

Industry Research Report on Semi-Rigid and Rigid Packaging Industry in India

21st September 2026

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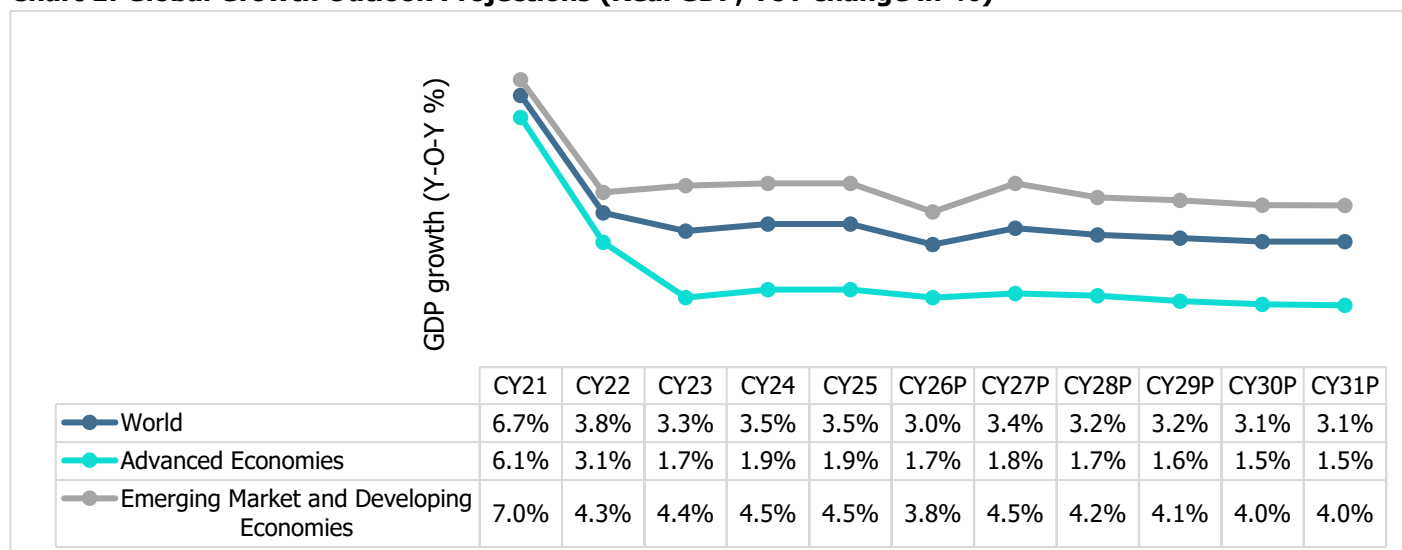
1 Global Macroeconomic Outlook

1.1 Commentary on Macroeconomic Trends in the Global Economy with an Overview and Outlook of Global GDP Trends

Global economic growth is projected to moderate to around 3.0% in CY26 and 3.4% in CY27, reflecting the impact of geopolitical tensions on energy and trade flows. The ongoing Middle East conflict poses downside risks, with prolonged disruptions potentially reducing growth further to 2.5%, or lower. However, supportive factors such as continued investment momentum and policy support are helping offset some of these pressures.

Key downside risks include a weaker-than-expected payoff from AI-related investment, renewed escalation in geopolitical conflicts and trade fragmentation, persistent energy price volatility, and elevated public debt levels that could keep long-term interest rates higher and tighten global financial conditions. Policymakers face the challenge of balancing inflation control with supporting economic growth, while prudent fiscal consolidation, structural reforms and measures to enhance productivity remain critical to strengthening resilience and sustaining long-term growth.

Chart 1: Global Growth Outlook Projections (Real GDP, YoY change in %)



Source: IMF – World Economic Outlook, April 2026 and July 2026; Notes: P-Projection, E-Estimated

1.2 Outlook on Key Advanced Economies

Advanced economies are projected to grow at around 1.7% in CY26 and 1.8% in CY27, the overall effect on growth in advanced economies of the conflict in the Middle East is modest. In the United States, growth is forecast at about 2.3% in CY26, supported by fiscal measures and lower interest rates, even as the increase in trade barriers since April 2025 continues to weigh on the trade relations. The Euro Area growth is expected to decline in CY26 to 0.9% from 1.4% in CY25 and moderate to 1.2% in CY27, due to negative impact of the war in the Middle East over time even though there was substantial growth in CY25.

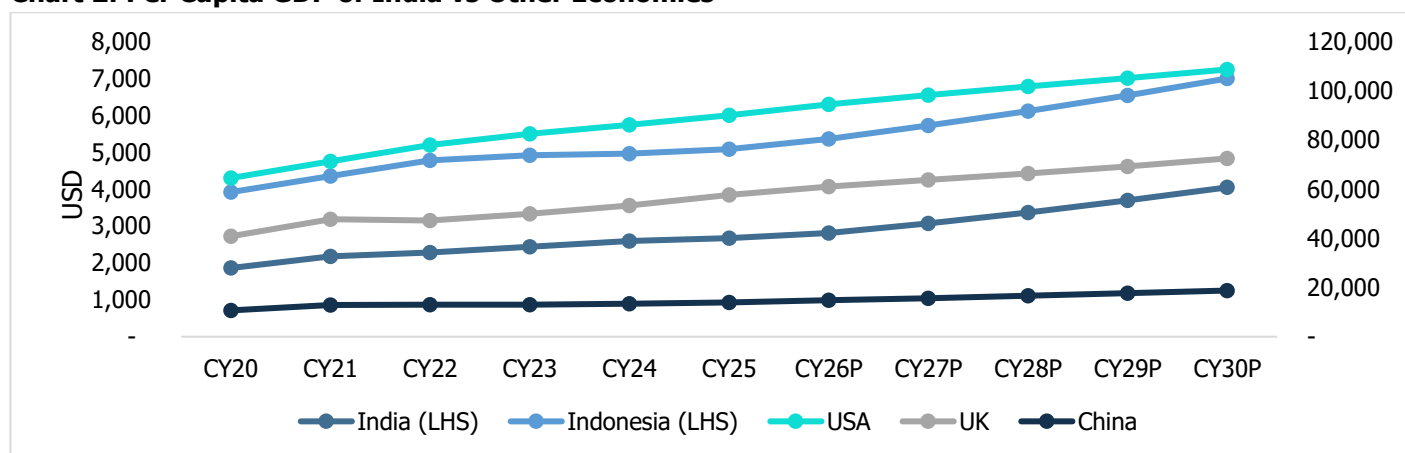
India's Per Capita GDP Continues to Rise, Though Income Levels Remain Below Global Peers

India's per capita GDP has exhibited a steady upward trajectory over the past decade and is expected to continue improving over the medium term, supported by sustained economic growth, rising urbanization, expanding formal employment, increasing productivity, and continued investments across key sectors of the economy. As depicted in the chart, India is projected to register one of the strongest growth rates in per capita GDP among the selected economies. However, despite this sustained improvement, its per capita income continues to remain substantially lower than that of

developed economies such as the United States and the United Kingdom, while also trailing other major emerging economies, including China and Indonesia.

The comparison highlights that India's economic expansion has largely been driven by the scale of its economy and demographic advantage, with aggregate GDP growth outpacing improvements in income per capita. Nevertheless, the continued rise in per capita GDP reflects gradual progress in income levels, purchasing power and overall living standards, supported by expanding industrial activity, infrastructure development, digital transformation, and increasing participation in the formal economy. As India advances towards becoming a larger global economy, sustained growth in per capita income is expected to be supported by continued investments in manufacturing, infrastructure, technology adoption, education, healthcare, and skill development. Further, policy initiatives aimed at improving ease of doing business, enhancing labour productivity, promoting exports, and encouraging private investment are expected to strengthen long-term economic fundamentals. While the income gap with higher-income economies is expected to persist over the medium term, continued structural reforms, productivity-led growth, and broad-based employment generation are likely to support gradual convergence in per capita income levels over the long term.

Chart 2: Per Capita GDP of India vs Other Economies



Source: IMF – World Economic Outlook, April 2026; Notes: P-Projection

1.3 Outlook on Key Emerging Markets

Emerging and developing economies are expected to fall to 3.8% in CY26 and recover to 4.5% in CY27, due to the global conflicts having a greater net impact on emerging economies than advanced economies.

China's growth remains steady at around 4.6% in CY26 and is expected to fall to 4.1% in CY27 due to higher global oil prices as well as global uncertainty. India's growth has been among the fastest-growing major economies, with projections of 6.4% in CY26, driven by strong private consumption and services activity.

Indonesia is expected to maintain consistent growth of around 5.0% over CY26 and 5.1% in CY27. Saudi Arabia's growth in CY26 has a downward projection to have a growth rate of 3.1% on account of the damage due to the ongoing tensions. On the other hand, Brazil's growth is projected to be 2.3% in CY26 and 2.4% in CY27, due to the war have a small net positive effect in 2026, as a result of the country being a net energy exporter.

Despite the turmoil in the last 2-3 years, India bears good tidings to become a USD 5 trillion economy by CY28. According to the IMF dataset on Gross Domestic Product (GDP) at current prices, the nominal GDP projected to be at USD 4.2 trillion for CY26 and is projected to reach USD 4.5 trillion by CY27 and USD 6.8 trillion by CY30. India's expected GDP growth rate for coming years is almost double compared to the world economy. The Indian economy shows resilience amid global inflation, supported by a stable financial sector, strong service exports, and robust investment driven by government spending and high-income consumer consumption, positioning it for better growth than other economies.

Besides, India stands out as the fastest-growing economy among the major economies. The country is expected to grow at 6.5% in the period of CY25-CY30, outshining China's growth rate. By CY30, the Indian economy is estimated to emerge as the third-largest economy globally, hopping over Japan and Germany. Currently, it is the third largest economy globally in terms of Purchasing Power Parity (PPP) with a ~8.5% share in the global economy, with China on the top followed by the United States.

India continues to remain fastest growing economy even as global growth falters

India stands out as the fastest-growing economy amongst the major economies and expected to grow at a CAGR of 6.5% in the period of CY25-CY30, outshining China's growth rate. By CY28, the Indian economy is estimated to emerge as the third-largest economy globally, hopping over Japan and Germany. Currently, as of CY25, it is the third-largest economy globally in terms of Purchasing Power Parity (PPP)¹ with a ~8.2% share in the global economy, with China ~19.6% on the top followed by the United States ~14.6%. Since the liberalization reforms of the early 1990s, India's economy has undergone a significant transformation, emerging as one of the world's fastest-growing major economies. The subsequent decades witnessed robust expansion across information technology, telecommunications, manufacturing, and services, while structural reforms and infrastructure investments strengthened the country's economic fundamentals. Despite global disruptions including the global financial crisis, the pandemic, rising trade protectionism, evolving US tariff measures, and the ongoing West Asia conflict India has demonstrated resilience, supported by strong domestic demand, a well-capitalized banking system, and sustained public capital expenditure.

Although higher energy prices, global trade uncertainties, and geopolitical tensions pose near-term risks due to India's dependence on imported crude oil, the economy continues to benefit from resilient services exports, digitalization, manufacturing initiatives, and improving investment activity. India's long-term growth outlook remains favorable, underpinned by structural reforms, increasing integration into global value chains, and a growing role in technology- and manufacturing-led exports, positioning it as one of the key drivers of global economic growth.

1.4 Shift in Global Manufacturing Destinations: Key Beneficiaries of the China+1 and Europe+1 Strategies

Global manufacturing supply chains have undergone a structural realignment in recent years as multinational companies seek to diversify production networks beyond traditional manufacturing hubs. Supply chain disruptions during the COVID-19 pandemic, rising geopolitical tensions, evolving trade policies, increasing labour costs in certain regions, and the growing emphasis on supply chain resilience have accelerated the adoption of the China+1 strategy, wherein manufacturers retain operations in China while establishing incremental production capacity in alternative locations. More recently, similar diversification trends have emerged across Europe, with manufacturers evaluating additional production bases outside the region to mitigate geopolitical, energy, and operational risks while enhancing supply chain resilience.

Rather than representing a wholesale relocation of manufacturing away from China or Europe, these strategies are driving a gradual diversification of production across multiple geographies. China continues to retain significant advantages through its extensive supplier ecosystem, mature infrastructure, skilled workforce, and integrated manufacturing capabilities, particularly for high-value and technologically advanced products. Consequently, most multinational enterprises are adopting a complementary manufacturing footprint instead of replacing existing operations entirely.

Several emerging economies have consequently strengthened their position as alternative manufacturing destinations. India, Vietnam, Thailand, Indonesia, Malaysia, and Mexico have emerged as key beneficiaries owing to their competitive labour costs, improving infrastructure, expanding industrial ecosystems, favourable demographic profiles, and supportive government policies aimed at attracting foreign investment and export-oriented manufacturing. India, in particular, has benefited from its large domestic market, ongoing infrastructure development, policy initiatives to strengthen manufacturing competitiveness, and increasing integration into global value chains. Similarly, Vietnam and Thailand have

witnessed continued investments in electronics and consumer goods manufacturing, while Mexico has benefited from nearshoring trends serving the North American market.

Going forward, the diversification of global manufacturing is expected to remain a long-term structural trend, with companies increasingly prioritizing supply chain resilience, geographic diversification, operational flexibility, and risk mitigation alongside cost efficiencies. Countries that continue to improve infrastructure, logistics, ease of doing business, workforce skills, and industrial capabilities are expected to remain well positioned to capture a larger share of future global manufacturing investments.

1.5 Qualitative analysis of recent US tariffs and their impacts across key geographies

In 2025, the United States introduced a reciprocal tariff framework aimed at addressing trade imbalances, strengthening domestic manufacturing, and encouraging greater reciprocity in market access. The policy imposed a baseline tariff on most imports, with higher country-specific tariffs proposed for selected trading partners, although implementation of certain measures was deferred to facilitate bilateral negotiations. The revised tariff framework reflects a renewed emphasis on trade protectionism and has heightened uncertainty across global trade and investment flows. International institutions such as the IMF and the World Bank have noted that rising trade restrictions could moderate global economic growth, disrupt established supply chains, and accelerate efforts by businesses to diversify production and sourcing networks.

The implications of the revised U.S. tariff regime differ across major geographies. China continues to face increased trade barriers, reinforcing the ongoing diversification of manufacturing under the "China+1" strategy. Export-oriented economies across East and Southeast Asia are adapting by strengthening regional supply chains, diversifying export markets, and attracting investments relocating from higher-risk jurisdictions. Meanwhile, economies such as Mexico have benefited from nearshoring trends driven by proximity to the U.S. market, while several European exporters continue to assess the implications of higher trade barriers alongside broader geopolitical and energy-related challenges. These developments have prompted multinational enterprises to increasingly prioritize supply chain resilience, geographic diversification, and operational flexibility in addition to cost considerations.

Against this backdrop, the United States has intensified bilateral trade negotiations with several strategic partners, including India, the United Kingdom, the European Union, and Japan, with discussions centred on improving market access, reducing tariff and non-tariff barriers, and strengthening cooperation across strategic industries. India has emerged as an important participant in these discussions while continuing to position itself as an alternative manufacturing destination through policy reforms, infrastructure development, and production-linked incentive (PLI) schemes. At the same time, several Southeast Asian economies, including Vietnam, Thailand, Malaysia, and Indonesia, continue to attract investments across electronics, consumer goods, and industrial manufacturing, benefiting from competitive cost structures and increasing integration into global value chains.

Overall, the evolving U.S. tariff framework is expected to reinforce the long-term diversification of global manufacturing and trade networks rather than reverse globalization. While trade policies may create near-term uncertainties and alter competitive dynamics across regions, they are also expected to accelerate investments in alternative manufacturing hubs, encourage regionalization of supply chains, and strengthen the strategic importance of countries that offer competitive manufacturing ecosystems, policy stability, skilled labour, and improving logistics infrastructure.

2 Indian Macroeconomic Outlook

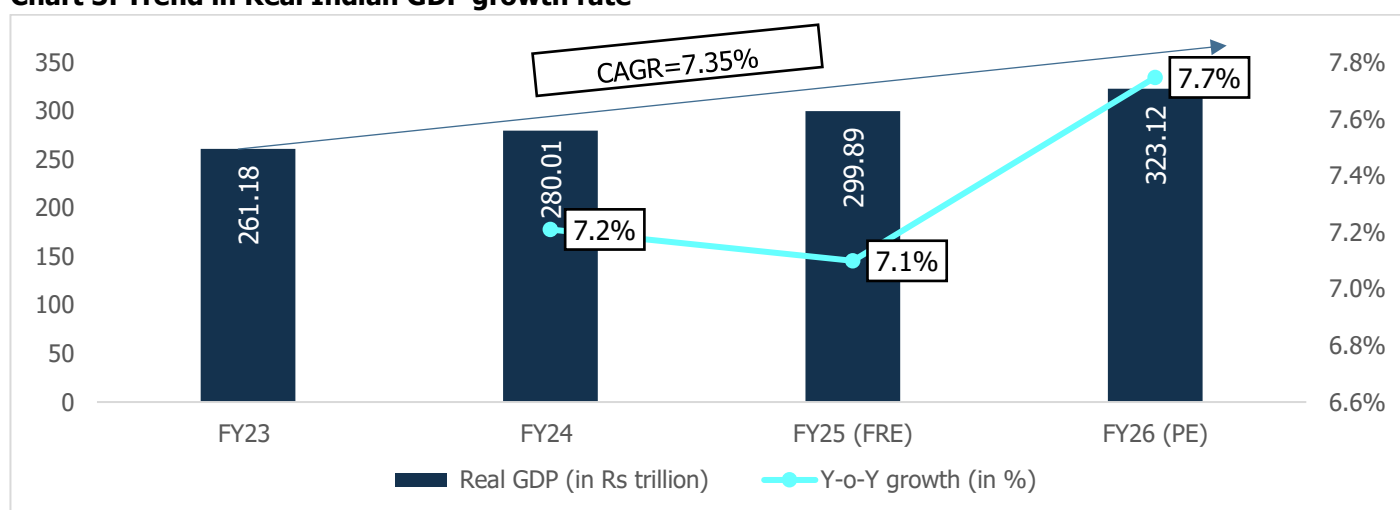
2.1 Commentary on the macroeconomic overview of the Indian economy

Real and Nominal GDP Growth in India

India's economy continues to show rapid growth. As per Provisional Estimates by MOSPI, GDP in FY26 is expected to have grown by 7.7%, supported by rising rural demand, better job opportunities and favourable business conditions.

For FY25, First Revised Estimates show a growth of 7.1% (Rs 299.89 trillion), led by robust performance in manufacturing, construction and financial services. Consumer spending rose by 7.7%, and government spending increased by 5.5%, both contributing to the overall growth. In FY23, the real GDP stood at Rs 261.18 trillion and registered YoY growth of 7.2% in FY24 (Rs 280.01 trillion).

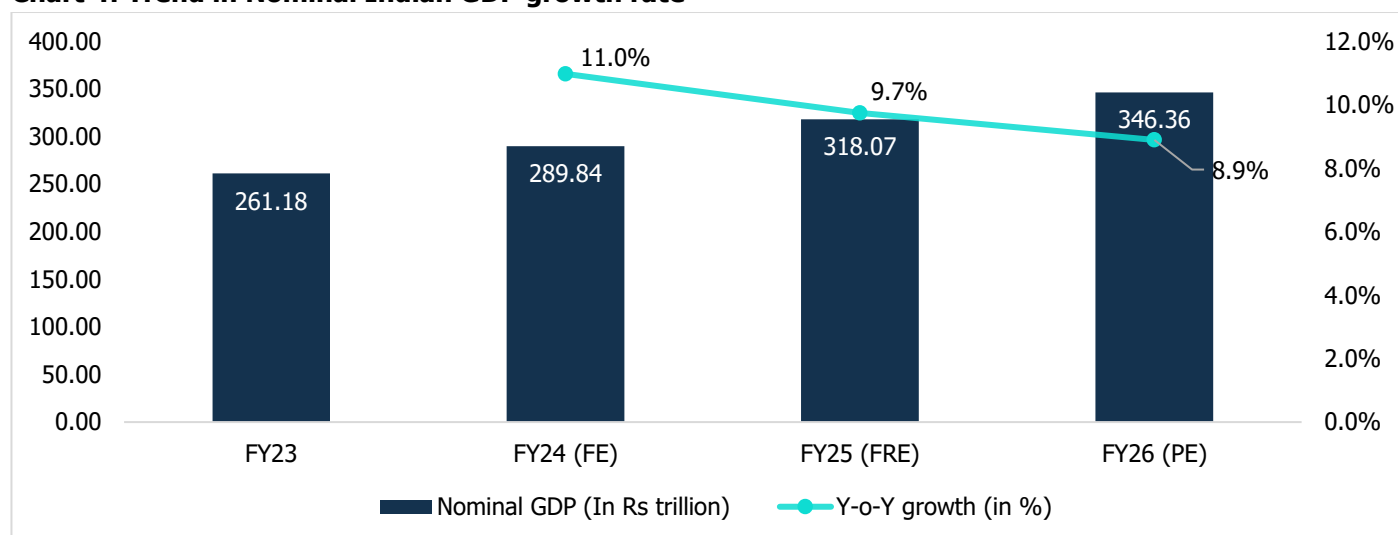
Chart 3: Trend in Real Indian GDP growth rate



Source: MOSPI; Note: PE – Provisional Estimates, FRE- First Revised Estimates

India's nominal GDP has continued to expand, reflecting sustained economic activity and resilient domestic demand. As per the Provisional Estimates, nominal GDP is estimated at Rs 346.36 trillion in FY26, registering a YoY growth of 8.9%. Although the pace of expansion has moderated compared with the previous two years, growth continues to be supported by robust domestic consumption, government capital expenditure, and investments across key sectors of the economy.

As per the First Revised Estimates, nominal GDP increased by 9.7% to Rs 318.07 trillion in FY25, following an 11.0% growth in FY24, when the economy reached Rs 289.84 trillion. In FY23, India's nominal GDP stood at Rs 261.18 trillion. The consistent increase in nominal GDP reflects the combined impact of real economic growth and price movements, highlighting the continued expansion of India's economic output and its position as one of the world's fastest-growing major economies.

Chart 4: Trend in Nominal Indian GDP growth rate


Source: MOSPI; Note: PE – Provisional Estimates, FRE- First Revised Estimates, FE – Final Estimates

Real and Nominal GVA growth in India

GVA is the measure of the value of goods and services produced in an economy. GVA gives a picture of the supply side whereas GDP represents consumption. GVA in FY25 was powered by a broad-based rebound across sectors.

In FY26 (PE), real GVA growth of 7.9% is primarily led by manufacturing, Trade, Hotels, Transport, Communication & Services related to Broadcasting. Industry is estimated at 8.5%, supported by a pickup in manufacturing and construction (10.7% and 7.4% respectively). The gap between GDP and GVA growth stood at 0.2 percentage point in FY26, with GDP growing at 7.7% and GVA at 7.9%.

Table 1: Sectoral Growth (YoY % Growth) - at Constant Prices

At constant Prices	FY24	FY25 (FRE)	FY26 (PE)
Agriculture, Forestry & Fishing	2.6	4.2	3.0
Industry	10.9	8.3	8.5
Mining & Quarrying	2.4	11.7	5.2
Manufacturing	12.7	9.3	10.7
Electricity, Gas, Water Supply & Other Utility Services	10.7	2.9	1.7
Construction	9.9	7.3	7.4
Services	7.0	7.9	9.3
Trade, Hotels, Transport, Communication & Broadcasting	10.1	6.6	11.0
Financial, Real Estate & Professional Services	5.5	10.0	10.4
Public Administration, Defence and Other Services	6.8	5.0	5.0
GVA at Basic Price	7.2	7.3	7.9

Source: MOSPI; Note: FRE- First Revised Estimates, PE – Provisional Estimates;
The trend for FY24-FY26 is based on new series base year 2022-23.

Gross Value Added (GVA) at current prices continued to register broad-based growth across major sectors of the economy, reflecting sustained expansion in economic activity. As per the Provisional Estimates, nominal GVA is estimated to grow by 9.1% in FY26, led by Financial, Real Estate & Professional Services, Trade, Hotels, Transport, Communication

& Broadcasting, and Manufacturing. The services sector is expected to remain the primary growth driver, while manufacturing and construction continue to support industrial activity.

As per the First Revised Estimates, nominal GVA grew by 9.6% in FY25, supported by strong growth across services, agriculture, and manufacturing. In FY24, GVA expanded by 10.7%, reflecting broad-based growth across agriculture, industry, and services, underscoring the resilience of the Indian economy and sustained momentum in domestic economic activity.

Table 2: Sectoral Growth (YoY % Growth) - at Current Prices

At current Prices	FY24	FY25 (FRE)	FY26 (PE)
Agriculture, Forestry & Fishing	7.6	9.2	1.4
Industry	10.8%	8.1%	9.1%
Mining & Quarrying	6.3	6.4	4.5
Manufacturing	10.8	8.3	11.6
Electricity, Gas, Water Supply & Other Utility Services	24.1	10	1.9
Construction	8	7.5	8.4
Services	11.9	10.6	12
Trade, Hotels, Transport, Communication & Broadcasting	13.8	7.6	12.4
Financial, Real Estate & Professional Services	10.9	13.1	12.8
Public Administration, Defence and Other Services	12.1	9	10
GVA at Basic Price	10.7	9.6	9.1

Source: MOSPI; Note: FRE- First Revised Estimates, PE – Provisional Estimates;
The trend for FY24-FY26 is based on new series base year 2022-23.

The agriculture sector has demonstrated resilience over the review period, supported by favourable monsoon conditions, improved crop production, and continued government initiatives aimed at enhancing agricultural productivity and rural incomes. Steady performance in agriculture has contributed to sustaining rural demand and supporting overall economic activity despite periodic weather-related challenges.

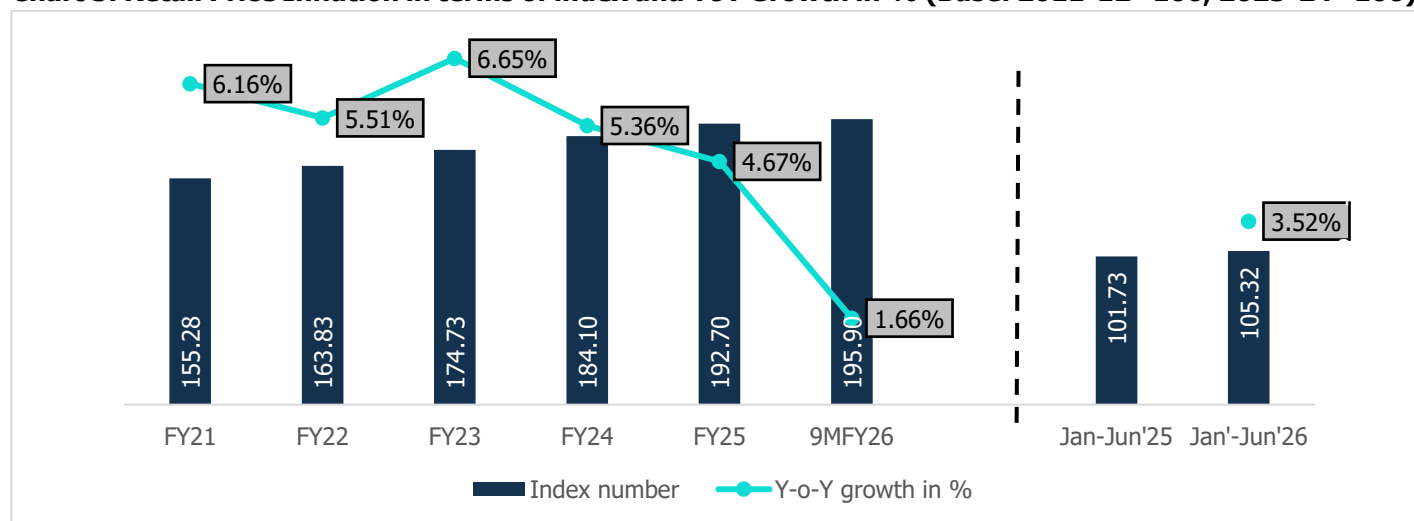
Manufacturing has remained one of the key drivers of economic growth, supported by robust domestic demand, improving capacity utilization, increased capital expenditure, and continued policy initiatives to strengthen India's manufacturing ecosystem. Growth has also been aided by expanding investments in infrastructure, production-linked incentive (PLI) schemes, and increasing integration into global value chains. The sustained momentum across both agriculture and manufacturing underscores the broad-based nature of India's economic expansion, with agriculture supporting domestic consumption and manufacturing strengthening industrial output, employment generation, and export competitiveness.

Consumer Price Index

Between January and June 2026, the inflation averaged around 3.52% across the Consumer Price Index. By June 2026, inflation increased to 4.38% on a year-on-year basis, compared with 3.93% in June 2025. Within this, the rural inflation

rate stood at 4.74%, while the urban inflation rate was comparatively lower at 3.92%. This indicates an overall modest inflationary trend, with rural areas experiencing relatively higher price pressures than urban regions.

Chart 5: Retail Price Inflation in terms of index and YoY Growth in % (Base: 2011-12=100, 2023-24=100)



Source: MOSPI

Current Account Deficit

India's current account deficit narrowed to 0.8% of GDP in H1FY26 from 1.3% in H1FY25. This was supported by resilient services exports, steady merchandise exports, and continued strength in the external sector.

The Current Account Deficit (CAD), which reflects the difference between a country's total foreign income and expenditures, is a key indicator of the strength of a nation's external sector. Between FY20 and FY24, India's Current Account Deficit (CAD) exhibited a current account surplus in FY21, attributed to reduced import absorption amid GDP contraction. India's CAD widened post FY21 from 1.2% in FY22 to USD 67 billion, or 2% of GDP in FY23. However, the trend reversed in FY24, with the deficit narrowing to USD 31.1 billion, or 0.7% of GDP and further dropping to 0.6% in FY25. This reduction was driven by a decrease in the merchandise trade deficit, a rise in net services exports, and increased remittances. Robust global demand for India's service sectors, including IT, accountancy, and legal services, played a crucial role in this positive shift.

