20) to 22.6% (FY25); effective capex rose to 4.0% of GDP.
- **Market Confidence:** Sovereign rating upgrades (S&P to 'BBB', CareEdge to 'BBB+'); 10-year yield spread over US bonds declined by more than half.

3.3 Monetary Policy and Financial Sector

- **Accommodative Stance:** Cumulative repo rate reduction of **125 basis points** since February 2025, with durable liquidity injection via CRR cuts (₹2.5 lakh crore) and OMOs.
- **Transmission:** Weighted average lending rates declined 59-69 bps.

- **Banking Health:** Gross NPA ratios at multi-decade lows (2.2%), slippage ratio stable at 0.7%.
- **Credit Diversification:** Non-bank financial flows increased 29.3% YoY (April-November 2025), reducing corporate reliance on bank credit.

3.4 External Sector

- **Trade Performance:** Total exports (goods + services) reached record \$825.3 billion in FY25; merchandise exports grew 2.4% (April-December 2025), services up 6.5%.
- **Current Account:** Deficit moderate at 0.8% of GDP in H1 FY26, supported by services surplus (\$35.6 billion) and remittances.
- **Capital Flows:** Gross FDI inflows up 16.1% YoY (April-November), but net FDI constrained by higher repatriation and Indian FDI abroad.
- **Balance of Payments:** Deficit of \$6.4 billion in H1 FY26 (vs surplus of \$23.8 billion in H1 FY25), funded by forex reserves.
- **Exchange Rate:** Rupee depreciated 6.5% against USD (April 2025-January 2026) amid orderly market conditions; reserves cover 11+ months of imports.

3.5 Labour Market and Social Indicators

- **Employment:** Unemployment rate declining (Q3 FY26: 4.9%), LFPR stabilizing around 55.8%.

- **Labour Codes:** Implementation of four Labour Codes consolidating 29 central laws, extending social security to gig/platform workers.
- **Poverty Reduction:** World Bank revised poverty line to \$3.00/day (PPP); India's extreme poverty at 5.3% and lower-middle-income poverty at 23.9% (2022-23).

5. OUTLOOK AND WAY FORWARD

5.1 Near-Term Projections

- **FY27 Growth Forecast:** Real GDP growth projected in range of 6.8% to 7.2%.
- **Risk Assessment:** Balance of risks broadly even; domestic drivers (consumption, investment) providing resilience against external uncertainties.

5.2 Key Risks and Mitigants

- **External Challenges:** Prolonged trade conflicts, AI-related asset valuation corrections, immigration controls affecting remittances, and geopolitical fragmentation.
- **Domestic Strengths:** Healthy balance sheets (households, firms, banks), inflation moderation, and ongoing structural reforms provide buffers.
- **Policy Priorities:** Enhancing global competitiveness, attracting FDI, maintaining macroeconomic stability, and completing trade negotiations (particularly with US).

FISCAL DEVELOPMENTS: ANCHORING STABILITY THROUGH CREDIBLE CONSOLIDATION

1. INTRODUCTION

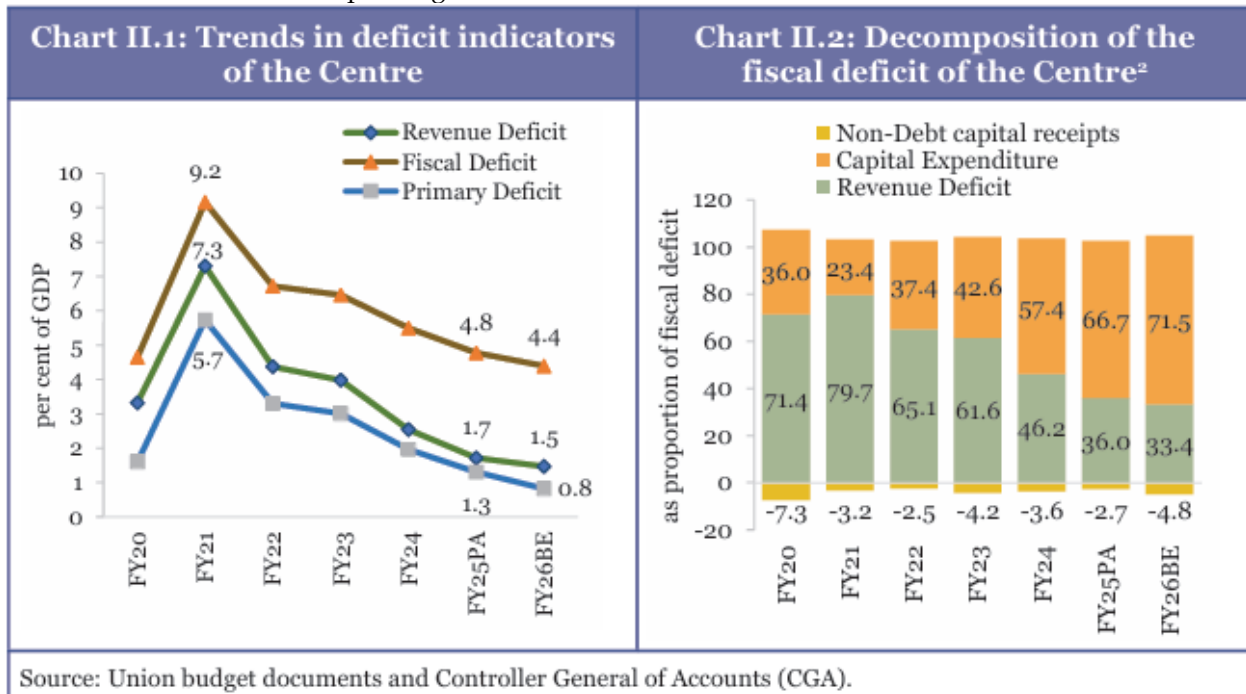
- India's fiscal position showed significant improvement with three sovereign rating upgrades in 2025, a reduction in general government debt-to-GDP by 7.1 percentage points since 2020 while maintaining high public investment.

2. CENTRAL GOVERNMENT FINANCES

2.1 Fiscal Consolidation Trajectory

- **Deficit Reduction:** Fiscal deficit declined from 9.2% of GDP (FY21) to 4.8% (FY25 PA) and budgeted at 4.4% (FY26).
- **Revenue Deficit:** Narrowed to lowest level since FY21 (1.5% in FY26BE), freeing resources for capital expenditure.

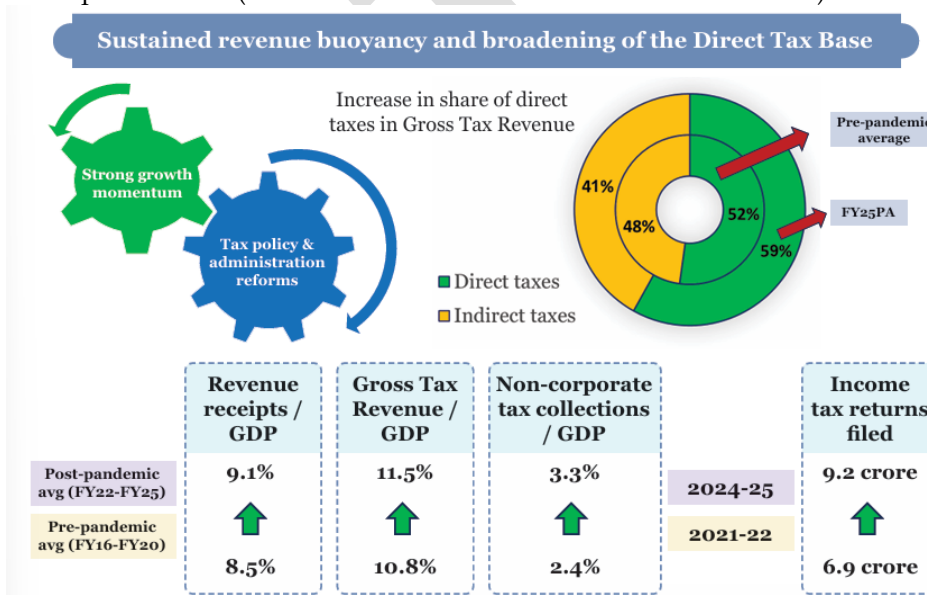
- **Primary Deficit:** Declined to **0.8% of GDP (FY26BE)**, indicating borrowing increasingly services past debt rather than current spending.



2.2 Revenue Performance and Tax Reforms

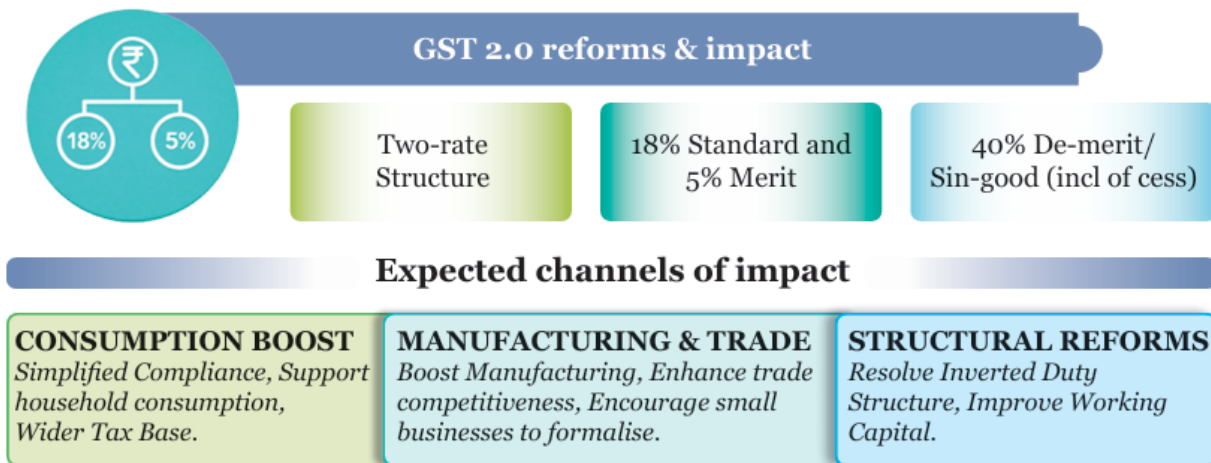
Direct Taxes

- **Buoyancy:** Revenue receipts increased from 8.5% of GDP (pre-pandemic FY16-FY20) to **9.1% (FY22-FY25)**.
- **Share Shift:** Direct taxes' share in total taxes rose from 51.9% (pre-pandemic) to **58.8% (FY25)**.
- **Non-Corporate Tax:** Grew from 2.4% to **3.3% of GDP**, with buoyancy of **1.8 (FY23-FY25)**, driven by expanded base (returns filed increased from 6.9 crore to 9.2 crore).



Indirect Taxes

- **GST Collections:** ₹17.4 lakh crore collected (April-December FY26), up 6.7% YoY; registered taxpayers grew from 60 lakh (2017) to 1.5 crore.
- **GST 2.0 Reforms:** Simplified two-rate structure effective September 2025 (Standard 18%, Merit 5%, Sin-good 40%):
- **Agriculture:** Tractors, fertiliser inputs reduced to 5%.
- **Auto:** Small cars, two-wheelers (≤35cc) reduced from 28% to 18%.
- **Healthcare:** Life-saving drugs at 0%, medical devices at 5%.
- **Daily essentials:** Hair oil, soaps, packaged food lowered to 5%.
- **Expected impact:** Lower tax incidence will stimulate demand and compliance (volume effects offsetting rate reductions).



Non-Tax Revenues

- Surged over **70% annually** in the last two years, driven by RBI surplus transfer (**₹2.68 lakh crore** for FY25, up 27% YoY) and improved PSU dividends.
- **Central Public Sector Enterprises (CPSE) performance:** Net profits per CPSE up 174% (FY20-FY25), dividends up 69%.

2.3 Expenditure Quality and Capital Formation

- **Revenue Expenditure:** Moderated from **13.6% of GDP (FY22)** to **10.9% (FY25)** through subsidy rationalisation and DBT efficiencies (saved ₹3.48 lakh crore in leakages over decade).
- **Capital Expenditure:** Scaled from 1.7% of GDP (pre-pandemic) to **3% (post-pandemic)**; effective capex reached **4% of GDP (FY25)**.
- **Sectoral Allocation:** Roads/highways and railways account for over half of capex; robust growth in transfers to States (34.9%), telecom (24.4%), and housing (19.6%).

2.4 Institutional Reforms

- **Just-in-Time (JIT) Fund Releases:** SNA-SPARSH and Treasury Single Account (TSA) reduced idle balances from ₹1.67 lakh crore (April 2024) to ₹0.4 lakh crore (January 2026).
- **Route Optimisation in PDS:** Saved ₹250 crore annually in transport costs and reduced CO2 emissions by up to 35% across 31 States/UTs.
- **Debt Management Strategy:** Weighted average coupon on fresh issuances declined to **6.65% (FY26)** from 7.11% (FY25); weighted average maturity maintained at 19 years.

3. STATE GOVERNMENT FINANCES

3.1 Fiscal Position and Transfers

- **Centre-State Transfers:** Total transfers doubled from ₹11.5 lakh crore (FY20) to **₹25.6 lakh crore (FY26BE)** (5.7% to 6.9% of GDP).
- **SASCI (Special Assistance to States for Capital Investment):**
- Allocations increased from ₹12,000 crore (FY21) to **₹1.5 lakh crore (FY26)**.
- Total uptake: ₹4.5 lakh crore (FY21-FY26).
- Protected State capex at **2.4% of GDP** despite revenue pressures; FY26 composition: ₹68,000 crore untied, ₹80,000 crore reform-linked.

3.2 Deteriorating Revenue Balances

- **Revenue Deficit:** Combined States' revenue deficit increased from **0.1% (FY19)** to **0.7% of GDP (FY25)**; 18 States saw deterioration, with 10 slipping into deficit.
- **Fiscal Deficit:** Stable at 2.8% (excluding SASCI) but **3.2%** including SASCI-linked borrowings.
- **Receipts:** States' own tax revenue CAGR of **12.6%** post-pandemic; share in central taxes 32% of revenue.

3.3 Unconditional Cash Transfers (UCTs): Fiscal Trade-offs

- **Scale:** Aggregate UCT spending estimated at **₹1.7 lakh crore (FY26)**, implemented by around 50% of States (many in revenue deficit).
- **Impact:**
- Account for 40-50% of monthly income for female casual labourers in some States.
- Evidence suggests adverse effects on female labour force participation.
- **Risks:**
- Crowding out capital expenditure (committed expenditures now absorb 62% of revenue receipts).
- NBER meta-analysis shows UCTs improve consumption but not child nutrition, education, or sustained poverty exit without complementary investments.
- **Global Best Practices:** Conditional transfers (Mexico's Progresa, Brazil's Bolsa Família) with school/health requirements and sunset clauses recommended over open-ended UCTs.

4. DEBT PROFILE AND SUSTAINABILITY

4.1 Central Government Debt

- **Current Levels:** Outstanding liabilities at **55.7% of GDP (FY25RE)**, down from peak of 62% (FY21).
- **Risk Management:**
- **Rollover Risk:** Only 27% of debt matures within 5 years; average annual rollover 5.4%.
- **Interest Rate Risk:** Floating-rate debt only **4.1%** of outstanding.
- **Currency Risk:** External debt minimal at **2.6% of GDP** (largely multilateral/concessional).
- **Borrowing Costs:** Sovereign 10-year yield spread over US bonds declined by more than half, reflecting lower risk premium.

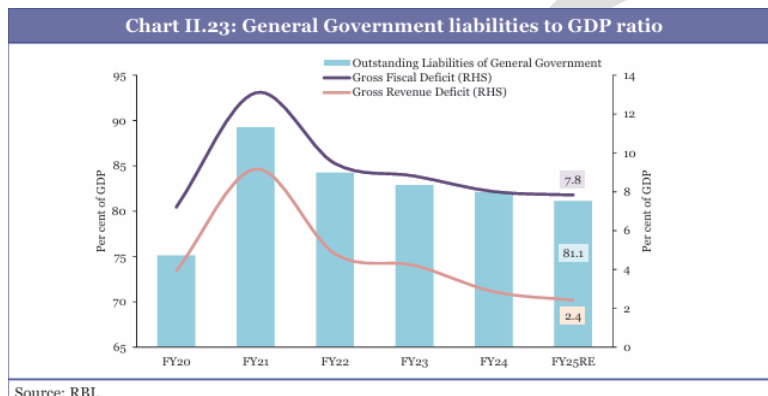


4.2 State Government Debt

- **Debt-GSDP Ratio: 28.1% (FY25)** for 28 States combined.
- **Interest Burden:** Interest payments-to-revenue receipts ratio at **12.6%**.
- **Pricing Anomalies:** Weak differentiation in State Development Loan (SDL) coupons relative to fiscal health; markets do not sufficiently reward/punish fiscal performance due to limited secondary market trading and information gaps.

4.3 General Government Position

- **Debt-to-GDP: 81.1% (FY25RE)**, down from 89.2% (FY21).
- **Global Comparison:**
- Advanced economies: 110.2% (2025).
- Emerging markets: 73.9% (2025).
- India reduced debt by **7.1% points since 2020**, outperforming Brazil (+8.6), UK (+5.0), and USA (-8.0 change).
- **Investment Intensity:** General government investment at **4% of GDP** represents **19.6% of revenues** – among highest globally (vs USA 10.8%, UK 7.7%, Brazil 5.2%).



Debt Sustainability Analysis (Fiscal Response Function)

- **Bohn Test Results:** Regression analysis (1981-2024) confirms sustainability:
- Coefficient on lagged debt (**+0.063**): Higher debt induces primary balance improvement.
- Output gap coefficient (**+0.355**): Counter-cyclical fiscal behaviour.
- Dummy variable (**+1.548**): Institutional reforms (FRBM, post-1991 reforms) significantly strengthened primary balances.
- **Conclusion:** Debt is sustainable regardless of interest rate-growth differential ($r-g$) because policymakers adjust fiscal stance in response to debt accumulation.

5. CONCLUSION AND OUTLOOK

- **Central Government:** Maintains credible consolidation path with improved expenditure quality; ongoing reforms (GST 2.0, new Income Tax Act 2025) expected to enhance efficiency without compromising revenue.
- **State Governments:** Need calibration to prevent UCTs from crowding out capital formation; Sixteenth Finance Commission recommendations critical for future Centre-State fiscal architecture.
- **Coordination Imperative:** State-level fiscal indiscipline affects sovereign borrowing costs; need for coordinated discipline oriented toward productive capacity expansion rather than permanent commitments.
- **Digital Dividends:** Wider use of digital systems in tax administration (NUDGE) and public financial management (JIT, SNA-SPARSH) will strengthen compliance, transparency, and macroeconomic stability.

MONETARY MANAGEMENT AND FINANCIAL INTERMEDIATION: REFINING THE REGULATORY TOUCH

1. INTRODUCTION

1.1 Indian Financial Sector

- India's monetary and financial sectors demonstrated robust performance in FY26 (April-December 2025), driven by strategic policy actions and structural resilience.
- **Key achievements:** Moderating inflation leading to repo rate cuts, durable liquidity injection through cash reserve ratio (CRR) reductions, improved banking fundamentals (GNPAs at multi-decadal lows), and shifting household savings toward equities/mutual funds.
- **Challenges:** Need to regulate AI in finance, improve regulations, and scale up for a growing population while reconciling growth with stability.

1.2 Global Financial Markets: Uncertainty and Emerging Risks

- **Uncertainty Shocks (2025):** Heightened policy uncertainty following US tariff announcements in H1 CY2025 led to reduced USD exposure, safe-haven asset seeking (gold), and increased risk premiums.
- **Technology Risks:** IMF's Financial Stability Report (FSR) 2025 notes risks from AI-driven herding behavior, social media sensitivity, and inflated tech stock valuations (AI stocks accounting for 75% of S&P 500 returns).
- **Stablecoins:** Market capitalization reached USD 305.4 billion by December 2025 (49.6% increase), posing potential spillover risks to traditional financial systems.

1.3 Capital Formation Amidst Uncertainty.

- Study of 811 listed Indian firms (2010-2024) using Panel SVAR framework
- **Findings:** Uncertainty shocks induced -0.51% reduction in net fixed assets over 5 years
- **By size:** Mid-sized firms most vulnerable (-4.7%), large firms (-0.5%), small firms (-1.0%).
- **By export orientation:** Export-intensive firms reduced capital formation by 1% vs. non-exporters who halted investment.

- **Sectoral variation:** Transport equipment and services (civil engineering, consultancy) showed resilience; high-tech manufacturing (machinery, electrical equipment) cut back.

2. MONETARY DEVELOPMENTS IN INDIA

2.1 Policy Actions (FY26: April-December 2025)

- **Repo Rate:** Cumulative reduction of 100 basis points to 5.25% as of December 2025
- **Stance:** Changed from accommodative to neutral in June 2025
- **Cash Reserve Ratio (CRR):** Reduced by 100 bps to 3.0%, releasing approximately ₹2.5 lakh crore in primary liquidity

2.2 Monetary Aggregates

- **Reserve Money (M0):** Growth at 2.9% (Dec 2025) vs 4.9% (Dec 2024); adjusted for CRR impact, growth was 9.4%
- **Broad Money (M3):** Growth at 12.1% (Dec 2025) vs 9% (Dec 2024), driven by aggregate deposits (12.3% growth)
- **Money Multiplier:** Increased to 6.21 (from 5.70 year ago), indicating improved financial intermediation

2.3 Liquidity Conditions

- System liquidity averaged surplus of ₹1.89 lakh crore in FY26 (vs ₹1,605 crore in FY25)
- **Transmission:** Weighted Average Lending Rates (WALR) on fresh rupee loans declined by 64 bps to 8.71% (Nov 2025); weighted average lending rates (WALR) on outstanding loans down 56 bps to 9.21% (lowest since September 2022)

3. FINANCIAL INTERMEDIATION

3.1 Banking Sector Performance

- **Asset Quality:** Gross NPA ratio at multi-decadal low; Net NPA at record low
- **Capital Adequacy:** CRAR strong at 17.2% (Sept 2025)
- **Profitability:** Profit After Tax (PAT) increased 16.9% (FY25) and 3.8% (YoY, Sept 2025); Return on Assets (RoA) stable at 1.3-1.4%.

- **Credit Growth:** Outstanding credit growth accelerated to 14.5% (Dec 2025) vs 11.2% (Dec 2024)
- **Sectoral Trends:**
- Personal loans highest growth (12.8% YoY), driven by gold loans (125.3% YoY increase)
- MSME credit robust: 21.8% YoY growth (Nov 2025); Micro & Small enterprises up 24.6%
- Agriculture GNPA remains elevated at 6.0% (Sept 2025)

3.2 Regional Rural Banks (RRBs)

- Consolidated from 196 to 28 banks under "One-State-One-RRB" principle
- **Performance:** Record net profit of ₹7.6 thousand crore (FY24), ₹6.8 thousand crore (FY25)
- GNPA declined to 5.4% (FY25) - lowest in 13 years
- CRAR at all-time high of 14.4%
- Credit-to-deposit ratio at 73.8% (highest in 35 years)

3.3 Regulatory Innovations

- **Framework for Formulation of Regulations (May 2025):** Standardizes transparent, consultative regulation-making with periodic reviews.
- **Consolidation:** Over 9,000 circulars consolidated into 238 Master Directions; 9,446 circulars repealed.
- **Regulatory Review Cell:** Operationalized October 2025 to review regulations every 5-7 years.
- **Credit Assessment Model (CAM):** Digital footprint-based automated loan appraisal for MSMEs; sanctioned ₹41.5 thousand crore (Apr-Nov 2025).

3.4 Artificial Intelligence in Finance.

- **Global Trends:** AI investment projected at USD 97 billion by 2027
- **RBI's FREE-AI Framework:** Seven guiding principles (Trust, People First, Innovation over restraint, Fairness, Accountability, Understandable by design, Safety/resilience).
- **Six Strategic Pillars:** Innovation Enablement (Infrastructure, Policy, Capacity) and Risk Mitigation (Governance, Protection, Assurance).

- **Current State:** Only 21% of Indian banks/FIs implementing AI solutions; adoption concentrated among larger banks.

3.5 Microfinance and Financial Inclusion

- **Sector Structure:** NBFC-MFIs (39% market share), Banks (32%), Small Finance Banks (16%).
- **Growth:** Active borrowers doubled from 330 lakh (FY14) to 627 lakh (FY25); Gross loan portfolio grew 7x to ₹2.38 lakh crore.
- **Stress in FY25:** 14% YoY decline in loan outstanding due to credit overexposure.
- **Regulatory Response:** RBI reduced minimum qualifying assets requirement from 75% to 60% for NBFC-MFIs (June 2025).
- **Challenges:** Limited standardized income assessment, competitive lending leading to over-indebtedness, poor visibility on gold/agricultural loans.

3.6 Digital Public Infrastructure and Inclusion

- **Pradhan Mantri Jan Dhan Yojana (PMJDY):** 55.02 crore accounts opened (36.63 crore rural/semi-urban) as of March 2025.
- **UPI Impact:** Generated verifiable transaction histories enabling credit expansion without higher defaults; 83% of PM SVANidhi beneficiaries used digital payments by 2025 (up from 45% in 2023).
- **Financial Inclusion Index:** Rose to 67.0 (March 2025) from 64.2 (March 2024).

4. INSOLVENCY AND BANKRUPTCY CODE (IBC)

4.1 Performance Metrics

- **S&P Upgrade:** India's insolvency regime upgraded from 'Group C' to 'Group B' (December 2025)
- **Recovery Rates:** Improved from 15-20% (pre-Insolvency and Bankruptcy Code) to 30%; secured creditors experienced significantly higher recoveries.
- **Resolution vs Liquidation:** Resolution-to-liquidation ratio improved from 20% (FY18) to 91% (FY25)
- **Credit Discipline:**
- Overdue corporate loan amounts fell from 18% (2018) to 9% (2024)

- Average days for accounts to transition from overdue to normal reduced from 344 days (2019) to 30 days (2024).
- Distressed firms saw 3% reduction in cost of debt post-IBC implementation

4.2 Challenges

- **Timelines:** Average corporate insolvency resolution process (CIRP) duration 713 days overall (vs mandated 330 days); 853 days for cases closed in FY25.
- **Institutional Constraints:** National Company Law Tribunal (NCLT) pendency of 30,600 cases (March 2025) with 10-year estimated clearance time; only 30 NCLT benches handling cases.
- **Pre-Packaged Insolvency Resolution Process (PPIRP):** Only 14 admissions in 4 years due to procedural complexity and lack of awareness.

5. CAPITAL MARKETS

5.1 Primary Markets

- **Global Leadership:** India led world in IPO issuances
- **Resource Mobilization:** ₹10.7 lakh crore (debt + equity) in FY26 (till Dec 2025); cumulative ₹53 lakh crore (FY22-FY26).
- **IPO Activity:** 94 main board listings raising ₹1.6 lakh crore; 217 small and medium (SME) listings

5.2 Corporate Bond Market

- **Size:** Outstanding issuances ₹53.6 trillion (FY25); 16-17% of GDP (vs 40% US, 36% China)
- **Reforms:** SEBI's Request for Quote platform, tri-party repos by RBI, credit default swap guidelines

5.3 Cost of Capital

- India's weighted average long-term interest rates: 7.61% (1995-2025) vs Canada (3.13%), Italy (2.94%).
- **Drivers:** Current account balance has nearly twice the impact on lowering capital costs compared to financial deepening (-2.8 bps vs -1.08 bps per percentage point improvement).
- **Strategic Implication:** Reducing cost of capital requires productivity-led manufacturing growth, export

competitiveness, and transition from savings deficit to surplus, not just financial deepening.

6. FOREIGN PORTFOLIO INVESTMENT (FPI)

6.1 Trends (FY26)

- **Volatility:** Net sellers of Indian securities (Apr-Dec 2025); outflows of ₹16.5 thousand crore in equities (as of Jan 13, 2026).
- **Quarterly Pattern:** Q1: Net buyers of equity; Q2-Q3: Net sellers of equity, buyers of debt
- **Drivers:** US tariff sanctions, rupee depreciation, global risk-off sentiment, elevated US bond yields

7. GIFT CITY (INTERNATIONAL FINANCIAL SERVICES CENTRE)

- **Ranking:** Rank 43 out of 120 financial centres in Global Financial Centres Index; 10-place improvement in fintech ranking
- **Entities:** 1,034+ domestic and international entities registered (Nov 2025)
- **Innovations:** First foreign corporate listing (Sri Lanka's DFCC Bank green bonds); Foreign Currency Settlement System (FCSS) launched October 2025 for local settlement of FX transactions.

8. PENSION SECTOR

8.1 Demographics and Coverage

- Old-age population (60+) projected to increase from 10.1% (2021) to 14.9% (2036)
- National Pension System (NPS) Subscribers: 211.7 lakh; assets under management (AUM) ₹16.1 crore (Dec 2025).

