Industry Report on Industrial Catalyst and Adsorbent

9th June 2026

Prepared for

Devson Catalyst Limited

Disclaimer

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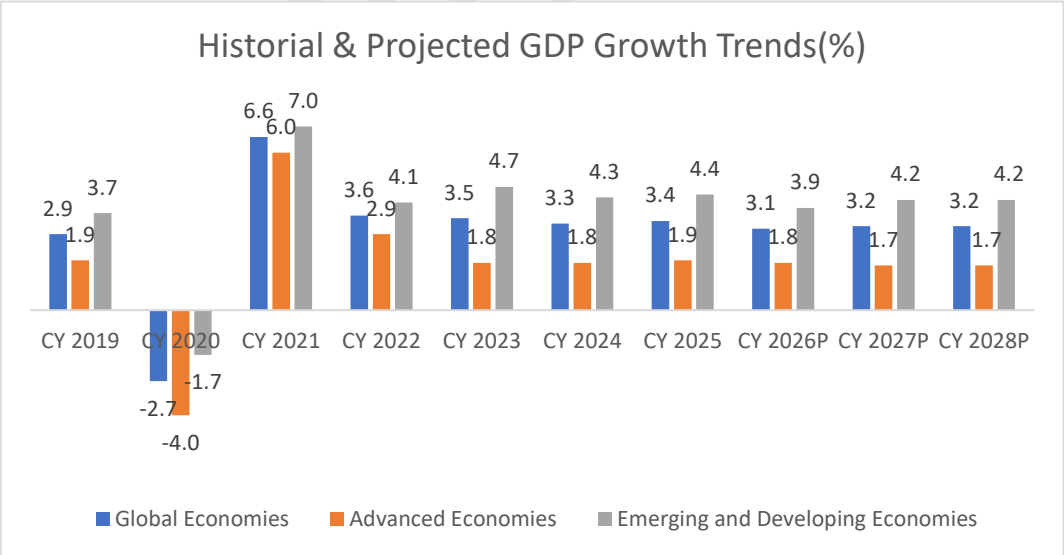
Global Economic Overview

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

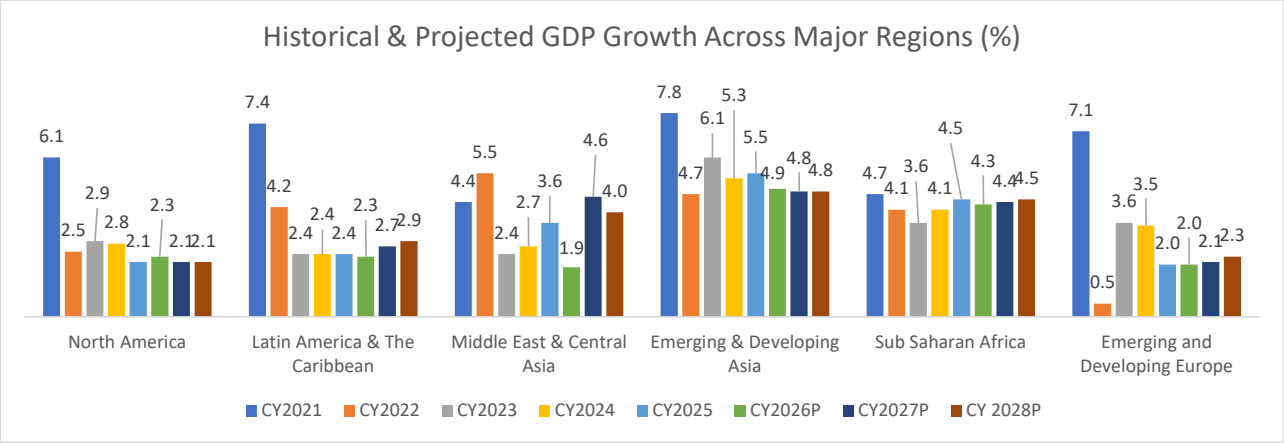
Note: Advanced Economies and Emerging & Developing Economies are as per the classification of the World Economic Outlook (WEO). This classification is not based on strict economic criteria and has evolved over time. It comprises 40 countries in the Advanced Economies category, including the G7 (the United 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%

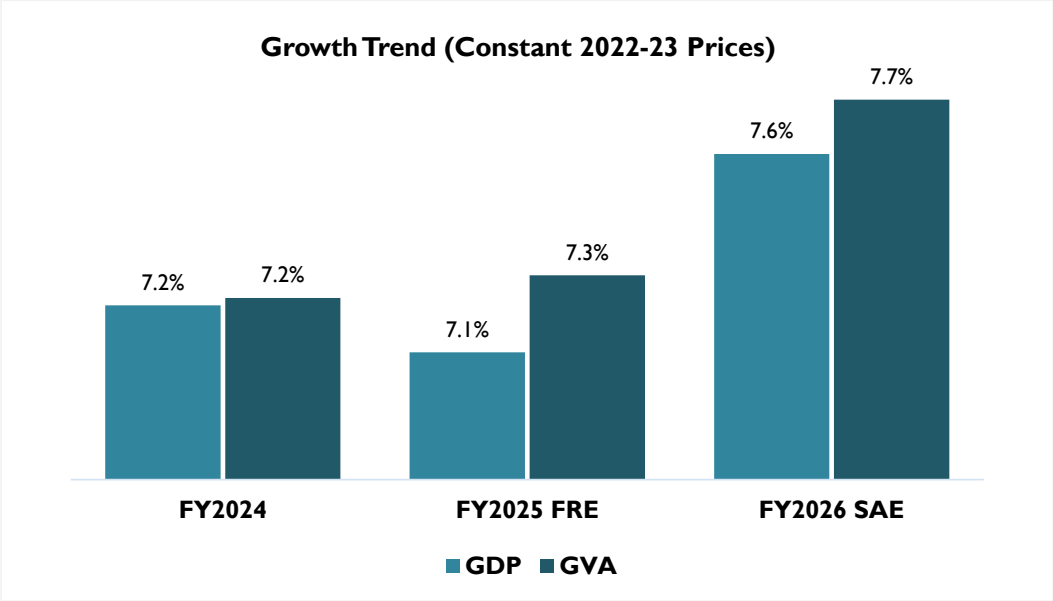
Source: World Economic Outlook, April 2026

Historical GDP and GVA Growth Trend

India Real GDP (GDP at constant prices) for FY 2025–26 is estimated to reach INR 322.58 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 7.6% in 2025–26, higher than the 7.1% growth recorded in 2024–25.

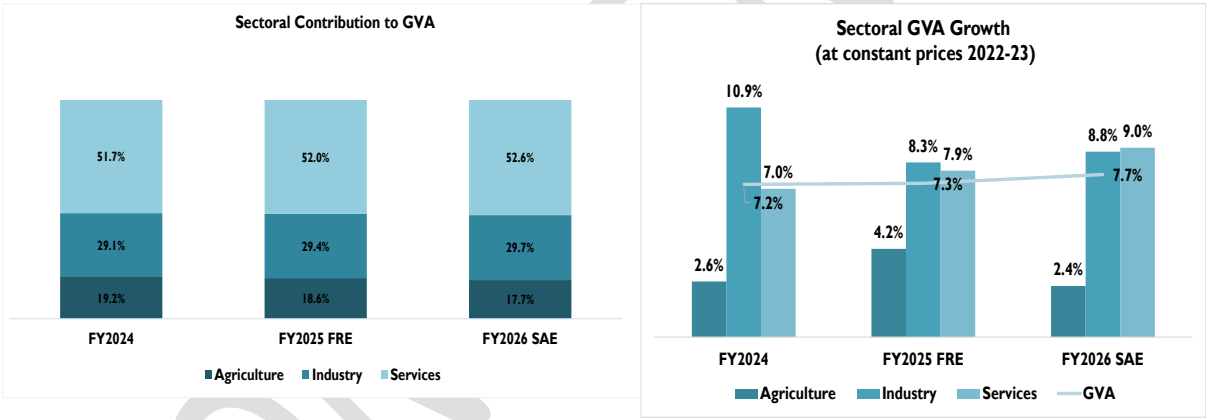
Similarly, Real GVA for FY 2025–26 is projected at INR 294.40 lakh crore, up from INR 273.36 lakh crore in FY 2024–25. This indicates a growth rate of 7.7%, compared with the 7.3% growth achieved in the previous year.

[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, SAE is Second Advance Estimate

Sectoral Contribution to GVA and Annual Growth Trend



Source: Ministry of Statistics & Programme Implementation (MOSPI), CMIE Economics Outlook
FRE is First Revised Estimate, SAE is Second Advance Estimate

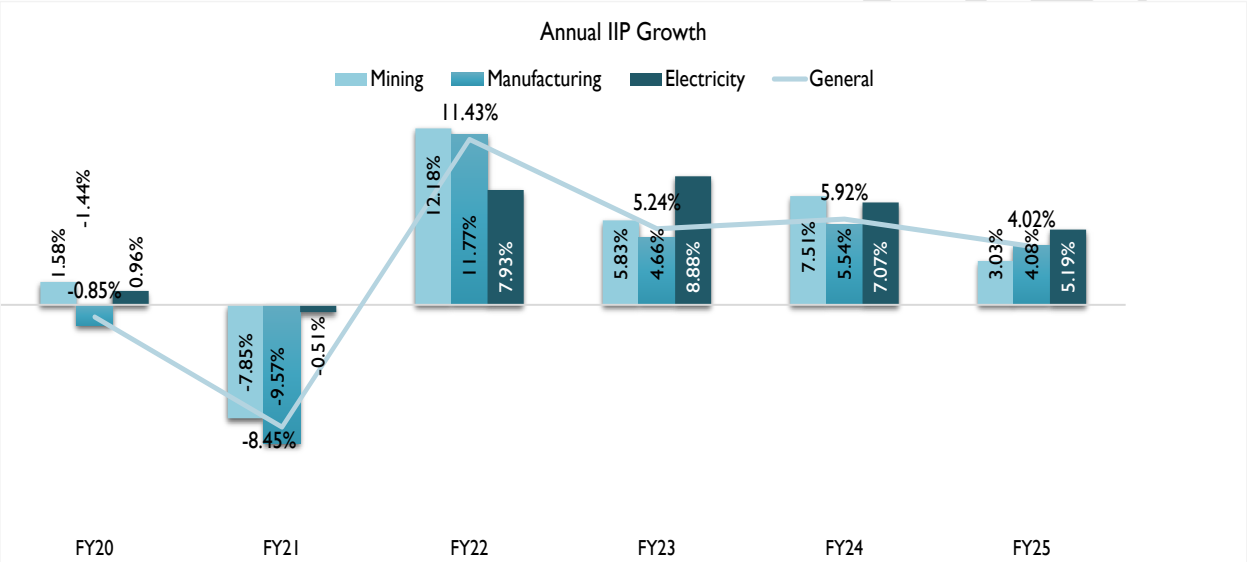
Sectoral analysis of GVA reveals that the industrial sector experienced steady growth momentum in FY 2026, recording a 7.7% y-o-y growth against 7.3% year-on-year growth in FY 2025. Within the industrial sector, growth moderated across sub-sectors with mining, and construction activities growing by 4.08%, and 7.08%, respectively in FY 2026, compared to 11.69%, and 7.30% in FY 2025. Growth in the utilities sector too moderated to 1.52% 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 29.7% in FY 2026.

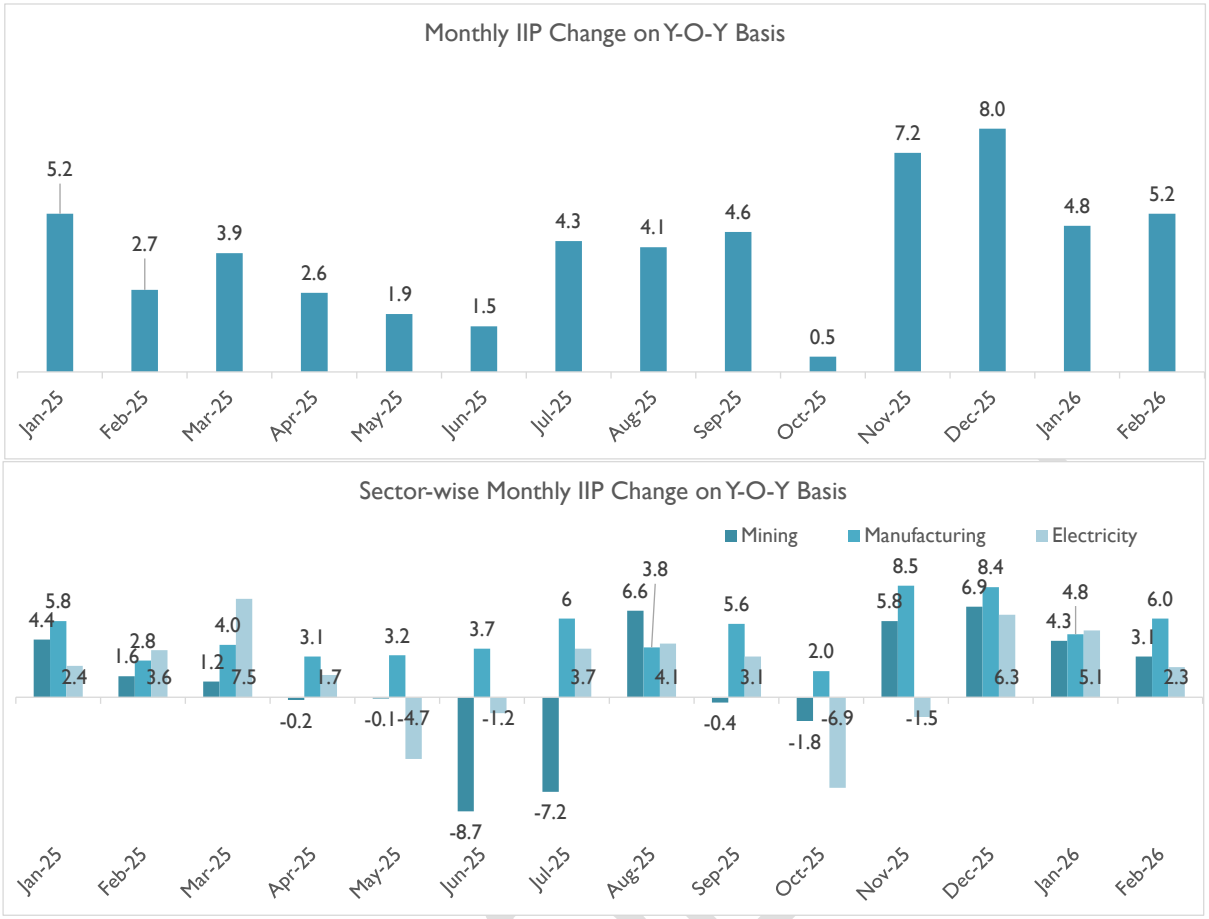
The services sector continued to be the main driver of economic growth. It expanded by 9.0% in FY 2026 from 7.9% in FY 2025. The services sector retained its position as the largest contributor to GVA, rising from 51.7% in FY 2024 to 52.0% in FY 2025, with a further increase to 52.6% in FY 2026.