Table 3: Current Account Deficit as a percentage of GDP (%)

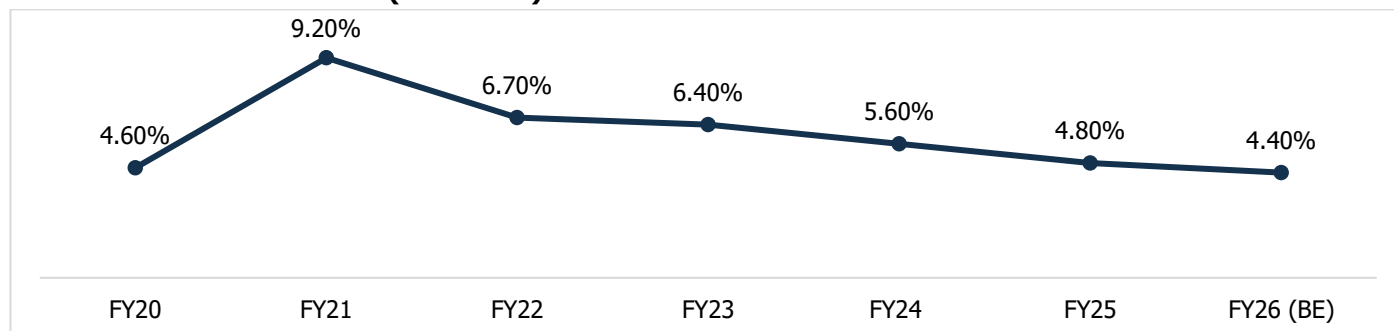
Year	CAD as a % of GDP
FY20	-0.83%
FY21	0.93%
FY22	-1.20%
FY23	-2.04%
FY24	-0.72%
FY25	-0.58%
H1FY25	1.3%
H1FY26	0.8%

Source: Reserve Bank of India (RBI)

Fiscal Deficit (% of GDP)

In FY21, India's fiscal deficit was 9.20% due to the impact of COVID-19 pandemic, since then it has seen a steady improvement is expected to reduce to 4.8% of GDP FY25 (RE), driven by strong economic growth and higher tax and non-tax revenues. The government aims for further fiscal consolidation, setting a target of 4.40% of GDP for FY26 to maintain fiscal prudence.

Chart 6: Gross Fiscal Deficit (% of GDP)

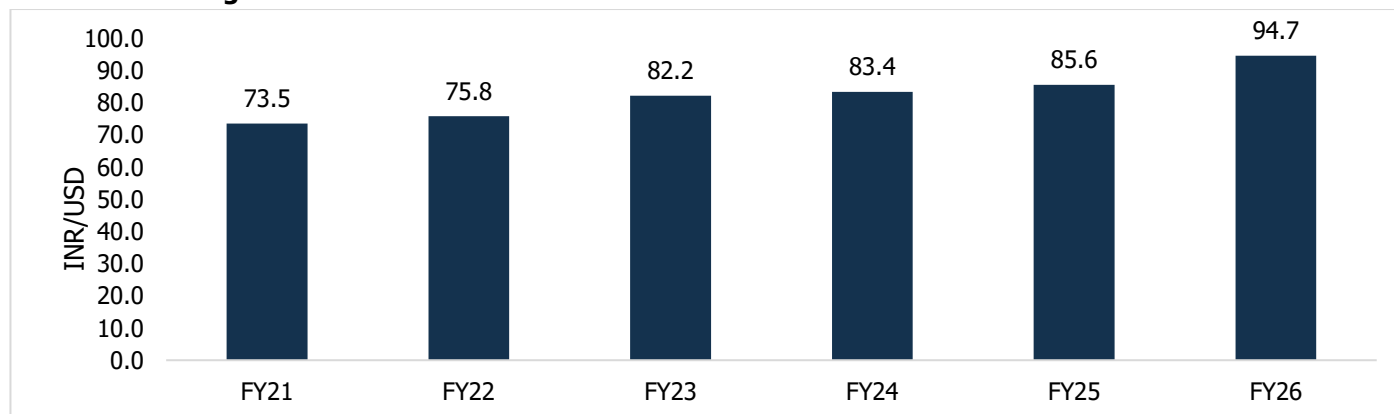


Source: RBI; Note: RE-Revised Estimates, BE-Budget Estimates

Exchange Rate Movement

The Indian rupee remained under depreciation pressure throughout FY21-FY26, with the exchange rate rising from Rs 73.5 per US dollar in FY21 to Rs 94.7 in FY26. Depreciation was relatively moderate in FY22, before accelerating sharply in FY23 as global monetary tightening, elevated commodity prices, geopolitical uncertainty and broad-based US dollar strength increased pressure on emerging-market currencies. The rupee subsequently depreciated at a slower pace, moving to Rs 83.4 per US dollar in FY24 and Rs 85.6 in FY25, supported partly by the Reserve Bank of India (RBI)'s foreign-exchange interventions aimed at containing excessive volatility. FY26 shows a renewed and significantly sharper weakening to Rs 94.7 per US dollar, representing a 10.6% increase in the exchange-rate quotation over FY25. Overall, the INR/USD rate increased by approximately 28.8% between FY21 and FY26, reflecting persistent external pressures, foreign capital-flow volatility, import-related dollar demand and the continued strength of the US dollar.

Chart 7: Exchange Rate Trend

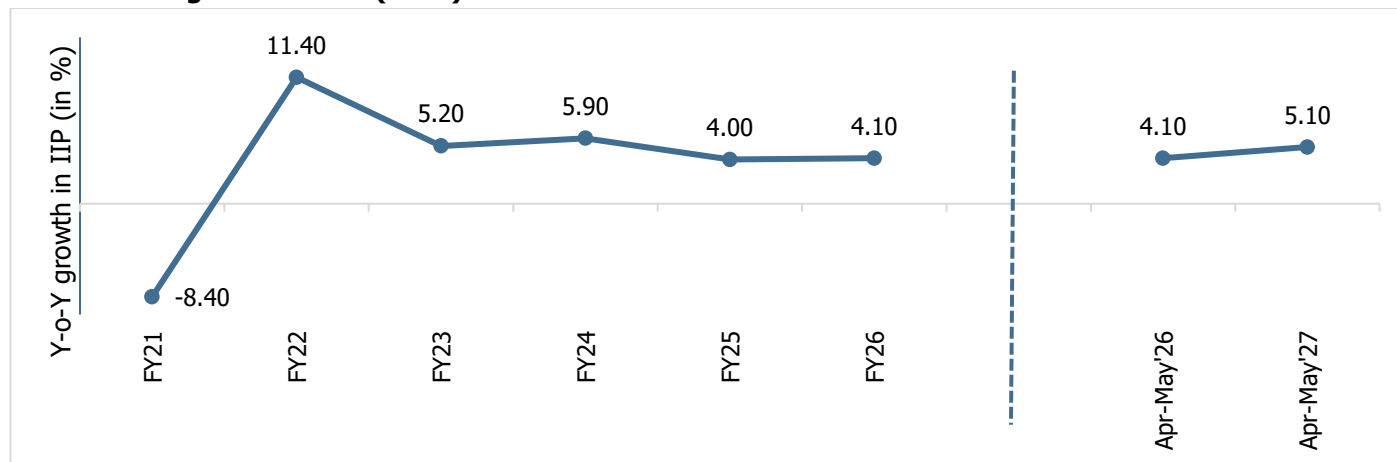


Source: RBI; Note: Exchange rate is as on the last date of the financial year

2.2 Industrial Growth

The Index of Industrial Production (IIP) in India grew by 4.1% year-on-year from April-May 2026, showing steady but moderate industrial momentum, supported by 5.5% growth in Manufacturing sector and strong growth of 9.9% in Electricity & Gas Supply sector.

Chart 8: YoY growth in IIP (in %)

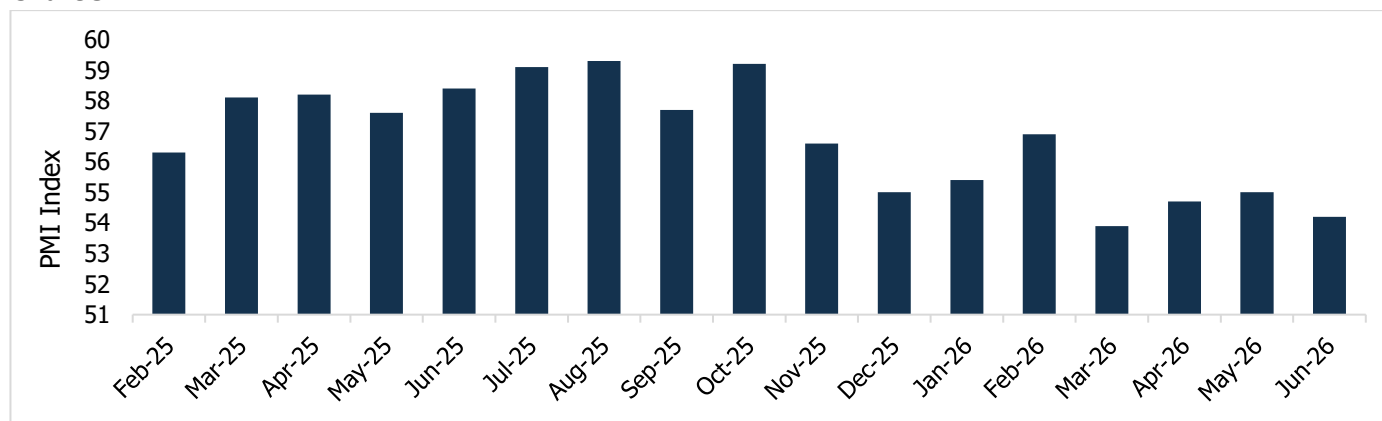


Source: MOSPI

2.3 Purchasing Managers' Index (PMI)

India's manufacturing sector remained in expansion throughout the review period, with the HSBC Manufacturing PMI consistently staying above the neutral threshold, indicating sustained improvement in operating conditions. Manufacturing activity strengthened through the middle of 2025, supported by robust domestic demand, healthy order inflows, and increased production, with business confidence remaining positive. However, momentum moderated towards the end of 2025 and into the first half of 2026 as growth in new orders and output softened amid global trade uncertainties, easing export demand, and cautious business sentiment. Despite this moderation, the PMI continued to signal expansion, reflecting the resilience of domestic demand, continued hiring activity, and sustained growth in production. Overall, the manufacturing sector remained on a stable growth trajectory, supported by favourable domestic fundamentals despite evolving external headwinds.

Chart 9: PMI



Source: HSBC, S&P Global

2.4 India as a Preferred Manufacturing Destination

2.4.1 Review and Outlook of the Indian manufacturing sector

Manufacturing is an important constituent of the Indian economy and contributes to industrial output, employment, exports and the development of ancillary industries. The manufacturing sector's recent performance has been supported by domestic consumption, investment in production capacity, public infrastructure expenditure, policy incentives and the expansion of selected export-oriented industries. The Economic Survey 2025-26 notes that the industrial sector maintained momentum despite global headwinds and that the manufacturing transition is increasingly oriented towards high-technology and higher-productivity activities. It also identifies electronics and other emerging technology segments as areas in which policy support has contributed to investment and domestic value addition.

India's manufacturing outlook is closely linked to the performance of the broader economy and prevailing investment conditions. Continued growth in the secondary sector and capital formation indicates sustained investment activity and capacity creation. However, manufacturing performance may vary across industries depending on domestic demand, export conditions, commodity prices, financing costs, supply-chain stability and the availability of critical inputs.

2.4.2 Factors supporting India's position as a manufacturing destination

- **Availability of labour and workforce development**

India has a broad labour pool across manufacturing, engineering, information technology, logistics and related services. The availability of labour can support labour-intensive and skill-intensive manufacturing activities, although wages, productivity, skills and employee availability vary by state, industrial cluster and occupation.

The Government has emphasised vocational education, practical industry-oriented training and stronger linkages between educational institutions and employers. Government workforce initiatives are intended to improve employability, formalisation and job creation, while industry-led training can help address requirements arising from automation, digitalisation and new manufacturing technologies. At the same time, shortages of appropriately trained personnel may arise in specialised areas such as industrial automation, quality control, precision engineering, electronics, semiconductor manufacturing and advanced materials.

Labour-related conditions also differ across jurisdictions. Manufacturers are subject to laws and regulations relating to wages, industrial relations, social security, occupational health and safety and working conditions. The Government has enacted four labour codes by consolidating 29 central labour laws, with the stated objectives including rationalisation of the legal framework, worker protection and facilitation of business operations. The commercial effects of labour reforms will depend on their applicable provisions, rules and implementation.

- **Make in India and Atmanirbhar Bharat**

The Make in India and Atmanirbhar Bharat initiatives seek to expand domestic manufacturing, encourage localisation, strengthen supply-chain resilience and reduce import dependence in selected strategic sectors. These initiatives encompass sector-specific policies, procurement measures, industrial infrastructure, investment facilitation and financial incentives. The Government has also announced the National Manufacturing Mission to provide a broader framework for improving competitiveness, innovation and industrial capacity.

The extent to which an individual manufacturer benefits from these initiatives depends on its sector, investment commitments, eligibility conditions, localisation levels and compliance with the applicable scheme guidelines. Changes in policy priorities, incentive conditions, implementation schedules or budgetary allocations could affect anticipated benefits.

- **Production Linked Incentive schemes**

The Government has introduced Production Linked Incentive, or PLI, schemes for 14 sectors with an aggregate announced outlay of Rs 1.91 lakh crore. The covered sectors include electronics, information technology hardware, pharmaceuticals, bulk drugs, medical devices, telecommunications products, food processing, white goods, automobiles and auto components, specialty steel, textiles, advanced chemistry cell batteries, solar photovoltaic modules and drones. Incentives are generally linked to eligible incremental production or sales and are subject to scheme-specific investment, value-addition and performance conditions.

According to the Government, cumulative investments exceeding ₹2.40 lakh crore had been made under the PLI Schemes as of 31 March 2026, resulting in exports exceeding ₹15.2 lakh crore and direct and indirect employment generation of more than 14.15 lakh. PLI schemes may encourage scale, localisation and technology adoption, but participants remain exposed to demand conditions, input availability, execution risks and compliance with the relevant scheme requirements. Delays in achieving committed investment or production thresholds, changes in approved product categories or failure to satisfy localisation conditions may limit the availability of incentives.

- **Phased Manufacturing Programme**

The Government introduced the Phased Manufacturing Programme to progressively increase domestic value addition and develop local supply chains for selected products and components. In the electronics sector, the programme has been used to promote domestic manufacturing of mobile phones and their sub-assemblies and parts through a calibrated localisation and tariff framework. The initiative has complemented measures such as the Production Linked Incentive schemes, the Scheme for Promotion of Manufacturing of Electronic Components and Semiconductors and electronics manufacturing clusters.

The PMP framework has also been applied to the electric mobility sector. Under the Government's electric-vehicle programmes, phased localisation requirements are intended to encourage domestic manufacturing of electric vehicles, batteries, assemblies, sub-assemblies and components, increase domestic value addition and strengthen the associated supply chain.

The programme may support the development of domestic supplier capabilities, reduce dependence on imported finished products and encourage manufacturers to establish or expand production facilities in India. However, its impact may vary across sectors and participants depending on the availability of locally manufactured components, cost competitiveness, quality standards, technology requirements and compliance with prescribed localisation conditions. Changes in customs duties, localisation timelines, technical standards or incentive conditions could affect manufacturers' sourcing strategies, capital expenditure requirements and operating costs.

- **Investment environment and foreign direct investment**

India permits foreign direct investment in a range of manufacturing activities, subject to applicable sectoral caps, entry routes, security conditions and other regulatory requirements. Foreign investment can contribute capital, technology, management practices, export relationships and access to international supply chains. However, investment decisions

remain sensitive to global financing conditions, tax and regulatory developments, market demand and geopolitical considerations.

According to the Department for Promotion of Industry and Internal Trade, FDI equity inflows into India were ₹5,16,936 crore, equivalent to US\$58,846 million, in Fiscal 2026, compared with ₹4,21,929 crore, equivalent to US\$50,018 million, in Fiscal 2025. The Government reported year-on-year growth of 23% in rupee terms and 18% in US dollar terms. The Fiscal 2026 figures are provisional and subject to reconciliation with the RBI. The data relates to total FDI equity inflows into India and should not be presented as manufacturing-specific FDI unless a corresponding sectoral table from the DPIIT factsheet is cited.

- **Business and infrastructure reforms**

Government initiatives relating to industrial corridors, logistics infrastructure, digital approvals, taxation and investment facilitation are intended to reduce transaction costs and improve connectivity. PM GatiShakti and the National Industrial Corridor Development Programme are among the initiatives intended to improve coordination in infrastructure planning and strengthen industrial and logistics connectivity. The Economic Survey identifies infrastructure and logistics efficiency, ease of doing business, innovation, workforce skilling and the scaling-up of micro, small and medium enterprises as important pillars for improving industrial competitiveness.

Operating conditions nevertheless vary materially across states and locations. Manufacturers may encounter delays in land acquisition, construction approvals, utilities, environmental permissions, transport connectivity or other regulatory processes. Accordingly, references to “ease of doing business” should be framed as an area of continuing reform rather than as an assurance that approvals will be obtained within a particular period.

2.4.3 Geopolitical and international trade developments

The ongoing geopolitical developments involving the Russia–Ukraine conflict, strategic competition between the United States and China, and persistent instability in the Middle East have significantly altered global trade patterns, supply chains, and investment decisions. International institutions, including the International Monetary Fund (IMF) and UNCTAD, have observed that increasing geopolitical fragmentation, trade restrictions, and regional conflicts are contributing to higher production costs, supply chain disruptions, and slower global economic growth, while prompting businesses to diversify manufacturing locations and sourcing networks.

The Russia–Ukraine conflict has affected global commodity markets by disrupting supplies of energy, metals, fertilizers, and agricultural commodities. Higher input and logistics costs have increased cost pressures for manufacturers worldwide, particularly in energy-intensive industries. For India, elevated commodity price volatility has created short-term cost challenges; however, the country's diversified sourcing strategy, expanding domestic manufacturing base, and policy support have helped mitigate some of these risks.

The strategic rivalry between the United States and China, including higher tariffs, export controls, and restrictions on critical technologies, has accelerated the diversification of global manufacturing under the “China+1” strategy. Multinational companies are increasingly evaluating alternative manufacturing destinations to improve supply chain resilience and reduce concentration risks. India has emerged as one of the potential beneficiaries of this structural shift owing to its large domestic market, competitive labour force, improving infrastructure, policy initiatives such as the Production Linked Incentive (PLI) schemes, and increasing integration into global value chains. Nevertheless, competition from other manufacturing destinations in Southeast Asia and Mexico remains significant, requiring continued improvements in logistics, ease of doing business, and industrial competitiveness.

Meanwhile, geopolitical tensions in the Middle East have heightened concerns over energy security and maritime trade routes, resulting in increased freight costs, longer transit times, and volatility in crude oil prices. Given India's dependence on imported crude oil, sustained increases in energy prices could raise manufacturing costs, particularly across chemicals, metals, transportation equipment, and other energy-intensive industries. The IMF has noted that prolonged regional conflicts could adversely affect global growth through higher commodity prices, inflationary pressures, and disruptions to trade and logistics.

Overall, while geopolitical uncertainties present near-term challenges through higher input costs, trade disruptions, and increased business uncertainty, they have also accelerated the diversification of global manufacturing networks. Countries offering policy stability, competitive production ecosystems, skilled labour, and resilient infrastructure are expected to benefit from the reconfiguration of global supply chains. Continued investments in infrastructure, manufacturing capabilities, technology adoption, and export competitiveness are expected to strengthen India's position as an alternative manufacturing destination over the medium to long term.

2.4.4 Technology, automation and machinery usage

The increasing adoption of advanced technologies and modern manufacturing equipment is transforming India's manufacturing sector by improving productivity, operational efficiency, product quality, and competitiveness. The integration of automation, robotics, artificial intelligence (AI), Industrial Internet of Things (IIoT), cloud computing, data analytics, and smart manufacturing solutions is enabling manufacturers to optimize production processes, reduce downtime, improve quality control, and enhance supply chain visibility. These technological advancements are supporting the transition towards Industry 4.0 and facilitating greater digitalization across manufacturing operations.

The growing use of technologically advanced machinery is also enabling manufacturers to achieve higher precision, greater production flexibility, and improved resource utilization while reducing wastage and operating costs. Modern production equipment, automated material handling systems, predictive maintenance solutions, and digitally connected factory operations are helping manufacturers improve capacity utilization and respond more efficiently to evolving customer requirements. The World Bank has highlighted that wider adoption of modern technologies, combined with improvements in infrastructure and business reforms, can significantly enhance firm productivity and strengthen manufacturing competitiveness.

Government initiatives such as Make in India, the Production Linked Incentive (PLI) schemes, and the emphasis on digital infrastructure have further encouraged investments in advanced manufacturing technologies across sectors including electronics, automobiles, pharmaceuticals, engineering goods, and renewable energy equipment. At the same time, increasing participation of global manufacturers and greater integration into global value chains are facilitating technology transfer, process innovation, and adoption of international manufacturing standards.

Despite these advancements, the pace of technology adoption varies across enterprises, with small and medium-sized manufacturers continuing to face challenges relating to capital investment, digital capabilities, and workforce skills. The IMF has observed that strengthening innovation, encouraging technology diffusion, reducing business barriers, and improving firm productivity will be important to accelerate India's structural transformation and enhance manufacturing competitiveness over the long term. Continued investments in automation, advanced machinery, digital technologies, research and development, and workforce upskilling are therefore expected to support the sustained growth and modernization of India's manufacturing sector.

2.5 Key Underlying Driving Factors for the Indian Economy

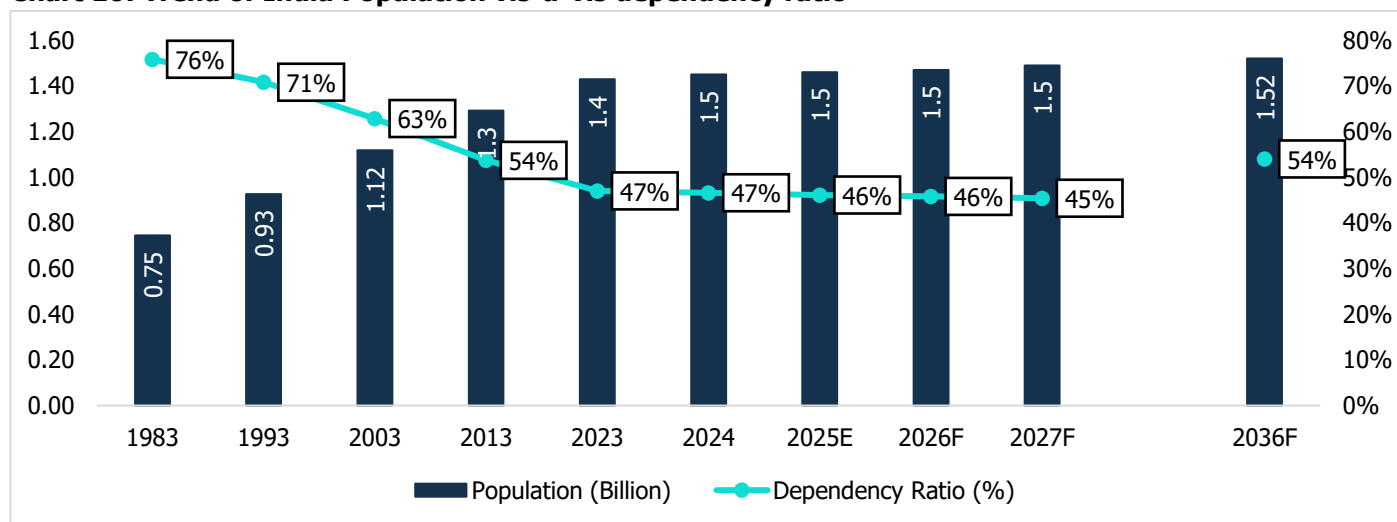
2.5.1 Favourable Demographics

India has relatively high young population as compared to major economies

The trajectory of economic growth of India and private consumption is driven by socio-economic factors such as demographics and urbanization. According to the world bank, India's population in 2022 surpassed 1.42 billion, slightly higher than China's population (1.41 billion) and became the most populous country in the world.

Age Dependency Ratio is the ratio of dependents to the working age population, i.e., 15 to 64 years, wherein dependents are population younger than 15 and older than 64. This ratio has been on a declining trend. Declining dependency means the country has an improving share of working-age population generating income, which is a good sign for the economy. It was as high as 76% in 1983, which has reduced to 47% in 2023. However, this ratio is expected to rise again to 54% by 2036, driven by an increase in the elderly population as life expectancy improves.

Chart 10: Trend of India Population vis-à-vis dependency ratio



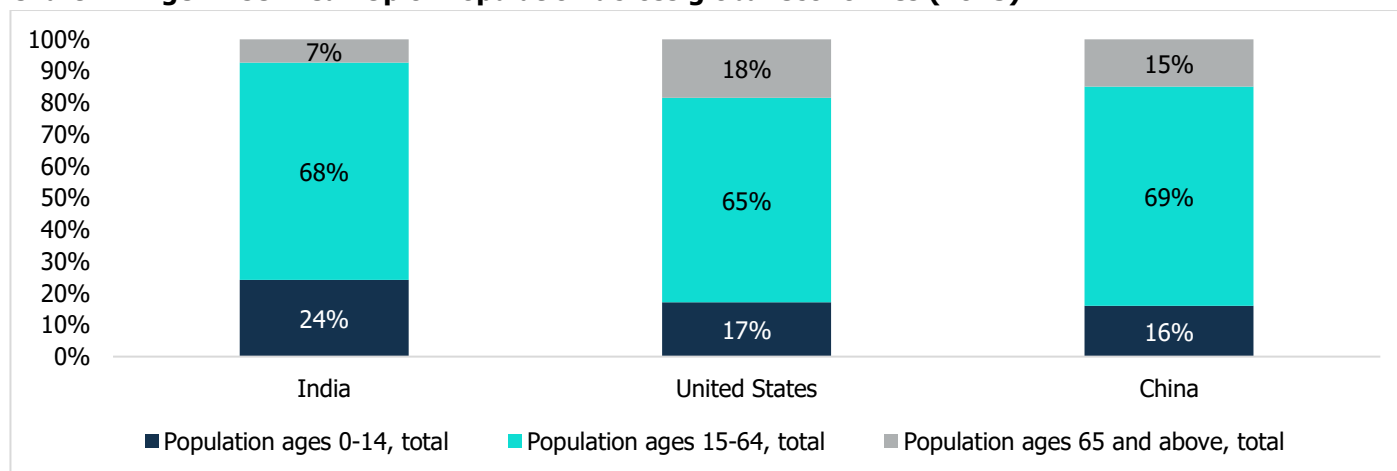
Source: World Bank Database, MOSPI

Note: Age Dependency Ratio is the ratio of dependents to the working age population, i.e., 15 to 64 years, wherein dependents are population younger than 15 and older than 64.

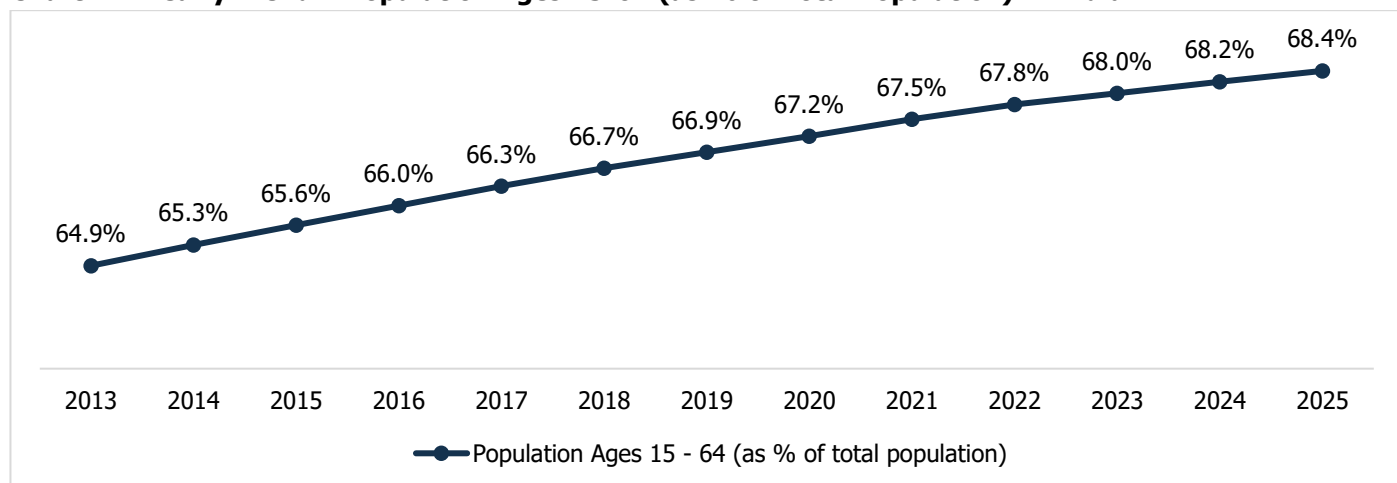
Time periods are in Calendar Year

E-Estimates, F-Forecast

India continues to enjoy a strong demographic advantage, with over 65% of its population below the age of 35 and nearly 64.2% in the working-age group. This favourable demographic profile is expected to remain broadly intact over the next decade, providing a sustained demographic dividend. Coupled with continued investments in skilling, employment generation, and digital infrastructure, India's large and youthful workforce is expected to play a pivotal role in driving productivity, innovation, manufacturing, and long-term economic growth.

Chart 11: Age-Wise Break Up of Population across global economies (2025)


Source: World Bank Database

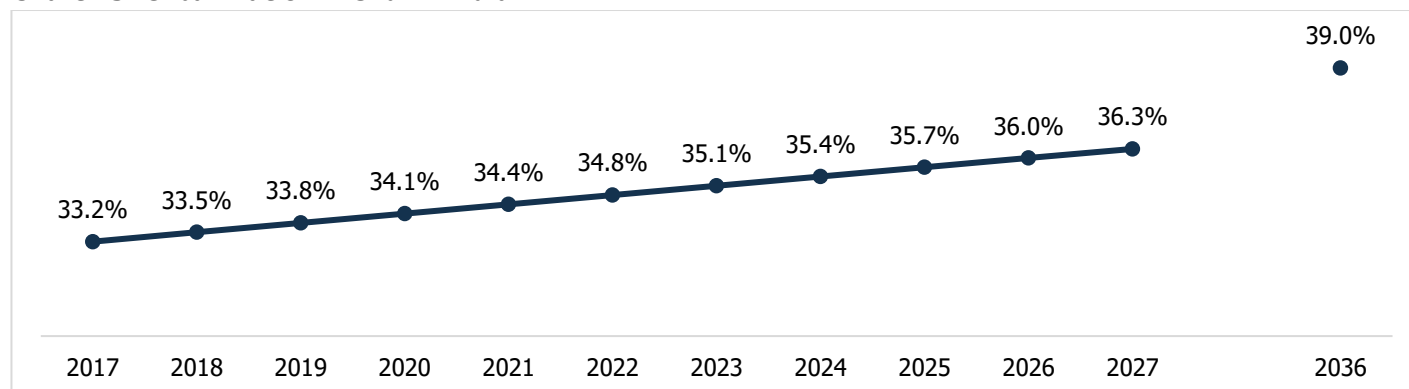
Chart 12: Yearly Trend – Population Ages 15-64 (as % of Total Population) in India


Source: World Bank database

2.5.2 Rapid Urbanisation

Urbanization presents significant advantages that can drive sustainable development and reduce inequality, catalyze infrastructure investment and create job opportunities, boosting local economies and improving living standards. Moreover, urban areas facilitate the mobilization of savings, as higher incomes enable residents to invest in education, health, and entrepreneurial ventures. Additionally, well-managed urbanization can foster social inclusion, allowing marginalized communities better access to resources and opportunities.

