Industry Report on Logistics Solution to Medical Diagnostics, Pharmaceutical and Contract Research Organization (CRO) industry in India

July 31st, 2026

Prepared for

Credent Connect N Care Limited

Disclaimer

*This study has been undertaken through extensive secondary research, which involves compiling inputs from publicly available sources, including official publications and research reports. Estimates provided by Dun & Bradstreet ("**Dun & Bradstreet**") and its assumptions are based on varying levels of quantitative and qualitative analysis including industry journals, company reports and information in the public domain.*

Dun & Bradstreet has prepared this study in an independent and objective manner, and it has taken all reasonable care to ensure its accuracy and completeness. We believe that this study presents a true and fair view of the industry within the limitations of, among others, secondary statistics, and research, and it does not purport to be exhaustive. The results that can be or are derived from these findings are based on certain assumptions and parameters/conditions. As such, a blanket, generic use of the derived results or the methodology is not encouraged.

Forecasts, estimates, predictions, and other forward-looking statements contained in this report are inherently uncertain because of changes in factors underlying their assumptions, or events or combinations of events that cannot be reasonably foreseen. Actual results and future events could differ materially from such forecasts, estimates, predictions, or such statements.

The recipient should conduct its own investigation and analysis of all facts and information contained in this report is a part and the recipient must rely on its own examination and the terms of the transaction, as and when discussed. The recipients should not construe any of the contents in this report as advice relating to business, financial, legal, taxation or investment matters and are advised to consult their own business, financial, legal, taxation, and other advisors concerning the transaction.

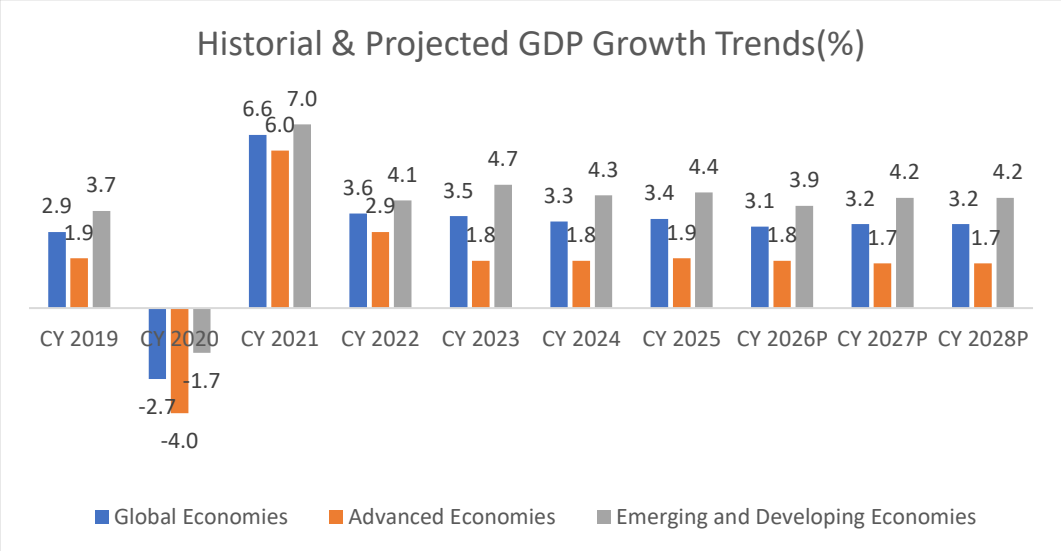
Table of Contents

Global Macroeconomic Scenario

Global Economic Overview

According to World Economic Outlook, global growth is projected at 3.1% in 2026 and at 3.2% in 2027 and 2028, slower than the recent pace of about 3.4% in CY 2024–25 and is expected to settle at approximately that rate over the medium term, below the historical average of 3.7% during 2000–19. The forecast for 2026 has been revised downward by 0.2 percentage point, while the forecast for 2027 and 2028 remains unchanged compared with the January 2026 WEO Update. Global headline inflation is expected to rise to 4.4% in 2026 and decline to 3.7% in 2027, reflecting upward revisions for both years.

The conflict involving US, Isreal and Iran is increasingly functioning as a global supply and confidence shock. The International Energy Agency (IEA) describes the current situation as the largest oil supply disruption on record, with flows through the Strait of Hormuz reduced to a trickle and the resulting effects spreading across refined fuels and liquefied natural gas (LNG). At the same time, aviation disruptions and elevated risk premia are weakening services activity and increasing uncertainty around investment decisions. A significant share of global energy flows through the Strait of Hormuz, and shipping disruptions and insurance constraints are therefore translating directly into higher landed costs, supply chain delays, and greater output risks for energy-intensive manufacturing. As a result, the policy environment has increasingly become challenging, while growth support is required but renewed cost-push inflation across energy, freight, and eventually food inputs is limiting the scope for faster monetary easing.



Source – IMF Global GDP Forecast Release, April 2026

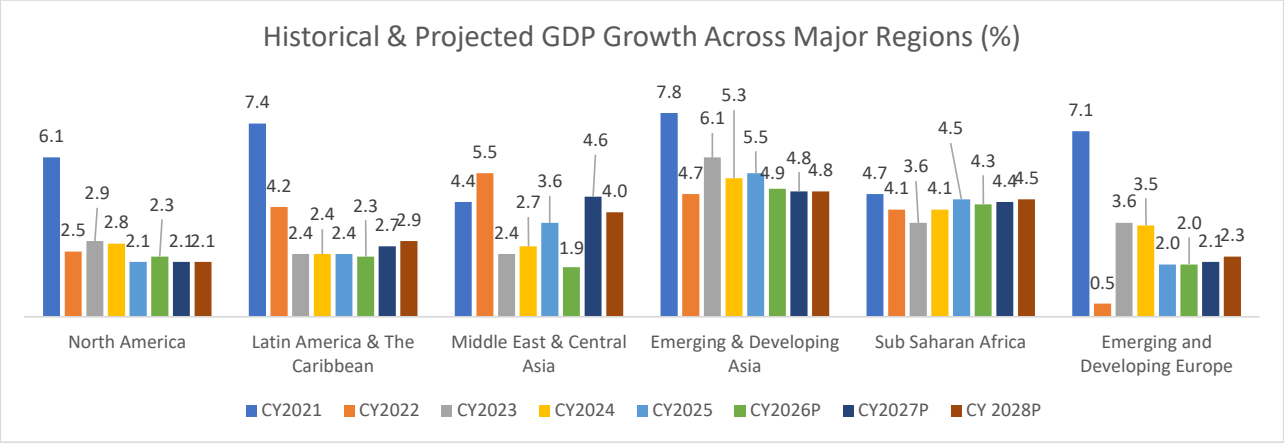
Note: Advanced Economies and Emerging & Developing Economies are as per the classification of the World Economic Outlook (WEO). This classification is not based on strict economic criteria and has evolved over time. It comprises 40 countries in the Advanced Economies category, including the G7 (the United States, Japan, Germany, France, Italy, the United Kingdom, and Canada) and selected Eurozone members (Germany, Italy, France, etc.). The group of emerging and developing economies (156) comprises all economies not classified as Advanced Economies (e.g., India, China, Brazil, Malaysia).

Historical and Projected GDP Growth

GDP growth across major regions showed a mixed trend during 2024–25. While growth in several regions—including Middle East & Central Asia, Emerging and Developing Asia, Sub-Saharan Africa as well as Latin America and the Caribbean—is expected to slow further in 2026, performance remains uneven across geographies.

In the Middle East and Central Asia, economic growth is projected to decline from **3.6% in 2025** to **1.9% in 2026**, before recovering to **4.6% in 2027 and 4.0% in 2028**, reflecting the region's direct exposure to the conflict and the anticipated rebound thereafter. For commodity-exporting economies directly affected by the conflict, reduced production and export activity are expected to result in a significant downward revision to 2026 GDP growth projections.

Growth in emerging and developing Asia is projected to moderate from **5.5% in 2025** to **4.9% in 2026** and is further estimated to grow at **4.8% in 2027 and 2028**. Within the region, China's 2026 growth forecast has been revised upward by **0.2 percentage point** relative to the October estimate, to **4.4%**, despite a **0.1 percentage point downward revision** from January. This upward adjustment reflects the impact of lower effective U.S. tariff rates on Chinese goods, along with stimulus measures that are expected to offset the negative effects of the shock arising from the Middle East conflict. However, China's growth is projected to slow to **4.0% in 2027**, as structural headwinds continue to weigh on the economy, including the prolonged slowdown in the housing sector, a shrinking labor force, declining returns on investment, and weaker productivity growth.



Source- IMF World Economic Outlook, April 2026

In Latin America and the Caribbean, economic growth is projected to remain broadly stable at 2.3% in 2026 before strengthening to 2.7% in 2027 and 2.9% in 2028. The effects of the Middle East conflict across the region are expected to be uneven, with smaller economies likely to experience a more pronounced negative impact due to their relatively greater vulnerability to external shocks.

Growth in sub-Saharan Africa is projected to remain relatively stable at 4.3% in 2026 and 4.4% in 2027 and 4.5% in 2028. However, this regional outlook masks significant variation across countries, with some

economies expected to face more pronounced challenges than others. In particular, oil-importing and non-resource-intensive economies are likely to be adversely affected by the conflict in the Middle East, as heightened external pressures may weigh on economic activity and weaken growth prospects. In emerging and developing Europe, economic growth is expected to slow sharply to 2.0% in 2025 and recover only marginally thereafter, with the region projected to expand at an average rate of 2.0% in 2026, 2.1% in 2027 and 2.3% in 2028.

Global Economic Outlook

The conflict between Israel/the United States and Iran, which began in February, has developed into a global shock to transport, trade, and security planning. As a result, periodic airspace closures across Israel and parts of the Gulf, together with severe disruption to shipping through the Strait of Hormuz, have affected the movement of oil, oil products, and LNG. Consequently, businesses have faced longer and less reliable supply lines, higher freight and insurance costs, and more frequent "stop-go" operating conditions.

The near-term growth outlook has softened as the conflict is affecting both demand and costs. Disruption to the oil channel is coinciding with pressure on the non-oil outlook as travel and services weaken and risk premia rise. Airspace disruption has increased operating costs and reduced travel reliability, while higher jet fuel costs have added to pressure on carriers and freight forwarders.

Investment conditions have also tightened as higher regional risk premia have increased insurance, shipping, hedging, and working capital costs. At the same time, logistics disruption and higher input costs are raising inflation risks. Fertilizer and related input disruption is also creating a lagged risk to food prices.

Asia-Pacific: In Asia-Pacific, the conflict has created sustained stress for business continuity. Even with fighting paused, energy availability, shipping disruption, and insurance costs are expected to continue weighing on operations over the next quarter. Oil prices remain well above January levels despite easing from March peaks, while war-risk insurance, tighter tanker availability, and rerouting costs remain elevated. As a result, several fuel-importing economies—including Japan, South Korea, India, and parts of Southeast Asia—have faced power-conservation measures and fuel rationing, increasing the risk of operational downtime in energy-intensive sectors.

Shipping and supply chains are also facing second-round effects. Many Asia–Europe shipments have been diverted via the Cape of Good Hope, thereby extending lead times by 10–14 days. Although some routes have reopened, schedules remain compressed and insurers remain cautious, which has increased delivery deadline risk across manufacturing, particularly in chemicals, electronics, and pharmaceuticals. Input volatility and fertilizer disruption are also adding to inflation risks and thereby complicating the policy outlook.

Latin America: In Latin America, the U.S.-Israel-Iran conflict has increased energy market pressures, with higher Brent crude prices raising input costs and inflation risks across the region. Consequently, net hydrocarbon exporters such as Brazil, Colombia, and Ecuador are benefiting from stronger external balances,

while net energy importers—including Panama, Chile, and much of Central America—are facing higher import costs. Elevated fertilizer prices are also weighing on agricultural output and margins, including in Brazil and Argentina. In response, governments have introduced fuel subsidies and price controls.

Middle East & North Africa: In the Middle East and North Africa, the conflict continues to affect the region directly, with many countries facing missile and drone attacks from Iran in response to attacks by the United States and Israel on Iran. In the short term, economic growth is expected to slow sharply as exports decline, uncertainty constrains spending, and governments delay investment initiatives. The reduction in food imports is also expected to significantly affect countries with limited domestic production capacity. Bahrain, Qatar, and Kuwait remain highly dependent on imports through the Strait of Hormuz and therefore face risks of food shortages and concerns regarding social stability if disruption persists.

Sub-Saharan Africa: In Sub-Saharan Africa, the conflict continues to disrupt energy and fertilizer supply chains, thereby keeping the region under significant external pressure. Higher global oil prices are sharply rising fuel and transport costs for import-dependent economies such as Kenya, Uganda, Ethiopia, and Ghana. Policy responses have varied across the region. Ethiopia introduced emergency fuel subsidies in mid-March to contain domestic price increases, while Kenya is experiencing stronger pass-through from higher fuel costs, which is weighing on aviation, logistics, and export activity.

Global Growth Projection

Growth in advanced economies is projected at 1.8% in 2026 and 1.7% in 2027 and 2028, while the overall impact of the Middle East conflict is expected to remain modest, lowering 2026 growth by 0.2 percentage point relative to the pre-conflict forecast. This limited effect reflects positive terms-of-trade gains in the United States and stronger growth momentum, supported by government measures, in Japan, whereas more significant negative effects are expected mainly in net energy-importing economies, including the euro area and the United Kingdom. In the United States, growth is projected at 2.3% in 2026 and 2.1% in 2027 and 2028, with fiscal policy and the lagged effects of monetary easing in 2025 continuing to support activity, even as higher trade barriers since April 2025 weigh on growth. The 0.1 percentage point downward revision from the January 2026 WEO Update reflects a small negative effect from the war, but this is partly offset by a rebound following the end of the 2025 federal government shutdown, along with stronger productivity growth and positive carryover effects. Although the International Emergency Economic Powers Act (IEEPA) ruling may reduce tariff-related fiscal revenues, its impact on the fiscal balance and activity is expected to remain limited and spread over the forecast horizon. Growth in 2027 is expected to remain solid, supported by tax incentives, including those for corporate investment under the One, Big, Beautiful Bill Act (OBBBA), while technology-driven momentum is projected to moderate and productivity growth is expected to gradually converge toward historical norms.

Growth in emerging market and developing economies is projected to slow to 3.9% in 2026 before recovering to 4.2% in 2027 and 2028, while the Middle East conflict is expected to have a greater impact on this group

than on advanced economies, reducing 2026 growth by 0.3 percentage point relative to the pre-conflict forecast. In emerging and developing Asia, growth is expected to moderate from 5.5% in 2025 to 4.9% in 2026 and 4.8% in 2027 and 2028. Within the region, China's 2026 growth forecast has been revised upward to 4.4%, as lower effective U.S. tariffs and stimulus measures offset the impact of the conflict, although growth is projected to slow to 4.0% in 2027 as structural headwinds intensify. India's growth outlook has also improved, with growth revised upward to 7.6% in 2025 and projected to remain at 6.5% in 2026, 2027 and 2028, supported by strong carryover effects and lower additional U.S. tariffs on Indian goods. Meanwhile, several South and Southeast Asian economies are expected to face weaker domestic demand due to lower tourism and remittance inflows, while the Philippines has seen a sharp downward revision for 2026.

In the Middle East and Central Asia, growth is projected to decline from 3.6% in 2025 to 1.9% in 2026, before rebounding to 4.6% in 2027 and 4.0% in 2028, reflecting the region's direct exposure to the conflict. The downturn is expected to be most severe among affected commodity exporters, particularly Bahrain, Iran, Iraq, Kuwait, and Qatar, while the impact is expected to be less severe in other economies. Accordingly, Iran's economy is projected to contract by (-) 6.1% in 2026, before rebounding to 3.2% in 2027 and moderating to 1.5% in 2028. By contrast, Saudi Arabia's growth is projected at 3.1% in 2026, rising to 4.5% in 2027 before easing to 3.6% in 2028. In sub-Saharan Africa, growth is expected to remain broadly stable at 4.3% in 2026, 4.4% in 2027, and 4.5% in 2028, although oil-importing economies are likely to face greater pressure, while Nigeria and South Africa are expected to record moderate but gradually improving growth profiles. In Latin America and the Caribbean, growth is projected at 2.3% in 2026, 2.7% in 2027, and 2.9% in 2028, with Brazil expected to benefit modestly in the near term from its position as a net energy exporter, while Mexico is projected to recover gradually to 1.6% in 2026, 2.2% in 2027, and 2.1% in 2028.

In emerging and developing Europe, the sharp slowdown in growth to 2.0% in 2025 is expected to reverse only marginally, with the region projected to expand at an average rate of 2.0% in 2026, 2.1% in 2027, and 2.3% in 2028. Within the region, Russia's 2026 growth forecast has been revised upward by 0.3 percentage point relative to January, to 1.1%, as higher commodity prices are expected to support activity. This momentum is projected to continue, with growth remaining at 1.1% in 2027 before moderating slightly to 1.0% in 2028. By contrast, Türkiye's 2026 growth forecast has been revised downward by 0.8 percentage point relative to the January 2026 WEO to 3.4%, as weaker-than-expected growth in 2025 and higher oil and gas prices are expected to weigh on activity.

Key factors impacting Global Macroeconomic landscape

- Geopolitics continues to constitute a major source of global macroeconomic and business risk. The Russia–Ukraine war remains a persistent driver of instability, as Russia has intensified large-scale missile and drone attacks on Ukrainian cities and infrastructure, while Ukraine has stepped up strikes on Russian ports, refineries, and export infrastructure, reportedly contributing to a reduction in Russian oil output in April. The Israel–Iran–U.S. confrontation has emerged as the most significant

near-term external shock to the global economy, with the IMF warning that disruptions to the Strait of Hormuz and regional energy infrastructure could materially weaken global growth and raise inflation; under its April 2026 reference forecast, global growth has been lowered to 3.1% and inflation raised to 4.4%, with materially worse outcomes under prolonged disruption scenarios. In parallel, the Pakistan–Afghanistan border conflict remains a significant regional flashpoint, although China-mediated talks are seeking to secure a ceasefire and reopen border crossings after months of cross-border attacks and trade disruption. At the same time, U.S. strategic activism continues to influence regional risk perceptions: Washington has removed sanctions on Venezuela's interim leadership and deepened engagement with Caracas, tensions over Greenland have re-emerged amid renewed U.S. rhetoric and ongoing diplomatic discussions with Denmark and Greenland, and U.S.–Nigeria security cooperation has continued to deepen in response to regional instability and counterterrorism concerns. In addition, resource nationalism and strategic competition over rare earths and other critical minerals have become increasingly operational concerns rather than distant strategic risks. The IEA's April 2026 assessment notes that demand for magnet rare earths has doubled since 2015 and is projected to increase by more than 30% by 2030, while supply chains remain highly concentrated, with China accounting for around 60% of mined output, more than 90% of refining, and nearly 95% of permanent magnet production, thereby heightening global exposure to export controls, supply concentration, and industrial policy interventions

- The period of relatively frictionless trade supported by multilateral liberalisation and free trade agreements is increasingly giving way to regionalisation, nearshoring, friend-shoring, and diversification of production networks. Rising tariffs, policy uncertainty, and strategic realignment are creating a more fragmented trade environment and raising the premium on resilience over pure efficiency
- Technology adoption and sustainability have become core strategic priorities. Organizations are advancing digital transformation by embedding AI, automation, and cybersecurity into their operations to enhance productivity and safeguard critical assets. AI adoption is emerging as a visible driver of optimism, particularly within the information and communications sectors. Growth in cloud computing, streaming, IoT, and AI and Advancements in hardware and cooling technologies aim to reduce energy consumption and improve performance is driving the need for more powerful and scalable data centres.

India Macroeconomic Analysis

India's economic growth outlook for 2025 has been revised upward by 1.0 percentage point from the October estimate to 7.6%, supported by stronger-than-expected performance in the second and third quarters of the fiscal year and sustained momentum in the fourth quarter. For 2026, the growth projection has been moderately increased by 0.3 percentage point (including a 0.1 percentage point upward revision

from January) to 6.5%, primarily driven by the carryover effect of the strong 2025 performance and the reduction in additional U.S. tariffs on Indian goods from 50% to 10%, which more than offsets the adverse impact of the Middle East conflict. Growth is expected to remain steady at 6.5% in 2027. Across several South and Southeast Asian economies, disruptions linked to the Middle East conflict are anticipated to reduce tourism activity and remittance inflows, thereby weakening domestic demand and moderating overall economic performance.