The agriculture sector saw an acceleration in growth, increasing from 2.66% in FY 2024 to 4.18% in FY 2025, before moderating to 2.42% in FY 2026. However, its contribution to GVA declined marginally from 19.2% in FY 2024 to 17.7% in FY 2026. Overall, Gross Value Added (GVA) growth rose to 7.7% 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 2025, recording a 4.02% y-o-y growth against 5.92% increase in the previous year. The manufacturing index showed moderation, increasing by 4.08% in FY 2025 compared with 5.54% in FY 2024. The mining sector index also moderated, growing 3.03% in FY 2025 compared with 7.51% in the previous year, while the Electricity sector index moderated by 5.19% in FY 2025 compared with 7.07% in the previous year.



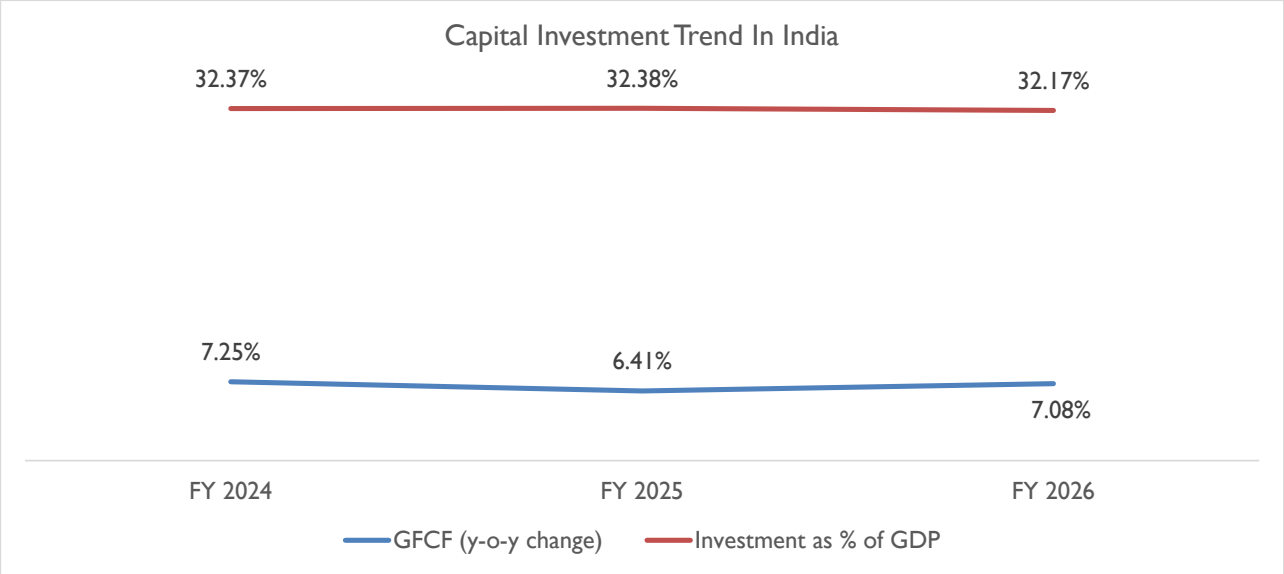


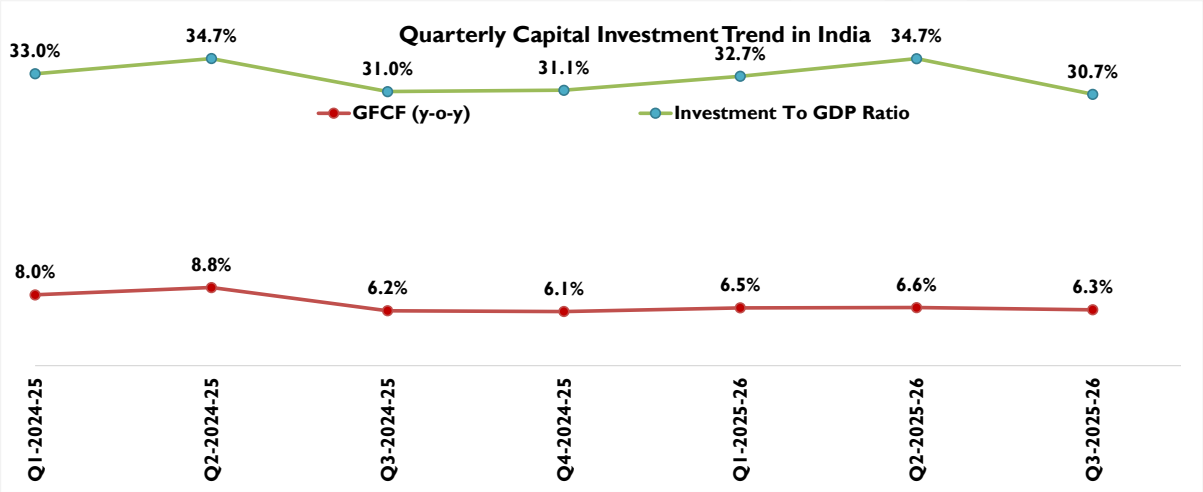
Source: Ministry of Statistics & Programme Implementation (MOSPI)

The IIP growth rate for the month of February 2026 is 5.2 percent which was 4.8 percent (Quick Estimate) in the month of January 2026. The growth rates of the three sectors, Mining, Manufacturing and Electricity for the month of February 2026 are 3.1 percent, 6.0 percent and 2.3 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 7.08% year-on-year growth compared with 6.41% in FY 2025, bringing the GFCF-to-GDP ratio to 32.17%.

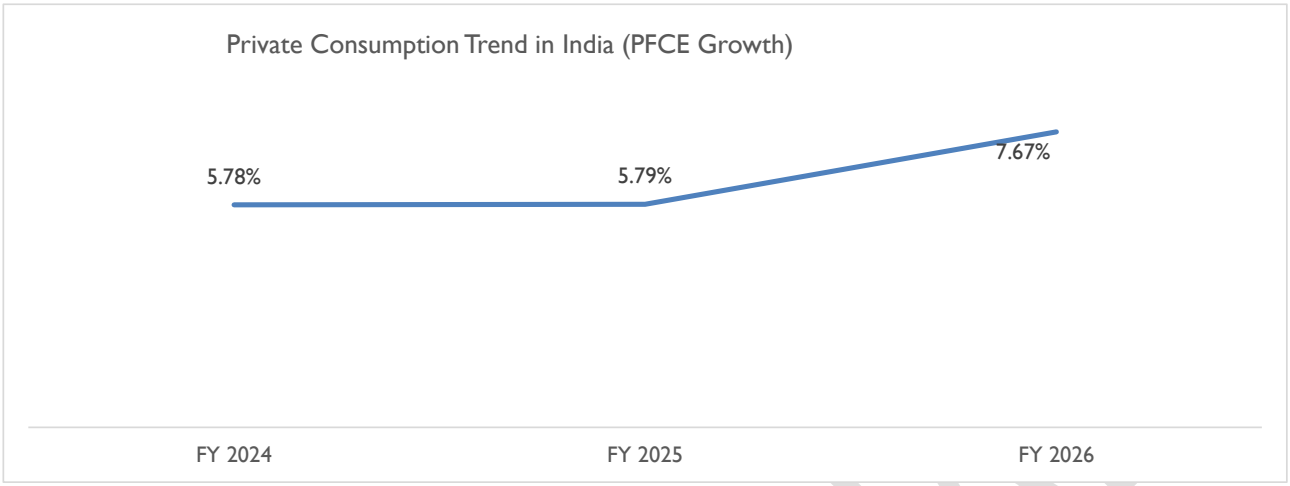


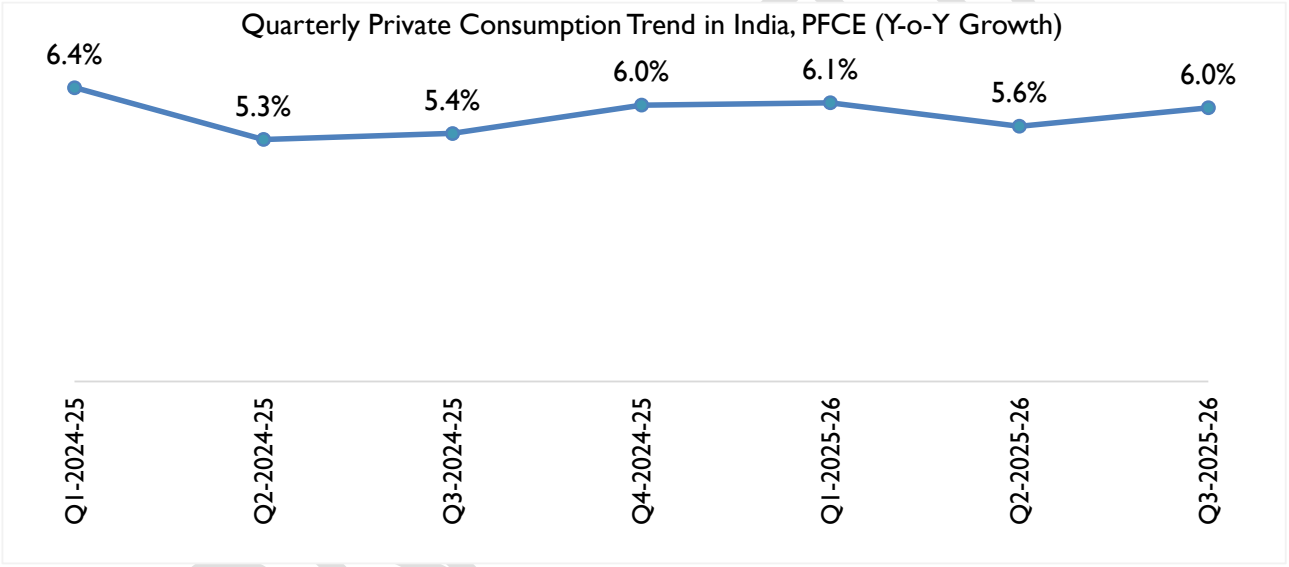


Source: Ministry of Statistics & Programme Implementation (MOSPI), CMIE Economics Outlook

On a quarterly basis, India's capital investment indicators display a pattern of moderate but uneven momentum. The Investment-to-GDP ratio remained above 30% throughout the period but shifted within a narrow and cyclical band—rising from 33.0% in Q1 FY 2024-25 to 34.7% in Q2, before softening to 31.0% and 31.1% in Q3 and Q4, respectively. The ratio recovered to 32.7% in Q1 FY 2025-26 and 34.7% in Q2, before easing to 30.7% in Q3, indicating fluctuating capital deployment across quarters. Meanwhile, GFCF (y-o-y) growth also exhibited volatility. After rising to 8.8% in Q2 FY 2024-25, growth moderated to 6.2% in Q3 and 6.1% in Q4, reflecting a deceleration in both government and private investment activity. Growth improved marginally to 6.5% in Q1 FY 2025-26 and 6.6% in Q2, but eased to 6.3% in Q3, signalling a plateauing in investment momentum. Overall, the data suggests that while investment levels remain healthy, quarterly volatility persists, underscoring the dependence on fiscal spending patterns and the still gradual recovery of private capital expenditure.

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. Quarterly Private Final Consumption Expenditure (PFCE) has reported 6.0% growth rate during Q3 of FY 2025-26 as compared to the 5.6% growth rate in the corresponding period of the previous financial year.

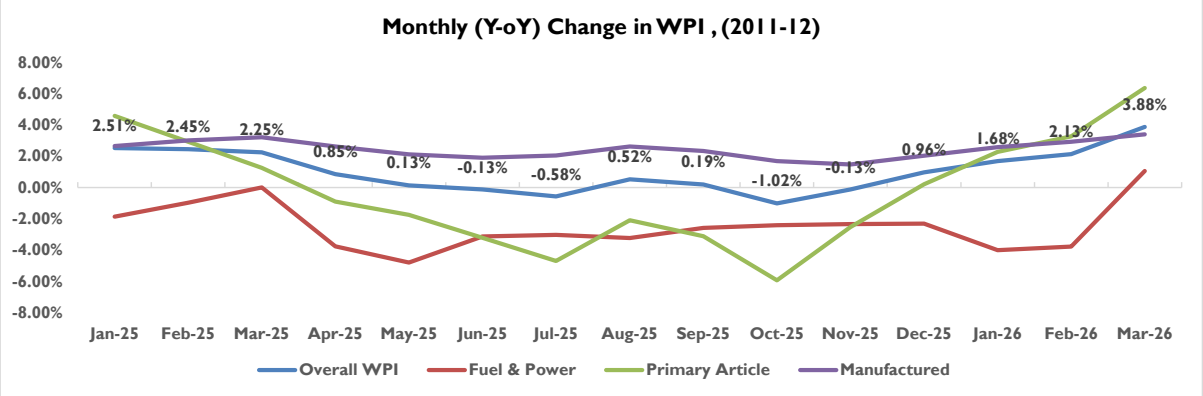
Inflation Scenario

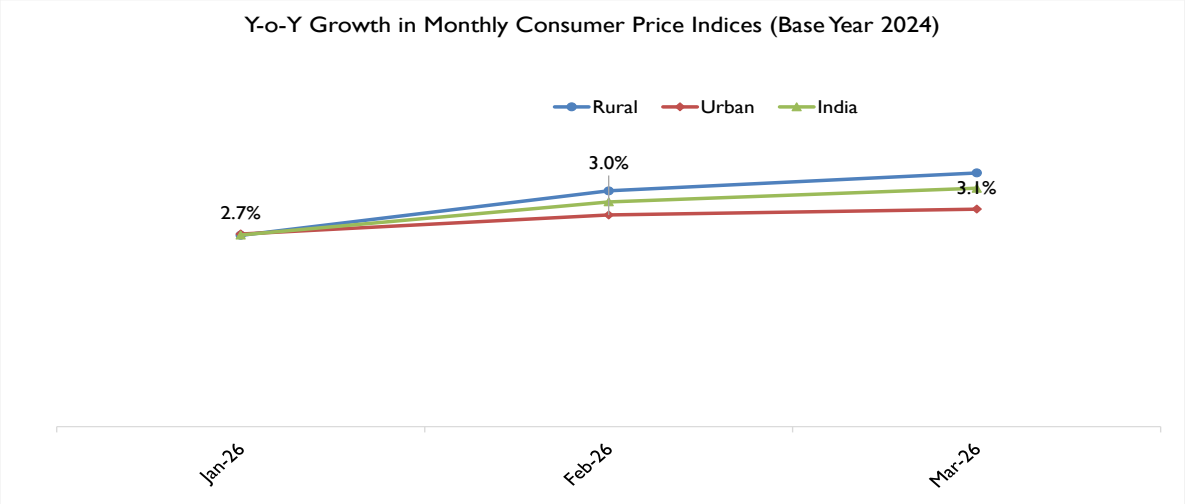
The annual rate of inflation based on All India Wholesale Price Index (WPI) number is 3.88% (provisional) for the month of March 2026 (over March 2025). Positive rate of inflation in March 2026 is primarily due to increase in prices of crude petroleum & natural gas, other manufacturing, non-food articles,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

Primary Articles (Weight 22.62%): - The index for this major group increased by 2.28 % from 192.9 (provisional) for the month of February, 2026 to 197.3 (provisional) in March, 2026. The price of crude petroleum & natural gas (36.16 %) and minerals (0.12%) increased in March, 2026 as compared to February, 2026. The Price of food articles (- 0.85%) and non- food articles (-0.22 %) decreased in March, 2026 as compared to February, 2026.