The urban population is significantly growing in India. The urban population in India is estimated to have increased from 33.2% of total population in 2017 to 35.7% of total population in the year 2025.

Chart 13: Urbanization Trend in India


Source: World Bank Database

2.5.3 Regulatory Reforms

Regulatory reforms have played a significant role in strengthening India's economic fundamentals by improving the ease of doing business, promoting investment, enhancing transparency, and supporting formalization of the economy. Over the past decade, the Government has introduced several structural reforms, including the Goods and Services Tax (GST) to establish a unified indirect tax regime, the Insolvency and Bankruptcy Code (IBC) to strengthen the resolution framework for distressed assets, and the National Single Window System (NSWS) to streamline investment approvals. Continued digitization of public services through Digital India, the expansion of digital payment infrastructure, and simplification of compliance requirements have further improved the efficiency of business operations.

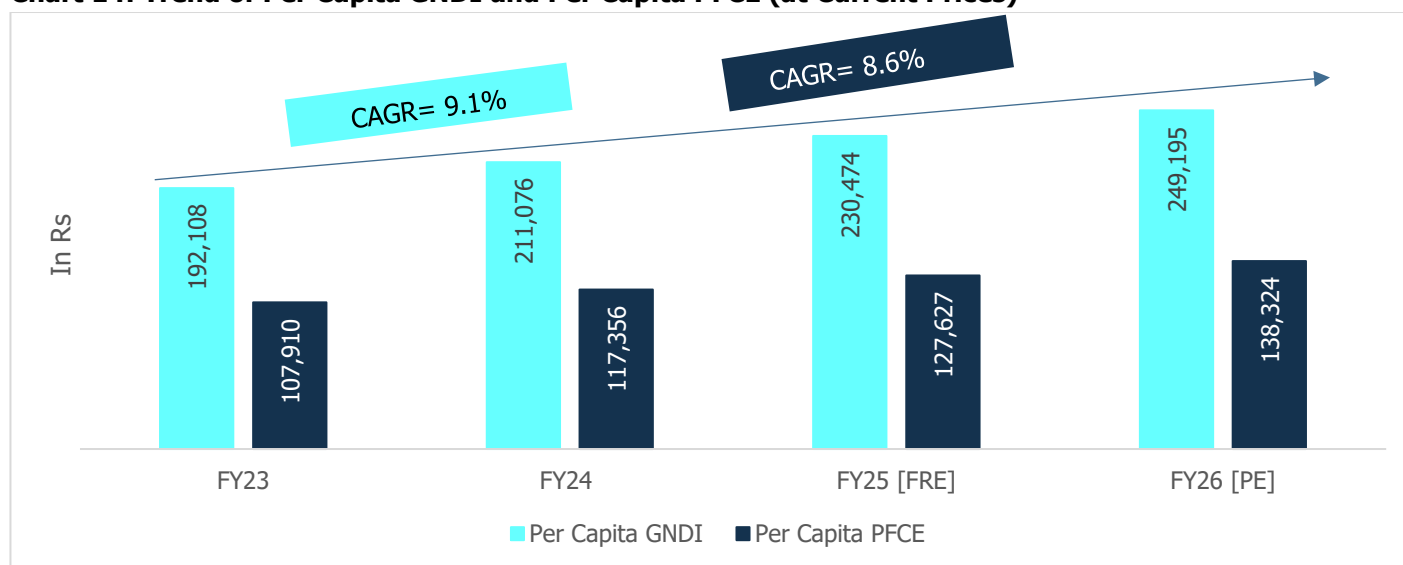
In addition, initiatives such as Make in India, the Production Linked Incentive (PLI) schemes, PM Gati Shakti National Master Plan, the National Logistics Policy, and labour law reforms through the four Labour Codes aim to strengthen India's manufacturing ecosystem, improve multimodal connectivity, reduce logistics costs, encourage domestic value addition, and attract domestic as well as foreign investments. The Government has also undertaken corporate tax reforms, rationalized foreign direct investment (FDI) norms across several sectors, and introduced measures to facilitate exports and improve trade competitiveness.

Collectively, these reforms have strengthened the investment climate, encouraged private sector participation, improved supply chain efficiency, and enhanced India's integration into global value chains. Continued emphasis on infrastructure development, regulatory simplification, digital governance, and manufacturing-led growth is expected to further improve productivity, enhance competitiveness, and support the long-term growth of the Indian economy.

2.5.4 Increasing Disposable Income and Consumer Spending

Gross National Disposable Income (GNDI) is a measure of the income available to the nation for final consumption and gross savings. Between the period FY23 to FY26, per capita GNDI at current prices registered a CAGR of 9.1%. More disposable income drives more consumption, thereby driving economic growth.

With increase in disposable income, there has been a gradual change in consumer spending behaviour of the country. Per capita Private Final Consumption Expenditure (PFCE), which is measure of consumer spending, has also shown significant growth from FY23 to FY26 at a CAGR of 8.6%.

Chart 14: Trend of Per Capita GNDI and Per Capita PFCE (at Current Prices)


Source: MOSPI; Note: FRE – First Revised Estimates, PE- Provisional Estimates;
 The trend for FY23-FY26 is based on new series base year 2022-23.

2.5.5 Growing Middle Class

India's expanding middle class has emerged as a key structural driver of economic growth by supporting domestic consumption, increasing discretionary spending, and fostering demand across a wide range of goods and services. Rising household incomes, rapid urbanization, improving educational attainment, greater formal employment, and expanding access to financial services have contributed to the growth of the middle-income population. This demographic shift has led to changing consumption patterns, with increasing expenditure on housing, automobiles, consumer durables, healthcare, education, travel, financial services, and digital products.

The growing middle class has also encouraged businesses to expand production capacity, diversify product offerings, and invest in technology and distribution networks to cater to evolving consumer preferences. Increased adoption of e-commerce, digital payments, organized retail, and consumer finance has further strengthened household spending and improved market accessibility across urban as well as semi-urban regions. Rising aspirations and greater purchasing power are also supporting demand for premium products and value-added services, creating opportunities across manufacturing, retail, infrastructure, and services.

As the middle-income population continues to expand, domestic consumption is expected to remain an important pillar of India's economic growth. A broad-based consumer market, supported by favourable demographics, rising income levels, and continued urbanization, is expected to enhance economic resilience, encourage private investment, and strengthen India's long-term growth prospects.

2.5.6 Nuclearization

The gradual shift from joint families to nuclear households has emerged as an important socio-economic trend supporting India's economic growth. Rapid urbanization, increasing workforce mobility, rising disposable incomes, changing lifestyle preferences, and greater participation of women in the workforce have contributed to the growth of nuclear families across both urban and semi-urban areas. This transition has altered consumption patterns, with individual households increasingly driving demand for housing, home furnishings, consumer durables, automobiles, electronics, packaged foods, healthcare, education, and financial services.

The rise in nuclear households has also accelerated demand for residential real estate, organized retail, digital services, and household appliances, encouraging businesses to expand production, diversify product offerings, and strengthen distribution networks. Smaller household sizes have further supported the adoption of e-commerce, digital payments, and convenience-oriented products and services, reflecting evolving consumer preferences. In addition, increasing residential formation has stimulated investments in housing, urban infrastructure, and allied industries, generating multiplier effects across manufacturing and services.

As the trend towards nuclear families continues alongside urbanization and rising incomes, household consumption is expected to remain a key driver of domestic demand. The resulting expansion in consumer spending and housing demand is expected to support sustained economic activity, encourage private investment, and strengthen India's long-term growth prospects.

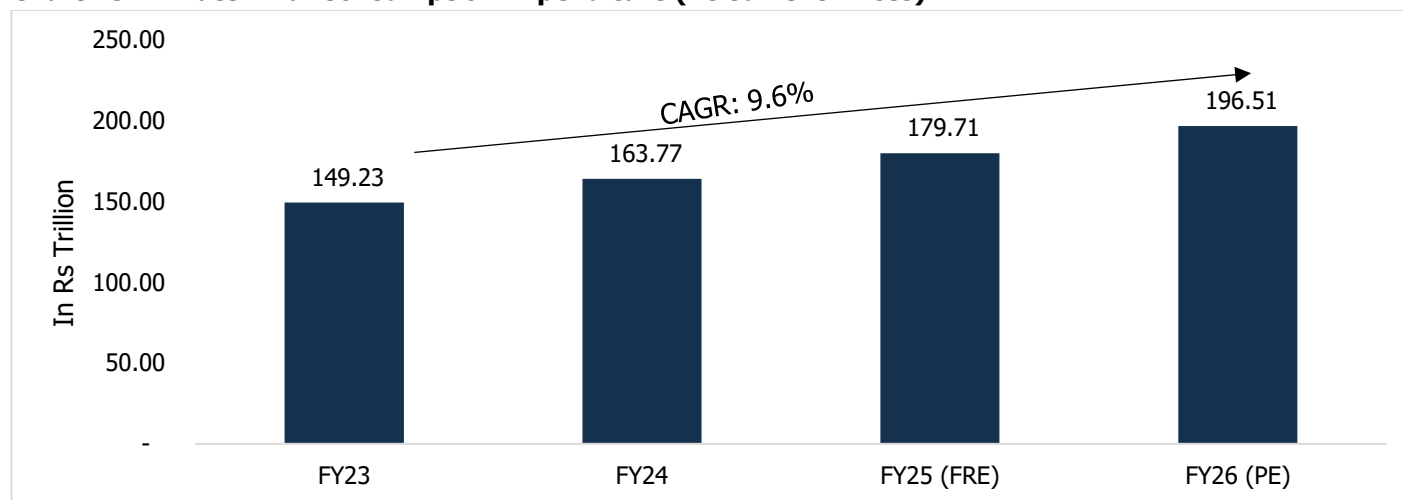
2.5.7 Private Final Consumption Expenditure

Private Final Consumption Expenditure is expected to maintain a steady upward trend, reflecting continued strength in household demand. Recent momentum has been supported by moderating inflation, improving real incomes and stable employment conditions, which have strengthened consumers' purchasing power.

Rural consumption has improved on the back of stronger agricultural activity, favourable crop prospects and rising consumer confidence. Urban demand is also recovering, supported by income-tax rationalisation, resilient services activity and improving discretionary spending.

Going forward, consumption is likely to remain a key driver of economic growth as lower inflation and supportive policy measures encourage household expenditure. However, volatile food prices, geopolitical tensions and global trade uncertainty could affect consumer sentiment and temporarily moderate spending growth. Overall, the trend remains positive, with broadening rural and urban demand providing a stable foundation for continued expansion in private consumption.

Chart 15: Private Final Consumption Expenditure (At Current Prices)

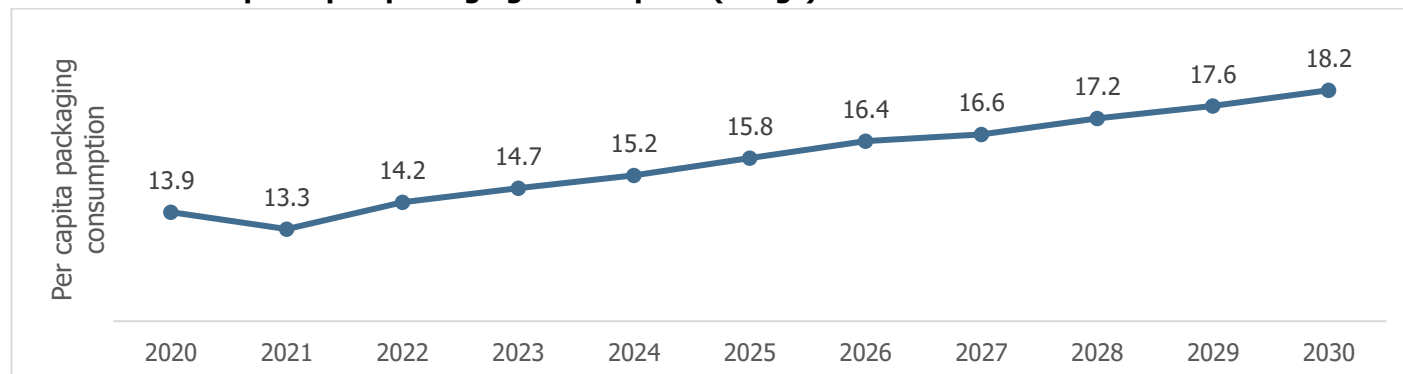


Source: MOSPI; Note: FRE – First Revised Estimates, PE- Provisional Estimates

2.6 Per Capita Packaging Consumption in India

From FY20 to FY30, per-capita packaging consumption in India is projected to rise steadily from 13.9 kg to 18.2 kg. This upward trajectory is mainly due to stronger consumption patterns across sectors and greater market penetration of

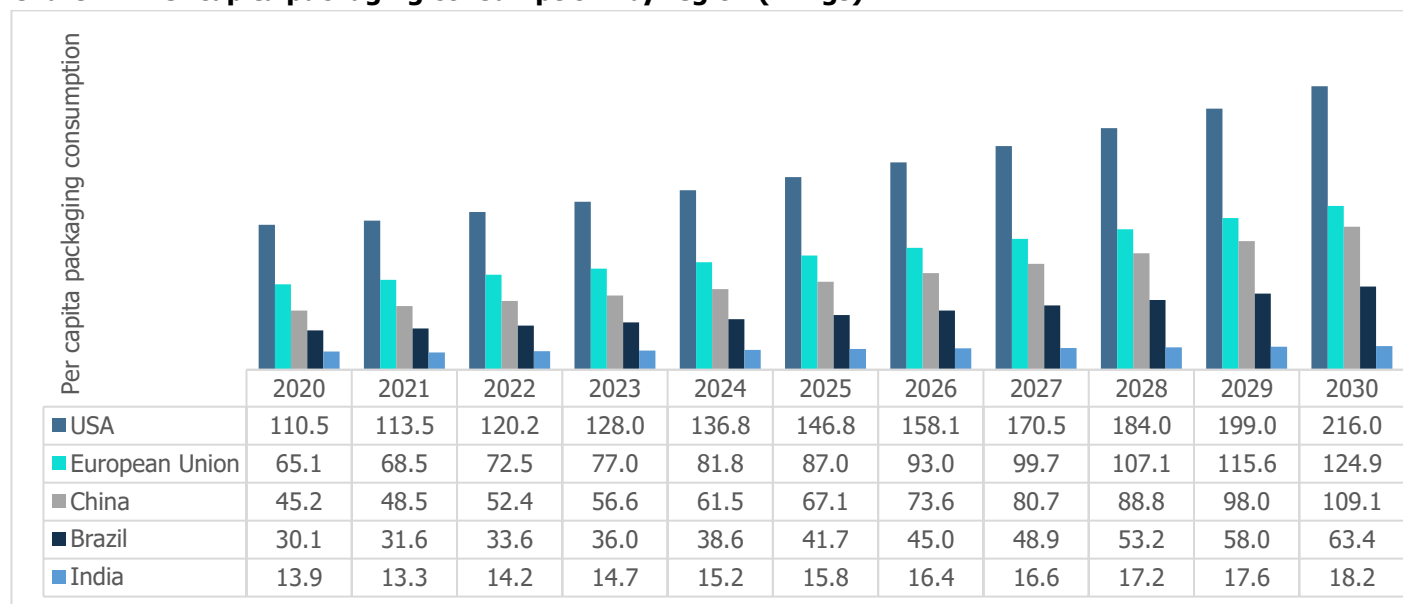
packaged goods. Key drivers include rising disposable incomes, rapid urbanisation, growth in organised retail and e-commerce, expansion of the food processing and pharmaceutical sectors, and a shift toward value-added, branded products. The packaging industry is also increasingly adopting advanced and sustainable materials, supported by regulatory drivers and consumer preferences for eco-friendly packaging. While India's per-capita packaging consumption still lags many mature markets, the steady increase reflects the ongoing structural transformation of consumption and distribution ecosystems.

Chart 16: India's per capita packaging consumption (in Kgs)


Source: Acumen Research And Consulting, CareEdge Research

2.7 Comparison of per capita Packaging Consumption in India vs Other Key Countries

Per capita packaging consumption is rising across all regions from FY2020 to FY2030, reflecting growing demand for packaged goods and lifestyle changes. The USA and EU lead with mature, high-volume markets, while China and Brazil show faster relative growth driven by urbanisation and expanding middle classes. India, though starting from a lower base, is witnessing strong structural growth supported by rising incomes, organised retail, and e-commerce expansion. Overall, the global trend highlights increasing packaging intensity alongside a gradual shift toward sustainable materials.

Chart 17: Per capita packaging consumption- by region (in Kgs)


Source: Acumen Research And Consulting, CareEdge Research. European Union* consists of 27 countries.

2.8 Key Trends and Cross-Economy Comparison Defining Semi-Rigid and Rigid Plastic Packaging Consumption

Consumption of semi-rigid and rigid plastic packaging is influenced by the interaction of income levels, urbanisation, middle-class expansion, workforce participation and e-commerce penetration. Across representative economies such as the United States, Germany, China, India and Brazil, these factors create distinct demand patterns. Developed economies represent mature, high-value markets where growth is increasingly driven by premiumisation, functionality and sustainability, while emerging economies offer stronger volume-growth potential as consumers transition towards branded and formally packaged products.

2.8.1 GDP per capita

GDP per capita is a key determinant of packaged-goods consumption, as higher disposable income generally supports greater expenditure on packaged food and beverages, pharmaceuticals, household products and premium personal-care products. The United States and Germany are mature, high-income markets where packaging demand is primarily driven by product premiumisation, convenience, functionality and sustainability rather than rapid volume growth. Consumers and brand owners in these markets increasingly favour lightweight, recyclable and high-performance packaging products.

China occupies an intermediate position, combining a large consumer base with purchasing power that is substantially higher than that of several other emerging economies. This supports demand across both mass-market and premium packaging categories. India currently has a significantly lower per-capita income, but sustained economic growth provides considerable headroom for consumers to shift from unpackaged or locally packed products towards branded and formally packaged alternatives. Brazil has an established packaged-consumer-goods market, although fluctuations in household income, inflation and purchasing power can result in greater variability in packaging demand.

Packaging implication: The United States and Germany are expected to generate demand for premium, lightweight, recyclable and functionally differentiated packaging. India and other emerging economies are likely to experience stronger volume growth in affordable bottles, jars, tubs, containers and smaller pack sizes, while China should continue to support opportunities across both value and premium segments.

2.8.2 Urbanisation rate

Urbanisation supports packaging consumption by improving access to supermarkets, convenience stores, organised retail, food-delivery platforms and modern distribution networks. Urban households also tend to consume more prepared foods, ready-to-drink beverages, personal-care products and household cleaners, all of which are important applications for semi-rigid and rigid plastic packaging.

The United States and Germany are already highly urbanised, limiting the incremental volume growth generated directly by further urbanisation. In these economies, demand is increasingly shifting towards packaging that is reusable, recyclable, lightweight and compatible with automated retail, logistics and recycling systems.

China's extensive urban consumer base continues to sustain significant packaging demand, although the pace of incremental urbanisation-led growth is moderating. India offers greater long-term potential as urban development, organised retail and delivery infrastructure expand beyond major metropolitan areas into smaller cities and towns. Brazil also has a highly urbanised population, supporting established demand for packaged consumer goods, although macroeconomic volatility can affect consumption patterns.

Packaging implication: Faster-urbanising markets, particularly India, are expected to experience rising demand for beverage bottles, dairy containers, food trays, takeaway packaging and personal-care bottles. In mature urban markets, growth is more likely to arise from sustainable materials, improved functionality and packaging redesign than from underlying volume expansion.

2.8.3 Middle-class expansion

Middle-class expansion is one of the strongest long-term indicators of packaged-goods consumption. Rising household income increases discretionary spending and encourages consumers to purchase branded, hygienically packaged and convenience-oriented products. China has the largest middle-class consumer base among the emerging economies considered and benefits from established retail infrastructure and sophisticated consumer-product sectors. However, future expansion is likely to be more moderate than during the earlier period of rapid middle-class formation.

India presents a larger runway for first-time adoption across categories such as packaged dairy products, beverages, beauty and personal-care products, liquid detergents and over-the-counter healthcare products. The expansion of India's middle-income population is therefore expected to support both increased packaging volumes and gradual movement towards higher-value products.

Brazil retains a sizeable middle-class consumer market and an established packaged-goods industry. However, the pace of expansion may be affected by income volatility and inflation. In the United States and Germany, where middle-class packaged-goods consumption is already well established, demand is increasingly centred on premium products, specialised functionality and environmentally sustainable packaging.

Packaging implication: India is likely to generate strong volume demand for affordable rigid packaging and smaller pack sizes. China, the United States and Germany are expected to provide greater opportunities for premium packaging, specialised closures, dispensing systems and sustainable material solutions. Brazil should continue to offer opportunities across mainstream packaging categories, although demand may remain sensitive to economic conditions.

2.8.4 Women's workforce participation

Greater participation of women in the workforce can increase household income and strengthen demand for products that reduce preparation, storage and shopping time. This supports categories such as ready meals, packaged snacks, dairy products, beverages, personal-care products, household cleaners and healthcare items. However, the effect on packaging demand also depends on wage levels, working hours, retail access and household consumption patterns.

Women's labour-force participation is higher in China, Germany, the United States and Brazil than in India. In mature economies, established workforce participation supports sustained demand for portion-controlled, resealable, portable and ready-to-use products.

India has considerable potential for additional convenience-oriented consumption if workforce participation, formal employment and disposable income continue to improve. A larger working population could accelerate the shift from home-prepared and informally sold goods towards branded and packaged alternatives. China and Brazil similarly benefit from the relationship between workforce participation, urban lifestyles and demand for convenience products, although the degree of incremental growth varies by income level and market maturity.

Packaging implication: Higher workforce participation supports demand for lightweight, portable, resealable and easy-to-handle containers, particularly across food, beverages, personal care, healthcare and household products. India offers notable long-term potential, while developed economies are more likely to generate demand for advanced closures, portion-control features and high-convenience packaging designs.

2.8.5 E-commerce penetration

E-commerce is influencing both the volume and design requirements of semi-rigid and rigid plastic packaging. Products distributed through online channels must withstand stacking, vibration, repeated handling and potential leakage while retaining functionality and visual appeal. This increases the importance of durable containers, tamper-evident closures, secure caps, leak-resistant designs and compact packaging products.

China and the United States have large and mature online retail ecosystems, making them important markets for e-commerce-optimised packaging. Packaging suppliers in these markets must balance durability and product protection with increasing pressure to reduce material use and secondary packaging.

India's digital retail sector is expanding rapidly as internet access, smartphone usage, digital payments and delivery coverage improve. This creates opportunities for rigid packaging across personal care, household chemicals, pharmaceuticals, food and beverages, particularly as e-commerce reaches consumers beyond major cities.

Germany also has an established online retail market, but stringent environmental expectations increase pressure on companies to improve recyclability, reduce packaging weight and minimise unnecessary secondary packaging. Brazil offers growing digital-commerce opportunities, although differences in logistics infrastructure, transportation distances and fulfilment costs can influence packaging specifications.

Packaging implication: E-commerce is expected to support demand for transport-resistant, tamper-evident and leak-proof packaging, particularly for liquid personal-care products, household chemicals, pharmaceuticals and selected food categories. At the same time, environmental concerns are likely to accelerate lightweighting, refill systems, concentrated products and alternative delivery formats.

3 Global Industry Overview

3.1 Overview and Market Size of the Global Packaging Industry

The global packaging industry is crucial for trade, product protection, and brand communication across various sectors, including food, pharmaceuticals, personal care, and e-commerce. This industry has shifted from traditional packaging to more sustainable and consumer-focused solutions.

The rising global population, urbanisation, and increasing income levels have driven up the demand for packaged goods, particularly in emerging economies. At the same time, environmental concerns and stricter regulations are driving investments in recyclable and biodegradable materials. Technological advancements in automation and smart packaging are also enhancing supply chain efficiency and product traceability.

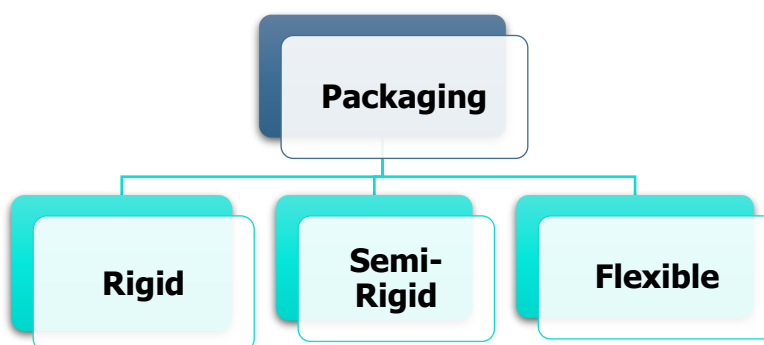
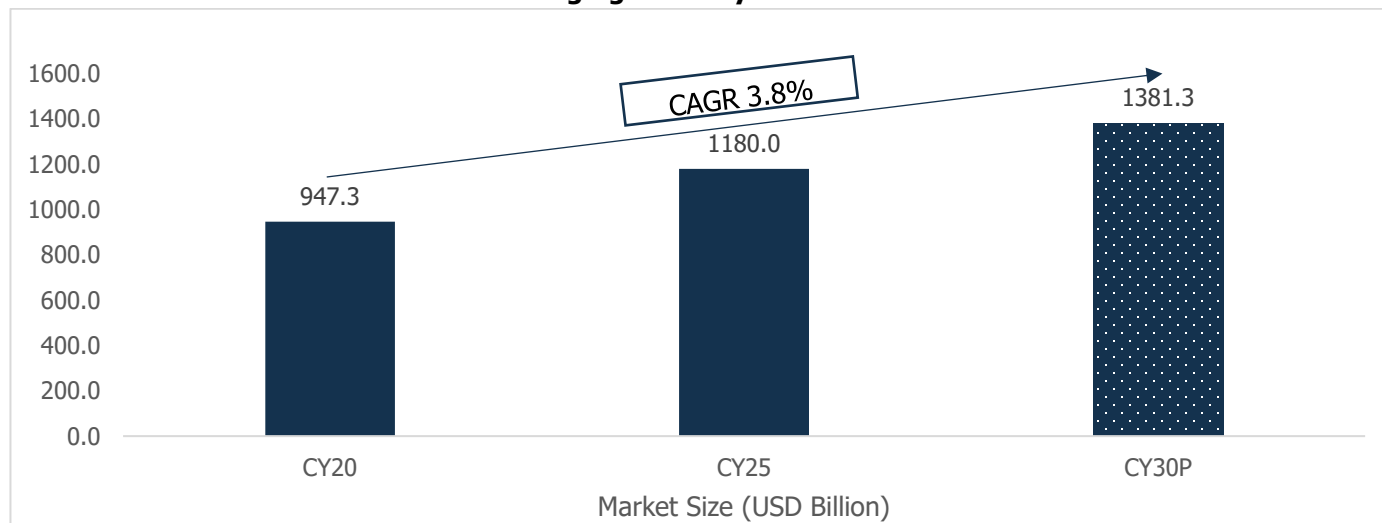


Chart 18: Market Size of the Global Packaging Industry



Source: Acumen Research And Consulting, CareEdge Research, P denotes projected

In CY25, the global packaging industry is valued around USD 1,180 billion and is expected to grow to USD 1,381.3 billion by CY30. This represents a compounded annual growth rate of 3.8% from CY20 to CY30. Developing regions, particularly in Asia-Pacific like China, India, Latin America like Brazil, and parts of Africa, etc are experiencing faster growth compared to mature markets, driven by industrialisation and changing consumption habits. In line with this trend, India's packaging industry is projected to grow at a CAGR of 7% between CY25 to CY30. In contrast, developed economies like the USA, Germany, Japan, etc, are shifting their focus to sustainable, premium packaging products rather than simply increasing volume.

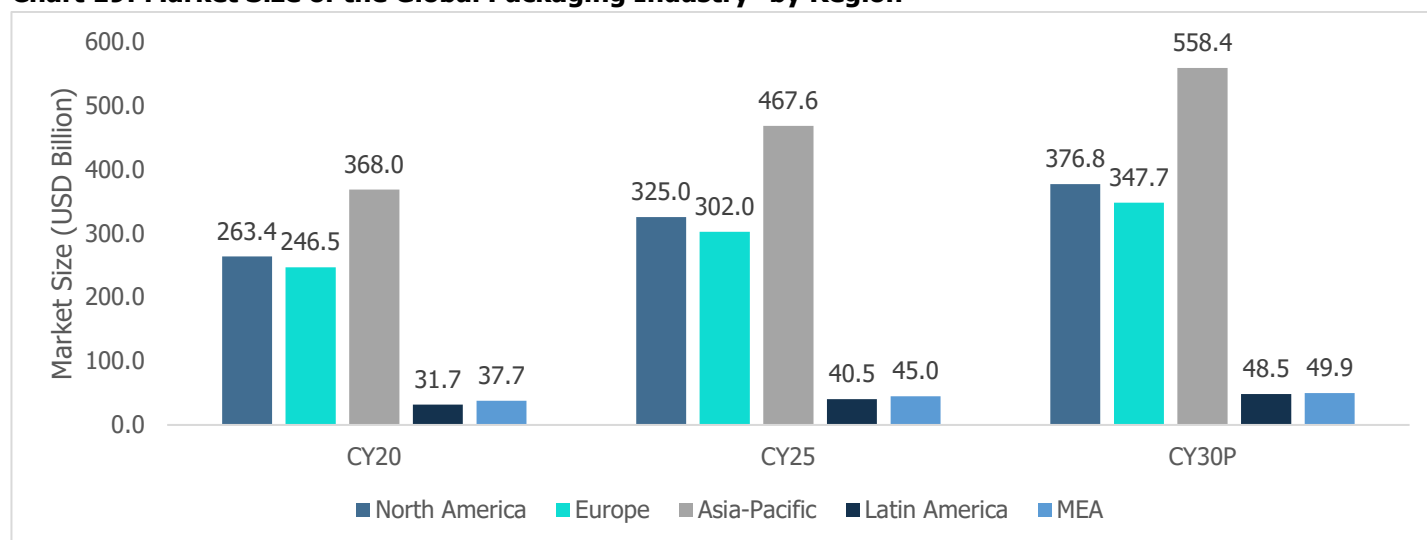
After CY20, demand for packaging increased strongly in regions such as North America, Europe and China due to growth in online shopping, pharmaceuticals, and environmentally friendly packaging. While India also saw steady growth, factors such as rising raw-material prices, supply chain disruptions, slower adoption of newer packaging technologies, and currency fluctuations affected the overall growth in value. As a result, even though India's packaging market increased in size, the global market expanded faster, leading to a lower share for India. However, improving export competitiveness, global supply chain realignments, and increasing adoption of value-added and sustainable packaging solutions are likely to strengthen India's global positioning.