Country	CY 2020	CY 2021	CY 2022	CY 2023	CY 2024	CY 2025	CY 2026 P	CY 2027 P	CY 2028P
India[1]	–5.8%	9.7%	7.6%	9.2%	6.5%	7.6%	6.5%	6.5%	6.5%
China	2.3%	8.6%	3.1%	5.4%	5.0%	5.0%	4.4%	4.0%	4.0%
United States	-2.2%	6.1%	2.5%	2.9%	2.8%	2.1%	2.3%	2.1%	2.1%
Japan	-4.2%	2.7%	0.9%	1.4%	-0.2%	1.2%	0.7%	0.6%	0.6%
United Kingdom	-10.3%	8.6%	4.8%	0.4%	1.1%	1.3%	0.8%	1.3%	1.6%
Russia	-2.7%	5.9%	-1.4%	4.1%	4.3%	1.0%	1.1%	1.1%	1.0%
Germany	-4.1%	3.9%	1.8%	-0.9%	-0.5%	0.2%	0.8%	1.2%	1.2%

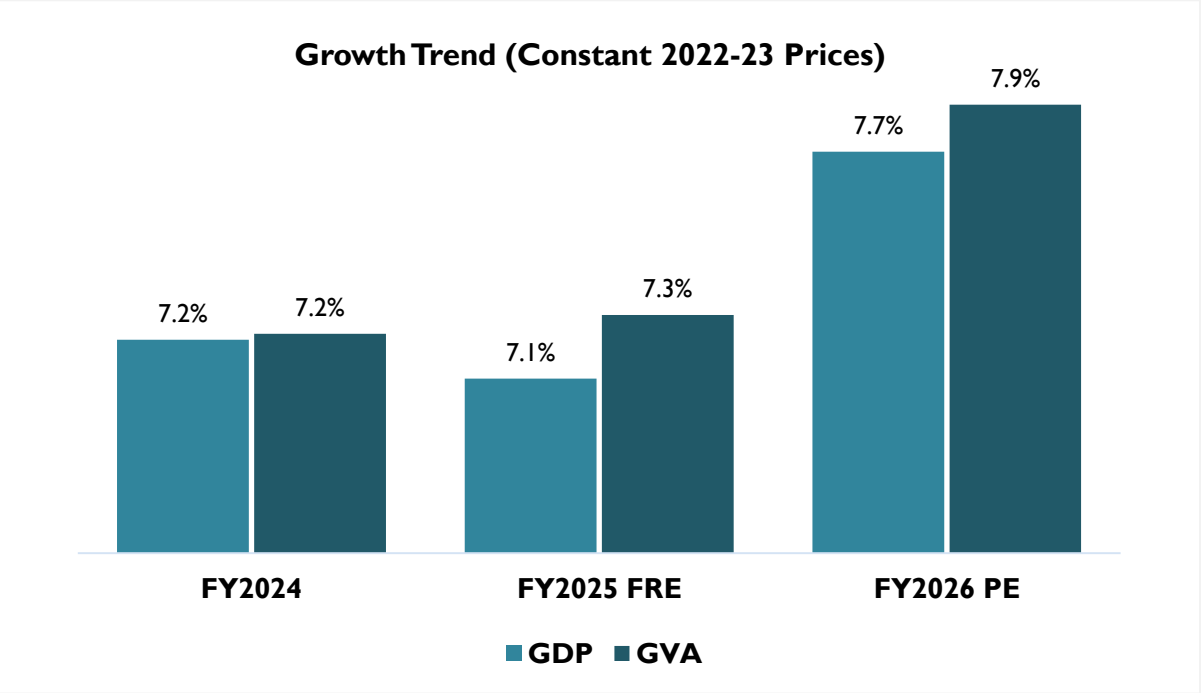
Source: World Economic Outlook, April 2026

Historical GDP and GVA Growth Trend

As per Provisional Estimates, India Real GDP (GDP at constant prices) for FY 2025–26 is estimated to reach INR 323.12 lakh crore, compared to the First Revised Estimate (FRE) of INR 299.89 lakh crore for FY 2024–25. This represents a growth rate of 7.7% in 2025–26, higher than the 7.1% growth recorded in 2024–25.

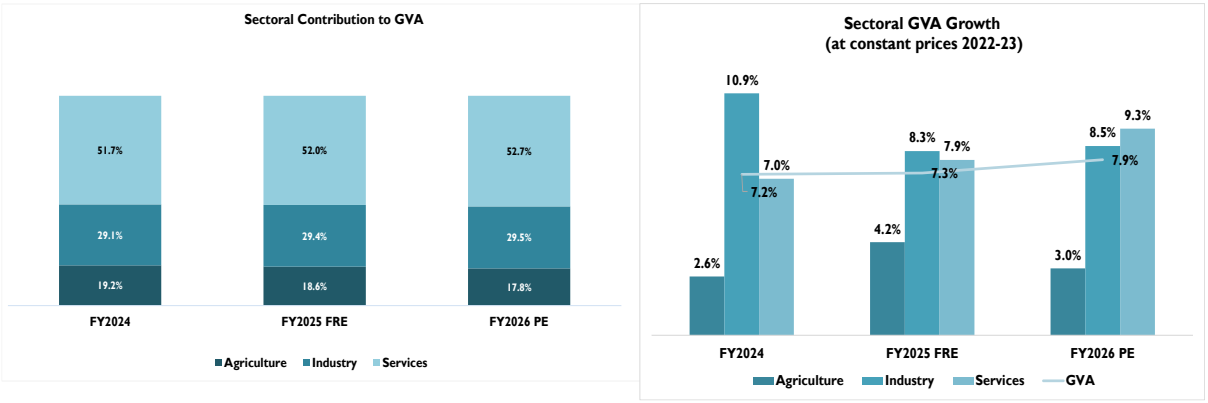
Similarly, Real GVA for FY 2025–26 is estimated to reach INR 294.91 lakh crore, up from INR 273.36 lakh crore in FY 2024–25. This indicates a growth rate of 7.9%, compared with the 7.3% growth achieved in the previous year.

[1] For India, data and forecasts are presented on a fiscal year basis, and GDP from 2022 onward is based on GDP at market prices with fiscal year 2022/23 as a base year



Source: Ministry of Statistics & Programme Implementation (MOSPI), National Account Statistics: FY2025, FRE is First Revised Estimate; PE is Provisional Estimates

Sectoral Contribution to GVA and Annual Growth Trend



Source: Ministry of Statistics & Programme Implementation (MOSPI), CMIE Economics Outlook
FRE is First Revised Estimate; PE is Provisional Estimates[2]

Sectoral analysis of GVA reveals that the industrial sector experienced steady growth momentum in FY 2026, recording a 7.9% y-o-y growth against 7.3% year-on-year growth in FY 2025. Within the industrial sector, growth moderated across sub-sectors with mining, and construction activities growing by 5.15%, and 7.36%, respectively in FY 2026, compared to 11.69%, and 7.30% in FY 2025. Growth in the utilities sector too moderated to 1.74% in FY 2026 from 2.87% in the previous year. The industrial sector's contribution to GVA increased marginally from 29.4% in FY 2025 to 29.5% in FY 2026.

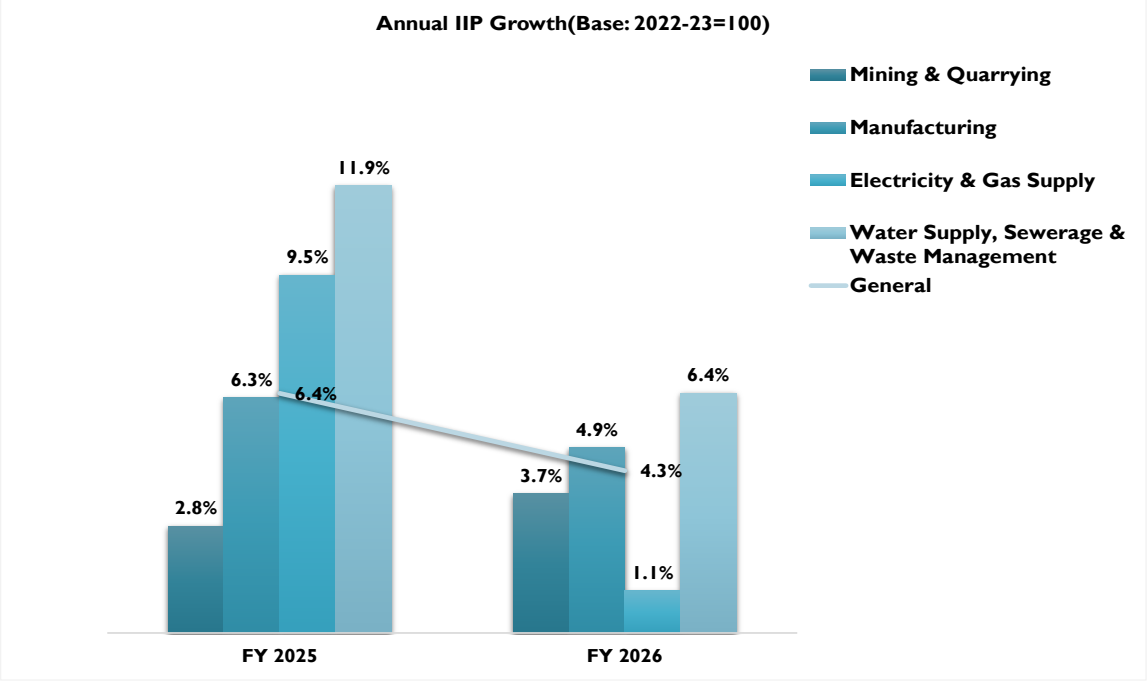
[2] https://www.mospi.gov.in/uploads/latestReleases/latest_release_1780655857536_5ac01869-ca4a-422d-b7a7-57b81da60932_Press_Note_on_GDP_Estimates_for_Q4_2025-26_and_PE_FY_2025-26_F.pdf

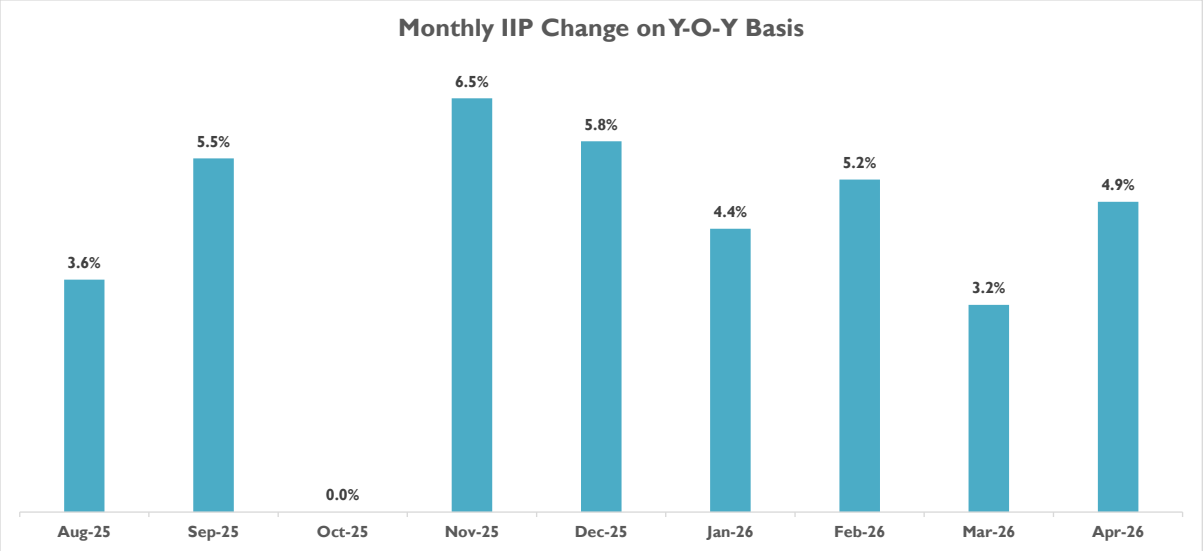
The services sector continued to be the main driver of economic growth. It expanded by 9.3% in FY 2026 from 7.9% in FY 2025. The services sector retained its position as the largest contributor to GVA, rising from 51.7% in FY 2024 to 52.0% in FY 2025, with a further increase to 52.7% in FY 2026.

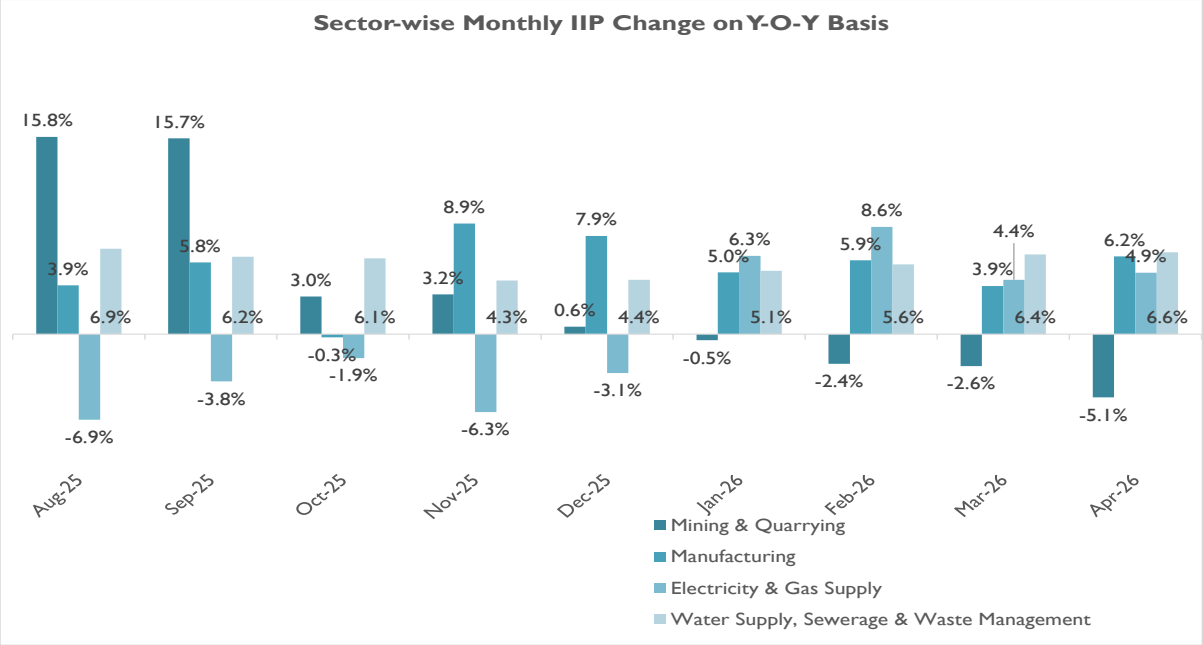
The agriculture sector saw an acceleration in growth, increasing from 2.66% in FY 2024 to 4.18% in FY 2025, before moderating to 3.0% in FY 2026. However, its contribution to GVA declined marginally from 19.2% in FY 2024 to 17.8% in FY 2026. Overall, Gross Value Added (GVA) growth rose to 7.9% in FY 2026 from 7.3% in FY 2025.

Annual & Monthly IIP Growth

Industrial sector performance as measured by the IIP index exhibited moderation in FY 2026, recording a 4.3% y-o-y growth against 6.4% increase in the previous year. The manufacturing index showed moderation, increasing by 4.9% in FY 2026 compared with 6.3% in FY 2025. The Electricity & Gas Supply sector index also moderated, growing 1.1% in FY 2026 compared with 9.5% in the previous year. Water Supply, Sewerage & Waste Management also moderated by 6.4% in FY 2026 compared with 11.9% in the previous year, while the mining sector index grews by 3.7% in FY 2026 compared with 2.8% in the previous year.





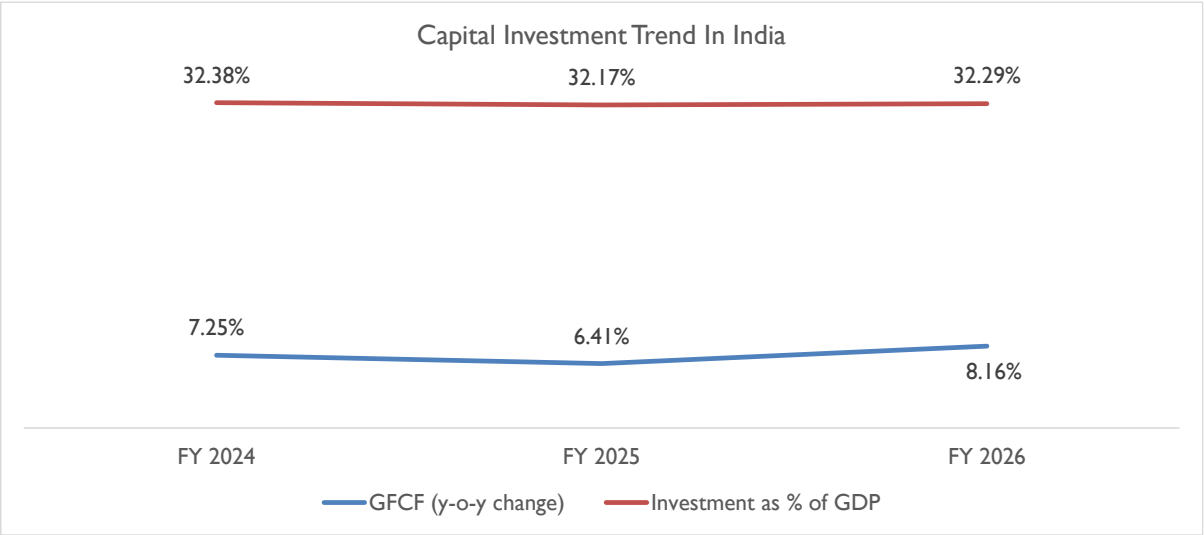


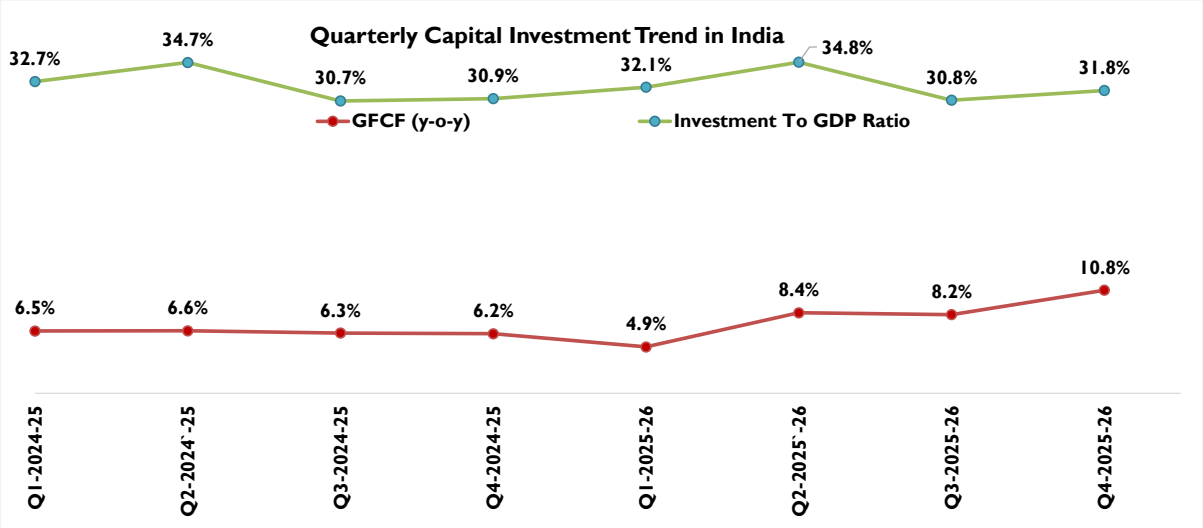
Source: Ministry of Statistics & Programme Implementation (MOSPI)

The IIP growth rate for the month of April 2026 is 4.9 percent as compared to April 2025. The growth rates of the Four sectors, Mining & Quarrying, Manufacturing, Electricity & Gas Supply and Water Supply, Sewerage & Waste Management for the month of April 2026 are (-)5.1 percent, 6.2 percent, 4.9 percent and 6.6 percent respectively

Annual and Quarterly: Investment & Consumption Scenario

Other major indicators, such as Gross Fixed Capital Formation (GFCF), a measure of investment, increased during FY 2026, registering 8.16% year-on-year growth compared with 6.41% in FY 2025, bringing the GFCF-to-GDP ratio to 32.29%.