Fuel & Power (Weight 13.15%): - The index for this major group increased by 4.13 % from 147.6 (provisional) for the month of February, 2026 to 153.7 (provisional) in March, 2026. The Price of mineral oils (8.77 %) increased in March, 2026 as compared to February, 2026. The Price of electricity (-5.07%) decreased in March, 2026 as compared to February, 2026.

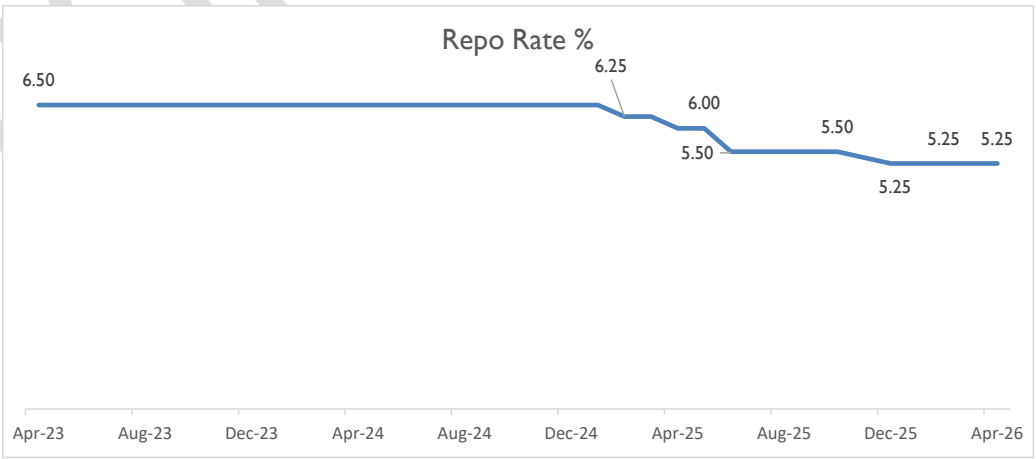
Manufactured Products (Weight 64.23%): - The index for this major group increased by 0.88 % from 148.2 (provisional) for the month of February, 2026 to 149.5 (provisional) in March, 2026. Out of the 22 NIC two-digit groups for manufactured products, 16 groups witnessed an increase in prices and 6 groups witnessed a decrease in prices. Some of the important groups that showed month-over-month increase in prices were manufacture of food products; chemicals and chemical products; basic metals; textiles and other manufacturing etc. some of the groups that witnessed a decrease in prices were manufacture of machinery and equipment; beverages; fabricated metal products, except machinery and equipment; computer, electronic and optical products and wearing apparel etc in march, 2026 as compared to February, 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 March, 2026 over March, 2025 is 3.40%(Provisional). Corresponding inflation rates for rural and urban are 3.63% and 3.11%, 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%, following the MPC's decision to hold rates unchanged at its April 2026 meeting.



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)[2] 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

[2] 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.

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[3] (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 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.

[3] 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

Product Overview

India's industrial catalyst and adsorbent ecosystem play a critical role in enabling efficient, sustainable, and high-quality production across refining, petrochemical, chemical, fertilizer, and gas-processing industries. These materials ranging from process-specific catalysts to high-performance adsorbents and inert ceramic support media are essential for purification, dehydration, sulphur removal, hydro processing, cracking, and environmental compliance. Together, they enhance reaction efficiency, protect downstream equipment, extend catalyst life, and support cleaner manufacturing practices. As India's industrial sectors expand and adopt stricter quality and emission standards, the demand for advanced catalytic systems, specialized adsorbents, and durable ceramic balls continues to rise, positioning this segment as a foundational enabler of the country's broader industrial and energy-transition goals.

The following sections provide a structured overview of these three key product categories and their roles within the industrial ecosystem:

- **Catalysts:** Industrial catalysts are critical materials that accelerate chemical reactions without being consumed, enabling large-scale refining, petrochemical, and chemical processes to operate more efficiently and sustainably. By lowering activation energy, these catalysts allow reactions to occur at lower temperatures and pressures reducing energy usage, improving yield, and enhancing product quality. Within this category, several specialized catalyst types play essential roles:
  - **Chloride Guard Catalysts** remove chloride impurities from feedstocks, protecting downstream equipment and improving product purity.
  - **Sulphur Guard Catalysts** capture sulphur contaminants to prevent catalyst poisoning and ensure smooth operation of hydrotreating and reforming units.
  - **Claus Catalysts** enable sulphur recovery by converting hydrogen sulphide into elemental sulphur, a vital step for environmental compliance in refineries and gas-processing units.
  - **Other Process Catalysts** support hydroprocessing, reforming, isomerization, cracking, and other critical transformations across the oil & gas, petrochemical, fertilizer, and polymer sectors.

Together, these catalysts form the backbone of high-efficiency industrial processes, where even incremental improvements translate into major operational and environmental benefits.

- **Adsorbents:** Adsorbents are essential materials used for purification, drying, and separation of gases and liquids. Unlike catalysts, which accelerate reactions, adsorbents selectively trap impurities or specific molecules, ensuring clean output streams and protecting process units. The two major commercial adsorbents include:
  - **Activated Alumina** – used for dehydration, fluoride removal, gas purification, and protection of downstream catalyst beds by eliminating moisture and trace contaminants.

- **Molecular Sieves** – crystalline aluminosilicates designed to adsorb molecules based on size and polarity; widely used in natural gas drying, air separation, refining, petrochemicals, and environmental applications.

These adsorbents are indispensable in industries requiring ultra-pure feedstocks, stable reaction environments, and strict environmental compliance.

➢ **Ceramic Balls:** Ceramic balls serve as **inert support media** in fixed-bed reactors across refineries, petrochemical plants, and chemical processing units. They do not participate in reactions but provide:

- mechanical strength,
- thermal stability,
- uniform distribution of gas and liquid flows, and
- support for catalyst and adsorbent beds.

By maintaining bed integrity and ensuring even flow distribution, ceramic balls enhance catalyst performance and extend reactor life, making them a fundamental component of industrial reactor design.

Key Attributes of Industrial Catalyst:

➢ **High Reaction Efficiency:** Industrial catalysts accelerate chemical reactions, allowing processes to occur faster and at lower temperatures or pressures. This efficiency reduces energy consumption and increases overall productivity. In large-scale operations, even small improvements in reaction rates can lead to significant cost savings. Catalysts ensure that reactions proceed in a controlled manner, maintaining consistent production quality. This attribute is especially critical in refining, petrochemical, and chemical manufacturing units where throughput is a key metric.

- **Selectivity and Product Purity:** Catalysts are engineered to favor the formation of the desired product over unwanted by-products. High selectivity minimizes waste and enhances the overall yield of valuable chemicals. This feature also reduces downstream purification requirements, saving time and operational costs. In processes like hydrocracking, sulphur removal, or ammonia synthesis, selectivity ensures efficiency and compliance with quality standards. By controlling reaction pathways, catalysts contribute to stable and predictable production outcomes.
- **Thermal and Mechanical Stability:** Industrial catalysts are designed to withstand high temperatures, pressures, and harsh chemical environments without losing activity. Thermal stability ensures that the catalyst continues to perform over extended operating periods. Mechanical strength prevents structural breakdown during handling, mixing, or reactor operations. This durability is essential for processes in refineries, gas plants, and chemical reactors where extreme conditions are common. Stability ensures consistent performance, reduces downtime, and lowers replacement frequency.
- **Reusability and Regeneration:** Most industrial catalysts can be regenerated and reused multiple times, making them cost-effective over their life cycle. Regeneration involves removing deposits or restoring active sites, allowing the catalyst to recover its original activity. This reduces the need for frequent replacement and minimizes waste. Reusability is particularly important in continuous industrial processes such as hydro processing, sulphur recovery, and gas purification. It ensures sustainable operations while lowering operational costs for manufacturers.
- **Environmental Compliance:** Catalysts are crucial in reducing harmful emissions and meeting environmental regulations. For example, Claus catalysts convert hydrogen sulfide into elemental sulphur, preventing air pollution. Similarly, catalysts in automotive exhaust systems reduce NOx, CO, and hydrocarbons. By enabling cleaner chemical processes, catalysts help industries comply with increasingly strict environmental standards. Their role in waste minimization and emission control makes them indispensable for sustainable industrial operations.
- **Tailor-Made Formulations:** Today's catalysts are developed with a high degree of customization to suit specific chemical reactions or operating environments. Whether the objective is to eliminate chloride or sulphur contaminants, enhance hydro-processing efficiency, or purify industrial gases, tailored formulations help achieve superior process outcomes. By aligning catalyst properties with feedstock characteristics and process conditions, industries can improve yields, minimize energy use, and enhance operational reliability. Customization also enables the use of specialized catalyst categories such as molecular sieves, activated alumina, and Claus catalysts which perform targeted roles in adsorption, purification, and sulphur recovery.

Key end use application:

- **Hydrocarbon Purification (Removal of Sulphur, Chloride, and Moisture):**

Industrial catalysts such as **Chloride Guard and Sulphur Guard** are used to remove impurities from hydrocarbon streams in **refineries** and **petrochemical plants.** This purification prevents **corrosion, protects downstream catalysts**, and ensures smooth operation of processing units. Removing moisture, sulphur, and chloride also improves fuel quality and compliance with environmental standards. These applications are critical for hydro processing, catalytic reforming, and other refining operations. Effective purification enhances product yield, reliability, and plant safety.

- **Hydrogen and Synthesis Gas Production**

Catalysts play a key role in producing hydrogen and synthesis gas (syngas) through processes like steam reforming, partial oxidation, or water-gas shift reactions. High-efficiency catalysts ensure optimal conversion rates, reducing energy consumption and improving gas purity. Hydrogen and syngas are essential feedstocks for ammonia, methanol, and other chemical syntheses. Proper catalyst selection ensures consistent reaction conditions and prevents contamination of product streams. This application is vital for the chemical and fertilizer industries.

- **Sulphur Recovery and Desulphurization Processes:**

Claus catalysts are widely used in sulphur recovery units (SRUs) to convert hydrogen sulphide (H_2S) into elemental sulphur. This process reduces sulphur emissions and recovers valuable by-products, ensuring compliance with environmental regulations. Desulphurization catalysts also remove sulphur compounds from fuels and gas streams, protecting downstream equipment. These applications are critical in **oil & gas refineries** and natural gas processing plants. Effective sulphur management improves environmental sustainability and operational efficiency.

- **Gas Drying and Separation (Using Molecular Sieves, Activated Alumina):**

Molecular sieves and activated alumina are used to remove moisture, carbon dioxide, and other impurities from gases and liquids. These materials provide selective adsorption, improving process efficiency and protecting sensitive downstream catalysts. Applications include air separation, natural gas processing, and petrochemical purification. By ensuring high-purity feedstocks, these materials enhance product quality and reduce maintenance issues. Gas drying and separation are fundamental for continuous and reliable industrial operations.

- **Refining and Petrochemical Conversion Reactions:**

Catalysts are essential in refining processes like hydrocracking, catalytic reforming, and isomerization, as well as in petrochemical conversions like polymerization and oxidation reactions. They increase reaction rates, improve selectivity, and enhance yield of desired products. Proper catalyst choice ensures energy efficiency

and process stability. These applications are critical for producing fuels, plastics, chemicals, and other high-value products. They directly impact plant profitability and operational reliability.

- **Emission Control and Environmental Management:**

Catalysts help reduce harmful emissions by converting pollutants like NOx, CO, and hydrocarbons into less harmful substances. Applications include automotive catalytic converters, flue gas treatment, and industrial emission control units. By minimizing environmental impact, catalysts help industries comply with strict government regulations. They also enable sustainable operations and reduce health and safety risks. This application is increasingly important as industries focus on green and clean technologies.

Major end use industries/ customer segments:

- **Oil & Gas Refineries:**

Refineries are the largest consumers of industrial catalysts, using them for processes like hydrocracking, catalytic reforming, desulphurization, and sulphur recovery. Catalysts help improve fuel quality, increase yield, and protect downstream equipment from corrosion or fouling. They are also crucial for meeting environmental standards by reducing sulphur and other impurities in fuels. Efficient catalysts enable refineries to optimize energy consumption and production costs. Refineries rely heavily on specialized catalysts such as Chloride Guard, Sulphur Guard, and Claus catalysts.

- **Petrochemical and Chemical Manufacturing:**

Chemical plants use catalysts for a wide range of reactions, including polymerization, oxidation, hydrogenation, and synthesis of basic chemicals. Catalysts improve reaction selectivity and efficiency, ensuring higher product yield and consistent quality. Molecular sieves, activated alumina, and catalyst carriers are commonly used in gas purification and process enhancement. Petrochemical applications include production of plastics, synthetic fibers, and other high-value chemicals. Custom-designed catalysts are often deployed to suit specific feedstocks and reaction conditions.

- **Natural Gas Processing Facilities:**

Natural gas plants use catalysts and adsorbents for purification, drying, and removal of contaminants like H_2S, CO_2, and water vapor. Catalysts ensure smooth operation of downstream units, prevent corrosion, and protect sensitive equipment. Molecular sieves and activated alumina are widely used for gas dehydration and separation. Efficient purification is critical for meeting pipeline specifications and environmental regulations. The use of catalysts improves overall plant efficiency, reduces downtime, and increases gas quality for industrial or commercial use.