Overall, while the sector continues to expand at a steady pace, the emphasis is clearly moving from scale to sustainability, innovation, and circular design principles.

3.2 Overview and Market Size of the Global Packaging Industry- by Region Wise

The global packaging industry shows varied growth patterns across regions, influenced by economic maturity, consumer preferences, industrialisation, and sustainability priorities. While developed markets such as North America and Europe focus on innovation and circularity, emerging regions like Asia-Pacific and Latin America are driving overall volume growth through expanding consumer bases and manufacturing capacity.

Chart 19: Market Size of the Global Packaging Industry- by Region



Source: Acumen Research And Consulting, CareEdge Research, E denotes estimated P denotes projected

North America

In CY20, North America's packaging market was mature, valued at around USD 263.4 billion, supported largely by strong food, beverage, and healthcare sectors. In CY25, growth remained steady, showing a CAGR of 4.3% between CY20-CY25, led by increased e-commerce packaging and sustainability-driven redesigns. The region's focus is shifting toward recyclable plastics, paper-based solutions, and digital printing technologies. By CY30, the market is expected to reach roughly USD 376.8 billion, reflecting a moderate CAGR of around 3%, between CY25-CY30, with emphasis on innovation and closed-loop recycling systems rather than volume expansion.

Europe

Europe has been at the forefront of sustainable packaging initiatives, driven by strict regulations and eco-conscious consumers. In CY20, the market stood at approximately USD 246.5 billion, expanding modestly through regulatory alignment under the EU's Green Deal and Packaging Waste Directives. In CY25, the demand remained stable from the

food, beverage, and personal care sectors keeps growth at around 4.1% CAGR between CY20-CY25. By CY30, the market could touch USD 347.7 billion, reflecting stable growth anchored by circular economy policies and advanced recycling infrastructure.

Asia-Pacific

Asia-Pacific represents the largest and fastest-growing packaging market globally, driven by rising incomes, urbanisation, and rapid expansion in the FMCG and e-commerce sectors. In CY20, the region's market was valued at roughly USD 368 billion, growing rapidly through manufacturing-led economies like China, India, and Indonesia. In CY25, the market have surpassed USD 467.6, registering a CAGR of 4.9%, supported by strong demand for flexible packaging and increasing localisation of production. Looking ahead to CY30, Asia-Pacific is expected to reach USD 558.4 billion, growing at a steady 3.6% CAGR, between CY25-CY30, firmly positioning it as the global growth engine for packaging.

Latin America

In CY20, Latin America's packaging industry was valued at just over USD 31.7 billion, with growth tied to food processing, beverages, and household products. The region has gradually recovered from pandemic-driven disruptions, supported by local manufacturing and export-oriented industries. In CY25, the market have reached around USD 40.5 billion, driven by flexible and paper-based packaging products. By CY30, moderate economic recovery and regional trade expansion could take the market to about USD 48.5 billion, representing a 3.7% CAGR, between CY25-CY30.

Middle East and Africa (MEA)

MEA's packaging industry remains smaller in comparison but offers long-term potential. In CY20, it was valued at around USD 37.7 billion, supported by the food, beverages, and personal care sectors. Industrial growth, urbanisation, and rising consumption are helping the region steadily expand. In CY25, the market reached around USD 45 billion, and by CY30 is projected to reach about USD 49.9 billion. The focus in MEA is shifting towards localisation of packaging production and investments in recyclable materials to meet sustainability goals.

3.3 Overview and Market Size of the Global Packaging Industry- by Material

The global packaging industry is essential within the packaging landscape, providing strength, durability, and product protection across various applications. It primarily includes materials such as plastic, metal, paper and paperboard, and glass, each serving distinct purposes.

Plastic

Plastic is widely used in bottles, containers, trays, films, caps and closures because it is lightweight, adaptable and cost-efficient. Its main constraints are dependence on petrochemical raw materials, plastic-waste concerns and varying recyclability across products. Regulation is encouraging mono-material designs, recycled content and reuse. The EU aims to make all packaging economically recyclable by 2030, while India's EPR framework requires higher recycling levels for rigid, flexible and multi-material plastic packaging.

Metal

Metal packaging, primarily made from aluminium, is valued for its durability, tamper-resistance, and excellent barrier properties. The production of primary metals involves energy-intensive smelting processes that contribute to high carbon emissions and fossil fuel consumption. However, metals can be recycled repeatedly without loss of quality, and recycling consumes only a fraction of the energy compared to primary production. This recyclability supports the circular economy and helps offset the sector's carbon intensity. Key end-use sectors for metal packaging include beverages (cans), canned foods, aerosols, paints, and industrial lubricants.

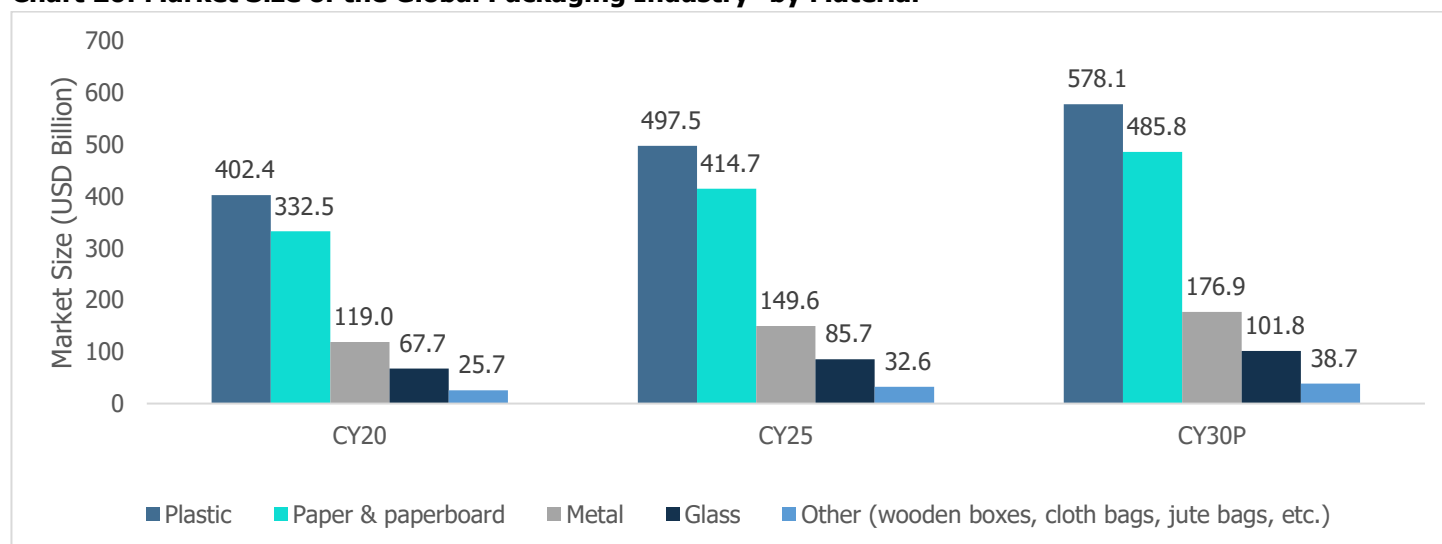
Paper & Paperboard

This segment includes cartons, corrugated boxes, and moulded fibre products, and is gaining momentum as a sustainable alternative to plastics. While paper manufacturing does involve fossil fuel-based energy and emits CO₂ during pulping and drying processes, the increasing use of recycled and responsibly sourced fibre has reduced overall emissions. The biodegradability and recyclability of paper make it suitable for environmentally conscious applications, supported by ongoing investments in low-carbon energy sources within paper mills. Key end-use sectors for paper and paperboard packaging include food and beverage cartons, ready-to-eat packaging, e-commerce and logistics, pharmaceuticals, and personal care products.

Glass

Glass is a preferred choice in premium sectors such as alcoholic beverages, cosmetics, and pharmaceuticals due to its non-reactive, inert, and fully recyclable nature. However, glass production requires high-temperature furnaces that rely heavily on fossil fuels, resulting in substantial CO₂ emissions. Incorporating cullet (recycled glass) in production helps lower melting temperatures, which in turn reduces both energy use and carbon emissions. While the weight of glass results in higher transport and energy costs, its recyclability makes it a long-term sustainable option.

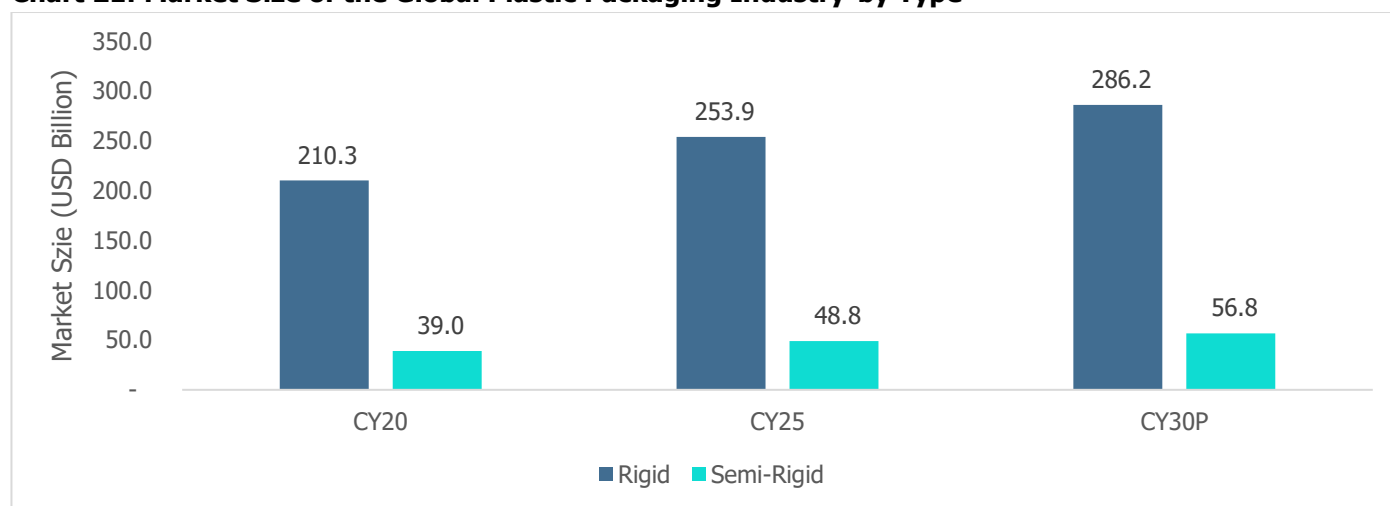
Chart 20: Market Size of the Global Packaging Industry- by Material



Source: Acumen Research And Consulting, CareEdge Research, P denotes projected

3.4 Overview and Market Size of the Global Plastic Packaging Industry- by type

Semi-rigid and rigid plastic packaging is widely used across food and beverages, dairy, healthcare, personal care, household products and industrial applications. Demand is supported by low weight, break resistance, product protection and compatibility with high-speed filling operations. However, the market is increasingly shaped by lightweighting, recycled-content requirements and packaging designed for easier recycling. The absence of a globally harmonised method for measuring plastic flows also limits direct comparison between semi-rigid and rigid market values

Chart 21: Market Size of the Global Plastic Packaging Industry-by Type


Source: Acumen Research And Consulting, CareEdge Research, P denotes projected

In CY25, the global rigid plastic packaging is valued around USD 253.9 billion and is expected to grow to USD 286.2 billion by CY30. This represents a compounded annual growth rate of 2.4% from CY25 to CY30. In CY25, the global semi-rigid plastic packaging is valued around USD 48.8 billion and is expected to grow to USD 56.8 billion by CY30. This represents a compounded annual growth rate of 3.1% from CY25 to CY30.

Rigid packaging remained the larger segment in CY20 and CY25 and is expected to retain this position through CY30, owing to the extensive use of bottles, jars, containers, drums and closures. Semi-rigid packaging remains a niche segment within the broader packaging industry; however, it is witnessing increasing adoption across applications such as dairy products, ready meals, fresh food, and takeaway services. Overall market value should rise towards CY30, although growth in resin consumption may be slower because of lightweighting, reuse and packaging-reduction initiatives. Regulatory requirements should also shift value towards recyclable designs and recycled-content products.

3.5 Sustainability Profile Segment for the Packaging Industry

Biodegradability

Biodegradable packaging is gaining traction, especially for short-use applications. Companies are developing compostable and natural fibre-based materials to tackle waste leakage. While infrastructure for large-scale composting is still evolving, a balanced approach combining recyclable and biodegradable solutions is emerging across the sector.

Carbon Emissions

Packaging production has been energy-intensive, but the focus has shifted from offsetting emissions to redesigning processes for efficiency. Manufacturers are increasingly adopting energy-efficient machinery, renewable power, and optimized logistics. Lightweight materials and low-temperature inks are helping reduce the carbon footprint per ton of output. Companies are also assessing material-level emissions through lifecycle analyses and transparent reporting.

Fossil Fuel Consumption

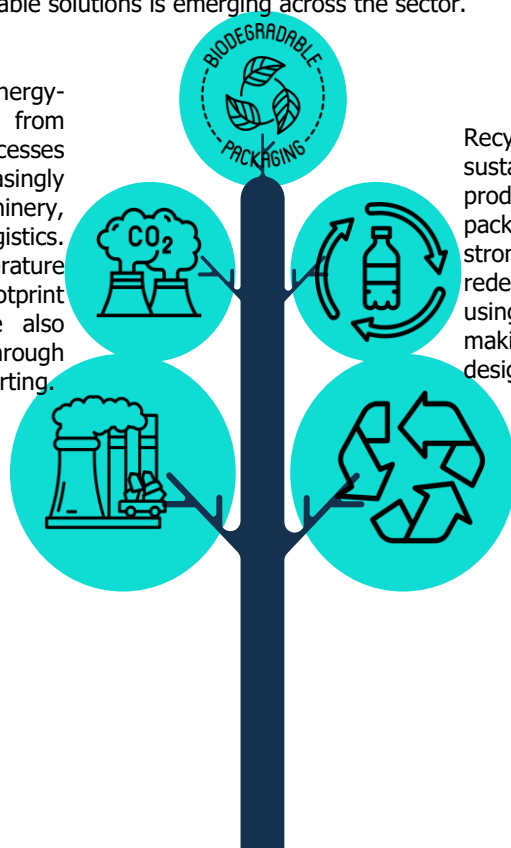
The industry's reliance on petrochemical feedstocks is steadily decreasing as companies shift toward bio-based and recycled materials. Many are also using renewable energy in production and sourcing recycled inputs to reduce dependence on crude oil, stabilize costs, and make their operations more sustainable over the long term.

Recyclability

Recyclability has become a key pillar of sustainable packaging. Under the EPR framework, producers are responsible for ensuring that their packaging is collected and reused. With India's strong informal recycling network, companies are redesigning packaging for easier segregation using mono-materials and solvent-free laminates, making recycling an integral part of product design rather than a post-use process.

Recycled Content

The use of recycled materials is becoming mainstream rather than symbolic. Manufacturers are setting up in-house recycling capabilities to ensure quality and consistency. Advanced blending techniques now allow higher use of post-consumer recycled (PCR) content without compromising performance, helping formalize India's recycling value chain.



3.6 Key Growth and Drivers

Key Trends in The Global Packaging Industry

Global Shift Toward Sustainability & Circular Packaging

Global demand for recyclable, lightweight, and recycled-content semi-rigid and rigid plastics is rising. India leads this shift, with EPR Guidelines and Plastic Waste Management Rules ensuring recycling. Indian circular packaging market is expected to have reached around USD 8 to USD 12 Billion in 2025.

Technological Advancements in Semi-rigid and rigid Plastic Materials

Globally, mono-material, bio-based, and high-barrier PET technologies are enhancing performance and recyclability. India's Plastic Parks Scheme and Petrochemical Innovation Centres promote R&D in lightweight rigid packaging, enabling local firms to achieve global quality benchmarks and export high-value PET/HDPE containers.

Innovation and Automation in Semi-rigid and rigid Plastic Packaging

Globally, automation, digital printing, and smart manufacturing are improving efficiency and enabling premium packaging. India is embracing these technologies, allowing local manufacturers to meet international standards, cater to evolving consumer needs, and strengthen its position as a competitive hub for semi-rigid and rigid plastic packaging.

Key Growth Drivers in the Global Packaging Industry

E-Commerce & Modern Retail Driving Semi-rigid and rigid Packaging Growth

Worldwide e-commerce and omni-channel retailing are spurring demand for durable, tamper-proof plastics. In India, online retail value is growing at a double-digit CAGR, fueling demand for PET and HDPE products in logistics and D2C fulfilment; converters are adding blow-moulding capacity to serve this boom.

Growth of Direct-to-Consumer (D2C) Brands

The rise of D2C brands is increasing the importance of packaging as a branding and customer experience tool. With limited physical retail presence, packaging plays a key role in storytelling, differentiation and first impressions, driving demand for customised and design-led solutions. At the same time, higher parcel shipping and last-mile delivery needs are pushing demand for durable, transit-ready packaging, increasing packaging value per unit across global markets.

Asia-Pacific Dominance

Asia-Pacific leads global packaging consumption, driven by urbanisation and rising incomes. India outpaces regional trends, supported by a young population, expanding retail, and strong sustainability policies, establishing itself as one of the fastest growing and most attractive markets for semi-rigid and rigid plastic packaging.

3.7 Key Threats and Challenges in the Global Packaging Industry

Raw Material Scarcity and Carbon Constraints

Volatility in raw material prices, especially PET, HDPE, and PP, continues to squeeze margins in semi-rigid and rigid plastic packaging. Recently, crude-linked polymer prices in various Asian markets have been fluctuating due to supply disruptions, directly impacting input costs. Additionally, manufacturers are facing increasing scrutiny regarding their carbon emissions. To address these challenges, manufacturers need to adopt energy-efficient extrusion technologies, reduce water usage, and increase the recycled content in their products. However, achieving these goals often requires significant investment in advanced equipment, such as wash-line and solid-state polycondensation (SSP) units, which can be a hurdle for smaller companies. Those that cannot upgrade risk falling behind in meeting the sustainability criteria set by multinational FMCG firms.

Global Regulatory Fragmentation

Manufacturers of plastic packaging that operate internationally are facing a fragmented regulatory landscape. The definition of "recyclable packaging" varies significantly; Europe's mechanical recyclability criteria are quite different from those in Southeast Asia or the United States. For example, over 30 countries have implemented their own Extended Producer Responsibility (EPR) rules, many of which set distinct recycled-content requirements or mandate producers to take-back programs.

Disruptive Consumer Behaviour

Consumer behaviour is rapidly evolving, driven by sustainability concerns and the desire for convenience. Minimalist, refillable, or reusable packaging products have gained popularity in premium personal care and household categories. Brands that do not adapt to these changing preferences risk losing their shelf appeal, especially in mature markets. Many beverages and FMCG companies have initiated refill-and-return programs across Europe and Asia, placing pressure on rigid plastic packaging providers to innovate with lightweight formats or higher recycled content. The shift towards "eco-conscious" packaging is no longer just a trend; it has become a competitive advantage that influences retailer acceptance and consumer loyalty.

High Entry Barrier

High entry barriers significantly challenge the global packaging industry due to capital-intensive operations, advanced machinery, and strict quality and regulatory standards in sectors like food and pharmaceuticals. Establishing manufacturing lines for materials such as plastics and paper requires substantial investment in technologies like extrusion and printing. Established companies benefit from long-term agreements, integrated sourcing, and economies of scale, making it difficult for new entrants to compete on price and reliability. Additionally, global brands require proven technical capabilities and certifications from suppliers, further complicating market entry for new firms, which limits competition and maintains dominance by well-capitalised manufacturers.

Rising Inflationary Pressures

Inflation poses a challenge to the global packaging industry by increasing costs of key inputs such as polymers, paper, aluminium, energy and freight. Since packaging is often supplied under annual or fixed-price contracts, immediate cost pass-through is limited, leading to margin pressure. Elevated inflation also prompts FMCG and beverage companies to pursue lightweighting, pack-size optimisation and cost rationalisation, which can reduce packaging volumes and limit pricing flexibility for manufacturers.

Geopolitical Instability

Geopolitical instability remains a key challenge for the global packaging industry due to its impact on raw material supply, logistics and production costs. Conflicts, trade restrictions and disruptions to major shipping routes can increase freight charges, delay deliveries and create volatility in the prices of petrochemical-based resins such as PE, PP and PET. As the industry relies on globally integrated supply chains, prolonged geopolitical tensions can affect procurement, production planning and profit margins, prompting manufacturers to diversify sourcing and strengthen supply chain resilience.

Regulatory challenges

The regulatory environment for plastic and bio-plastic packaging is becoming increasingly stringent, requiring companies to adapt to evolving environmental, quality, and safety norms. Compliance often involves higher spending on testing, certifications, product redesign, and process upgrades, increasing operating complexity and costs. These requirements can act as an entry barrier for smaller players, while favouring scaled players with established compliance capabilities.

Key global regulatory frameworks include:

- UK / International: Standards developed by the British Retail Consortium in collaboration with the Institute of Packaging Professionals set widely accepted benchmarks for packaging quality, hygiene, and safety.
- United States: Compostable plastics are evaluated under standards issued by the American Society for Testing and Materials, such as ASTM D6400, which assesses compostability under controlled conditions.
- European Union: EN 13432 defines criteria for packaging recoverable through composting and biodegradation, including suitability for organic recovery routes.
- India: Plastic packaging is regulated through Food Safety regulations, Extended Producer Responsibility (EPR) norms under the Plastic Waste Management Rules, and standards issued by the Bureau of Indian Standards.

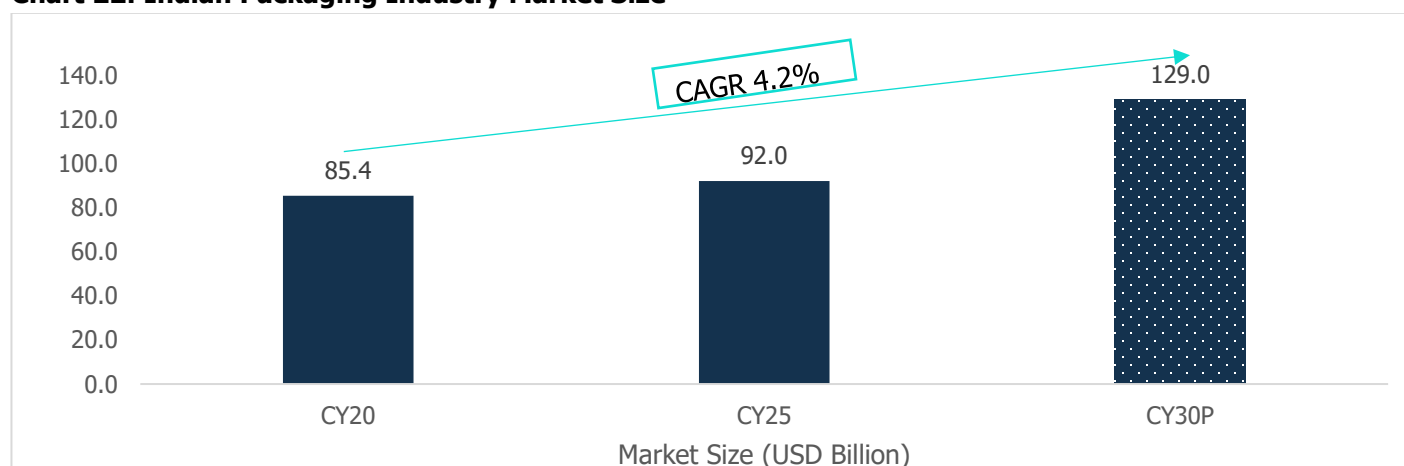
4 Overview of the Indian Packaging Industry

4.1 Overview & Market Size of the Indian Packaging Industry

The Indian packaging industry is one of the fastest-growing sectors in India, driven by increasing consumer demand, urbanisation, the growth of e-commerce, and a heightened preference for sustainable packaging. This sector plays a vital role across various industries, including fast-moving consumer goods (FMCG), food and beverages, dairy, pharmaceuticals, retail, and industrial applications, making it an integral part of India's consumption and manufacturing ecosystem.

The industry is currently transitioning from traditional packaging to more lightweight, flexible, and sustainable solutions. This shift is being driven by the integration of technology and automation, which are transforming production processes.

Chart 22: Indian Packaging Industry Market Size

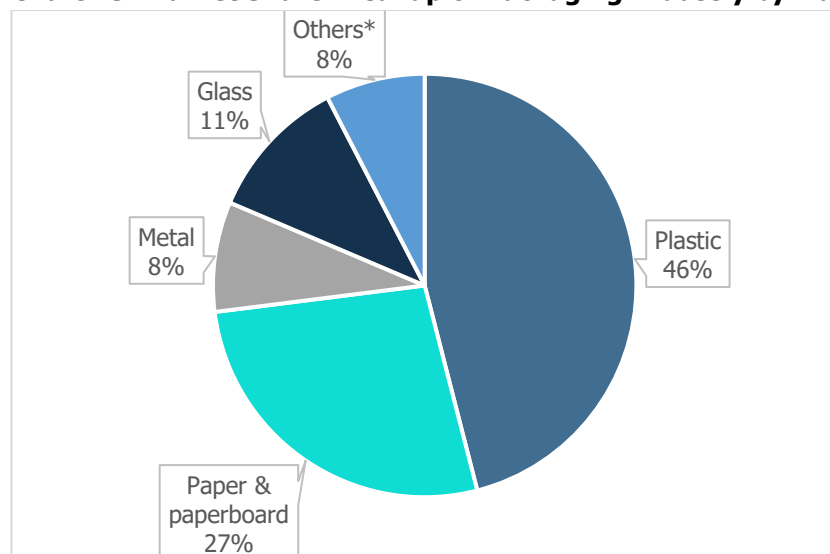


Source: Acumen Research And Consulting, CareEdge Research, P denotes projected

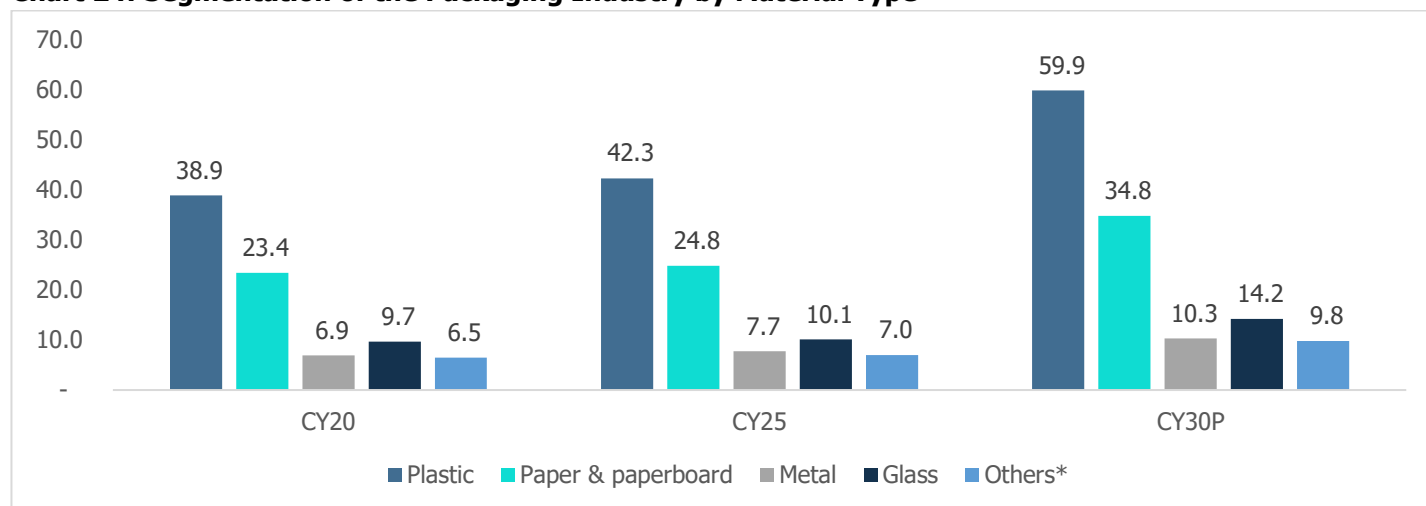
In CY25, the Indian packaging industry have reached around USD 92 billion, and it is further anticipated to reach USD 129 billion by CY30, showing a compounded annual growth rate of 7% between CY25-CY30. This growth is supported by factors such as rising per capita income, the premiumisation of products, the E-commerce and quick commerce boom, and increasing exports that require packaging to meet global standards.

4.1.1 Segmentation of the Packaging Industry by Material Type

Plastic dominates India's packaging landscape, making up about 46% of the market thanks to its affordability and wide use across food, FMCG, and pharma. Paper and paperboard follow at around 27%, and this segment is growing quickly as e-commerce expands and brands push for more sustainable packaging. Metal packaging holds a smaller 8% share, but demand for cans and aerosols is expected to keep growing at roughly 6-7% CAGR through CY25-30. Glass accounts for about 11%, supported by premium beverages and pharmaceutical uses where quality and safety are critical. The remaining 8% comes from other materials such as jute, wood, and an emerging biodegradable option.

Chart 23: Market Share Breakup of Packaging Industry by Material Type (CY25)


Source: Acumen Research And Consulting, CareEdge Research, *Others include wood, cloth, jute etc.

Chart 24: Segmentation of the Packaging Industry by Material Type


Source: Acumen Research And Consulting, CareEdge Research; P denotes projected; *others include wood, cloth, jute, etc.

• Plastic Packaging

Plastic packaging remains the largest segment in the Indian packaging market because it's versatile, affordable, and applicable across a wide range of industries, with the market size of USD 42.3 billion in CY25, contributing 46% of the total market. By CY30, the plastic packaging reaching USD 59.9 billion, implying a CAGR of 7.2% from CY25 to CY30.

Rigid Plastic Packaging: The Indian rigid plastic packaging market has reached around USD 14.7 billion in CY25 and is projected to reach USD 21.4 billion by CY30, reflecting a CAGR of 7.9%. The segment remains the largest contributor to the plastic packaging industry, driven by the widespread use of bottles, jars, containers, drums, caps and closures across beverages, pharmaceuticals, household products, personal care and industrial applications. Growth is expected to be supported by increasing packaged product consumption, while greater adoption of recyclable designs, food-grade recycled materials and lightweight packaging solutions is likely to shape future market development.