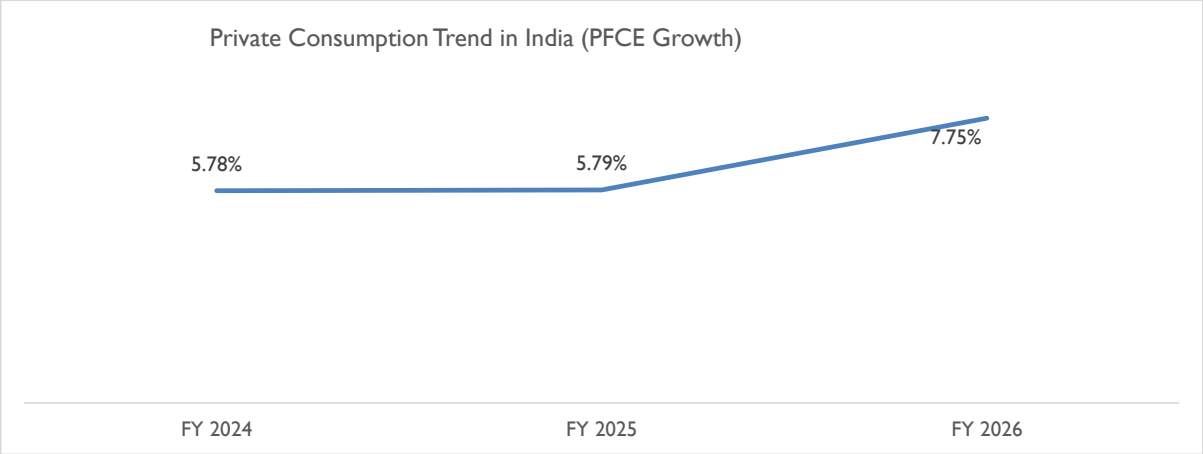
Source: Ministry of Statistics & Programme Implementation (MOSPI), CMIE Economics Outlook

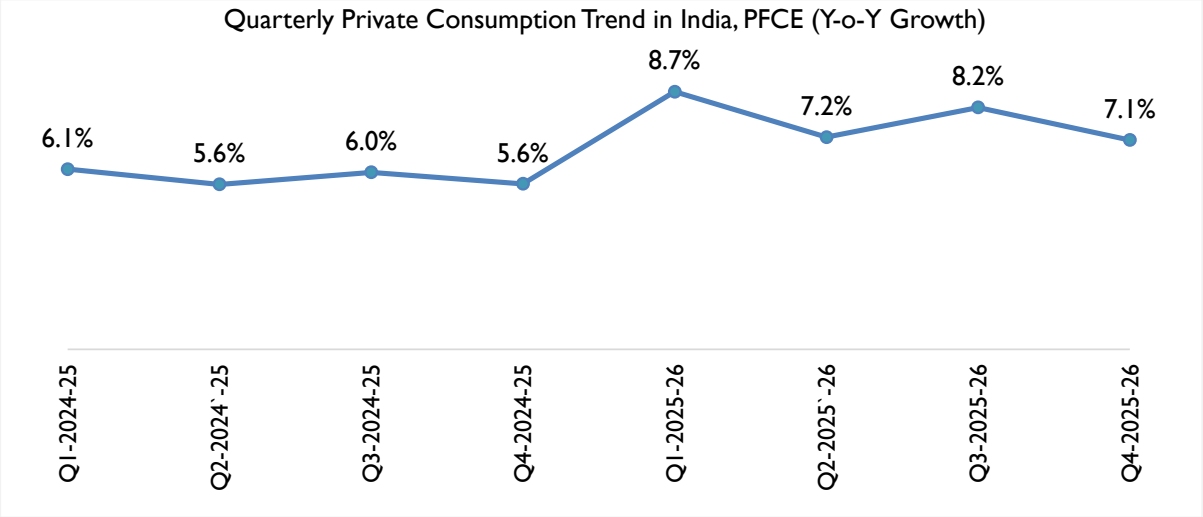
On a quarterly basis, India's capital investment indicators reflect a healthy and improving investment environment, supported by sustained investment intensity and stronger capital formation in recent quarters. The Investment to GDP ratio remained consistently above 30% throughout the period, highlighting continued resilience in capital deployment. The ratio increased from 32.7% in Q1 FY 2024-25 to 34.7% in Q2, before moderating to 30.7% in Q3 and 30.9% in Q4. In FY 2025-26, the ratio improved again to 32.1% in Q1 and further strengthened to 34.8% in Q2, the highest level during the period, before remaining healthy at 30.8% in Q3 and 31.8% in Q4. This indicates that investment activity continued to remain robust despite normal quarterly variations.

GFCF (y-o-y) growth also points toward a positive investment trend, particularly in FY 2025-26. After remaining broadly stable during FY 2024-25, with growth ranging between 6.2% and 6.6%, GFCF growth accelerated meaningfully from 4.9% in Q1 FY 2025-26 to 8.4% in Q2 and 8.2% in Q3, before rising further to 10.8% in Q4. This strong improvement in the second half of FY 2025-26 suggests strengthening fixed capital formation and a revival in investment momentum. Overall, the data indicates that India's capital investment

landscape remains on a positive trajectory, with sustained investment levels and improving GFCF growth reflecting stronger capital spending, better investment confidence, and continued support for economic growth.

Private Consumption Scenario





Sources: MOSPI, CMIE Economics Outlook

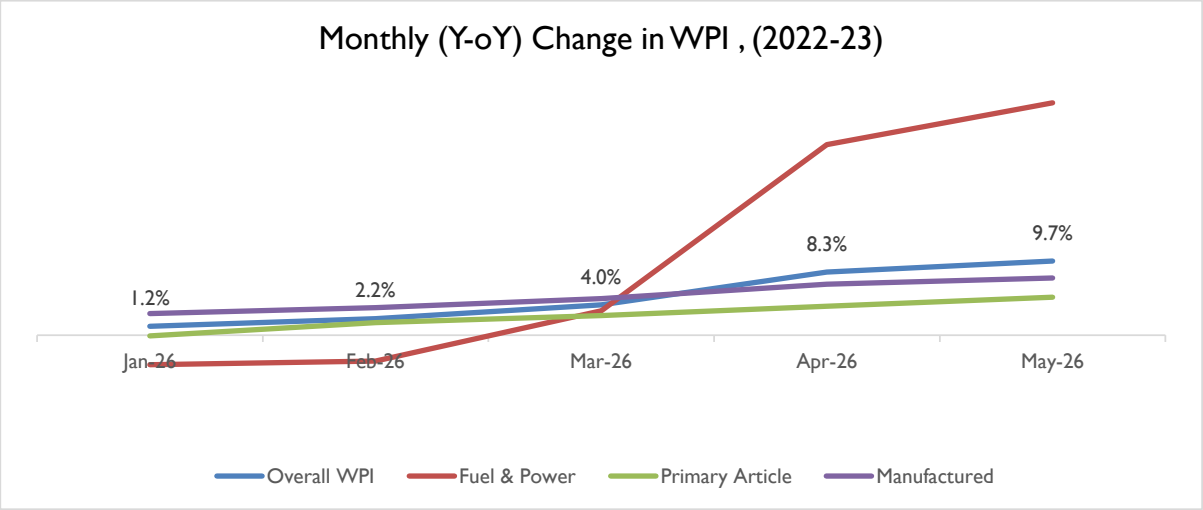
Private Final Consumption Expenditure (PFCE), a practical proxy for household spending, recorded growth in FY 2026 relative to FY 2025. PFCE recorded healthy growth in FY 2025-26 relative to FY 2024-25. However, quarterly PFCE growth moderated sequentially to 7.1% in Q4 FY 2025-26 from 8.2% in Q3 FY 2025-26

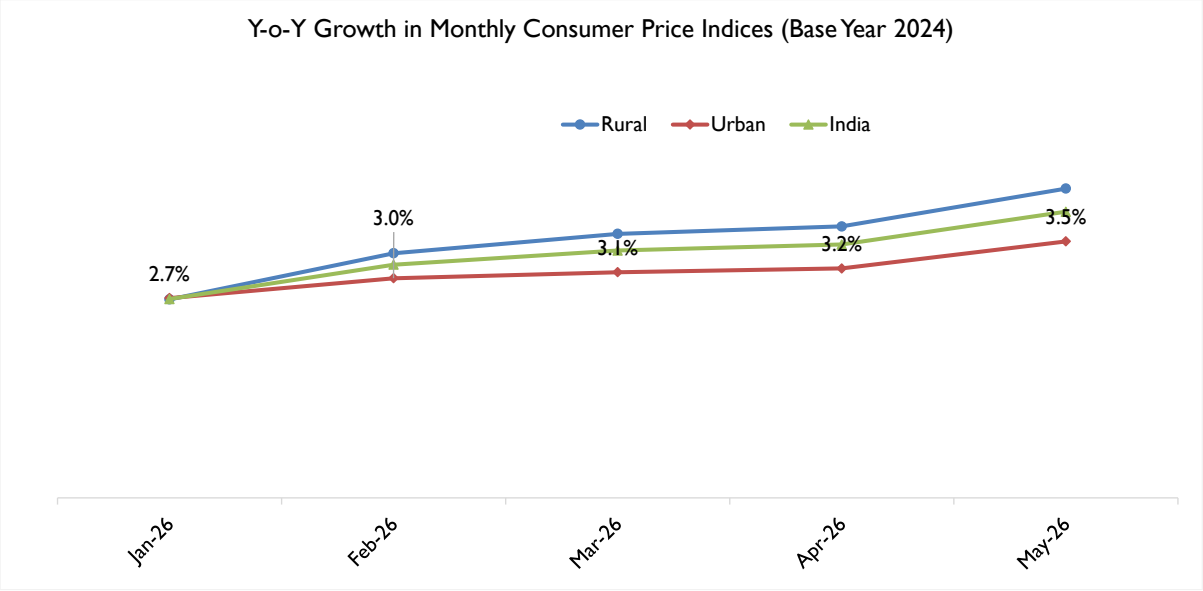
Inflation Scenario

The annual rate of inflation based on All India Wholesale Price Index (WPI) number is 3.88% (provisional) for the month of March 2026 (over March 2025). Positive rate of inflation in March 2026 is primarily due to increase in prices of crude petroleum & natural gas, other manufacturing, non-food articles, manufacture of basic metals and food articles etc.

All India Wholesale Price Index (WPI) inflation for May 2026 is 9.68 per cent on year-on-year (YoY) basis, compared to 8.26 per cent in April 2026. The index for All Commodities for May 2026 stands at 109.9, whereas it was 108.8 in April 2026. Across Groups, 'Mineral Oils (containing Petroleum Products)', 'Crude Petroleum and Natural Gas', 'Manufacture of Chemicals and Chemical Products', and 'Manufacture of Basic Metals', have been major drivers of WPI inflation in April and May 2026.

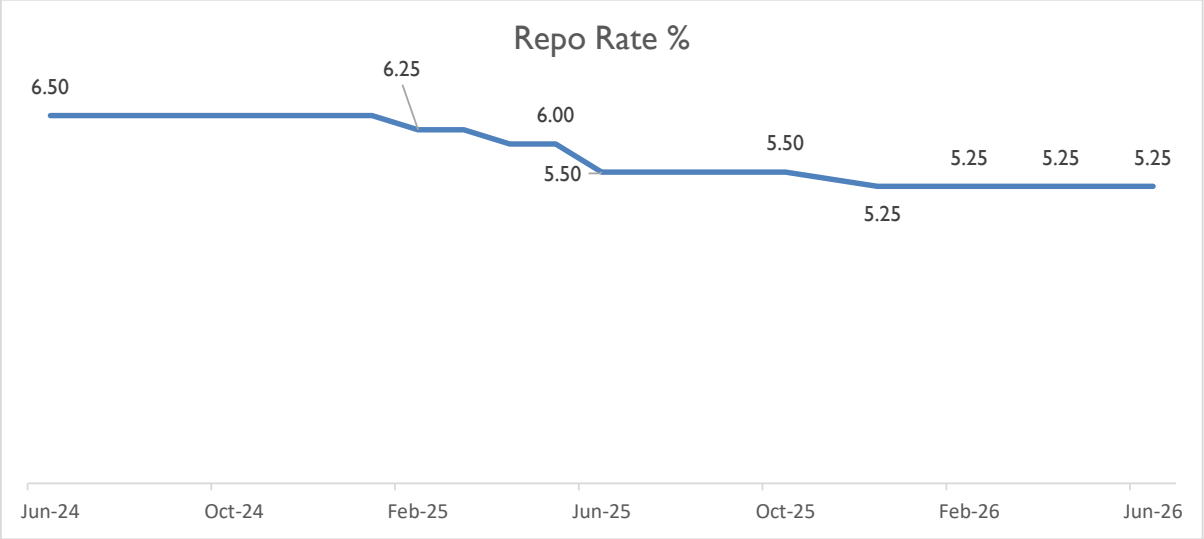
Across Major Groups, YoY inflation for Primary Articles, Fuel and Power, and Manufactured Products is 4.99 per cent, 30.33 per cent, and 7.48 per cent, respectively in May 2026, whereas it was 3.78 per cent, 24.89 per cent, and 6.68 per cent, respectively, in April 2026. The indices for Primary Articles, Fuel and Power, and Manufactured Products are 113.7, 113, and 107.8, respectively, in May 2026, whereas they were 112.6, 110.9, and 107, respectively, in April 2026.





Source: MOSPI, Office of Economic Advisor

With effect from January 2026, the National Statistics Office (NSO) introduced a revised CPI series with base year 2024=100, drawing revised item weights from the Household Consumption Expenditure Survey (HCES) 2023-24. Year-on-year inflation rate based on All India Consumer Price Index (CPI) with base year 2024 for the month of May, 2026 over May, 2025 is 3.93%(Provisional). Corresponding inflation rates for rural and urban are 4.25% and 3.53%, respectively.On the monetary policy front, the RBI had cumulatively raised the repo rate by 250 basis points between May 2022 and February 2023, bringing it to 6.50%, where it was held steady through January 2025 to anchor inflationary expectations. With inflation moderating below target and growth requiring support, the RBI's Monetary Policy Committee (MPC) commenced an easing cycle in February 2025, delivering a cumulative 125 basis points of rate cuts through four reductions — 25 bps each in February 2025, April 2025, and December 2025, and a larger 50 bps cut in June 2025 — interspersed with pauses in August and October 2025. The repo rate currently stands at 5.25%, in June 2026.



Sources: CMIE Economic Outlook

Growth Outlook

The Union Budget 2026–27 sets out a quantitatively strong push to build resilient supply chains and develop next-generation industrial capacity. The record ₹12.2 trillion capital expenditure outlay is aimed at easing logistics bottlenecks and enhancing India's cost competitiveness. Employment measures extend across both urban and rural India in one sweep. In cities and large towns, capex is channelled into "connectors" such as the seven proposed high-speed rail corridors and upgraded Tier-2 and Tier-3 infrastructure, thereby creating construction, logistics, and service jobs while cutting commute times. In smaller towns and villages, job creation is expected to be supported by mega textile parks, the Mahatma Gandhi Gram Swaraj Initiative's push for khadi and handloom, training for tourist guides, and new waterways and coastal shipping. Together, these steps broaden the wage base instead of providing a short-term bump.

This domestic push is complemented by targeted measures to strengthen strategic supply chains. Dedicated rare earth corridors in Odisha, Kerala, Andhra Pradesh, and Tamil Nadu; customs exemptions for capital

goods used in critical mineral processing and battery cells; and the India Semiconductor Mission 2.0 aim to pull manufacturing deeper into components and materials. If executed well, these measures could reduce import dependence in magnets, batteries, and chip inputs and lift the share of higher-productivity manufacturing jobs — thereby raising household incomes durably.

Alongside these domestic measures, India is also seeking to strengthen its external trade architecture through major trade agreements. The conclusion of the India–EU FTA negotiation marks a major strategic milestone, as it offers near-universal market access for 99.5% of India's exports by value and integrates India more deeply into a USD 24 trillion economic bloc. By providing duty-free entry for key labour-intensive sectors, expanding services access, and establishing a mobility framework for Indian professionals, the deal is expected to improve market access, support export competitiveness and high-value job creation. It is likely to promote a predictable, rules-based environment for long-term trade and investment flows.

In a similar vein, India–Oman Comprehensive Economic Partnership Agreement (CEPA)[3] has been framed as a comprehensive arrangement covering trade in goods and services, investment, professional mobility, and regulatory cooperation, with the objective of strengthening bilateral economic integration between India and Oman. Bilateral trade between the two countries stood at USD 10.61 billion in FY 2024–25, providing the economic basis for the agreement. Under the CEPA, India has secured 100% duty-free market access in Oman across 98.08% of tariff lines, covering 99.38% of India's export value, thereby improving export competitiveness across sectors such as engineering goods, pharmaceuticals, agriculture and processed food, electronics, textiles, plastics, and gems and jewellery. At the same time, India has adopted a calibrated liberalisation approach by offering tariff concessions on 77.79% of its tariff lines, covering 94.81% of imports from Oman by value, while retaining safeguards for sensitive domestic sectors. The agreement also provides gains in services, with Oman undertaking commitments across 127 services sub-sectors, alongside improved provisions for professional mobility, including an increase in the Intra-Corporate Transferee ceiling from 20% to 50% and commitments for a defined category of Indian professionals. Overall, the CEPA is presented as a framework intended to support trade expansion, improve market access, and strengthen long-term economic cooperation between India and Oman.

However, these gains remain exposed to external geopolitical risks. The escalation of the Middle East crisis represents an external shock for India, transmitted primarily through energy markets, logistics, and trade-linked business exposure. The Gulf–Levant 11[4] (GL 11) economies account for around 15% of India's merchandise exports and 21% of its imports, with trade concentrated in high-value categories such as mineral

[3] https://www.pib.gov.in/PressReleasePage.aspx?PRID=2213203&reg=3&lang=1
The Comprehensive Economic Partnership Agreement (CEPA) between India and Oman marks a meaningful step forward in the economic relationship between the two countries. The agreement brings together trade in goods and services, investment, professional mobility, and regulatory cooperation under a single, coherent framework aimed at deepening bilateral economic integration.

[4] For the purposes of this report, the analysis is confined to a defined group of countries referred to as the Gulf–Levant 11 (GL-11). This group comprises Bahrain, Iran, Iraq, Israel Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, and the United Arab Emirates. These economies are treated collectively because they are either directly involved in, or immediately exposed to, the current crisis through geographic proximity, security linkages, energy production and transit, or their role as regional trade and financial hubs

fuels, precious metals, and electronics; disruptions in this region therefore have an outsized impact despite its modest share of global GDP.

Export exposure is unevenly distributed across India, with risks concentrated in specific districts that serve as production hubs. Discretionary exporters, such as gems and jewellery firms in the districts of Surat, Jaipur, and Mumbai; apparel manufacturers in Tiruppur; automotive producers in Ahmedabad; and electronics assemblers in Kanchipuram and Kolar, are vulnerable to demand slowdown and order deferrals in Gulf markets.

At the same time, Perishable agricultural exporters, including grapes from Nashik, bananas from Solapur, and bovine meat from Ghaziabad, face acute risks from shipping delays and logistics disruptions. Dun & Bradstreet data show that over 4,500 Indian exporters and around 1,800 importers relied on the Strait of Hormuz trade route in 2025, exposing them to working capital stress, payment delays, and production interruptions, while, for import-dependent industries, delays in critical inputs raise the risk of temporary shutdowns and sustained energy price volatility amplifies margin pressure across manufacturing and services.

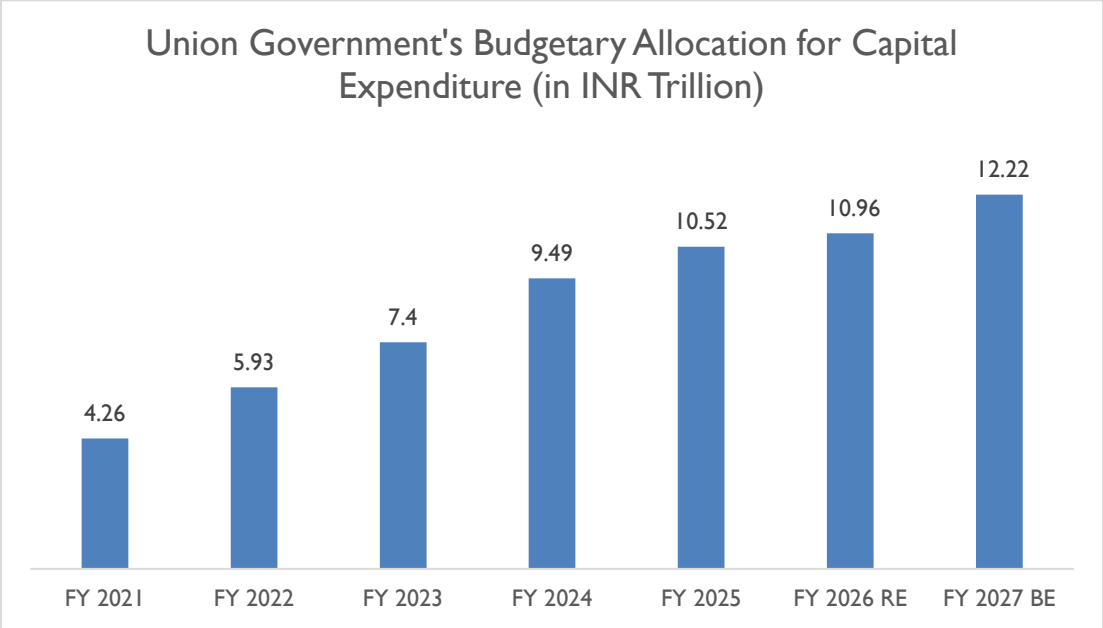
Key Growth/Demographic Drivers for Economic Growth

Government focus on infrastructure development

The infrastructure sector has received a strong boost in Budget FY'27, marked by a record INR 12.2 trn[5] public capital expenditure allocation, reinforcing the government's focus on making assets more efficient and sustainable. The introduction of the landmark Infrastructure Risk Guarantee Fund aims to provide partial credit guarantees to lenders and revitalise private sector participation in large-scale projects. By lowering project risk premiums and easing borrowing costs, this mechanism is likely to help crowd in private capital and accelerate construction phase financing across the sector. The transport and logistics sector, in particular, will buoy infrastructure growth. Railways have received a substantial boost in allocation, which will help support the planned development of seven new high-speed rail corridors and a Dankuni-Surat DFC[6], which aims to cut logistics costs and improve national connectivity. Moreover, the rollout of 20 new National Waterways, new ship repair hubs and a scheme to double the share of coastal and inland water transport from 6.0% to 12.0% by 2047[7] will together build a greener, more efficient multimodal freight network. Urban transformation continues through targeted development of Tier-2 and Tier-3 cities – with populations over 0.5mn – alongside the creation of City Economic Regions, each supported by multi-year, challenge-based financing to establish new growth hubs and reduce pressure on metros. A broader ecosystem of reforms strengthens medium-term sector prospects. The government aims to scale domestic construction and infrastructure equipment manufacturing, reducing import dependence and improving execution capability in tunnelling, metro construction and road building machinery. The monetisation of CPSE assets will be accelerated through dedicated REIT[8] structures, helping unlock liquidity for redevelopment and new project pipelines. Additional support flows through region-specific initiatives, such as industrial corridor expansion, and tourism development in cultural and Buddhist heritage zones will further reinforce construction demand.