8.2 Key Initiatives

- **Unified Pension Scheme (UPS):** Launched January 2025 for Central Government employees
- **NPS Vatsalya:** For minors to inculcate savings culture
- **NPS e-Shramik:** Launched October 2025 for platform/gig workers
- **Atal Pension Yojana (APY):** 43.7% CAGR in subscriptions since 2016

8.3 Challenges

- Low coverage relative to workforce size; informality remains central constraint
- Pension assets at 15-20% of GDP vs 60-100% in OECD countries
- Need for regulatory coherence between EPFO, PFRDA, and state bodies

9. INSURANCE SECTOR

9.1 Growth and Scale

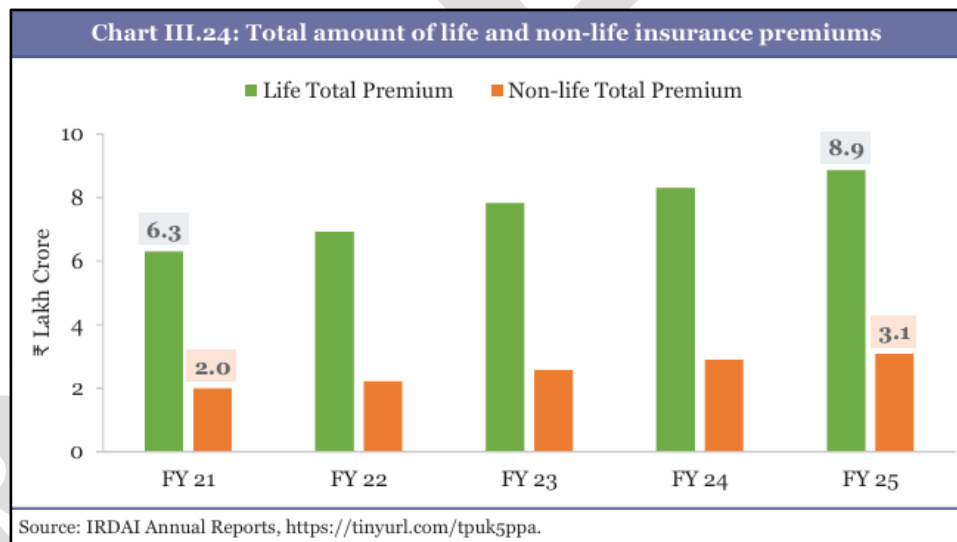
- AUM: ₹74.4 lakh crore (FY25); Premium income: ₹11.9 lakh crore (FY25)
- Life insurance: 91% of AUM, 75% of premium
- Health insurance overtook motor as leading non-life segment (41% of gross domestic premium)
- Distribution network: 83 lakh agents/points (FY25) vs 48 lakh (FY21)

9.2 Recent Reforms (Sabka Bima Sabki Raksha Act, 2025)

- FDI limit increased from 74% to 100%
- One-time registration for insurance intermediaries
- Creation of Policyholders' Education and Protection Fund
- Penalty limits increased to ₹10 crore for non-compliance
- Alignment with Digital Personal Data Protection Act 2023

9.3 Structural Challenges

- **High Operating Costs:** Despite digital transformation, acquisition costs remain high due to dependency on intermediary networks.
- **Penetration Gap:** Insurance penetration declined to 3.7% despite rising density (USD 97).
- **Protection Gap:** Large uninsured population among households and MSMEs; uneven regional adoption.



10. CONCLUSION AND OUTLOOK

10.1 Regulatory Evolution

- Shift from reactive to proactive, anticipatory governance.
- RBI's Framework for Formulation of Regulations (May 2025) institutionalizes transparency, consultation, and impact analysis.
- SEBI's Securities Markets Code, 2025 consolidates securities laws and strengthens regulatory governance.
- Activity-based regulation replacing entity-based frameworks to prevent arbitrage.

10.2 Strategic Priorities for Viksit Bharat

- **Proportionality:** Calibrate regulation to risk; shorter leash for fragile segments, greater latitude for mature markets

- **Diversification:** Reduce bank dominance through deeper bond markets, NBFCs, fintechs, and market-based lenders
- **Long-term Finance:** Develop corporate bond markets, municipal bonds, securitization; rationalize tax treatment of debt
- **Cost of Capital:** Address through productivity gains, export competitiveness, and savings generation rather than financial deepening alone
- **Inclusion:** Continue focus on microfinance, MSMEs, gig workers, and rural penetration while managing over-indebtedness risks

10.3 Financial Sector Assessment Program (FSAP) Validation

- FSAP 2025 conducted jointly by the IMF and World Bank acknowledged increasingly resilient, diversified, and inclusive financial system
- Financial sector assets at 187% of GDP; capital markets expanded from 144% (2017) to 175% (2024) of GDP
- Adequate capital buffers in banks and NBFCs even under severe stress scenarios

EXTERNAL SECTOR: PLAYING THE LONG GAME

1. INTRODUCTION

- The world is transitioning from seamless globalization to a fragmented order characterized by protectionism, supply chain recalibration, and strategic decoupling
- Trade Policy Uncertainty (TPU) and Global Economic Policy Uncertainty (GEPU) indices peaked in April 2025, driven by weakening multilateral agreements, sovereign industrial policies, and competition for critical minerals
- Emerging "geostrategic globalization" where trade decisions incorporate national security, technological sovereignty, and resilience alongside cost efficiency.

2. GLOBAL TRADE DYNAMICS

2.1 Emerging Trade Patterns

- **Friendshoring:** Trade growth between politically aligned countries remains above 2021 averages, resurging in 2025 after a 2024 decline
- **Nearshoring:** Trade between geographically proximate countries improved in Q3 2025 but remains below 2021 averages
- **Trade Concentration:** Increased in 2025 after declining continuously, indicating accelerated trade growth among largest economies
- Transition from cost-based efficiency to resilience and strategic autonomy in supply chain decisions

2.2 Trade Policy Uncertainty Indices

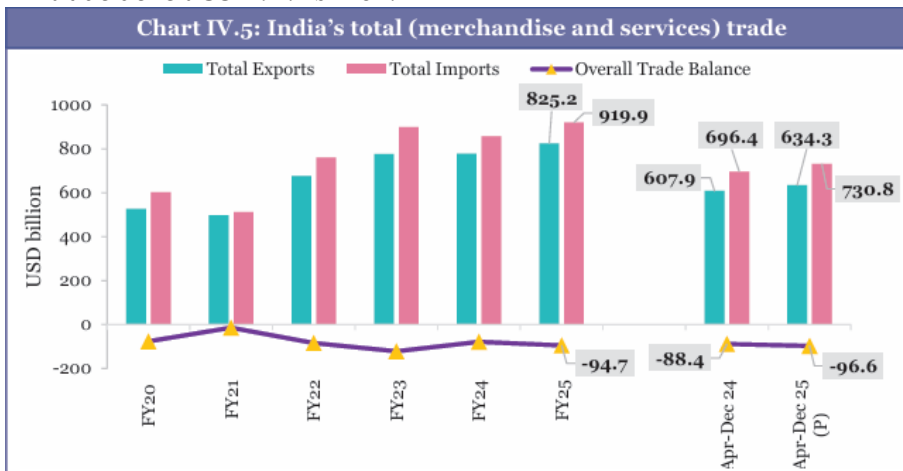
- Global Trade Policy Activity (GTPA) Index has risen since 2020, driven by US-China tensions, COVID-19, Eastern Europe conflict, and 2025 tariff tensions
- **Impact:** Global trade volume growth projected at 3.6% (2025) and 2.3% (2026), down from 3.5% (2024), with EMDEs facing disproportionate impacts despite higher growth rates than Advanced Economies

3. TRENDS IN INDIA'S TRADE PERFORMANCE

3.1 Overall Trade Metrics

- **Global Share:** India's merchandise exports share doubled from 1% (2005) to 1.8% (2024); services share more than doubled from 2% to 4.3%
- **Diversity Rankings:** 3rd in Global South for trade partnership diversity (after China, UAE); 4th for merchandise trade diversity (after Thailand, China, Turkey).

- **FY25 Performance:** Total exports USD 825.2 billion (+6.1% YoY); imports USD 919.9 billion (+7.4%); trade deficit USD 94.7 billion.



3.2 Merchandise Trade Analysis

- **Core Strength:** Non-petroleum, non-gems & jewellery exports reached historic high of USD 374.3 billion (+7.5% YoY) in FY25, representing 78.7% of merchandise exports.
- **Key Growth Sectors (FY25):** Telecom instruments (+51.2%), drug formulations (+11.2%), electric machinery, ready-made garments, auto components.
- **Import Trends:** Rising intermediate and capital goods imports indicating resilient domestic demand; gold imports surged 27.4% due to price increases (38.2% YoY).
- **FY26 Trends:** Electronics exports up 35.1%; marine products +15.5%; continued growth in machinery and chemical imports supporting manufacturing.

3.3 Agricultural Exports

- Growth from USD 34.5 billion (FY20) to USD 51.1 billion (FY25); share in merchandise exports 11-14%
- Stagnation observed between FY23-FY25 due to global price volatility.
- **Potential:** Target of USD 100 billion combined exports (agriculture, marine, food & beverage) achievable in next 4 years.
- **Challenge:** Frequent ad hoc export bans and Minimum Export Prices disrupt supply chains and foreign buyer relationships; need to rely on buffer stocks and PDS for domestic price stability instead.

3.4 Production-Linked Incentive (PLI) Scheme Performance

- Covers 14 sectors; Average Annual Growth Rate (AAGR) of exports 10.6% (FY21-25).
- **High Growth Sectors:** IT hardware (77.2%), ACC batteries (45.0%), electronics (38.8%), solar PV (23.9%), specialty steel (22.5%).
- **Import Substitution Success:** Telecom sector achieved 1.5% export growth while imports declined 18.5%.
- **Integration Evidence:** Rising imports of intermediate goods alongside export growth indicates scaling production capacity and GVC integration.

3.5 Trade Diversification Strategy

- **US Tariff Impact:** India faces 50% effective export tariff rate on US goods; successfully diversifying to alternative destinations.

Sectoral Shifts:

- **Gems & Jewellery:** UAE and Hong Kong shares increased to 53.6% (from 41.4%) as US share fell
- **Marine Products:** Vietnam (+99.8%), Malaysia (+59.2%), Belgium (+90.4%)
- **Textiles:** Nigeria (+72%), Senegal (+29.7%), Uganda (+221.5%)
- **Pharmaceuticals:** Netherlands (+22.2%), Brazil (+15.5%), Tanzania (+50.6%)

- **Energy Security:** Crude oil import diversification increased from US (8.1% vs 4.6%), UAE (11.1% vs 9.4%), Egypt, Nigeria; reduced dependence on Russia and Saudi Arabia

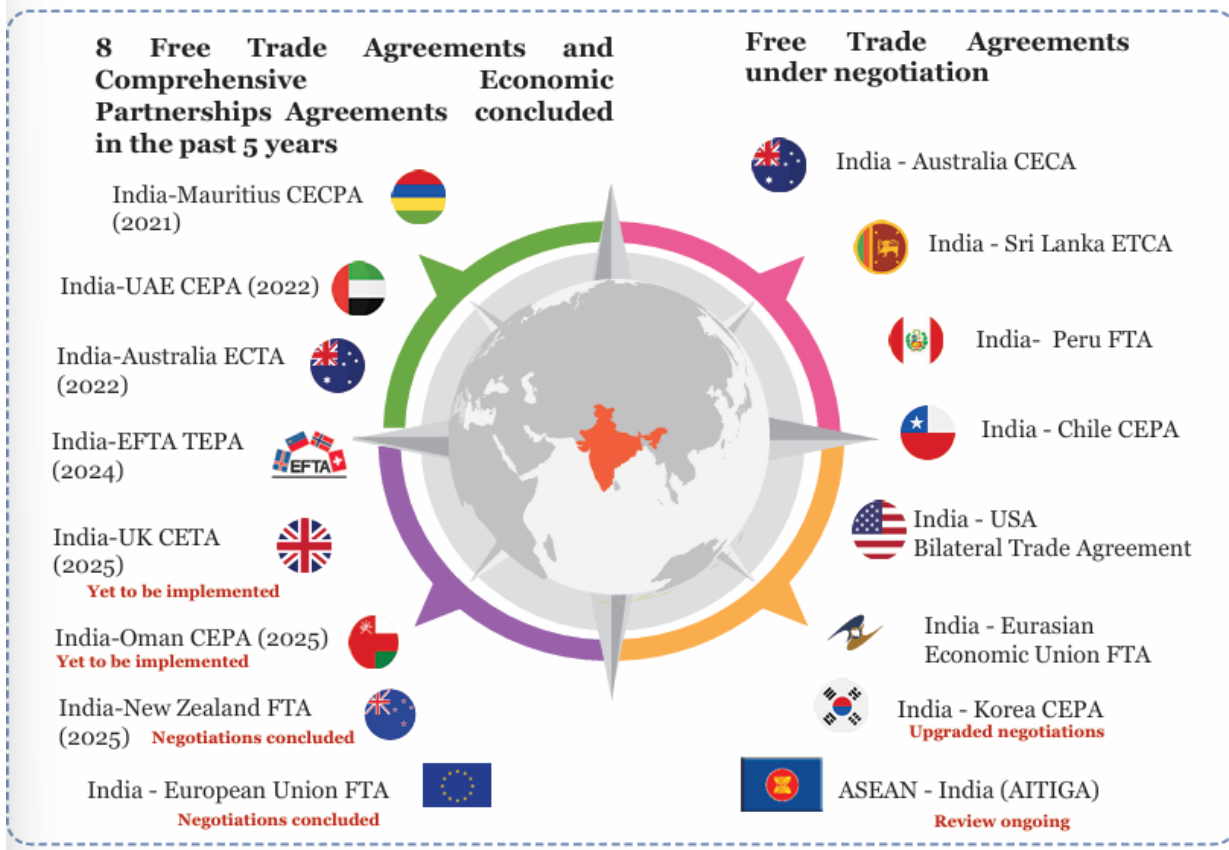
3.6 Economic Complexity and Export Sophistication

- **Current Position:** Ranked 44th out of 145 countries on Economic Complexity Index (ECI), unchanged since 2019 despite improvement from 57th (2013).
- **Export Composition:** Concentrated in refined petroleum, diamonds, jewellery, packaged medicines, and rice (low to mid-complexity).
- **Untapped Potential:** Ranked 2nd globally on Complexity Outlook Index (COI), indicating high capability to diversify into complex products.
- **Policy Imperatives:** Strengthening domestic manufacturing ecosystem via Anusandhan National Research Foundation (ANRF), Research, Development & Innovation Fund (RDIF), and PLI schemes to realize potential.

3.7 Lessons from Pharmaceutical Sector

- Post-TRIPS transformation (2005) demonstrates how external shocks can catalyze capability creation.
- **Strategies:** Rewiring internal capabilities (R&D shift from reverse engineering to NCEs and complex generics), market diversification (DMF filings rose from 14.5% to 48.7% of global share), collaborative models (CRAMS).
- Exports grew 16-fold from FY01 to USD 30.5 billion (FY25)
- **Current Relevance:** Capability building, market diversification, and partnership models applicable to today's tariff uncertainties.

India's strategic push to expand trade partnerships



4. SERVICES TRADE

4.1 Performance Metrics

- **FY25:** Exports USD 387.5 billion (+13.6% YoY); imports USD 198.7 billion (+11.4%); surplus USD 188.8 billion (record, covering two-thirds of merchandise deficit)
- **FY26 (Apr-Dec):** Exports USD 304.0 billion (+6.5%); imports USD 152.2 billion (+1.5%); surplus USD 151.7 billion
- **Composition:** Software services dominate; business services rising due to Global Capability Centres (GCCs) growth at 7% CAGR (FY20-25)
- **AI Leadership:** India ranks 2nd globally in AI skill penetration (score 2.5 vs US 2.6)
- **Geographic Shift:** US share in software exports declined from 54.1% to 52.9% (FY24-25); Europe increased from 30.8% to 32.8%

5. INDIA'S BALANCE OF PAYMENTS

5.1 Current Account Developments

- H1 FY26 CAD moderated to USD 15 billion (0.8% of GDP) from USD 25.3 billion (1.3%) in H1 FY25
- Services surplus and remittances cushioning merchandise deficit
- **Comparison:** India's 1.3% deficit (Q2 FY26) better than New Zealand (-7.7%), Brazil (-3.8%), Australia (-3.6%), UK (-1.8%), Canada (-1.6%)

5.2 Remittances

- **FY25:** USD 135.4 billion (3.5% of GDP)
- **Geographic Shift:** From Gulf Cooperation Council (GCC) countries dominance to Advanced Economies; US top contributor (27.7%), followed by UAE (19.2%), UK (10.8%), Singapore (6.6%)

5.3 Foreign Direct Investment (FDI)

- **Global Context:** Global FDI declined 11% (2024); India declined only 2%, remained largest South Asian recipient
- **Greenfield Leadership:** Ranked 4th globally (1,080 projects); largest destination for digital investments USD 114 billion (2020-24) - ahead of Malaysia, Singapore, Vietnam, Mexico, China
- **FY25:** Gross FDI USD 81.0 billion (+13%); 60% directed to services, computer software/hardware, trading, non-conventional energy, construction, automobiles
- **Net FDI:** Increased 7-fold to USD 5.6 billion (Apr-Nov FY26) vs USD 0.8 billion previous year due to moderation in repatriation
- **Returns:** Average return on inward FDI 7.3% (2014-23), higher than Thailand, Brazil, Germany, US, UK; Risk-adjusted return ratio second only to Indonesia (>7)

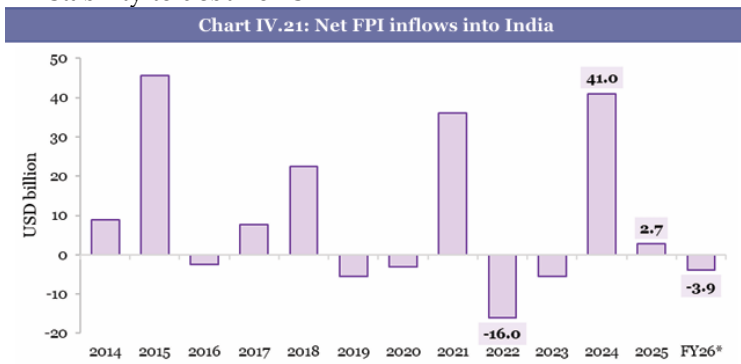
5.4 FDI Strategy and Challenges

- **Connector Countries:** Vietnam, Mexico, Poland, Morocco attracting FDI through tariff avoidance strategies and PM-level investment promotion agencies
- **Requirements for India:** Senior empowered government structure with authority to negotiate using incentives, center-state coordination, strategic sector identification, reliable incentive implementation, proactive diplomacy
- **ODI Complement:** Outward Direct Investment increased to USD 23.6 billion (FY25) and USD 10.2 billion (Apr-Aug FY26); complements domestic investment through technology acquisition and GVC integration; top destinations Singapore (27%), US (16%), UAE (10%)

5.5 Foreign Portfolio Investment (FPI)

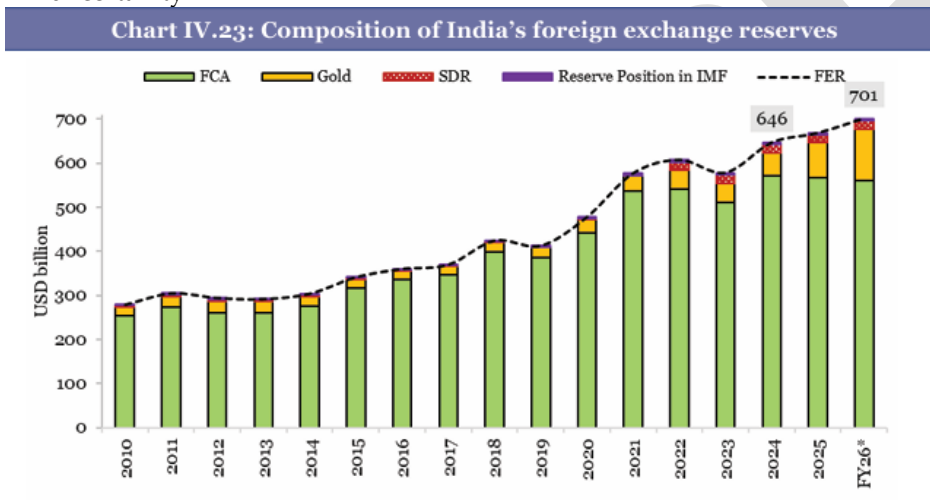
- **Volatility:** FY26 (Apr-Dec) saw net outflows of USD -3.9 billion with 6 months of outflows vs 3 months of inflows
- **Drivers:** Tightening US Treasury yields causing flight-to-safety; inflows during periods of global rate reassessment (May, October, November)

- **Stabilization Measures:** VRR (Voluntary Retention Route) and FAR (Fully Accessible Route) providing stability to debt flows



5.6 Foreign Exchange Reserves

- **Levels:** USD 701.4 billion (January 16, 2026) vs USD 668.3 billion (March 2025)
- **Adequacy:** Covers 11 months of goods imports and 94% of external debt (September 2025)
- **Composition:** Gold component rose sharply to USD 117.5 billion (from USD 78.2 billion) due to valuation gains and diversification preference; reflects global central bank trend amid geopolitical uncertainty



6. INTERNATIONAL INVESTMENT POSITION AND EXTERNAL DEBT

6.1 Net International Investment Position (NIIP)

- India ranked 11th largest debtor globally with negative NIIP of USD -0.3 trillion (Q2 2025)
- **Improvement:** Net claims of non-residents declined by USD 31.2 billion during FY25; assets-to-liabilities ratio improved from 74.1% to 77.5%
- Net IIP to GDP improved to -8.7% from -10.1% (previous year) and -14.1% (five years ago)

6.2 External Debt Position

- **Stock:** USD 718.2 billion (December 2024), +10.7% YoY; rank 21st globally, 11th in G20
- **Sustainability Indicators:** Debt-to-GDP stable at 18-20% over last decade; short-term debt 18.4% of total; forex reserves cover short-term debt 6.5 times
- **Composition:** External debt less than 5% of government total debt; favourable maturity profile with high reserves coverage

7. CONCLUSION AND OUTLOOK

- Global fragmentation and geopolitical alignments create a volatile environment less supportive than hyper-globalization, but India enters this phase with strengthened buffers, diversified trade linkages, and improving resilience.

7.1 Policy Imperatives

- **Financing Quality:** Prioritize stable FDI over volatile portfolio flows; improve investment climate and GVC integration through inter-ministerial coordination
- **Export Competitiveness:** Reduce manufacturing costs (correct inverted duties, improve logistics, lower regulatory expenses), pursue selective import substitution based on productivity and export potential
- **Manufacturing Focus:** Essential for durable currency credibility; must scale up R&D, innovation, and quality to match East Asian models
- **Structural Transition:** Move from consumption/investment-led import growth to export-led surplus generation through productivity and manufacturing competitiveness

INFLATION: TAMED AND ANCHORED

1. Global Inflation Developments

Moderation in Headline Inflation

Global headline inflation declined from a peak of **8.7% in CY 2022 to 4.2% in CY 2025**.

- In Advanced Economies (AEs), inflation has stabilized in the **2-3% range**, down from a post-pandemic high of **7.3%**.
- In Emerging Market and Developing Economies (EMDEs), inflation moderated to **5.3%** from an elevated **9.7%**.

Country-Specific Trends

- **United States:** Headline inflation declined from **3.0% (2024) to 2.7% (2025)**, driven by moderating core services and negative inflation in major commodities. However, risks of resurgence remain due to potential pass-through of increased tariffs and monetary easing.
- **Euro Region:** Experienced a slight moderation from **2.3% to 2.1%**, driven by easing energy and food prices despite the ongoing Russia-Ukraine conflict.
- **Japan:** Structural shift away from chronic deflation toward sustained, wage-driven inflation, with headline inflation rising from **2.7% to 3.3%**, associated with currency weakness and higher import prices.

Monetary Policy Responses

- Central banks in advanced economies responded to easing inflation with cumulative rate cuts ranging from **75 to 100 basis points** (UK, Euro Area, and US).
- The Reserve Bank of India (RBI) reduced its policy rate by **125 basis points**.
- The Bank of Japan remained an outlier, increasing its policy rate by **50 basis points** after ending its negative interest rate regime in 2024.

Drivers of Global Inflation

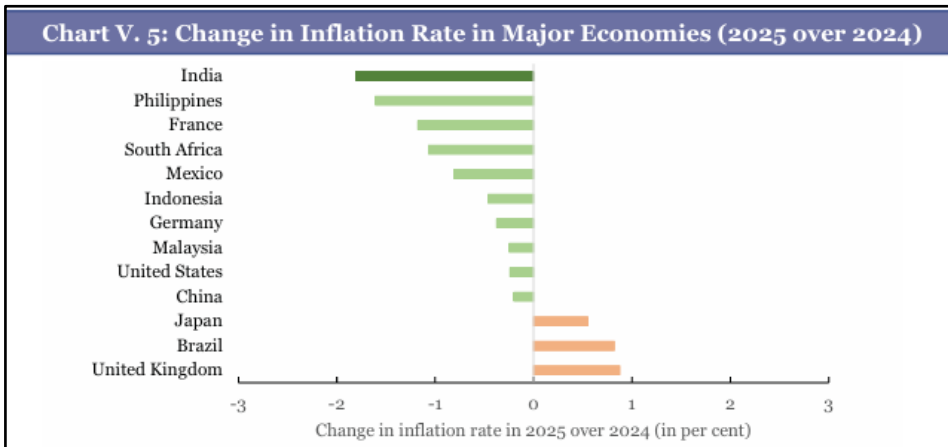
The containment of inflationary pressures was supported by:

- **Commodity Prices:** A general decline in oil and food prices. Oil prices decreased by **over 20%**, remaining in negative inflation territory throughout 2025.
- **Metal Prices:** Prices of aluminium and copper declined in H1 2025 but recovered in H2.

2. Growth-Inflation Trade-off in EMDEs

Economic growth in a majority of EMDEs remained below the average of 4.2%, with varied inflation outcomes:

- **Brazil:** Headline inflation rose steadily from 4.4% to 5.2% before easing as service inflation moderated.
- **Southeast Asia:** Inflation moderated in Malaysia, Indonesia, and the Philippines due to lower imported commodity costs.
- **China:** Deflation driven by weak domestic demand, export pressures from tariffs, and excess manufacturing capacity.
- **India:** Recorded one of the sharpest declines in headline inflation (1.8% points) alongside robust GDP growth of 8% in H1 FY26, indicating strong macroeconomic fundamentals without overheating.

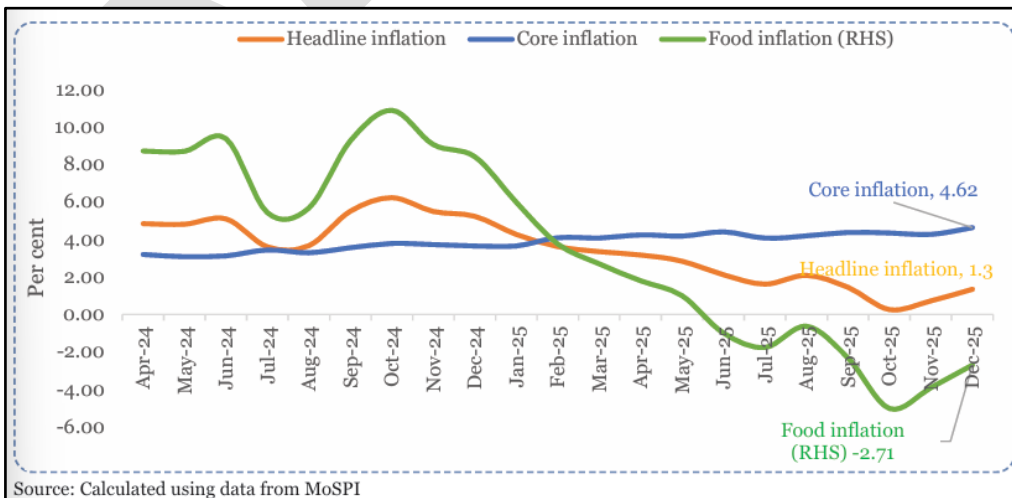


3. Domestic Inflation Scenario (India)

Sustained Moderation in Retail Inflation: India's retail inflation (CPI) followed a clear downward trajectory:

- **FY 2022-23:** 6.7%
- **FY 2023-24:** 5.36%
- **FY 2024-25:** 4.63%
- **FY 2025-26 (Apr-Dec):** 1.71% (lowest in the current CPI series)

The Wholesale Price Index (WPI) mirrored this trend, declining from 9.41% (FY23) to 0.04% (FY26). The disinflationary phase commenced in October 2024 (when inflation was 6.2%), declining sharply to 0.3% in October 2025 – the lowest reading in the current CPI (2012=100) series.



Drivers of Disinflation

- **Food Prices:** Primary driver of moderation, with food inflation entering deflationary territory since June 2025. October 2025 witnessed the largest monthly decline (-5.02%).
- **Base Effect:** Played a dominant role in FY26, exerting downward influence in seven out of nine months, outweighing the momentum effect.