- **Fertilizer Industry:**

Fertilizer manufacturing relies heavily on catalysts for ammonia synthesis, urea production, and hydrogen generation. Catalysts accelerate chemical reactions and improve conversion efficiency, enabling large-scale production at lower energy costs. They help maintain consistent production rates and high product purity. Catalyst systems like molecular sieves, catalyst carriers, and activated alumina also play roles in gas treatment and purification within fertilizer plants. Efficient catalyst usage directly impacts profitability and sustainability of fertilizer operations.

- **Environmental and Emission Control Applications:**

Industries across sectors increasingly use catalysts to comply with environmental regulations and reduce emissions. Applications include flue gas treatment, automotive catalytic converters, and sulphur recovery units. Catalysts convert harmful pollutants like NOx, CO, and SOx into less harmful substances, helping industries reduce their environmental footprint. They also support sustainable industrial operations by minimizing waste and energy consumption. Growing global emphasis on clean technologies is driving higher adoption of catalysts in emission control systems.

- **Specialty Chemical and Polymer Manufacturing:**

Catalysts are essential in producing specialty chemicals, adhesives, resins, and high-performance polymers. They enable precise control over reaction pathways, improving product quality and yield. Catalyst carriers, molecular sieves, and activated alumina are often used to enhance reaction efficiency and ensure uniform performance. Industries producing paints, coatings, and advanced materials rely on catalysts for consistent and scalable production. Customized catalyst formulations help meet specific requirements of specialty chemical applications.

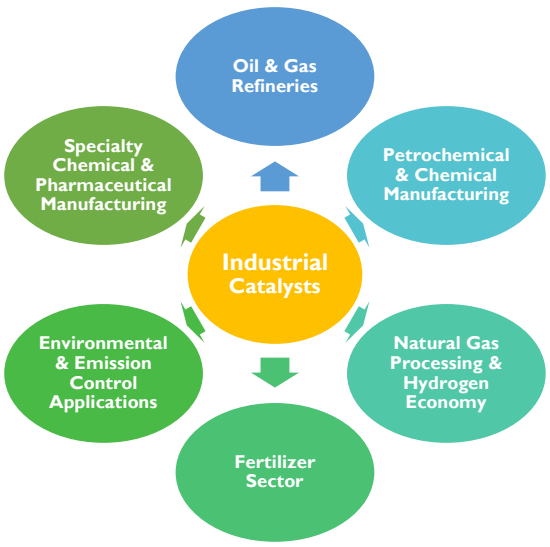
Market Scenario: India's Industrial Catalyst Industry

The Indian industrial catalyst industry plays a foundational role in the country's economic and manufacturing ecosystem, supporting some of the most strategically important value chains, including Oil & Gas, Petrochemicals, Steel, Fertilizers, and others. **Catalysts are substances that accelerate chemical reactions, enhance product yield and quality, reduce energy consumption, and enable environmentally cleaner industrial operations without being consumed in the process.** In modern industrial production, catalysts are not optional inputs; they are mission-critical performance materials that determine efficiency, sustainability, and economic viability.

India's rise as a major hub for refining, chemicals, and pharmaceuticals has fundamentally strengthened its catalyst consumption profile. Growing domestic energy needs, shifts toward cleaner fuels, large-scale petrochemical integration, and continuous expansion of fertilizer capacity have all contributed to sustained demand. Over the last decade, increasing emphasis on **environmental compliance, fuel quality upgradation, BS-VI emission norms, and green energy transition policies** has further accelerated the adoption of advanced adsorbents, guard bed catalysts, and reactor media including **activated alumina, molecular sieves, inert ceramic balls, and catalyst carriers**.

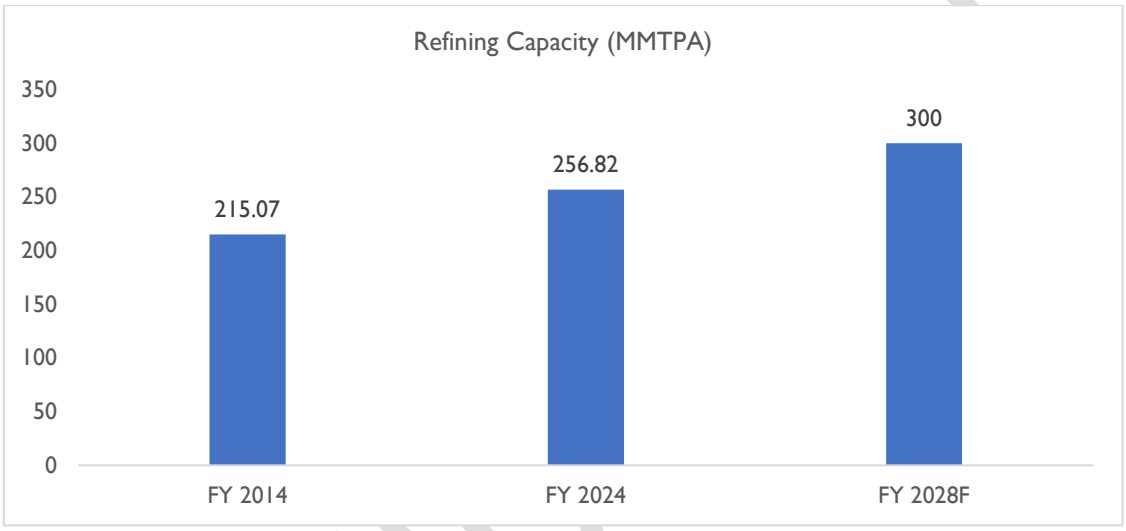
Looking ahead, the Indian industrial catalyst market is expected to grow at an average **CAGR of 6%–7% during FY 2025–2031**, supported by refinery modernization, natural gas infrastructure growth, specialty chemical manufacturing, and a structural shift toward cleaner and technology-intensive industrial processes. The market's attractiveness is reinforced by recurring replacement cycles, large-scale maintenance programs, import substitution push under Atmanirbhar Bharat, and increasing domestic capability in advanced catalytic materials. The following section provides a comprehensive overview of the major end-use industries and explains how their capacity expansion, technology adoption, and regulatory priorities collectively shape catalyst demand across India's industrial ecosystem.

Overview on Industrial Catalyst End user sectors:



➢ **Oil & Gas Refineries**

The oil and gas refining sector remains the dominant consumer of industrial catalysts in India, accounting for the largest share of demand due to extensive use in fuel upgrading, impurity removal, and residue conversion processes. India today operates 19 public sector refineries, three private refineries and one joint-venture refinery, and has expanded refining capacity from 215.07 MMTPA in 2014 to 256.82 MMTPA in 2024, with planned expansion beyond 300 MMTPA by 2028. India has been increasing its refining capacity to meet rising fuel demand, support energy security, and transition to cleaner, BS-VI-compliant fuels. This progression is shown below:



Source: Press Information Bureau (PIB)

F= Forecasted

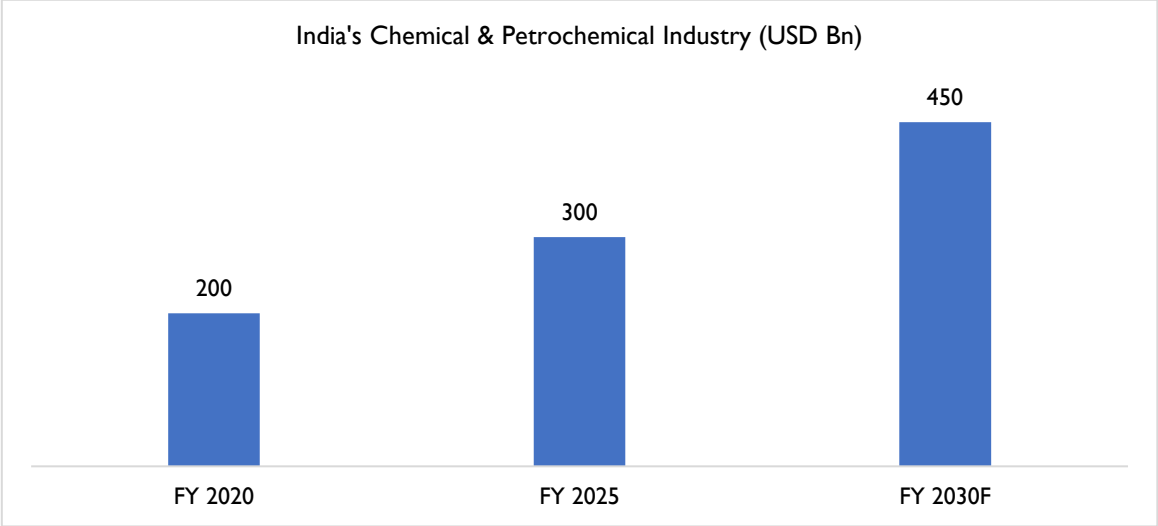
Under the Bharat Stage VI (BS-VI) emission norms and the national mandate for cleaner transportation fuels, refineries have scaled hydro processing, desulphurization, reforming, and cracking units all of which rely heavily on catalyst systems.

Materials such as activated alumina, molecular sieves, chloride and sulphur guard catalysts, ceramic balls, and carrier media play essential roles in gas purification, impurity removal, catalyst bed stability, and feed protection. The industry follows planned maintenance shutdown cycles every two to five years, requiring systematic catalyst replacement, regeneration, and replenishment. This predictable cycle ensures recurring demand, making the refining sector the backbone of India's industrial catalyst market.

➢ **Petrochemical & Chemical Manufacturing**

The petrochemical and chemical sector forms the second most significant application segment for catalyst consumption in India. With the country shifting toward integrated refinery-petrochemical complexes including major initiatives such as HPCL Rajasthan Refinery, IOCL's Paradip petrochemical expansion, and OPaL there has been a steady rise in catalyst usage for polymer production, aromatics processing, and

downstream chemical manufacturing. These plants use advanced catalytic media and reactor packing materials to ensure feedstock purity, optimize conversion efficiency, and maintain consistent product quality. Structured ceramic tower packing, high-surface-area activated alumina, molecular sieves, and guard catalysts are deployed across distillation, dehydration, hydrogenation, and polymer synthesis processes. As India aims to reduce dependency on imported petrochemicals and build self-sufficiency in polymers, elastomers, and chemical intermediates, catalyst demand in this segment will continue to grow in line with capacity creation and process intensification efforts.

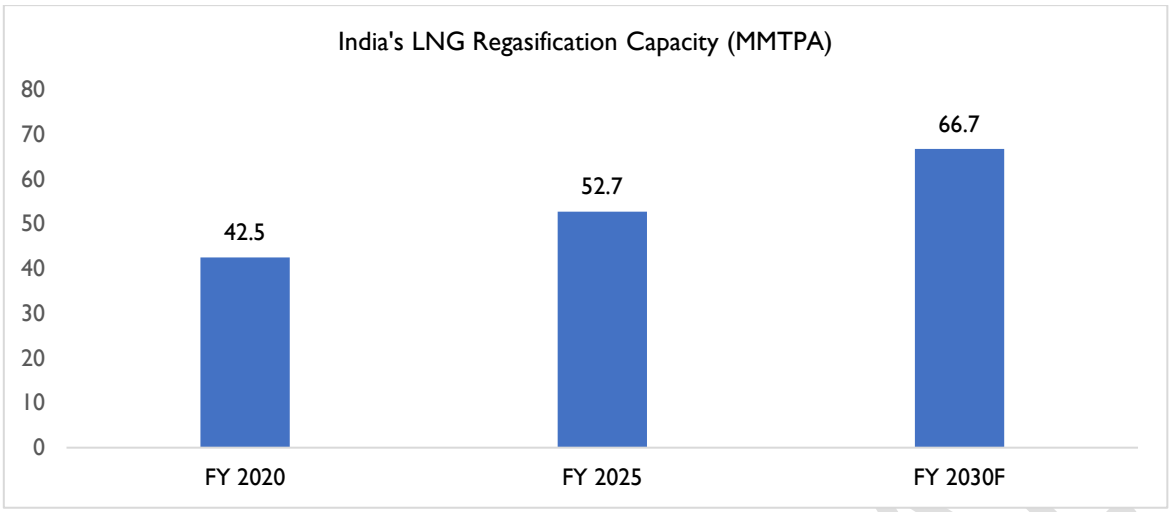


Source: Press Information Bureau (PIB), NITI Ayog

This growth momentum is further supported by India's broader chemical and petrochemical expansion plans, with the overall industry expected to grow at a **CAGR of 8.4% between FY 2020 and FY 2030**, providing a clear outlook for long-term catalyst demand. India's petrochemical capacity is projected to increase from about 29.62 MT in FY 2024 to nearly 46 MT by 2030. This growth is strongly driven by the push for self-reliance, as nearly 45% of the country's petrochemical intermediates are still imported. India's Petroleum Intensity Index (PII)—which indicates how much crude is converted into petrochemicals—is also expected to rise by around 15% by 2030 and further by 25% by 2040. These trends signal a clear shift toward higher petrochemical integration, which will significantly increase catalyst demand across new and upgraded complexes.

- **Natural Gas Processing & Hydrogen Economy**

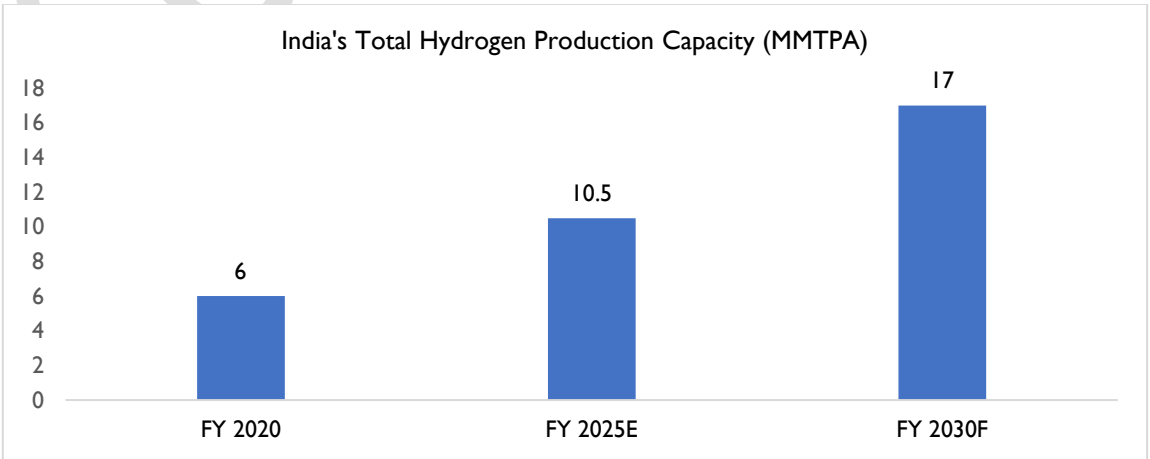
India's expanding natural gas infrastructure and accelerating shift toward clean hydrogen are emerging as major drivers of catalyst demand across purification, separation, and low-carbon fuel production. The country's LNG regasification capacity has grown from **42.5 MMTPA in FY 2020** to an estimated **52.7 MMTPA by FY 2025**, and is projected to reach **66.7 MMTPA by FY 2030**, supported by the expansion of over 25,000 km of gas pipeline networks and rising consumption from industrial users, city gas distributors, and the power sector.