Together, these measures will strengthen India's infrastructure ecosystem through higher public investment, improved risk mitigation tools and wider multimodal connectivity – creating a constructive environment for sustained growth in construction, logistics and urban development.

[5] https://www.pib.gov.in/PressReleasePage.aspx?PRID=2222521&reg=3&lang=1#:~:text=Reinforcing%20the%20role%20of%20public,productive%20capacity%20across%20the%20economy.
[6] https://prsindia.org/budgets/parliament/demand-for-grants-2026-27-analysis-railways
[7] https://www.pib.gov.in/PressReleasePage.aspx?PRID=2221817&reg=3&lang=1
[8] https://www.hindustantimes.com/real-estate/budget-2026-eyes-dedicated-reits-for-cpse-asset-monetisation-what-it-means-for-investors-101769942312710.html#google_vignette



Union Budget, Government of India
Note: BE (Budget Estimates) and RE (Revised Estimates)

Development of Domestic Manufacturing Capability

The Government launched the Production Linked Incentive (PLI) scheme in early 2020, initially aimed at improving domestic manufacturing capability in large-scale electronic manufacturing and gradually extended to other sectors. At present it covers 14 sectors, ranging from medical devices to solar PV modules. The PLI scheme provides incentives to companies on incremental sales of products manufactured in India. This incentive structure is aimed at attracting private investment into setting up manufacturing units and thereby strengthening domestic production capabilities. The overall incentive outlay earmarked for the PLI scheme is estimated to be INR 2 trillion. If fully realised, the PLI scheme could add nearly 4% to annual GDP growth, by way of incremental revenue generated from the newly formed manufacturing units.

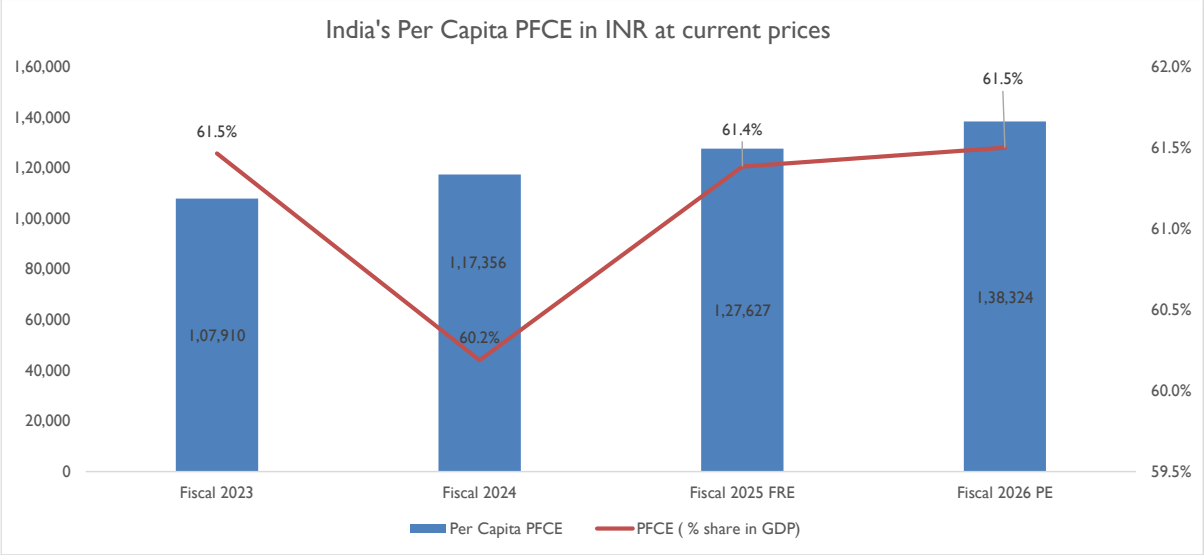
Strong Domestic Demand

Domestic demand has traditionally been one of the key drivers of the Indian economy. After a brief lull caused by the Covid-19, domestic demand is recovering. Consumer Confidence surveys by the Reserve Bank and other institutions point to an improvement in the Consumer Confidence Index, which is a precursor of improving demand. India has a strong middle-class segment, which has been the major driver of domestic demand. Factors like fast paced urbanization and improving income scenario in rural markets are expected to accelerate domestic demand further. This revival is reflecting in the private final consumption expenditure (PFCE) metric.

India's per capita Private Final Consumption Expenditure (PFCE) at current prices has shown a consistent upward trend, indicating steady improvement in household consumption levels over the years. Per capita PFCE increased from INR 1,07,910 in Fiscal 2023 to INR 1,17,356 in Fiscal 2024, and further rose to INR 1,27,627

in Fiscal 2025 FRE. It is estimated to increase further to INR 1,38,324 in Fiscal 2026 FE, reflecting continued growth in consumer spending and improving consumption capacity.

PFCE as a share of GDP also remained healthy during the period, broadly staying above 60%. The share stood at 61.5% in Fiscal 2023, moderated to 60.2% in Fiscal 2024, before recovering to 61.4% in Fiscal 2025 FRE and further improving to 61.5% in Fiscal 2026 FE. This indicates that private consumption continues to remain a key driver of India's economic growth. Overall, the steady increase in per capita PFCE, along with a stable PFCE share in GDP, reflects resilient household demand and sustained consumption momentum in the economy.



Source: Ministry of Statistics & Programme Implementation (MOSPI)

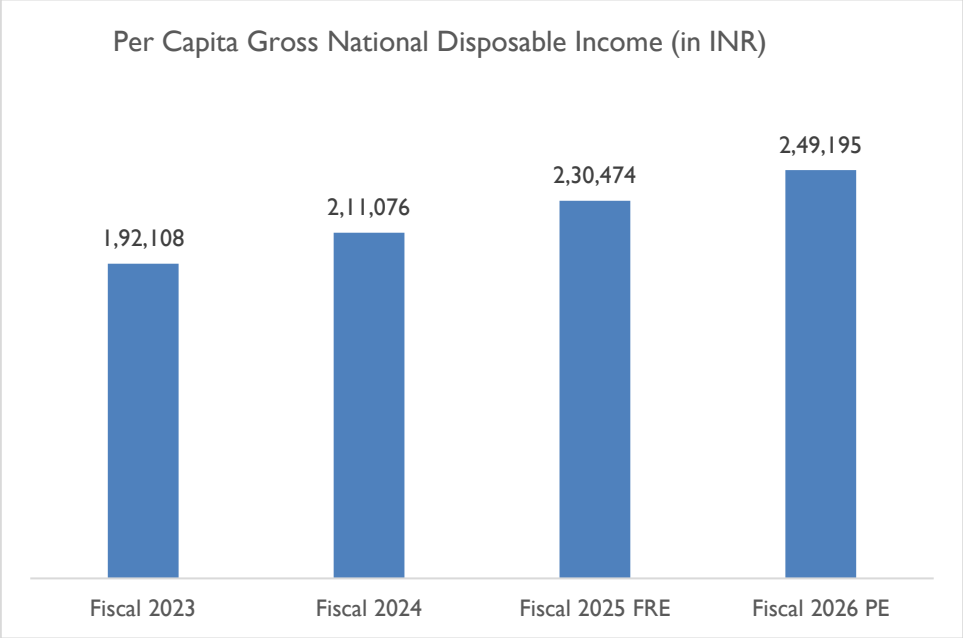
FRE is First Revised Estimate; PE is Provisional Estimates

There are two factors driving this domestic demand: first, the large pool of consumers; and second, the improvement in purchasing power.

- The share of middle class increased from nearly 14% in 2005 to nearly 30% in 2021 and is expected to cross 60% by 2047 [9]. This expanding middle class household segment is fuelling India's growth story and would continue to play a key role in propelling India's economic growth.
- Consumer-driven domestic demand is majorly fuelled by this growth in per capita income. As per National Statistics Office (NSO), India's per capita Gross National Disposable Income (GNDI) has shown a steady upward trend, reflecting improvement in overall income levels and disposable income capacity. Per capita GNDI increased from INR 1,92,108 in Fiscal 2023 to INR 2,11,076 in Fiscal 2024 and further rose to INR 2,30,474 in Fiscal 2025 FRE. It is estimated to increase further to INR 2,49,195 in Fiscal 2026 PE, indicating continued growth in income levels across the economy. The consistent

[9] As per the survey conducted by People Research on India's Consumer Economy. Households with annual income in the range of INR 5 – 30 lakh are considered as middle-class households.

rise in per capita GNDI highlights strengthening purchasing power and improving household income conditions, which can support consumption demand going forward. Overall, the trend reflects a positive income environment, with rising disposable income expected to contribute to sustained private consumption and broader economic growth.



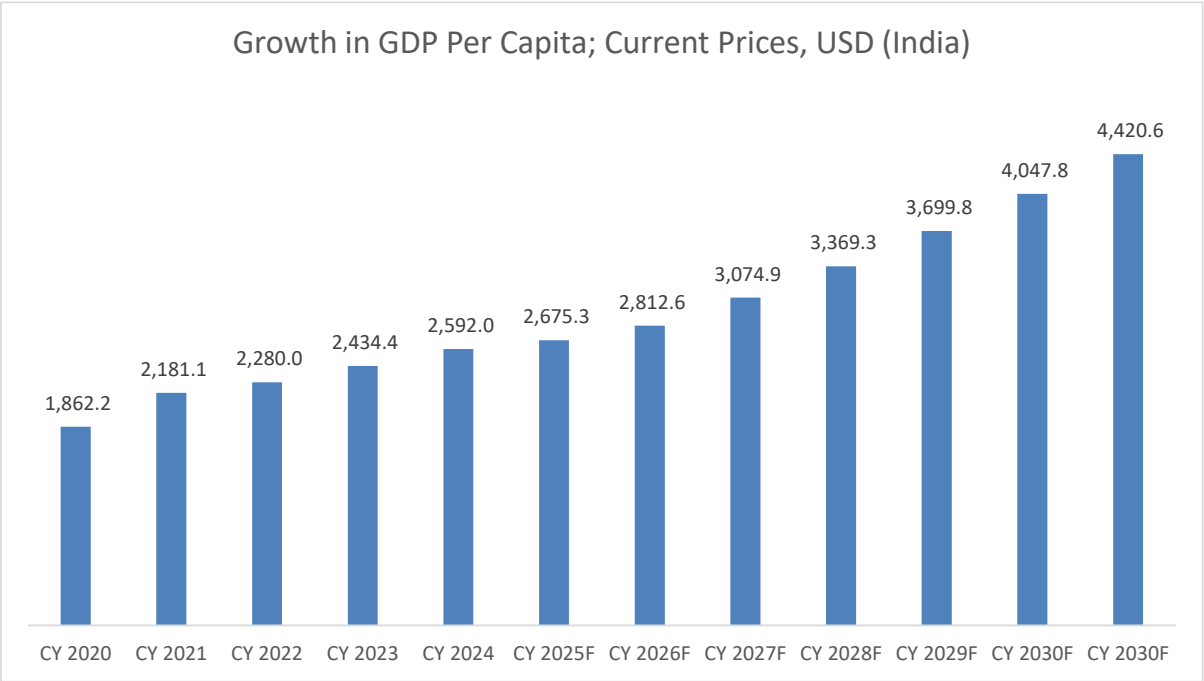
Source: Ministry of Statistics & Programme Implementation (MOSPI)

FRE is First Revised Estimate; PE is Provisional Estimates

India's Per Capita GDP Trends

India is poised to become the world's third-largest economy with a projected GDP of USD 5 trillion within the next three years, driven by ongoing reforms. As one of the fastest-growing major economies, India currently holds the position of the fifth-largest economy globally, following the US, China, Japan, and Germany. By 2027-28, it is anticipated that India will surpass both Germany and Japan, reaching the third-largest spot. This growth is bolstered by a surge in foreign investments and a wave of new trade agreements with India's burgeoning market of 1.4 billion people. The aviation industry is witnessing unprecedented orders, global electronics manufacturers are expanding their production capabilities, and suppliers traditionally concentrated in southern China's manufacturing hubs are now shifting towards India.

To achieve its vision of becoming the world's third-largest economy by 2027-28, India will need to implement transformative industrial and governmental policies. These policies will be crucial for sustaining the consistent growth of the nation's per capita GDP over the long term.

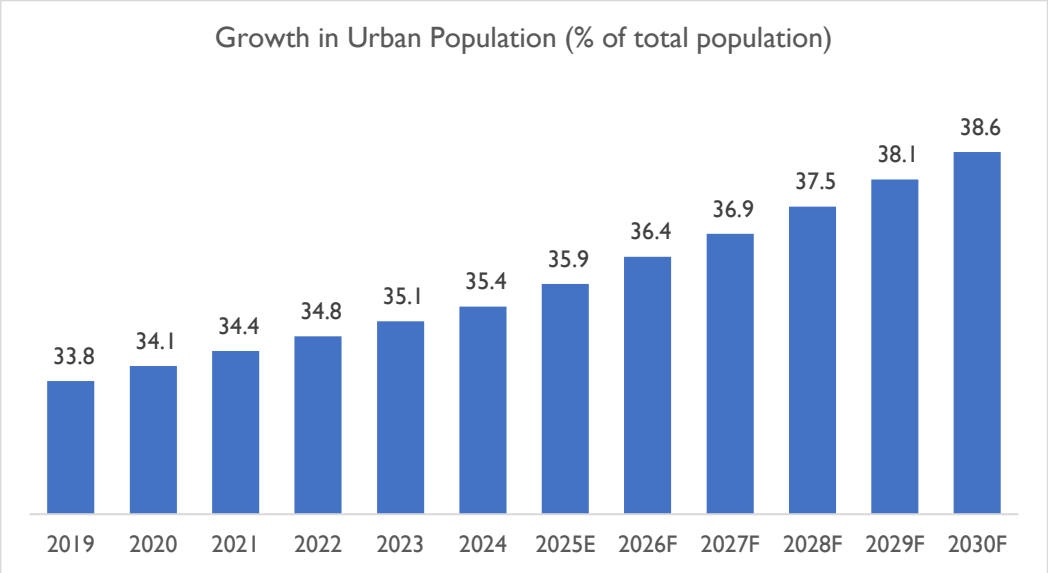


Source: IMF

From CY 2024 to CY 2031, India's per capita GDP is projected to grow at a compound annual growth rate of 7.9%. This growth will be driven by the service sector, which now accounts for over 50% of India's GDP, marking a significant shift from agriculture to services.

Increasing Urbanization

As per the Handbook of Urban Statistics 2022, India's urban population has been on a steady rise. Urban dwellers accounted for over 469 million in 2021 and are projected to rise to over 558 million by 2031 and further exceed 600 million by 2036.



Source: World Bank, [10] Dun & Bradstreet Research and Estimates

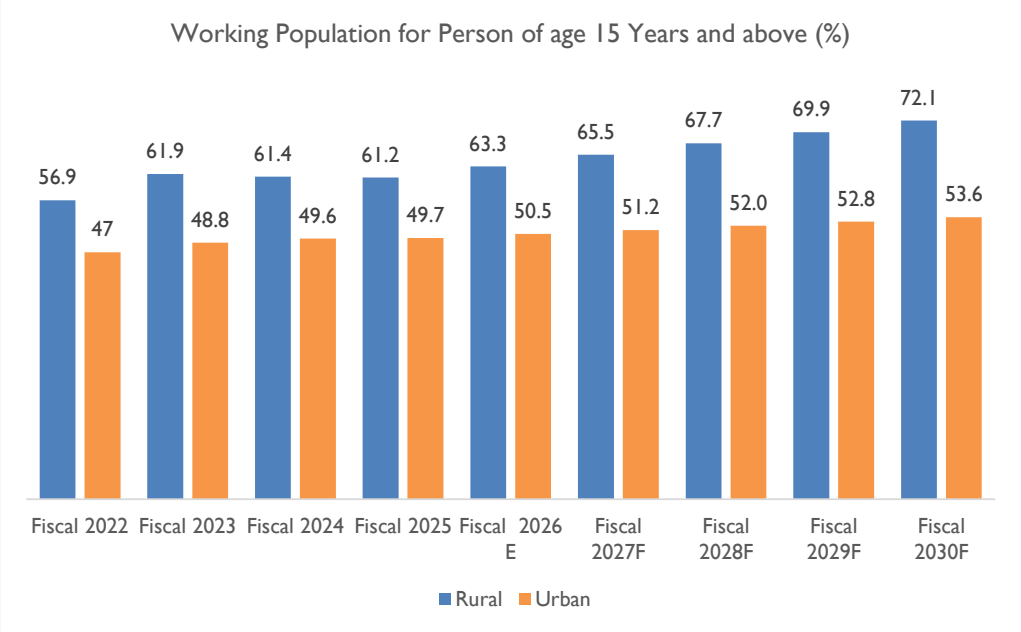
[10] https://data.worldbank.org/indicator/SP.URB.TOTL.IN.ZS?end=2022&locations=IN&skipRedirection=true&start=1960&view=chart

The share of urban population in total population has been rising steadily. In 2019, 33.81% of the total population was urban. By 2025, it had reached 35.9%, showing an increase over a span of five years of about 2.10%. The share of urban population is further forecasted to cross 38.6% by 2030. This increase in urban population is set to demand drastic changes in infrastructure development. Cities are a major driver for the construction industry. With cities expanding rapidly, there will be an increased need for improved housing, water supply, sewage systems, and electricity. Urban planning will need to account for higher population densities, necessitating the development of smart cities with integrated technology for efficient management of resources and services. The Smart Cities Mission targeted at 100 cities is aimed at improving the quality of life through modernised, technology-driven urban planning. This transformation will also require significant investment in public health, education, and recreational facilities to enhance the quality of urban living. The surge in urban population will also propel demand for improvement in multimodal transport infrastructure for freight and passenger travel requirements.

Rural vs. Urban Working Population by Age Group

As India continues to experience economic growth and development, the working population in both rural and urban areas is increasing. In the case of the urban population, this growth is reflected in the increase from a share of 47% in FY22 to 49.7% in FY25, whereas in rural areas, it grew from 56.9% in FY22 to 61.2% in FY25.

This growth is driven by a combination of factors, including demographic changes, economic policies, and the expansion of various industries. The rise in employment opportunities across sectors such as agriculture, manufacturing, services, and information technology has contributed to the overall increase in the working population, thereby fostering economic stability and enhancing the standard of living for many Indians.