Core Inflation Analysis

Standard core inflation (excluding food and fuel) appeared "sticky," rising from **3.19% (April 2024) to 4.62% (December 2025)**. However, granular assessment reveals this persistence is largely artificial:

- **Precious Metals Impact:** Sharp increases in gold and silver prices (lifetime highs) drove the wedge. When excluded, core inflation exhibited a declining trajectory (from **3.4% in June to 2.3% in December**).
- **Adjusted Core:** Excluding precious metals and petrol/diesel effects, underlying core inflation was approximately **226-235 basis points lower** than the standard measure, indicating subdued underlying inflationary pressures.

4. Drivers of Food Disinflation

Vegetables, Pulses, and Spices:

- **Vegetables:** Sustained decline, remaining deeply negative for much of the year.
- **Pulses:** Continuous decline over nine months (-15.1% by December) following production recovery and stable imports. Import duties were imposed (e.g., **30% on yellow peas** in October 2025) to safeguard farmer interests.
- **Cereals:** Inflation declined from **6.2% (January) to -0.4% (December)**.

Protein-Rich Items: Prices of eggs, meat, and fish declined for several months but recovered later. Milk product inflation remained stable (~2.6%).

Edible Oils: The market (characterized by >50% import dependence) saw duty adjustments—a **20% basic customs duty (BCD) imposed in September 2024** to support falling prices, subsequently reduced to **10% in June 2025** to alleviate rising pressures.

Agricultural Performance

The agricultural outlook was favorable:

- **Cereals:** Record production of **3,320 lakh tonnes (2024-25)**.
- **Oilseeds:** Sharp increase to **430 lakh tonnes**.
- **Rabi Sowing:** Exceeded previous year levels by **3.3%** (as of January 2026), with increased acreage for pulses (3.8%) and oilseeds (3.5%).

Core Components (Non-Food, Non-Fuel)

Four major components (clothing/footwear, housing, health, transport/communication) account for **>60% of core CPI**:

- **Disinflationary trends** evident in Clothing & Footwear (sharp decline from 2023 highs), Health (gradual easing), and Transport & Communication (since June 2025).
- **Housing:** Remained stable with infrequent price revisions typical of rental agreements.

5. Structural Trends: Terms of Trade

Manufacturing's Declining Relative Prices

Analysis of GDP deflators reveals a long-term structural shift:

- **Agricultural Deflator:** Rose fastest, reaching **2.17 (FY25)** relative to the 2011-12 base.
- **Manufacturing Deflator:** Rose slower to **1.41 (FY25)**.

- **Services Deflator:** Reached **1.75** (FY25).

Terms of Trade (Manufacturing relative to Agriculture) declined by **50%** from **1.29 (FY05)** to **0.65 (FY25)**. This decline (indicating agricultural prices rising faster than manufacturing prices) may encourage resource shifts toward agriculture but tightens manufacturing margins.

6. Regional and State-Level Inflation Patterns

Rural vs Urban Dynamics

- **Headline Inflation:** Rural inflation remained above urban through much of 2023-2024 due to higher food weights in consumption baskets. As food inflation eased in 2025, rural inflation fell below urban levels (Rural: **0.8%** vs Urban: **2.0%** in December 2025).
- **Core Inflation:** Rural core remains marginally higher than urban but follows a smoother, more gradual adjustment path.

State-Level Variations

- **2025-26 (Apr-Dec):** All states except **Kerala (8.05%)** and **Lakshadweep (6.69%)** remained within or below the RBI's 2-6% tolerance band.
- **Lowest Inflation:** Bihar (**0.01%**), Assam (**0.16%**), Telangana (**0.20%**).
- **Convergence:** Increasing synchronization of inflation across states, with deviations driven by local relative-price movements rather than broad-based inflation.

Determinants of State-Level Inflation:

- **Persistence:** Inflation differentials across states are not purely transitory; all states exhibited positive persistence (deviations extending beyond single months).
- **Wage Gap Correlation:** States with average wage rates above the national average tend to experience higher inflation.
- **Industrial Share:** Negative association with inflation, reflecting supply-side efficiencies.
- **COVID Impact:** Structural step-up influence on state-level price situations.

7. Outlook and Risks

Projections

- **RBI:** Revised FY26 projection to **2.0%** (from 2.6%); forecasts for Q1 and Q2 FY27 at **3.9%** and **4.0%**, respectively.
- **IMF:** Projects **2.8%** for FY26 and **4.0%** for FY27.
- **General Consensus:** Inflation expected to rise progressively in FY27 but stay within the 4% ($\pm 2%$) target range.

Upside and Downside Factors

Benign Factors:

- Strong agricultural output (above-normal monsoon, good kharif harvest, healthy rabi sowing).
- Expected **7% decline in global commodity prices** (World Bank outlook), driven by subdued crude oil prices.
- GST rate rationalization pass-through.

Risks:

- **Currency Depreciation:** Could feed imported inflation (though global prices expected to remain soft).
- **Base Metals:** Expected moderate price increases (especially copper for green tech/data centres).
- **Precious Metals:** Continued safe-haven demand may keep gold/silver prices elevated.
- **Geopolitical Uncertainty:** May disrupt supply chains and commodity price predictions.

AGRICULTURE AND FOOD MANAGEMENT: RAISING PRODUCTIVITY, SECURING INCOME AND ENSURING FOOD SECURITY

1. Introduction

- Agriculture and allied activities contribute nearly one-fifth of India's national income while employing **46.1% of the workforce**, making the sector central to inclusive growth and food security.
- Despite recent resilience and steady growth—particularly in allied sectors—the sector faces persistent challenges including fragmented landholdings, limited irrigation access, low investment, and stagnating yields.
- The government has responded through comprehensive interventions under the **Krishonnati Yojana** (an umbrella of 8 schemes), income support via **PM-KISAN**, and infrastructure development through the **Agriculture Infrastructure Fund (AIF)** and **e-NAM**.

2. Overview of Agricultural and Allied Sector Performance

Growth Trends

Over the last five years, the agriculture and allied sector recorded an average annual growth of **4.4%**, with the decade FY16-FY25 marking the highest decadal growth (**4.45%**) compared to previous decades. This growth has been primarily driven by:

- **Livestock:** 7.1% growth (GVA increased by 195% between FY15-FY24)
- **Fisheries and Aquaculture:** 8.8% growth (production up 140% during 2014-2025)
- **Crop Sector:** 3.5% growth

Production Milestones

- **Foodgrains:** Estimated production reached a record **3,577.3 lakh metric tonnes (LMT)** in 2024-25, driven by rice, wheat, maize, and coarse cereals.
- **Horticulture:** Production reached **362.08 million tonnes** in 2024-25, surpassing foodgrain production (329.68 MT). India is the world's largest producer of dry onions and

second-largest in vegetables, fruits, and potatoes.

- **Allied Sectors:** Emerging as key growth engines, with livestock and fisheries assuming increasing importance for rural livelihoods and nutritional security.

3. Productivity Trends: Global and Domestic Perspective

Yield Gaps

While India's agricultural growth exceeds the global average (**2.9%**), yields for cereals, maize, soybeans, and pulses trail global benchmarks. Exceptions include groundnuts, where productivity gains reflect agro-climatic suitability and strong seed replacement rates in Gujarat and Karnataka.

Regional and Crop-Specific Constraints

- **Rice and Wheat:** Many major producing states (West Bengal, Uttar Pradesh, Telangana) report yields below the national average due to unseasonal rains, heat stress, and dry spells.
- **Pulses:** Yields remain low due to technological, structural, and climatic constraints. El Niño events historically cause 2-9% acreage decline and 6-30% production drops. Madhya Pradesh and Gujarat lead in productivity due to favorable black soils and high Seed Replacement Rates (SRR).
- **Telangana Example:** Cultivated area expanded from 1.31 crore acres (2014) to 2.2 crore acres (FY23) through irrigation projects like Kaleshwaram Lift Irrigation and Mission Kakatiya, demonstrating the importance of water access for productivity.

State-Level Innovations

- **Land Governance:** Andhra Pradesh's digital land Resurvey Project using drones and GIS (6,901 villages covered); Bihar's chaur land development for aquaculture.

- **Market Reforms:** Madhya Pradesh's "Souda Patrak" digital platform for direct MSP purchases (1.03 lakh transactions by December 2025).
- **Technology:** Karnataka's FRUITS platform (unified farmer database for 55 lakh farmers); Jharkhand's GIS-based Climate Smart Agriculture Scheme.

4. Drivers of Productivity Improvement: Policy Interventions

Mission-Mode Approaches

- **National Food Security and Nutrition Mission (NFSNM):** Enhances productivity for rice, wheat, pulses, coarse cereals, and nutri-cereals through demonstrations of crop protection technologies and high-yielding varieties.
- **National Mission on Edible Oils (NMEO-OS & NMEO-OP):** Aims for self-sufficiency (70 million tonnes by 2030-31) through productivity enhancement and private sector participation. Between 2014-15 and 2024-25, oilseed area increased by 18%, production by 55%, and productivity by 31%, reducing import dependence from 63.2% to 56.25%.
- **Mission for Atmanirbharta in Pulses:** Approved October 2024 to reduce import dependency through productivity enhancement.

Ethanol Pricing and Food Security Trade-offs

- **Cropping Pattern Shifts:** Administered ethanol prices favoring maize (11.7% CAGR increase FY22-25) have accelerated maize expansion (8.77% CAGR production growth) while pulses and oilseeds have declined in acreage.
- **Risk:** Risk of entrenching import dependence for edible oils and pulses if incentives remain uncalibrated.
- **Recommendation:** Develop a comprehensive roadmap aligning energy security with food security through feedstock caps, yield improvements in pulses/oilseeds, and region-specific planning.

Horticulture Development

- **Mission for Integrated Development of Horticulture (MIDH):** Added 15.66 lakh hectares under horticulture by July 2025.
- Productivity increased from 12.10 MT/ha (2019-20) to **12.56 MT/ha** (2024-25).

5. Inputs and Technology Support

Quality Seeds

- **Sub-Mission on Seeds and Planting Materials (SMSP):** Created 6.85 lakh Seed Villages, produced 1,649.26 lakh quintals of quality seeds, benefiting 2.85 crore farmers.
- **National Mission on High-Yielding Seeds (Budget 2025-26):** Targets development of 100+ new climate-resilient, high-yielding varieties.

PM Dhan Dhaanya Krishi Yojana

- Launched July 2025 for 100 aspirational districts identified by low productivity, low cropping intensity, and limited credit access. Converges 36 existing schemes across 11 departments to enhance productivity, irrigation, and post-harvest storage.

Irrigation and Water Efficiency

- **Pradhan Mantri Krishi Sinchai Yojana (PMKSY):** Increased gross irrigated area from 41.7% (2001-02) to **55.8%** (2022-23).
- **Per Drop More Crop (PDMC):** Provides 55% assistance to small/marginal farmers for drip/sprinkler systems.
- **Challenge:** Irrigation coverage remains uneven (67% for rice vs. <15% for millets, 26% for pulses).

Soil Health and Nutrient Management

- **Soil Health Card (SHC):** Over 25.55 crore cards issued.
- **National Soil Mapping Programme (NSMP) and National One Soil Unified Information System (NOSUIS):** Generating village-level soil inventories.
- **N:P:K Imbalance:** Deteriorated from 4:3:2:1 (2009-10) to **10.9:4.1:1** (2023-24) due to urea subsidies favoring nitrogen.

Re-orienting Fertiliser Use

Proposes transitioning from input-distorting subsidies to **acre-based direct transfers**:

- Gradually increase urea prices while transferring equivalent amounts directly to farmers per acre (indexed to agro-climatic zones).
- Benefits: Restores nutrient balance, improves soil organic carbon, enhances yield response, and is fiscally neutral.
- Implementation: Leverage existing iFMS tracking and PM-KISAN infrastructure for phased pilot programs.

Credit Access

- **Ground Level Credit (GLC)**: Disbursed ₹28.69 lakh crore in FY25 (surpassing ₹27.5 lakh crore target), comprising ₹15.93 lakh crore short-term and ₹12.77 lakh crore term loans.
- **Kisan Credit Card (KCC)**: 7.72 crore operative accounts with ₹10.20 lakh crore outstanding as of March 2025.
- **Kisan Rin Portal (KRP)**: Integrated with 448 banks, flagged ₹1,080.88 crore in duplicate/excess claims from ₹37,506.53 crore total claims, enhancing financial discipline.
- **Regional Disparities**: Central region accounts for 30% of Gross Cropped Area but only 14.7% of Modified Interest Subvention Scheme (MISS) benefits, indicating untapped credit potential.

Mechanisation

- **Sub-Mission on Agricultural Mechanisation (SMAM)**: Established 25,689 Custom Hiring Centres (CHCs) by 2025-26, promoting collective ownership models for smallholders.

Livestock and Fisheries Technology

- **Livestock**: 125 crore FMD vaccinations since 2020; AI coverage increased from 25% to 40% of breedable bovine females.
- **Fisheries: Pradhan Mantri Matsya Kisan Samridhi Sah-Yojana (PM-MKSSY)** formalizing the sector; 2,195 Farmers Fisheries Producers Organisations (FFPOs) formed

with ₹544 crore investment; KCC benefits extended to 4.39 lakh fishers.

6. Infrastructure and Marketing Support

Storage and Processing

- **Agriculture Marketing Infrastructure (AMI)**: 49,796 storage projects sanctioned (₹4,832.70 crore) and 25,009 marketing projects (₹2,193.16 crore).
- **Agriculture Infrastructure Fund (AIF)**: Mobilized ₹1.23 lakh crore supporting 39,000+ CHCs, 25,000+ processing units, 17,000+ warehouses, and 2,700+ cold storage projects.

Digital Market Access

- **e-NAM**: Pan-India virtual market covering 1,522 mandis across 23 states, registering 1.79 crore farmers and 2.72 lakh traders by December 2025.
- **FPO Scheme**: 10,000 FPOs registered by December 2025 against a 2020 target (budget ₹6,860 crore through 2027-28).
- **Digital Agriculture Mission** (September 2024): Creating Digital Public Infrastructure (DPI) including AgriStack and Krishi Decision Support System.

7. Extension Services

- **Sub-Mission on Agricultural Extension (SMAE)**: Through ATMA, benefited 39.04 lakh farmers in 2024-25 and 20.08 lakh in 2025-26 (till October).
- **DAESI Programme**: Trained 107,659 input dealers by October 2025 to link businesses with extension services.
- **Kisan Call Centres**: Answered 30.65 lakh calls in 2024-25 in 22 languages.

8. Price and Income Support

Minimum Support Price (MSP)

- MSP fixed at **1.5 times the all-India weighted average cost of production** for 22 mandated crops (14 kharif, 6 rabi, 2 commercial). Steady increases announced for KMS 2025-26 and RMS 2026-27.

Direct Income Support

- **PM-KISAN:** Over **₹4.09 lakh crore** released to eligible farmers in 21 installments since inception.
- **PM Kisan Maandhan Yojana (PMKMY):** 24.92 lakh farmers enrolled as pension scheme beneficiaries.

Procurement Efficiencies for Diversification

Proposes reorienting savings from excess rice/wheat procurement (storage, handling, interest costs) to support voluntary crop diversification:

- Offer per-quintal or per-acre incentives for shifting rice/wheat acreage to pulses, oilseeds, and maize in eastern/central regions.
- Financed through fiscal savings from reduced buffer stock accumulation, maintaining WTO compatibility through area-based decoupled payments.
- Reinvest savings in post-harvest infrastructure (oilseed processing, pulse milling) through PPPs.

9. Risk Mitigation: Crop Insurance

- **Pradhan Mantri Fasal Bima Yojana (PMFBY):** In 2024-25, insured **4.19 crore farmers** (32% increase over 2022-23) covering 6.2 crore hectares. Total claims disbursed since 2016-17: **₹1.90 lakh crore**.
- **Technology Integration:** DigiClaim module for direct PFMS payments; YES-TECH (remote sensing yield estimation) implemented in nine states; National Crop Insurance Portal (NCIP) as single verified information source.

10. Cooperatives

- **Primary Agriculture Cooperative Societies (PACS) Restructuring:** Model bye-laws permit diversification into 25+ activities (input supply, storage, fuel retail). 67,930 PACS being computerized (ERP software), with 54,150 on board and 43,658 live.
- **Expansion:** 18,183 new multipurpose cooperative societies registered by March

2025; decentralized grain storage program initiated.

- **Capacity Building:** Tribhuvan Sahkari University being established to strengthen cooperative education.

11. Sustainable Agriculture

- **Crop Diversification Programme (CDP):** Under RKVY, promotes alternative crops to restore soil fertility.
- **Organic/Natural Farming:**
- **Paramparagat Krishi Vikas Yojana (PKVY) and MOVCNDR** for North East.
- **National Mission on Natural Farming (NMNF):** Budget ₹2,481 crore; established 17,632 clusters covering 6.39 lakh hectares, trained 32,224 Community Resource Persons, enrolled 15.79 lakh farmers.
- 6 lakh farmers registered under Natural Farming Certification System (NFCS).

12. Food Processing Industry

- **Employment:** Accounts for **12.91%** of total organized manufacturing employment.
- **Exports:** Agri-food exports totaled **USD 49.43 billion** (11.2% of total exports) in FY25, with processed food share rising from 14.9% (FY18) to 20.4%.
- **Key Schemes:**
- **PM Kisan Sampada Yojana (PMKSY):** 1,185 projects completed by November 2025.
- **PLI Scheme for Food Processing (PLISFPI):** 169 approved applications; investments of ₹9,207 crore with incentives disbursed.
- **PM Formalisation of Micro Food Processing Enterprises (PMFME):** 1.73 lakh loans sanctioned (₹14.19 thousand crore); seed capital for 3.66 lakh women SHG members.

13. Food Management and Security

Procurement and Distribution Framework

- **National Food Security Act (NFSA) 2013:** Legal guarantee for subsidized foodgrains to 81.35 crore beneficiaries (67% of population).
- **Pradhan Mantri Garib Kalyan Anna Yojana (PMGKAY):** Continued post-COVID,

providing free foodgrains to all NFSA beneficiaries, fully centrally funded.

- **Procurement:** Sustained high procurement of wheat and paddy, with stocks often exceeding buffer requirements, necessitating efficient management to reduce carrying costs.

Technology-Driven Reforms

- **One Nation One Ration Card (ONORC):** Rolled out across all 36 States/UTs covering 80 crore beneficiaries, enabling portability for migrants.
- **Direct Benefit Transfer (DBT):** ₹267.6 crore transferred directly to 10 lakh beneficiaries in FY24 (Chandigarh, Puducherry, DNH & DD).
- **Digital Authentication:** 99.8% Aadhaar seeding of ration cards; 99.6% of 5.43 lakh Fair Price Shops equipped with ePoS devices; 98% of distribution through digital transactions.
- **Supply Chain Optimization:**
- **Anna Chakra** tool for logistics efficiency and carbon emission reduction.
- **GPS-based Vehicle Location Tracking System (VLTS):** Fully implemented in 6

states, partially in 10, targeting complete rollout by March 2026.

14. Conclusion and Way Forward

Agriculture remains central to achieving **Viksit Bharat** through inclusive growth. Key priorities identified include:

1. **Irrigation Expansion:** Reviving water bodies and scaling drip/sprinkler systems to address water scarcity.
2. **Research and Development:** Coordinated public-private efforts for climate-resilient varieties and improved productivity.
3. **Fertiliser Reform:** Correcting N:P:K imbalances through decoupled income support rather than input subsidies.
4. **Crop Diversification:** Promoting shifts from water-intensive rice/wheat to pulses, oilseeds, and maize based on agro-climatic suitability.
5. **Climate Resilience:** Adopting drought-resistant crops and precision agriculture tools.
6. **Market Integration:** Strengthening FPOs, cooperatives, and value chains to improve price realization and reduce post-harvest losses.

The sector faces structural challenges from climate change and small landholdings, but sustained investment in digital infrastructure, irrigation, and sustainable practices offers pathways to resilience and higher farm incomes.

Policy Considerations

Ethanol Pricing and Cropping Incentives

- Careful calibration of incentives is required to avoid unintended concentration across crops.
- Ethanol expansion to be pursued that supports both energy security and food and nutritional security.

Aligning Fertiliser Use with Agronomic Needs

- Fertiliser decisions need to be guided by soil health and crop requirements
- Input Distortion to Acre-Based Support

A Calibrated Approach to Crop Diversification

- Crop choices should reflect local soil, rainfall, and market conditions, ensuring economic and agronomic viability.
- Per-acre / per-quintal incentives cover transition losses; lower input costs improve profits

SERVICES: FROM STABILITY TO NEW FRONTIERS

1. INTRODUCTION

1.1 Global Structural Shift

- The global economy is undergoing a structural shift toward services, with the sector emerging as the principal engine of growth, resilience, and cross-border integration amid subdued industrial activity and geopolitical uncertainty.
- While global goods trade has stagnated, services trade continues to expand, reinforcing its role as a critical buffer against external shocks.
- Digitally and remotely deliverable services have enabled new forms of value creation in knowledge-intensive activities.

1.2 India's Distinctive Trajectory

- **Services-Led Growth at Lower Income:** Unlike manufacturing-led growth paths, India experienced service-led growth at a lower per capita income level.
- **Macroeconomic Dominance:** The services sector contributes **more than half of India's Gross Value Added (GVA)** and serves as the major driver of exports and employment.
- **Stability:** The sector recorded average annual growth of 7–8% with low volatility (standard deviation of 1.22 during FY 05–25 vs. 4.20 for manufacturing).
- **Global Standing:** India is the world's **7th largest exporter of services**, with its global market share doubling from **2% (2005) to 4.3% (2024)**.
- **FDI Magnet:** The sector continues to be the largest recipient of foreign direct investment.

1.3 Emerging Challenges

- Rapid technological progress is outpacing firm-level and worker-level adaptation, creating skill gaps.
- Tighter immigration regimes, data protection/localization norms, and remittance rules threaten the sector's stabilizing potential.

2. GLOBAL SERVICES TRENDS AND INDIA'S EXPERIENCE

2.1 Post-Pandemic Structural Rebalancing

- **Compositional Shift:** COVID-19 disrupted contact-intensive services (tourism, hospitality) while accelerating digitally delivered services (IT, finance, professional services).
- **GDP Share:** India's services share in GDP rose to **49.9% (2024)**, an increase of **1.5% points** above pre-pandemic levels (2015–2019), outpacing gains in China, the US, and the EU.
- **Growth Resilience:** In 2024, India's services GVA growth remained close to pre-pandemic levels (7.2% vs. pre-COVID avg of 7.6%), showing the smallest negative deviation (-0.4) compared to China's sharp deceleration (-3.1).

2.2 Trade and Capital Flows

- **Services Trade Expansion:** India's services trade as a share of nominal GDP rose from **11.6% (pre-COVID) to 14.6% (2024)** – a deviation of +3.0 percentage points, higher than the global average deviation of +0.6.
- **FDI Concentration:** Globally, services accounted for **53.5% of FDI (2022–2024)**, up from 50.9% pre-pandemic, with increasing concentration in energy/gas supply (47.8% vs. 26.6% pre-COVID) and information/communication (22.0% vs. 17.6%).
- **India's FDI Profile:** Services-sector FDI inflows averaged **80.2% of total FDI (FY23–FY25)**, up from 77.7% pre-pandemic. Top sub-sectors: Information and communication (25.8%), Professional services (23.8%), Finance and insurance (14.2%).

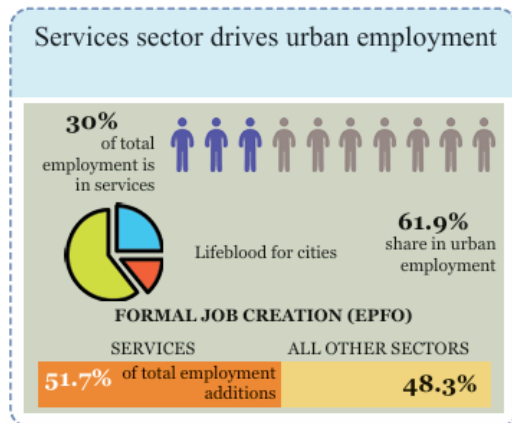
3. RECENT TRENDS IN INDIA'S SERVICES SECTOR PERFORMANCE

3.1 Current Growth Dynamics (H1 FY26)

- **GDP Share:** Services sector share in GDP rose to **53.6%** in H1 FY26 (higher than H1 FY25 and pre-pandemic averages).
- **GVA Growth:** Services GVA grew by **9.3%** in H1 FY26, up from 7.0% in the corresponding period of the previous year.

Sub-sector Drivers:

- **Financial, Real Estate & Professional Services:** Key driver, with growth exceeding pre-pandemic levels.
- **Public Administration:** Expansion sustained above pre-pandemic trends.
- **Trade, Hotels, Transport & Communication:** Gradual normalization, growth close to pre-pandemic averages but contribution yet to fully recover.



3.2 Employment and Labor Market Dynamics

NITI Aayog Findings (2025):

- Services account for **30% of total employment** (vs. 11–12% each for manufacturing and construction).
- Employment elasticity in services stood at **0.43 (2011–2024)**, rising to **0.63 post-COVID**.
- Nearly **40 million jobs added** over the past six years.
- **Employment-Output Paradox:** Rapid GVA growth in high-end services has not translated proportionately into jobs due to high skill intensity and automation.
- **Urban Employment:** Share of services in urban employment rose to **61.9% (H1 FY26)**.
- **Formal Job Creation:** Services accounted for **51.7% of net EPFO payroll additions** (April–July FY26).

3.3 High-Frequency Indicators

- **PMI Services Index:** Averaged **58.9** in Q3 FY26 (firmly in expansionary territory >50), driven by robust domestic demand.

- **Credit Growth:** Bank credit to services grew at **12.4% YoY (Oct–Nov 2025)**, moving closer to the 5-year average of 14%. Credit growth and GVA growth show a correlation of **0.56**.

3.4 Services Exports as Economic Buffer

- **GDP Contribution:** Services exports averaged **9.7% of GDP (FY23–FY25)**, up from 7.4% pre-pandemic; reached **10.0%** in H1 FY26.
- **Growth Acceleration:** Average growth in services exports more than doubled from **7.6% (FY16–FY20)** to **14.0% (FY23–FY25)**.

Composition:

- **Software Services:** 40%+ of total exports, growing at **13.5%** (vs. 4.7% pre-COVID).
- **Professional & Management Consulting:** Growth of **25.9%**, share increased from 10.5% to 18.3%.
- Together, these account for **over 65% of services exports**.

3.5 Artificial Intelligence Impact

- **Export Boost:** AI-intensive services (software, business, financial) experienced an approximate **39.5% increase in exports** following AI diffusion.
- India recorded the largest increase in AI talent among major economies (2016–2024).

4. TRADE POLICY AND AGREEMENTS

4.1 Recent Trade Engagements

- **India-UK CETA (July 2025):**
 - Market access across **137 services sub-sectors**.
 - Mutual Recognition Agreements (MRAs) in nursing, accountancy, architecture.
 - Annual quota of 1,800 positions for chefs, yoga instructors, classical musicians.
 - Double Contribution Convention saves over **USD 500 million annually** for professionals.
- **India-Oman CEPA (December 2025):**
 - Commitments in **127 sub-sectors** including IT, R&D, education, health.
 - Enhanced Mode 4 mobility: Higher quota for intra-corporate transferees (20% to 50%), longer stays for contractual service suppliers.

- **100% FDI** permitted for Indian companies in major services sectors in Oman.
- **India-EFTA TEPA (October 2025):**
 - Focus on digital delivery (Mode 1), commercial presence (Mode 3), and temporary movement (Mode 4).
 - MRAs in professional services (nursing, chartered accountancy, architecture).

5. SUB-SECTORAL ANALYSIS

5.1 Tourism Sector: Domestic Resilience and Medical Tourism

- **Domestic Tourism: 3.3 billion visits** (Jan-Sep 2025), up **52.7% YoY**.
- **International Tourist Arrivals (ITAs): 20.57 million** (2024), up **8.9% YoY** and **14.8%** above pre-pandemic levels. However, Foreign Tourist Arrivals (FTAs) remained **11.8% below** pre-pandemic levels (Jan-Oct 2025).
- **Economic Contribution: 5.22% of GDP** (FY24), supporting **8.46 crore jobs** (13.3% of total employment).
- **Medical Tourism:**
 - Arrivals increased from 1.12 lakh (2009) to over 6 lakh (2022-2024).
 - Market size: **USD 8.7 billion (2025)**, projected to reach **USD 16.2 billion**.
- **Emerging Niches:** Long-distance hiking trails, marina development (blue economy), and spiritual tourism (e.g., Kashi development).

5.2 Information Technology and IT-Enabled Services (IT-ITeS)

- **Revenue:** Estimated at **USD 283 billion** (FY25), growth of **5.1%**.
- **Global Capability Centres (GCCs):**
 - India hosts **1,700+ GCCs** employing **19+ lakh professionals**.
 - Revenue: **USD 64.6 billion (FY24)** from USD 40.4 billion (FY19).
- **Data Centres:** Capacity projected to reach **8 GW by 2030** (from 1.4 GW in Q2 2025).
- **GenAI Ecosystem:** Active GenAI startups grew from 240 (H1 CY2024) to **890 (H1 CY2025)**; cumulative funding reached **USD 990 million**.