Semi-Rigid Plastic Packaging: The Indian semi-rigid plastic packaging market has reached around USD 5.1 billion in CY25 and is expected to grow to USD 7.3 billion by CY30, registering a CAGR of 7.5%. The segment primarily comprises trays, cups, tubs, lids and thermoformed containers used across dairy products, packaged foods, fresh produce, ready-to-eat meals and takeaway applications. Demand is being supported by the expansion of convenience food consumption, organised retail and food-delivery services, while increasing focus on recyclability, mono-material structures and material efficiency is expected to drive product innovation over the forecast period.



- **Paper & Paperboard Packaging**

Paperboard packaging includes cartons, boxes, and corrugated containers used for secondary and tertiary packaging. Paper & Paperboard packaging constitute around 26% of the total market in CY25 and is projected to grow by 7% and become USD 34.8 billion in CY30. This segment has experienced rapid growth, particularly with the expansion of e-commerce and the increasing demand for packaging solutions that offer recyclability and versatility. Paper-based packaging is easy to print on, making it suitable for branding and product display, while corrugated boxes offer strong protection for transit and storage. Indian manufacturers are investing in lightweight, high-strength paperboard to achieve a balance between durability and cost efficiency. Alongside other packaging materials, paperboard continues to play an important role in the packaging ecosystem, serving a wide range of consumer and industrial applications. Paper packaging is renewable, biodegradable, and widely recovered, with 70–85% recycling rates in many markets. It naturally decomposes within a few months under environmental conditions. While production requires substantial water and energy, its strong circularity and composability enhance its sustainability appeal.



Metal packaging, primarily composed of aluminium and tinplate, is recognised for its strength, durability, and excellent barrier properties. Metal packaging constitute around 8% of the total market in CY25 and is projected to grow by 6% and become USD 10.3 billion in CY30. It is commonly used for beverages, canned foods, aerosols, paints, and industrial products. In India, the market remains stable, supported by the beverage and FMCG industries, alongside increasing demand for energy drinks and ready-to-drink products. Metal packaging aligns well with circular economy goals, as it is fully recyclable without losing quality. However, higher production costs and energy consumption present significant challenges for this segment.

Metal packaging (steel and aluminium) offers high recyclability, with strong scrap value driving collection rates typically between 60–80%. Recycled metal can be reused repeatedly with minimal quality loss, supporting robust circularity. Key challenges include high resource use during primary production and the need for clean, well-sorted scrap to ensure efficient recycling across different metal grades.



- **Glass Packaging**

The glass packaging industry was valued at USD 9.7 billion in CY20 and has reached around USD 10.1 billion in CY25, reflecting steady demand from core end-use segments. Supported by premiumisation trends, recyclability, and rising use in alcoholic beverages and pharmaceuticals, the market is projected to grow further and reach USD 14.2 billion by CY30, making up about 11% of the total market.

Glass packaging is primarily used for premium food items, alcoholic beverages, cosmetics, and pharmaceuticals. It offers a high level of product safety as it is non-reactive and provides an excellent barrier against contamination. Indian consumers often associate glass with quality and luxury, which reinforces its continued use in premium brands. However, its heavier weight and fragility increase transportation and handling costs compared to other materials, limiting its broader application in mass-market segments.

Glass can be recycled endlessly without quality loss, with 40–60% recycling rates depending on collection systems. It is chemically inert and suitable for repeated reuse cycles. Its heavier weight increases transport intensity, and high-temperature manufacturing makes production more resource-heavy despite strong recyclability.



- **Others:**

The “Others” segment covers smaller, niche packaging materials such as jute bags, wooden crates and pallets, textile packaging, cork, and other speciality products typically used for industrial goods, agricultural produce, exports, and logistics. While not a large part of the overall market, these materials serve specific use cases where strength, reusability or sustainability matter more than scale. The segment was valued at USD 6.1 billion in CY20, dipped slightly to USD 7 billion in CY25, and is expected to grow steadily to USD 9.8 billion by CY30. By CY30, “Others” is projected to account for approximately 8% of the total packaging market. Growth here is driven less by FMCG volumes and more by infrastructure activity, exports and rising preference for natural and reusable materials like jute and wood. Although smaller in size, the segment remains relevant as sustainability and circular-use packaging gain importance across supply chains.

- **Comparing Sustainability Across the Different Forms of Packaging**

Plastic materials are generally efficient in terms of material usage and cost-effective, offering strong barrier properties. However, they tend to have lower recycling outcomes in practice. On the other hand, paper and paperboard excel in recyclability and biodegradability, but they usually provide limited barrier protection unless enhanced with additional treatments. Metal and glass offer excellent barrier performance and are highly recyclable, but they come with a higher

unit cost. Therefore, the choice of packaging should be based on the specific needs for product protection and supply chain requirements, rather than focusing solely on one sustainability factor.

Table 7: Comparing Sustainability Across the Different Forms of Packaging

Criteria	Plastic Packaging	Paper and Paper Board Packaging	Metal Packaging	Glass Packaging
Cost per Unit	★★★	★★	★★	★
Barrier requirement	★★★	★	★★★	★★★
Lower lifecycle carbon footprint	★★★	★★★	★★	★
Recycled %	★	★★	★★★	★★
Recyclability	★	★★	★★★	★★★
Biodegradability	★	★★★	★	★

Source: Industry Sources, CareEdge Research

Note: ★★★ – Best | ★★ – Good | ★ – Poor

4.2 Key Trends and Growth Drivers

Key Trends in the Indian Packaging Industry

Shift from Unorganised to Organised Manufacturing

The packaging landscape is transitioning from a fragmented, localised supply base to larger, organised manufacturers and integrated suppliers. Key drivers of this change include brand consolidation, retailer and exporter quality requirements, and investments by larger firms in automated converting, recycling, and testing facilities. This trend reduces regional variability in quality and increases scale efficiencies. Additionally, it accelerates partnerships for formal waste management and compliance with national Extended Producer Responsibility (EPR) requirements.

Premiumisation Driving Rigid/PET Products

The rise of premium product lines in beverages, personal care, and gourmet foods is increasing the demand for high-quality semi-rigid and rigid products that convey value and protection. PET and rigid plastics are often used for premium-positioned beverages and personal care jars because they allow for a premium finish (such as labelling, shrink sleeves, and embossing) while being lighter than glass. Retailers and brands frequently choose rigid plastic when they need a premium look combined with lower transport costs and shatter resistance.

Technology, Automation & Lightweighting

Packaging companies are using better design tools and more automated production lines to use less material in each pack without compromising strength or safety. Thinner walls improved preform designs and optimised closures help cut material costs and make packs lighter to transport. Automation ensures consistent quality even as material usage is reduced.

Lighter packaging also means lower freight loads and fewer transport emissions, while generating less waste at the end of life. This is especially important in markets where recycling is still limited. Everyday examples include lighter PET bottles for drinking water and thinner HDPE drums for non-hazardous industrial liquids, which deliver the same performance using less plastic.

Shift from Glass and Metal

Product products that traditionally used glass or metal are increasingly shifting towards lighter, more durable plastics in various applications. Edible oils, once commonly sold in glass bottles or metal tins, are now regularly packaged in PET bottles and HDPE containers for larger bulk products, reducing breakage and transport costs. Shampoo and personal care bottles, which previously included some glass or metal premium options, are now predominantly available in PET or PP rigid bottles, with refill pouches emerging to cut down on single-use waste. Toothpaste packaging is also evolving, moving away from all-metal tubes to laminated PE/PP tubes and increasingly recyclable mono-polymer products to simplify recovery. While spirits and other premium liquors largely remain in glass for reasons related to shelf presence and perceived quality, ready-to-drink and entry-level products are increasingly using PET. Paints and varnishes, historically packaged in steel tins, are seeing a shift towards more lightweight steel gauges, metal-plastic hybrid packs, and an increase in HDPE pails for smaller volumes to improve handling and reduce weight.

Product	Traditional Material	Current Trend
Edible Oil	Glass / Metal	3-layer / 5-layer flexible film pouches and Tin containers
Toiletries (Soap / Shampoo)	Paper / Glass	Plastic pouches and flexible films
MPCG (Cement / Fertiliser)	Jute	PP / HDPE woven sacks
Toothpaste	Metal	Plastic laminates (lamitubes)
Liquor	Glass	Recycled PET bottles
Aerated Beverages	Glass	PET bottles
Paints and Agrochemicals	Metal	Recycled PET / HDPE containers and Tinplate containers
Packaged Drinking Water	Glass	PET bottles
Snacks and Confectionery	Paper / Foil	Tin and multi-layer plastic laminates
Pharmaceuticals (Syrups)	Glass	PET bottles

Source: Industry Sources, CareEdge Research

Key Growth Drivers in the Indian Packaging Industry

PET and HDPE Dominance

PET and HDPE are gaining wider acceptance due to their cost-effectiveness, ease of processing, durability, and established recycling streams. PET is often preferred when clarity and barrier properties are required for beverages, while HDPE is typically chosen for its chemical resistance and strength (in products like detergents and oils). Their widespread use is supported by a growing domestic converting base and improving collection and recycling infrastructure for common bottle grades.

Growth in Specific End-Use Sectors

Demand for packaging is increasing across a broad range of consumer, industrial and specialised applications in India. Food and beverages, pharmaceuticals, personal care and household products require packaging that supports product safety, shelf life, convenience, branding and traceability. Industrial sectors, including chemicals, agriculture, automotive, electronics and construction, generate demand for durable packaging suited to storage, handling and transportation. At the same time, the expansion of retail, e-commerce, food service and logistics is supporting demand for lightweight, protective and transit packaging. Evolving requirements across these end-use sectors are expected to drive the adoption of innovative, efficient and application-specific packaging solutions.

Rising FMCG and Consumer Consumption:

The primary growth driver of the Indian packaging industry is the steady expansion of FMCG, food & beverages, pharmaceuticals and e-commerce. Rising disposable incomes, urbanisation and changing lifestyles are increasing demand for packaged, branded and convenience-oriented products. This directly drives higher demand for reliable, scalable and compliant packaging across products, with manufacturers increasingly focusing on shelf-ready, transport-efficient and regulatory-compliant solutions to support growing volumes and wider distribution reach.

Rapid Growth of Food Delivery & Quick Commerce

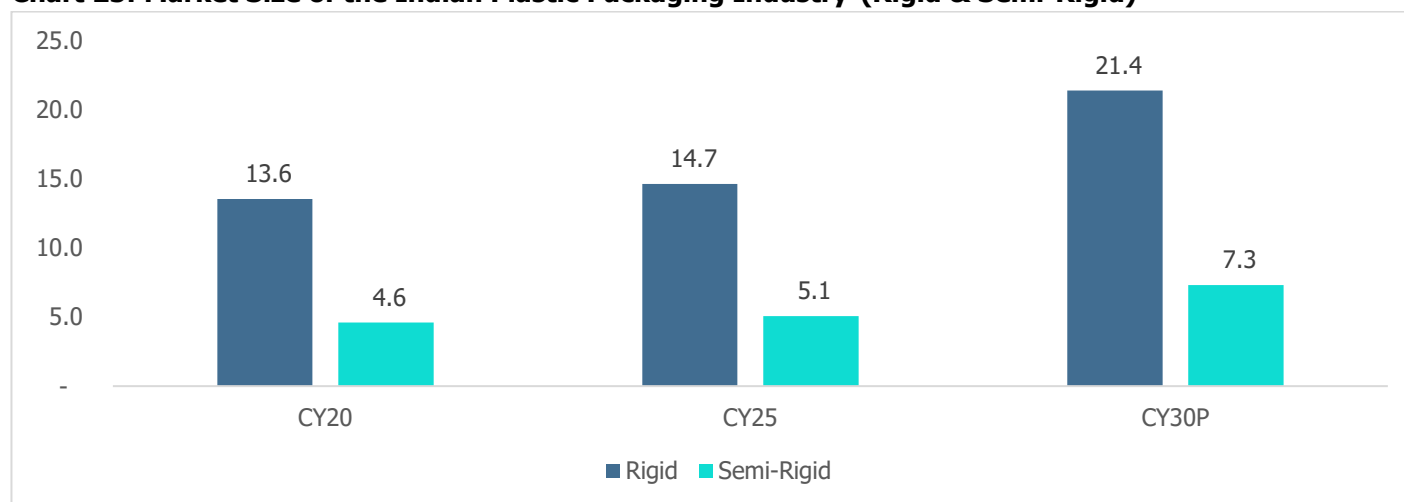
The rapid expansion of food delivery platforms and quick-commerce models offering 10–30-minute delivery has meaningfully increased demand for durable, leak-proof and temperature-resistant packaging. Restaurants, cloud kitchens and grocery platforms increasingly depend on semi-rigid and rigid containers, multi-layer packs and tamper-evident solutions to ensure food reaches consumers safely and in good condition.

5 Overview of the Indian Plastic Packaging Industry

5.1 Overview and Market Size of the Indian Plastic Packaging Industry

India's semi-rigid and rigid plastic packaging market serves beverages, dairy, packaged food, pharmaceuticals, personal care and household products. Rigid products include bottles, jars and containers, while semi-rigid products primarily comprise trays, cups and thin-wall tubs. Demand is supported by organised retail, packaged consumption and delivery-led food services, although future product development will increasingly focus on lower material use, recyclability and recycled content. BIS also highlighted sustainable design, food-contact safety and circularity as key priorities for Indian plastic packaging in July 2025.

Chart 25: Market Size of the Indian Plastic Packaging Industry-(Rigid & Semi-Rigid)



Source: Acumen Research And Consulting, CareEdge Research, P denotes projected

In CY25, the Indian rigid plastic packaging is valued around USD 14.7 billion and is expected to grow to USD 21.4 billion by CY30. This represents a compounded annual growth rate of 7.9% from CY25 to CY30. In CY25, the Indian semi-rigid plastic packaging is valued around USD 5.1 billion and is expected to grow to USD 7.3 billion by CY30. This represents a compounded annual growth rate of 7.5% from CY25 to CY30.

Rigid packaging remained the larger segment in CY20 and CY25 and is expected to retain this position through CY30, owing to the extensive use of bottles, jars, containers, drums and closures. Semi-rigid packaging represents a smaller market but is likely to grow faster in selected applications, supported by dairy products, ready meals, fresh food and takeaway services. Overall market value is expected to rise by CY30, although growth in resin consumption may be slower because of lightweighting, reuse and packaging-reduction initiatives. Regulatory requirements should also shift value towards recyclable designs and recycled-content products.

Rigid Plastic Packaging

Rigid plastic packaging includes PET and HDPE bottles, jars, thick-wall containers, drums, caps and closures. The segment benefits from broad use in beverages, pharmaceuticals, household products and industrial goods, where dimensional stability, sealing performance and transport durability are important. Growth through CY30 should be supported by packaged consumption in developing markets, while lightweight designs, refill systems and restrictions on unnecessary packaging may moderate volume expansion. Demand is expected to move towards recyclable containers, food-grade rPET and packaging systems in which the body, label and closure are easier to separate or recycle.

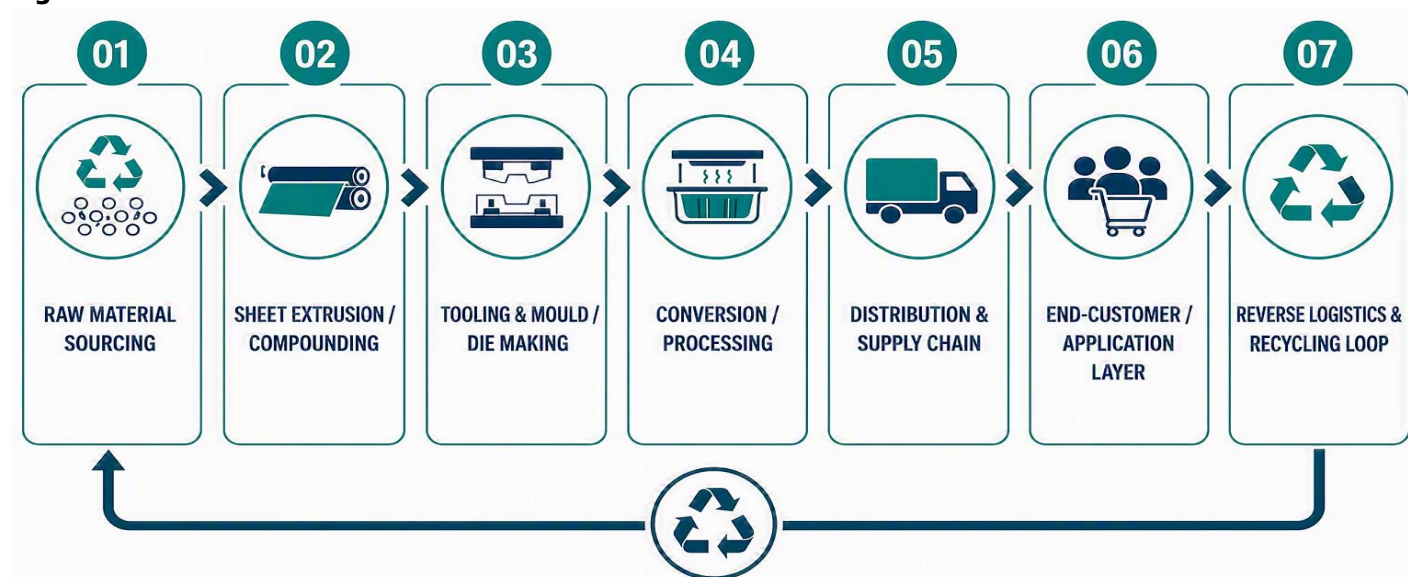
Semi-rigid Plastic Packaging

Semi-rigid packaging includes thermoformed trays, cups, thin-wall tubs and lids that retain their form but use less material than conventional rigid containers. Growth should be supported by convenience food, portion packs, dairy, fresh produce and food-delivery applications. The segment's future performance will depend on improving recyclability, as food residue, multi-material layers, labels and dark colours can reduce recycling efficiency. Mono-material PET and polypropylene products, detachable lids and lower-weight structures are therefore likely to gain importance through CY30.

5.2 Value chain analysis

The semi-rigid plastic packaging value chain comprises interconnected stages from polymer sourcing to end-use and post-consumer recovery. Each stage influences the final product's cost, performance, customization potential and sustainability profile.

Figure 1: Value chain



- The chain begins with raw material sourcing, including PET, PP, PE, PS, HIPs, additives, masterbatch and recycled resin/PCR. Material selection is critical as it determines rigidity, transparency, heat resistance, recyclability and overall packaging cost.
- The next stage is sheet extrusion, compounding and material preparation, where polymers are converted into sheets, rolls or compounded inputs suitable for thermoforming or injection moulding. This stage is especially important for thermoformed products such as trays, cups, tubs and clamshells. Thermoforming is widely used in semi-rigid and rigid food packaging products, while injection moulding is relevant for containers, lids and closures.
- Tooling, mould and die making form a key technical stage in the value chain. Tooling determines pack design, dimensions, wall thickness, stacking ability and production consistency. Strong tooling capabilities also improve customization and reduce product development timelines.
- The conversion and processing stage is the core value-adding step. It includes thermoforming, injection moulding, trimming, printing, labelling and in-mould labelling. This stage converts prepared materials into finished packaging products used across food service, dairy, FMCG, fresh produce and agro-based applications.
- The finished products then move through the distribution and supply chain layer, where manufacturers supply packaging to brand owners, food processors, dairy companies, FMCG players and institutional customers. Logistics

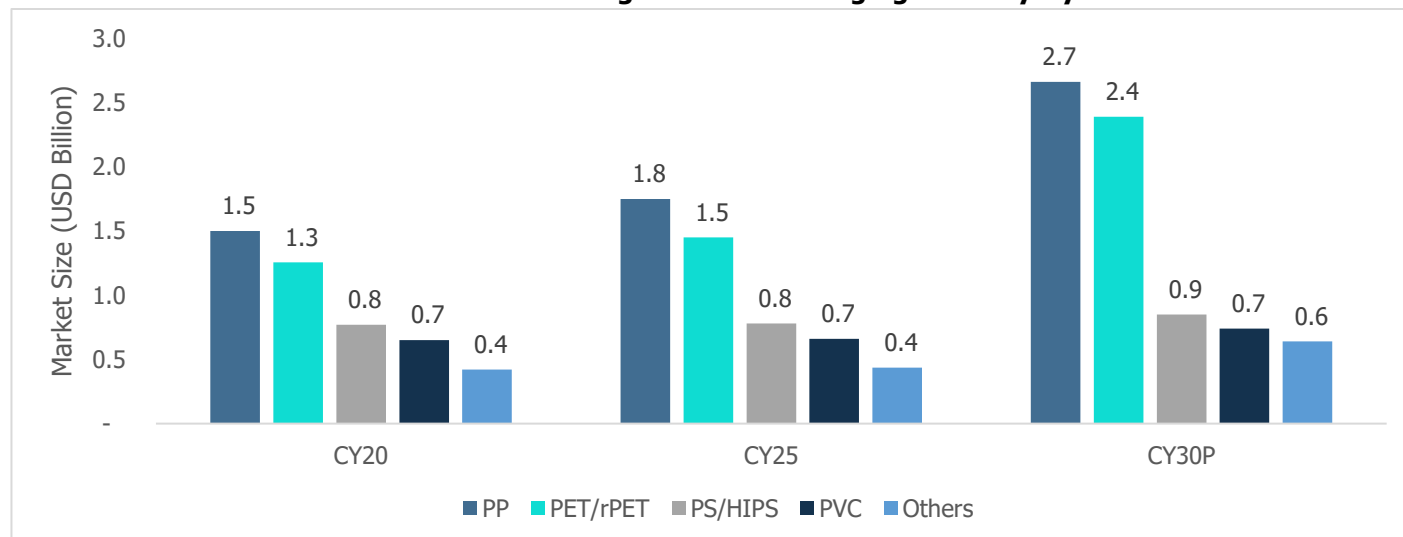
efficiency is important because semi-rigid packaging is lightweight but occupies significant volume, making transportation, warehousing, and inventory management important cost factors.

- The end-customer/application layer drives demand based on convenience, hygiene, product protection, shelf visibility and branding requirements. Food and beverage applications remain a major demand driver within plastic packaging, with rigid packaging products continuing to hold a significant share in the market.
- Finally, reverse logistics and recycling completes the value chain by enabling collection, sorting, recycling and recovery of plastic packaging waste. In India, this stage is increasingly important due to EPR-linked obligations, under which producers, importers and brand owners are responsible for managing plastic packaging waste.

5.3 Semi-Rigid Plastic Packaging-by Material

India's semi-rigid plastic packaging market includes thermoformed trays, cups, thin-wall tubs, lids, blister packs and food-service containers. Polypropylene (PP), PET/rPET, PS/HIPS and PVC are the principal materials, while polyethylene and specialised polymers serve selected applications. Material choice is determined by heat resistance, transparency, forming performance, product protection, cost and recycling suitability. For food applications, FSSAI requires packaging to be food-grade and suitable for the product, filling process, storage conditions and transportation environment.

Chart 26: Market Size of the Indian Semi – Rigid Plastic Packaging Industry-by Material



Source: Acumen Research And Consulting, CareEdge Research, P denotes projected

PP was the largest semi-rigid packaging material in CY20 and remained the market leader in CY25 with a market size of USD 1.8 billion and is expected to show a CAGR of 8.7% between CY25 and CY30, supported by its use in dairy cups, thin-wall tubs, trays and takeaway containers. PET and rPET was valued at USD 1.3 billion in CY20 and increased to USD 1.5 billion, further, it is expected to grow at a CAGR of 10.5% reaching USD 2.4 billion by CY30, due to demand for transparent and recyclable packaging, while PS/HIPS and PVC remained concentrated in selected food-service and pharmaceutical applications expected to maintain similar levels by CY30.

By CY30, PP is expected to remain the largest material, while PET/rPET is likely to achieve the strongest relative growth. This shift will be supported by expanding food-grade recycling capacity and FSSAI's framework for using approved rPET in food-contact packaging. PS/HIPS and PVC may lose relative share as manufacturers favour materials with better-established recycling routes.

a) Polypropylene

PP is widely used in thin-wall tubs, dairy cups, takeaway containers, microwaveable trays and lids. Its low weight, heat resistance and ability to form relatively stiff containers support its leading position. Demand is expected to increase through CY30 with packaged dairy products, prepared foods and delivery-based consumption. However, packaging manufacturers will need to reduce pack weight and simplify labels, lids and decoration to improve recycling outcomes.

b) PET and rPET

PET is used in clear trays, cups, lids and food containers where product visibility, strength and dimensional stability are important. Its position strengthened between CY20 and CY25 and is expected to improve further by CY30 as approved rPET becomes more available. FSSAI notified amendments relating to recycled plastic in food packaging in March 2025 and subsequently issued guidelines for accepting rPET as a food-contact material in May 2025. As of September 2025, FSSAI's published list included multiple approved manufacturers and production lines for food-grade rPET resin. This provides a clearer regulatory route for using recycled material in trays and other suitable food-contact products. Growth will nevertheless depend on the supply of clean used PET, consistent colour and reliable forming performance.

c) PS and HIPS

PS and HIPS are used in yoghurt cups, food trays, disposable containers and selected healthcare packs. The materials offer stiffness, printability and efficient thermoforming, while HIPS provides better impact resistance than standard PS. However, their relative share is likely to decline towards CY30 because PP can replace PS in several food-service applications and PET has stronger collection and recycling routes. PS/HIPS should remain relevant where stiffness, surface finish and low processing cost are important.

d) PVC

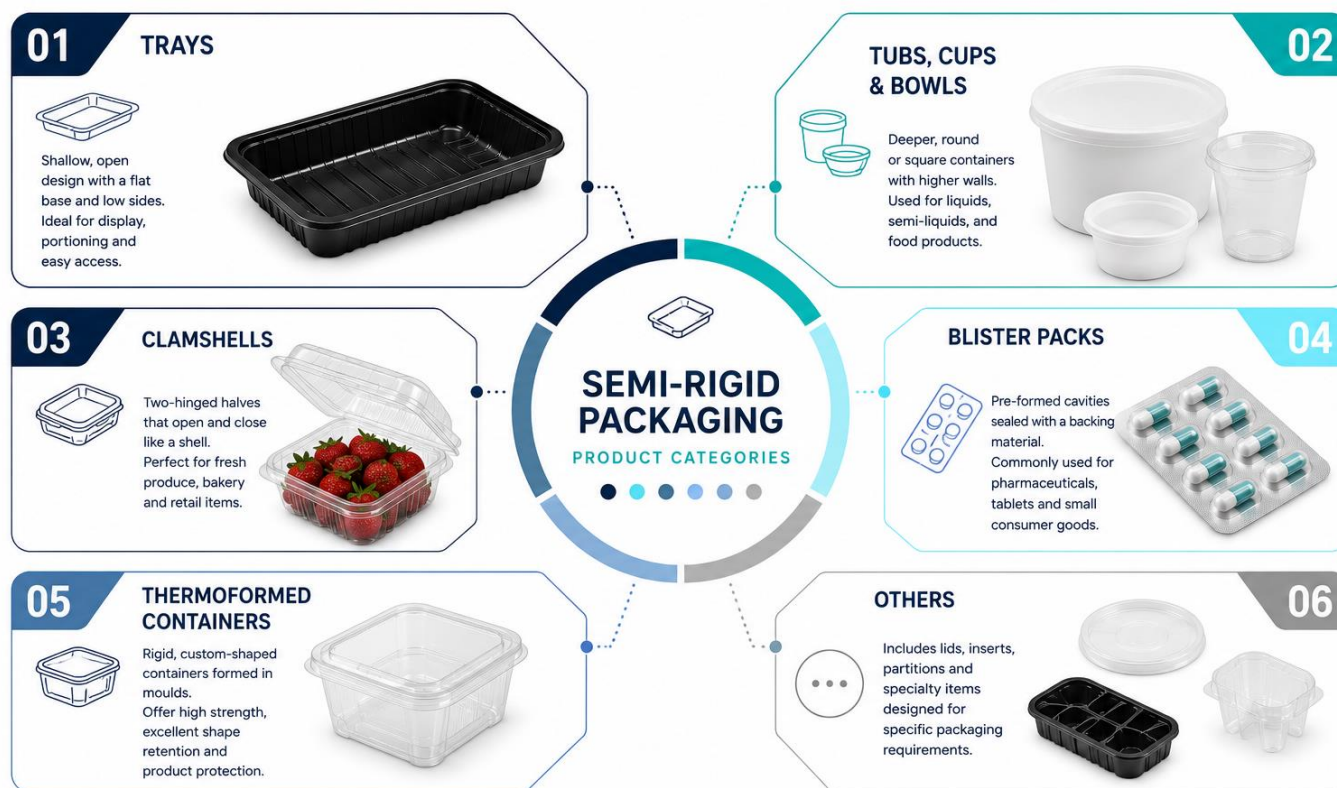
PVC is mainly used in pharmaceutical blister packaging and selected thermoformed packs because it offers clarity, forming performance and useful barrier properties. Its share of the wider semi-rigid market is expected to remain limited through CY30. Substitution is more likely in general consumer packaging, while pharmaceutical applications may change more slowly because product specifications, machinery compatibility and regulatory approvals create higher switching costs.

e) Other Materials

Other materials include polyethylene grades, polycarbonate, compostable polymers and specialised multi-material structures. Their combined share is expected to remain relatively small, with growth concentrated in products requiring specific sealing, barrier, temperature or durability properties. Future adoption will depend on food-contact safety, recycling infrastructure and the ability to justify higher material costs. FSSAI's continuing review of substances used in food-contact packaging indicates that material safety and chemical composition will remain important product-development considerations.

5.4 Overview of Indian Semi-Rigid Plastic Packaging Industry- by Product Type

The Indian semi-rigid plastic packaging market comprises a diverse range of product products, including trays, tubs, cups, bowls, clamshells, blister packs, thermoformed containers and other customized packaging solutions. These products are primarily used across food service, dairy, fresh produce, FMCG, pharmaceuticals, personal care and consumer goods applications. The segment benefits from rising demand for lightweight, hygienic, convenient and cost-efficient packaging, particularly across organised retail, quick-service restaurants, packaged foods and ready-to-eat consumption categories.

Figure 2: Semi-Rigid Plastic Packaging Products


• **Trays** represent an important product category within semi-rigid packaging, especially for fresh produce, meat, bakery, ready meals and institutional food packaging. Their demand is supported by the need for product protection, portion control, packaging that can be stacked easily during storage and transport, and clear product visibility. Thermoformed trays are widely preferred due to their ability to offer design flexibility, lightweighting and compatibility with sealing films.