Source: Periodic Labour Force Survey (PLFS) Annual Report, Dun & Bradstreet Research and Estimates

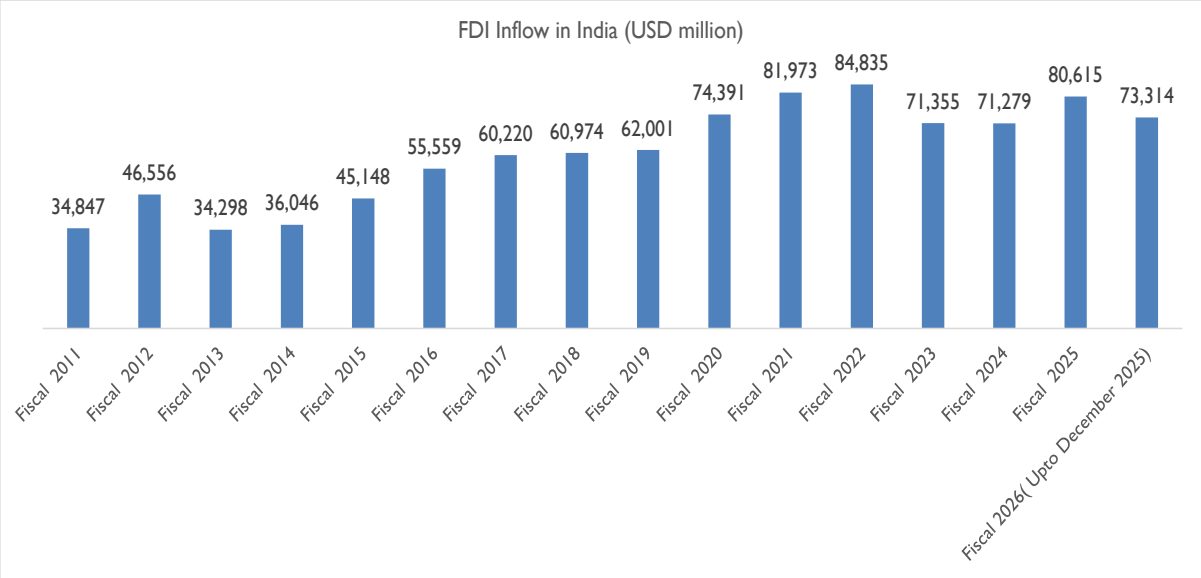
Note: 2025 refers to the period January 2025 – December 2025 and likewise for 2024, 2023 and 2022

In urban areas, the working population is growing rapidly due to the proliferation of jobs in sectors like IT, finance, retail, and healthcare. Additionally, the development of infrastructure, such as improved transportation networks and housing, has made urban centers more accessible and desirable for the working population. In rural areas, the working population remains substantial, primarily due to the dominance of the agricultural sector. Government initiatives aimed at rural development, such as improved access to education and skill development programs, have also played a crucial role in enhancing employment prospects in these regions.

The dominance of the rural working population over its urban counterpart can be attributed to the labour-intensive nature of the agricultural sector, which ensures a consistent demand for human labor despite advancements in mechanization, sustaining employment rates in rural areas.

Foreign Direct Investment Trend in India

FDI inflows in India observed a steady increase from FY 2013 to FY 2022 while it witnessed a decline of 15% in FY 2023 and a decline of 0.1% in FY 2024 due to several factors, including the ongoing conflict between Russia and Ukraine, changes in US monetary policy, and other global uncertainties. However, the country has received substantial FDI inflows from April 2000 to December 2024. This increasing FDI can be attributed to the new investment facilitation measures like the National Single-Window System (NSWS), which streamlines the approval and clearance process for investors, entrepreneurs, and businesses, along with sectoral measures and PLI schemes, supporting growth prospects in tier-2 and tier-3 cities. Further, tax compliance for startups and foreign investors has been simplified and the Income Tax Act, 1961, was amended in 2024 to abolish angel tax and to reduce income tax rate chargeable on income of a foreign company.



Sources: Department for Promotion of Industry and Internal Trade

Logistics Solution to Medical Diagnostics Industry

Brief insight on the key types of logistics services provided to medical diagnostics industry:

Logistics plays a critical role in ensuring reliability, speed, and regulatory compliance across the medical diagnostics value chain. The medical diagnostics industry relies on a highly coordinated logistics ecosystem designed to move biological samples, test kits, consumables, and medical documentation with accuracy, speed, and regulatory compliance. Unlike general logistics, diagnostic logistics must operate within strict time temperature windows, follow biosafety norms, and maintain sample integrity to ensure reliable test outcomes. As India's diagnostics sector expands through centralized processing laboratories, hub-and-spoke networks, and home-collection models, specialized logistics partners have emerged offering end-to-end solutions integrated with digital tracking, route optimization, and quality assurance systems. These logistics services are critical for supporting faster turnaround times (TAT), minimizing pre-analytical errors, and enabling nationwide coverage, including Tier II/III cities.

Specimen collection & Courier Services:

Specimen collection and courier services constitute the most essential operational layer in the medical diagnostics logistics chain. These services ensure that biological samples including blood, urine, swabs, biopsies, and other patient specimens are collected, handled, and transported to processing laboratories within defined time temperature windows. The objective is to preserve sample integrity, minimize pre-analytical errors, and provide reliable turnaround times (TAT). This segment covers scheduled and on-demand pickups, home-collection models, direct-to-customer services, and secure transport between collection centres, hospitals, and centralized laboratories. The process is supported by digital tracking tools, chain-of-custody protocols, and trained medical couriers who adhere to biosafety norms and International Air Transport Association (IATA) packaging standards (Category B infectious substances, UN3373).

Diagnostic logistics operators increasingly use standardized sample collection kits, tamper-proof packaging, and barcode-based labelling to ensure error-free handling. Real-time tracking platforms are used to monitor specimen movement, prevent delays, and maintain temperature compliance. Hub-and-spoke routing, air transport for priority samples, and route-optimized courier networks help diagnostic companies extend operations across metropolitan and non-metro markets. These services are integral to the functioning of national diagnostic chains, regional labs, and independent collection centres.

Last mile delivery:

Last-mile logistics in the medical diagnostics industry is crucial for ensuring timely delivery of specimens, test kits, reagents, and medical consumables to and from collection points and laboratories. Given the sensitivity of biological samples and the limited stability window for many assays, last-mile operations are designed to minimize transit time, reduce variability, and maintain temperature integrity. Diagnostic logistics providers use specialized vehicles, cluster-based routing, and digital tracking systems to ensure predictable delivery,

while also maintaining protocols for urgent transport cases such as emergency samples, infectious disease panels, or critical-care diagnostics. Effective last-mile management not only improves turnaround times (TAT) but also enhances service reliability for hospitals, home-collection networks, and decentralized diagnostic nodes.

Cold chain logistics:

Cold-chain logistics is a critical component of the medical diagnostics supply chain, ensuring that temperature-sensitive specimens, reagents, culture media, molecular testing panels, and blood derivatives are transported under controlled environmental conditions. Many diagnostic samples degrade rapidly when exposed to non-compliant temperatures, making stringent cold-chain protocols essential to maintaining accuracy, test reliability, and regulatory compliance. Logistics providers therefore deploy a mix of refrigerated vehicles, frozen transport systems, and cryogenic solutions (for highly sensitive biomolecular or genetic materials), supported by validated packaging and continuous temperature surveillance. The objective is to preserve sample stability from the point of origin to the processing laboratory, while mitigating risks related to thermal shock, microbial shift, or biochemical degradation.

Lab kit assembly & distribution: Pre-assembled lab kits with reagents and consumables

Efficient assembly and distribution of lab kits are essential for ensuring uninterrupted diagnostic operations across centralized laboratories, satellite labs, and collection centres. Diagnostic logistics providers manage a coordinated process involving procurement, kitting, packaging, and scheduled replenishment of consumables such as vacutainers, swabs, reagents, cartridges, PPE, and molecular testing materials. These activities help maintain standardized sample collection protocols, reduce stock-out risks, and support consistent operational performance across multiple locations. As diagnostic networks scale geographically, specialized logistics partners facilitate timely distribution of ready-to-use kits and consumables, supported by inventory monitoring tools and automated reorder systems to ensure alignment with each lab's throughput and turnaround demands.

Warehousing & Inventory management:

Warehousing and inventory management form a critical backbone of diagnostic logistics, ensuring uninterrupted availability of reagents, consumables, molecular testing kits, PPE, collection supplies, and cold-chain materials across the laboratory network. Given the sensitive nature of diagnostic inputs many of which require controlled storage environments logistics providers operate temperature-regulated warehouses with defined zones (ambient, chilled, frozen) to preserve product efficacy and compliance with quality standards. Integrated inventory systems, automated monitoring tools, and forecasting algorithms support accurate stock planning, reduce wastage, and enable timely replenishment across hubs, satellite labs, and collection centres. Effective warehousing ensures operational reliability, cost efficiency, and readiness for variable testing demand, particularly during seasonal disease surges or public health emergencies.

Value-added services:

Value-added services strengthen the operational efficiency and compliance posture of diagnostic logistics networks by addressing specialized requirements beyond routine transportation and warehousing. Reverse logistics supports the safe, documented return of expired kits, unused consumables, faulty reagents, and temperature-excursion materials to central facilities for inspection, replacement, or disposal. Concurrently, regulatory compliance audits ensure that logistics processes adhere to biosafety, biomedical waste, cold-chain, and documentation standards mandated by NABL, ICMR, CDSCO, and international guidelines such as IATA and WHO. These services help diagnostic companies minimize operational risks, maintain quality assurance, and achieve audit readiness across distributed lab networks.

Parameter	Specimen Collection & Courier	Last-Mile Delivery	Cold Chain Logistics	Lab Kit Assembly & Distribution	Warehousing & Inventory Mgmt.	Value-Added Services
Purpose	Pick-up & safe transport of samples	Fast delivery to meet cut-off times	Maintain required temperature	Supply labs with kits & consumables	Store & manage diagnostic stock	Returns, audits, compliance
Nature	Collection- & custody-focused	Speed & routing-focused	Temperature-controlled	Assembly & replenishment-focused	Storage & forecasting-focused	Governance & improvement-focused
Time Sensitivity	High	Very high	Critical (temperature-bound)	Moderate	Moderate	Low–moderate
Temperature Need	Low–moderate	Minimal	Mandatory (2–8°C / frozen / cryo)	Selective	Ambient/chilled/ frozen zones	For returned items only
Compliance	Chain-of-custody, biosafety	SOP-based urgent handling	IATA/WHO/NABL cold chain	Batch tracking, QC alignment	CDSCO/NABL storage norms	Biomedical waste & regulatory audits
Key Tools	Barcoding, sealed packs, tracking	Route optimization, dispatch tools	Data loggers, insulated shippers	Kit SOPs, inventory lists	RFID/barcodes, dashboards	CAPA, audit trails
Main Risks Prevented	Contamination, mix-ups	Delays, failed TAT	Temperature excursions	Stock-outs, kit errors	Expiry, wastage	Non-compliance

Emerging Trends & Developments

Integration of technology for real-time monitoring

The diagnostic logistics ecosystem is increasingly adopting IoT-enabled sensors, RFID tags, and smart monitoring devices to ensure real-time visibility of specimen location, temperature, humidity, and handling

conditions. These technologies significantly reduce pre-analytical errors by providing automated data capture, instant deviation alerts, and continuous chain-of-custody updates. With molecular, genetic, and advanced diagnostic tests becoming more common, the need for precise environmental control during transport has become essential.

Recent developments in India demonstrate this transition clearly, where smart medical refrigeration systems capable of tracking temperature, power status, and door activity in real time have been deployed across healthcare and diagnostic networks. These sensor-driven systems enable immediate alerts in case of excursion and ensure accurate documentation for cold-chain compliance. The growing adoption of such IoT-driven monitoring platforms indicates a shift toward more reliable, technology-enabled logistics across multi-location laboratory operations.

Integration of technologies like blockchain for traceability

Blockchain technology is emerging as a strong enabler of secure, tamper-proof traceability in diagnostic logistics. By creating immutable digital records of specimen movement, handover events, and temperature logs, blockchain ensures full transparency across stakeholders while reducing the risk of data manipulation. This capability is particularly important for high-value diagnostic materials that require strict chain-of-custody documentation, including oncology samples, genetic assays, and infectious disease panels.

Recent pilots in healthcare supply chains have shown how blockchain can streamline compliance by maintaining a permanent, time-stamped ledger of specimen handling, packaging integrity, and environmental conditions throughout transit. These systems allow authorized entities to verify movements instantly, strengthening audit readiness and reducing operational disputes. As diagnostic networks become more decentralized, blockchain-driven traceability frameworks are gaining traction as a tool to improve overall governance and trust in the logistics workflow.

Integration of AI & predictive analytics in elements ranging from route optimization to forecasting

Artificial intelligence and predictive analytics are increasingly being integrated into diagnostic logistics to enhance efficiency, reliability, and turnaround time. AI systems evaluate traffic patterns, courier capacity, route constraints, and sample stability windows to recommend the most efficient delivery paths. Predictive temperature models analyse real-time sensor data to identify early warning signs of cold-chain deviation, enabling proactive interventions before sample integrity is compromised.

Recent research and industry pilots have demonstrated how AI can work with IoT sensors and blockchain-based event logs to create an intelligent logistics environment capable of predicting risks and initiating automated corrective actions. These systems can reroute couriers, trigger backup transport, or alert quality teams instantly when anomalies appear. As diagnostic volumes increase and the need for rapid, error-free transport grows, AI-enabled logistics is becoming central to ensuring consistent performance across multi-city laboratory networks.

Smart packaging & technology-integrated cold chain solutions

Smart packaging technologies such as temperature-sensitive pouches, condition-monitoring labels, and phase-change materials are playing a crucial role in maintaining cold chain integrity. These solutions ensure that samples and reagents remain within the required temperature brackets throughout transit, even when exposed to external fluctuations. This is vital in India, where climatic conditions and long-distance rural coverage pose unique challenges for thermal control.

Technology-integrated cold chain systems further incorporate IoT-equipped refrigerated boxes, intelligent coolant systems, and automated validation tools that continuously log temperature data. Such innovations reduce reliance on manual temperature recording and significantly increase accuracy. By improving cold chain efficiency, logistics providers can expand their coverage to remote regions, support emerging molecular diagnostics, and handle more complex and temperature-sensitive products.

Innovations in hub & spoke model.

The hub-and-spoke model is evolving rapidly within the diagnostics logistics sector, driven by growing demand for faster turnaround times and urban micro-mobility solutions. Micro-distribution hubs small, strategically located sorting and dispatch points help reduce delivery radius and enable same-day or even intra-day specimen pick-ups. This model minimizes transit delays and improves the reliability of time-critical diagnostics such as RT-PCR, histopathology samples, and urgent biochemical tests.

Additionally, the new model supports the expansion of home-collection services, ensuring samples are moved quickly from residential areas to centralized laboratories. Integrating electric vehicles, bike couriers, and compact micro-warehouses enhances flexibility and cost-efficiency. These innovations collectively create a more responsive logistics backbone, capable of supporting India's rapidly expanding diagnostic industry and its emphasis on quick, accurate reporting.

Key Demand Drivers

Key factors driving the demand for logistics solutions in the medical diagnostics industry in India:

- **Overall growth in diagnostic testing: Increasing volume of diagnostics testing in the country and its impact.**

India's diagnostic testing sector has seen rapid and sustained growth, driven by rising awareness of preventive healthcare, increasing incidence of chronic diseases, and expanding insurance coverage. As more patients undergo routine screenings, advanced pathology tests, and molecular diagnostics, the volume of samples being collected and transported has grown significantly. This surge directly increases the demand for efficient, reliable, and scalable logistics networks capable of handling higher sample loads while maintaining strict turnaround times.

The expansion of home sample collection services has further accelerated the need for specialized logistics solutions. With diagnostic companies now offering doorstep collection across metros, tier-2 cities, and even rural regions, logistics providers must manage more frequent pickups, decentralized locations, and time-sensitive deliveries to central laboratories. The increased geographical spread and higher frequency of sample transport have made logistics a critical enabler of the industry's service quality, driving investments in last-mile delivery, temperature control, and real-time tracking systems.

Furthermore, the growth in specialized and high-value diagnostics such as genetic testing, histopathology, and infectious disease panels has intensified the need for secure and compliant logistics operations. These tests often involve sensitive samples that require careful handling, rapid transport, and stringent chain-of-custody practices. As diagnostic testing volumes rise across all segments, the demand for advanced logistics infrastructure proportionately increases, making logistics a strategic differentiator for diagnostic companies.

- **Regulatory compliance: Stringent regulations and quality standards surrounding medical diagnostics and the resultant demand for specialized logistics solutions.**

The medical diagnostics sector in India is governed by a range of regulatory standards that emphasize strict quality control, temperature compliance, and chain-of-custody documentation. These regulations require that biological samples be handled in a controlled environment with validated processes to ensure sample integrity. As compliance frameworks become more stringent especially with accreditation requirements such as NABL diagnostic players increasingly rely on logistics partners who can meet these high standards, driving demand for specialized medical logistics providers.

Regulatory guidelines also mandate clear documentation and traceability at every stage of sample movement. This includes accurate labelling, timestamping, temperature logging, and adherence to biosafety protocols during handling and transportation. As traditional courier services often lack such specialized capabilities, the demand has shifted toward healthcare-focused logistics companies equipped with trained personnel,

calibrated cold chain equipment, and digital tracking systems. Compliance is no longer optional but a critical operational requirement for maintaining accreditation and ensuring patient safety.

Moreover, as the regulatory ecosystem evolves especially with upcoming reforms aimed at standardizing diagnostic services nationwide the pressure on logistics infrastructure will continue to grow. Diagnostics companies must demonstrate compliance during audits and maintain detailed records of sample handling. As a result, they increasingly prefer logistics partners who offer validated processes, automated compliance reporting, and risk mitigation solutions. This shift strengthens the market for specialized logistics services tailored to the medical diagnostics industry.

- **Growth in home-based testing: Tracking the explosive growth in home-based testing and the resultant demand for specialized logistics services.**

Home-based testing has expanded rapidly in India, driven by rising consumer preference for convenience, digital health adoption, and increased awareness of preventive care. This shift has significantly increased the logistical burden on diagnostic networks, as more samples now originate from homes rather than clinics or hospitals. Frequent pickups, broader route coverage, and the need for reliable cold-chain handling have become operational necessities. As customers increasingly expect fast turnaround times, logistics providers must enhance their last-mile capabilities and strengthen coordination between phlebotomists, couriers, and laboratories.

The growth of home-testing has also encouraged the emergence of new players specialising in digitally enabled diagnostics and doorstep sample collection. Several next-generation diagnostics startups and online health platforms have expanded their logistics footprint by building dedicated fleets, deploying app-based dispatch systems, and establishing smaller satellite hubs for quicker consolidation. This competitive environment is pushing traditional laboratory chains to modernize their logistics systems, adopt real-time tracking, and expand into previously underserved markets. The rise of home-based testing is therefore reshaping the logistics landscape, demanding scale, speed, and increased technological integration.

- **Increasing demand for preventive diagnostic services in India: Resultant demand for logistics solutions**

The rising adoption of preventive diagnostics such as full-body check-ups, wellness panels, early screening programs, and lifestyle disease monitoring is significantly increasing the operational load on diagnostic logistics. Home-collection services now require larger fleets, more frequent pickups, and faster last-mile transport for temperature-sensitive samples. This trend has also expanded kit distribution cycles, reagent replenishment needs, and cold-chain capacity requirements across diagnostic networks.

Major diagnostic service providers in India have responded by scaling their home-collection infrastructure, expanding regional logistics hubs, and deploying technology-driven dispatch systems to manage higher specimen volumes. Investments in insulated carriers, GPS-enabled routing, and cold-chain monitoring tools

have become more common as these companies broaden their coverage into Tier-II and Tier-III cities. Preventive diagnostics has therefore become a major structural driver influencing how logistics networks expand, adapt, and modernize to meet rising nationwide demand.

- **Growth in clinical trials and advanced diagnostics: Resultant demand for transporting investigational drugs, lab kits, and patient samples.**

The rise of clinical trials, genomic testing, precision medicine, and specialized molecular diagnostics has created new, higher standards for medical-grade logistics. These samples often require ultra-low temperature transport, strict time-bound movement, and highly controlled environments due to their sensitivity and regulatory requirements. As pharmaceutical companies and research organizations expand trial activity across multiple regions, logistics providers must handle bio-specimens with extreme care, using validated packaging, continuous temperature monitoring, and standardized documentation. The growing complexity of diagnostic assays further increases reliance on high-quality cold-chain infrastructure.

Advanced diagnostic techniques, including NGS, immunophenotyping, and oncology biomarker panels, also require dedicated logistics capabilities for both specimen movement and reagent replenishment. Laboratories offering such high-end tests increasingly depend on specialized carriers trained in biosafety handling, cryogenic shipment protocols, and chain-of-custody compliance. The expansion of research collaborations between hospitals, clinical research organizations, and diagnostic companies has further strengthened demand for medical-grade logistics networks capable of meeting global standards. This trend indicates that logistics will continue to evolve from a courier-based system to a specialized scientific support function.

Other Factors

In addition to technological and demand-driven changes, broader ecosystem shifts are contributing to the transformation of diagnostic logistics. **Increased regulatory scrutiny** around sample integrity, biomedical waste management, and cold-chain documentation is pushing providers to adopt more rigorous SOPs, traceability tools, and quality assurance systems. Evolving compliance standards from NABL, ICMR, CDSCO, and international frameworks require laboratories and logistics partners to maintain accurate audit trails and validated processes across all stages of specimen handling. This heightened oversight encourages investment in automation, monitoring technologies, and standardized workflows.