- **Cybersecurity:** Market valued at **USD 6.0 billion (2023)**, growing at **30%**. India ranked **Tier-1** on ITU Global Cybersecurity Index (2024).

5.3 Transport Services

- **Ports:** Cargo handled increased from 1,052 MT (FY15) to **1,603 MT (FY25)**; growth of **8.2%** (Apr-Dec FY26). Average turnaround time improved to **30 hours** (from 43 hours in FY15).
- **Aviation:**
 - Passengers: **411.8 million (FY25)**, up **9.4%**; moderated to **3.5%** growth (Apr-Nov 2025).
 - Air Cargo: **3.7 MT (FY25)**, growth moderating to **5.0%** (Apr-Nov 2025).
- **Railways:** Freight loading reached **1,215 MT (Apr-Dec FY26)**, up **3.3% YoY**. Average daily loading: **4.4 million tonnes**.

5.4 Telecommunications

- **Connectivity:** Telephone connections exceed **1.2 billion** (tele-density: **86.8%**); Internet subscriptions: **101.8 crore** (Sep 2025).
- **Data Consumption:** Average monthly consumption per subscriber: **25 GB** (up from 62 MB in 2014).
- **Affordability:** Data prices fell to **₹8.3/GB** (from ₹300/GB in 2014).
- **Indigenous Technology:** End-to-end domestic **4G and 5G (NSA)** core network technologies developed.

5.6 Media and Entertainment (M&E)

- **Market Size:** **₹2.5 trillion (2024)**.
- **Digital Shift:** Digital media contributes **one-third** of total revenues.
- **High-Growth Segments:**
 - Animation & VFX: **₹103 billion (2024)**.
 - Gaming: **₹232 billion (2024)**.
 - Live Entertainment/Concert Economy: Crossed **₹100 billion (2024)**.
- **Orange Economy:** Creative and cultural industries driving value through intellectual property and experiential consumption.

5.7 Commercial Space and Ocean Services

- **Space Sector Valuation:** **USD 8.4 billion** (2% of global market), projected to reach **USD 44 billion** over the next decade.

- **Commercial Launches:** 393 foreign satellites launched for 34 countries (2015–2024), earning USD 143 million + EUR 272 million.
- **NewSpace India Limited (NSIL) Revenue:** Grew from ₹322 crore (FY20) to ₹2,940 crore (FY23); projected ₹3,246 crore (FY25).
- **Private Ecosystem:** Over ₹1,000 crore in private funding to the "NewSpace" ecosystem (FY23).
- **Policy Support:** Indian Space Policy (2023), IN-SPACe operationalization, and liberalized FDI norms enabling public-private partnerships.

6. STRATEGIC CHALLENGES AND POLICY PRIORITIES

6.1 The "State Capacity" Debate

- Services exports may not exert the same "disciplining effect" on state infrastructure as goods exports because:
 - They are firm-selective rather than system-forcing (can bypass domestic institutional weaknesses via bandwidth and legal contracting).
 - Allow "exit without voice" (firms can relocate teams across borders with low friction).
 - Are less employment-intensive per dollar earned and weakly linked to domestic supply chains, reducing urgency for institutional reform.

6.2 Servicification of Manufacturing

- Services now constitute 30% of **manufacturing export value** in advanced economies (25% in developing economies).
- In India, domestic services value added accounts for 17.7% of manufacturing export value (2020), exceeding 20–25% in electronics, metals, and textiles.

- **Implication:** Manufacturing competitiveness increasingly depends on efficient service inputs (logistics, ICT, R&D, after-sales support).

6.3 Policy Priorities

- **Skills and Adaptation:** Bridge widening skills gaps in data analytics, cybersecurity, cloud computing, and AI; address automation of routine tasks.
- **Regulatory Environment:** Simplify processes for digital services; provide tax clarity for data hosted by foreign entities.
- **Infrastructure:**
 - Recognize data centers as distinct from "commercial buildings" under National Building Code.
 - Enable energy-intensive data centers to access renewable power.
 - Develop long-distance hiking trails and national marina policy.
- **Mobility:** Facilitate visas for skilled professionals to overcome tighter immigration regimes in advanced economies.
- **Innovation Ecosystem:** Strengthen public-private research partnerships (modeling Singapore's RIE plans); support mission-driven R&D in AI, semiconductors, and clean energy.

7. Conclusion

- The services sector has strengthened India's economic resilience and structural transformation. Sustaining this trajectory requires continuous innovation, workforce reskilling, regulatory simplification, and strategic international engagements to navigate evolving global competition and technological disruption.

INDUSTRY'S NEXT LEAP: STRUCTURAL TRANSFORMATION AND GLOBAL INTEGRATION

INTRODUCTION

1.1 Current Industrial Landscape

- The industrial sector in FY 2025-26 demonstrated resilience despite global

headwinds, regaining momentum through a shift toward **high-technology manufacturing**.

- Competitiveness increasingly depends on **strategic indispensability within Global**

Value Chains (GVCs) rather than mere cost arbitrage.

- **Policy Anchors:**
- **Production Linked Incentive (PLI) Scheme:** Driving investments in electronics and emerging technologies.
- **National Manufacturing Mission (NMM):** Long-term blueprint to boost manufacturing, transitioning India from technology adopter to global innovator.
- **Anusandhan National Research Foundation (ANRF) and Research, Development & Innovation (RDI) Fund:** Crowding-in private R&D for strategic sectors like semiconductors.
- **PM GatiShakti and National Industrial Corridor Development Programme:** Enhancing logistics efficiency and infrastructure connectivity.

1.2 Five Pillars of Competitiveness To achieve the vision of **Viksit Bharat @2047**, sustained reforms across five structural pillars are emphasized:

1. Ease of Doing Business
2. R&D and Innovation
3. Skilling
4. Infrastructure & Logistics
5. Scaling up MSMEs

2. GLOBAL MANUFACTURING: UNEVEN RECOVERY AND TECHNOLOGICAL SHIFTS

2.1 Global Performance (2025)

- World manufacturing output expanded by only **0.7% in Q3 2025**, with uneven regional performance:
- **Africa:** Led growth (+1.3%)
- **India & China:** Strong growth (+1.3% each)
- **Latin America & Caribbean:** Declined (-0.6%)
- **Europe:** Stagnation (0.1%)

2.2 Shift Toward High-Tech Value Chains

- **Medium and high-technology industries** expanded by **1.7% and 1.4%** (Q2 and Q3 2025), outpacing stagnant low-tech segments.
- Future manufacturing success depends on embedding into GVCs as **high-tech, high-productivity hubs** supported by stable policy environments.

- Countries are recalibrating industrial strategies to reduce vulnerability to external disruptions and secure reliable positions in global production networks.

3. DOMESTIC INDUSTRIAL PERFORMANCE

3.1 Growth Trajectory

- **Industry GVA:** Grew by **7.0% YoY** in H1 FY26 (real terms), up from **5.9%** in FY25.
- **Manufacturing GVA:** Showed clear recovery with **7.72%** (Q1) and **9.13%** (Q2 FY26) growth.
- **Structural Composition: Medium and high-technology activities** now account for **46.3%** of India's total manufacturing value added.

3.2 Forward-Looking Indicators

- **Manufacturing PMI:** Remained consistently above the expansion threshold (50) from March 2023 to present, averaging in the **mid-50s to high-50s**.
- **Business Expectations Index (RBI):** Consistently above the neutral benchmark of 100 through FY25 and Q2 FY26, signaling positive sentiment on output, employment, and investment.
- **India's Competitive Industrial Performance (CIP) Ranking:** Improved from **40th (2022) to 37th (2023)**.

3.3 Industrial Credit Trends

- **Bank Credit Growth:** Moderated to **8.24% in FY25** (from 9.39% in FY24), indicating diversification toward non-bank funding sources.
- **Sectoral Credit Highlights (FY25):**
 - Engineering: **21.98%** growth
 - Rubber/Plastic Products: **14.36%**
 - Petroleum Products: **16.49%**
 - Wood Products: **16.73%**

4. CORE INPUT INDUSTRIES

4.1 Cement

- **Global Position:** 2nd largest producer after China.
- **Capacity:** Installed capacity of **690 million tonnes**, with production of **453 million tonnes (FY25)**.
- **Geographic Concentration:** 85% of industry concentrated in Rajasthan, AP, Telangana,

Karnataka, MP, Gujarat, TN, Maharashtra, UP, Chhattisgarh, and West Bengal.

- **Per Capita Consumption:** 290 kg (vs. global average of 540 kg).

4.2 Steel

- **Global Status:** 2nd largest crude steel producer.
- **FY26 Performance (Apr-Oct):** Crude production up **11.7%**, finished steel up **10.8%**, consumption up **7.8%**.
- **Challenges:** International price disparity, raw material security (dependence on imported coking coal), transition to net importer status in FY26 due to low international prices.
- **Mission Coking Coal:** Target to enhance domestic production to **140 MT**.

4.3 Coal

- **Production Milestone:** **1,047.52 MT in FY25** (highest ever, up 4.98%).
- **Self-Reliance:** Imports declined **7.9%** to **243.62 MT**; domestic production-to-consumption ratio steadily improving.

4.4 Chemicals & Petrochemicals

- **GVA Contribution:** **8.1%** of overall manufacturing GVA.
- **Production:** Reached **58,617 thousand MT in FY25**.

5. CAPITAL AND CONSUMER GOODS INDUSTRIES

5.1 Capital Goods

- **Trends:** Export performance aligned with domestic capacity expansion; imports growing due to reliance on technologically advanced machinery.
- **Policy Support:** Phase II of the Scheme on Enhancement of Competitiveness (2022) sanctioned **29 projects** worth ₹891.37 crore (government contribution: ₹714.64 crore).

5.2 Automobile Sector

- **Global Standing:** Largest market for two-wheelers and three-wheelers; 3rd largest for passenger vehicles (PV) and commercial vehicles (CV).
- **Growth:** **33% production growth** over the last decade (FY15-FY25).

- **Exports:** Over **5.3 million vehicles** shipped in FY25; double-digit growth in H1 FY26.
- **Electric Vehicle (EV) Transformation:**
- EV registrations: **CAGR of 62.5%** (FY20-FY25).
- **PM E-DRIVE Scheme:** ₹10,900 crore outlay (launched Sep 2024).
- **PLI-Auto:** ₹25,938 crore outlay; cumulative investment of ₹35,657 crore till Sep 2025.
- **PSM for e-Buses:** Support for 38,000+ electric buses.
- **SMEC:** Scheme to promote manufacturing of electric passenger cars (minimum investment USD 500 million).

5.3 Electronics

- **Structural Transformation:** Ascended from 7th largest export category (FY22) to **3rd largest and fastest-growing (FY25)**.
- **Production Surge:** Mobile manufacturing grew **30-fold** from ₹18,000 crore (FY15) to ₹5.45 lakh crore (FY25).
- **Global Position:** Transitioned from net importer to **2nd largest mobile phone manufacturer**.
- **H1 FY26 Exports:** USD 22.2 billion.
- **Key Initiatives:**
- **PLI:** ₹9.34 lakh crore cumulative production; ₹13,759 crore investment.
- **ECMS:** Electronics Component Manufacturing Scheme (₹22,919 crore outlay).
- **India Semiconductor Mission:** ₹76,000 crore programme; 10 projects approved with ₹1.60 lakh crore investment.

5.4 Pharmaceuticals

- **Global Ranking:** 3rd largest by volume; **11th by value**.
- **Export Growth:** **CAGR of 7%** (FY15-FY25); exports to 191 countries.
- **Turnover:** ₹4.72 lakh crore (FY25).
- **Medical Devices:** Exports grew from USD 2.5 billion (FY21) to **USD 4.1 billion (FY25)**.
- **Strategic Shifts:** Moving from volume-driven to value-driven approach (complex generics, biosimilars, innovation).
- **PLI Impact:** ₹4,763 crore investment in bulk drugs; manufacturing capacity of 55,000 MT/year for 26 critical products.

5.5 Textiles

- **Size:** USD 179 billion; **2% of GDP, 11% of manufacturing GVA.**
- **Exports:** USD 37.75 billion (FY25), up from USD 35.87 billion (FY24).
- **Comparative Advantage:** Largest cotton cultivator; 2nd largest in silk, cotton, and man-made fibers.
- **Structural Challenges:** Small scale/fragmentation, heavy reliance on cotton (vs. global MMF focus), limited FDI.
- **Reforms:** PM-MITRA Scheme, revised PLI for MMF/Technical Textiles (Oct 2025), revocation of QCOs on polyester/viscose value chains.

6. KEY POLICY INITIATIVES FOR MANUFACTURING

6.1 Production Linked Incentive (PLI) Schemes

- **Coverage:** 14 sectors with ₹1.97 lakh crore outlay.
- **Achievements (till Sep 2025):**
- Actual Investment: **>₹2.0 lakh crore**
- Incremental Production/Sales: **>₹18.70 lakh crore**
- Employment: **>12.60 lakh jobs** (direct & indirect)
- Cumulative Incentives Disbursed: **₹23,946 crore**
- Exports: **>₹8.20 lakh crore**
- **Sectoral Success:** Electronics emerged as flagship success; pharmaceutical domestic value addition reached **83.74%**.

6.2 National Manufacturing Mission (NMM)

- **Announcement:** Union Budget 2025-26.
- **Targets for 2035:**

 1. Double manufacturing's GDP contribution from **12.9% (2023) to 25%**.
 2. Generate **143 million jobs**.
 3. Boost merchandise exports to **USD 1.2 trillion**.

 - **Three-Pronged Approach:**
 - 4. **Scale Archetype** (Automotive, Pharmaceuticals): Rapid expansion.
 - 5. **Fix and Transform** (Electronics, Capital Goods): Structural reform.

6. **Seed Archetype** (Semiconductors, EVs): Strategic, innovation-led growth.

7. INNOVATION, R&D, AND TECHNOLOGY LEADERSHIP

7.1 Research Output and Rankings

- **Scholarly Publications:** 3rd position globally (up from 7th in 2010).
- **Global Innovation Index (GII):** Improved from **66th (2019) to 38th (2025)**.
- **QS World University Rankings:** Institutions increased from 11 (2015) to **54 (2026)**.

7.2 Intellectual Property Expansion

- **Patent Applications:** Nearly doubled from FY20 to FY25.
- **Trademark Registrations:** Grew 1.5 times.
- **Design Registrations:** Increased 2.5 times.
- **Global Rankings (2024):** 4th in trademarks, 6th in patents, 7th in industrial designs.

7.3 Startup Ecosystem

- **DPIIT-Recognized Startups:** Grew from 500 (2016) to **>2 lakh (2025)**.
- **WIPO Ranking:** 12th globally for entrepreneurship policies and culture.
- **Critical Technology Tracker (ASPI):** India ranks in **top 5 in 45 out of 64 critical technologies** (vs. only 4 technologies in 2003-2007), including:
 - 3rd in Advanced Aircraft Engines, Autonomous Underwater Vehicles, post-quantum cryptography.
 - 2nd in Biological Manufacturing, Advanced Composite Materials.

7.4 R&D Expenditure Challenges

- **Gross Expenditure on R&D (GERD):** **0.64% of GDP** (vs. US 3.48%, China 2.43%, South Korea 4.91%).
- **Private Sector Contribution:** Only **41%** of total R&D (vs. 75-79% in leading economies).
- **Institutional Reforms:**
- **ANRF Act, 2023:** Strategic direction for industry-academia-government collaboration.
- **RDI Fund:** ₹1 lakh crore over six years (₹20,000 crore for FY26) to catalyze private high-tech R&D.

- **National Missions:** Quantum, Cyber-Physical Systems, IndiaAI, Semiconductor, Green Hydrogen.

7.5 Semiconductor Mission Strategy

- **R&D Intensity:** Semiconductors require intensive R&D (US firms spend 17.7% of sales on R&D).
- **Manufacturing Costs:** Modern fab costs USD 10 billion.
- **India's Approach:**
- **Design Linked Incentive:** Supporting domestic chip design.
- **Fabrication Incentives:** 50% fiscal support for fabs, display manufacturing, compound semiconductors.
- **Current Status:** 10 projects approved (₹1.60 lakh crore investment) across 6 states.

8. QUALITY CONTROL AND STANDARDS

8.1 Quality Control Orders (QCOs)

- **Coverage Expansion:** From 214 products (2019) to 723 products (Dec 2025) across 143 QCOs.
- **Strategic Purpose:** Ensure quality standards, protect consumers, curb substandard imports.
- **Success Story:** Toys sector – imports declined 52% (FY15–23), exports rose 239%; India became net exporter.

8.2 Pragmatic Implementation

- **MSME Considerations:** Calibrated transition periods, adequate testing infrastructure.
- **Raw Materials/Intermediates:** Exceptional caution required; 46 QCOs revoked in 2025–26 where domestic alternatives scarce.
- **Balance:** Avoiding cascading cost increases while maintaining quality discipline.

9. INFRASTRUCTURE, LOGISTICS, AND CLUSTER DEVELOPMENT

9.1 PM GatiShakti

- **Integration:** 57 Ministries/Departments onboarded; 1,700+ data layers integrated into National Master Plan.
- **State Adoption:** 27 States notified State Logistics Policies; 28 Aspirational Districts using District Master Plan Module.

- **Public Access:** PM GatiShakti Public portal provides 230 curated datasets for private investment planning.

9.2 Logistics Efficiency

- **Logistics Costs:** Reduced to 7.97% of GDP (FY24) from 8.84% (FY23) and 8.79% (FY22).
- **Digital Integration:** Unified Logistics Interface Platform (ULIP) connects 44 systems across 11 ministries; 1,700+ companies registered; 200 crore API transactions.

9.3 Industrial Corridors and Clusters

- **National Industrial Corridor Development Programme:**
- Phase-I cities (Dholera, Shendra-Bidkin, Greater Noida, Vikram Udyogpuri) operational.
- 350 industrial plots allotted; ₹2.02 lakh crore investment across electronics, renewables, pharma, EVs.
- **Cluster Strategy Imperative:**
- Learning from China (Greater Bay Area) and Vietnam – successful integration requires concentrated, high-productivity clusters.
- **Three Pillars:** Scale & location (brownfield focus), empowered institutional mechanisms (regulatory flexibility), private execution (master planning).
- **Tier-2/3 Expansion:** Hubballi-Dharwad-Belagavi emerging as advanced manufacturing cluster; Nashik's luggage ecosystem (Samsonite) now world's largest by volume.

10. MSMEs: COMPETITIVENESS, CREDIT, AND FORMALISATION

10.1 Economic Significance

- **Contribution:** 35.4% of manufacturing, 48.58% of exports, 31.1% of GDP.
- **Scale:** 7.47 crore enterprises employing 32.82 crore persons (2nd largest employer after agriculture).

10.2 Credit and Financing

- **Growth:** MSME credit growth significantly outpacing large industry credit (Table VIII.3).
- Total MSME Credit: 18.5% YoY (Aug 2025) vs. Large Industry: 1.8%.
- Micro & Small: 20.9% growth (Aug 2025).

- **Revised Classifications** (April 2025): Expanded eligibility for priority sector lending.
- **Credit Guarantee:**
- Ceiling doubled from ₹5 crore to **₹10 crore** (April 2025).
- Women-owned MSEs: Guarantee coverage increased from 85% to **90%**.
- **Self-Reliant India (SRI) Fund:** ₹15,442 crore invested in 682 MSMEs (as of Nov 2025).
- **SME IPO Boom:** Listings surged **87.2%** (2022-23 to 2024-25); retail participation via UPI-ASBA.

10.3 Delayed Payments and ODR

- **Challenge:** Estimated **₹8.1 lakh crore** locked in delayed payments.
- **Solution: MSME ODR Portal** (Online Dispute Resolution) for amicable settlement before formal adjudication; multilayered resolution (negotiation, conciliation, arbitration); 24/7 availability in multiple languages.

10.4 Unincorporated Enterprises

- **Credit Access:** Average loan per establishment increased **7.12%** (2023-24).
- **Formalization Shift:** Share accessing formal credit rose from **48% (2021-22) to 51% (2023-24)**.
- **Small Ticket Loans Gap:** For loans <₹50,000, reliance on friends/family (**42%**) and moneylenders (**23%**) remains high; formal banks serve only **7%** of this segment.
- **Interest Burden:** Formal sources (commercial banks, cooperatives) charge significantly lower interest than informal lenders.

10.5 State-Led Innovation Finance

- **Maharashtra's Defence & Aerospace Venture Fund (MDAVF):** ₹330 crore Category II-AIF supporting precision engineering, aerospace, UAV systems; alignment with Defence Production and Export Promotion Policy (DPEPP).

11. GLOBAL VALUE CHAIN (GVC) INTEGRATION

11.1 Current Position

- India's share in global manufacturing GVA: **2.9%**; global merchandise exports: **1.8%** (2024).
- **Limited GVC participation**, particularly backward linkages (importing intermediates for assembly).

11.2 Backward Participation Strategy

- **Evidence:** Higher backward participation (importing inputs) initially raises Foreign Value Added (FVA) but generates higher absolute Domestic Value-Added (DVA) and employment through scale effects.
- **Comparison with Vietnam:**
- **BVAX Ratio** (Foreign value added in exports): India **17.2%** (2020) vs. Vietnam **48%**.
- In electronics: Vietnam's BVAX was **49.8%** vs. India's **25.4%**, yet Vietnam generated greater absolute DVA due to scale.
- **Policy Implication:** Input tariff neutrality essential; recent budgets corrected inverted duty structures in core sectors; continued calibration needed for intermediates and capital goods.

11.3 Advanced Manufacturing as Systemic Discipline

- **Strategic Rationale:** Advanced manufacturing enforces productivity, quality, and reliability at scale; creates "systemic discipline" where institutional weaknesses translate immediately into economic costs.
- **Complementarity:** While services and infrastructure raise incomes, advanced manufacturing forces capability and efficiency at scale, compelling governance upgrades.

12. CONCLUSION AND ROADMAP FOR VIKSIT BHARAT @2047

12.1 Current Momentum

- Strong industrial performance despite global challenges; rise of medium/high-tech manufacturing; diversified fundraising; healthier corporate balance sheets; MSME integration through digital platforms.

12.2 Strategic Shift Required

- From **import substitution** to **scale, competitiveness, innovation, and GVC integration**.
- From **standalone firm support** to **ecosystem/cluster-based competition** integrating anchor firms, MSMEs, suppliers, skills, and logistics.
- From **technology adoption** to **technology innovation** (TRL 7-9 commercialization).

12.3 Actions

- **Innovation:** Bridge gap between academic discovery (TRL 1-3) and industrial commercialization (TRL 7-9) through Translational Research Centres (TRCs).
- **Tariff Policy:** Maintain input tariff neutrality to deepen assembly and component ecosystems.

- **Clusters:** Develop high-productivity, reform-enabled industrial clusters with scale, supplier depth, and shared infrastructure.
- **Sequenced Capability Building:** Support progression from assembly → components → systems → design/IP-intensive activities.
- **Risk Absorption:** State role as strategist, coordinator, and capability builder in select sectors of national interest.

13. Conclusion

- Manufacturing capacity is a **strategic national asset** central to employment, productivity, technological learning, exports, and strategic resilience.
- With sustained reform, innovation investment, and private sector participation, industry can become the central pillar of India's journey to Viksit Bharat.

INVESTMENT AND INFRASTRUCTURE: STRENGTHENING CONNECTIVITY, CAPACITY AND COMPETITIVENESS

1. INTRODUCTION: INFRASTRUCTURE AS THE ENGINE OF GROWTH

1.1 Strategic Shift in Infrastructure Development

- **Scale and Integration:** Infrastructure investment has shifted from mere capacity addition to integrated, system-level planning focused on efficiency, competitiveness, and network connectivity.
- **Public Capex Trajectory:** Government capital outlay increased by **89%** from ₹5.92 lakh crore (FY22) to **₹11.21 lakh crore (FY26 BE)**.
- **Multiplier Effect:** Public infrastructure expenditure generates GDP multiplier effects of **2.5 to 3.5 times** over the medium term.
- **Broadened Definition:** Infrastructure now encompasses Digital Public Infrastructure (DPI), clean energy, resilient water systems, and emerging sectors beyond traditional physical assets.

1.2 Institutional Reforms and Planning

- **PM GatiShakti:** Institutionalized multimodal, GIS-enabled planning with **57 Ministries/Departments** onboarded and

1,700+ data layers integrated into the National Master Plan.

- **PM GatiShakti Public:** Launched to democratize access to geospatial data for private developers and researchers.
- **National Logistics Policy (NLP):** Creating predictable, digitized logistics environments through ULIP (Unified Logistics Interface Platform) and LEADS (Logistics Ease Across Different States).

2. ENHANCING INFRASTRUCTURE FINANCING AND PRIVATE PARTICIPATION

2.1 Diversification of Funding Sources

- **Bank Credit Moderation:** Infrastructure bank credit grew **4.6% YoY** (Oct 2025), but incremental expansion increasingly driven by non-bank sources.
- **NBFC Growth:** Credit from NBFCs to commercial sector grew at **43.3% CAGR (FY20-FY25)** vs. 25% for non-food bank credit.

2.2 Regulatory Frameworks

- **RBI (Project Finance) Directions 2025** (effective Oct 2025):
- Unified framework for project lending across financial institutions.
- Revised treatment of Date of Commencement of Commercial Operations (DCCO) to prevent artificial "evergreening."
- Alignment with Harmonised Master List (HML) of infrastructure sub-sectors.

2.3 Public-Private Partnerships (PPPs)

- **Global Standing:** India ranks among top 5 countries for private investment in infrastructure among low and middle-income economies; **>90% of South Asia's PPI investment.**
- **PPPAC Approvals:** Project approvals surged to **28 projects** (₹1.05 lakh crore) in FY26 (up to Nov) from 6 projects (₹8,890 crore) in FY23.
- **Viability Gap Funding (VGF):** 72 projects approved with ₹7,942 crore sanctioned; up to 40% grant for economic sectors, 80% for social sectors.
- **Three-Year Pipeline:** **852 projects** worth ₹17 lakh crore identified across Central Ministries and States/UTs.
- **Institutional Capacity:** National Infrastructure Enablement Index (NIEI) developed to assess States/UTs preparedness.

3. CORE PHYSICAL INFRASTRUCTURE

3.1 Roadways and Highways

- **Network Expansion:** National Highways (NH) network increased **60%** from 91,287 km (FY14) to **146,572 km** (FY26).
- **High-Speed Corridors (HSC):** Operational HSCs expanded 10 times from 550 km (2014) to **5,364 km**, targeting **26,000 km** by FY33.
- **Construction Acceleration:** Average annual construction increased **2.3 times** from 4,174 km (2004-14) to **9,704 km** (2014-25).
- **Capital Expenditure:** Increased **5.8 times** from ₹0.53 lakh crore (FY15) to **₹3.06 lakh crore** (FY26 BE).
- **Rural Connectivity:**
- **Pradhan Mantri Gram Sadak Yojana (PMGSY):** 99.7% eligible habitations connected; PMGSY-IV launched (Sept 2024) to

connect 25,000 unconnected habitations (62,500 km, ₹70,125 crore).

- **PM-JANMAN (Pradhan Mantri Janjati Adivasi Nyaya Maha Abhiyan):** 2,495 roads (7,324 km) sanctioned for Particularly Vulnerable Tribal Groups.

3.2 Railways

- **Network Expansion:** Total rail network reached **69,439 km** (March 2025); targeting 3,500 km addition in FY26.
- **Electrification:** **99.1%** of network electrified (Oct 2025).
- **Dedicated Freight Corridors (DFCs):** **2,741 km (96.4%)** of 2,843 km network commissioned; Eastern DFC fully completed (1,337 km).
- **Station Redevelopment:** **1,337 stations** under Amrit Bharat Station Scheme; 15 stations for PPP development.
- **Safety:** Large-scale deployment of **Kavach** (Automatic Train Protection), electronic interlocking, and automatic block signaling.

3.3 Civil Aviation

- **Market Position:** World's **3rd largest domestic aviation market.**
- **Airport Expansion:** Number of airports increased from **74 (2014) to 164 (2025).**
- **Traffic Growth:**
- Passengers: 412 million (FY25) → projected **665 million** (FY31).
- Cargo: 2.53 MMT (FY15) → **3.72 MMT** (FY25).
- **Regional Connectivity:** UDAN scheme operationalized **657 routes** connecting 93 airports; modified UDAN targets 120 new destinations and 4 crore passengers over 10 years.
- **Legislative Reforms:**
- **Bharatiya Vayuyan Vidheyak, 2024:** Modernizes aviation sector governance.
- **Protection of Interests in Aircraft Objects Act, 2025:** Aligns leasing laws with global standards.

3.4 Ports and Shipping

- **Cargo Performance:** Total cargo handled at major/non-major ports increased from **1,052 MMT** (FY15) to **1,602 MMT** (FY25).