• **Tubs, cups and bowls** are widely used across dairy, desserts, dips, sauces, ice creams, ready-to-eat meals and food service applications. This category is driven by growth in packaged foods, convenience-led consumption and single-serve products. The ability to combine functionality with branding through printing, labelling and in-mould labelling makes this product group particularly relevant for consumer-facing applications.

• **Clamshells** are commonly used for bakery products, fresh fruits, salads, snacks and takeaway food packaging. Their integrated lid structure, transparency and ease of handling make them suitable for retail display and food delivery products. However, clamshells also face higher sustainability scrutiny due to their post-consumer recovery challenges, particularly when contaminated with food residues.

• **Blister packs** are used in pharmaceutical, personal care, electronics and small consumer goods packaging. Within the semi-rigid packaging space, blister packs offer product protection, tamper evidence, visibility and unit-level packaging convenience. Their growth is closely linked to the expansion of pharmaceutical and healthcare consumption, although recyclability can be challenging where multi-material structures are used.

• **Thermoformed containers** form a core part of the semi-rigid packaging industry and are used across food, dairy, ready meals, frozen foods and consumer goods. Thermoforming is a major production process for semi-rigid and rigid products such as trays, cups, tubs and food containers, supported by its suitability for high-volume, lightweight and cost-efficient packaging production.

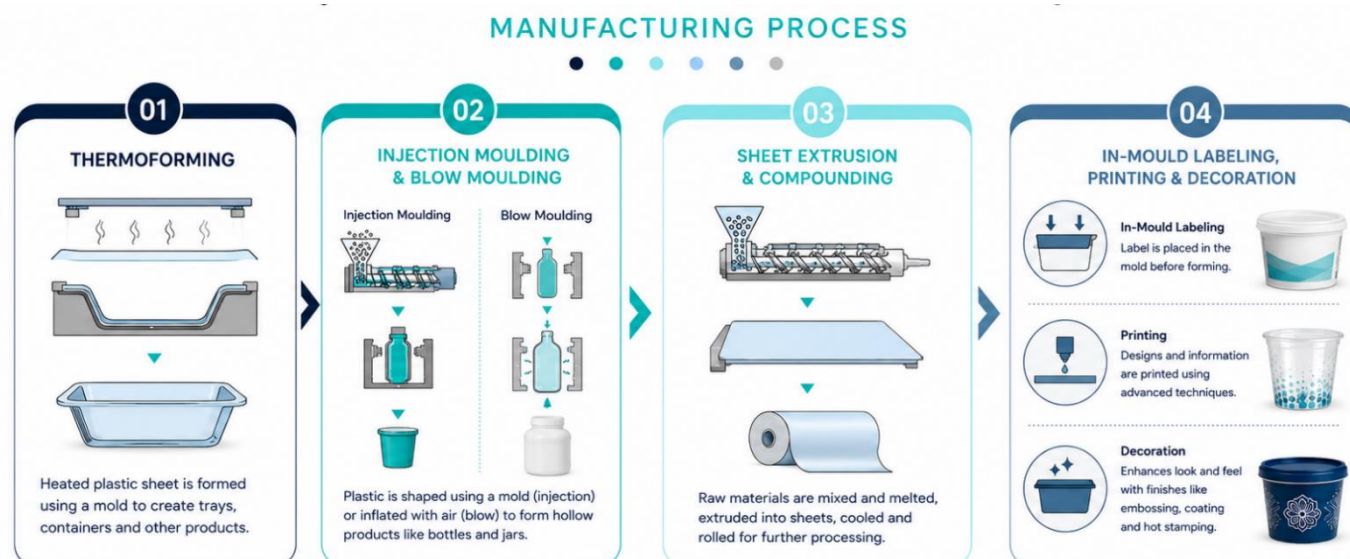
• **Others** includes lids, punnets, inserts, compartment packs, customized containers and specialty packaging products. These products are usually application-specific and are shaped by customer requirements around shelf appeal, sealing compatibility, barrier performance, stackability and material efficiency.

Overall, the product mix in India's semi-rigid plastic packaging market is increasingly being shaped by food-led consumption growth, retail formalisation, convenience packaging, sustainability expectations and material innovation. While demand remains strong across key products, future competitiveness will depend on manufacturers' ability to improve recyclability, reduce material usage, enhance design flexibility and support large-scale customised packaging requirements.

5.5 Overview of Indian Semi-Rigid Plastic Packaging Industry- by Process Types

The Indian semi-rigid plastic packaging industry is primarily shaped by key processing technologies such as thermoforming, injection moulding, sheet extrusion, in-mould labelling, and printing/decorative processes. The choice of process depends on the product format, end-use application, production volume, material type, design complexity and cost requirements. In India, process selection is becoming increasingly important as manufacturers focus on lightweighting, customization, scalability and recyclability.

Figure 3: Semi-Rigid Plastic Packaging Processes



• **Thermoforming** is the dominant process for semi-rigid plastic packaging, particularly for trays, tubs, cups, bowls, lids, clamshells, punnets and food containers. The process involves heating plastic sheet and forming it into the desired shape using moulds, vacuum, pressure or mechanical assistance. It is especially suitable for high-volume, lightweight and cost-sensitive packaging applications because it offers design flexibility, relatively lower tooling costs and faster conversion cycles compared with more complex moulding processes. In India, thermoforming is highly relevant for food service, dairy, fresh produce, bakery, ready-to-eat meals and FMCG packaging, where visibility, stackability, hygiene and sealing compatibility are key requirements.

- **Injection moulding** plays an important role in semi-rigid and rigid plastic packaging where higher dimensional accuracy, structural strength and repeatability are required. It is commonly used for containers, lids, caps, closures, bowls, tubs and thin-wall packaging products. Compared with thermoforming, injection moulding generally offers better control over shape complexity, surface finish and product consistency, making it suitable for standardized, high-volume products with stricter performance requirements. However, the process typically involves higher tooling investment, making it more viable where production volumes are sufficient to absorb mould costs.

- **Blow moulding** is comparatively more relevant to rigid plastic packaging, particularly for bottles, jars and hollow containers used in beverages, personal care, household care, pharmaceuticals and industrial packaging. Blow moulding is preferred where hollow container structures, lightweighting, material efficiency and high-volume production are required. Its role is therefore more complementary to semi-rigid packaging, rather than directly substituting thermoformed trays, tubs or clamshells.

- **Sheet extrusion and compounding** act as important upstream processing steps, particularly for thermoformed packaging. In this stage, polymers such as PET, PP, PE or PS are converted into sheets or rolls that are later formed into packaging products. The quality of sheet extrusion directly affects final packaging attributes such as thickness uniformity, clarity, stiffness, surface finish and forming efficiency. As demand for recycled-content packaging increases, this stage is also becoming important for integrating PCR or recycled resin into semi-rigid packaging structures.

- **In-mould labelling, printing and decoration processes** are gaining relevance as brand owners seek packaging that delivers both functionality and shelf appeal. These processes help improve product differentiation, branding visibility and consumer engagement, especially in dairy, FMCG, personal care and food service applications. In-mould labelling also supports durable decoration and can reduce the need for external labels in certain applications.

Overall, the process landscape of India's semi-rigid plastic packaging industry indicates a gradual shift toward automation, material efficiency, lightweighting and higher design precision. Thermoforming is expected to remain the core process for semi-rigid products due to its suitability for lightweight, high-volume packaging. Injection moulding strengthens the industry's ability to serve precision and durability-led applications, while blow moulding remains relevant for adjacent hollow rigid packaging products. Manufacturers with integrated capabilities across forming, moulding, extrusion and finishing are likely to be better positioned to address evolving customer requirements around cost, quality, customization and sustainability.

5.6 Key Growth Drivers and Trends of the Indian Semi-Rigid and Rigid Plastic Packaging Industry

Growth in packaged, convenience, and fresh foods: Rising demand for ready-to-eat meals, dairy, bakery, fresh produce, frozen foods, snacks, and food delivery is the strongest driver for semi-rigid products such as trays, bowls, cups, clamshells, tubs, and compartment containers. These packs offer portion control, product visibility, sealing convenience, and protection during handling. Rigid bottles and containers also benefit from packaged food and beverage growth, but the strongest opportunity lies in semi-rigid food applications.

Expansion of organised retail, quick commerce, and e-commerce: Supermarkets, food delivery platforms, quick commerce, and online grocery channels require packaging that can withstand stacking, transit, and last-mile delivery. Semi-rigid packs with tamper-evident lids, snap-fit closures, clear display surfaces, and stackable designs are well suited for these channels, while rigid jars and bottles remain relevant for liquids, personal care, and household products.

Shift toward lightweight and cost-efficient packaging: Semi-rigid packaging enables material reduction compared with heavier rigid containers while retaining adequate stiffness, barrier properties, and product protection. Thermoformed trays, thin-wall containers, lidded tubs, and cups are attractive in cost-sensitive Indian markets. Rigid packaging is also moving toward lightweighting, but semi-rigid products provide greater scope for material optimisation in high-volume consumer packs.

Growth in healthcare and pharmaceutical packaging: Blister packs, medical trays, diagnostic kit packaging, and unit-dose formats are key semi-rigid applications supported by demand for hygiene, tamper resistance, dosage control, and product protection. Rigid bottles, jars, caps, and containers complement this demand in liquid medicines, tablets, and bulk storage.

Sustainability, recyclability, and technology-led redesign: Brand owners are shifting toward recyclable PET and PP products, mono-material structures, downgauging, and recycled-content use where feasible. Semi-rigid trays, tubs, cups, and clamshells are being redesigned to reduce material use while maintaining performance. Advances in thermoforming, thin-wall moulding, barrier coatings, and sealing technologies further support lighter, stronger, and more functional semi-rigid packs.

5.7 Innovation and Technology in the Indian Semi-Rigid and Rigid Plastic Packaging Industry

Advanced thermoforming and thin-wall packaging: Thermoforming and thin-wall moulding are the most important technology areas for semi-rigid packaging, enabling lighter trays, cups, tubs, bowls, clamshells, and blisters with improved strength and lower material usage. These technologies support high-volume food, dairy, takeaway, and healthcare applications where cost efficiency, consistency, and speed are critical.

Sustainable material innovation and recyclable design: Innovation is shifting toward mono-material PET and PP structures, downgauged packs, recyclable trays and tubs, and selective use of recycled content where feasible. Semi-rigid packaging is being redesigned to reduce material intensity while retaining stiffness, sealing performance, and product protection. Rigid bottles and jars are also adopting lightweighting and recycled-content strategies.

Barrier and shelf-life enhancement technologies: Multi-layer sheets, barrier coatings, modified-atmosphere compatibility, and improved sealing technologies are helping semi-rigid packs protect fresh foods, ready meals, dairy, meat, seafood, and pharmaceutical products. Rigid bottles and containers also benefit from barrier improvements, but shelf-life extension is especially important for thermoformed trays, tubs, and cups.

Digital design, simulation, and rapid prototyping: Packaging suppliers are increasingly using digital design tools, mould-flow analysis, prototyping, and performance testing to optimise pack shape, wall thickness, stacking strength, sealing areas, and material use. This is especially useful for semi-rigid trays, tubs, cups, and clamshells, where small design changes can improve strength, reduce material consumption, and enhance shelf presentation.

Mandatory QR/Barcode Traceability, AI-Assisted Design and Connected Labels: The Indian semi-rigid and rigid plastic packaging industry is increasingly adopting digital technologies such as QR codes, barcodes, connected labels, and AI-driven design tools. These solutions enhance product traceability, supply chain visibility, packaging optimization, and consumer engagement, supporting greater operational efficiency, regulatory compliance, and value-added packaging innovation.

Automation, precision tooling, and smart production: Automation in forming, filling, sealing, trimming, and inspection is improving output quality and production efficiency for semi-rigid packaging. Better tooling and process control help converters manufacture lightweight packs with consistent dimensions, stronger seals, and lower rejection rates. Rigid packaging also benefits from automation in blow moulding and injection moulding, but semi-rigid packaging has strong innovation potential through integrated thermoforming and sealing lines.

In-mould labelling, printing, and visual differentiation: In-mould labelling, improved printing, transparent materials, and shaped pack designs are strengthening shelf appeal for semi-rigid cups, tubs, trays, and display packs. These technologies allow brands to combine decoration, product visibility, and functional packaging in one product. Rigid jars and containers also use labelling and printing innovation, but semi-rigid products are gaining relevance in premium food, personal care, and consumer goods packs.

5.8 Investments in the Indian Semi-Rigid and Rigid Plastic Packaging Market

The Indian semi-rigid plastic packaging industry is witnessing steady investment momentum, driven by rising demand from food service, dairy, FMCG, fresh produce, pharmaceuticals, personal care and agro-based applications. Growth is being supported by the increasing adoption of convenient, lightweight and hygienic packaging products such as trays, tubs, cups, lids, clamshells, containers and punnets.

Investments are largely focused on expanding thermoforming, injection moulding, sheet extrusion, in-mould labelling and advanced decoration capabilities. These technologies enable manufacturers to improve product quality, enhance customization, reduce material usage and develop more recyclable packaging products. Companies are also investing in process innovation to support lightweighting, mono-material designs and compatibility with recycled resin or PCR content.

Capacity expansion remains a key priority, with manufacturers adding new production lines and upgrading existing facilities to meet growing domestic demand. Demand growth is closely linked to organised retail, packaged foods, dairy products, quick-service restaurants, ready-to-eat meals and food delivery products. Strategic collaborations and technical partnerships are also helping players improve design capabilities, access advanced materials and diversify product portfolios. Overall, we can see an upward trend in the Capex trend of overall packaging sector. There was around 9% increase in Capex in FY26 as compared to FY25.

Table 4: Trend in Capex in Packaging Industry

Particulars	FY24	FY25	FY26
Total Capex (Rs Billion)	128.7	136.5	148.4

Source: AceEquity, CareEdge Research.

Note: 18 Listed Packaging companies have been considered

Overall, investment in the semi-rigid plastic packaging segment is being shaped by capacity expansion, technology enhancement and sustainability alignment. As end-use industries continue to demand scalable, cost-efficient and recyclable packaging solutions, the segment is expected to play an increasingly important role in India's broader plastic packaging ecosystem.

5.9 Threats and Challenges for the Indian Rigid and Semi-Rigid Plastic Packaging Industry

Sustainability Pressure & Plastic Waste Scrutiny: Semi-rigid plastic packaging faces increasing scrutiny due to concerns around plastic waste, recyclability and single-use applications. Products such as trays, cups, tubs, lids and clamshells are often used in food service and FMCG applications, where post-consumer collection and recycling remain challenging. Manufacturers are under pressure to redesign packaging for recyclability, reduce material usage and align with circular economy expectations.

Raw Material Price Volatility: The industry is highly dependent on polymers such as PET, PP and HIPS, making it vulnerable to resin price fluctuations. For semi-rigid packaging converters, sudden changes in raw material costs directly affect margins, especially because the market is price-sensitive and many players operate on thin margins.

Recycling & Collection Infrastructure Gaps: A key challenge for semi-rigid plastic packaging is the limited availability of organised collection, sorting and recycling infrastructure. Food-contact packs such as trays, cups and containers are often contaminated after use, making recycling more difficult and reducing the availability of high-quality recycled resin for reuse in packaging.

Regulatory Compliance & EPR Burden: India's Extended Producer Responsibility framework has increased compliance obligations for plastic packaging producers, importers and brand owners. Requirements related to recycling targets, recycled content, reuse of rigid packaging and traceability add operational and documentation costs across the value chain.

Intense Competition & Pricing Pressure: The semi-rigid packaging segment is highly competitive, with several regional manufacturers serving price-sensitive end-use industries such as food service, dairy, fresh produce and FMCG. This limits the ability of manufacturers to pass on increases in resin, energy, labour and logistics costs to customers.

Competition from Alternative Materials: Semi-rigid plastic packaging also faces competition from paperboard, moulded fibre, glass, aluminium and other materials positioned as more sustainable alternatives. This is particularly relevant in food service and consumer-facing applications, where brand owners are increasingly evaluating packaging based on recyclability, consumer perception and environmental impact.

Quality Consistency & Food-Contact Requirements: Semi-rigid plastic packaging is widely used in food, dairy, ready-to-eat meals and fresh produce applications, where quality, hygiene, sealing compatibility and safety requirements are important. Maintaining consistent thickness, clarity, rigidity and contamination-free output can be challenging, especially for smaller converters with limited process control and automation.

Geopolitical Tension: The Indian semi-rigid and rigid packaging industry is indirectly exposed to geopolitical tensions through its dependence on imported petrochemical feedstocks and globally traded polymers. Disruptions in crude oil supply, shipping routes or international trade can increase the cost of key raw materials such as PE, PP and PET, leading to higher manufacturing and transportation expenses. While strong domestic polymer production provides some cushion, prolonged geopolitical instability can pressure margins, disrupt supply chains and increase input cost volatility, particularly for manufacturers serving export-oriented and price-sensitive end-use industries.

6 Manufacturing Technology and Process Overview

6.1 Thermoforming vs. Injection Moulding vs. Blow Moulding Process

THERMOFORMING vs. INJECTION MOULDING vs. BLOW MOULDING

COMPARISON FACTOR	 THERMOFORMING	 INJECTION MOULDING	 BLOW MOULDING
 Process Overview	A heated plastic sheet is softened and then formed over a mold using vacuum (and/or pressure). The part is then cooled and trimmed.	Molten plastic is injected under high pressure into a closed mold cavity. After cooling, the mold opens and the part is ejected.	A parison (hollow tube) or preform is formed and placed in a mold. Compressed air is blown into it to expand and take the shape of the mold.
 Typical Products	Packaging trays, clamshells, disposable plates, cups, lids, blister packs, appliance liners.	Toys, automotive parts, electronic housings, containers, caps, closures, furniture components, appliance parts.	Bottles, containers, jars, drums, tanks, jerry cans, hollow toys, fuel containers.
 Materials Used	PS, PET, PVC, PP, HIPS, ABS, PC (in sheet form) and others.	PP, ABS, PC, Nylon, POM, PE, PS, TPE and many engineering plastics.	HDPE, LDPE, PP, PET, PVC and other thermoplastic resins.
 Design Complexity	Low to Moderate (Best for simple shapes and shallow depths)	High (Can produce complex shapes and fine details)	Moderate (Ideal for hollow parts; limited detail on internal features)
 Wall Thickness	Generally uniform but comparatively thicker than injection moulding.	Can be very precise and can achieve very thin to thick sections.	Generally uniform thickness throughout the hollow part.
 Production Volume (Suitability)	Low to Medium (Ideal for low to medium volume production)	Medium to Very High (Ideal for high volume mass production)	Medium to High (Ideal for medium to high volume hollow parts)
 Tooling Cost	Low (Simple and inexpensive molds)	High (Complex and precision molds)	Moderate (Mold cost lower than injection moulding)
 Cycle Time	Short (Seconds to a minute depending on part size)	Short (Highly automated and consistent)	Moderate (Depends on part size and machine type)
 Cost Per Part	Low	Low (in high volumes)	Low to Moderate
 Material Waste	Higher (trimming of excess sheet required)	Low (runners and sprues can be recycled)	Low (minimal scrap)
 Key Advantages	Low tooling cost, quick setup, ideal for large parts, lightweight, good for prototypes and short runs.	High precision, excellent surface finish, ability to make complex shapes, high repeatability, suitable for mass production.	Ideal for hollow parts, lightweight, good strength-to-weight ratio, efficient for containers and bottles.
 Limitations	Limited design complexity, thicker walls, visible draft angles, lower strength compared to other processes.	High tooling cost, not economical for very low volumes, longer lead time for mold making.	Limited to hollow parts, less dimensional accuracy than injection moulding, limited detail and tight tolerances.
 Best Suited For	Large, shallow parts with simple geometry, low to medium volumes, packaging and disposable products.	Complex, high-precision parts requiring high strength and accuracy, medium to very high volume production.	Hollow products like bottles, containers and tanks, where strength and lightweight are important.

6.2 IML (In-Mould Labelling) Technology Overview and Adoption trends in India

IML (IN-MOULD LABELLING) TECHNOLOGY OVERVIEW

IML is a decoration process where a pre-printed label is placed in a mould and fused with the container during moulding, becoming an integral part of the product.

WHAT IS IML?



In-Mould Labelling (IML) is a high-quality decoration technology that uses a pre-printed label placed inside the mould.

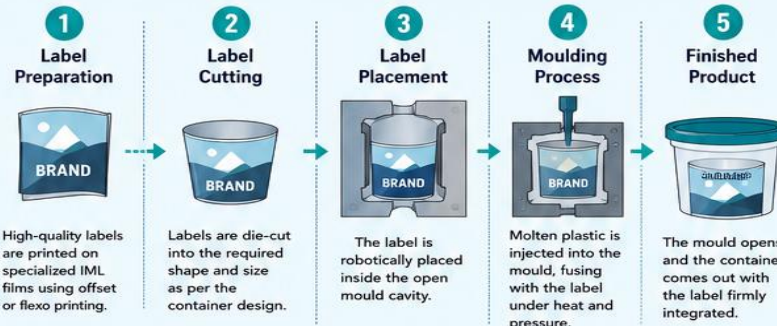


During the moulding process, the label fuses with the container, resulting in a seamless, durable and tamper-evident final product.



The label becomes part of the product—no peeling, no scrubbing, no fading.

THE IML PROCESS – STEP BY STEP



KEY BENEFITS OF IML TECHNOLOGY



Premium Look & High Visual Appeal

Delivers high-resolution graphics and vibrant colors for strong shelf impact.



Durable & Long-Lasting

Label is fused with the container; resistant to moisture, chemicals, scratching and wear.



Tamper Evident & Unscrubbable

Cannot be peeled off, ensuring brand protection and product authenticity.



Waterproof & Hygienic

Ideal for products exposed to moisture or refrigeration.



Eco-Friendly

Supports recyclability; no adhesive used and label is part of the plastic.



Cost Effective in High Volumes

Reduces secondary labelling and improves automation efficiency.

IDEAL APPLICATIONS



Food Packaging

Yogurt cups, ice cream tubs, margarine tubs, spreads, etc.



Dairy & Beverages

Dahi cups, lassi cups, beverage containers, cream tubs, etc.



Personal Care & Cosmetics

Cream jars, hair care containers, face packs, etc.



Home Care Products

Detergent tubs, cleaning product containers, etc.

TYPES OF IML



Roll-Fed IML

Labels are printed in reels and automatically cut and placed in the mould. Ideal for high-speed, high-volume production.



Sheet-Fed IML

Pre-printed labels in sheets are cut and placed in the mould. Suitable for larger labels or lower volume production.

COMPATIBLE MATERIALS



PP
Polypropylene



PS
Polystyrene



PET
Polyethylene Terephthalate



HDPE
High Density Polyethylene



& More

IML works best with materials that can be injection moulded and achieve strong bonding with the label.

WHY CHOOSE IML?



Enhances Brand Value



Strengthens Brand Protection



Improves Consumer Experience



Enables Automation & Efficiency



Supports Sustainability Goals

IML vs. TRADITIONAL LABELLING

FEATURE	IML (IN-MOULD LABELLING)	PRESSURE-SENSITIVE LABELS	SHRINK SLEEVES
Label Placement	Inside the mould	On the surface	Sleeved over the container
Adhesive Used	No	Yes	Yes (for sleeve)
Durability	Excellent (integrated with product)	Moderate (can peel or smear)	Good (can shrink or wrinkle)
Resistance (Water/Chemicals)	High	Low to Moderate	Moderate
Visual Quality	High (photo-quality graphics)	Good	High
Tamper Evident	Yes	No	Yes
Best For	Premium look, durability, brand protection	Low-cost applications	360° branding, large graphics



IML combines aesthetics, performance and sustainability—making it the preferred choice for modern packaging.

Adoption Trends in India

The adoption of **In-Mould Labelling (IML)** technology in India is witnessing steady growth, supported by the expansion of FMCG, food & beverage, personal care, home care and pharmaceutical packaging markets. As brands increasingly focus on product differentiation, shelf visibility, packaging aesthetics and manufacturing efficiency, IML has emerged as a preferred labelling and product identification technology for injection-moulded rigid plastic packaging. Growing consumption of packaged products, advancements in automation, and the shift towards high-quality and sustainable packaging products are expected to support continued adoption of IML solutions.

The **food and dairy segments represent the largest application area for IML**, driven by the growing use of semi-rigid and rigid plastic containers for yogurt, curd, ice cream, butter and margarine tubs, edible oil containers, ready-to-eat meals, takeaway packaging, confectionery packs and other convenience food products. Increasing consumer preference for packaged and branded foods, along with the expansion of organised retail, food delivery platforms and convenience food offerings, has strengthened demand for visually appealing, durable and information-rich food containers. IML enables high-quality graphics, 360-degree branding, moisture resistance and label durability, making it particularly suitable for refrigerated, frozen and shelf-stable food applications where packaging appearance and product identification play an important role.

Beyond food applications, leading FMCG companies are expanding the use of IML for paint pails, detergent tubs, household product containers and personal care packaging. By integrating the label directly into the moulding process, IML eliminates secondary labelling operations, improves production efficiency, enhances product consistency and reduces the risk of label damage or peeling during handling and distribution.

While adoption remains more prevalent among medium and large packaging manufacturers due to the investment requirements associated with precision moulds, robotic label placement and automated production systems, the technology is gradually becoming more accessible as manufacturing volumes increase and automation becomes more widespread. Rising demand for premium packaging, lightweight container designs, recyclability and improved consumer appeal is expected to further support IML adoption across India's semi-rigid and rigid plastic packaging industry. Additionally, growing usage of food containers, dairy packaging and convenience meal products is likely to remain a key driver of long-term demand for IML-based packaging solutions.

6.3 Role of Advanced Technology in quality and precision benchmarking

The adoption of German, Japanese, Taiwanese, Turkish and Chinese technologies has enhanced the quality, precision and production efficiency of semi-rigid and rigid plastic packaging. These technologies enable manufacturers to produce packaging such as thin-wall containers, trays, cups, tubs, lids, closures, pails and in-mould labelled products with consistent dimensions, surface finish, sealing performance and structural strength. Equipment selection typically depends on the packaging product, product complexity, production volume, automation requirements and capital considerations.

German technology is particularly relevant for precision thermoformed products such as trays, cups, lids and food containers, where forming accuracy, material distribution and consistent quality are important. Japanese thin-wall injection moulding technology supports high-volume production of food containers, dairy tubs, closures and other lightweight packaging, offering repeatability, energy efficiency and robotic automation. Taiwanese machinery and tooling provide flexibility and precision across varied packaging products, supporting efficient mould utilisation and product changeovers. Turkish thermoforming equipment offers European-oriented engineering at competitive investment levels, making it suitable for cups, trays, tubs and takeaway containers. Chinese technology provides a broad and customisable range of injection moulding, thermoforming and automation solutions, particularly for standardised and high-volume packaging products.

Collectively, these technologies support faster production cycles, efficient material and energy use, lower downtime and consistent packaging quality. Precision tooling, closed-loop controls, robotics and digital process monitoring also enable lightweighting, thin-wall structures, in-mould labelling and mono-material designs. Technology selection therefore depends on the required balance between packaging performance, design complexity, output scale, automation and investment efficiency.

6.4 Manufacturing Capacity (Metric Tonnes per Annum) and Machine Utilization Norms

Manufacturing capacity in the Indian semi-rigid and rigid packaging industry is generally measured in metric tonnes per annum (TPA/MTPA) for processes such as injection moulding, thermoforming, blow moulding, and sheet extrusion. Capacity disclosure practices vary across industry participants depending on their manufacturing processes and product portfolio. Companies engaged in thermoformed packaging typically disclose separate installed capacities for sheet extrusion and thermoforming operations, while manufacturers primarily engaged in injection moulding generally disclose their aggregate polymer processing capacity. Certain industrial packaging manufacturers report installed capacity in terms of production units, such as drums, containers, or intermediate bulk containers (IBCs), instead of metric tonnes, owing to variations in product dimensions and specifications.

Machine utilization is an important operating parameter in the semi-rigid and rigid packaging industry, as manufacturing operations are characterized by relatively high fixed operating costs. Utilization levels may vary depending on factors including product mix, customer demand, maintenance schedules, production planning, and the commissioning of new manufacturing lines. Industry participants generally monitor machine utilization to assess production efficiency, capacity availability, and future capital expenditure requirements. Sustained utilization levels, together with demand visibility and customer order pipelines, may support decisions relating to capacity expansion through the installation of additional machinery, production lines, moulds, or the development of new manufacturing facilities.

Manufacturers are also increasingly adopting automation, robotic material handling systems, process monitoring technologies, and preventive maintenance practices to improve production efficiency, reduce machine downtime, and enhance process consistency. These initiatives support operational efficiency while facilitating the manufacture of packaging products across end-use industries including food and beverages, dairy, personal care, pharmaceuticals, paints, lubricants, and industrial chemicals.

Table 5: Manufacturing Capacity across players in the Rigid/Semi-Rigid Packaging Industry

Company	Packaging Segment	Installed Manufacturing Capacity
Mold-Tek Packaging	Injection-moulded rigid packaging (IML, paints, lubricants, FMCG)	55,000+ TPA
Rajshree Polypack	Rigid sheets + thermoformed packaging	25,600 MT (Extrusion) + 12,120 MT (Thermoforming) + 4,800 (Injection Moulding)
Glen Industries	Thin-wall food containers, paper & PLA straws	11,048 MT
Jyoti Global Plast	Bottles, jars & industrial moulded packaging	7,416 MTPA

Source: Company Reports

6.5 Tooling Costs and Capex Intensity Benchmarks across the Industry

The semi-rigid and rigid plastic packaging industry requires significant capital investment due to its dependence on specialised manufacturing equipment, precision tooling, automation systems, utilities and quality-control infrastructure. The level of investment varies depending on the production process employed, such as injection moulding, thermoforming or blow moulding, as well as the scale of operations, product complexity and quality standards required by end-user industries.

Among the various cost components, tooling represents one of the most important upfront investments, particularly for customised packaging applications. Tooling costs can range from approximately Rs 2-5 lakh for simple moulds to Rs 10-30 lakh or more for multi-cavity packaging moulds, while advanced hot-runner and IML-compatible moulds may require even higher investments. The cost of a mould is influenced by factors such as cavity count, product geometry, resin characteristics, expected production volumes and customer-specific design requirements. High-volume packaging applications, including dairy cups, food containers, caps and closures, typically justify investments in sophisticated moulds due to the productivity, cycle-time and quality advantages they provide.

Capital expenditure in the industry is generally directed towards capacity expansion, product innovation, production efficiency improvements and technology upgrades. Manufacturers regularly invest in additional moulding machines, thermoforming lines, robotic handling systems, material-conveying equipment and inspection technologies to support growing customer requirements. Modern plastics-processing facilities are increasingly adopting advanced moulding and automated manufacturing technologies to improve throughput, reduce processing variability and enhance overall product quality.