Source: Ministry of Petroleum & Natural Gas, Press Information Bureau (PIB), Petroleum and Natural Gas Regulatory Board (PNGRB)

This scale-up in natural gas handling is directly increasing the use of high-performance catalysts and adsorbents across processing facilities. Molecular sieves, activated alumina, and sulphur/chloride guard catalysts are essential for removing moisture, CO_2, sulphur species, and trace contaminants from feed gas, thereby protecting downstream equipment, ensuring process reliability, and enabling compliance with stringent gas quality requirements. As more gas-based industries come online—including petrochemicals, refining, fertilizers, and CGD networks—the demand for purification catalysts is expected to rise steadily.

Parallel to natural gas growth, India is building a strategic foundation for a hydrogen-based energy economy. India's total hydrogen production capacity is expected to increase from **6 MMTPA in FY 2020** to **10.5 MMTPA by FY 2025**, and further to **17 MMTPA by FY 2030**, reflecting a strong CAGR of about **11%**. In addition, the country has set an ambitious target to produce **5 million metric tonnes (MMT) of green hydrogen annually by 2030** under the National Green Hydrogen Mission. Achieving this requires ultra-pure feed gases for electrolysis, as well as advanced catalysts for ammonia and methanol synthesis, hydrogen purification, and associated reactor systems.



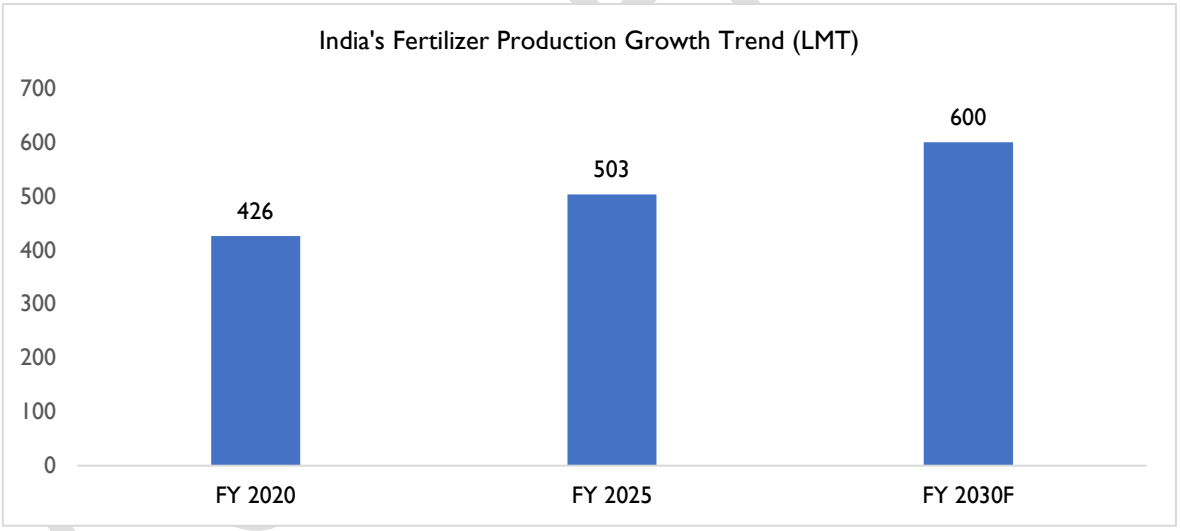
Source: Institute for Energy Economics & Financial Analysis (IEEFA), Press Information Bureau (PIB), D&B Research Estimates

*E= Estimated, F= Forecasted

As hydrogen blending into natural gas pipelines, gas-based power systems, and green ammonia production gain momentum, high-efficiency purification catalysts and adsorbents will remain indispensable to maintaining gas quality, protecting electrolyzers, and enabling large-scale adoption. Together, the expansion of LNG infrastructure, growing hydrogen production, and rising adoption of clean-fuel technologies place catalysts at the center of India's long-term clean energy and industrial transformation.

- **Fertilizer Sector**

The fertilizer industry remains one of India's most significant catalyst-consuming segments, particularly due to the ammonia–urea production chain where catalysts are essential across reforming, methanation, ammonia synthesis, and purification stages. India's fertilizer output is projected to grow steadily from **426 LMT in FY 2020 to 503 LMT in FY 2025**, and further to **600 LMT by FY 2030**, reflecting a **CAGR of approximately 3.5% during 2020–2030**. This growth trajectory is supported by the operationalization and revival of major ammonia–urea plants at Gorakhpur, Sindri, Barauni, Ramagundam, and Talcher, each with capacities of around 1.27 MMTPA.



Source: Press Information Bureau (PIB), Ministry of Chemicals & Fertilizers

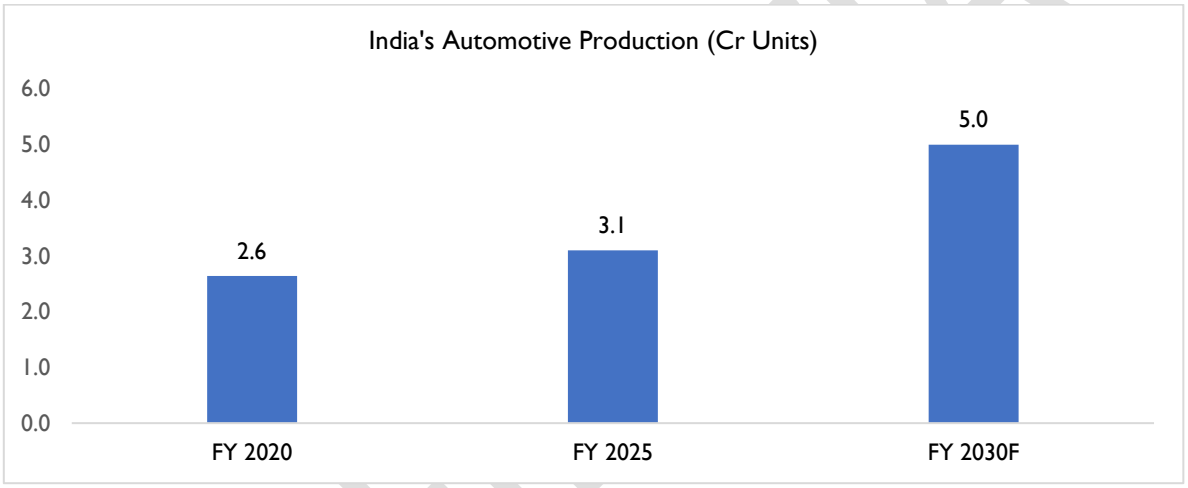
These facilities rely on a wide range of catalysts and supporting media—including activated alumina, molecular sieves, ceramic balls, and catalyst carriers—to optimize gas conversion efficiency, eliminate impurities, and maintain reactor stability. As fertilizer demand grows in line with national priorities for agricultural productivity and balanced nutrient use, the sector will continue to require routine catalyst replenishment and periodic technology upgrades.

Government-driven modernization programs and efficiency enhancement initiatives further support steady catalyst consumption. With India reinforcing its objective of achieving fertilizer self-sufficiency and ensuring

reliable domestic production, the fertilizer sector is expected to remain a **stable and predictable market for catalyst demand** throughout the coming decade.

➢ **Environmental & Emission Control Applications**

Environmental compliance regulations have emerged as a major driver of catalyst consumption in India. Under the BS-VI emission standards, catalytic converters have become mandatory across all vehicle categories, accelerating the use of platinum-group metal–based catalyst systems. India's automotive production is estimated to rise from **2.6 crore units in FY 2020 to 3.1 crore units in FY 2025**, and further to **5.0 crore units by FY 2030**, reflecting a **CAGR of about 6.6% during 2020–2030**. This sustained increase in vehicle manufacturing directly strengthens demand for catalytic systems used in exhaust treatment and emission control across OEM and aftermarket channels.



Source: Society of Indian Automobile Manufacturers (SIAM), D&B Research Estimates

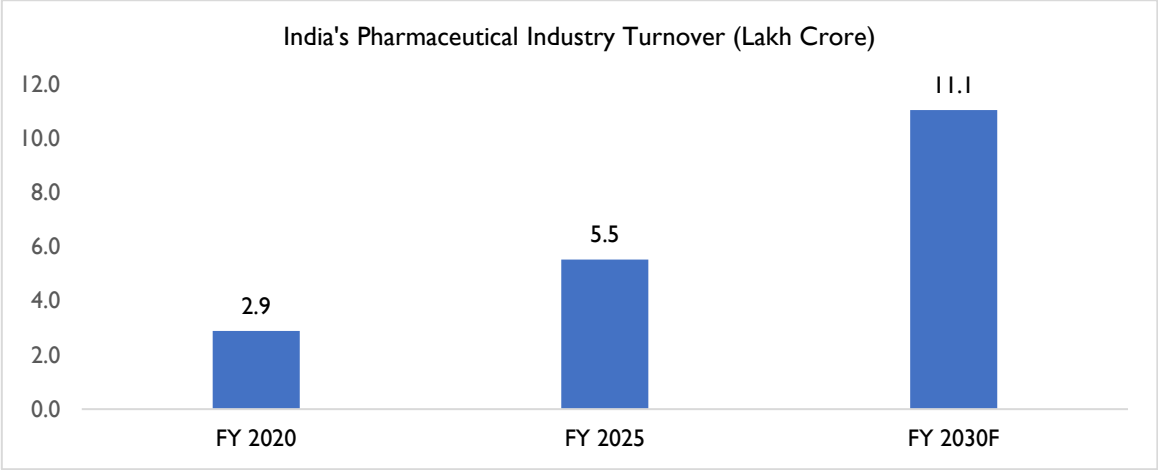
Looking ahead, India's broader automotive ecosystem is on a strong growth trajectory. Automotive component manufacturing is projected to reach USD 145 billion by 2030, while exports are expected to grow from USD 20 billion to USD 60 billion, enabling India to expand its share of the global automotive value chain from 3% to 8%. This expansion will further reinforce the demand for emission-control catalysts, including three-way catalysts, diesel oxidation catalysts, and selective catalytic reduction systems.

Beyond automobiles, refineries and natural gas processors also contribute substantially to catalyst requirements. These industries deploy Claus catalysts, tail-gas treatment catalysts, activated alumina, and molecular sieves for sulphur recovery, desulphurization, and flue-gas purification in line with guidelines from the Central Pollution Control Board (CPCB) and the Ministry of Environment, Forest and Climate Change. As India adopts stricter environmental norms and transitions toward cleaner fuel pathways, catalyst consumption in emission-control applications is expected to grow consistently over the coming decade.

➢ **Specialty Chemical & Pharmaceutical Manufacturing**

India's specialty chemical and pharmaceutical sectors are emerging as some of the strongest engines of catalyst consumption, largely due to the increasingly complex and high-purity processes adopted across production lines. These industries rely on tightly controlled reaction environments—whether for converting intermediates, refining molecular structures, or ensuring stringent impurity thresholds—which inherently increases the need for advanced catalytic systems.

As India strengthens its stature as the world's third-largest pharmaceutical manufacturer by volume and a major supplier of global generics, the scale of operations across the sector has expanded significantly. Industry turnover is projected to rise from **₹2.9 lakh crore in FY 2020** to **₹5.5 lakh crore in FY 2025**, and further to **₹11.1 lakh crore by FY 2030**, implying a **14.4% CAGR** over the decade. This accelerated growth brings with it a proportional increase in demand for catalysts that support reaction selectivity, conversion efficiency, and purification consistency.



Source: Department of Pharmaceuticals, Government of India

A similar momentum is visible in the specialty chemicals domain, which now represents one of the most dynamic segments of India's broader chemical industry. Accounting for nearly **47% of the national chemical market**, this segment is expanding due to rising consumption across automotive, electronics, construction, aerospace, nutrition, and agrochemical sectors. Agrochemicals alone form a **US$5.5 billion sub-segment**, projected to contribute nearly **40% of India's chemical exports by 2040**. Such diversification deepens the requirement for tailored catalytic systems that support controlled synthesis, impurity management, and yield improvement.

At the operational level, the manufacture of APIs, intermediates, vitamins, specialty molecules, and polymer-grade compounds relies on catalysts such as **selective hydrogenation catalysts, polymer-grade alumina, structured ceramic media, and precise adsorbent formulations**. Indian firms—including Sud-Chemie India, Viridis Chemicals, and Hetero Catalysts—are increasingly developing localized catalytic

solutions, enabling process optimization, reduced dependency on imports, and alignment with global quality benchmarks. The sector's shift toward domestic capability development supports long-term resilience, especially in supply chains involving regulated markets.

Broadly, India's industrial catalyst ecosystem is benefitting from the simultaneous expansion of specialty chemicals, pharmaceuticals, refining modernization, petrochemical capacity addition, and environmental compliance mandates. The recurring nature of catalyst replacement, combined with capacity upgrades across energy, manufacturing, and emission-control applications, ensures sustained demand. Government initiatives under **Atmanirbhar Bharat** and **Make in India** further encourage backward integration, technology partnerships, and domestic manufacturing of advanced catalytic systems, positioning the catalyst industry as a vital enabler of India's industrial growth, clean-energy transition, and long-term sustainability objectives.