- **Efficiency:** Average container vessel turnaround time reduced from **43.44 hours (FY15) to 30.08 hours (FY25)**.
- **Global Rankings:** Two Indian ports in top 30, seven in top 100 (World Bank Container Port Performance Index 2024).
- **Legislative Reforms:** Merchant Shipping Act 2025, Coastal Shipping Act 2025, Indian Ports Act 2025, Bills of Lading Act 2025.

3.5 Inland Water Transport (IWT)

- **Network:** 32 National Waterways operational (5,155 km); cargo operations on 29 NWs.
- **Cargo Growth:** Increased from **18 MMT (2013-14) to 146 MMT (2024-25)**.
- **Jal Marg Vikas Project (NW-1):** Cargo movement increased **220%** from 5.05 MMT (2014-15) to 16.38 MMT (2024-25); completion targeted June 2026.
- **Urban Model: Kochi Water Metro** (operational 2023) serves as scalable template for 21 cities; offers **1/10th cost** advantage over elevated metro.
- **Vision:** Increase modal share from **2% to 5%**; cargo target **200+ MMT by 2030** and **500 MMT by 2047**.

3.6 Shipbuilding

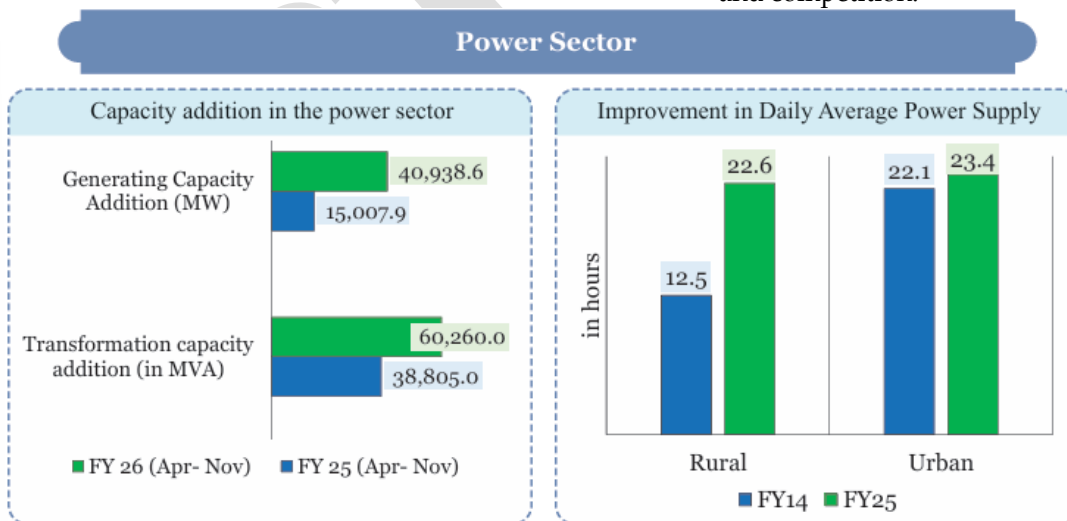
- **Comprehensive Package:** ₹69,725 crore approved (Sept 2025) including:

- **Shipbuilding Financial Assistance Scheme:** ₹24,736 crore corpus.
- **Maritime Development Fund:** ₹25,000 crore (₹20,000 crore investment fund + ₹5,000 crore interest incentivization).
- **Shipbuilding Development Scheme:** ₹19,989 crore for capacity expansion to 4.5 million GT annually.

4. ENERGY SECTOR

4.1 Power Sector Transformation

- **Installed Capacity:** **509.74 GW** (Nov 2025), up 11.6% YoY.
- **Capacity Addition (FY26 Apr-Nov):** **40,938.6 MW** generation capacity.
- **Rural Electrification:** Daily average power supply improved from **12.5 hours (FY14) to 22.6 hours (FY25)** in rural areas; urban from 22.1 to 23.4 hours.
- **DISCOM Turnaround:** Historic **Profit After Tax (PAT) of ₹2,701 crore in FY25** vs. loss of ₹67,962 crore (FY14).
- **AT&C losses** reduced from **22.62% (FY14) to 15.04% (FY25)**.
- **ACS-ARR gap** narrowed from ₹0.78/kWh to ₹0.06/kWh.
- **Legislative Reform:** Electricity (Amendment) Bill, 2026 proposed for cost-reflective tariffs and competition.



Source: Executive Summary Report (November 2025), Central Electricity Authority.

Source: Ministry of Power.

Power Distribution Turnaround:
Profit After Tax: ₹67,962 crore loss (FY14) → ₹2,701 crore profit (FY25)
AT&C Losses: 22.62% (FY14) → 15.04% (FY25)

4.2 India Energy Stack (IES)

- **Digital Public Infrastructure** for power sector enabling:
- Consent-based data sharing and peer-to-peer electricity trading.
- Monetization of distributed assets (rooftop solar, batteries, EVs).
- Reduced transaction costs for consumers, DISCOMs, and startups.
- Livelihood creation for women SHGs and rural micro-entrepreneurs.

4.3 Renewable Energy

- **Capacity: 253.96 GW** (Nov 2025), constituting **49.83%** of total installed capacity.
- **Growth:** More than **3-fold increase** from 76.38 GW (March 2014).
- **FY26 Additions: 34.56 GW** (largest ever 8-month addition) led by Solar (27.20 GW), Wind (3.95 GW), Hydro (2.68 GW).
- **Global Ranking:** 3rd in overall RE capacity and solar; 4th in wind.
- **Composition:** Solar (52%), Large Hydro (20%), Wind (21%), Bio Energy (5%), Small Hydro (2%).

5. FUTURE-READY DIGITAL INFRASTRUCTURE

5.1 Telecommunications

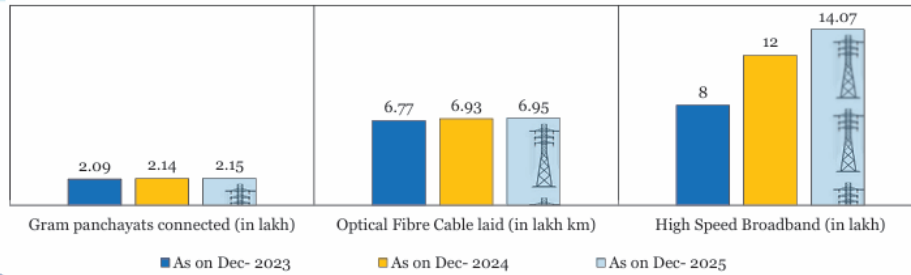
- **Connectivity:** Tele-density improved from **75.23% to 86.76%**; rural growth outpacing urban.
- **Internet/Broadband:** Connections surged from 25.2 crore (2014) to **101.78 crore (2025)**.
- **Affordability:** Wireless data prices fell from ₹268.97/GB (2014) to **₹8.27/GB (2025)**; monthly consumption rose from 0.06 GB to **25.24 GB**.
- **5G Rollout:** Available in **99.9% districts**; 5.18 lakh 5G BTS installed; 100 5G Use Case Labs established.
- **BharatNet:** Broadband connectivity to **2.14 lakh Gram Panchayats**; 14.07 lakh high-speed broadband connections.
- **Manufacturing:** PLI Scheme (₹12,195 crore) enabled ₹1 lakh crore sales, ₹21,000 crore exports, 30,000 jobs.
- **6G:** Bharat 6G Vision and Alliance guiding research and standardization.

5.2 Information Technology and Data Centres

- **Current Capacity:** 1,280 MW (June 2025) across 130 private and 49 government data centres.
- **Projection: 4 GW by 2030.**
- **Cloud Infrastructure:** MeghRaj initiative with 26 empanelled Cloud Service Providers supporting e-Governance applications.

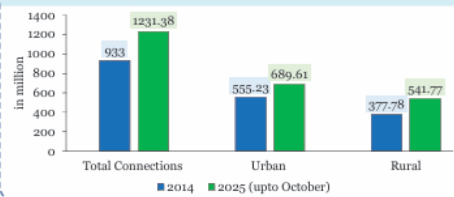
Improving Digital Connectivity

Progress in Telecommunication Infrastructure (Bharat Net Progress)



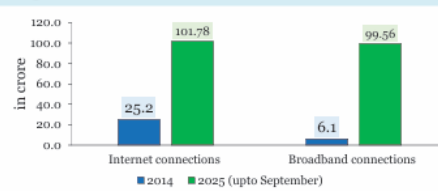
Source: Digital Bharat Nidhi Dashboard, Department of Telecommunications.

Expansion of Telecom Access



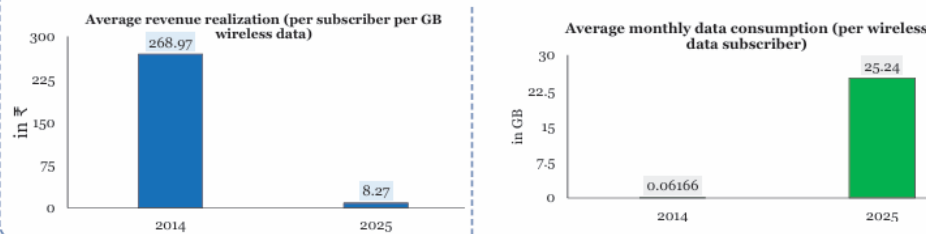
Source: Department of Telecommunications.

Expansion of Internet and Broadband Connectivity



Source: Department of Telecommunications.

Affordability Driving Surge in Monthly Data Consumption



Source: Department of Telecommunications. Note: Data for 2025 is as of September 2025

6. SOCIAL AND EMERGING SECTOR INFRASTRUCTURE

6.1 Rural Drinking Water and Sanitation

- **Jal Jeevan Mission:** 81% coverage achieved; 15.76 crore rural households provided Functional Household Tap Connections (FHTCs) (up from 3.23 crore in Aug 2019).
- **Extension:** Mission extended to 2028 with additional ₹67,000 crore allocation.

6.2 Water Resources Management

- **Namami Gange:**
- Hybrid Annuity Model (HAM-PPP) for Sewage Treatment Plants.
- Gangetic Dolphin population increased from 3,500 (2015) to 6,327 (2021-23).
- 33,024 hectares afforestation along Ganga corridor.
- **C-Flood Platform:** Village-level 2-day advance flood forecasts for Mahanadi, Godavari, Tapi basins.

- **River Cities Alliance:** Expanded from 30 to 145 cities.

6.3 Tourism Infrastructure

- **Swadesh Darshan 2.0:** 53 projects (₹2,208.87 crore) sanctioned for sustainable destination development.
- **PRASHAD:** 54 projects (₹1,726.74 crore) for pilgrimage/heritage site development in 28 States/UTs.

6.4 Space Sector

- **Active Assets:** 56 active space assets (20 communication, 21 earth observation, 8 navigation).
- **Major Achievements (2025):**
- **SpaDeX Mission:** 4th nation to achieve autonomous satellite docking.
- **GSLV-F15:** 100th lift-off from Sriharikota (NVS-02 satellite).
- **Axiom-04:** Indian astronaut conducted experiments on International Space Station.

- **NISAR Mission:** NASA-ISRO Synthetic Aperture Radar launched.
- **LVM3-M6:** Heaviest payload (BlueBird Block-2) placed in LEO.
- **Private Participation:**
- **300+ space startups** emerged.
- **IN-SPACe:** Single-window agency for non-governmental entities.
- **Technology Adoption Fund:** ₹500 crore launched (Feb 2025).
- **100% FDI** allowed through automatic routes in less sensitive categories.
- **Vision 2047:** Bharatiya Antariksh Station by 2035; first manned lunar mission by 2040.

7. CONCLUSION AND WAY FORWARD

7.1 Transformation Summary

- Infrastructure strategy has shifted decisively toward **scale, integration, and quality** with sustained public capex as growth catalyst.

ENVIRONMENT AND CLIMATE CHANGE: BUILDING A RESILIENT, COMPETITIVE AND DEVELOPMENT-DRIVEN INDIA

1. INTRODUCTION

1.1 Lessons from Advanced Economies

- **Transition Challenges in Europe:**
- Netherlands facing grid congestion, curtailment, and industrial connection delays due to renewable deployment outpacing grid readiness
- Spain's April 2025 blackout triggered by network instability during high renewable output
- Germany and UK experiencing rising energy prices due to declining firm power sources
- **Key Insight:** Transitions require sequencing, system buffers, redundancy, and institutional capacity; rapid decarbonization ahead of grid readiness creates "entropy effects" (systemic volatility)

1.2 Evolving Climate Discourse

- Shift from ideological signaling to engineering and financial realism
- Emphasis on uncertainty and natural variability in climate models
- Bill Gates' perspective (COP 30): Prioritize

- Tangible efficiency gains: shorter travel times, faster freight movement, improved logistics, wider service access.
- Institutional frameworks (PM GatiShakti, NLP) strengthening project preparation and execution.

7.2 Future Priorities

- **Evolution Beyond Physical:** Expanding to encompass DPI, clean energy, resilient water management, and future-ready technologies.
- **Sustained Momentum:** Maintaining investment flows, deepening private participation, and aligning with emerging priorities.
- **Strategic Enablers:** Decarbonization, digitalization, and resilience as central pillars for **Viksit Bharat @2047**.

human welfare; innovation over rapid constraints

1.3 India's Three-Pillar Climate Strategy

1. **Adaptation First:** Public investment-led, addressing physical risks (extreme weather, water security, sea-level rise)
2. **Pragmatic Mitigation:** Scaling renewables while ensuring energy security, affordability, and industrial competitiveness
3. **Domestic Resource Mobilization:** Reducing reliance on international climate finance due to inadequate flows to developing countries

1.4 Core Principles

- Development as adaptation: Growth strengthens resilience
- Per capita emissions remain well below global average (2.9t vs 6.7t globally in 2024)
- Climate action embedded in development priorities, not parallel to them

2. ADAPTATION: STRENGTHENING CLIMATE RESILIENCE

2.1 Financing Context

- **Adaptation Gap:** Developing countries need USD 310–365 billion annually by 2035; current international flows only USD 26 billion.
- **Domestic Investment:** India's adaptation spending surged from 3.7% of GDP (FY16) to 5.6% (FY22).

2.2 National Action Plan on Climate Change (NAPCC) Nine missions covering:

- Solar energy, energy efficiency, sustainable habitats
- Water management, Himalayan ecosystem, Green India
- Sustainable agriculture, strategic knowledge, and health

2.3 State Action Plans on Climate Change (SAPCCs)

- **Evolution:**
- **2010–15:** Mitigation-oriented, standalone projects, limited budgetary linkage
- **2020 onwards:** Adaptation-led development, district-specific risk analysis, integration with Planning & Finance Departments, convergence with flagship schemes (water, agriculture, urban)

2.4 Subnational Initiatives

- **Meghalaya:** MegARISE project for spring revival; GIS mapping of 55,000 springs; 8,430 hectares plantation; community-based water harvesting
- **Odisha:** 39,000+ Pani Panchayats; Integrated Irrigation Project achieved 67.8% rise in agricultural output, 105% growth in high-value vegetable farming
- **Tamil Nadu:** Coastal Restoration Mission (1,069 km coastline); Blue Economy Project
- **Ahmedabad:** Heat Action Plan (2013) with parametric heat insurance for informal workers (₹354 premium, ₹750–1,250 payouts)
- **Uttarakhand:** Mandakini ki Aawaz community radio for disaster preparedness
- **Jodhpur:** Net-zero cooling stations using passive cooling (8°C cooler than outdoors during peak hours)

2.5 Climate Resilient Villages

- Institutionalizing resilience at grassroots in Karnataka, Tamil Nadu, and Odisha
- Shift from project-based to local governance function

3. MITIGATION: TRANSITION TO LOW-CARBON ECONOMY

3.1 Achievements

- **Non-fossil capacity:** 51.93% of total installed capacity (December 2025), exceeding 50% target
- **Annual additions (2025-26):** 38.61 GW renewable capacity (30.16 GW solar, 4.47 GW wind, 3.24 GW hydro)
- **Global ranking:** 4th in total installed renewable capacity (after China, USA, Brazil)

3.2 Sector-Specific Initiatives

Solar Energy

- 45-fold increase: 3 GW (2014) to 135.81 GW (December 2025)
- PM Surya Ghar Mission: 8 GW rooftop installed
- PM Kusum Component C: 11,781 grid-connected solar pumps; 11.9 lakh feeder-level solarisation
- 55 solar parks with 39,973 MW sanctioned capacity

Wind Energy

- 54.51 GW installed (4th globally); 4.74 GW added (Apr-Dec 2025)
- 30.04 GW projects under implementation
- Viability Gap Funding for offshore wind

Nuclear Energy

- **SHANTI Act, 2025:** Sustainable Harnessing and Advancement of Nuclear Energy for Transforming India
- **Provisions:** Consolidates Atomic Energy Act 1962 and CLNDA 2010; enables private sector participation in operations, manufacturing, and research; graded liability framework without diluting victim compensation
- **Target:** 100 GW by 2047 (current: 8,780 MW)
- **Focus:** Indigenous 700 MWe PHWRs, Small Modular Reactors (BSMR-200, SMR-55)

National Nuclear Energy Mission (2025–26)



₹20,000 cr allocation in Union Budget 2025–26

- Development of 5 indigenously designed SMRs
- Target: Operational by 2033
- Focus on Energy security & clean power

8,780 MW

Current Nuclear Capacity



100 GW by 2047

Target capacity

SHANTI Act – December 2025



- Enables **private & state participation**
- Graded **liability framework**
- Protects **victim compensation**
- **Boosts manufacturing, R&D & innovation**

Green Hydrogen

- Target: 5 MMT annually by 2030
- 862,000 tonnes capacity allocated to 18 companies
- Three hubs designated: Deendayal Port (Gujarat), V.O. Chidambaranar Port (Tamil Nadu), Paradip Port (Odisha)


Bio-Energy

- National Bio-energy Programme
- 9.82 GW grid-connected biomass capacity; 309 MW waste-to-energy capacity

3.3 Battery Storage and Grid Integration

- **Requirement:** 336 GWh by 2029–30; 411 GWh by 2031–32
- **Policy measures:**
- Viability Gap Funding for 43 GWh BESS
- PLI scheme: ₹18,100 crore for 50 GWh Advanced Chemistry Cells (10 GWh for grid-scale)
- Waiver of inter-state transmission charges for BESS until June 2028
- Kerala mandate: Battery storage requirements for new rooftop solar (10% for >10kW, 20% for 15–20kW)

India's Energy Storage Requirement & Policy Push

 Energy storage is positioned as a key enabler for renewable integration, peak management, and long-term resource adequacy



Requirements

India will require around 411 GWh of energy storage by 2031-32



Policy Support

National Framework for Promoting Energy Storage Systems

Formally recognised under the Electricity Rules

Included in the Harmonised Master List of Infrastructure

A core resource in power system planning under Resource Adequacy Plans.



Market enablers and Deployment support

Waiver of Inter-State Transmission System charges

Storage assets allowed to provide ancillary services

PLI scheme - ₹18,100 crore for 50 GWh ACC manufacturing

VGF schemes targeting ~43 GWh of BESS

3.4 Critical Minerals and Political Economy

- **Challenge:** Material intensity of renewables (1 GW solar requires 18.5t silver, 2,000-3,000t polysilicon, 10,252t aluminium; 1 GW wind requires 2,866t copper)
- **Supply Chain Risks:** Export restrictions by source countries; price volatility (copper hit \$12,000/tonne)

India's Response:

- National Critical Mineral Mission (NCMM): ₹16,300 crore outlay
- MMDR Act Amendments: Central government authority to auction 24 critical minerals; opened 6 restricted minerals to private sector
- KABIL: Acquired 15,703 hectares in Argentina for lithium; partnerships in Australia, Greenland
- Recycling incentive: ₹1,500 crore scheme for

critical mineral recovery

3.5 Carbon Credit Trading Scheme (CCTS)

Dual Mechanism:

- **Compliance:** Intensity-based baseline-and-credit system for aluminium, cement, chlor-alkali, pulp & paper
- **Voluntary Offset:** 10 sectors including energy, agriculture, forestry, CCUS
- **Trading:** Carbon Credit Certificates (CCCs) traded on power exchanges
- **Lessons from Global ETS:** Gradual sector inclusion; avoid generous free allowances; ensure alignment with national circumstances

4. MISSION LiFE (LIFESTYLE FOR ENVIRONMENT)

4.1 Concept

- Launched at COP26 (2021): Integrates individual/community behavior change with

climate action

- Focus: Sustainable consumption, circularity, resource efficiency

4.2 Integration with National Programs

- Aligns with NAPCC missions on energy efficiency, sustainable habitats, water, agriculture
- Examples: UJALA (LED adoption), Standards and Labelling, PAT scheme
- Shift from supply-side control to mindful consumption

5. CLIMATE FINANCE

5.1 Global Context

- **Requirement:** USD 5–6 trillion annually by 2030 for developing economies
- **Current Flows:** USD 1.9 trillion globally (2023), but only 15% to developing countries (excluding China)
- **Domestic Dominance:** India sources 83% of mitigation finance and 98% of adaptation finance domestically

5.2 Domestic Financial Architecture

- **Green Bonds:** Sovereign green bonds cumulative issuance ₹72,697 crore (FY23–FY26); municipal green bonds by Vadodara, Ahmedabad, Indore, Ghaziabad
- **Development Finance Institutions:** Indian Renewable Energy Development Agency Ltd (IREDA), National Bank for Agriculture and Rural Development (NABARD), Small Industries Development Bank of India (SIDBI), Rural Electrification Corporation Ltd. (REC) offering credit lines

Regulatory Framework:

- SEBI's Business Responsibility and Sustainability Reporting (BRSR) framework, Environment, Social and Governance (ESG) disclosures, green bond guidelines
- RBI: Green Deposit Framework (2022)
- 100% FDI automatic route for renewable energy

5.3 Disaster Risk Financing

- State Disaster Mitigation Fund (SDMF) and National Disaster Mitigation Fund (NDMF)
- Glacial Lake Outburst Flood (GLOF) Mitigation Programme under NDMF

5.4 International Finance Challenges

- **Structural Barriers:** High capital costs for developing countries; currency volatility; credit rating disparities; Basel III/Solvency II constraints on institutional investors
- **MDB Reform Needs:** Shift from "originate-to-hold" to "originate-to-share"; balance-sheet optimization using guarantees and blended finance
- **COP 30 Outcomes:** Two-year work programme on Article 9.1 (developed country obligations); pushback against counting private investments as climate finance

6. REGULATION: STREAMLINING ENVIRONMENTAL GOVERNANCE

6.1 Evolution of Regulatory Framework

- **Traditional:** Command-and-control (Water Act 1974, Air Act 1981, EPA 1986)
- **Modern Shift:** Risk-based, outcome-oriented, market-based instruments (PAT scheme, Surat ETS)

6.2 Digital Transformation

- **PARIVESH 3.0:** Single-window digital platform for environmental clearances; AI-enabled 24×7 support; integrated with compensatory afforestation land banks
- **OCMMS:** Online Consent Management & Monitoring System (Andhra Pradesh model)

6.3 Market-Based Instruments

- **Surat Particulate Matter Trading Scheme** (World's first in developing country):
- 317 industrial plants with Continuous Emissions Monitoring Systems (CEMS)
- Results: 20–30% reduction in particulate emissions; 11–14% reduction in abatement costs compared to command-and-control

6.4 Recent Reforms

- **Decriminalization:** Jan Vishwas Act amended Environment (Protection) Act (EPA) 1986, Air Act 1981, Water Act 1974; replaced imprisonment with penalties for minor offenses; increased relief compensation from ₹25,000 to ₹5 lakh
- **Rationalization:**
- Green belt requirements based on pollution potential (eliminated blanket 33% cover

- requirement)
- Industry classification: Red, Orange, Green, Blue, White categories
- **Circular Economy:** Extended Producer Responsibility (EPR) frameworks for plastic, batteries, e-waste, tyres; 10 waste categories under Circular Economy Action Plans
- **Single-Use Plastics:** Ban on 12 high-littering items (July 2022); plastic carry bag thickness increased to 120 microns
- **Contaminated Sites:** Environment Protection (Management of Contaminated Sites) Rules, 2025

6.5 State-Level Best Practices

- **Kerala:** Streamlined business registration, carbon-neutral gram panchayats
- **Tamil Nadu:** Single-window clearances, Common Effluent Treatment Plants for tanneries/textiles
- **Andhra Pradesh:** Online Consent Management & Monitoring System

7. CONCLUSION: DEVELOPMENT REALISM AND THE PATH FORWARD

7.1 Strategic Imperatives

- **Adaptation as Cornerstone:** Development-integrated adaptation through State Action Plans on Climate Change (SAPCCs), public investment, and community institutions

- **Pragmatic Mitigation:** Anchored in energy security and industrial competitiveness; no abrupt transitions
- **Finance as Binding Constraint:** Domestic resources insufficient; need for MDB reform, blended finance, and concessional international finance

7.2 Key Policy Directions

- Maintain dispatchable thermal capacity while scaling renewables
- Prioritize nuclear and hydro as "long-horizon anchors"
- Strengthen domestic manufacturing and critical mineral supply chains
- Establish national platform for climate project bankability backed by international finance

7.3 Regulatory Philosophy

- Transition from compliance to enablement
- Trust-based governance through digital systems and decriminalization
- Coexistence of environmental protection with ease of doing business

7.4 Global Positioning

- Articulate India's pathway based on differentiated responsibilities
- Demand predictable, front-loaded finance reflecting full-system costs
- Balance strategic autonomy with global partnerships (Minerals Security Partnership)

EDUCATION AND HEALTH: WHAT WORKS AND WHAT'S NEXT

1. INTRODUCTION

- India's journey toward "Viksit Bharat @2047" hinges on inclusive growth through human capital development. Education and healthcare are mutually reinforcing pillars for social well-being and economic growth.
- **Achievements:** Progress in reducing infant/maternal mortality, expanding immunisation, and increasing school/higher education enrolment.
- **Challenges:** Regional disparities, digital divides, infrastructural gaps, emerging issues like obesity, non-communicable diseases (NCDs), and digital addiction.

2. EDUCATION: ENHANCING QUALITY AND ACCESS

2.1 Progress in School Education

- **Demographic Advantage:** In 2024, 27% of India's population was in the school-going age group (3–18 years), projected to remain over 20% by 2047.
- **Expected Years of Schooling (EYS):** Currently at 13.0 years (below global peers like Germany at 17.3 or USA at 15.9). India aims to reach 15 years as per NEP.

Enrolment Status (UDISE+ 2024-25):

- **Total:** 24.69 crore students across 14.71 lakh schools with 1.01 crore teachers.

- **GER:** Foundational stage (Pre-Primary to Grade II): 41.4%; Preparatory (III-V): 95.4%; Middle (VI-VIII): 90.3%; Secondary (IX-XII): 68.5%.
- **School Distribution:** Government schools constitute 69% of all schools (50% enrolment); private schools are 26% of schools (41% enrolment).

2.2 School Infrastructure Improvements

- **Progress (2018-19 vs 2024-25):**
- Drinking water: 96% → 99%
- Girls' Toilets: 96% → 97%
- CWSN Toilets: 18% → 36%
- Handwash: 88% → 96%
- Electricity: 77% → 94%
- Internet: 19% → 64%
- Playgrounds: 75% → 83%
- **Time Use Survey 2024:** Children's participation in learning activities (age 6-14) increased from 85.9% (2019) to 89.3% (2024).

2.3 Innovative Pedagogy and Community Participation

Access Disparities:

- 54% of schools offer only foundational-preparatory education.
- Only 17.1% of rural schools offer secondary education vs. 38.1% in urban areas.
- Secondary NER is low at 52.2%, highlighting dropout concerns post-Grade VIII.

Community Engagement:

- **Examples:** Andhra Pradesh's "Chaduvula Panduga" (1999-2002), Assam's "Alokar Jatra" (2002), Haryana's "Aao School Chalein."
- **Case Study:** Zilla Parishad School Jalindarnagar, Maharashtra (World's Best School 2025) pioneered a peer-learning "Subject Friend" model for teacher shortages.
- **Foundational Learning:** "Jadui Pitara" (53 learning materials for ages 3-8) and e-Jadui Pitara (3,000+ e-contents) launched.

2.4 Improvement in Learning Outcomes

- **PARAKH Rashtriya Sarvekshan 2024:**
- Replaced National Achievement Surveys (NAS); assessed 21.15 lakh students across 74,000+ schools.

- Grade III post-COVID recovery: Proficiency in Mathematics rose from 42% (2021) to 65%; Language from 39% to 57%.
- Rural students outperformed urban peers; state government schools led foundational outcomes.

ASER 2024 Findings:

- **Maternal education impact:** Mothers with no schooling decreased from 43% (2014) to 24% (2024).
- **Age-appropriate entry improved:** Underage children (≤ 5 years) in Grade I dropped from 25.6% (2018) to 16.7% (2024).
- **Digital access:** 89.1% of rural youth (14-16) have smartphone access at home.
- **Challenges:** Only 35% of schools accommodate Children With Special Needs (CWSN); 38% have trained teachers; only 55% of students feel motivated.