The need for specialised equipment and tooling creates moderate barriers to entry, particularly in food-grade and FMCG packaging segments where customers demand stringent standards relating to consistency, traceability and regulatory compliance. Established companies benefit from existing mould portfolios, approved tooling and larger production volumes, enabling them to achieve better economies of scale and reduce the cost of developing new packaging programmes.

Going forward, industry investment is expected to increasingly focus on automation, process control and sustainability-related technologies. Companies are allocating capital towards lightweight packaging solutions, in-mould labelling (IML), recycled-content processing capabilities and automated inspection systems to improve productivity, minimise material consumption and address evolving customer and regulatory requirements. These investments are expected to support both operational efficiency and product differentiation in an increasingly competitive packaging market.

Table 6: Tooling Cost for various machineries

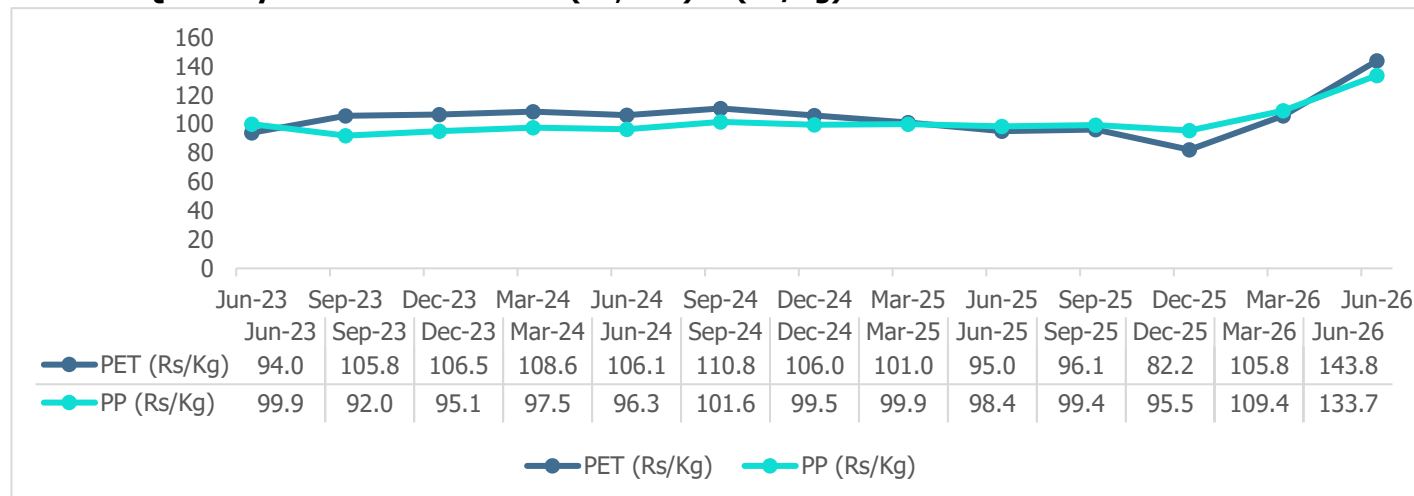
Parameter	Indicative Industry Range
Simple injection mould/tooling	Rs 3-6 lakh per mould
Multi-cavity packaging mould (food, dairy, FMCG applications)	Rs 12-25 lakh per mould
Advanced hot-runner / IML-compatible mould	Rs 25 lakh+ per mould

Source: Industry Sources, CareEdge Research

7 Pricing, Cost Structures & Margin Drivers

7.1 Resin Price Trends: Historical Movement

Chart 27: Quarterly Price Trend of Resins (PP, PET) in (Rs/Kg)



Source: CMIE

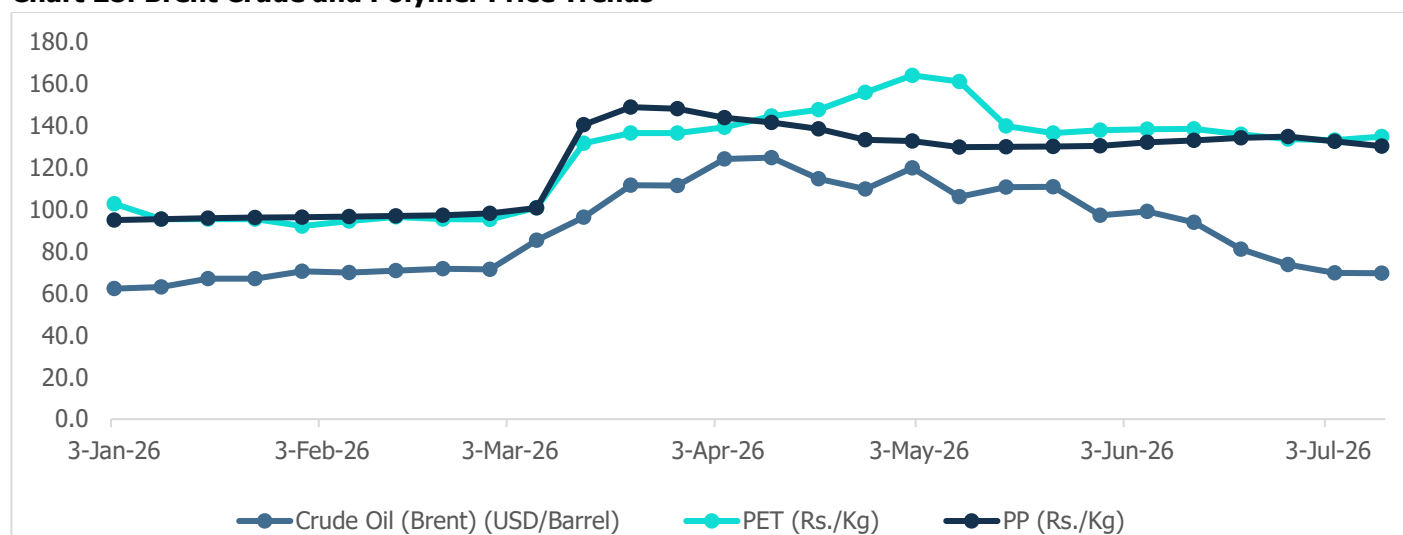
PET and PP resin prices remained relatively range-bound between June 2023 and September 2025, although PET displayed greater volatility. PET increased from Rs 94.0/kg in June 2023 to a near-term peak of Rs 110.8/kg in September 2024, before declining steadily to Rs 82.2/kg in December 2025. PP was comparatively stable, generally remaining within Rs 95–102/kg from December 2023 to December 2025.

The trend reversed sharply during the first half of 2026. Between December 2025 and June 2026, PET prices increased by approximately 75% to Rs 143.8/kg, while PP prices rose by 40% to Rs 133.7/kg. On a year-on-year basis, June 2026 prices were approximately 51% higher for PET and 36% higher for PP. The increase was particularly pronounced in the June 2026 quarter, when PET and PP prices rose by approximately 36% and 22%, respectively, compared with March 2026. The trend reversed sharply in early 2026 due to the West Asia crisis and concerns over disruption to petroleum supplies, particularly through the Strait of Hormuz.

As resin represents a significant share of manufacturing costs, the increase could weaken margins where selling-price revisions are delayed. Packaging manufacturers with monthly or quarterly resin-linked pricing are likely to recover costs more effectively than those operating under annual or fixed-price contracts.

7.2 Crude Oil Price Linkage to Plastic Resin Costs and Market Dynamics

Raw material prices in the plastics industry are closely linked to global crude oil markets due to reliance on hydrocarbon-based feedstocks such as naphtha and natural gas. Consequently, polymer prices are influenced by energy market conditions, geopolitical developments, and supply-demand dynamics, making effective procurement, inventory management, and pricing strategies important for maintaining margin stability.

Chart 28: Brent Crude and Polymer Price Trends


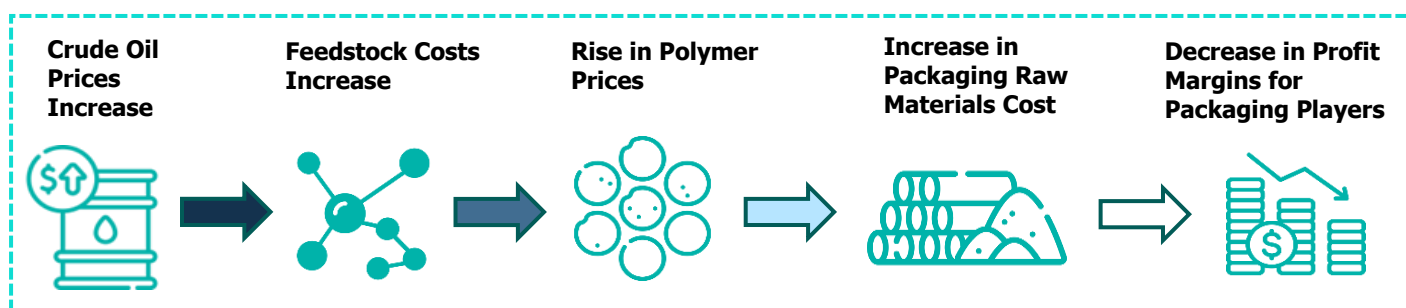
Source: CMIE

The plastics industry is affected by movements in crude oil prices through its dependence on crude-linked feedstocks and import-parity polymer pricing. During March-April 2026, geopolitical developments in West Asia contributed to fluctuations in Brent crude prices, which were reflected in key polymer categories such as PET and PP. As commodity polymers are derived from naphtha and natural gas, changes in energy markets are transmitted across the plastics value chain. India's dependence on imported energy feedstocks further reinforces the connection between global energy markets and domestic polymer prices. During April-May 2026, India imported 41.74 million tonnes of crude oil and 5.14 million tonnes of petroleum products, highlighting the importance of imported hydrocarbons to the petrochemical sector.

Crude oil prices rose during March 2026, resulting in higher polymer prices, particularly for PET and LDPE. While some prices later stabilized, overall levels remained above those at the beginning of the year due to prevailing feedstock and inventory factors. These market movements emphasises the importance of strong procurement practices, inventory planning, and customer engagement. Companies with diversified product portfolios, efficient sourcing capabilities, and greater exposure to value-added applications are generally better positioned to manage input cost fluctuations.

7.3 Cost Pass-Through Mechanisms to End Customers

Changes in crude oil prices are typically transmitted through the packaging value chain gradually. Higher crude prices increase feedstock and resin costs, raising raw material expenses for packaging manufacturers. As customer contracts are often revised with a time lag, the impact is generally absorbed initially before being passed through over time. Changes in energy and logistics costs can further influence overall production and distribution expenses, which are eventually reflected in end-customer pricing.



Industry Impact on Packaging Players

Packaging manufacturers often manage changes in raw material costs through procurement planning, inventory optimization, customer negotiations, and operational efficiencies. The impact is typically more pronounced in resin-intensive segments such as flexible packaging and PET-based products. Companies with strong sourcing capabilities and effective cost pass-through mechanisms are generally better equipped to navigate changing market conditions.

Recent developments in West Asia have also affected certain supply chain and logistics routes, potentially influencing procurement and delivery timelines. If these conditions persist, manufacturers may need to undertake additional planning to ensure supply continuity and operational efficiency.

Table 2: Impact on End-user Industry

End-user Industry	Packaging Material Used	Typical Products	Impact Level	Remarks
FMCG / Household Care	PE, PP, PET, multilayer films	Detergents, shampoos, cleaning products	↑	High packaging consumption and frequent order cycles make cost increases difficult to pass on immediately, leading to margin pressure.
Food & Beverages	PET bottles, flexible films, laminates	Bottles, pouches, packaged foods, beverages	↑	Strong dependence on plastic packaging and competitive pricing delays cost recovery.
Personal Care & Cosmetics	PET, PP, PE	Creams, lotions, tubes, bottles	↑	Packaging is an important cost component, but some pricing flexibility exists for premium products.
Pharmaceuticals	PET, PP, HDPE, films	Syrups, tablets, medical packaging	↑	Packaging costs rise, but regulated pricing and contracts allow gradual pass-through.
Agriculture / Agrochemicals	HDPE, PP containers	Pesticides, fertilisers, chemical containers	↑	Cost impact is moderate; pass-through is possible but with a time lag.
Industrial Packaging	PP woven sacks, films	Bulk chemicals, industrial goods	↑	Often governed by long-term contracts and bulk pricing, limiting short-term margin impact.
E-commerce / Logistics	LDPE, LLDPE films	Courier bags, protective packaging	↑	Packaging forms a smaller share of overall costs, reducing immediate financial impact.

Source: CareEdge Research, Note: Red denotes High impact, Yellow denotes Medium Impact, Green denotes low Impact

7.4 Pricing Power Analysis Spot vs Long-Term Contracts with Customers

Pricing power is moderate, with stronger leverage in pharmaceutical, food-grade, high-barrier and customised packaging, where moulds, validation and filling-line compatibility increase switching costs. Standard bottles, jars, caps, tubs and trays have weaker pricing power due to greater product substitutability and competitive tendering.

Comparison of short vs long-term contracts

Parameter	Short-term/spot contracts	Long-term contracts
Typical structure	Purchase order, spot quotation or agreement of less than one year	Usually one- to three-year framework agreement
Suitable products	Standard bottles, caps, tubs and thermoformed trays	Custom-moulded, validated, high-barrier and regulated packaging
Pricing method	Prevailing polymer price plus conversion charge	Polymer-indexed material component plus separately negotiated conversion charge
Cost recovery	Rapid, as prices can be revised for each order	Effective only when resin prices reset monthly or quarterly
Volume visibility	Low and potentially seasonal	Higher, supported by forecasts or committed volumes
Plant utilisation	Less predictable	Supports capacity planning and dedicated production
Customer switching risk	High for standardised products	Lower where moulds, trials or approvals are customer-specific
Margin volatility	High; exposed to resin prices, demand and spare capacity	Lower with indexation; potentially high under fixed-price arrangements
Falling resin prices	Reductions are generally passed through quickly	Benefit may be retained temporarily, depending on the reset formula
Tooling recovery	Normally charged upfront	Amortised over agreed volumes, preferably with minimum-volume protection
Main supplier risk	Uncertain volumes and aggressive market pricing	Delayed pass-through, annual cost-down requirements and customer concentration
Overall assessment	Flexible but volatile	More predictable when supported by short-cycle indexation

8 Distribution & Channel Structure

8.1 Distribution models in Indian semi-rigid and rigid packaging direct, distributor, e-commerce

The Indian semi-rigid and rigid packaging industry employs a mix of distribution channels tailored to customer size and product type. Large industrial buyers (FMCG, pharmaceuticals, automotive, etc.) often source directly or through long-term contracts, while smaller companies and regional customers are served via multi-tiered distributor and dealer networks. Modern channels (e-commerce platforms, digital procurement) are emerging for convenience and broad coverage. Each model has distinct advantages and constraints and is chosen based on customer segmentation and application requirements.

DISTRIBUTION & CHANNEL MODELS



Distribution Models:

- Direct Sales Model:** Manufacturers sell directly to major clients, typically large FMCG/pharma firms or institutional customers. This model allows close engagement, custom solutions and tighter quality control. It is widely used for high-value or customised packaging (e.g. high-end PET bottles, specialized pharma containers). Some of the advantages are higher margins, direct feedback, secured contracts. Some of the limitations are high sales and service cost; limited geographic reach; requires large sales force.
- Distributor/Stockist Model:** Companies appoint regional distributors or stockists who buy in bulk and resell to smaller end-users (e.g. local manufacturers, small food processors). This expands market reach without heavy sales overhead. In practice, many plastic containers, metal closures or glass jars are routed through local distributors in each state. Some of the advantages include, local market penetration; inventory carried by partners; lower direct overhead. Some of the limitations include, lower margins; risk of channel conflict; less direct control over customers.
- Regional Dealer Network:** A multi-tier model where primary distributors supply dealers who then serve the last-mile buyers (e.g. traders or smaller manufacturers). This is common in fragmented markets (e.g. agro-based packaging in rural areas). It extends reach but adds complexity.

- **Institutional / B2B Procurement:** Very large buyers (e.g. major consumer goods companies, government procurements) often use formal procurement processes. These may involve tendering, vendor registration, and long-term supply agreements. Packaging suppliers to such customers (like FMCG giants or industrial users) typically secure annual contracts with fixed pricing formulas and service-level clauses. This model ensures steady volumes but demands strict quality and reliability.
- **OEM Supply Model:** Some packaging components (like specialty caps, preforms, moulds) are supplied to original equipment manufacturers (OEMs) of filling/processing machines. Here the packaging supplier acts as an OEM vendor. This creates long-term partnerships but ties growth to the OEM's customers.
- **Contract Manufacturing (Co-Packing) Supply:** In many cases, brand owners outsource packaging and filling to third-party co-packers. Packaging companies align with co-packers to supply containers and closures. This indirect channel helps reach large FMCG clients via contract packers.
- **E-Commerce and Digital Procurement:** B2B e-commerce portals and vendor portals of large buyers are increasingly used for small-scale orders or transparent bidding. While still a minor channel for heavy packaging, digital tools aid tendering and sample orders.
- **Channel Selection by Customer Size/Industry:** In practice, large corporate buyers procure directly or via a few approved distributors, often under annual contracts. Medium-sized processors rely on statewide distributors. Micro and small users largely depend on dealers and retailers. High-volume, price-sensitive industrial packaging (like drums or standard crates) may favor distributors; while technically demanding packaging (pharma glass vials, high-barrier bottles) favors direct supply.

Packaging companies in India typically adopt a hybrid channel mix. Large companies insist on direct supply or exclusive distribution agreements for critical packaging, while commodity products traverse multiple distributor layers. OEM and contract packer channels help reach otherwise inaccessible accounts. E-commerce is nascent but growing for sample orders and smaller clients. Long-term supply contracts (often multi-year) are common with major customers to secure business and input pricing. Overall, the sector is more B2B-oriented than consumer-oriented, so reliability and relationship are prioritized over retail display.

8.2 Regional Demand Concentration Analysis

Demand for semi-rigid and rigid packaging generally follows the location of manufacturing, processing, filling and bottling facilities. Food and beverage, pharmaceutical, FMCG, chemical and industrial manufacturers represent the principal customer base. Maharashtra, Gujarat, Tamil Nadu, Karnataka and Uttar Pradesh together accounted for more than 54% of India's registered manufacturing GVA. This is not their share of packaging output or consumption.

Regional Comparison

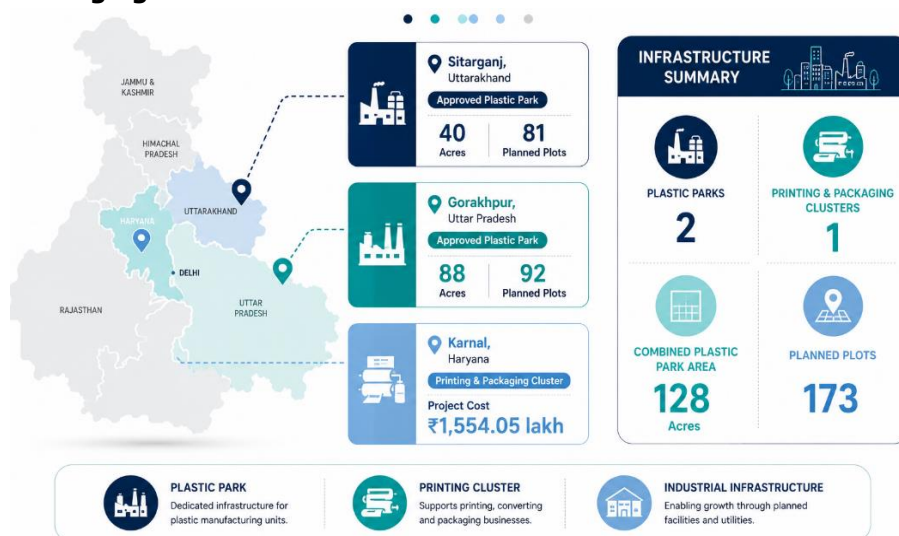


Source: Manufacturing rankings are based on ASI 2022-23, Department of Chemicals and Petrochemicals; Ministry of MSME; DFCCIL; NICDC; and Ministry of Ports, Shipping and Waterways, CareEdge Research

• North India: Demand and Infrastructure Position

North India has a sizeable industrial hinterland across Uttar Pradesh, Delhi NCR, Haryana, Punjab, Rajasthan and Uttarakhand. Uttar Pradesh provides the region's strongest official manufacturing indicator, ranking fifth among major states by registered manufacturing GVA in ASI 2022-23.

Packaging-related Infrastructure



Source: Department of Chemicals and Petrochemicals, CareEdge Research

The parks support downstream plastics processing generally and are not exclusively packaging parks. Karnal is classified by the Ministry of MSME as a Printing and Packaging Cluster. Approval of a Plastic Park does not establish that every plot has been allotted or that all planned units are operational.

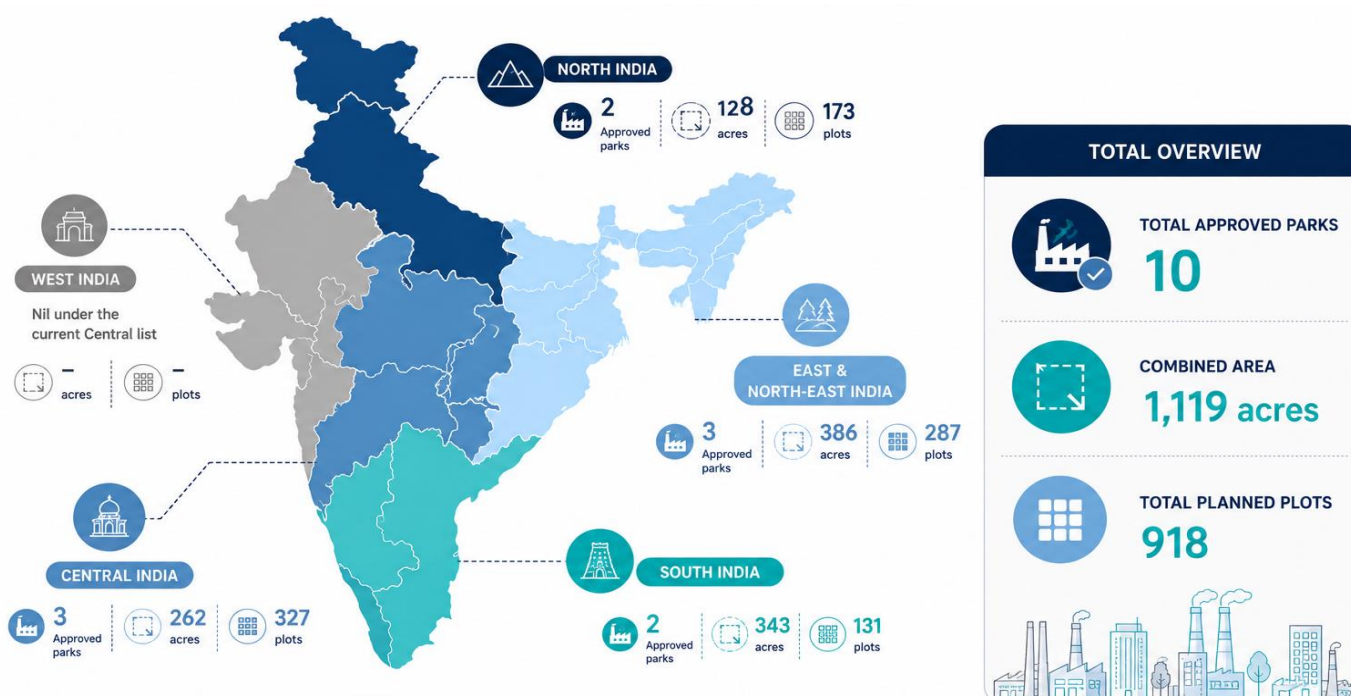
Strategic Logistics Position

The completion of the Western Dedicated Freight Corridor (WDFC), extending from JNPT to Dadri through Maharashtra, Gujarat, Rajasthan, and Haryana, along with the full commissioning of the Eastern Dedicated Freight Corridor (EDFC), has strengthened India's freight logistics infrastructure. The WDFC's final JNPT-New Saphale section became operational on 31 March 2026, enabling seamless connectivity across key industrial and consumption centres.

The enhanced rail freight network improves access to ports, raw material sources, and end markets, while reducing transit bottlenecks and improving freight movement efficiency. From an industry perspective, this strengthened logistics ecosystem supports supply chain reliability, operational efficiency, and execution capabilities for manufacturers operating across northern, western, and eastern regions of the country.

Distribution of Approved Plastic Parks

The Department of Chemicals and Petrochemicals reports ten approved Plastic Parks covering 1,119 acres and 918 planned plots.



Source: Department of Chemicals and Petrochemicals, CareEdge Research

North India versus Other Regions

Comparison	Key conclusion
North vs West	West India has a stronger verified manufacturing concentration and direct access to seaports. North India has two approved Plastic Parks and strong inland freight connectivity.

North vs South	South India has two top-five manufacturing states, two approved Plastic Parks and access to ports on both coasts. North India has one top-five manufacturing state and greater dependence on inland freight for exports.
North vs East	East and North-East India contain more approved Plastic Parks, while North India has a stronger verified overall manufacturing indicator through Uttar Pradesh.
North vs Central	Central India contains more approved Plastic Parks. North India has stronger connectivity to both Dedicated Freight Corridors and includes one of the five leading manufacturing states.

8.3 Pan-India Distribution Network Benchmarking

Leading packaging firms in India maintain extensive distribution and sales networks to cover the nationwide market. This involves a combination of multiple manufacturing units, regional sales offices, warehouses, and a tiered dealer network. This section benchmarks typical distribution strategies of major rigid-packaging players (plastics, glass, metal) to illustrate industry best practices in coverage and servicing.

Large packaging companies usually adopt a multi-location production footprint plus a hub-and-spoke distribution model. They operate numerous plants to serve regional demand efficiently. Centralized production in one region is complemented by regional warehouses or factories to reduce lead times.

Regional Sales & Warehousing

Firms typically establish regional sales offices or depots in key cities (such as Mumbai, Delhi, Bengaluru, Chennai, Kolkata, Pune, Hyderabad). These offices coordinate sales, logistics and customer service. Dedicated warehouses near ports or industrial areas handle inventory for fast-moving stock (e.g. generic jars, bottles). Some large firms use C&F (Clearing & Forwarding) agents or third-party logistics for distribution, but many large producers operate their own trucks and depots for reliability.

Dealer/Distributor Networks: Even large manufacturers maintain a network of authorized dealers or distributors for broad coverage, especially in under-served regions. These partners stock standard products (e.g. metal cans, household containers) and feed smaller customers. Periodic training and brand incentives are used to align distributors with the company's standards.

Export Networks: Major packaging exporters often have dedicated export sales teams and partnerships in target markets. For example, plastic packaging firms exporting PET preforms, caps or containers often appoint overseas agents or have sister companies abroad. Leading glass exporters use networks in Middle East and Africa. However, exports generally constitute a smaller portion of sales (typically under 20%) for rigid packaging specialists.

Benchmarking Highlights: While detailed data are company-specific, industry reports and public filings reveal commonalities. For instance:

- **Facilities:** Top semi-rigid and rigid packaging firms often list 5–15 manufacturing sites.
- **Warehouses:** Many mid-large firms have central warehouses in Mumbai/Delhi plus additional hubs near ports. Some have 3–5 main warehouses geographically placed.
- **Geographic Reach:** Leading players serve virtually all major states. Their coverage often spans 25–30 states/UTs, with occasional under-served areas (like the far Northeast).
- **Distribution Model:** A mix of direct institutional supply, exclusive distributors for medium accounts, and C&F agents for smaller retail segments.
- **Regional Offices:** It is common to have 3–6 regional offices aligned with economic regions (North, South, East, West, Central).

The packaging industry's distribution networks are highly decentralized. This reflects the necessity to be close to both raw material sources (often petrochemical centers) and end-user clusters. Leading firms benchmark on network coverage; a company falling below 20 states coverage is considered regional/niche. Integration with logistics (own fleet or third-party) is seen as a service differentiator. Companies also highlight after-sales support (technical service) as part of their channel strategy, ensuring customers in all regions have access to assistance.

9 Customisation, Branding & SKU Economics

Customisation is becoming an important source of value addition in India's semi-rigid and rigid plastic packaging market. Growth in online commerce, food delivery and digitally enabled brands is widening the range of pack sizes, designs and product variants required by customers. ONDC reported more than 7.64 lakh sellers and service providers across 616 cities, with food and beverages and grocery among the active categories as of May 2025. This expanding digital sales base supports demand for packaging suited to multiple products, price points, delivery formats and regional markets.

• Role of IML, Tamper-Evident and Custom-Printed Packaging

In-mould labelling (IML) integrates a printed label with a plastic container during moulding. The resulting pack offers durable decoration, consistent print quality and resistance to moisture or abrasion. IML is particularly relevant for dairy products, spreads, confectionery, edible oils, personal care and premium food containers. It can also reduce the need for post-production labelling, although the economic benefit depends on production scale and design stability.

Tamper-evident features, including breakable rings, tear bands, sealed lids and induction-compatible closures, provide visible evidence of opening. They are particularly valuable for food, beverage, pharmaceutical and personal-care products, where product integrity affects consumer confidence. FSSAI requires food-contact packaging to be food-grade, appropriate for the product and filling process, and capable of withstanding the mechanical, chemical and thermal stresses encountered during transport. Semi-rigid containers may also require an overwrap depending on the application.

Custom printing transforms the package from a functional container into a brand-communication medium. Graphics, colours, product claims, regional language information and QR codes can differentiate similar products at the point of sale and on digital platforms. However, the decoration must accommodate mandatory information. FSSAI's labelling framework covers pre-packaged foods and requires relevant product, nutritional, batch and date information, while the Legal Metrology framework prescribes declarations for packaged commodities.

Value-Added Feature	Customer Benefit	Benefit to Packaging Manufacturer
In-Mould Labelling	High-quality graphics, moisture resistance and durable branding	Higher value per container and stronger customer integration
Tamper-Evident Closure	Visible product-integrity assurance	Opportunity to supply an integrated container-and-closure system
Custom Printing	Brand differentiation and space for product information	Decoration income and lower product substitutability
Embossing or Custom Shape	Distinctive shelf identity and improved brand recognition	Dedicated mould revenue and longer customer relationships
QR Code or Variable Information	Traceability, consumer engagement and digital product information	Supports more advanced printing services

• SKU Proliferation Driven by QSRs, D2C Brands and Cloud Kitchens

Quick-service restaurants, direct-to-consumer food brands and cloud kitchens frequently operate with a larger number of lower-volume packaging variants than established mass-market brands. Variation may arise from different portion sizes, meal combinations, flavours, regional menus, promotional campaigns and delivery channels.

This trend is reinforced by digital commerce, which makes it easier for smaller brands to list and test products without building a nation wide physical distribution network. Cloud kitchens add further complexity because a single production facility may support several consumer-facing brands or cuisines. For packaging suppliers, this creates demand for shared base containers combined with brand-specific lids, labels, sleeves or printing.