Demand Scenario

Analysis of key factors that are shaping the demand in the industry

- Rapid Urbanization and Energy Consumption Growth
- Accelerated Industrialization and Manufacturing Expansion
- Decarbonization and Energy Transition Policies
- Growth in Process Intensification and Technology Upgradation
- Rising Focus on Import Substitution and Domestic Catalyst Production

➢ Rapid Urbanization and Energy Consumption Growth

India's rapid urbanization adding nearly 25–30 million new city residents every five years is driving a sharp increase in demand for refined fuels, fertilizers, petrochemicals, and construction materials. As more people migrate toward cities, the need for transportation fuels, power, and plastics intensifies, prompting refineries and petrochemical complexes to expand operations. Urban infrastructure growth drives higher throughput in hydrocracking, desulphurization, and reforming units, all of which depend on industrial catalysts and adsorbents to enhance yield and control emissions. The growth in urban fuel consumption and expansion of gas distribution networks in metropolitan regions further elevate the use of catalysts in purification and upgrading units across India's downstream energy sector. In parallel, urban waste management initiatives and municipal waste-to-energy plants are increasingly using catalyst-supported processes for gas purification, hydrogen generation, and emissions control. Similarly, biogas upgradation systems in urban and peri-urban areas rely on molecular sieves and activated alumina for CO_2 and moisture removal. As India's cities expand,

the intersection of energy demand, environmental compliance, and industrial growth ensures a broad-based and sustained demand for catalyst materials across refining, petrochemical, and clean energy domains.

- **Accelerated Industrialization and Manufacturing Expansion**

The Indian government's push through Make in India 2.0 and Production Linked Incentive (PLI) schemes has catalyzed major investments in chemical processing, advanced materials, and specialty manufacturing. The establishment of new process plants for paints, coatings, textiles, plastics, and fine chemicals has amplified the requirement for reforming, hydrogenation, oxidation, and polymerization catalysts. Industries are increasingly deploying molecular sieves and adsorbents for feedstock purification, process optimization, and volatile organic compound (VOC) abatement, which enhances both product quality and environmental compliance. This industrial broad-basing beyond traditional oil refining and fertilizer production is redefining the structure of catalyst consumption in India.

Simultaneously, expansion in core industries such as steel, cement, and non-ferrous metals is also fostering indirect catalyst demand through increased chemical usage in flue gas treatment, emission control, and process gas purification. India's vision to become a global manufacturing hub for electronics, semiconductors, and specialty chemicals is encouraging technology collaborations for catalytic and adsorbent systems. As industries modernize and diversify, they require customized catalyst formulations, driving innovation, localization, and long-term demand consistency across multiple process applications.

- **Decarbonization and Energy Transition Policies**

India's commitment to achieve net-zero emissions by 2070 is reshaping its industrial and energy landscape, with catalysts emerging as a critical enabler in this transition. Policies such as the National Green Hydrogen Mission, Biofuel Policy (2018), and National Carbon Capture, Utilization, and Storage (CCUS) Framework are stimulating investment in low-carbon fuels and chemical processes. Catalysts play a pivotal role in enabling green hydrogen production, methanation, and ammonia synthesis, where they ensure high conversion efficiency under low-emission operating conditions. Likewise, reforming and hydroprocessing catalysts are key to producing renewable diesel, sustainable aviation fuel (SAF), and methanol from biomass and waste feedstocks.

In addition, the deployment of carbon capture and gas purification units across power, steel, and fertilizer sectors is generating significant demand for molecular sieves, activated alumina, and tailored adsorbents capable of selectively separating CO_2 and other impurities. The adoption of cleaner process chemistries, along with increasing ESG compliance mandates from global investors, is pushing Indian companies to retrofit existing units with next-generation catalysts. Consequently, India's pathway toward decarbonization not only aligns with sustainability goals but also provides a structural long-term growth opportunity for the domestic industrial catalyst market.

- **Growth in Process Intensification and Technology Upgradation**

Industrial process plants across India are transitioning toward advanced reactor designs and process intensification techniques to improve throughput, yield, and energy efficiency. Technologies such as fluid catalytic cracking (FCC), selective hydrogenation, and advanced reforming depend on precision-engineered catalysts to maintain selectivity and reaction control. Structured ceramic packings and high-performance catalyst carriers are increasingly used to enhance mass and heat transfer, minimize pressure drop, and extend catalyst life. This modernization wave is particularly visible in refineries, petrochemical complexes, and specialty chemical units adopting continuous catalytic processes for cleaner and more efficient operations. Moreover, the integration of digital monitoring and AI-based process control in catalyst performance management has enabled predictive maintenance and optimization, reducing unplanned downtimes. As India's process industries pursue energy conservation and emission minimization, the adoption of high-efficiency reactor media such as structured ceramics and high-surface-area alumina is rising sharply. This convergence of process intensification and digital transformation supports consistent demand for technologically advanced catalyst systems, underscoring the strategic shift toward high-value, performance-oriented process materials.

- **Rising Focus on Import Substitution and Domestic Catalyst Production**

India's industrial catalyst market has historically been dependent on imports from established global players in Europe, the US, and Japan. However, recent policy frameworks under Atmanirbhar Bharat and the PLI Scheme for Advanced Chemistry Cells and Specialty Chemicals have prioritized domestic manufacturing and innovation. Public sector enterprises such as IOCL, BPCL, and GAIL are increasingly issuing tenders favoring Indian-made catalysts, spurring R&D investment in high-surface-area activated alumina, low-chloride catalyst carriers, and improved Claus catalyst formulations. These developments are helping local manufacturers move up the value chain from bulk materials to precision-engineered catalyst systems.

Furthermore, collaborations between public R&D institutes like CSIR-NCL, IIP Dehradun, and private catalyst firms are advancing indigenous formulations suitable for refinery, petrochemical, and environmental applications. With increasing government emphasis on technology self-reliance and supply chain resilience, India's domestic catalyst ecosystem is poised for rapid expansion. This strategic shift not only reduces import dependence but also creates export potential for Indian-made catalysts and adsorbents in emerging Asian and African markets, positioning India as a competitive supplier in the global catalyst value chain.

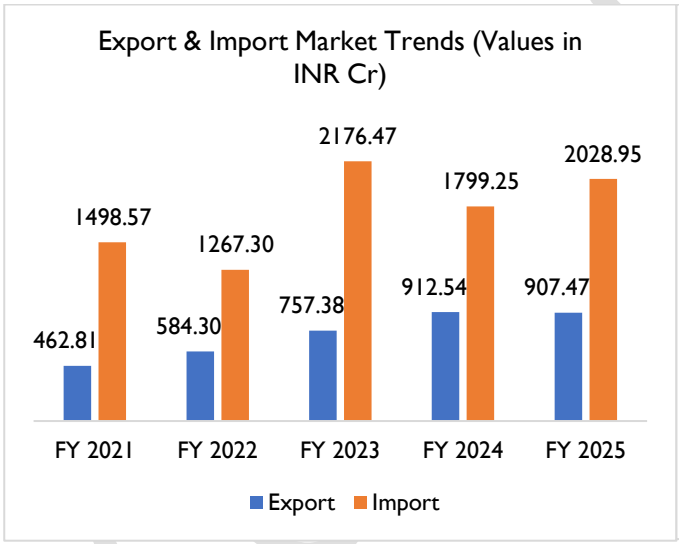
Regulatory Landscape

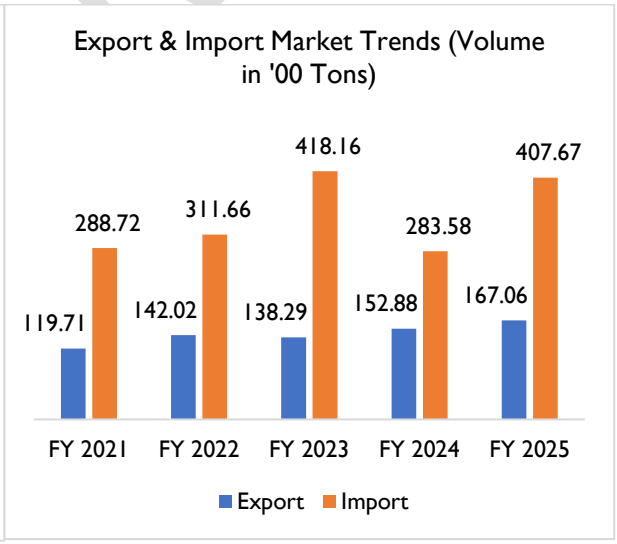
- **Chemical Promotion & Cluster Development**: There are proposals and policies (from NITI Aayog, Department of Chemicals & Petrochemicals etc.) aimed at creation of world-class chemical hubs / clusters with shared infrastructure, logistical support, and possibly viability gap funding (VGF). The idea is that chemical / catalyst producers could be located in such clusters to reduce cost of operations (e.g. utilities, effluent treatment, feedstock access). Improved port-related infrastructure for transport of raw materials and export goods is also flagged.
- **Reduced Import Duties / Tariff Policy on Raw Materials**: The chemicals sector is allowed 100% FDI (automatic route) except certain hazardous chemicals; and manufacture of many chemical products is de-licensed, which reduces regulatory overhead. Additionally, in some chemical policies there is an intention to reduce duties or provide exemptions for critical raw materials/feedstocks, to encourage domestic value addition. Though I didn't find one specific policy that gives raw materials for catalysts special duty exemption, the broader approach for chemicals could benefit catalyst manufacturers.
- **Ease of Doing Business & Regulatory Streamlining**: The proposal from NITI Aayog includes measures like fast-tracking environmental clearances, simplifying regulatory compliance, and reducing friction in approvals. For industrial catalysts, which often involve hazardous materials, metals, supports, there is benefit if environmental, safety & handling approvals are faster and clearer. Also, schemes like "Make in India" and simplification of licensing help reduce entry barriers.

Trade Details

India remains a net importer in this product category, which includes specialized ceramic components, activated alumina, and advanced catalytic materials. Between FY 2021 and FY 2025, import volumes and values consistently exceeded exports, reflecting the country's continuing dependence on high-performance materials and technologies that are not yet produced domestically at sufficient scale or specification. Although exports have grown steadily supported by rising global demand and improving manufacturing capabilities imports still dominate overall trade. The following section provides an analysis of India's top export and import partner countries to highlight the key trade relationships and evolving market trends in this segment.

The trade trend analysis for FY 2021–FY 2025 shows a steady rise in both exports and imports for this product category; however, imports have consistently remained higher in both value and volume. This reflects India's increasing integration into global trade for these specialized industrial materials, while simultaneously underscoring its dependence on foreign suppliers to meet domestic requirements. The continuous growth in export performance points to improving competitiveness and a widening international footprint, whereas the sustained high level of imports indicates strong internal demand and the need for materials that are not yet fully produced at the required scale or specifications within the country.





Source: Directorate General of Foreign Trade

Between FY 2021 and FY 2025, exports rose from **INR 462.81 crore to INR 907.47 crore**, reflecting nearly a **96% growth** over five years. Imports, however, increased from **INR 1,498.57 crore to INR 2,028.95 crore**, showing continued dependence on foreign suppliers for certain specialized materials. The export-import gap remained wide, with imports consistently over twice the value of exports, indicating that while export competitiveness is improving, domestic industries continue to rely heavily on imported catalysts, alumina, and ceramic materials. Notably, FY 2023 marked a strong growth phase for both exports and imports, with exports peaking at **INR 757.38 crore** and imports reaching **INR 2,176.47 crore**, suggesting

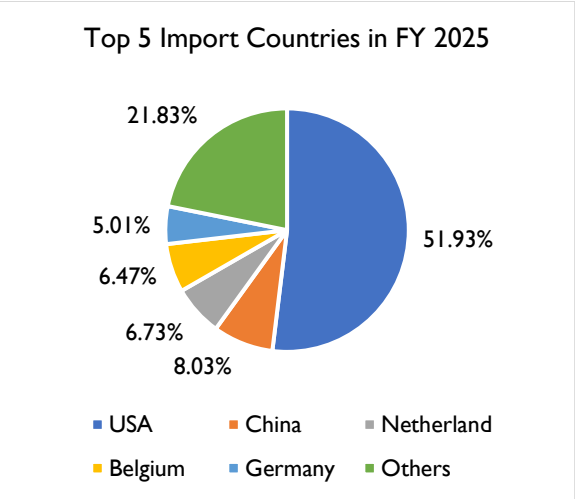
robust global and domestic demand. Although exports slightly declined in FY 2025, the overall upward trend underscores sustained international interest in Indian-origin products.

In terms of physical volume, exports increased from **119.71 '00 tons in FY 2021 to 167.06 '00 tons in FY 2025**, highlighting consistent expansion in production and shipment capacity. Imports also grew from **288.72 '00 tons to 407.67 '00 tons** during the same period, underscoring India's growing consumption base and industrial scale. The volume growth for exports was more gradual compared to the sharper rise in import volumes, which reflects the difference in domestic manufacturing self-sufficiency versus dependency on imported inputs. The highest trade activity was observed in FY 2023, coinciding with global post-pandemic industrial recovery, followed by stabilization in FY 2024 and FY 2025.

While the export sector has shown commendable growth, increasing nearly twofold in value and volume, imports have remained dominant, reflecting India's continued integration into global supply chains as both a consumer and supplier. The widening trade gap suggests opportunities for capacity expansion, value addition, and technological advancement within domestic industries to reduce dependency and improve export competitiveness.

Top 5 Export & Import partners:

The profile of India's major export and import partners in FY 2025 reflects shifting trade dynamics and deeper global engagement in this product segment. The United States stands out as the dominant partner on both sides of the trade ledger, underscoring strong bilateral flows. Export markets appear relatively diversified, spanning developed economies such as Germany as well as fast-growing destinations like Indonesia and China. Imports, however, remain concentrated among a smaller set of advanced economies, highlighting India's reliance on technologically superior countries for specialized materials and inputs. The notable presence of "Other" countries in both export and import shares further indicates ongoing diversification efforts, pointing toward India's strategy to develop a broader and more resilient trade ecosystem.