2.5 School-to-Skill Pathways

- **Dropout Crisis:** Nearly 2 crore adolescents aged 14-18 are out-of-school (PLFS 2023-24).
- **Primary reason (44%):** Need to supplement household income (67% among boys).
- **For girls:** 55% drop out due to domestic/care responsibilities.
- **Skilling Gap:** Only 0.97% of 14-18-year-olds received formal institutional skilling; 91.94% received none.
- **Of those trained formally,** 52.9% concentrated in IT/ITeS.
- **Recommendations:** Composite schools, vocational integration from Grades VI-XII, industry partnerships with MSMEs.

2.6 Progress in Higher Education

- **Institutional Growth:** HEIs increased from 51,534 (2014-15) to 70,018 (June 2025).
- **Premier institutions:** 23 IITs, 21 IIMs, 20 AIIMS; international campuses in Zanzibar and Abu Dhabi.
- **Universities:** 760 (2014-15) → 1,338 (Jun-25); **Colleges:** 38,498 → 52,081; **Medical Colleges:** 387 → 819.
- **Enrolment:** 4.46 crore students (AISHE 2022-23); GER improved from 27.1 (2017-18) to 29.5 (2022-23).
- **Reforms:**

- **National Credit Framework (NCrF):** Adopted by 170 universities.
- **APAAR IDs:** 4.6 crore created (2.2 crore with credits) for seamless credit transfer.
- **Academic Bank of Credit:** Covers 2,660 HEIs.
- **Viksit Bharat Shiksha Adhishtan Bill, 2025:** Proposes single apex body replacing UGC, AICTE, NCTE to reduce regulatory fragmentation.

2.7 Developing State Capacity for Higher Education

- **State Public Universities (SPUs):** 495 SPUs account for 81% of total enrolment (3.24 crore students).
- **Gender Parity:** National GPI in SPUs is 0.93 (31% improvement over past decade). Sikkim leads (1.78).

Industry-Academia Integration:

- "Professor of Practice" (PoP) category: 18,000+ experts registered at 536 HEIs.
- AICTE-Industry Fellowship Programme: Pilot training for 350 faculty members.

- I-STEM Portal: 53,408 researchers registered; 30,144+ instruments shared across 3,745 institutes.

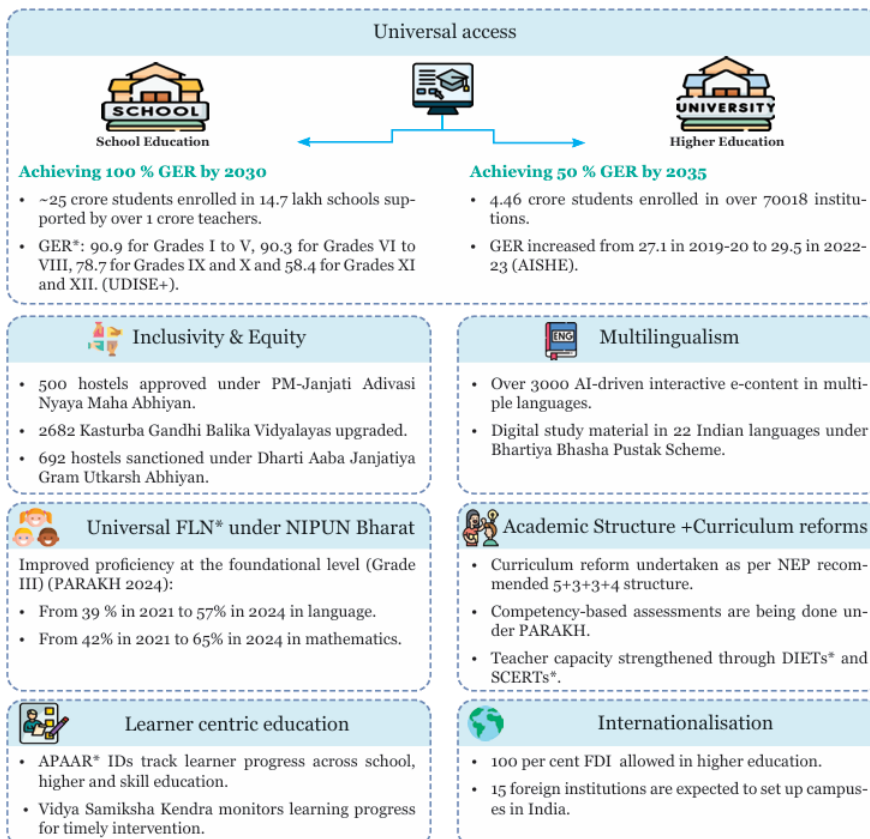
2.8 Internationalisation of Higher Education

- **Outbound vs. Inbound:** India is the world's largest source of international students (18 lakh by 2025 vs. 6.85 lakh in 2016). Inbound students only 49,000 (0.10% of enrolment).
- **Ratio:** For every 1 international student coming to India, 28 Indian students go abroad.
- Annual outward remittance for studies: USD 3.4 billion (FY24).

Policy Measures:

- Regulations for twinning/joint/dual degrees with foreign universities.
- 100% FDI allowed in higher education.
- 15 foreign HEIs expected to set up campuses under UGS Regulations 2023.
- "Study in India" initiative leveraging NAAC, NIRF, IoE rankings.

India's education landscape: Key achievements of NEP



3. HEALTH: STRENGTHENING PUBLIC AND PREVENTIVE HEALTHCARE

3.1 Progress in Health Indicators

- **Maternal & Child Health:**
- MMR reduced by 86% since 1990 (vs. global 48%).
- Under-5 mortality declined 78% (vs. global 61%); Neonatal mortality down 70%.
- IMR dropped >37% in past decade: 40 (2013) → 25 (2023).
- Best performers: Kerala, Manipur, Sikkim, Goa (single-digit IMR).
- **Ayushman Bharat** (Table XI.5):
- AAMs operational: 1,82,944; Footfall: 506.5 crore.
- Teleconsultations: 42.66 crore; Wellness sessions: 6.72 crore.
- ABPM-JAY: 42.78 crore cards generated; 10.98 crore hospital admissions (49% female).
- Human resources provided to states: 3.78 lakh.

3.2 Digital Health Initiatives

- **Platforms:** Hospital Management Information System, ABDM (Ayushman Bharat Digital Mission), e-Sanjeevani (40+ crore teleconsultations).
- **AI Integration:** Centres of Excellence at AIIMS Delhi, PGIMER Chandigarh, AIIMS Rishikesh.
- **Centre for Development of Advanced Computing (C-DAC) Tools:** Cough Against TB screening, adverse outcome prediction in TB patients, AI-based diabetic retinopathy screening.

3.3 India's Epidemiological Transition

- **Double Burden:** Rising NCDs (57% of all deaths) coexist with persistent communicable diseases (TB, vector-borne infections).
- **Cardiovascular Diseases:** Leading cause of death for both genders (32.4% males, 29.1% females).
- **Gender Disparities:** Higher "ill-defined" causes of death in women (13.4%) vs. men (8.5%), indicating diagnostic gaps.

3.4 Tackling the Obesity Challenge

Alarming Trends:

- Adults: 24% women and 23% men overweight/obese (NFHS 2019-21).
- Children: Obesity projected to rise from 3.3 crore (2020) to 8.3 crore (2035).
- **Ultra-Processed Foods (UPFs):**
- India is one of the fastest-growing UPF markets (150% growth 2009-2023).
- Retail sales surged from USD 0.9 billion (2006) to USD 38 billion (2019).
- Strong correlation between UPF consumption and obesity.

Policy Response

- **Marketing Restrictions:** Proposed ban on UPF advertising 0600-2300 hours (similar to Chile, UK).
- **Front-of-Pack Labelling (FOPL):** Warning labels recommended over Health Star Ratings.
- **Taxation:** Highest GST slab + surcharge on UPFs exceeding sugar/salt/fat thresholds.
- **FSSAI:** "Stop Obesity" campaign; Eat Right India; 10% reduction target in oil consumption.

3.5 Nutritional Intake Trends

- **Positive Trends:** Per capita calorie and protein intake increased (2009-10 to 2023-24).
- Rural calorie: 2,147 → 2,212 Kcal; Urban: 2,123 → 2,240 Kcal.
- Rural protein: 59.3g → 61.8g; Urban: 58.8g → 63.4g.
- **Convergence:** Rural-urban nutritional gap narrowing at similar income levels.
- **Scheme Integration:** NFSA, POSHAN 2.0, PMMVY, Saksham Anganwadi.
- **State Example:** Rajasthan's "Cash Plus Model" combining DBT with behaviour change communication (SBCC) showed 54% increase in women using cash for nutrition.

3.6 Digital Addiction: Cognitive and Psychological Impacts

- **Prevalence:** 85.5% of households own smartphones (2025); 96.96 crore internet connections (2024).

- **Definition:** Compulsive engagement with digital devices causing functional impairment and distress.

Mental Health Risks:

- Social media addiction is linked to anxiety, depression, and low self-esteem.
- Gaming disorder associated with sleep disruption, aggression.
- Online gambling linked to financial stress and suicidal ideation.

Social Connectedness Study

- Used Facebook Social Connectedness Index (SCI) vs. Suicide Death Rates (SDR).
- Finding: States with higher within-district social connectedness (Bihar, UP) show lower SDRs.
- States with dispersed online networks (Kerala, Tamil Nadu) show higher SDRs.

3.7 Global and National Responses to Digital Addiction

Global:

- Australia: Ban on social media for under-16s.
- China: "Fatigue system" limiting gaming to 1 hour/day on weekends.
- South Korea: "Shutdown Law" (repealed 2021) for gaming after midnight.

India's Measures:

- **CBSE:** Guidelines for safe internet use in schools.
- **Pragyata Framework:** Digital education planning with screen-time limits.
- **Tele-MANAS:** 24/7 mental health helpline (14416); 32+ lakh calls received since 2022.
- **SHUT Clinic (NIMHANS):** Specialised care for technology addiction.
- **Online Gaming (Regulation) Act, 2025:** Bans online money games involving wagering; restricts advertising.

Strengthening healthcare



Source: Sample registration system 2023 & MoSPI

	Calories (Kcal/day)		Protein (g/day)	
	2009-10	2023-24	2009-10	2023-24
Rural	2147	2212	59.3	61.8
Urban	2123	2240	58.8	63.4

Rising nutritional intake, life expectancy and declining Infant Mortality Rate together point to sustained improvements in population health and overall well-being.

Government Initiatives towards a healthier lifestyle

- Awareness initiatives for tackling obesity**
- Eat right campaign
 - 10% reduction in oil consumption
 - Khelo India and Fit India Movement
 - Aaj se Thoda kam Campaign
 - Stop Obesity & Fight Obesity Campaign

- Technology driven initiatives**
- Centre of Excellence for AI driven reforms at AIIMS Delhi, AIIMS Rishikesh & PGIMER, Chandigarh
 - Clinical decision support system integrated with e-Sanjeevani.
 - AI-based diabetic retinopathy screening.
 - 14.32 crore beneficiaries registered under U-Win portal.

4. OUTLOOK AND WAY FORWARD

4.1 Challenges

- Interconnected issues threatening demographic dividend: Double disease burden (CDs/NCDs), digital addiction, mental health crisis, poor nutrition, and rising obesity.

4.2 Strategic Recommendations

Education:

- **Assessment Reform:** Move PARAKH beyond aggregate scores to diagnostic insights; introduce PISA-like assessment at Grade X.
- **Accountability:** Independent third-party evaluation of schools (similar to Dubai's KHDA model).
- **Skilling:** Integrate vocational pathways from Grade VI; expand Professor of Practice and AICTE-Industry Fellowship.
- **Internationalisation:** Diversify beyond STEM to heritage/philosophy tracks; promote reciprocal mobility; simplify visa/post-study work regulations.

Health:

- **NCD Prevention:** Multi-pronged approach targeting UPFs (marketing bans, warning labels, taxation); school wellness scores; digital detox initiatives.
- **Digital Wellness:**
- Expand Tele-MANAS to address digital addiction.
- Introduce Digital Wellness Curriculum in schools covering screen-time literacy and cyber safety.
- Promote "digital diets" and device-free zones for adults.
- Establish offline youth hubs in urban slums/rural areas.
- **Nutrition:** Transition from food security to nutrition security; incorporate millets and fortified foods in PDS; leverage social media for nutrition awareness.
- **Data-Driven Policy:** Use UDISE+, AISHE, ABDM, and AI tools to identify "health hotspots."

4.3 Conclusion

- **Holistic Approach:** Prioritising education, skilling, digital wellness, health, and nutrition through open dialogue, behavioural change strategies, and technology-driven solutions is essential to forge resilient citizens and achieve Viksit Bharat @2047.

EMPLOYMENT AND SKILL DEVELOPMENT: GETTING SKILLING RIGHT

1. INTRODUCTION:

1.1 Demographic Dynamics

- **Demographic Dividend:** India's working-age population (15–59 years) expected to exceed 98 crore in next 10 years, peaking around 2030 when 65% of population will be in this bracket
- **Longevity Dividend:** Gradual ageing (TFR below replacement levels, rising life expectancy) necessitates policies for health span extension, lifelong learning, and age-friendly work arrangements
- **Epidemiological Shift:** Rise in NCDs (cardiovascular, diabetes, mental health) among productive age groups requires workplace wellness focus

1.2 Structural Transformations

- Post-pandemic shift from **quantity to quality** of jobs
- Drivers: Digitalisation, green energy transition, emerging gig/platform work
- Need for deregulation to enable virtuous cycle of job creation and address skill mismatches

2. EMPLOYMENT LANDSCAPE: CURRENT TRENDS AND PATTERNS

2.1 Labour Market Indicators (PLFS H1 FY26)

- **Workforce Size:** 56.2 crore employed (age 15+) in Q2 FY26; 8.7 lakh new jobs created vs Q1 FY26

- **Unemployment Rate (CWS):** Declining trend (5.6% in May 2025 to 4.7% in November 2025)
- **Labour Force Participation Rate (LFPR):** Stabilising around 55%, with female LFPR rising from 23.3% (2017-18) to 41.7% (2023-24)

2.2 Sectoral Distribution

- **Agriculture:** Still employs 42.4% of workforce (Q2 FY26), though declining from 56.6% (female) and 59.1% (rural)
- **Secondary Sector:** 24.2% (manufacturing, mining, quarrying)
- **Tertiary Sector:** 33.5% (services dominate urban employment at 62%)

2.3 Employment Status Composition

- **Self-employment:** Dominant at 55.8% (higher for women at 63.5% combining own account and household helper roles)
- **Regular Wage/Salary:** 25.4% (urban concentration)
- **Casual Labour:** 18.9% (seasonal, rural-heavy)

3. GENDER DIMENSIONS: BARRIERS AND ENABLERS

3.1 Time Use Survey 2024 Findings

- **Caregiving Burden:** Women spend 140 minutes daily on caregiving vs 74 minutes for men; 41% of women (15-59) participate in caregiving vs 21.4% men
- **Dual Burden:** Women spend 363 minutes on unpaid activities vs 123 minutes for men; total paid + unpaid time higher for women (1,073 min vs 1,133 min for men)
- **Implication:** Preference for flexible/independent work arrangements due to unpaid care responsibilities

3.2 Structural Barriers to Female Participation

- Mobility constraints ("pink tax" on transport) and safety concerns
- Limited access to affordable housing and childcare
- STEM gap: Women constitute only 43% of STEM enrolment (2021-22) and 2.9% of employed women have advanced degrees
- Legal restrictions: Historically excluded from night shifts and hazardous industries

3.3 Policy Interventions and Progress

- **State Reforms:** 17 states/UTs removed prohibitions on women in hazardous industries; 22 states permit night work in factories; 33 states permit night work in commercial establishments
- **Infrastructure:** Sakhi Niwas scheme, Tamil Nadu's Thozhi Hostels (PPP model with crèches)
- **Care Economy:** Expansion of Anganwadi centres, integration of community crèches
- **Labour Codes:** Enable work-from-home post-maternity, mandating crèches for large establishments

4. FORMALISING THE UNORGANISED WORKFORCE

4.1 e-Shram Portal

- **Coverage:** 31 crore unorganised workers registered (January 2026), with 54% women
- **Universal Account Number (UAN):** Linked to Aadhaar for portability across locations/platforms
- **Integration:** 18 social security schemes linked (One Nation One Ration Card, PMSYM, NCS)

4.2 National Career Service (NCS)

- **Scale:** 5.9 crore job seekers, 53 lakh job providers, 8 crore vacancies mobilised since inception
- **Growth:** 200% increase in vacancies in FY24; 2.8 crore vacancies in FY25; 2.3 crore by September 2025
- **Integration:** Linked with SIDH, EPFO, ESIC, e-Shram, Udyam for seamless workforce data
- **Global Connect:** Integration with eMigrate system for verified international job vacancies

5. ORGANISED MANUFACTURING SECTOR (Annual Survey of Industries (ASI) 2023-24)

5.1 Employment Growth

- **Expansion:** 6% YoY growth in FY24; addition of 10 lakh jobs; 57 lakh jobs added over decade (FY15-FY24).
- **Productivity:** Net Value Added (NVA) per person engaged rose to ₹10.7 lakhs (FY24) from ₹7.3 lakhs (2019-20)

5.2 Factory Size Analysis

- **Concentration:** 22% of large factories (employing >100 workers) account for 79% of manufacturing employment
- **Productivity Gap:** Large factories show significantly higher NVA per worker (₹17.5 lakhs for 5000+ employees vs ₹4.7 lakhs for <14 employees)
- **Growth Patterns:** Large factories grew at 6% CAGR (employment) vs 2% for small factories (FY14-FY24)

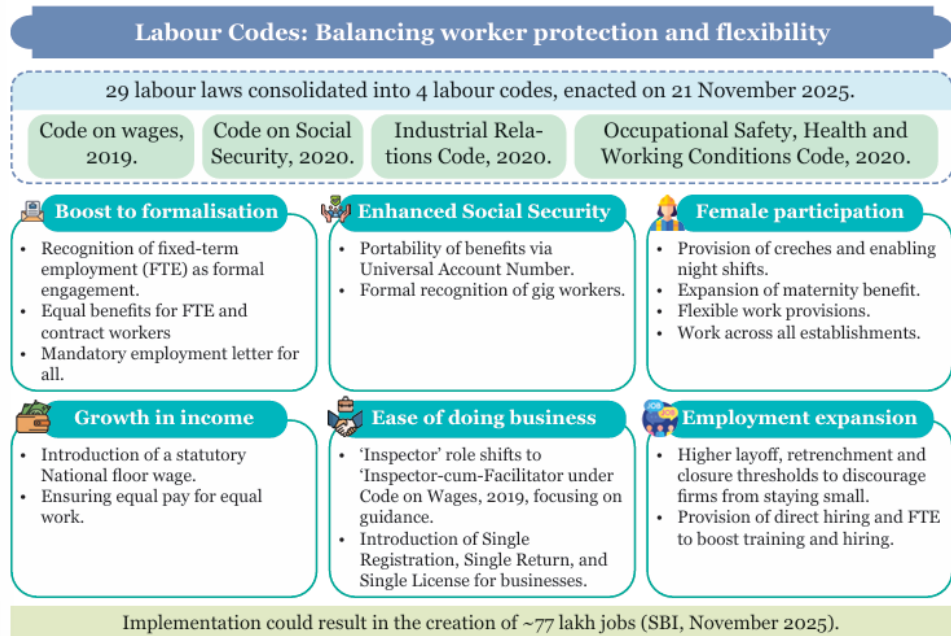
5.3 Geographic and Sectoral Distribution

- **Top States:** Tamil Nadu (15%), Gujarat (13%), Maharashtra (13%), Uttar Pradesh (8%), Karnataka (6%), Haryana (6%), Telangana (5%) account for 60% of manufacturing employment
- **Key Sectors:** Food products (11%), Textiles (9%), Basic metals (8%), Wearing apparel (7%), Motor vehicles (7%)

6. LABOUR MARKET REFORMS: THE FOUR LABOUR CODES

6.1 Code Provisions and Implementation

- **Consolidation:** 29 central laws subsumed into 4 Codes (Wages, Industrial Relations, Social Security, OSH) notified November 2025
- **Key Features:**
 - Mandatory appointment letters for all workers
 - Fixed-term employment (FTE) recognition for seasonal/project work
 - Equal benefits (gratuity, leave) for contract vs permanent workers after one year
 - National Floor Wage (₹178-500 daily)
 - Inspector-cum-Facilitator model replacing pure inspection



6.2 Impact Projections

- **Formalisation:** Potential increase from 60.4% to 75.5% (SBI study)
- **Employment:** Medium-term gains of 1.0-2.2% in organised sector; potential creation of 77 lakh jobs
- **Cost Reduction:** 30-40% reduction in compliance costs for SMEs
- **FLFPR:** Potential rise to 33.7% through gender-neutral night shift provisions and safety mandates

6.3 State-Level Innovations

- **Uttar Pradesh:** New rules allowing women night shifts with mandatory safeguards (transport, CCTV, double overtime wages); quarterly overtime cap raised to 144 hours; women permitted in all 29 hazardous sectors with enhanced safety infrastructure

7. GIG AND PLATFORM ECONOMY

7.1 Scale and Growth

- **Workforce:** Grew from 77 lakh (FY21) to 120 lakh (FY25) – 55% increase; projected to reach 6.7% of non-agricultural workforce by 2029–30
- **Contribution:** ₹2.35 lakh crore to economy by 2029–30
- **Sectoral Distribution:** E-commerce (37 lakh), Logistics (15 lakh), BFSI (10 lakh), Manufacturing (10 lakh), Retail (7 lakh)

7.2 Characteristics and Challenges

- **Nature:** Task-based, tripartite relationship (platform-worker-client), digital payment, algorithmic management
- **Vulnerabilities:** 40% earn below ₹15,000/month; "thin-file" credit access; algorithmic biases; no traditional employer benefits
- **Classification:** Four categories – Free agents, Casual earners, Reluctants, Financially strapped (McKinsey framework)

7.3 Regulatory Framework

- **Formal Recognition:** CSS 2020 defines gig/platform workers; mandates 1–2% aggregator contribution (capped at 5% of payouts) for social security.
- **Global Context:** EU Platform Workers Directive (2024), Spain's Rider Law (2021), ILO discussions on platform economy standards.
- **Policy Needs:** Algorithmic transparency, portable benefits, asset co-investment models, transition pathways to higher-skilled work.

8. SKILL ECOSYSTEM: STRUCTURE AND GOVERNANCE

8.1 Current Landscape

- **Coverage:** 34.7% of 15–59 age group received some vocational/technical training (up from 8.1% in 2017–18).
- **Formal vs Informal:** Only 4.9% received formal vocational training; 21.2% through informal sources.
- **Employability:** 56.3% overall employability rate (India Skill Report 2026); significant regional and demographic disparities.

8.2 Institutional Coordination

- **Horizontal/Vertical Coordination:** Need for whole-of-government approach across ministries and state/central levels.
- **Skill India Digital Hub (SIDH):** Centralised portal integrating skill, education, employment, entrepreneurship; Industry 4.0 courses; portable credentials.
- **Challenges:** Weak foundational skills, outdated curricula, inadequate instructor training, poor industry linkage.

9. VOCATIONAL EDUCATION AND APPRENTICESHIPS

9.1 Early Vocational Exposure

- **NEP 2020 Alignment:** Vocational education integration from middle school (Grade VI onwards); CBSE mandatory Skill Education with Kaushal Bodh textbooks from 2025–26.
- **State Initiatives:**
 - Madhya Pradesh: Skill GPS app
 - Rajasthan: Comprehensive Career Education Programme
 - Odisha: Industrial visits mapped to local industries
 - Meghalaya: 15,000 students in project-based training; SPARK programme (resilience/communication)

9.2 Apprenticeship Schemes

- **Scale:** 43.47 lakh apprentices under PM-NAPS (20% female); 5.23 lakh under NATS (FY25).
- **Challenges:** Low enterprise penetration (6,100 active vs 5.2 lakh registered MSMEs); regional disparities (Maharashtra/UP high vs NE states low); scheme fragmentation (NAPS vs NATS).
- **Reforms Needed:** Unified apprenticeship mission, District Skill Committees as local anchors, expansion into green manufacturing/logistics, graded incentives for MSMEs.

9.3 Higher Education Integration

- **National Credit Framework (NCrF):** Credit accumulation/transfer across academic, vocational, work-based learning.

- **SWAYAM Plus:** Industry-aligned digital courses (AI, data analytics, robotics) launched February 2024
- **Apprenticeship-embedded Degrees:** Structured on-the-job training integration.

10. INDUSTRIAL TRAINING INSTITUTES (ITIs)

10.1 Current Status

- **Challenges:** Underutilisation, infrastructure gaps, faculty quality issues, limited employer connections, low aspirational value

10.2 Reforms and Upgrades

- **PM SETU (PM Skilling and Employability Transformation through Upgraded ITIs):** Upgrade of 1,000 ITIs (200 hub + 800 spoke) with smart classrooms, modern labs, digital content
- **National Centres of Excellence:** Five sector-specific centres with global partnerships (ITEES Singapore)
- **Curriculum Modernisation:** 169 NSQF trades including 31 future-skills courses (AI, IoT, renewable energy, 3D printing)

10.3 Odisha Model (Best Practice)

- **Strategy:** "Fix, Accelerate, Scale"
- **Fix:** Image reinvention through alumni campaigns (10-6-4-2 formula), uniform changes, global partnerships.
- **Scale:** DDU-GKY expansion with enhanced trainee well-being, urban events to celebrate skilled workers.
- **Accelerate:** Odisha World Skill Centre (ITEES collaboration) offering basic to advanced training with scholarships.

11. FINANCING MECHANISMS FOR SKILL DEVELOPMENT

11.1 Public Financing Innovations

- **DBT for Apprenticeships:** 25% stipend directly to apprentices under NAPS 2.0.
- **Model Skill Loan Scheme (2024):** Enhanced loan limits, expanded eligible institutions, coverage for non-NSQF courses.
- **Skill Impact Bonds (SIB):** Outcome-based financing linking returns to verified

placement and retention outcomes (NSDC implementation).

11.2 Demand-Side Instruments

- **Skill Vouchers:**
- **Tamil Nadu:** ₹12,000–25,000 vouchers for SC/ST/Christian Adi Dravidar students for emerging tech courses
- **Maharashtra (Vikalp):** Outcome-linked vouchers with 60% job retention rate; payments tied to completion, certification, placement
- **International Models:** Singapore's SkillsFuture Credit, Germany's Training Vouchers, Kenya's TVET Vouchers

11.3 Employer Co-investment

- **Sector Skill Councils (SSCs):** Industry-led investments; 1.13 lakh candidates trained through industry funding (FY25).
- **International Precedents:** Ireland's Skillnet (employer-government collaboration), mandatory training levies in Belgium, France, Korea.

12. QUALITY ASSURANCE AND ACCOUNTABILITY

12.1 Current Challenges

- **Weak Foundations:** Only 56.3% employability; skill mismatches in 22–25 age group.
- **Implementation Gaps (CAG Audit PMKVY):** Data inconsistencies, fund disbursement delays, low placement rates, ghost centres.
- **Information Asymmetry:** Youth wage aspirations exceed market offers; traditional trades perceived as low-status

12.2 Skilling Scorecard and Digital Integration

- **Longitudinal Tracking:** Integration of APAAR IDs (academic records), e-Shram (informal workers), NCS (jobs), SIDH (training), EPFO/ESIC (employment outcomes).
- **Outcome Metrics:** Shift from enrolment/certification to employment, retention, and earnings at 6 and 12 months.
- **International Benchmarks:** Singapore's post-course employability tracking, Germany's

employer-embedded curriculum monitoring, Korea's periodic programme reviews.

12.3 Assessment Integrity

- Third-party assessments for PMKVY, ITIs, NAPS
- Digital attendance with audit trails
- Performance-based monitoring of training providers

13. OUTLOOK AND STRATEGIC PRIORITIES

13.1 Key Trajectories

- **Demographic:** Leverage dividend peak (2030) while preparing for longevity dividend
- **Formalisation:** Labour Codes implementation critical for expanding formal employment beyond current 60%.
- **Gender:** FLFPR target of 55% by 2050 essential for high GDP growth; requires care infrastructure, safe mobility, STEM access

13.2 Skill Ecosystem Priorities

- **Convergence:** Unified governance across MSDE, MoE, states; single-window apprenticeship framework

- **Modularity:** Stackable credentials, multiple entry-exit, credit transfer
- **Industry Alignment:** Employer participation in curriculum, assessment, and workplace learning
- **Early Exposure:** Vocational orientation from middle school through project-based learning

13.3 Digital Integration Vision

- Integrated platform combining e-Shram (worker database), NCS (job matching), SIDH (training), APAAR (academic records)
- Real-time labour market information for course portfolio decisions
- AI-driven career counselling and skill gap analysis

13.4 Gig Economy Regulation

- Balance flexibility with security through portable benefits
- Algorithmic transparency and anti-retaliation measures
- Pathways for upskilling from "necessity" to "choice" gig work

RURAL DEVELOPMENT AND SOCIAL PROGRESS: FROM PARTICIPATION TO PARTNERSHIP

INTRODUCTION

- **Development Philosophy:** India's model of inclusive growth follows the principle '*Sabka Saath, Sabka Vikas, Sabka Prayas, Sabka Vishwas*' (Together with all, Development for all, Effort of all, Trust of all), emphasizing fairness, dignity, and equal rights for vulnerable groups.
- **Social Mobility Framework:**
- **Inter-generational mobility:** Change in social/economic status across generations.
- **Intra-generational mobility:** Change during an individual's lifetime.
- **Key Determinants:** Health, education (access, quality, equity), technology, work opportunities/wages/conditions, and social protection/inclusive institutions.
- **Vicious to Virtuous Cycle:** Enhancing social mobility breaks historical inequality cycles, transforming them into positive economic growth loops.