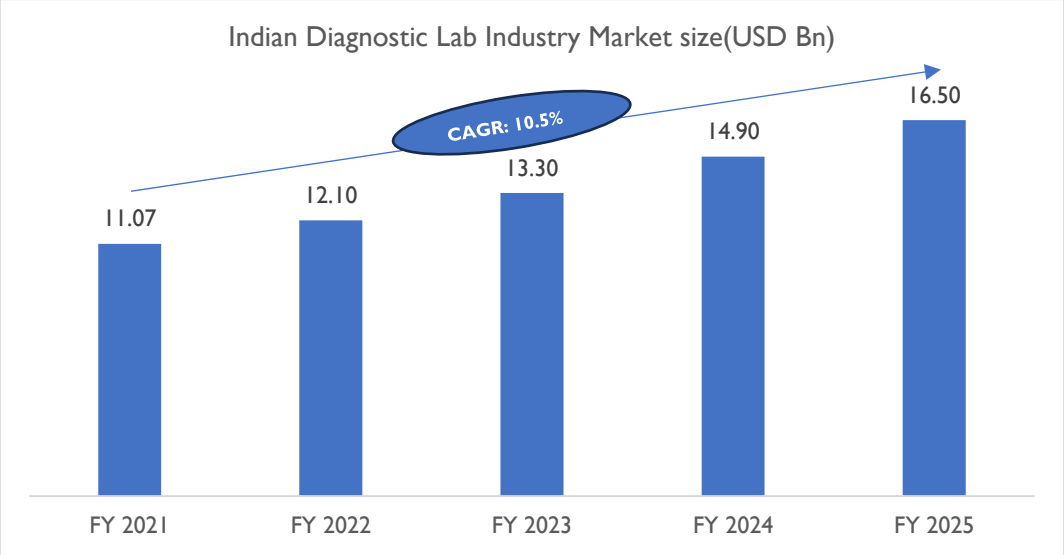
Operational resilience has also become a key focus, driven by lessons learned from large-scale disruptions such as pandemics, supply-chain interruptions, and emergency health outbreaks. Diagnostic companies are increasingly building redundancy into their logistics networks through additional hubs, multi-modal transport options, and alternative routing plans. There is also a growing emphasis on sustainability, with some providers experimenting with energy-efficient cold storage, eco-friendly packaging materials, and optimized routing to reduce carbon footprint. Collectively, these supporting factors strengthen the long-term evolution of diagnostic logistics into a more efficient, compliant, and technology-centric ecosystem.

Medical Diagnostics Industry in India

Estimated market size of diagnostic lab industry in India.

The Indian diagnostic laboratory industry has become a critical enabler of the country's healthcare system, supporting early disease identification, treatment planning, and preventive health management. Over the past few years, the sector has witnessed rising demand driven by an increase in lifestyle-related diseases, growing health awareness, and the expansion of diagnostic infrastructure into Tier-2 and Tier-3 cities. The rapid adoption of home sample collection, digital booking platforms, and technology-enabled testing has further strengthened industry penetration. Additionally, the shift toward organized chains offering standardized testing protocols, faster turnaround times, and comprehensive test menus continues to accelerate industry consolidation. With healthcare expenditure increasing and preventive wellness gaining importance, the diagnostic services market remains one of the fastest-growing segments in India's healthcare ecosystem.

The graph shows a clear and consistent upward trajectory in the Indian diagnostic lab industry, reflecting strong structural growth across the five years from FY 2021 to FY 2025. Market size expands from **USD 11.07 billion in FY 2021 to USD 16.50 billion in FY 2025**, reaffirming the rising demand for diagnostic services across the country. This growth path has been stable and incremental, highlighting the sector's resilience and its central role in healthcare delivery.



Source: D&B Desk Research and Estimation

The underlying trend line, supported by a **CAGR of 10.5%**, indicates a steady compounding of market value rather than sporadic jumps or volatility. Each year shows meaningful progression: the post-pandemic period in FY 2022 brought increased awareness for routine and preventive diagnostics; FY 2023 and FY 2024 saw further expansion supported by molecular diagnostics, wellness testing, and organized players scaling their networks; and FY 2025 continues the growth trajectory with deeper penetration into semi-urban regions and wider adoption of advanced technologies.

Collectively, the graph underscores a strong demand ecosystem where diagnostics is transitioning from being an episodic healthcare service to a mainstream, preventive, and technology-driven industry. The consistent rise in market size suggests strengthened consumer reliance on diagnostics, greater clinical integration, and enhanced industry maturity positioning the sector for continued long-term expansion.

Insight on diagnostics lab infrastructure in India Focus on key players and their network.

The organized diagnostic laboratory segment in India has grown significantly as national and regional chains expand their presence through robust, technology-enabled infrastructure. Leading players such as Dr. Lal PathLabs, Metropolis Healthcare, Thyrocare Technologies, SRL Diagnostics, Vijaya Diagnostic Centre, Medall Diagnostics, and Neuberg Diagnostics have developed wide-reaching networks that combine central reference laboratories with satellite labs and extensive collection centre footprints. These networks enable high-volume testing, standardized processes, and efficient sample logistics across geographies. Central labs are equipped with advanced diagnostic platforms including molecular diagnostics, immunodiagnostics, microbiology automation, and genomics which support complex and high-value tests, while mid-sized labs handle routine pathology and biochemistry workloads. This structured layering of capabilities ensures faster turnaround times, cost efficiency, and consistent quality across regions.

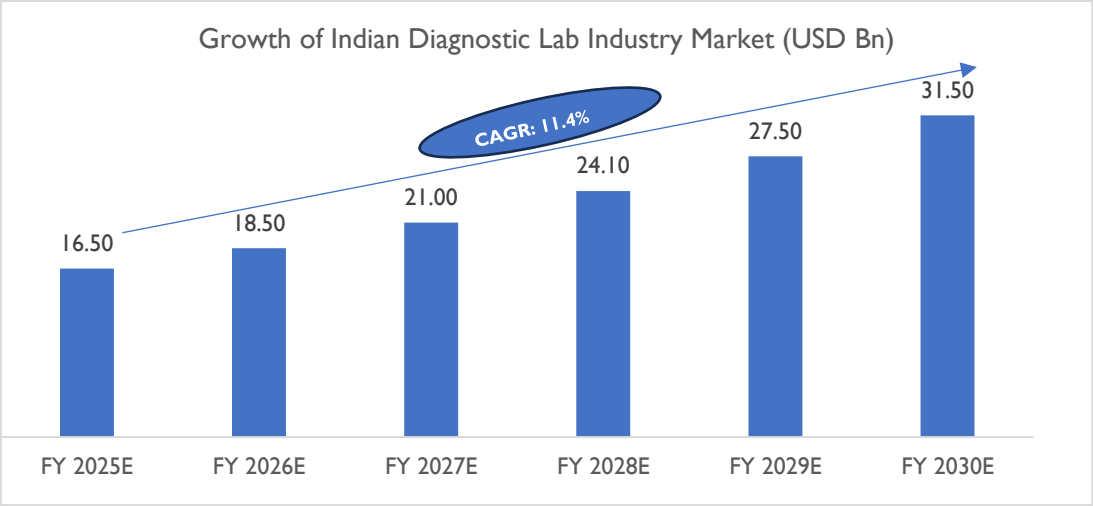
The organized segment has also been instrumental in driving accessibility and reliability in diagnostics beyond metros, deepening penetration into Tier-2 and Tier-3 markets through franchise-led collection centres and mobile phlebotomy services. The integration of Laboratory Information Systems (LIS), automation technologies, and digital interfaces for booking, tracking, and delivering reports has further strengthened operational efficiency and patient convenience. Many leading chains maintain NABL-accredited facilities, reinforcing trust and standardization in diagnostic outcomes. As consumer expectations evolve and preventive healthcare becomes mainstream, these scalable and tech-enabled networks position organized diagnostic providers as the backbone of India's modern diagnostic infrastructure, with continued expansion expected across urban and semi-urban markets.

In summary, the organized diagnostics segment has emerged as the backbone of India's testing infrastructure, combining scale with standardization and technological depth. As these players continue to widen their networks and upgrade capabilities, they will play an increasingly central role in shaping the industry's long-term growth and service quality.

Expected growth in diagnostic lab industry in India.

The Indian diagnostic laboratory industry is entering a phase of accelerated growth driven by the increased adoption of preventive healthcare, wider access to specialized testing, and the expansion of organized diagnostic chains into Tier-2 and Tier-3 markets. Growing lifestyle diseases, rising health awareness, and deeper integration of digital diagnostics such as home sample collection, AI-enabled test interpretation, and online booking platforms continue to strengthen industry demand. The shift toward high-value molecular and genomic testing, coupled with greater private investment and consolidation within the sector, is positioning India's diagnostic services market for strong long-term expansion.

The graph highlights a clear and sustained upward growth trend in the Indian diagnostic lab industry, with the market expected to expand from **USD 16.50 billion in FY 2025E to USD 31.50 billion by FY 2030E**. This near doubling of market size within five years reflects the sector's strengthening demand base, driven by rising preventive healthcare adoption, higher test utilization across chronic and lifestyle diseases, and the increasing acceptance of advanced molecular and genomic tests. The consistent annual rise from USD 18.50 billion in FY 2026E to USD 24.10 billion in FY 2028E signals that diagnostics is becoming a more integrated and essential part of patient care, supported by expanding laboratory infrastructure and digital-first service models such as home sample collection and online reporting.



Source: D&B Desk Research

The projected **CAGR of 11.4%** further underscores the industry's strong long-term trajectory, indicating stable, compounding growth across both urban and semi-urban markets. Organized diagnostic chains continue to scale rapidly, improving service quality, standardization, and geographical reach, which in turn is accelerating overall market expansion. By FY 2030E, the industry's expected value of USD 31.50 billion reflects not only the growing size of the healthcare economy but also an evolving consumer shift toward timely diagnosis, preventive monitoring, and reliable digital-enabled testing solutions. Together, these trends

position the diagnostic sector as one of the most resilient and fast-growing components of the Indian healthcare ecosystem.

Logistics Solution to Pharmaceutical Industry

Overview

The pharmaceutical industry depends heavily on specialized logistics services that ensure the safe, compliant, and efficient movement of sensitive materials across the supply chain. Given the highly regulated nature of drug development and distribution, logistics providers support pharma companies through a combination of in-plant logistics, temperature-controlled warehousing, customized operational solutions, and value-added services that enhance product integrity and regulatory adherence. These services enable seamless coordination between production units, quality assurance teams, storage facilities, and distribution networks, ensuring that materials such as active pharmaceutical ingredients (APIs), formulations, vaccines, and biologics are handled under precise conditions. As the industry increasingly adopts biologics, cell therapies, and temperature-sensitive drugs, the demand for robust cold-chain infrastructure and real-time monitoring systems has surged. Moreover, evolving regulations, serialization mandates, and rising global supply chain scrutiny have amplified the importance of high-quality logistics support. Together, these specialized logistics capabilities form the backbone for ensuring safe global distribution of pharmaceuticals while enabling industry scalability and process optimization.

Insight on the specialized logistics services & solutions provided to pharmaceutical industry.

- **In-Plant Logistics:** In-plant logistics covers the strategic movement of raw materials, intermediates, and finished products within a pharmaceutical manufacturing facility. It ensures synchronization between production, packaging, and quality control units. The process includes precise material handling, automated storage and retrieval, and controlled internal transportation. Pharmaceutical plants require strict hygiene, contamination-free movement, and compliance with Good Manufacturing Practices (GMP). In-plant logistics also integrates digital tracking systems to maintain batch traceability and reduce material mix-ups. These solutions help streamline production workflows, minimize downtime, and enhance operational efficiency. They further support just-in-time delivery of materials to production lines. Overall, in-plant logistics ensures a seamless internal supply chain that supports consistent product quality and regulatory compliance.
- **Temperature-Controlled Warehouse:** Temperature-controlled warehousing is essential in pharma logistics to maintain drug stability and potency throughout storage. Facilities include cold rooms (2- 8°C), deep freezers (- 20°C or below), and controlled ambient zones (15- 25°C). These warehouses use real-time digital sensors to monitor environmental parameters with automated alerts. Redundant refrigeration systems, backup power, and validated storage equipment ensure zero deviation from required conditions. **Compliance with Good Distribution Practices (GDP)** mandates rigorous documentation, calibration, and audit trails. Temperature-controlled warehouses also manage lifecycle services such as

receiving, sampling, quarantine, dispatch, and cold-chain packaging. Such facilities safeguard vaccines, biologics, and high-value therapies that are highly temperature-sensitive. They form a critical link in delivering safe pharmaceuticals to global and domestic markets.

- **Customized Solutions:** Pharmaceutical logistics increasingly requires customized solutions tailored to product-specific and regulation-specific needs. These include validated packaging systems, specialized cold boxes, and lane-risk assessments to minimize temperature excursions. Customized processes also involve designing SOPs for specific molecules, countries, or trial requirements. Logistics providers offer controlled-substance handling, secure transport, and white-glove delivery for high-value biologics. Batch-level serialization, scanning, and documentation support regulatory audits. Solutions also incorporate digital dashboards for shipment visibility and deviation reporting. Customization ensures each shipment meets its therapeutic, stability, and safety needs. Such specialized offerings help pharmaceutical companies reduce risks, maintain compliance, and optimize supply chain reliability.
- **Value-Added Services:** Value-added services enhance the efficiency and compliance of pharmaceutical logistics operations. These include labelling, kitting, repacking, and secondary packaging that comply with regulatory requirements. Documentation support ensures adherence to GDP and international shipment norms. Reverse logistics handles expired, damaged, or recalled products securely. Providers also offer lane validation studies, cold-chain qualification, and shipment testing. Real-time tracking platforms give full visibility into temperature, location, and handling. Some providers extend support in quality inspections, customs clearance, and regulatory paperwork. These services reduce operational burden on pharma companies and strengthen supply chain accuracy. Ultimately, value-added services play a key role in ensuring safe, compliant, and uninterrupted pharmaceutical distribution.

Integration of pharma logistics to pharma industry

The integration of logistics into the pharmaceutical industry plays a vital role in ensuring that medicines, raw materials, biologics, and high-value formulations move efficiently and safely across the supply chain. Pharma logistics extends far beyond physical transportation; it involves temperature-controlled warehousing, real-time monitoring, multimodal distribution systems, and strict regulatory adherence to maintain product integrity. As the pharmaceutical sector expands into biologics, personalized therapies, and gene-based treatments, logistics providers must deliver highly specialized solutions that meet global quality standards. These logistics capabilities directly influence production continuity, regulatory compliance, patient safety, and market responsiveness. With increasing risks of counterfeit drugs, tighter global distribution norms, and a shift toward complex formulations, the need for advanced logistics frameworks has never been greater. Thus, integrated pharma logistics has become a strategic function enabling pharmaceutical companies to remain compliant, competitive, and operationally efficient.

Deep dive into the role played by pharma logistics and its vital importance to the pharmaceutical industry.

- **Sensitive Products:**

Pharmaceutical materials especially biological samples, vaccines, enzymes, and advanced formulations are highly sensitive and require specialized handling across the supply chain. Maintaining controlled temperature and humidity is critical to ensuring stability, efficacy, and shelf life. Cold-chain systems equipped with refrigeration units, insulated containers, and thermal mapping technologies are widely used to preserve quality. Pharma logistics providers implement validated storage environments and calibrated systems to prevent temperature excursions that could compromise products. Warehouses are designed with multiple controlled zones and monitored through automated sensors to maintain strict environmental conditions. Transport vehicles often include reefer units, GPS-enabled temperature monitoring, and alarm systems for deviations. Even short periods outside acceptable temperature ranges can result in product loss, regulatory non-compliance, and patient safety risks. Thus, logistics partners must deliver high-precision, end-to-end environmental control.

- **Stringent Regulations**

The pharmaceutical supply chain is governed by stringent global and national regulatory standards, particularly Good Distribution Practices (GDP). These regulations mandate proper handling, documentation, validation, and traceability across all logistics activities. Every step from storage to transport to last-mile delivery must comply with defined quality protocols to prevent contamination, mismanagement, or loss of therapeutic value. Pharma logistics players must maintain meticulous process documentation, route validation, temperature logs, and chain-of-custody records. Regulatory audits by agencies such as CDSCO, WHO, USFDA, and EMA require logistics providers to demonstrate process control and risk management. Non-compliance can lead to severe penalties, product recalls, and supply disruptions. Consequently, specialized logistics partners with established quality systems and standardized operating procedures are essential for pharmaceutical companies to maintain compliance and product integrity.

- **Need for Real-Time Tracking**

Pharmaceutical supply chains face the persistent threat of counterfeit drugs, diversion, and unauthorized entry into legitimate channels, making real-time tracking indispensable. Advanced tracking systems using RFID, barcoding, blockchain, and IoT devices ensure that every shipment is monitored from origin to destination. Continuous digital visibility allows pharma companies to detect anomalies such as route deviation, temperature fluctuations, or unauthorized access. Real-time tracking also supports regulatory compliance, as authorities increasingly require end-to-end traceability data for audits and product authentication. Logistics providers integrate monitoring dashboards, automated alerts, and live data feeds to allow proactive intervention when issues arise. This level of transparency strengthens security, minimizes spoilage, and

ensures timely decision-making. Ultimately, real-time tracking improves patient safety and enhances trust among global supply chain partners.

- **Integration of Multi-Modal Delivery Solutions**

Pharmaceutical distribution often requires a combination of transportation modes air, road, rail, and sea to ensure timely, cost-efficient, and secure movement of drugs and materials. Multimodal logistics enables companies to select optimal routing based on product type, temperature sensitivity, urgency, and regulatory constraints. For instance, biologics may require air transport, while bulk APIs may move via road or sea under controlled conditions. Coordinated multimodal operations ensure continuity despite disruptions, such as weather delays or route restrictions. Pharma logistics providers must synchronize transit handovers, maintain environmental controls across modes, and validate end-to-end integrity. Effective multimodal integration minimizes risks of delays, contamination, or temperature excursions. This structured approach allows pharmaceutical products to reach hospitals, distributors, and global markets without compromising quality or time sensitivity.

- **In-Plant Logistics**

In-plant logistics ensures smooth internal movement of raw materials, intermediates, packaging materials, and finished goods within pharmaceutical manufacturing facilities. Efficient internal logistics is essential for uninterrupted production cycles, regulatory compliance, and optimized material flow. Activities include material staging, line feeding, batch-wise movement, waste removal, and finished goods transfer to warehouses. Automation tools such as conveyor systems, AGVs, and digital inventory systems are increasingly used to reduce errors and maintain traceability. Controlled movement within the plant is vital for sterile, cleanroom, and segregated production environments. In-plant logistics providers maintain documentation, environmental control, and sequencing accuracy to support GMP compliance. The efficiency of in-plant processes directly affects manufacturing productivity, batch quality, and operational cost.

- **Emergence of Specialized / Tailor-Made Formulations**

The rise of personalized medicine, gene therapy, and biopharmaceuticals has led to the need for highly specialized logistics solutions. These formulations often have extremely low shelf life, require cryogenic temperatures, or must be handled under strict biohazard protocols. Logistics providers must deliver customized packaging, specialized containers, and ultra-low temperature storage such as -80°C freezers or liquid nitrogen tanks. Gene therapies may require just-in-time (JIT) logistics, where delays can render products unusable. Biopharmaceuticals also demand validated cold chain systems and high regulatory compliance due to their biological sensitivity. Tailor-made logistics ensures that such advanced therapies reach clinical sites or patients in perfect condition. As innovation grows, logistics partners must continuously enhance technology, infrastructure, and quality systems to support next-generation pharmaceuticals.

Technology Integration in Pharma Logistics

Technology integration in pharma logistics is transforming the efficiency, transparency, and reliability of the pharmaceutical supply chain. **Advanced AI and ML tools** are increasingly being used for route optimization, demand forecasting, and inventory automation helping companies minimize stockouts, avoid excess inventory, and maintain consistent supply. These technologies enable predictive insights based on consumption trends, seasonal patterns, and geographic demand variations, ensuring that critical medicines reach hospitals, pharmacies, and patients without disruption.

In addition, emerging digital solutions such as **blockchain, GPS, IoT sensors, and RFID tagging** are strengthening end-to-end visibility and product authenticity. Blockchain provides **tamper-proof proof-of-delivery records** and helps reduce the risks posed by counterfeit drugs. **IoT and RFID-enabled tracking allow real-time monitoring of temperature, humidity, and location**, which is essential for sensitive pharmaceutical products that require strict cold-chain compliance. Together, these technologies are modernizing pharma logistics by improving traceability, regulatory compliance, and delivery performance.

Usage of AI and ML solutions for route optimization, demand forecasting and automation to address stockouts / excess inventory

AI and ML solutions are significantly enhancing efficiency in pharma logistics by enabling intelligent route optimization. These technologies process vast datasets including traffic conditions, delivery deadlines, vehicle capacity, and temperature-control requirements to generate the fastest and most reliable delivery routes. This is especially crucial for pharmaceutical products that require strict compliance with cold-chain standards. As ML models learn from real-world data over time, they continuously refine routing decisions, reducing transit delays, operational costs, and wastage caused by temperature excursions.