Source: Directorate General of Foreign Trade

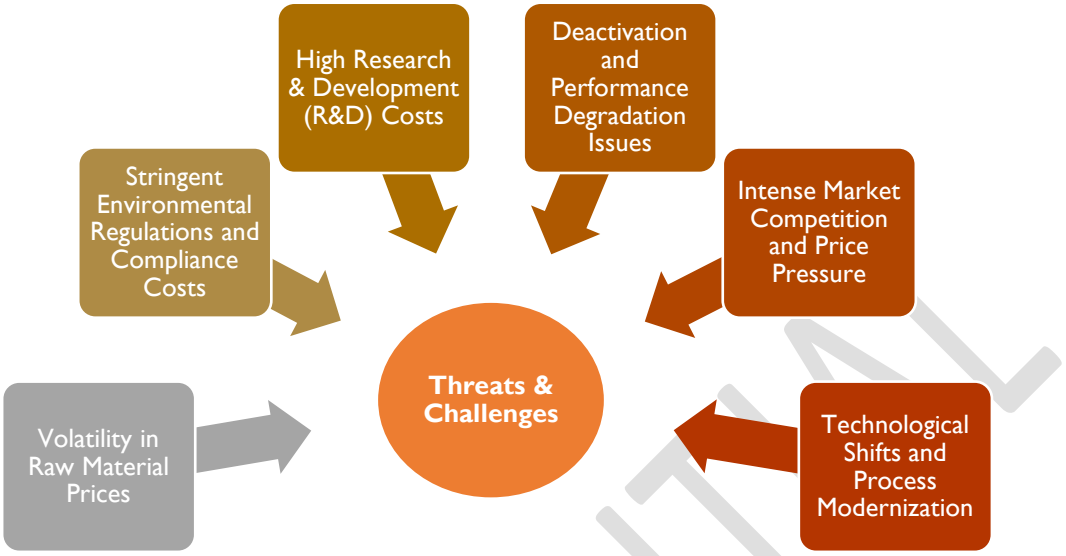
The comparative analysis of India's top export and import partners in FY 2025 reveals a distinct pattern in trade dynamics, showcasing both strength and dependency in global engagements. The USA stands out as the most dominant partner, accounting for 21.7% of total exports and a notably higher 51.9% of total imports. This indicates a strong and strategic bilateral trade relationship where the U.S. serves not only as a key destination for Indian goods but also as a primary source of advanced products, technology, and capital equipment. Such a concentration of imports from a single country suggests deep economic interdependence but also highlights potential vulnerability to policy shifts or trade barriers imposed by the U.S. government.

On the export front, India's market appears relatively diversified, with countries such as China (10.99%), Germany (8.92%), Indonesia (7.85%), and the Netherlands (5.44%) contributing significantly to outbound trade. This distribution points toward India's increasing competitiveness in both developed and emerging markets. The presence of major European economies like Germany and the Netherlands indicates strong demand for Indian engineering goods, pharmaceuticals, and IT services, while Indonesia's inclusion reflects regional trade growth within Asia. The large share of 'Others' (45.11%) further underlines that India's export base is expanding across multiple geographies, reducing overreliance on a few markets and enhancing trade resilience.

Conversely, India's import structure remains more concentrated, with the USA, Netherlands, Germany, Belgium, and China together constituting a major share. The composition of import partners suggests a high dependency on advanced economies for industrial inputs, technology products, and capital goods. The limited share of developing countries in the import mix reflects India's ongoing reliance on Western suppliers for critical manufacturing components. However, the 21.83% share of 'Others' signals gradual efforts toward diversification, potentially through increased sourcing from Asian and African nations. Overall, while India's export footprint is broadening, the import dependence on a few large economies emphasizes the need for policy-driven diversification, enhanced domestic manufacturing, and strategic trade partnerships to strengthen long-term economic stability.

Threats & Challenges:

Key threats & challenges facing the industry



- **Volatility in Raw Material Prices:** The production of industrial catalysts relies on metals and materials such as platinum, palladium, nickel, cobalt, and alumina. Fluctuations in global prices of these raw materials can significantly impact manufacturing costs and profit margins. Supply disruptions due to geopolitical tensions or trade restrictions further increase price instability. Manufacturers often face challenges in maintaining consistent pricing for customers. This volatility directly affects long-term contracts and profitability in the catalyst industry.
- **Stringent Environmental Regulations and Compliance Costs:** While catalysts support environmental sustainability, their own production and disposal processes must adhere to strict regulations. Compliance with global and national emission standards (such as REACH, EPA, and CPCB norms) increases operational complexity and cost. Industries must continuously upgrade facilities and adopt cleaner production technologies. Improper waste handling or disposal can lead to penalties and reputational damage. Ensuring regulatory compliance without compromising cost competitiveness remains a persistent challenge.
- **High Research & Development (R&D) Costs:** The catalyst industry is technology-intensive, requiring continuous innovation to improve efficiency, selectivity, and life span. Developing advanced formulations, nanostructured catalysts, or tailor-made solutions demands heavy investment in R&D. Small and mid-sized manufacturers often struggle to keep pace with global players due to financial and technical constraints. Additionally, scaling laboratory innovations to industrial-scale production involves long testing cycles and regulatory approvals. This limits the speed of market entry for new products.
- **Deactivation and Performance Degradation Issues:** Over time, catalysts can lose activity due to fouling, poisoning, or sintering caused by impurities, temperature fluctuations, and operational stress.

This leads to reduced efficiency, lower yields, and increased maintenance requirements. Catalyst deactivation often forces unplanned shutdowns, impacting productivity and profitability. Regeneration can restore activity but adds operational cost and downtime. Maintaining consistent catalyst performance across long production runs remains a key technical challenge.

- **Intense Market Competition and Price Pressure:** The global catalyst market is highly competitive, with numerous domestic and international players offering similar products. Customers often demand high-performance catalysts at low prices, squeezing profit margins. Larger companies with economies of scale dominate through advanced technologies and stronger supply chains. Smaller firms face challenges in differentiation and brand recognition. Price competition, coupled with customer preference for proven global brands, makes market penetration difficult for new entrants.
- **Technological Shifts and Process Modernization:** Rapid technological advancements in refining, petrochemicals, and green chemistry require constant adaptation of catalyst designs. The shift toward renewable feedstocks, bio-based fuels, and hydrogen economy introduces new performance expectations. Traditional catalyst formulations may become obsolete if they fail to support these evolving industrial processes. Manufacturers must invest continuously in new materials, reactor designs, and digital monitoring systems to remain relevant. Adapting to this changing landscape demands agility and sustained innovation.

Expected Growth: India's Industrial Catalyst Industry

The outlook for India's industrial catalyst industry is strongly positive, underpinned by rapid expansion across its key end-use sectors and the nation's broader industrial transformation. The **chemical industry**, valued at **USD 220 billion in 2024** and projected to reach **USD 380–400 billion by 2030**, will continue to be one of the largest demand centers for catalysts, driven by investments in petrochemicals, specialty chemicals, and performance materials. Parallel growth in the **pharmaceutical sector**, expected to reach **USD 130 billion by 2030**, will sustain demand for high-performance catalysts used in complex synthesis reactions, process intensification, and yield optimization. Similarly, the **automotive industry's ambition** to achieve **USD 145 billion in auto component production** and reach **7.5 million vehicle units by 2030** will expand the market for advanced emission-control and fuel-efficiency catalysts, especially with tightening regulatory norms.

Beyond traditional applications, India's transition toward **green hydrogen, biofuels, carbon capture, and circular economy initiatives** presents significant new frontiers for catalyst innovation. The government's emphasis on **Atmanirbhar Bharat** and **green manufacturing** encourages localized production of advanced catalyst systems, reducing import dependency and positioning India as a potential export hub for sustainable catalytic technologies.

Collectively, these dynamics point to a robust decade ahead one defined by **technological innovation, localization of manufacturing, and diversification into clean energy and environmental catalysts**, ensuring that India's catalyst industry remains a critical enabler of industrial efficiency, environmental compliance, and low-carbon growth.

Competitive Landscape

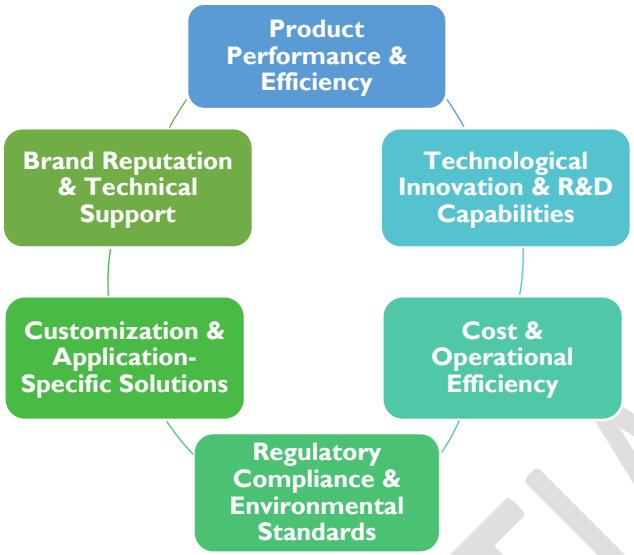
The industrial catalyst market in India is characterized by a mix of multinational and domestic players supplying both high-performance and cost-sensitive products. Global leaders such as BASF SE, Johnson Matthey, Honeywell UOP, Clariant, W.R. Grace, and Haldor Topsoe dominate specialized segments like Sulphur Guard, Claus, and Chloride Guard catalysts. These companies leverage advanced R&D, proprietary technologies, and process expertise to offer catalysts with superior efficiency, durability, and compliance with stringent environmental regulations, giving them a strong competitive edge in refinery and petrochemical applications.

At the same time, a new generation of Indian manufacturers has expanded its footprint in both commodity and semi-specialty catalyst segments, particularly Activated Alumina, Molecular Sieves, Catalyst Carriers, and Ceramic Tower Packing. Domestic producers are increasingly focusing on process-specific customization, indigenous R&D, and the development of advanced catalyst systems for emerging applications such as hydrogenation, reforming, and polymer-grade alumina. Their advantages include shorter lead times, competitive pricing, local technical support, and flexibility in adapting products to Indian feedstock and operating conditions—enabling them to capture a growing share of the domestic market.

Competition varies significantly across product segments. Commoditized materials such as Molecular Sieves, Inert Ceramic Balls, and Tower Packing continue to face price-based competition, where mechanical strength, purity, and consistency remain key differentiators. Conversely, advanced catalyst systems like Hydrogenation, Reforming, and Emission-Control catalysts require deep technical expertise, specialized formulations, and process validation, resulting in higher entry barriers and longer qualification cycles. Suppliers that can offer superior performance, longer catalyst life, and integrated operational support maintain a sustainable advantage in these high-value segments.

Finally, tightening environmental regulations, growing investments in clean fuels, and increasing process-efficiency requirements continue to reshape the competitive landscape. As India's refining, petrochemical, and clean-energy industries evolve, success in the catalyst market will depend on the ability to balance innovation, compliance, and cost-effectiveness while meeting emerging needs in sustainability and low-carbon technologies. While global players will continue to lead in technology-intensive areas, domestic manufacturers are steadily advancing toward higher-value, application-specific catalyst solutions, marking a gradual shift from import dependence to technological self-reliance.

Analysis of key factor shaping competition in the sector



- **Product Performance & Efficiency:** Catalyst efficiency and durability are among the most critical factors influencing competition. Companies that provide catalysts with higher sulphur removal efficiency, longer life cycles, or better adsorption capacity gain a clear competitive edge. For example, in Claus and Sulphur Guard Catalysts, performance under varying feed conditions directly affects operational cost and regulatory compliance. Superior product performance enables suppliers to command premium pricing and build long-term customer relationships.
- **Technological Innovation & R&D Capabilities:** The ability to develop tailored catalysts and adsorbents for specific industrial processes sets leading players apart. Innovation includes improving pore structures, thermal stability, resistance to poisoning, and regenerable catalysts. Companies investing in R&D can offer process-optimized solutions, which are particularly valuable in high-complexity operations like refining and natural gas treatment. Strong R&D also allows faster response to evolving environmental standards and fuel regulations.
- **Cost & Operational Efficiency:** Cost competitiveness remains a key factor, especially in commoditized segments such as molecular sieves, ceramic balls, and tower packing. Lower manufacturing and delivery costs, combined with reliable supply chains, allow companies to compete effectively in price-sensitive markets. Additionally, catalysts that improve operational efficiency for end-users, by reducing downtime or regeneration frequency, enhance the value proposition, influencing buyer preference.
- **Regulatory Compliance & Environmental Standards:** Strict environmental regulations such as SO_2 emission limits, fuel sulphur content mandates, and industrial wastewater norms drive demand for high-performance catalysts. Suppliers that ensure compliance through superior technology gain an advantage, while non-compliant products risk market rejection. This factor also encourages long-term partnerships between catalyst producers and industrial clients aiming to meet regulatory targets efficiently.

- **Customization & Application-Specific Solutions:** Competition is heavily influenced by the ability to customize catalysts to specific feedstock conditions and operational requirements. Feed variations in chloride, sulphur, moisture, or temperature necessitate tailor-made solutions. Suppliers who can optimize product design (e.g., guard beds, pore size, or carrier material) for unique client needs are more likely to capture high-value contracts and maintain repeat business.
- **Brand Reputation & Technical Support:** Long-standing reputation, proven track record, and post-sales technical support are vital competitive differentiators. Industrial catalyst customers often prefer suppliers who can provide installation guidance, troubleshooting, and performance monitoring, ensuring smooth operations. A trusted brand backed by technical expertise reduces operational risk and strengthens client loyalty, which is particularly important for high-cost or high-risk catalysts like Claus and Sulphur Guard types.

Analysis of entry barriers / other factors

- **High Technological Expertise and R&D Requirements:** Developing high-performance catalysts requires significant technical knowledge in chemical reactions, adsorption mechanisms, and material science. Entry is difficult for new players without established R&D capabilities, as customers demand catalysts that perform reliably under extreme temperatures, high pressures, or corrosive environments. Advanced process optimization, customized catalyst design, and innovation in regenerable materials create a strong barrier to entry.
- **Capital-Intensive Manufacturing:** Setting up facilities for catalyst production involves high-capital investment in specialized equipment, calcination units, precision shaping machinery, and quality testing laboratories. For products like Activated Alumina, Molecular Sieves, or Sulphur Guard Catalysts, maintaining strict control over surface area, porosity, and mechanical strength is critical. This high upfront cost discourages small or unestablished companies from entering the market.
- **Stringent Regulatory and Environmental Compliance**: The catalyst industry is closely linked to emission control and environmental standards. Compliance with regulations such as SO_2 emission limits, fuel sulphur content, and wastewater treatment norms requires not only high-quality products but also consistent documentation and certification. New entrants must navigate these regulatory hurdles to gain market acceptance, which acts as a significant barrier.
- **Customer Reliance on Established Brands:** Industrial clients in refining, petrochemical, and fertilizer sectors often prefer long-standing suppliers with proven track records. Reputation, consistent performance, and after-sales technical support are highly valued. New entrants without established credibility face difficulty convincing customers to adopt unproven products, limiting market access.
- **Access to Raw Materials and Supply Chain:** Catalyst production depends on high-purity alumina, metal oxides, and ceramic raw materials. Securing reliable sources of these inputs and maintaining supply

chain efficiency is challenging for new entrants. Established players benefit from long-term supplier contracts and bulk procurement, giving them a cost advantage and consistent product quality.