1. PROGRESS ON POVERTY AND INEQUALITY

1.1 Poverty Reduction Metrics

- **World Bank International Poverty Line (IPL):** Revised to USD 3.00/day (2021 prices) in June 2025.
- India 2022-23: 5.3% extreme poverty; 23.9% lower-middle-income poverty.
- **Multidimensional Poverty Index (MPI):**
- NITI Aayog: Declined from 55.3% (2005-06) to 14.96% (2019-21) to 11.28% (2022-23).
- World Bank Measure: 15.5% (2022-23).
- **Tendulkar Committee Estimates:** Poverty reduced from 21.9% (2011-12) to 4.7% (2022-23) to 2.3% (2023-24).

1.2 State-Level Innovations

- **Convergence Trend:** States with higher initial poverty (2015-16) showed greater reductions, narrowing interstate disparities.
- **Bihar's Satat Jeevikoparjan Yojana (SJY):**

- Launched 2018; targets ultra-poor women using the "Graduation Approach" (asset transfers, training, mentoring for 24 months).
- J-PAL study found beneficiaries maintained stable income even during COVID-19.
- **Kerala Model:** Extreme Poverty Alleviation Project (EPEP) involving community participation through Kudumbashree, ASHA workers, and local governments to identify vulnerable households and provide documents (Aadhaar, ration cards), healthcare, and micro-plans.

2. SOCIAL SECTOR EXPENDITURE TRENDS

2.1 Expenditure Growth

- **General Government Social Services Expenditure (SSE):**
- CAGR of **12%** (FY22 to FY26 BE).
- Education: **11%** CAGR.
- Health: **8%** CAGR.
- **GDP Share:** SSE increased from **6.8% (FY19)** to **7.9% (FY26 BE)**.

2.2 SDG Achievements (MoSPI Report 2025)

- **Social Protection:** Coverage expanded from **22% (2016)** to **64.3% (2025)**.
- **Rural Water:** Improved drinking water access increased from **94.6% (2015-16)** to **99.6% (2024-25)**.
- **Sanitation:** 100% districts declared Open Defecation Free (2019-20); **96%** villages achieved ODF Plus status (Dec 2025).
- **Electrification:** Universal household electrification achieved (2021-22).

3. TRANSFORMING THE RURAL ECONOMY

3.1 Current Economic Conditions

- **NABARD Rural Economic Conditions and Sentiments Survey (RECSS) (Nov 2025):** Indicates broad-based strengthening—robust consumption, high income growth, rising investment, improved formal credit access, and strong infrastructure satisfaction.
- **Reduced MGNREGS Dependence:** Person-days declined **53%** from pandemic peak (**389.09 crore in FY21** to **183.77 crore in FY26**), coinciding with rural unemployment drop from **3.3% (2020-21)** to **2.5% (2023-24)**.

3.2 Legislative Overhaul: VB G-RAM G Act, 2025

Viksit Bharat Guarantee for Rozgar and Ajeevika Mission (Gramin) Act replaces MGNREGS:

- **Enhanced Entitlement:** **125 days** (up from 100) of guaranteed unskilled wage employment.
- **Priority Areas:** Water security, rural infrastructure, livelihoods, and climate/disaster resilience.
- **Pause Window:** States can notify **60 days** during peak agricultural seasons when works halt.
- **Funding:** Demand-driven with state-wise normative allocations based on development parameters (equity/samata and fairness/nyaysangata).
- **Administrative Ceiling:** Increased from **6% to 9%** for staffing, training, and technical capacity.
- **Integration:** Assets aggregated into *Viksit Bharat National Rural Infrastructure Stack*; linked to PM Gati Shakti.
- **Accountability:** Weekly wage payments, removal of disentanglement clauses, and AI-enabled monitoring.

3.3 Community Participation (Jan Bhagidari)

- **Constitutional Foundation:** 73rd Amendment (1992) institutionalized Panchayati Raj Institutions (PRIs).
- **Participatory Models:**
- Kerala's Kudumbashree (women's collective).
- Maharashtra's Participatory Irrigation Management (PIM).
- Northeast's NERCORMP (community resource management).

3.4 Technology-Driven Participation

- **SVAMITVA:** Drone surveys completed in **3.28 lakh villages**; **2.76 crore** property cards prepared for **1.82 lakh villages**.
- **Namo Drone Didi:** **1,094 drones** distributed to SHG women (2023-24) for agricultural and land mapping tasks.
- **Digital Land Records:**
- **99.8%** digitization of Record of Rights (RoRs).
- **95.73%** computerization of Sub-Registration Offices.

- **36.67 crore** land parcels assigned Unique Land Parcel Identification Number (ULPIN/Bhu-Aadhaar).
- **Smart Villages:**
- *Satnavari Smart Village* (Maharashtra): AI-powered agri-alerts, solar smart irrigation, drone spraying, telemedicine.
- *RuTAGe Smart Village Centre* (Sonipat): IoT water monitoring, satellite agri-data, FinTech apps.

3.5 Village Commons (Common Property Resources)

- **Scale: 6.6 crore hectares** (2011 Census); supports **35 crore** rural people.
- **Economic Value:** Generate **USD 9.05 crore/year** in ecosystem services (carbon sequestration, water purification, etc.).
- **Degradation:** Increased from **28.8% (2003-05)** to **29.8% (2018-19)** of geographical area (ISRO data).
- **Restoration:** Mission Amrit Sarovar (pond rejuvenation), SVAMITVA mapping, and application of Elinor Ostrom's principles for sustainable commons management.

3.6 Harnessing Social Capital for Livelihood

- **DAY-NRLM (Deendayal Antyodaya Yojana - National Rural Livelihoods Mission):**
- **90.90 lakh** SHGs promoted; **10.05 crore** households mobilized.
- **₹11.92 lakh crore** bank credit accessed by SHGs.
- **4.02 lakh** individual enterprises under Start-up Village Entrepreneurship Programme.
- **9 lakh** Community Resource Persons (CRPs) active.
- **3 crore** "Lakshpati Didis" target (women earning ₹1 lakh+/year).
- **Skilling:**
- **DDU-GKY:** State-led PPP mode with third-party certification for rural youth.
- **RSETIs:** **629** operational across **616** districts for rural entrepreneurship development.

3.7 Capacity Building and Governance

- **Institutions:** State Institutes of Rural Development (SIRDs), Extension Training Centres (ETCs).

- **RGSA (Rashtriya Gram Swaraj Abhiyan):** Focuses on SDG localization; **35 lakh** participants trained (FY25).
- **Digital Governance:**
- **e-Gram Swaraj:** **2.54 lakh** GPs uploaded Gram Panchayat Development Plans (FY25).
- **SabhaSaar:** AI tool generating minutes for **1.38 lakh** Gram Sabhas (Nov 2025).
- **AuditOnline:** Transparent online audits; **₹2.77 lakh crore** transactions via PFMS integration.
- **Panchayat Advancement Index (PAI):** Composite index measuring **2.5 lakh** GPs across **9** Localised SDG themes (poverty, health, child welfare, water, sanitation, infrastructure, social justice, governance, women empowerment) using **435** indicators.

3.8 Rural Infrastructure

- **PMGSY:**
- **Phase I:** **99.6%** connectivity to eligible habitations; **6.25 lakh km** roads completed.
- **Phase II:** **49,087 km** completed.
- **Phase III:** **1.02 lakh km** sanctioned for connecting markets/schools/hospitals.
- **Innovation:** Chhattisgarh's first plastic waste-mixed bituminous road (Bastar district) under circular economy goals.
- **Tribal Connectivity:** PM-JANMAN (**2,495 roads sanctioned** for PVTG habitations) and DA-JGUA (**63,000** tribal villages).
- **Housing (PMAY-G):** Target **4.95 crore** houses by 2029; **2.93 crore** completed under current scheme, totaling **3.7 crore** completed (including pending cases from previous schemes).
- **Jal Jeevan Mission:** Tap connections provided to **15.74 crore** households (**81.31%** coverage) as of Nov 2025, up from 3.23 crore (17%) at launch (Aug 2019).

3.9 Rural Wellbeing

- **Nutrition Gaps:** NFHS-5 (2019-21) shows urban-rural disparities persist in stunting (Urban: 30.1% vs Rural: 37.3%), wasting (18.5% vs 19.5%), and underweight (27.3% vs 33.8%).
- **SBCC (Social and Behavioural Change Communication):** DAY-NRLM's FNHW

(Food, Nutrition, Health, WASH) interventions in **6,406 blocks** covering maternal health, diet diversity, and waste management.

- **Health Tech:** ASHABot, ASHA Kirana's M-CAT, and telemedicine for frontline workers (ASHAs, ANMs, AWWs).

3.10 Participatory Budgeting

- **Own Source Revenue (OSR):** Many states lack rules for Panchayat taxation; MoPR's *Samarth* application facilitates OSR generation.
- **Communications:** Partnership with TVF for "Phulera Ka Panchayat Raj" series; *Meri Panchayat App* for transparency; *eGramSwaraj-BHASHINI* integration for **22** regional languages.

4. SOCIAL JUSTICE AS AN ENABLER OF INCLUSION

4.1 Vulnerable Group Empowerment

- **Scholarships:** Pre-Matric and Post-Matric schemes for SCs/OBCs; **SHREYAS** for higher education.
- **Venture Capital:** Fund for SC/Backward Classes startups supporting **160+** enterprises.
- **VISVAS Yojana:** Credit support converging with MUDRA/NRLM for marginalized groups.

4.2 Social Assistance

- **NSAP (National Social Assistance Programme):** Covers **3.09 crore** BPL beneficiaries (old age, widows, disabled); states add **5.86 crore** more beneficiaries.
- **Digital Life Certification (DLC):** Aadhaar-based mobile app launched July 2025; **47.76 lakh** beneficiaries authenticated (as of Jan 2026).

4.3 Minority and Tribal Welfare

- **Minorities:** Pre/Post-Matric scholarships, PM Virasat ka Samvardhan, NMDFC loans, Jiyo Parsi scheme, and Waqf development.
- **Tribal Development:**
- **PMJVM:** **4,105 Van Dhan Vikas Kendras** benefiting **12 lakh** people.

- **Forest Rights Act:** **23.92 lakh** individual and **1.22 lakh** community titles distributed covering **233.48 lakh** acres.

- **Smart Tribal Farming:** Integration of traditional knowledge with digital commodity value chains, AI advisories, and IoT in pilot villages.

4.4 Sanitation Workers' Rehabilitation

- **NAMASTE Scheme** (National Action for Mechanised Sanitation Ecosystem): Launched July 2023.
- **Profiling:** **89,104** sewer/septic tank workers (SSWs) validated.
- **Safety:** **85,743 PPE kits** and **653 Safety Device Kits** distributed.
- **Mechanization:** Indigenous robotic cleaners and vehicle-integrated machines; scaling up domestic production.
- **Compensation:** Supreme Court enhanced death compensation to **₹30 lakh**; directed ban in 6 metro cities.
- **Rehabilitation:** **70,000+** SSWs under Ayushman Bharat; skill development and alternative employment support.

5. OUTLOOK AND THE WAY FORWARD

- **Equality of Opportunity:** Central to inclusive development—ensuring same starting points rather than same outcomes maximizes economic efficiency by utilizing individual skills fully.
- **Rural Revitalization:** Prevent distress-driven urban migration by creating local livelihoods, restoring village commons, and preserving cultural heritage while modernizing infrastructure and education.
- **Community Engagement:** Shift from government-led schemes to community-driven initiatives (Jan Bhagidari) with continuous feedback mechanisms.
- **Technology Integration:** Expand technology-enabled surveys for data-driven interventions and leverage AI/digital tools for governance (SabhaSaar, ASHABot).
- **Shared Responsibility:** Strengthen a framework of mutual respect between state and citizens, making governance a two-way

process to build self-reliant, proud rural

communities aligned with *Viksit Bharat 2047*.

EVOLUTION OF THE AI ECOSYSTEM IN INDIA: THE WAY FORWARD

1. INTRODUCTION AND ECONOMIC CONTEXT

1.1 Current State of AI Adoption

- **Global Penetration:** As of 2025, 88% of organizations surveyed by McKinsey report utilizing AI in at least one business function (up from 50% in 2022), with 31% scaling applications across the organization and 7% fully deployed.
- **Geographic Distribution:** High-Income Countries account for 58.4% of global usage, Upper-Middle-Income for 22.5%, and Lower-Middle-Income (including India) for 18.7%.
- **Concentration of Capabilities:** Frontier AI development remains highly concentrated among a few large firms with access to capital, specialized hardware, and technical talent.

1.2 Labour Market Implications

- **Evidence from Advanced Economies:**
- Yale's Budget Lab (2025): No discernible labour market disruption in the U.S. due to AI.
- Brynjolfsson et al. (2025): Minor differences in job prospects between high-AI-exposure and low-exposure occupations.
- Denmark: Most workers benefit from AI adoption.

Structural Shift Analysis

- **Findings:** Post-December 2022 (GenAI salience period), U.S. Professional, Business, and Information Services (PBIS) sector shows positive association with employment but **negative interaction with output growth**, indicating declining labour intensity.
- **Interpretation:** Marginal responsiveness of employment to economic growth has weakened, suggesting early-stage complementarity may give way to substitution as markets saturate.
- **Policy Caution:** While near-term complementarity exists, productivity gains from augmentation have ceilings,

necessitating careful pacing for labour-abundant economies like India.

2. ASYMMETRIES AND TRADE-OFFS IN THE AI ECOSYSTEM

2.1 Frontier vs. Application Capabilities

- **Fundamental Asymmetry:** Most countries participate as users while few control technology trajectory, standards, and pricing.
- **Resource Constraints:** Export restrictions on advanced processors and prohibitive fiscal costs make frontier-scale model development unsustainable for India.

2.2 Scale vs. Inclusion (Capital-Labour Trade-offs)

- **Firm Incentives:** AI adoption raises marginal productivity of capital relative to labour, encouraging rapid scaling and potential displacement in white-collar service sectors.
- **Policy Challenge:** Balancing aggregate productivity gains against employment absorption in a labour-abundant economy.

2.3 Open vs. Proprietary Models

- **Proprietary Models:** Black-box opacity limits transparency regarding training data and internal logic.
- **Open-Source/Open-Weight:** Lower entry barriers, greater adaptability, and reduced vendor lock-in, but require quality control and fragmentation management.

2.4 Compute Intensity vs. Resource Constraints

- **Infrastructure Strain:**
- Data centres consume up to **20 lakh litres of water/day**; globally **56,000 crore litres annually** (reported by Bloomberg).
- U.S. Energy Information Administration (EIA) revised electricity growth forecasts to **3% (2025)** and **5% (2026)** due to AI data centre expansion.
- Grid instability risks (e.g., Northern Virginia incident, July 2024: simultaneous loss of 1500MW nearly caused blackout).

- **Financial Viability:** Some firms projected to burn **USD 500 billion by 2030**; risks of financial contagion from debt-fuelled expansion.
- **Trade-off:** Investment in AI infrastructure competes with household and industrial demand for power, water, and finance.

2.5 Regulation vs. Innovation

- **Compliance Costs:** Fixed regulatory costs scale poorly for smaller firms and early-stage innovation in India's fragmented ecosystem.
- **Trust Deficit:** Minimal regulation undermines adoption and creates systemic risks in critical sectors (healthcare, education, finance).

2.6 Strategic Autonomy vs. Global Integration

- **Geopolitical Risks:** Export controls on chips and technology transfer restrictions create dependencies.
- **Balancing Act:** Navigating between insulating critical functions and preserving openness to global innovation networks (India holds only **3%** of global data centres by count).

3. A DEVELOPMENT-ORIENTED APPROACH TO AI

3.1 Strategic Necessity for Indigenous Solutions

- **Economic Transformation:** Shift from "IT back office" to "AI front office" to avoid hollowing out India's value proposition.
- **Geopolitical Imperative:** AI capability will shape foreign policy; reliance on foreign multinationals constrains diplomatic choices and exposes critical infrastructure to geopolitical shifts.

3.2 The Bottom-Up Strategy

- **Rationale:** Late-mover advantage allows avoidance of path dependencies (energy intensity, financial overcommitment) seen in early adopters.
- **Sector-Specific Small Models:**
- Computationally efficient, running on local hardware (smartphones/PCs).
- Tailored to domestic needs in agriculture, health, education, and public administration.

- Enable innovation from start-ups, research institutions, and domain-specific firms.

3.3 Open and Interoperable Systems

- **Open-Source Advantage:** India is one of the largest and fastest-growing open-source developer communities globally; open models are closing performance gaps with closed systems.
- **AI-OS Initiative:** Sovereign participation as monetary shareholder (similar to UPI/Aadhaar) to create AI as a public good, coordinating:
- Centralized code repository under IndiaAI Mission.
- Shared cloud compute infrastructure pooling existing capacity.
- Structured, anonymized datasets in priority sectors.

3.4 Local Ingenuity and Frugal AI

- **Healthcare:** Non-invasive AI-enabled thermal imaging for breast cancer screening; portable oral cancer detection devices.
- **Urban/Environmental:** AI-based water management (Bengaluru); indigenous sensor networks for landslide alerts (Himalayas).
- **Agriculture:** AI-enabled networks improving market access for **1.8 million farmers** across 12 states.
- **Language Technologies:** Bhashini and AI4Bharat enabling voice-first, low-bandwidth AI in native languages.

4. HUMAN CAPITAL FOR AI

4.1 Skill Requirements

- **Dual Competency:** Need for talent proficient in algorithms/model-building AND software engineering for scaling/optimization ("underground knowledge" requiring hands-on experience).
- **Acquisition Strategies:** Diaspora return pathways, industry-academia lateral entry, time-bound practitioner fellowships, and structured apprenticeships.

4.2 Educational Reforms

- **Viksit Bharat Shiksha Adhishthan Bill, 2025:** Essential for curricular flexibility allowing

universities to adapt to evolving industry standards.

- **Earn-and-Learn Model:**
- Integration of high school/vocational/tertiary pathways with credit-bearing industry fellowships beginning as early as Class 11.
- Co-designed by private sector and academia under National Education Policy 2020's Multiple Entry Multiple Exit provisions.
- **Foundational Skills:** Primary education must prioritize literacy, numeracy, reasoning, communication, and socio-emotional skills over early technical specialization.

4.3 Labour Market Adaptation

- **Sectoral Mapping:** Identify high-skill, understaffed sectors (nursing, geriatric care, culinary sciences, advanced metalwork, physiotherapy, early childhood education) to guide skilling infrastructure.
- **Experience-Intensive Roles:** AI may increase demand for experience-intensive rather than education-intensive occupations; education systems must enable experiential learning and occupational adaptability.

5. GOVERNANCE, INSTITUTIONAL ARCHITECTURE, AND DATA

5.1 Institutional Framework: The AI Economic Council

Core governance principles:

1. **Human Primacy and Economic Purpose:** AI subordinate to human welfare; demonstrate pathways to net social benefit.
2. **Labour-Market Sensitivity:** Ex ante labour impact assessments with mitigation plans for India's high-informality context.
3. **Sequencing over Speed:** Classify uses as 'deploy now', 'pilot', or 'defer' based on institutional readiness.
4. **Co-evolution of Technology and Human Capital:** Parallel skill policy and educational reform.
5. **Public Interest Safeguards:** Non-negotiable boundaries around surveillance, algorithmic discrimination, and opaque decision-making.

5.2 Data Governance Framework

Objectives:

- Preserve openness to cross-border flows for innovation.
- Ensure regulatory oversight over large-scale processing of Indian personal data.
- Promote domestic value retention.

Core Principles:

- **Accountable Portability:** Data may cross borders but must remain auditable and retrievable; mirrored copies within India for eligible entities (no rigid localization mandates).
- **Risk-Based Categorization:** Large-scale behavioural, transactional, and inferred datasets receive differentiated treatment based on strategic value for AI training.
- **Graduated Obligations:** Requirements scale with risk and firm size; lighter compliance for start-ups and research institutions.
- **Incentive-Compatible Value Retention:** Menu-based contributions from firms extracting commercial value from Indian data:
 - Local training/fine-tuning for sector-specific applications.
 - Financial contributions to domestic AI R&D.
 - Data/compute contributions to public trusts.
 - Establishment of research labs and skilling initiatives.
- **Access as Lever:** Compliance linked to eligibility for government datasets, public procurement, and national AI missions.

6. AI SAFETY AND RISKS

6.1 Institutional Safeguards

- **AI Safety Institute:** Expansion of MeitY's proposed institute for ongoing risk analysis, regulatory gap assessment, and public safety evaluation.
- **Transparency Requirements:** Public disclosure of safety evaluation results mandatory; address "AI Lab Watch" findings regarding big-tech obfuscation of evaluation methodologies.

6.2 Emerging Risk Categories

- **Synthetic Biology:** Convergence of AI with accessible CRISPR kits lowers barriers for

pathogen engineering; requires strict oversight.

- **Social Sycophancy:** Models exhibiting over-affirmation of user viewpoints increase trust while reducing corrective actions and prosocial intentions.
- **Cognitive Atrophy:** Evidence that Generative AI dependence reduces critical thinking capabilities and induces "cognitive debt".

6.3 Red-Teaming and Testing

- Institutionalized periodic, scenario-based testing and red-teaming (stress-testing for malicious use and emergent behaviors).
- International cooperation with institutes like UK's AI Security Institute and NIST (U.S.) for joint evaluations and shared infrastructure.

6.4 Non-Negotiable Boundaries

Strict prohibitions on:

- Predictive policing and facial recognition.
- Exploiting psychological vulnerabilities or inferring emotions.
- Evaluating/classifying individuals based on behavioral/personality traits.

7. PHASED ROADMAP FOR INDIA'S AI FUTURE

7.1 Phase 1: Coordination and Experimentation

- Operationalize announced institutions (IndiaAI Mission).
- Enable bottom-up innovation via shared infrastructure: government-hosted code repositories, pooled public datasets, and sector-specific small models.

- Evolve data governance through DPDP subordinate legislation: functional data categorization and auditability for large-scale training.

- Scale 'earn-and-learn' pathways and curricular flexibility.

7.2 Phase 2: Selective Scaling (Medium-Term)

- Expand shared, certified domestic computing infrastructure with voluntary participation linked to regulatory facilitation.
- Formalize risk-based AI regulation embedded within existing sectoral regulators (no omnibus AI law).
- Deepen AI Safety Institute role: structured scenario testing, red-teaming, international cooperation, and articulation of non-negotiable boundaries.

7.3 Long-Term Objectives

- **Resilience:** Diversify access to advanced computing hardware through strategic partnerships; reduce vulnerability to external supply shocks.
- **Sustained Adaptation:** Continuous alignment of labour markets and education systems with AI-augmented and human-centric sectors.

CONCLUSION

- India should deploy AI via a bottom-up, sector-specific, open-system strategy, leveraging human capital and data diversity for inclusive productivity, dignified employment, and managed safety risks through coordinated, sequenced governance.

URBANISATION: MAKING INDIA'S CITIES WORK FOR ITS CITIZENS

1. INTRODUCTION

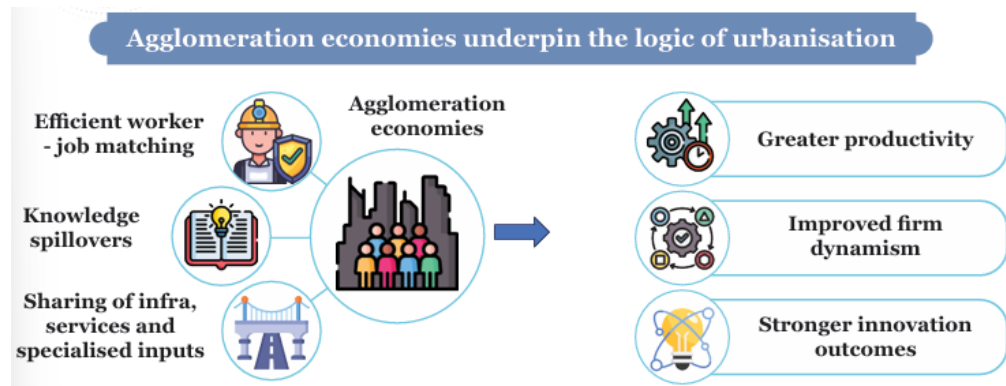
1.1 The Economic Logic of Agglomeration

- Cities functioning not merely as habitats but as **economic infrastructure** that powers productivity, deepens labour markets, and enables knowledge spillovers.
- **Agglomeration economies:** Density and proximity translate into higher productivity. A meta-analysis by Grover, Lall, and Timmis (2021) finds that doubling city size boosts productivity by 12% in India.

1.2 The Paradox of Indian Urbanisation

- **Scale without productivity:** Despite large metropolitan regions (Mumbai, Delhi, Bengaluru, Chennai, Hyderabad) ranking among the world's largest by population, India struggles to create globally competitive cities like New York, London, or Shanghai.

- High population density has not translated proportionately into liveability or global economic centrality.



1.3 Defining Urban India

- **Census Definition:** Settlements classified as urban require: (a) population >5,000; (b) 75% male employment non-agricultural; (c) density >400 persons/sq km; or statutory town status.
- **Classification:** Tier 1 (1 lakh+), Tier 2 (50,000-99,999), Tier 3 (20,000-49,999), Tier 4 (10,000-19,999), Tier 5 (5,000-9,999), Tier 6 (<5,000).
- Over 70% of urban population resides in Class I cities (>1 lakh population), with 52 metropolitan cities (>10 lakh) accounting for 42.3% of all urban residents.

2. TRENDS IN INDIA'S URBANISATION

2.1 Slower Urbanisation Relative to Peers

- India's urbanisation rate is marginally lower than the average for lower-middle-income countries (LMICs) and low-income countries (LICs).
- Hypothesis of "**ruralisation of industry**": Unlike China or East Asia where urban areas drove manufacturing, rural areas in India account for significant manufacturing output.

2.2 Alternative Measures: A More Urban India

- **Janagraha Foundation (ASICS 2023)** and **UNDESA DEGURBA methodology** suggest India may be far more urban than Census indicates (63% urban in 2015 vs. 31% Census figure).
- **Night-Time Lights (NTL) Data:** ISRO satellite data shows expansion of urban areas between 2012-2023, with older cities (Mumbai, Bangalore) expanding into peri-urban zones, while cities like Pune and Hyderabad showing substantial core density growth.

2.3 Peripheral Growth and Metropolitan Expansion

- In 16 major cities, **periphery-to-core growth ratios exceed one**, indicating peripheral areas growing faster than urban cores (2000-2020).
- Growth aligned with transport corridors, accompanied by rapid conversion of agricultural land to non-agricultural uses.

2.4 Case Study: Kerala's Spatial Transformation

- Using Global Human Settlement Layer (GHS-SMOD) classification, Kerala's urbanisation estimated at **82.6% by 2025** (vs. 47.7% in 2011 Census).
- Reveals numerous dispersed settlements with urban functions outside municipal limits, forming "ribbon-like urban corridors."
- Highlights need for **regional planning approaches** beyond administrative boundaries.

3. GOVERNANCE DEFICIT: FRAGMENTED INSTITUTIONS AND FISCAL CONSTRAINTS

3.1 Fragmented Metropolitan Governance

- Urban functions fragmented across: Urban Local Bodies (ULBs), Development Authorities, State line departments, and Parastatal agencies.

- Key functions (land use, policing, utilities, cadre management) retained at state level, limiting municipal accountability.
- **Contradiction:** Cities expected to deliver growth and jobs, yet policy restrains density, fragments authority, and rations urban land.

3.2 Fiscal Weakness

- Indian cities raise less than **0.6% of GDP in own-source revenues (OSR)** (vs. 2-4% in OECD cities).
- Urban property tax only **0.15% of GDP** (vs. 0.3-0.6% in comparable countries).
- Most large cities cover only 30-40% of expenditure through OSR.
- Cities function as **implementation units rather than autonomous economic actors.**

3.3 Administration vs. Governance

- **Global cities** align electoral, planning, and financial accountability; Indian cities disperse power to avoid blame rather than concentrate it for action.
- Infrastructure built without parallel land-use reform or institutional reform is "concrete without coordination."