Beyond transportation, **AI-driven demand forecasting** provides a strong foundation **for accurate inventory planning.** By analyzing historical consumption trends, seasonal demand spikes, disease outbreaks, regional prescription patterns, and even macro-level indicators, AI systems predict product demand weeks or months in advance. This helps pharmaceutical manufacturers, distributors, and pharmacies maintain optimal stock levels, ensuring medicines and critical healthcare supplies are consistently available. The resulting reduction in uncertainty allows companies to avoid emergency procurement, which is often costly and inefficient.

Automation further **strengthens inventory and warehouse management** by streamlining routine operations and minimizing manual errors. AI-powered systems can automatically trigger replenishment orders, allocate warehouse space based on priority or temperature sensitivity, and track shelf-life to prevent expiry-related losses. These automated workflows reduce human intervention, improve accuracy, and enhance overall supply chain responsiveness. *Altogether, the combination of AI, ML, and automation creates* ***a***

smart, agile, and cost-efficient logistics ecosystem *capable of addressing both stockouts and excess inventory challenges in the pharmaceutical sector.*

Integration of blockchain solution to ensure proof of delivery and combat the threat from counterfeit drugs.

The integration of blockchain technology in pharma logistics is strengthening supply chain transparency and security by creating tamper-proof, verifiable records of every transaction and movement of goods. Blockchain enables a decentralized ledger where each step from manufacturing to distribution to final delivery is time-stamped and permanently recorded. This provides a reliable, immutable proof of delivery that cannot be altered or manipulated, ensuring all stakeholders have access to accurate, real-time information. As a result, manufacturers, distributors, and regulators can verify the authenticity and condition of pharmaceutical products at any point in the supply chain.

A major advantage of blockchain is its ability to combat the growing global threat of counterfeit drugs. By linking every product to a unique digital identity and tracking its journey through the supply chain, blockchain makes it extremely difficult for fake or unauthorized products to enter the market. Any discrepancy, diversion, or unauthorized scanning is instantly flagged, enabling rapid intervention. This strengthens regulatory compliance, enhances patient safety, and preserves trust in the pharmaceutical ecosystem. Overall, blockchain serves as a powerful tool to ensure integrity, traceability, and authenticity across pharma logistics.

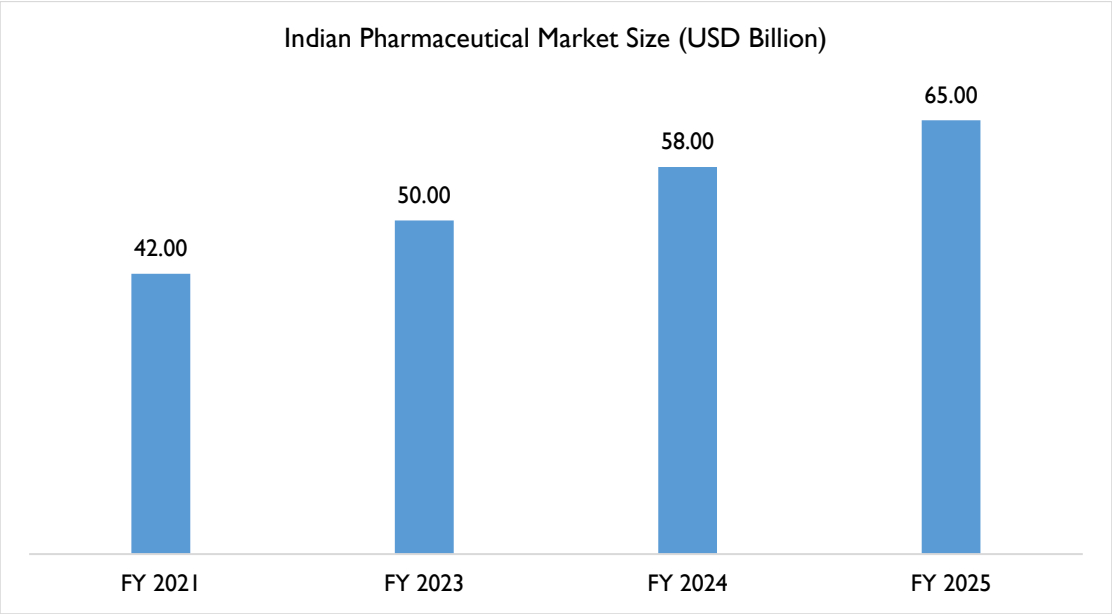
Usage of GPS / IoT / RFID for real-time tracking

Real-Time Location Visibility	**GPS (Global Positioning System)**-enabled tracking provides continuous visibility of shipment location throughout the transit journey. This helps logistics teams monitor route adherence, estimate accurate delivery times, and identify any unexpected delays. Real-time access to movement data enables swift corrective actions, ensuring timely and secure delivery.
Monitoring Temperature & Environmental Conditions	**IoT (Internet of Things)** sensors continuously capture temperature, humidity, and vibration levels inside transport vehicles or storage units.This is essential for sensitive pharma products such as vaccines, biologics, and insulin that require strict cold-chain compliance. Instant alerts are triggered if conditions deviate from permissible limits, preventing product spoilage and quality compromise.
Automated Identification & Traceability	**RFID (Radio Frequency Identification)** tags allow automated scanning and identification of products at warehouses, distribution centers, and delivery points. This eliminates manual entry errors and ensures faster, more accurate inventory tracking. Each scan updates the system in real time, improving traceability and reducing the risk of misplaced or lost shipments.
Enhanced Security & Tamper Detection	• GPS, IoT, and RFID systems can detect unauthorized access, route deviations, or tampering attempts during transit. Alerts are sent instantly to operations teams, enabling immediate intervention and preventing theft or diversion. This level of security is particularly important for high-value or controlled pharmaceutical products.

Insight on Indian Pharmaceutical Industry

Estimated size of pharmaceutical industry in India & historical growth trend.

India's pharmaceutical industry has displayed a consistent upward trajectory over the past few years, growing from USD 42 billion in FY 2021 to an estimated USD 65 billion in FY 2025. This marks a 55% growth in just four years, showcasing the sector's strong fundamentals and its ability to scale rapidly. The industry has evolved from being largely generic-focused to increasingly embracing high-value segments such as biosimilars, biologics, and complex generics. India's positioning as the **"pharmacy of the world"** has gained further credibility post-COVID, with global recognition of its role in supplying affordable, high-quality medicines to over 200 countries.



Source: Ministry of Chemicals and Fertilizers, Press Information Bureau, Industry Sources

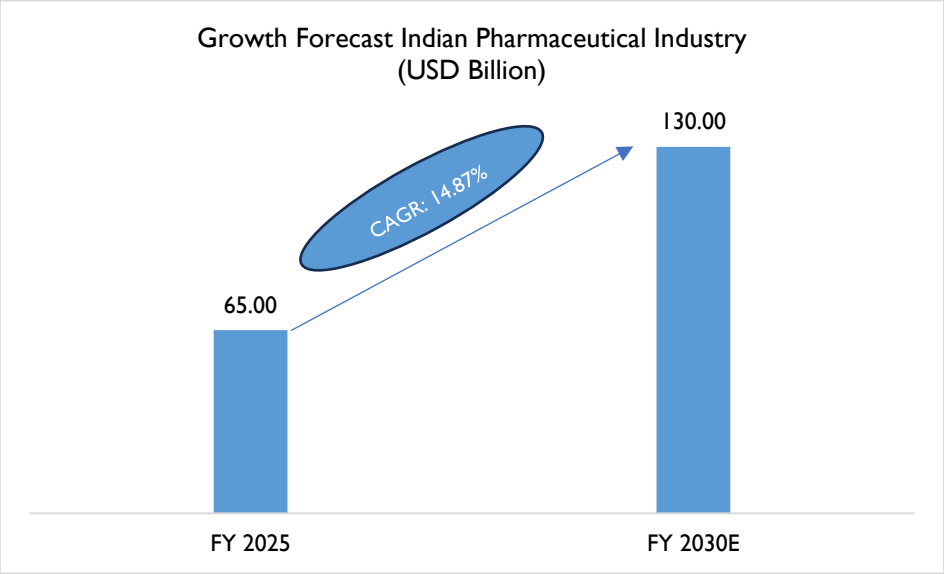
The growth momentum from FY 2021 to FY 2023 was primarily driven by post-pandemic recovery and a surge in domestic and global demand for essential medicines, vaccines, and chronic disease treatments. Government procurement for public health schemes and rising private health expenditure contributed significantly. Additionally, Indian companies ramped up exports of COVID-related drugs and expanded their presence in regulated markets by increasing USFDA and EMA approvals. This phase also saw increased manufacturing capacity and a sharp rise in generic production to meet global needs.

From FY 2023 onwards, the growth pace accelerated further due to a combination of policy support, diversification, and structural improvements. The Indian government's Production-Linked Incentive (PLI) scheme played a pivotal role in encouraging domestic manufacturing of Active Pharmaceutical Ingredients (APIs), key starting materials, and critical drug components. This move has reduced India's historical dependence on Chinese imports for APIs. Meanwhile, pharmaceutical exports continued to flourish, bolstered by demand in North America, Africa, Latin America, and Southeast Asia. ***Indian pharma's entry into biosimilars, specialty drugs, and high-margin therapeutic areas like oncology and immunology has helped push both volume and value growth.***

Currently, the Indian pharmaceutical sector is benefitting from rising healthcare awareness, digital health integration, and expanding insurance coverage among the population. E-pharmacies, telemedicine, and health-tech platforms are creating new demand avenues, especially in Tier-II and Tier-III cities. Companies are also investing in Contract Development and Manufacturing Organizations (CDMOs) and clinical trials, signalling a broader push toward innovation and end-to-end service delivery. The market today is more balanced between domestic consumption and export-led growth, with strong investor interest, global collaborations, and a policy ecosystem that supports scale, innovation, and quality.

Expected growth in Indian pharmaceutical industry.

The Indian pharmaceutical industry is poised for a major expansion, with the market size expected to double from USD 65 billion in FY 2025 to USD 130 billion by FY 2030E, reflecting a robust CAGR of approximately 14.87%. This anticipated growth trajectory underscores India's continuing dominance in the global pharmaceutical value chain, particularly in the generic formulations segment, where it already enjoys a leadership position.



Source Dun & Bradstreet Growth Estimates

A key driver behind this surge is the patent cliff, a global phenomenon that has removed patent protection on several blockbuster drugs, especially in the U.S. market. Indian pharmaceutical companies have successfully capitalized on this by introducing cost-effective generic alternatives at the right time, expanding their share in regulated markets. While recent U.S. FDA scrutiny and adverse inspection reports did temporarily dampen export momentum, proactive corrective actions and enhanced compliance efforts are expected to restore confidence and normalize overseas sales.

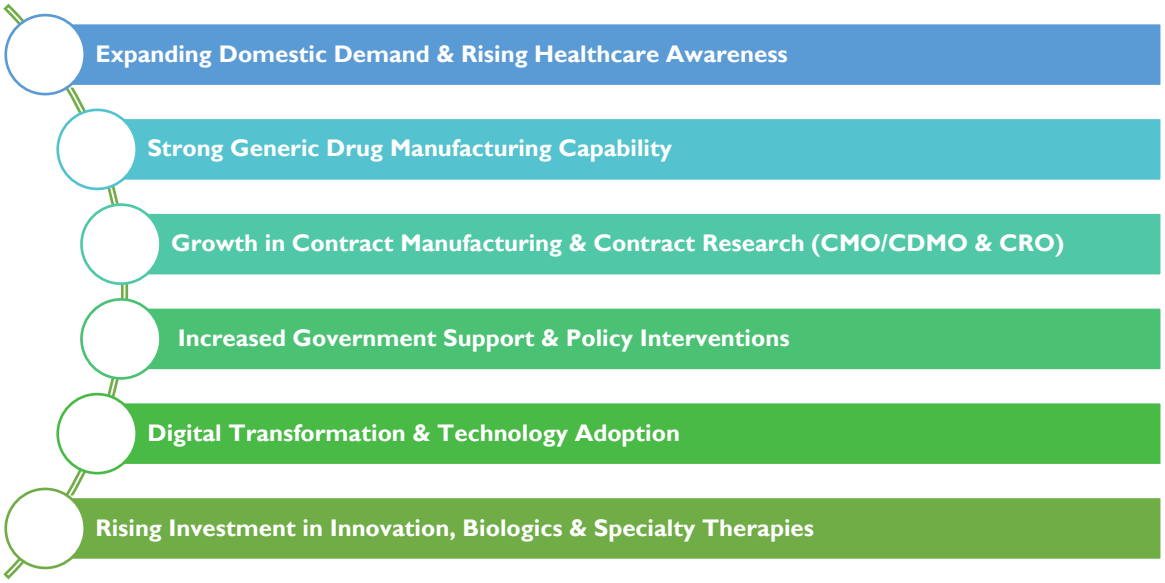
In parallel, the acceptance of generic medicines in the U.S. and other developed nations continues to grow, further accelerated by policy shifts toward affordable healthcare. Indian firms are strategically positioned to benefit from this transition, with many already embedded in global supply networks. Exports, which form a backbone of the industry's revenue model, are expected to be the primary growth engine in the years ahead.

Domestically, India's pharmaceutical landscape is evolving with demographic and epidemiological shifts. An aging population, rising cases of lifestyle and chronic diseases, and increasing health insurance penetration are expanding the demand for therapeutic solutions. Although innovator multinational corporations currently dominate the lifestyle disease segment due to patent control over advanced drugs, Indian companies are gradually making inroads through partnerships, biosimilars, and cost-effective formulations.

Moreover, transformative public health initiatives such as Ayushman Bharat, the National Digital Health Mission, and the Pradhan Mantri Rashtriya Swasthya Suraksha Mission are reshaping the healthcare delivery system. These programs are enhancing access, affordability, and transparency, boosting the pharmaceutical consumption base across rural and underserved regions.

Adding to this momentum, Indian pharma companies are embracing cutting-edge technologies, from AI and big data analytics to Internet of Medical Things (IoMT), telemedicine, and blockchain-driven supply chains, to drive innovation in drug discovery, patient care, and operational efficiencies. The integration of digital tools with traditional pharmaceutical practices is expected to unlock new efficiencies and faster go-to-market timelines for new drug launches. Given these developments, the Indian pharmaceutical sector is not only expected to maintain its global edge but also reinvent itself as an innovation-led, digitally integrated, and export-driven powerhouse. The journey toward USD 130 billion by FY 2030 reflects not just market expansion, but a structural shift in capabilities, compliance, and competitiveness.

Key factors driving the growth in the industry.



- **Expanding Domestic Demand & Rising Healthcare Awareness:** India's growing middle-class population, increasing urbanisation, and rising awareness about preventive healthcare are significantly boosting pharmaceutical consumption. Lifestyle diseases such as diabetes, hypertension, and cardiac disorders are becoming more prevalent, creating consistent demand for chronic therapies. Government-led health schemes like Ayushman Bharat are increasing access to affordable medicines.
- **Strong Generic Drug Manufacturing Capability:** India is globally recognised as the largest provider of generic medicines, supplying nearly 20% of the world's generics by volume. The country's cost-efficient manufacturing ecosystem and well-developed API base help produce drugs at competitive prices. Expiry of patents on major global drugs continues to open new opportunities for Indian companies. Regulatory

compliance improvements and USFDA-approved facilities strengthen India's export credibility. This strong manufacturing advantage fuels both domestic and international growth.

- **Growth in Contract Manufacturing & Contract Research (CMO/CDMO & CRO):** Global pharmaceutical companies are increasingly outsourcing manufacturing and research operations to India due to its cost advantages and skilled scientific workforce. India's growing CDMO ecosystem offers end-to-end services from formulation to commercial-scale production. Domestic CROs excel in clinical trials, bioequivalence studies, and drug discovery support. Improved regulatory frameworks and quicker approval timelines have increased global confidence in Indian service providers.
- **Increased Government Support & Policy Interventions:** Government initiatives such as the Production-Linked Incentive (PLI) schemes for pharmaceuticals and APIs are boosting local manufacturing capacity. Programs promoting bulk drug parks, medical device parks, and R&D incentives are strengthening the overall pharma ecosystem. Policy reforms such as fast-track drug approvals and greater focus on quality standards are improving industry competitiveness. Expansion of health insurance coverage is pushing domestic drug demand. These coordinated policy efforts are accelerating long-term industry growth.
- **Digital Transformation & Technology Adoption:** Indian pharmaceutical companies are increasingly adopting digital technologies such as AI, IoT, automation, and data analytics to improve R&D productivity and manufacturing efficiency. Digital tools are enabling faster drug discovery, predictive maintenance, and compliance management. Technologies like e-pharmacies, telemedicine, and digital health platforms are reshaping drug distribution and patient engagement. This shift increases operational efficiency and reduces time-to-market for new products. The digital push enhances both productivity and profitability.
- **Rising Investment in Innovation, Biologics & Specialty Therapies:** Indian companies are ramping up investments in biologics, biosimilars, vaccines, and specialty drugs to move beyond traditional generics. The growth in complex therapies oncology, immunology, rare diseases is creating higher value opportunities. Collaboration with global biotech firms and research institutes is accelerating innovation pipelines. Improved regulatory pathways for biosimilars and new drug approvals are fuelling R&D momentum.

Logistics Solutions to Clinical Research Organization (CRO) Space

Logistics solutions in the CRO space involve specialized, highly regulated supply-chain services that support the end-to-end execution of clinical trials across global research sites. These solutions ensure safe, compliant, and temperature-controlled movement of investigational drugs, biological samples, and medical devices between sponsors, depots, and trial sites. They encompass customized packaging and labelling tailored to site-specific regulatory requirements, along with stringent global and cross-border shipment management.

Ancillary materials such as consumables, diagnostic kits, and site equipment are managed through optimized warehousing and just-in-time delivery models. Reverse logistics plays a critical role in handling unused,

expired, or recalled trial materials with proper chain-of-custody. Additionally, advanced services such as real-time temperature monitoring, GPS-enabled tracking, and control-tower visibility improve operational reliability. Together, these specialized logistics solutions enable CROs to maintain protocol adherence, ensure patient safety, and support seamless trial execution across multiple geographies.

Specialized logistics covering custom packaging, cross-border movement, and reverse logistics.

- **Custom Site-Specific Packaging & Labelling Solutions**

Specialized logistics for CROs require highly customized packaging and labelling solutions that ensure investigational products remain compliant with protocol requirements and global regulatory standards. These solutions involve creating packaging formats tailored for each clinical site, considering factors such as temperature requirements, dosage forms, language needs, safety instructions, and country-specific labelling norms. Advanced techniques like serialization, tamper-evident seals, and barcoding are used to maintain full traceability and prevent product mix-ups. Packaging must also be compatible with cold-chain conditions, especially when transporting temperature-sensitive therapies or biological materials.

For global trials, multi-language packaging and region-specific regulatory inserts are crucial to ensure compliance. Additionally, CROs rely on kit-building services to prepare patient kits, investigator kits, and protocol-driven material combinations. This level of customization ensures seamless site activation and reduces the risk of clinical delays. Overall, custom packaging and labelling enhance operational accuracy, regulatory adherence, and product safety throughout the trial lifecycle.

- **Global & Cross-Border Management**

Global and cross-border logistics management ensures that clinical trial materials reach multiple sites across different countries with zero compromise on compliance, quality, or timelines. This requires navigating a complex landscape of customs rules, import/export permits, GDP (Good Distribution Practices), and

country-specific clinical trial regulations. Logistics providers must ensure continuous cold-chain integrity from origin to destination, using temperature-controlled packaging, conditioned containers, and real-time monitoring devices.

Robust documentation support including investigator brochures, MSDS sheets, and regulatory clearances is essential to avoid customs delays. These solutions also involve multi-modal transport planning, risk-assessment mapping, and contingency rerouting to mitigate potential disruptions. For high-value biological materials or investigational drugs, control-tower monitoring and GPS tracking offer enhanced visibility and security. Global logistics management ultimately enables CROs to harmonize trial execution across diverse geographies, maintain patient supply continuity, and uphold trial integrity. It also reduces operational risks, ensuring faster study initiation and smoother multi-country coordination.

- **Managing Ancillary Materials Including Consumables & Devices**

Clinical trials depend not only on investigational products but also on a wide range of ancillary materials such as syringes, PPE, swabs, diagnostic kits, lab reagents, and specialized medical devices. Managing these materials requires a dedicated supply-chain structure capable of forecasting demand across multiple sites and preventing stockouts that may delay patient recruitment or ongoing treatment schedules. Logistics partners must store these materials under appropriate conditions sterile, ambient, or temperature-controlled depending on their nature.

Effective coordination is required to bundle consumables and devices with patient kits or ship them separately based on protocol requirements. The availability of on-demand fulfilment services ensures that trial sites receive the exact materials they need, precisely when they need them. Additionally, handling medical devices often involves calibration, maintenance checks, and regulatory documentation to ensure compliance. These specialized solutions reduce administrative burden on CROs, streamline site operations, and maintain operational continuity throughout the trial duration. As a result, ancillary material management becomes a critical enabler of smooth clinical trial execution.