- **Market Fragmentation and Niche Requirements:** Some segments, like Molecular Sieves or Ceramic Tower Packing, are commoditized, allowing moderate entry. However, high-value, specialized catalysts such as Sulphur Guard, Chloride Guard, and Claus Catalysts require process-specific customization. Meeting these niche requirements demands expertise and local process knowledge, making it difficult for generic entrants to compete effectively.

Entry Barriers in the Catalyst & Adsorbents Industry:

- **Regulatory and Approval Barriers**

The catalyst and adsorbents industry is highly regulated, and suppliers must meet stringent regulatory and technical prequalification criteria before being considered. This involves comprehensive technical evaluations, commercial scrutiny, and financial assessments of the vendor. Even after initial prequalification, approvals are often order-to-order, requiring audits, compliance checks, and repeated documentation. These processes are time-consuming and resource-intensive, making it extremely difficult for new entrants to secure initial contracts. Established suppliers benefit from long-standing approvals and trust, which gives them a strong competitive edge. Overall, regulatory barriers ensure that only qualified and compliant companies can operate effectively in this sector.

- **Technical Barriers**

Producing catalysts and adsorbents requires specialized technical knowledge and advanced manufacturing capabilities. Products must meet precise specifications for activity, selectivity, pore structure, and mechanical strength, often customized for each client's process. Customers typically mandate plant-level trials and extended validation before approving new suppliers, adding complexity for newcomers. Establishing such technical credibility demands robust R&D, skilled personnel, and process optimization. Companies lacking a proven track record find it challenging to meet these high standards. Consequently, technical barriers act as a significant deterrent to new players attempting to enter the market.

- **Commercial and Relationship-Based Barriers**

Relationships and reputation play a crucial role in this industry, where end users like oil & gas, petrochemical, and fertilizer companies prefer long-established suppliers. Switching vendors involves operational risk, repeated validation cycles, and internal approvals, which discourages customers from experimenting with new entrants. The incumbents' long-term relationships and proven reliability create a commercial moat, making it difficult for newcomers to gain traction. New entrants often struggle to penetrate these established networks and build trust with clients. This ensures that companies with a strong presence maintain a dominant market position over time.

- **Financial and Capital Barriers**

Entering the catalyst and adsorbents industry requires significant upfront investment in manufacturing facilities, quality control systems, and R&D infrastructure. In addition, inventory management, process validation, and long approval cycles increase the financial burden before any revenue is realized. The return on investment is long-term, with initial operations often incurring losses. Smaller or less-capitalized companies face difficulties in securing funding and absorbing these early costs. High financial requirements act as a strong barrier, protecting established players and deterring inexperienced companies from entering the market.

- **Operational and Scale Barriers**

Operational expertise and scale are critical in producing consistent, high-quality catalysts and adsorbents. The production processes require precision, reliable supply chains, and customized solutions for different industrial applications. New entrants often lack the experience and scale to deliver products consistently across multiple regions. Incumbents can leverage their operational capabilities to ensure process reliability, timely delivery, and repeatable quality, which are essential for industries with zero tolerance for downtime. Operational and scale barriers, therefore, further reinforce the position of established manufacturers, making it extremely challenging for new competitors to penetrate the market.

Company profile: Devson Catalyst Limited

Company Overview:

Devson Catalyst Limited, established in 2004 began operations with the manufacture of low-tension insulators and subsequently diversified into inert ceramic balls, activated alumina, tower packing, catalysts, and molecular sieves. **Devson Catalyst is an indigenous manufacturer of catalysts, adsorbents, and ceramic balls in India and operates as an integrated catalyst and adsorbent company based in Gujarat.** The company is ISO 9001:2015 certified and has an annual production capacity of approximately 7,000 metric tons. It operates under established quality systems and supplies products across multiple regions, including the Indian Subcontinent, North Europe, the Middle East, South East Asia and South & West Europe.

The company manufactures a comprehensive range of products used across the chemical purification value chain, spanning catalysts, adsorbents, and ceramic balls. Its portfolio includes refinery and process catalysts such as Chloride Guard, Sulphur Guard, Claus catalysts, hydrotreating catalyst and reforming catalyst along with adsorbents comprising activated alumina (DEV-101™) and molecular sieves. Activated alumina with a dedicated installed capacity of around 2,545 MT per annum. The material is engineered to deliver defined adsorption characteristics, controlled pore structure, and high mechanical strength, enabling its use in drying gas and liquid streams to dew points of up to –40°C.

Devson Catalyst also manufactures ceramic balls (DEV-25™M, DEV-50™M, DEV-99™) and ceramic tower packing materials, including saddles, Raschig rings, Pall rings, and partition rings. These products are used across petroleum refineries, petrochemical complexes, steel plants, fertilizer units, acid plants, and industrial gas processing systems. **The company offers application-specific solutions to customers operating in the Oil & Gas, Petrochemical, Steel, and Fertilizer industries and positions among the leading global manufacturers of ceramic balls based on its scale, integrated product portfolio, and export presence.** Key performance attributes include defined chemical resistance, mechanical strength, thermal stability, and mass-transfer efficiency. Supported by in-house manufacturing facilities, relevant quality checks and continuous product development initiatives, **Devson Catalyst maintains an established and integrated role within India's catalyst, adsorbent, and ceramic support materials value chain.**

Products Offerings:

1. **Catalyst**

A substance that speeds up the chemical reaction without being consumed or permanently changed itself. It makes processes more efficient. Catalyst can be of multiple types considering the process involved and end-use industries.

Key features:

- Protects from impurities.
- Improves process efficiency.
- Not prone to severe conditions.
- Environment friendly

Sn	Product	Description	Photo
1.	Chloride Guard Catalyst	Used in oil & gas and petrochemical industry to remove harmful chloride impurities from process streams. It helps to protect equipment and reduce maintenance costs	
2.	Sulphur Guard	It is made from zinc oxide or copper-based materials, which react with sulphur and trap it permanently. Helps in removing harmful sulphur impurities in oil & gas before they reach sensitive equipment.	
3.	Claus Catalyst	It is made from alumina or titania, work inside special units called Claus converters and are stable at high temperatures. Used in oil & gas and petrochemical industry to safely convert toxic hydrogen sulphide (H_2S) gas into elemental sulphur, which is harmless and useful.	
4.	Hydrotreating Catalysts	It is made from metals like cobalt, nickel, and molybdenum on a strong alumina base, these catalysts improve fuel quality, protect equipment, and help produce ultra-low Sulphur fuels required by environmental regulations. Used in oil & gas and petrochemicals industry to remove harmful impurities such as Sulphur, nitrogen, and metals.	
5.	Reforming Catalysts	It converts fuels like natural gas into hydrogen or synthesis gas, which are essential for many industries. Used in steel industry for steel production through DRI process and in fertilizer industry for hydrogen and ammonia plants.	

2. Adsorbent

It removes unwanted substances from air, gas or liquids by making them stick to its surface.

Key features:

- High absorption capacity.
- Deep drying capabilities.

- Porous and strong structure.
- Withstand harsh conditions

Sn	Product	Description	Photo
1.	Activated Alumina	A porous material that works like a strong sponge to absorb moisture and remove impurities from gases and liquids. Used in oil & gas and petrochemical industry to keep systems clean and dry. Act as support material for catalyst, helping them work effectively.	
2.	Molecular Sieve	A special material with very tiny, uniform holes that act like a high-precision filter to dry and clean gases and liquids. They selectively trap impurities such as moisture, CO_2, and Sulphur compounds, even when present in very small amounts.	

3. Ceramic Balls

It is a small, hard sphere made from ceramic material that is placed inside industrial reactors and towers. It does not take part in any chemical reaction but plays an important support and protection role. Ceramic balls help hold catalyst beds in place, distribute gas or liquid evenly, and prevent sudden pressure or flow from directly hitting and damaging the catalyst.

Key features:

- High resistance to heat, chemicals and wear & tear.
- Ensures uniform distribution of material.
- Protect catalyst and optimize performance.

Sn	Product	Description	Photo
1.	Ceramic & Alumina Balls	Inert support materials placed inside reactors to hold the catalyst firmly and ensure smooth, even flow of gas or liquid. Act like a protective cushion, preventing catalyst damage from uneven flow, pressure surges, or wear & tear.	
2.	Ceramic Tower Packing	Ceramic tower packings are specially shaped ceramic pieces used inside tall process columns to help gases and liquids mix more effectively	

Key Customer Segments Served: Devson Catalyst serves a wide range of core industrial sectors, reflected in its diverse client base that includes oil & gas, petrochemical, fertilizer and steel manufacturers. With a strong portfolio covering catalysts, adsorbents, inert ceramic balls, tower packing, and bed support media, the company supports mission-critical operations across India's energy and manufacturing value chain. Its clientele featuring leading organizations from refining, gas, fertilizers, steel, EPC, petrochemicals, and specialty process industries demonstrates Devson's capability to meet varied operational and process requirements across domestic and international markets.

Key strengths:

- **Comprehensive Product Range**: Devson Catalyst offers a diverse portfolio of products, including Chloride Guard Catalyst, Sulphur Guard Catalyst, Claus Catalyst, Activated Alumina, Molecular Sieves, Inert Ceramic Balls, and Ceramic Tower Packing. This extensive range caters to various industrial applications, ensuring that clients receive tailored solutions to meet their specific needs.
- **Advanced Manufacturing Facilities**: The company operates state-of-the-art manufacturing facilities equipped with the latest technologies. These facilities enable Devson Catalyst to maintain stringent quality control measures, ensuring consistent product performance and reliability across all offerings.
- **Commitment to Research and Development**: Devson Catalyst invests continuously in research and development to enhance product quality and performance. This commitment ensures that the company remains at the forefront of technological advancements, providing innovative solutions to its clients.
- **Global Reach with Local Expertise**: Devson Catalyst has established a strong presence in both domestic and international markets. The company's global reach is backed by a deep understanding of local market dynamics, allowing it to serve a diverse clientele effectively.
- **Focus on Sustainable Practices**: Devson Catalyst emphasizes sustainable industrial practices by providing solutions that enhance efficiency and reduce costs. The company's products are designed to contribute to environmentally friendly operations, aligning with global sustainability goals.
- **Strategic Positioning as an Indigenous MSME**: Devson Catalyst operates as a fully indigenous MSME enterprise, benefitting from national initiatives that promote domestic manufacturing and technological self-reliance under Make in India. The company's presence in the catalyst and advanced materials segment identified as a strategic area for India's refining, petrochemical, fertilizer, and clean energy industries provides it with a clear domestic edge. By manufacturing catalysts and adsorbents locally, Devson offers competitive pricing, shorter supply chains, and faster responsiveness to customer requirements compared to import-dependent alternatives. Its MSME status enables access to policy-driven incentives such as priority in PSU procurement, R&D support, and subsidized finance, strengthening scalability and operational flexibility

- **Trusted Supplier with Proven Track Record**: Devson Catalyst has built a reputation as a reliable and trusted supplier over years of consistent performance. The company meets stringent client specifications, delivering catalysts, adsorbents, and ceramic balls that adhere to exacting quality standards. This long-term credibility enables strong relationships with both Indian and global customers, creating a significant competitive advantage over new entrants.
- **Strong Operational and Technical Capabilities**: Success in this industry requires robust technical expertise and operational excellence, which Devson Catalyst has developed over decades. The company ensures timely supply, consistent product quality, and process reliability across multiple regions. These capabilities, combined with its ability to adapt to evolving client needs, strengthen its entrenched position in the market and make it challenging for newcomers to compete.
- Strategic Exposure to India's Petrochemical Growth**:** India is currently one of the largest refiners and producers of petrochemicals, and this position is expected to strengthen over the long term, supported by favorable demographics and rising domestic demand. With the majority of Devson Catalyst's revenue derived from the petrochemical industry, the company is well positioned to significantly benefit from sustained growth in India's petrochemical sector, supporting long-term demand for its catalysts and adsorbents.

Financial Analysis:

Particular	Unit	Devson Catalyst Limited		
		As at end for Fiscal		
		Fiscal 2026	Fiscal 2025	Fiscal 2024
Revenue From Operations	₹ in Lakhs	5,577.59	5,319.21	4,346.99
Total Income	₹ in Lakhs	5,684.44	5,353.89	4,375.04
EBITDA	₹ in Lakhs	1,676.46	1,093.17	669.08
EBITDA Margin	in %	29.49%	20.42%	15.29%
Profit After Tax	₹ in Lakhs	1,252.09	767.23	407.84
Current Ratio	In Times	4.18	3.26	1.81
Debt Equity Ratio	In Times	0.07	0.13	0.33
Debt Service Coverage Ratio	In Times	5.63	7.72	95.30
Return on Capital Employed	in %	47.60%	44.71%	36.67%
Net Profit Ratio	in %	22.45%	14.42%	9.38%
Return on Equity	in %	45.97%	44.76%	36.20%
Net Worth	₹ in Lakhs	3,349.82	2,097.73	1,330.50

Note: We have considered standalone figures.

Parameter	Formula
Revenue from operations	Revenue from operations is calculated as the sum of revenue from sale.
Total Income	Total income is calculated as the sum of revenue from operations and other income for the period/year.
EBITDA	Operating EBITDA refers to earnings before interest, taxes, depreciation, amortization, gain or loss from discontinued operations and exceptional items less other income
EBITDA Margin	Operating EBITDA Margin refers to EBITDA during a given period as a percentage of Total income during that period.
Profit after Tax	Profit / (loss) for the period/ year is calculated as Total Income less Total Expenses plus Share of (loss) from joint ventures (Net of tax) less Total Tax expenses for the period/ year.
Current Ratio	Current Ratio is a liquidity ratio that measures our ability to pay short-term obligations (those which are due within one

	year) and is calculated by dividing the current assets by current liabilities.
Debt Equity Ratio	Debt to equity ratio is calculated by dividing the debt (i.e., borrowings (current and non-current) and current maturities of long-term-borrowings) by total equity (which includes issued capital and all other equity reserves)
Debt Service Coverage Ratio	Debt Service Coverage Ratio is calculated by dividing the sum of Profit after Tax and interest amount by sum of the repayment of loan and Interest.
Return on Capital Employed	RoCE is calculated as profit before tax plus finance costs divided by total equity plus Reserves & Surplus.
Net profit Ratio	(Net Profit Ratio/Margin quantifies our efficiency in generating profits from revenue and is calculated by dividing net profit after taxes by total revenue.
Return on Equity	Return on equity (RoE) is equal to profit for the year divided by the Average total equity during that period and is expressed as a percentage
Net Worth	Equity Share Capital + Reserve and Surplus (including surplus in the Statement of Profit & Loss) – Preliminary Expenses to the extent not written-off.