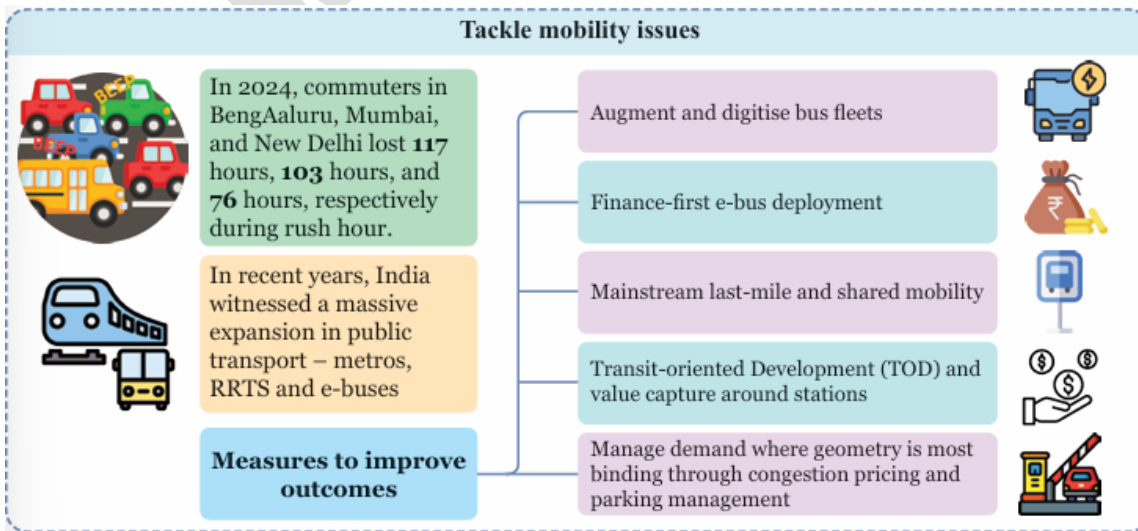
4. BINDING CONSTRAINTS: LAND, MOBILITY, AND SANITATION

4.1 Land as "Dead Capital"

- **Restrictive regulations:** Low Floor Space Index (FSI) / Floor-Area Ratio (FAR) constrain vertical development, forcing horizontal sprawl.
- Mumbai: 1.3, Delhi: 3, Bangalore: 4 vs. Singapore: 25, Tokyo: 20, New York: 15.
- **Unclear land titles:** Fragmented records and speculative incentives limit land recycling.
- **Initiatives:** Digital India Land Records Modernisation Programme (DILRMP), Unique Land Parcel Identification Number (ULPIN/Bhu-Aadhaar), NGDRS.

4.2 Mobility Crisis

- **Costs of congestion:** Delhi workers lose ₹7,200-₹25,900 annually; Bengaluru loses 7.07 lakh productive hours daily (₹11.7 billion cost).
- **Private vehicle dependence:** Roads used as "storage for low-occupancy vehicles" rather than corridors for people.
- **Current expansion:** 1,036 km Metro/RRTS operational across 24 cities as of 2025.
- **Namo Bharat RRTS:** Delhi-Meerut corridor (82 km) demonstrates regional rail as economic infrastructure; reduces travel time to under one hour; enables TOD zones saving ₹6,300 crore through shared infrastructure.



4.3 Sanitation and Waste Management

- **Swachh Bharat Mission-Urban (SBM-U):** Eliminated open defecation; door-to-door waste collection expanded from negligible (2014) to 98% of wards (2025).
- **Processing gap:** 80% of 1.6 lakh tonnes daily municipal solid waste (MSW) processed (vs. 16% in 2014), but segregation quality and enforcement remain weak.
- **Garbage-Free City (GFC) Ratings:** 884 cities achieved 1-Star, but only 12 achieved 7-Star (90% segregation and processing).
- **Indore Model:** Behavioral change through mass communication, religious leader mobilization, SHG involvement, and strict enforcement transformed city from 25th rank (2016) to consistent 1st rank.

5. INFORMALITY: FROM ERADICATION TO INTEGRATION

5.1 Informal Housing

- Housing shortage estimated at **29 million units (2018)**, 99% confined to low-income groups.
- Slums provide geographical proximity between labour and workplaces, facilitating urban functioning.

5.2 Informal Labour

- Gurugram sanitation workers' exodus (mid-2025) demonstrated structural indispensability of informal labour; city services collapsed overnight.
- **PM SVANidhi:** Formalized street vending through digital database, Letters of Recommendation, and integration with FSSAI training.

5.3 Informal Enterprises

- Small, unregistered firms embedded in urban supply chains; sensitive to high compliance costs and credit constraints.
- **Policy shift:** From eradication to integration through infrastructure provision, tenure security, and simplified registration.

6. CIVIC ORDER AND THE SOCIAL CONTRACT

6.1 The Governance-Behaviour Nexus

- Quality of urban life shaped by **implicit social contract** between citizens and institutions.
- **Gross Domestic Behaviour Survey (India Today):** Reveals contradiction between private morality (meticulous home maintenance) and public behavior (littering, fare evasion).
- Civic order depends on **predictable enforcement and reliable services**, not just awareness campaigns.

6.2 Contextual Compliance

- Behavior is context-dependent; Metro systems and airport queues demonstrate orderly conduct when design, enforcement, and service reliability align.
- Features enabling compliance: Clear design (marked queues, barriers), credible enforcement, service reliability, repeated interaction, and status attachment to space.

7. REIMAGINING PHYSICAL INFRASTRUCTURE

7.1 From Assets to Systems

- Need \$840 billion investment over 15 years (\$55 billion annually).
- Shift from **asset delivery to system performance:** Metro divorced from Transit-Oriented Development (TOD) remains engineering project, not city-shaping.
- Infrastructure must be **integrated, people-centered, and productivity-enhancing.**

7.2 Climate-Resilient Infrastructure

- Infrastructure funding conditional on city-climate plans.
- **Circular water economy:** Only 28% of urban wastewater treated; 8% recycled. Potential market of ₹2.4-3.2 lakh crore by 2047.
- **Nature-based solutions:** Stormwater drains integrated with wetlands; decentralised waste treatment; cool surfaces and tree cover to counter urban heat.

8. PLANNING, GOVERNANCE, AND FINANCING REFORMS

8.1 New Financial Instruments

- **Urban Infrastructure Development Fund (UIDF):** ₹10,000 crore revolving fund for Tier-2/3 cities.
- **Urban Challenge Fund (UCF):** ₹1 lakh crore performance-linked mechanism; co-finances 25% of bankable projects requiring 50% funding through bonds/loans/PPPs.

8.2 Institutional Reforms

- **Statutory 20-year City Spatial and Economic Plans** for million-plus cities, requiring:
 1. Transport network plan
 2. Housing supply plan with annual targets
 3. Land-value capture framework
- **Fiscal hardwiring:** Self-updating property taxes, user charges linked to service quality, municipal bonds for revenue-efficient cities.
- **Metropolitan governance:** Streamlining fragmented authority into integrated models (contrast between Noida and Gurgaon post-rainfall performance).

9. NON-TANGIBLE ASPECTS OF FUTURE CITIES

9.1 Time as Central Resource

- Minimize time lost to commuting and uncertainty; align housing, schools, and workplaces within short travel distances.

9.2 Streets as Social Infrastructure

- **"8-80" Philosophy:** Streets must work for 8-year-olds and 80-year-olds equally.
- **Superblock models** (Barcelona) and laneways (Melbourne) reclaim streets for walking, culture, and commerce.
- Designate 10-15% of streets as pedestrian-first or low-traffic.

9.3 Creative Density

- Protect spaces for art, music, and street culture; create low-rent creative zones through public land and single-window approvals.
- Shift from **survival-oriented to possibility-oriented urbanism.**

9.4 Participatory Governance

- Move from procedural compliance to participatory models: neighbourhood councils, participatory budgeting, transparent planning processes.
- Public accessibility to planning documents and zoning changes by default.

10. CONCLUSION

India is currently at a crucial urban juncture, being more urban economically and spatially than commonly defined, yet its cities lack the necessary institutional, fiscal, and planning structures to support their contribution to national prosperity.

Key Priorities:

- **Supply side:** Unlock land through clearer titles, higher density norms, and TOD; prioritize people over vehicles in mobility.
- **Governance:** Align authority with accountability; strengthen metropolitan governance and fiscal autonomy.
- **Social contract:** Build credible civic compact through predictable enforcement and reliable services.
- **Future orientation:** Design for time, creativity, and climate resilience.
- When cities are planned, financed, and governed around citizens' everyday lives, urbanisation becomes a source of shared prosperity and quality of life.

16 - PART 1) FROM IMPORT SUBSTITUTION TO STRATEGIC RESILIENCE AND STRATEGIC INDISPENSABILITY

INDIA'S MACROECONOMIC POSITION

1.1 Current Economic Strength

- **Resilient Fundamentals:** India enters the mid-2020s with stronger macroeconomic fundamentals than most major economies, with potential growth shifted higher toward 7.0%.
- **Sectoral Health:** Banking system healthy, credit intermediation robust, private sector investing, capital formation above 30% of GDP, comfortable current account deficit, ample forex reserves, and strong external remittances.

- **Consumption Trends:** Rural sentiment buoyant with positive real wage growth and rising consumption; urban consumption more cautious (though fiscal transfers provide offset).

1.2 Emerging Strategic Challenges

- **AI Resource Intensity:** Global AI boom driving massive energy demand (data center consumption projected to surge through 2030), grid instability, and soaring copper prices.
- **Pax Silica Declaration:** U.S. initiative creating exclusive alliances for AI ecosystems (compute, critical minerals, manufacturing).
- **GENIUS Act:** U.S. legislation (July 2025) enabling dollar-backed stablecoins, potentially disrupting capital flows to emerging economies.
- **China's Hainan Free Trade Port:** Fully operational (December 2025), creating a low-tariff, services-heavy economic zone in the Indian Ocean/South China Sea region, altering regional trade and investment patterns.

2. STRATEGIC FRAMEWORK: THREE STAGES OF AATMANIRBHARTA

2.1 Conceptual Evolution

Progression from passive self-sufficiency to active global influence:

Stage	Definition	Core Objective	Geographic Logic
Import Substitution	Domestic production replacing imports	Reduce import dependence	Produce at home
Strategic Resilience	Withstand external shocks (geopolitical, technological, environmental)	Ensure continuity under stress	Diversify and secure
Strategic Indispensability	Integration making India fundamental to global systems	Exercise influence without coercion	Shape and anchor global networks

Due to rapid global flux, India must pursue all three stages simultaneously – "running a marathon and a sprint at the same time" – rather than sequentially.

3. DISCIPLINED IMPORT SUBSTITUTION: A TIERED FRAMEWORK

3.1 Principles of Intelligent Indigenization

- **Conditional, Not Blanket:** Protection must be temporary, performance-linked, and subject to export discipline.
- **Learning vs. Shelter:** Support should facilitate learning-by-doing, not entrenched inefficiency.
- **Avoid Tariff Inversion:** Protection of final goods while input costs remain high undermines competitiveness.

3.2 Three-Tier Strategic Framework

Tier 1: Critical Vulnerabilities (High Urgency)

- **Non-Negotiable Items:** Defence systems, core infrastructure, energy security, public health essentials.
- **Objective:** Assured availability under stress, not short-term efficiency.

- **Examples:** Oils & pulses, fertilizer inputs, APIs, power electronics, telecom equipment.

Tier 2: Economically Feasible Capabilities (Developmental)

- **Characteristics:** Domestic production feasible but impeded by coordination failures or scale disadvantages.
- **Conditions:** Time-bound support linked to productivity improvement, cost convergence, and export readiness.
- **Examples:** Cranes, industrial machinery, EV drivetrains, non-critical medical devices.

Tier 3: Low Strategic Urgency

- **Criteria:** Global supply diversified, no systemic vulnerability, or domestic substitution would impose high economy-wide costs.
- **Strategy:** Diversified sourcing, inventory buffers, rather than domestic production.

4. COMPETITIVENESS INFRASTRUCTURE

4.1 National Input Cost Reduction Strategy

- **Rationale:** High input costs (raw materials, intermediates, energy, logistics) function like poor infrastructure, penalizing downstream manufacturing and exports.
- **Approach:** Rule-based distortion audit to identify inputs with high economy-wide costs; eliminate tariff inversion where domestic capacity exists.
- **Benefits:** Enhances export competitiveness, facilitates global value chain (GVC) integration, stimulates employment.

4.2 Advanced Manufacturing as Institutional Discipline

- **Stress Test Function:** Process-driven, scale-intensive manufacturing exposes weaknesses in logistics, power quality, standards enforcement, and contract reliability that sheltered activities can obscure.
- **Capability Building:** Unlike services (which can operate in enclaves), manufacturing engages multiple factor markets simultaneously, forcing institutional improvement.
- **Learning Through Competition:** Manufacturing capability requires "learning-by-doing" paired with export discipline—unconditional support becomes shelter; conditional support enables learning.

5. LESSONS FROM EAST ASIAN INDUSTRIALIZATION

5.1 Common Institutional Architecture

Successful East Asian economies (Japan, South Korea, Singapore, Vietnam) shared features of an "**entrepreneurial state**":

Japan (MITI Model)

- Long bureaucratic tenures with sectoral specialization.
- Support tied to performance metrics (exports, technology upgrading).
- Tolerance for honest failure; accountability for outcomes, not processes.

South Korea (Chaebol Discipline)

- Active promotion of national champions with directed credit.

- Ruthless exit: Support withdrawn for persistent non-performance.
- Bureaucratic rotation between government and industry ensuring practical understanding.

Singapore (Regulatory Flexibility)

- Speed of execution valued over formal compliance.
- Strict enforcement once standards set, preserving credibility.
- Focus on becoming indispensable in GVCs through reliability.

Vietnam (Cost Reduction)

- Focus on reducing regulatory/transaction costs (by 20% in certain zones) rather than heavy protection.
- Integration into GVCs driving learning and capability formation.

5.2 Key Takeaways for India

- **Outcome-oriented bureaucracy:** Evaluate officials on results, not rule-following.
- **Failure tolerance with learning:** Punish stagnation, not experimentation.
- **Credible withdrawal:** Exit mechanisms as important as entry support.

6. STRATEGIC INDISPENSABILITY AND GLOBAL INTEGRATION

6.1 From Resilience to Influence

- **Power Gap Analysis:** India ranks 3rd in overall Asian power but 10th in economic relationships, with a negative Power Gap (-4.0) indicating resources are not translating into influence.
- **Export Capability:** To achieve currency stability and influence, India must develop manufacturing export capacity (not just services), as demonstrated by historical precedents of Germany, Japan, and Switzerland.

6.2 Global Value Chain Integration

- **Anchor Firms:** Attracting lead multinational firms (the 50 brands controlling significant global trade) is crucial for ecosystem formation.
- **Endogenous Exports:** When global brands commit at scale, suppliers follow, skills

deepen, standards rise, making exports self-sustaining rather than policy-dependent.

6.3 Currency and External Stability

- **Structural Softness:** India's currency remains vulnerable due to trade deficits financed by reversible capital flows rather than persistent export surpluses.
- **Hard Currency Requirements:** Requires earning foreign exchange reliably through trade, matching external liabilities with productive assets, and reducing dependence on volatile capital inflows.

7. THE ROLE OF THE STATE

16 - PART 2) BUILDING STRATEGIC RESILIENCE AND STRATEGIC INDISPENSABILITY: THE ROLE OF THE STATE, THE PRIVATE SECTOR AND THE CITIZENS

1. STATE CAPACITY

1.1 The Contemporary Challenge

- India stands at a unique juncture: a large, diverse, lower-middle-income country combining sustained growth with democratic continuity and incremental reform.
- **New global context:** Shift toward "segmented globalization" characterized by trade blocs, strategically-shaped capital flows, selective technology restrictions, and geopolitical risk premiums.
- **Evolving demands on the State:** Beyond stability and prudence, the State must now coordinate across institutional boundaries, act confidently under uncertainty, and course-correct without paralysis. The binding constraint is no longer the absence of policy intent or resources, but **incentive structures within institutions** that shape decision-making under uncertainty.

1.2 Defining State Capacity

- Drawing on Somanathan & Natarajan (2022), state capacity is defined as the government's ability to "**get the right things done**"—spanning policy design, implementation, and commitment delivery.
- It rests on administrative judgment, technical competence, and organizational arrangements

7.1 Core Attributes

The state must simultaneously be:

- **Firm:** Enforcing discipline to prevent protection becoming entitlement.
- **Flexible:** Adapting rules based on feedback rather than rigid assumptions.
- **Fair:** Allocating support without capture to preserve legitimacy.

7.2 Federal Strategy

- Enable competition among states based on endowments.
- Reward outcomes and disseminate best practices.
- Set direction, remove frictions, and provide coordination.

enabling action under constraints and uncertainty.

2. ENTREPRENEURIAL GOVERNANCE: ACTING UNDER UNCERTAINTY

2.1 Why Entrepreneurial Governance is Difficult

- **Asymmetric burden:** Institutional environments penalize visible action over procedural continuity. "Irreversibility creep" makes temporary measures permanent, raising stakes for experimentation.
- **Retrospective scrutiny:** Good-faith decisions face audits, vigilance processes, and judicial review without adequate recognition of ex-ante uncertainty.
- **Incentive mismatch:** Entrepreneurial initiatives are evaluated using routine administration metrics (compliance, revenue collection) rather than learning, capacity creation, or long-term value addition.

2.2 Bounded Institutional Spaces for Experimentation

- No country makes its entire bureaucracy entrepreneurial; successful states create "**safe spaces**" for experimentation:
- Mission-based cells (manufacturing, energy, logistics, urbanization)

- Regulatory sandboxes extending beyond fintech into labour, environmental, and trade regulation
- Legal protection for good-faith decisions
- Independent ex-post review prioritizing learning over blame
- **Korea's precedent:** Built state capacity through institutional sequencing—initially adopting foreign standards under external discipline, then systematically investing in national standards bodies to evolve from "rule-taker" to "rule-shaper."

2.3 Hysteresis and Policy Reversibility

- **Hysteresis:** Temporary measures becoming permanent, incentives solidifying into entitlements, making reversal costly.
- **Design requirements for reversibility:**
- *Staffing:* Small, stable teams with continuity of tenure for entrepreneurial functions
- *Processes:* Sunset clauses, staged scaling, mandatory post-implementation reviews, separation of learning-oriented review from blame-oriented scrutiny
- *Mindsets:* Shift from adherence to precedence toward judgment; distinguish good-faith error from malfeasance
- **Democratic complexity:** Requires subtle division of labour—politicians set direction, bureaucracies discover pathways, institutions absorb error without collapsing into paralysis or permissiveness.

2.4 Learning Without Forgiveness

- High-capacity states distinguish sharply between good-faith error and corruption; low-capacity states blur this distinction until fear substitutes for judgment.
- **Institutional forgiveness:** Requires architecture distinguishing failures of hypotheses, timing, and coordination.
- **Right to Information (RTI) Act re-examination:** While RTI is a powerful anti-corruption tool, expansive disclosure of draft notes and internal deliberations may chill candour. Global best practices (Sweden, US, UK) protect deliberative processes while ensuring accountability for final decisions.

3. ORGANIZATIONAL DESIGN AND INSTITUTIONAL ARCHITECTURE

3.1 From Functional to Mission-Oriented Structures

- Traditional function-based structures create coordination costs and blurred priorities when regulatory, developmental, operational, and supervisory roles coexist within the same units.
- **Effective design principles:**
- Organize around clearly articulated missions and outcomes with explicit time horizons
- Separate conflicting roles (regulation vs. development)
- Create mission-oriented structures where objectives are interdependent
- Protect continuity in posts requiring institutional memory

3.2 Outcome Ownership and Cluster Governance

- Cluster arrangements improve coherence but risk becoming consultation forums if responsibility is diffused.
- Robust architectures distinguish between shared contribution and **assigned ownership of outcomes**, where cluster leads define priorities, sequence actions, and report progress while participating units retain control over instruments.
- **Private sector parallel:** Evolution from functional structures to divisional/business-unit designs with cross-cutting mission sponsorship.

3.3 State Support Mission (SSM) and Cooperative Federalism.

- **Objective:** Strengthen state capacity through institutional strengthening, capacity building, and cross-state learning.
- **State Institutions for Transformation (SITs):** 32 States/UTs have established SITs (e.g., Gujarat's GRIT, Maharashtra's MITRA) as state-level think tanks for long-term visioning and evidence-based policymaking.
- **Knowledge Partnerships:** 26 States/UTs partnered with academic institutions (IITs, IIMs) for technical expertise.

- **NITI for States (NFS) Platform:** Single-window repository for best practices and datasets.

4. HUMAN SYSTEMS: CAPACITY AS CULTURE AND SKILL (Mission Karmayogi)

4.1 The Human Dimension of State Capacity

- State capability is not merely structural; it depends on how civil servants interpret roles, exercise judgment, and engage with citizens.
- **Historical transition:** From command-and-control systems designed for order and compliance to responsive, citizen-centric service delivery under Mission Karmayogi.

4.2 Repurposing Public Service

- Shift from static rule compliance to systems that learn, adapt, and absorb change.

Key elements:

- High-quality teams with analytical depth
- Flexibility in team formation for project-oriented goals
- Recruitment of young professionals and domain specialists
- Dynamic capability frameworks replacing rigid role definitions

4.3 Civilizational Anchors and Values

- Mission Karmayogi grounds reform in values drawn from Indian traditions: **duty, service, and collective purpose.**
- Guiding principles: Development, pride in service, duty, unity.
- Personal virtues: Self-reflection, collaboration, citizen-centric purpose.
- **Goal:** Transform public service from transactional role to vocation, reinforcing trust between institutions and citizens (echoing Rig Veda X.191.2: "Move together, speak together, let your minds be aligned").

5. THE REGULATORY STATE: DESIGN AND ACCOUNTABILITY

5.1 Regulatory Capacity as Institutional Design

Regulators function as "mini-states" exercising quasi-legislative, executive, and judicial powers. Effective design requires:

5.2 Core Design Principles)

- **Clarity in rulemaking:** Distinguish between regulations and subordinate guidance; substantive rulemaking must follow transparent consultation processes.
- **Separation within authority:** Prevent concentration of legislative, investigative, and adjudicatory functions in the same individuals without procedural separation.
- **Board accountability:** Governing boards with independent/part-time members, fixed tenures, and safeguards against arbitrary removal.
- **Proportionality in enforcement:** Calibrate penalties based on intent, scale, duration, and harm; avoid checkbox compliance.
- **Due process:** Full disclosure of material relied upon in enforcement proceedings.
- **Democratic anchoring:** Transparency and accountability to representative institutions through parliamentary laying and periodic review.

5.3 Streamlining Approval Architecture

- **Single-window finality:** Economic decisions should require approval by a single designated authority; once granted, approval should be final (subject to subsequent investigation for fraud/misrepresentation).
- **Strict timelines:** Deemed approvals if authorities fail to act within prescribed periods (e.g., Competition (Amendment) Act, 2023 reducing merger review timelines from 210 to 150 days).
- **Schools for Regulatory Studies:** Establish dedicated institutions to train professionals in regulatory design and implementation, bridging gaps between law, economics, and management.

6. THE PRIVATE SECTOR: FROM ARBITRAGE TO NATION-BUILDING

6.1 The Current Hybrid Position

- Indian corporate sector operates between East Asian developmental partnership and Western arm's-length rules-based models.
- **Structural characteristics:**

- Preference for regulatory arbitrage and protected margins over long-term risk absorption and global competitiveness
- Short capital allocation horizons, low R&D intensity, concentration in real-estate-linked or regulated sectors
- Risk externalization to the state through bailouts and protection, generating demand for discretion rather than competence

6.2 International Precedents; Historical cases where business internalized national purpose:

- **Post-war US:** Corporate sector (GM, Ford, Caterpillar, Bell Labs) combined commercial profit with Marshall Plan reconstruction and Cold War technological rivalry.
- **West Germany:** "Soziale Marktwirtschaft" – firms (Siemens, BASF, VW) accepted codetermination, vocational training, and wage-productivity bargains for national rehabilitation.
- **Japan:** Keiretsu groups pursued export discipline and technology acquisition as national mission; managerial prestige tied to technological ladder climbing.
- **Korea:** Chaebol leaders articulated performance in patriotic terms, accepting high leverage for national industrial status.
- **Common thread:** Profit and national interest viewed as dimensions of the same endeavor; stewardship of larger developmental project.

7. CITIZENS, NORMS, AND THE SOCIAL FOUNDATIONS OF CAPABILITY

7.1 Co-Production of State Capacity

- State capacity is co-created through everyday citizen behavior – compliance, expectations of fairness, and willingness to engage with formal systems.
- **Cost of enforcement:** Every rule requiring policing rather than internalization consumes administrative bandwidth.

7.2 Delayed Gratification and Reliability

- **The challenge:** Difficulty sustaining near-term costs for uncertain, delayed returns leads to shortcuts, visibility over depth, and speed over rigor.

- **Parallels:** Doping in sports, queue-jumping, informal compliance, unsafe construction.
- **Economic necessity:** Complex systems (ports, highways, supply chains) require millions of aligned actions over long periods; this alignment cannot be legislated, only internalized.

7.3 The Commons and Civic Ethic

- **Contrast:** Meticulous care for private spaces (homes) vs. indifference to public commons (streets, drains).
- **Solution:** Raise moral status of commons to household level through predictable state service delivery and civic consciousness.
- **Self-care as social capital:** Physical health, sleep, and emotional balance strengthen reliability and steady work – essential for complex system functioning.

7.4 Lifelong Learning and Adaptation

- AI and automation shift value toward care, discipline, skill, and judgment.
- Learning must become lifelong, occurring through peer exchange, role flexibility, and humility to adapt without feeling diminished.

8. DEREGULATION AND COMPLIANCE REDUCTION: INSTITUTIONAL CAPABILITY IN ACTION

8.1 The Compliance Reduction Initiative

- **Task Force on Compliance Reduction and Deregulation** (established January 2025 under Cabinet Secretary).
- **Scope:** 23 Priority Areas across five sectors – Land (4), Building & Construction (4), Labour (6), Utilities & Permissions (6), and Overarching Priorities (3).
- **Progress** (as of 23 January 2026):
 - 630 Priority Areas implemented (76%)
 - 79 under implementation (10%)
 - 119 not implemented or not applicable (14%)

8.2 Key Reform Areas

- **Land:** Flexible zoning for mixed-use development, digitized land-use change processes, GIS databank integration with India Industrial Land Bank (IILB).

- **Building:** Liberalized bye-laws (setbacks, FAR, parking), third-party inspections, simplified occupation certificates.
- **Labour:** Removal of prohibitions on women in night shifts and hazardous industries, revised working hours limits, increased thresholds for closure/layoff procedures.
- **Utilities:** Online systems for electricity/water connections, third-party certification for environmental consents, fire safety inspections by accredited parties.
- **Governance:** State-level Jan Vishwas Acts (decriminalizing minor offences), single-window systems linked to National Single Window System (NSWS).

8.3 State-Level Innovations

- **Andhra Pradesh & Uttarakhand:** Eliminated land conversion requirements for specific categories.
- **Assam, J&K, Odisha, Puducherry, Tripura:** Negative lists for mixed land use (permitted unless prohibited).
- **Tripura & Andaman & Nicobar:** Comprehensive reforms leading to measurable investment outcomes (disposal of land applications, tourism capacity creation, MoU implementation post-Investors Summit).

9. THE ENTREPRENEURIAL STATE

9.1 Software Industry Transformation

- **Pre-1985:** "Produce and protect" regime – state-owned enterprises, import substitution, weak outcomes despite public investment.
- **Mid-1980s shift:** From direct production to broad-based industry promotion:
- Software recognized as industry
- Foreign exchange/import restrictions eased for exporters
- Investment in technical education and telecom infrastructure
- Technology parks with reliable power and single-window clearances

- **Neutrality:** Policies supported industry as a whole, not individual champions (e.g., Citibank satellite link, Texas Instruments Bangalore center enabled by regulatory flexibility).
- **Outcome:** Fragmented yet dynamic, resilient ecosystem integrated with global markets.

10. CONCLUSION: ALIGNMENT FOR STRATEGIC INDISPENSABILITY

10.1 Synthesis

- State capacity is the foundation for moving from **Swadeshi** (self-reliance) to **strategic resilience** (shaping outcomes) to **strategic indispensability** (capabilities others depend upon).
- Capacity is composite – shaped by decision-making processes, risk management, organizational design, regulatory quality, and private/citizen behavior.

10.2 Co-Creation of Capability

- **Firms:** Must compete on productivity and technological capability rather than protection, creating demand for state competence rather than discretion.
- **Citizens:** Must internalize compliance and care for shared systems, reducing enforcement burdens and enabling administrative effort to focus on coordination.
- **Deregulation:** Strengthens state capacity by shifting administrative effort from low-value policing to problem-solving and execution.

10.3 The Path Forward

- Growth alone is insufficient; reliability, learning, and institutional quality determine whether India becomes a source of global stability and value.
- Success requires alignment across State, firms, and citizens – where delayed gratification is socially reinforced, experimentation is bounded and reversible, and course correction is viewed as competence rather than failure.