- **Return & Reverse Logistics**

Return and reverse logistics are essential components of CRO logistics, ensuring proper handling of unused, expired, or temperature-compromised clinical supplies. Since investigational drugs fall under strict regulatory conditions, their retrieval, reconciliation, and destruction must follow documented procedures that satisfy sponsor and regulatory expectations. Reverse logistics involves arranging temperature-controlled returns, maintaining chain-of-custody records, and ensuring secure transport back to depots or destruction facilities.

These processes help CROs track discrepancies, analyse material usage, and maintain audit readiness. Additionally, unused devices, patient kits, and trial equipment are collected for refurbishing or verified disposal. Reverse logistics also supports sustainability goals by enabling recycling or compliant waste management where applicable. The accuracy and timeliness of these operations directly influence the quality

of trial documentation and regulatory compliance. Well-managed return processes also minimize losses, prevent protocol deviations, and close out trial sites efficiently without operational bottlenecks.

- **Specialized Services**

Specialized logistics services provide CROs with advanced capabilities that go beyond standard supply-chain operations, ensuring end-to-end oversight, precision, and regulatory compliance. These include real-time temperature monitoring, GPS tracking, and digital data-logging devices that continuously record shipment conditions. Cryogenic shipping for biological samples using liquid nitrogen dry shippers enables safe transport of highly sensitive genetic or cellular materials. Control-tower systems offer 24/7 visibility, enabling quick response to temperature excursions, route deviations, or customs delays.

Additional value-added services such as centralized inventory management, forecasting tools, kitting services, and regulatory documentation support significantly reduce operational complexity. Many logistics providers also offer risk-management frameworks and contingency plans, including secondary routes, emergency replenishment, and real-time alerting systems. These specialized services allow CROs to maintain high-quality standards across all trial stages while ensuring patient safety and protocol adherence. Ultimately, they enhance efficiency, responsiveness, and reliability in complex clinical research environments.

CRO Landscape in India

Brief insight on CRO landscape in India: Focusing on the emergence of India as a CRO hub to the world.

India has rapidly evolved into one of the world's most important destinations for clinical research, driven by a combination of scientific capability, diverse patient demographics, and improving regulatory surveillance. The country's official registry, the **Clinical Trials Registry India (CTRI)**, shows the depth and scale of activity: more than **94,730 clinical studies have been registered since 2000**, positioning India among the largest WHO-recognized registries worldwide. In FY 2024 alone, India recorded **~18,000 new trial registrations**, reflecting a sharp increase in global interest from pharmaceutical, biotechnology, and medical device sponsors. This extensive trial activity spanning interventional, observational, and post-marketing studies forms the backbone of India's growing CRO ecosystem.

The expansion of trial volume has been complemented by improving regulatory mechanisms under **CDSCO** and enhanced clinical governance frameworks promoted by **ICMR**. Long-term CTRI analytics indicate that between **2007 and 2018**, over **14,341 clinical studies** were registered, of which **76.3% were interventional** a category typically managed by CROs on behalf of global clients. Although a recent government-linked study found **12% of CDSCO-approved trials were not registered on CTRI**, the discrepancy merely suggests that India's actual trial footprint is larger than visible, strengthening the argument that the country is managing a significant volume of clinical activity. These factors collectively reinforce India's reputation as a reliable, large-scale clinical research hub.

Economically, the Indian CRO and clinical trials industry has demonstrated strong market momentum, indicating fast expansion across research stages. India's globally competitive cost structure, strong digital analytics capabilities, and availability of highly qualified clinical professionals have further accelerated multinational investment in India-based CRO partnerships. The ability to execute complex trials ranging from oncology to rare diseases has made Indian CROs a preferred partner for US, EU, and APAC sponsors seeking both efficiency and scientific rigor.

Together, these factors position India as a **strategic global CRO hub**, capable of supporting end-to-end clinical development: from early-stage toxicology and bioanalytic to late-phase global multicentric trials. Fast patient recruitment, rising trial transparency, world-class hospital infrastructure, and expanding regulatory harmonization make India an attractive location for outsourced clinical research. As global pharmaceutical pipelines expand and demand for cost-efficient, high-quality trial execution increases, India's role as a preferred global CRO destination is expected to strengthen further in the coming decade.

Analysis of specialized logistics demand coming from Indian CRO segment

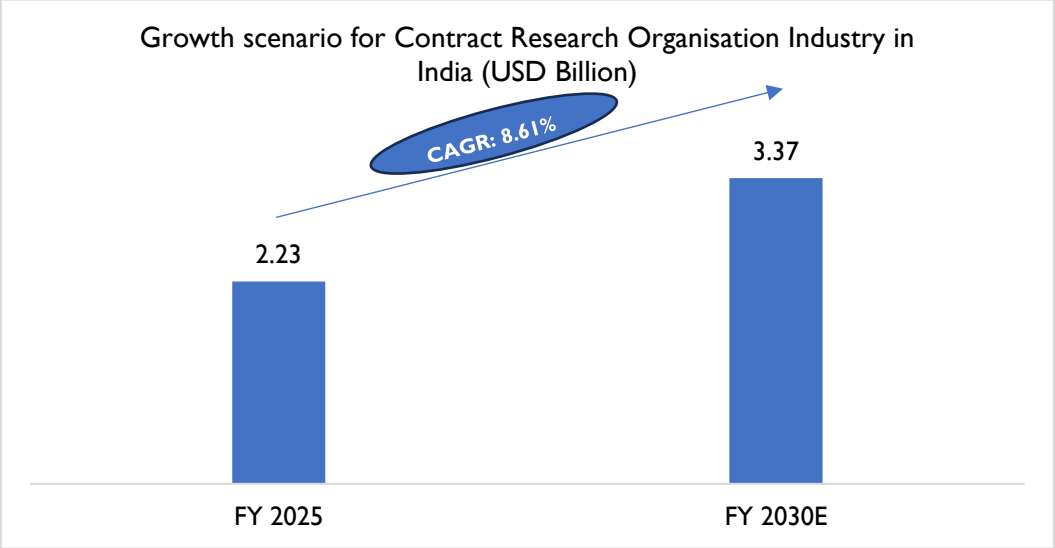
India's expanding clinical research activity has driven a sharp rise in demand for specialized logistics services tailored to the needs of Clinical Research Organizations (CROs). The surge in trial registrations, particularly in therapeutic areas such as oncology, vaccines, cardiology, and rare diseases, has created operational complexities that standard logistics systems cannot support. CROs must manage thousands of temperature-sensitive shipments, lab specimens, investigational products (IP), and biological samples across multi-site national and international trial networks. Each movement requires strict compliance with Good Distribution Practices (GDP), 24/7 traceability, and validated cold-chain performance conditions that significantly elevate logistics specialization. As CROs conduct more Phase II and Phase III trials, the volume of time-critical shipments has increased, creating sustained demand for advanced cold-chain packaging, real-time monitoring devices, and compliant distribution frameworks.

The Indian CRO sector's deepening engagement with global pharmaceutical, biotech, and medical device sponsors has further intensified the need for high-precision logistics support. International clients typically mandate global regulatory adherence U.S. FDA, EMA, and WHO standards requiring CROs in India to partner with logistics providers capable of executing cross-border movements seamlessly. This includes importing investigational drugs, exporting biological specimens to central labs abroad, and managing controlled-substance shipments with strict chain-of-custody requirements. As global pharma players increasingly outsource complex trials to India due to cost advantages and faster patient recruitment, logistics providers must now offer harmonized international solutions such as validated lane risk assessments, specialized customs clearance for clinical materials, and compliance-ready document management systems.

The growing complexity of clinical protocols has also expanded demand for ancillary and value-added logistics services. CROs now require support for clinical materials such as kits, diagnostic devices, swabs, reagents, comparator drugs, and placebo materials all of which involve precise forecasting, controlled storage, and timely replenishment to sites. Return and reverse logistics have become essential for unused IP, temperature logs, sharps, medical waste, and regulatory documentation, while direct-to-patient (DTP) trial models require last-mile cold-chain deliveries to participant homes. Moreover, decentralized and hybrid trials are pushing logistics providers to deploy digital tracking tools, IoT-enabled condition monitoring, and site-specific packaging and labelling solutions. Collectively, these factors are transforming the Indian clinical research ecosystem into a high-value market for specialized, compliant, technology-driven logistics solutions that can support the scale and global integration of modern clinical trials.

Growth scenario for CRO industry in India:

The Indian Contract Research Organisation (CRO) industry is poised for steady expansion over the medium term, rising from **USD 2.23 billion in FY 2025 to an estimated USD 3.37 billion by FY 2030**, supported by a healthy **CAGR of 8.61%**, as reflected in the graph. This growth will be driven by increasing R&D outsourcing by global pharmaceutical and biotechnology companies, greater participation of Indian players in clinical trials, and the rising demand for cost-efficient research solutions. India's large patient pool, skilled scientific workforce, and competitive operating costs continue to position the country as an attractive research destination, encouraging multinational companies to deepen their engagement with Indian CROs. The expansion of complex clinical studies, biologics research, precision medicine programs, and advanced biomarker-driven trials will further elevate the scale and sophistication of CRO operations in India.



Source: D&B Desk Research

As the CRO industry evolves, the need for specialized logistics solutions will strengthen, particularly in the movement of biological samples, investigational medicinal products (IMPs), clinical trial kits, and temperature-sensitive research materials. Future growth will require logistics partners capable of offering validated cold-chain systems, real-time temperature monitoring, regulatory-compliant documentation, chain-of-custody integrity, and rapid last-mile delivery efficiencies. The surge in decentralized and hybrid clinical trials will also drive demand for direct-to-patient logistics, home sample collection, and reverse logistics for unused or expired clinical materials. With the increasing adoption of biologics and cell/gene therapies in clinical research, the requirement for frozen and cryogenic logistics, specialized packaging, and high-quality specimen handling will intensify. Consequently, logistics providers with advanced infrastructure, GDP-certified operations, and strong global networks will play an increasingly critical role in supporting the next phase of CRO industry growth in India.

Competitive Landscape

Competition in India's medical diagnostic logistics industry is being reshaped by the increasing need for speed, reliability, and regulatory compliance in sample movement. As diagnostic laboratories expand their networks and scale up home collection services, logistics providers are expected to deliver seamless end-to-end connectivity ranging from rapid specimen pickups to controlled transport and accurate last-mile delivery. This has positioned logistics capability as a strategic differentiator, compelling players to adopt advanced technologies such as IoT-based tracking, route optimization systems, and real-time temperature monitoring tools. The growing focus on digital integration with laboratory information systems (LIS) and automated reporting mechanisms further intensifies competitive pressure, pushing providers to enhance transparency and minimize sample handling errors.

Simultaneously, the rising share of molecular diagnostics, oncology panels, infectious disease testing, and high-value biospecimens has amplified the need for specialized cold-chain systems and stringent chain-of-custody processes. Logistics partners are increasingly expected to demonstrate validated temperature-controlled infrastructure, trained phlebotomy personnel, WHO-GSDP/GDP compliance, and consistent turnaround times across geographies. Consolidation within the diagnostic industry has concentrated logistics demand among a few high-capacity players, driving competitive intensity and encouraging providers to scale rapidly, expand regional presence, and differentiate on service quality. Moreover, the surge in home testing and decentralized care models has pushed logistics companies to strengthen doorstep networks, manage time-critical deliveries, and ensure operational resilience even in remote or semi-urban markets. These factors collectively are transforming the competitive landscape into a technology-led, service-sensitive, and compliance-driven ecosystem.

Five Key Factors Shaping Competition

1. **Speed & Turnaround Time (TAT):** Rapid specimen pickup and delivery have become critical as diagnostic labs compete on faster reporting and higher service efficiency. Logistics providers capable of minimizing transit delays and ensuring time-bound delivery gain a significant competitive advantage.
2. **Cold-Chain & Temperature-Control Capabilities:** With the rising share of molecular, genetic, and infectious disease testing, maintaining strict thermal integrity during transport is essential. Players with validated cold-chain systems and reliable temperature monitoring are preferred partners for specialized diagnostics.
3. **Digital Integration & Real-Time Tracking:** Advanced digital tools such as IoT-based temperature sensors, GPS-enabled tracking, and seamless LIS integration enhance accuracy and transparency across the logistics chain. Companies offering real-time visibility and automated updates earn greater trust and repeat business.

4. **Regulatory & Quality Compliance:** Strict adherence to WHO-GSDP/GDP guidelines, proper chain-of-custody documentation, and standardized sample handling protocols are becoming mandatory expectations. Providers with strong compliance systems reduce operational risk for diagnostic labs and strengthen competitiveness.
5. **Network Scale & Last-Mile Reach:** A wide and dependable geographical network, supported by trained phlebotomists and efficient last-mile delivery teams, enables consistent service across diverse locations. Logistics firms with deeper penetration in Tier-2 and Tier-3 markets are better positioned to capture growing demand.

Company Profiling: Credent Connect N Care Limited

Company Overview:

Established in 2012 and headquartered in Delhi, Credent Connect N Care has built over 14 years of experience in providing specialised healthcare logistics, workforce solutions, and technology-enabled services across India. The organisation began its journey with a small team of field executives and gradually expanded into multiple healthcare service verticals, including home sample collection, corporate wellness, phlebotomy services, digital HR solutions, lab technician support, and cold chain logistics. As part of its growing ecosystem, Credent Connect N Care operates under the Credent Group, contributing significantly to its logistics and manpower service capabilities.

Over the years, Credent has progressed through structured expansion phases growing from a few field representatives to 350+ employees, later exceeding 1000 employees while serving 15+ clients nationwide and eventually scaling to 4500+ employees and achieving 100 Cr+ revenue by 2024. Its services now cover field logistics, phlebotomy operations, home healthcare support, onsite radiology, home care services, and skill development through dedicated learning and development programs. The organisation operates across 450+ cities, serving over 23,000 pin codes, supported by 7+ regional offices and 50+ active clients.

Credent's operations are strengthened by its technology infrastructure, which includes GPS-enabled tracking, EV logistics, IoT-supported cold chain systems, digital onboarding, and integrated monitoring platforms. Its HRMS solution, C3 HRMS, supports geo-attendance, shift and asset tracking, task allocation, and AI-driven performance management for distributed teams. In logistics, Credent manages first-mile, mid-mile, and last-mile healthcare distribution, temperature-controlled transport (2- 8°C), inter-city and surface logistics, air cargo movement, and on-board courier networks for time-sensitive and critical medical shipments.

Complementing its logistics and manpower ecosystem, Credent also operates ConnectNGrow, a dedicated platform focused on job placement, training, and skill enhancement for healthcare and logistics professionals including phlebotomists, nurses, paramedics, and delivery staff. Through its integrated service structure, digital capabilities, and nationwide reach, Credent continues to support diagnostic networks, hospitals, corporates, and healthcare institutions with reliable and compliant end-to-end operational solutions.

Products and Services Offered:

Services	Subcategories
Healthcare Logistics	• **Medical Logistics:** Intra-city and inter-city movement of diagnostic samples, covering first-mile, mid-mile, and last-mile delivery. • **Cold Chain Logistics (2- 8°C):** Temperature-controlled vehicles with Internet-of-Things (IoT) monitoring and real-time temperature tracking.

	• **Air and Surface Transport**: Movement through flights, vans and buses including Master Air Waybill (MAWB) and console shipments. • **On-Board Courier (OBC):** Train- and bus-based courier services for time-sensitive medical shipments. • **Technology-Enabled Operations:** Global Positioning System (GPS) tracking, digital proof-of-delivery, and electric vehicle (EV) logistics.
Phlebotomy and Paramedic Services	• **Home Sample Collection:** Doorstep phlebotomy and white-label home collection support. • **Stationed Phlebotomists:** Deployment at laboratories, diagnostic centres and hospitals. • **Medical Check Services:** Pre-Policy Medical Checkups (PPMC), Medical Examination Reports (MER), electrocardiogram (ECG) collection, and document / Know Your Customer (KYC) verification. • **Medical Camps:** Corporate, CSR and community-based health camp services.
Corporate Wellness and Medical Support	• **Occupational Health Centres (OHC):** On-site medical room setup and management. • **Health Screening:** X-ray, ECG, pulmonary function test (PFT), audiometry and vaccination programs. • **Home Care and Radiology**: Home-based medical assistance and onsite diagnostic support.
Workforce Deployment	• **Lab Technicians:** Placement of trained laboratory technicians in diagnostic facilities. • **Field Executives:** Motorcycle-based field staff for pick-up and delivery operations across 23,000+ pin codes.
Digital Platforms	• **C3 Human Resource Management System (C3 HRMS):** Digital onboarding, geo-fenced GPS attendance, shift and asset management, and task tracking.

	• **C3 POST:** Multi-carrier healthcare shipping with bulk order processing, e-commerce integrations, cash-on-delivery (COD) management, and return-to-origin (RTO) reduction. • **ConnectNGrow:** Job placement, training, certification, and skill development for healthcare and logistics professionals.

Key Customer Segments Served:

- **Diagnostic Chains & Pathology Labs:** Credent supports large diagnostic networks through sample logistics, home collection, stationed phlebotomists, and cold-chain operations.
- **Hospitals & Healthcare Providers:** Hospitals rely on Credent for phlebotomy staffing, lab technicians, radiology assistance, and rapid medical logistics support.
- **Corporate Organizations (Health & Wellness Services):** Corporate clients are served through wellness camps, Occupational Health Centers, and preventive health check-up programs.
- **Insurance Companies (PPMC Services):** Credent conducts pre-policy medical checkups including blood collection, ECG, MER, and KYC verification for insurers.
- **Pharma & Life Sciences Companies:** Pharma clients benefit from Credent's inter-city cold-chain logistics, time-critical transport, and compliance-ready temperature-controlled delivery.
- **Healthcare & Logistics Workforce (Training & Placement):** Through ConnectNGrow, Credent trains, certifies, and places frontline healthcare staff, paramedics, and delivery executives.

Key Strengths:

- **Deep Expertise in Healthcare-Focused Logistics:** Credent specializes in time-sensitive, compliance-ready logistics for diagnostics, pharma, and hospitals, ensuring sample integrity and fast TAT. Their pan-India cold-chain network and multimodal connectivity (road, air, OBC) make them a reliable partner for critical medical deliveries.
- **Strong Technology Integration Across Operations:** With GPS tracking, IoT-enabled temperature sensors, digital PODs, HRMS automation, and forecasting tools, Credent ensures transparency and accuracy. These tech capabilities improve productivity, reduce errors, and enable 25% faster turnaround times.
- **Large Skilled Workforce & Pan-India Presence:** Credent operates with 4,500+ employees across 450+ cities and 23,000 pin codes, giving clients unmatched operational reach. Their trained healthcare workforce including phlebotomists, paramedics, and technicians ensures service quality at scale.
- **Comprehensive End-to-End Service Portfolio:** From home collections, phlebotomy services, corporate wellness, and medical staffing to logistics and e-commerce courier aggregation, Credent offers

a one-stop solution. This diversified service model reduces vendor dependency and ensures seamless coordination for clients.

- **Strong Credibility with Leading Healthcare Partners:** The company serves India's top diagnostic chains, hospitals, and healthcare brands reflecting its strong market reputation and reliability. Credent's achievements and industry recognitions further reinforce its leadership in diagnostics logistics and workforce solutions.

Particular	Unit	Credent Connect n Care Limited		
		As at end for Fiscal		
		Fiscal 2025	Fiscal 2024	Fiscal 2023
Total Revenue	₹ in Lakhs	8,253.72	7,697.88	5,991.17
Revenue From Operations	₹ in Lakhs	8,182.32	7,663.04	5,932.12
Other Income	₹ in Lakhs	71.41	34.84	59.05
EBITDA	₹ in Lakhs	871.74	540.08	335.83
EBITDA Margin	in %	10.65%	7.05%	5.66%
PAT	₹ in Lakhs	553.23	340.85	252.77
PAT Margin	in %	6.76%	4.45%	4.26%
Operating Cash Flow	₹ in Lakhs	530.18	85.94	NA
Net Worth	₹ in Lakhs	1,598.59	1,116.75	775.89
Debt Equity Ratio	In Times	0.46	0.61	0.54
Return on Equity	in %	40.75%	30.52%	32.58%
Return on Capital Employed	in %	35.20%	29.81%	31.61%
Return on Assets	in %	18.76%	14.60%	16.45%
Interest Coverage Ratio	In Times	8.32	9.34	9.42

Note: We have considered the consolidated financial statements for all companies

Parameter	Formula
Total Revenue	Total Income includes Revenue from Operations and Other income.
Revenue From Operations	Revenue from operations means the revenue from operations as appearing in the restated statement of profit & loss for the relevant year/period.
EBITDA	PBT + Finance Cost + Depreciation -Other Income
EBITDA Margin	EBITDA/Revenue from Operations

PAT Margin	PAT /Revenue from Operations
Net worth	Shareholder Equity
Debt Equity Ratios	(Short-term Borrowing + Long-term Borrowing) / Shareholder Equity
Return on Equity	PAT / Shareholder Equity