Greater SKU variety raises revenue opportunities but also adds operational costs through:

- More frequent mould and colour changes;
- Shorter production runs;
- Higher artwork and label inventories;
- Additional inspection and line-clearance requirements;
- Slower production during changeovers; and
- Increased risk of obsolete packaging following menu or branding changes.

Standard container platforms with customised decoration can reduce these costs. For example, several brands may use the same tub or tray geometry while varying the IML label, printed lid or tamper-evident band.

• Economics of Small Order Quantities, Tooling And MOQs

Small orders generally carry a higher unit cost because fixed expenses are spread across fewer containers. These expenses include package development, mould trials, printing plates, IML label preparation, colour matching, machine set-up, quality approval and production-line cleaning.

Cost Consideration	Small Order Quantity	Larger Or Recurring Order
Tooling Recovery	Requires an upfront tooling charge or higher unit price	Cost can be amortised over committed volumes
Machine Set-Up	High cost per unit	Spread across a longer production run
Printing and Decoration	Greater cost per pack due to short runs and artwork preparation	More economical at scale
Material Purchasing	Limited ability to procure customer-specific resin or masterbatch efficiently	Better purchasing and inventory planning
Changeover Losses	Higher scrap and downtime relative to output	Lower relative impact
Finished-Goods Inventory	Higher obsolescence risk for customised stock	More predictable consumption under scheduled orders
Commercial Approach	Development fee, tooling deposit or premium price	Volume-based price and annual cost review
Preferred Packaging Design	Standard container with label or sleeve customisation	Fully customised shape, colour and decoration

Minimum order quantities should cover the supplier's economic production batch rather than merely the customer's immediate requirement. Where a customer cannot meet the MOQ, the manufacturer may use a tooling fee, small-batch surcharge, advance payment or scheduled call-off arrangement.

Tooling ownership also requires clear contractual treatment. Customer-funded moulds can deepen the commercial relationship but may create transfer risk if the customer retains the right to move the mould to another supplier. Manufacturer-owned tooling provides greater control but increases capital exposure. Contracts should therefore address mould ownership, maintenance, storage, usable life, minimum volumes and recovery of unamortised costs if the programme ends early.

• Customisation as a Competitive Moat and Switching-Cost Driver

Customisation strengthens customer retention when the packaging manufacturer becomes involved in product design, mould development, filling-line trials, decoration approval and regulatory testing. Moving to another supplier may then require mould transfer or duplication, fresh samples, line trials, quality approval and packaging validation.

The switching barrier is strongest where packaging combines:

- A customer-specific mould or closure;
- Validated food-contact material;
- Precise filling-line dimensions;
- Proprietary decoration or IML capability;
- Tamper-evident functionality; and
- Documented quality and traceability controls.

FSSAI requires food packaging to be suitable for the product, storage conditions, filling and sealing equipment, and transport environment. These requirements increase the importance of technical approval and reduce the attractiveness of changing suppliers solely for a small price reduction.

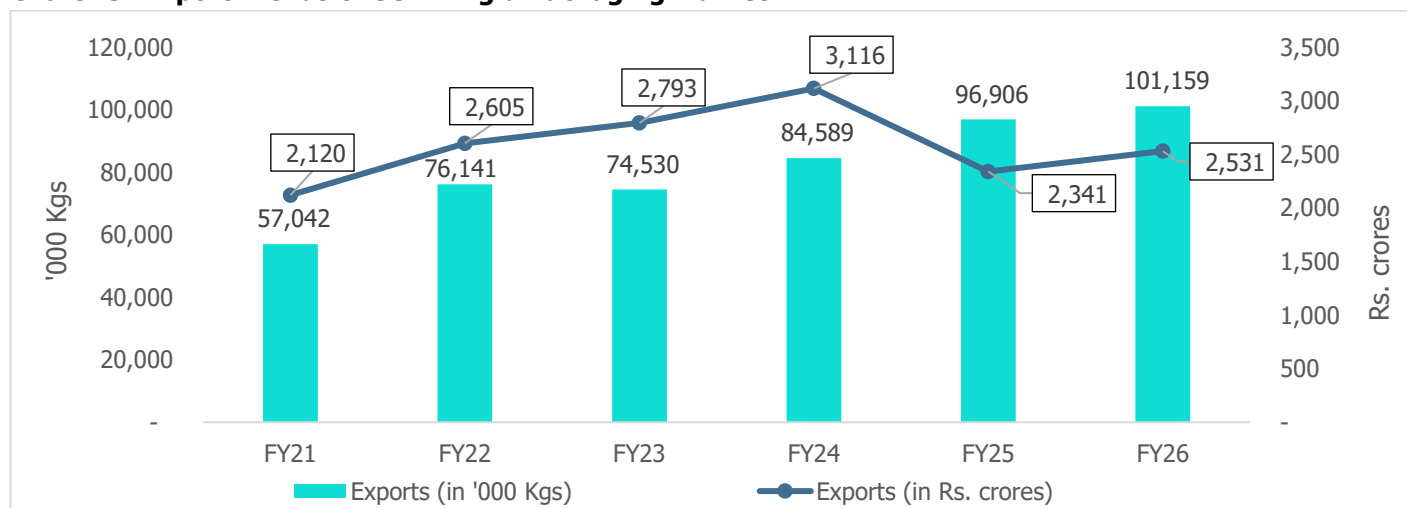
Customisation does not always create a durable advantage. A standard container carrying a conventional pressure-sensitive label can often be replicated by competing suppliers. The competitive moat becomes stronger when design capability, mould engineering, decoration, closures and quality assurance are supplied as an integrated package.

10 Export Market Opportunities

10.1 Indian Semi-Rigid Plastic Packaging Export Size and Growth Trends

India's exports of semi-rigid plastic packaging categories have shown a steady expansion in shipment volumes over the years. The trend indicates increasing export scale, supported by demand for plastic packaging-related products across international markets. However, export value has been comparatively volatile, suggesting fluctuations in average realisations, pricing conditions, product mix and destination-market demand. Broader plastic export trends also point to a mixed operating environment, where packaging-related exports have faced pressure in some periods due to weaker order inflows and external trade challenges, while certain consumer and houseware-linked plastic categories have remained relatively resilient.

Chart 29: Export Trends of Semi-Rigid Packaging Market



Source: Tradestat

Note: The chart includes export data for HSN 39249090: Tableware, kitchenware, other household articles and hygienic or toilet articles, of plastics - other: other; and HSN 39239090: Articles for the conveyance or packing of goods, of plastics; stoppers, lids, caps and other closures, of plastics - other: other. Values are shown in Rs. crore and quantity as per the chart.

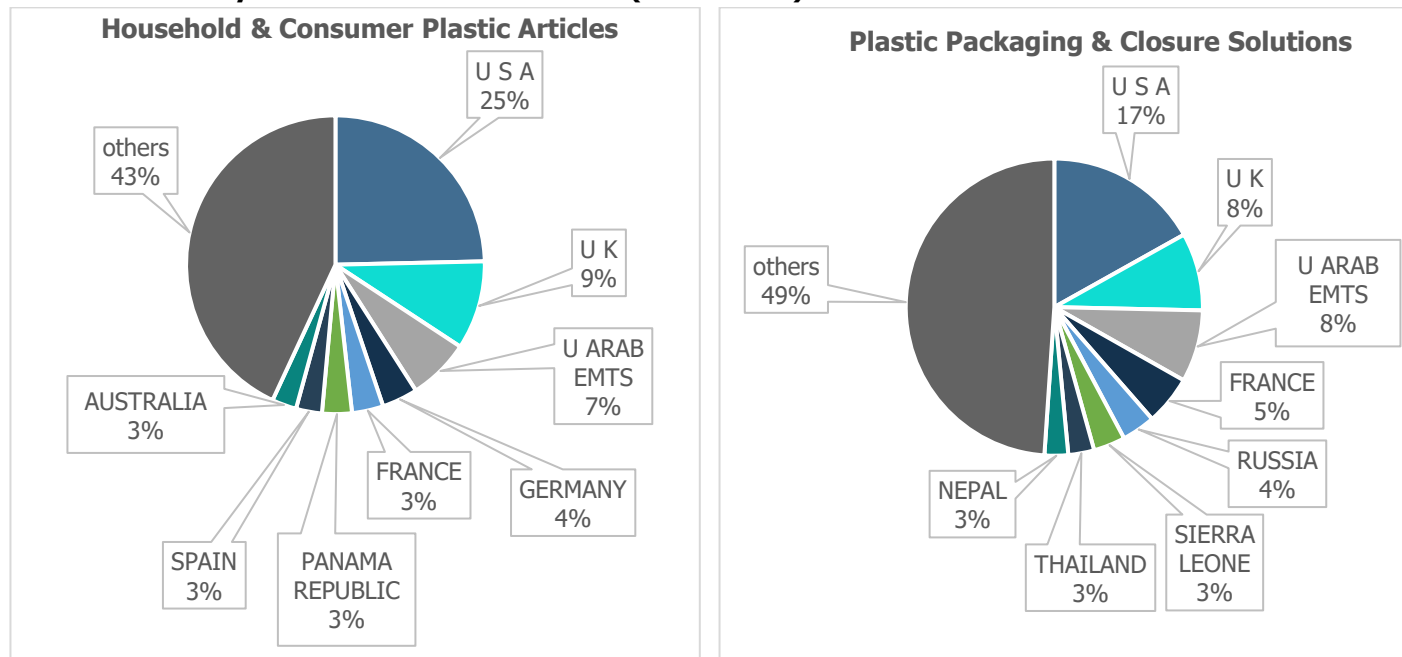
In FY26, exports reached the highest volume during the period at 1,01,159 thousand kgs, increasing from 96,906 thousand kgs in FY25. Export value also improved to Rs. 2,531 crore from Rs. 2,341 crore in FY25, indicating a recovery after the previous year's decline. However, despite this improvement, FY26 export value remained below the FY24 peak of Rs. 3,116 crore, suggesting that the growth was largely volume-led, while average export realisations continued to remain under pressure. In FY25, export volume increased to 96,906 thousand kgs, but export value declined to Rs. 2,341 crore, indicating weaker realisations despite higher shipment volumes. In FY24, export value peaked at Rs. 3,116 crore, supported by export volume of 84,589 thousand kgs, reflecting the strongest value performance during the period. In FY23, exports stood at 74,530 thousand kgs and Rs. 2,793 crore, indicating improved value realisation despite a marginal decline in volume compared with FY22.

Overall, exports of selected semi-rigid plastic packaging categories show strong long-term volume growth, with FY26 recording the highest shipment quantity during the period. However, the value trend has remained uneven, with FY24 continuing to represent the peak in value terms. The FY26 recovery is positive, but the gap between volume growth and value realisation highlights continued pricing and product-mix pressure. Going forward, export growth will depend on demand recovery in key markets, movement toward higher-value packaging products, improved quality standards and stronger cost competitiveness among Indian manufacturers.

10.2 Key Export Destinations for Indian Manufacturers

The country-wise export trend indicates the extent to which India's selected semi-rigid plastic packaging exports are dependent on key destination markets and highlights emerging opportunities across global regions.

Chart 30: Country Wise Trade trends for FY26 (Value-Wise)



Source: Tradestat Note:

Note: The chart includes export data for **Household & Consumer Plastic Articles**-HSN 39249090: Tableware, kitchenware, other household articles and hygienic or toilet articles of plastic and **Plastic Packaging & Closure Solutions**-HSN 39239090: Articles for the conveyance or packing of goods, of plastics; stoppers, lids, caps and other closures.

For Household & Consumer Plastic Articles, the export distribution is led by the USA, which accounts for 25% of total exports, indicating its position as the largest destination market. The UK and UAE follow with shares of 9% and 7%, respectively, while Germany accounts for 4%. Other key markets such as France, Panama Republic, Spain and Australia each contribute 3%. The "Others" category holds the largest combined share at 43%, suggesting that exports under this category are spread across a broad base of smaller destination markets beyond the leading countries.

For Plastic Packaging & Closure Solutions, the USA also remains the largest individual export destination, accounting for 17% of total exports. The UK and UAE each contribute 8%, followed by France at 5% and Russia at 4%. Sierra Leone, Thailand and Nepal each account for 3% of exports. The "Others" category represents 49%, indicating a relatively more diversified export base compared with Household & Consumer Plastic Articles, with a larger share distributed across smaller markets.

Overall, both product categories show the USA as the key export destination, although the level of dependence varies across the two categories. Household & Consumer Plastic Articles shows relatively higher exposure to the USA, while Plastic Packaging & Closure Solutions reflects broader geographic diversification due to the larger share of exports captured under "Others". This indicates that while established markets continue to drive demand, there remains scope to further strengthen export penetration across a wider set of global destinations.

10.3 Competitiveness of India vs. China on Cost, Quality and Lead Times

India's competitiveness in semi-rigid plastic packaging exports must be evaluated across three key dimensions: cost efficiency, quality consistency and export lead times. These factors are particularly important for semi-rigid packaging products such as thermoformed trays, tubs, cups, clamshells, lids and injection-moulded containers, where buyers typically assess suppliers on price competitiveness, compliance capability, delivery reliability and product consistency.

From a cost perspective, India offers a competitive manufacturing base for selected semi-rigid plastic packaging products, particularly where production involves labour-supported operations, mid-volume customization and cost-sensitive applications. However, China continues to remain a strong competitor due to its larger manufacturing scale, mature supplier ecosystem, higher automation levels and stronger tooling infrastructure. For Indian manufacturers, the cost advantage is therefore more visible in customized, mid-scale and relationship-driven export orders, while China retains strength in highly standardized, large-volume packaging products. India's competitiveness can improve further through automation, material optimization, downgauging and better integration across sheet extrusion, thermoforming, injection moulding and finishing operations.

In terms of quality, Indian semi-rigid plastic packaging exporters are increasingly moving toward higher process control, better finishing standards and compliance-oriented production. This is important because key export destinations such as the USA, UK, EU and Middle East require consistent product quality, food-contact suitability, dimensional accuracy, sealing compatibility and reliable documentation. The export opportunity is stronger for Indian firms that can demonstrate compliance with international buyer requirements, maintain consistent thickness and clarity, and offer value-added features such as improved printability, stackability, tamper-evident designs and recyclable material structures. Quality competitiveness is therefore not only linked to product appearance, but also to process reliability, certification readiness and the ability to meet repeat export orders without variation.

India's lead-time competitiveness is improving alongside better logistics and port performance. India ranked 38th among 139 countries in the World Bank's Logistics Performance Index 2023, up six places from 2018 and sixteen places from 2014. Initiatives such as PM GatiShakti, the National Logistics Policy, Unified Logistics Interface Platform and Logistics Data Bank are intended to improve logistics efficiency and reduce trade-related delays. Port turnaround has also improved, with India recording 0.9 days, ahead of several major economies in the same comparison.

For export-oriented semi-rigid packaging manufacturers, shorter and more predictable lead times can become a meaningful competitive advantage, especially for buyers looking to diversify sourcing beyond China. However, India still needs to strengthen consistency across inland logistics, container availability, customs processes and supplier coordination. In packaging exports, lead-time competitiveness depends not only on port performance but also on raw material availability, tooling turnaround, production scheduling, quality approvals and export documentation.

Overall, India's competitiveness against China in semi-rigid plastic packaging is improving, but remains selective rather than broad-based. India is better positioned in areas where buyers require cost-effective customization, reliable quality, diversified sourcing and compliance-oriented production. China remains stronger in scale, automation and large-volume standardized supply. Therefore, Indian manufacturers can strengthen their export position by investing in automation, tooling capability, food-contact compliance, material efficiency and supply-chain reliability. Over the medium term, India's ability to combine competitive pricing with consistent quality and improving logistics performance will be central to capturing a larger share of global semi-rigid plastic packaging demand.

10.4 Certification Requirements for Export Markets

Certification and regulatory compliance are critical determinants of export competitiveness in semi-rigid plastic packaging, particularly for products used in food-contact, household, hygienic, pharmaceutical and personal care applications. For products such as trays, tubs, cups, clamshells, lids, bowls and containers, export buyers increasingly require suppliers to demonstrate compliance with food-contact safety, material traceability, migration limits, good manufacturing practices and documentation standards. As a result, compliance is no longer limited to regulatory approval, but has become an important market-access requirement for Indian exporters.

For the US market, semi-rigid plastic packaging used in food-contact applications must comply with requirements administered by the US Food and Drug Administration (FDA). The FDA regulates substances that come into contact with food, including packaging materials, cookware and containers used for food storage. The FDA also provides guidance on food-contact substances, food-contact notifications, recycled plastics in food packaging and regulatory submissions for packaging-related materials.

For the European Union, plastic materials and articles intended to come into contact with food are governed by Commission Regulation (EU) No. 10/2011. This regulation lays down specific rules for plastic food-contact materials, including compositional requirements, authorised substances and safe-use conditions. Compliance with EU food-contact norms is particularly important for Indian exporters supplying thermoformed trays, cups, tubs, lids and containers to food, dairy, bakery, ready-meal and retail packaging customers.

The EU regulatory framework is also becoming more stringent with respect to recycled plastics and quality control. Commission Regulation (EU) 2025/351 amended Regulation (EU) No. 10/2011 and requirements related to recycled plastic materials intended to come into contact with food, including matters linked to manufacturing quality control. This is relevant for semi-rigid plastic packaging manufacturers as export buyers increasingly evaluate recyclability, recycled-content suitability and material safety together.

From an exporter's perspective, compliance requirements typically involve maintaining documentation related to food-grade resin usage, migration testing, declaration of compliance, recycled-content suitability, traceability, and good manufacturing practices. These requirements are especially important for semi-rigid packaging because many products are used directly in food-contact environments, where contamination risk, chemical migration, temperature exposure and shelf-life considerations are closely evaluated by buyers.

Compliance capability also has a direct impact on customer access and pricing. Manufacturers with established testing systems, certification readiness and strong documentation practices are better positioned to supply regulated markets such as the USA, EU and UK. In contrast, smaller or less formalised manufacturers may face challenges due to the cost of testing, frequent documentation requirements, limited technical capability and evolving international regulations.

Overall, certification and compliance are becoming key differentiators for India's semi-rigid plastic packaging exporters. Firms that can align with FDA and EU food-contact norms, maintain consistent quality systems and demonstrate material traceability will be better placed to serve global buyers. Going forward, compliance readiness is expected to play an increasingly important role in export growth, particularly as international customers shift toward safer, recyclable and regulation-compliant packaging solutions.

10.5 Opportunity for China+ 1 Sourcing Shift in Packaging

The China+1 sourcing shift presents a strategic opportunity for India's semi-rigid plastic packaging industry, as global buyers increasingly evaluate diversified sourcing bases to reduce supply-chain concentration and improve procurement resilience. For packaging products, this shift is particularly relevant because buyers assess suppliers not only on cost, but also on consistency, compliance, lead times, logistics reliability and ability to support customised product products.

India's export base has strengthened over the past decade, creating a favourable foundation for manufacturing-led growth and export-oriented sectors. Total exports, including merchandise and services, are estimated at USD 860.1 billion in FY26, compared with USD 825.3 billion in FY25, reflecting a 4.2% year-on-year increase. Merchandise exports stood at USD 441.8 billion in FY26, compared with USD 437.7 billion in FY25, registering a modest growth of 0.9%. The continued expansion in India's export base supports the country's positioning as an increasingly relevant manufacturing and sourcing destination for global buyers

Export performance in FY27 has started on a strong note, reinforcing the country's relevance as an alternative sourcing destination. Total exports during April-June 2026-27 are estimated at USD 232.7 billion, reflecting 11.4% growth over the same period in the previous year. Merchandise exports increased by 15.9% to USD 129.3 billion, while non-petroleum exports grew by 12.4% to USD 106.3 billion, indicating broad-based resilience in non-commodity exports

For semi-rigid plastic packaging, the China+1 opportunity is likely to be strongest in categories where buyers require cost-effective production, mid-volume customisation, food-contact compliance, reliable documentation and consistent supply quality. Products such as thermoformed trays, tubs, cups, clamshells, lids and injection-moulded containers are aligned with end-use sectors such as food service, FMCG, dairy, fresh produce and personal care, where global buyers increasingly prefer suppliers with stable production capabilities and regulatory readiness.

India's improving logistics performance further supports export competitiveness. In the World Bank's Logistics Performance Index 2023, India ranked 38th out of 139 countries, improving from 44th in 2018 and 54th in 2014. Policy and digital logistics initiatives such as PM GatiShakti, the National Logistics Policy, Unified Logistics Interface Platform and Logistics Data Bank are aimed at improving efficiency and reducing trade-related delays.

Port performance is also improving, with India recording a turnaround time of 0.9 days in the World Bank LPI 2023 comparison, ahead of several major economies. For export-oriented packaging manufacturers, faster port turnaround can support more predictable delivery timelines, strengthening India's case as an alternate sourcing destination.

However, the opportunity is not automatic. India will need to strengthen scale, automation, tooling capabilities, sheet extrusion quality, moulding precision, food-contact compliance and export documentation to compete effectively with China. China continues to benefit from large-scale manufacturing ecosystems, integrated supplier networks and mature tooling infrastructure, while India's opportunity is likely to be stronger in customised, compliance-oriented and relationship-driven export orders.

Overall, the China+1 sourcing shift can act as a medium-term growth lever for India's semi-rigid plastic packaging industry. India's expanding export base, improving logistics infrastructure and growing relevance in global trade create a supportive environment for packaging exporters. However, the extent of opportunity capture will depend on the ability of Indian manufacturers to combine competitive pricing, consistent quality, international compliance readiness and reliable export lead times.

11 Overview of End User Segments of Indian Packaging Industry

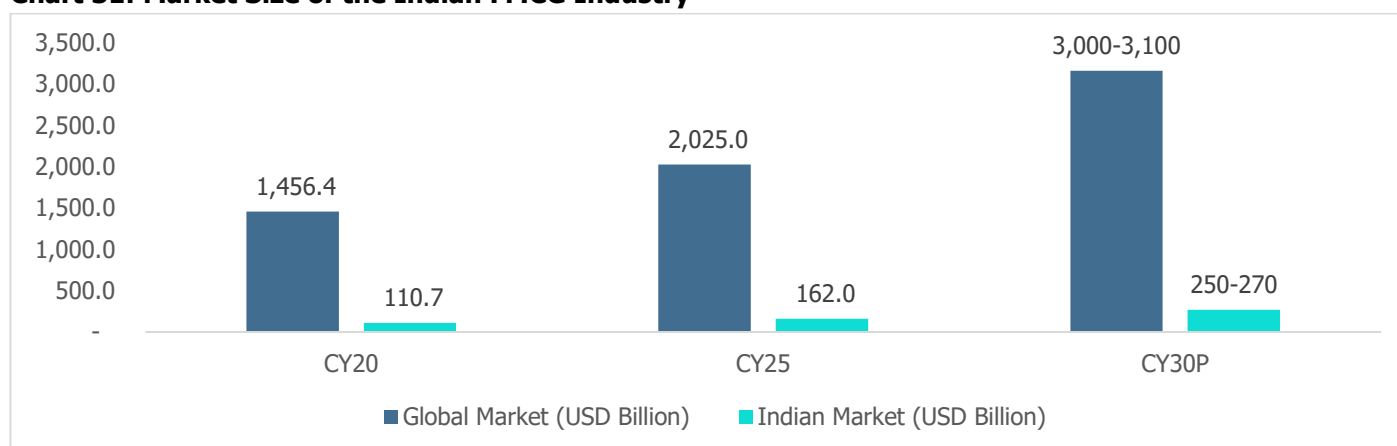
11.1 Overview of FMCG Industry

11.1.1 Market Size of the FMCG Industry

The Indian fast-moving consumer goods (FMCG) sector encompasses a wide range of products, including food and beverages, household items, personal care products, and health and wellness items. These consumer staples are available through both modern and traditional retail channels. The market features a mix of well-known national brands alongside a diverse array of regional and local manufacturers. Distribution networks include traditional kirana stores, modern retail outlets, and an expanding landscape of e-commerce and quick-commerce platforms.

Consumer demand in India varies significantly between urban and rural areas and across different income brackets. This diversity influences product formats, such as single-use sachets, family-sized packs, and premium variants, as well as the choices made in packaging.

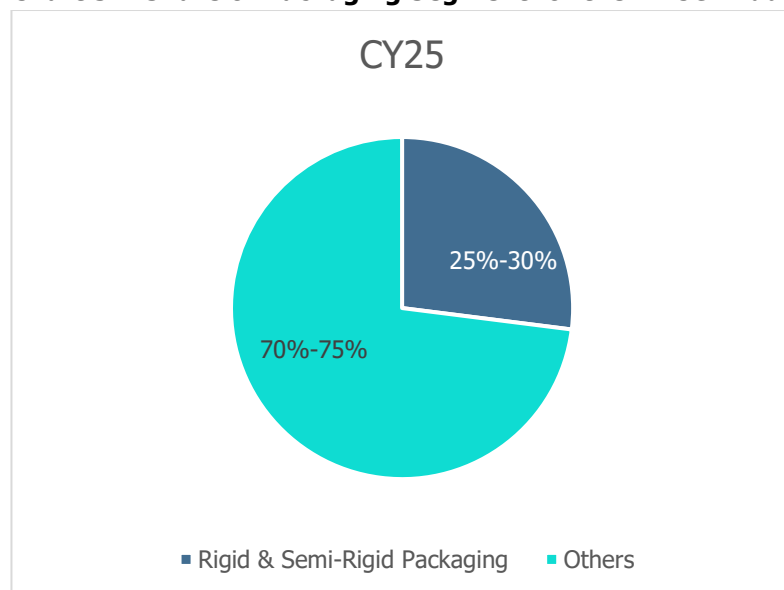
Chart 31: Market Size of the Indian FMCG Industry



Source: Acumen Research And Consulting, CareEdge Research, P denotes projected

The Global FMCG market is valued at approximately USD 2,025 billion for CY25 and it is expected to reach USD 3,000-3,100 billion by CY30, whereas, India market is expected to grow from USD 162 billion in CY25 to USD 250-270 billion by 2030. A noteworthy portion of this packaging demand is driven by packaging and plastics, particularly for food and household products. Packaging plays a crucial role for FMCG companies, contributing not only to shelf life and convenience but also enhancing branding and logistical efficiency. As such, it constitutes a significant part of the overall supply chain expenditure, although the proportion of spending on packaging can vary by product category and company.

11.1.2 Share of Packaging Segment for the FMCG Industry

Chart 32: Share of Packaging Segment for the FMCG Industry


Source: CareEdge Research *Others include Other Includes flexible plastic, metal, paper & paperboard, and others

The FMCG packaging market in CY25 is valued at around USD 162 billion, and most of this comes from the “other” materials category, which makes up approximately 70-75% of the total share. This mainly includes flexible plastics, laminates, metal cans, carton board and foil packs. These products are widely used because they are lightweight, cost-effective and suitable for high-volume products such as snacks, personal care items, home-care products and daily essentials.

Semi-rigid and rigid plastics account for the remaining 25-30% and are used in bottles, jars and containers that need better durability, ease of handling and stronger shelf presence. These formats work well for products like shampoos, detergents, creams and food storage categories.

11.1.3 Key Trends and Growth Drivers in the FMCG Packaging Industry

• Rising household consumption and rural demand

Improving household expenditure supports higher demand for packaged food, personal care and household products. Rural monthly per-capita expenditure increased to Rs 4,122 in FY24, while the difference between urban and rural expenditure continued to narrow. This supports broader distribution beyond major cities and increases demand for durable packs capable of withstanding longer and less controlled supply chains. For packaging manufacturers, rural expansion creates demand for both small affordable packs and larger value packs. Semi-rigid and rigid suppliers must therefore balance product protection with low package weight and competitive unit cost.

• Expansion of food processing

Government investment in food-processing infrastructure is increasing the addressable market for containers, trays, tubs and closures. As of 28 February 2025, the Ministry of Food Processing Industries had approved 1,608 projects under the relevant components of PM Kisan SAMPADA Yojana, including 41 Mega Food Parks, 394 cold-chain projects and 536 food-processing units. Greater processing capacity should support demand for portion packs, dairy cups, ready-meal trays, condiment containers and tamper-evident closures. Semi-rigid products are particularly relevant to chilled foods, confectionery and ready-to-eat products, while rigid bottles and jars remain important for beverages, oils, sauces and spreads.

- **E-commerce and quick delivery**

Online retail is widening SKU ranges and increasing demand for packaging that prevents leakage, breakage and deformation during individual-order delivery. This favours rigid bottles with secure closures and semi-rigid food containers with dependable seals. It may also increase demand for tamper evidence and lighter packs that reduce delivery costs. Conversely, excessive secondary packaging may face pressure as companies seek to lower material use.

- **Premiumisation and customisation**

Higher-value personal care, food and beverage products require distinctive shapes, colours, surface finishes and dispensing systems. Rigid packaging is well suited to custom-moulded bottles and jars, while semi-rigid packs can use in-mould labels, printed lids and high-clarity trays to improve presentation. Premiumisation can raise revenue per pack, but it also increases tooling, decoration and SKU-management costs. Packaging suppliers with design, mould development and short-run decoration capabilities should therefore be better positioned than manufacturers of standard containers.

- **Smaller households, convenience and portion packs**

Urbanisation, convenience-led consumption and demand for ready-to-eat products support single-serve and portion-controlled packaging. These trends directly benefit semi-rigid cups, trays and thin-wall tubs. Government projections indicate that almost 600 million people, or approximately 40% of India's population, could live in cities by 2030, reinforcing demand for organised retail, packaged food and delivery-ready products. However, growth in the number of packs may not translate into equivalent resin-volume growth because manufacturers are reducing wall thickness and pack weight.

- **Recyclability and recycled content**

Environmental requirements are changing FMCG packaging specifications. Plastic-packaging EPR places obligations on producers, importers and brand owners relating to recycling, reuse of rigid packaging and recycled content. This is encouraging FMCG companies to simplify packaging structures, reduce material use and adopt recycled PET where permitted. For packaging manufacturers, the trend favours mono-material containers, recyclable closures, clear PET and PP products, removable labels and lower pigment use. It may disadvantage difficult-to-recycle combinations that provide strong branding but complicate sorting and processing.

- **Product safety and shelf-life requirements**

Food, beverage and healthcare products require packaging that remains suitable throughout filling, storage, transport and use. Semi-rigid and rigid products offer dimensional stability, resealability and tamper-evident options, making them important where product integrity outweighs the lower cost of flexible packaging. The strongest FMCG-linked opportunities are therefore expected in beverage bottles, dairy cups, food trays, personal-care bottles, dispensing closures and healthcare containers. Growth should increasingly depend on delivering the same functional performance with less virgin material and improved recyclability.

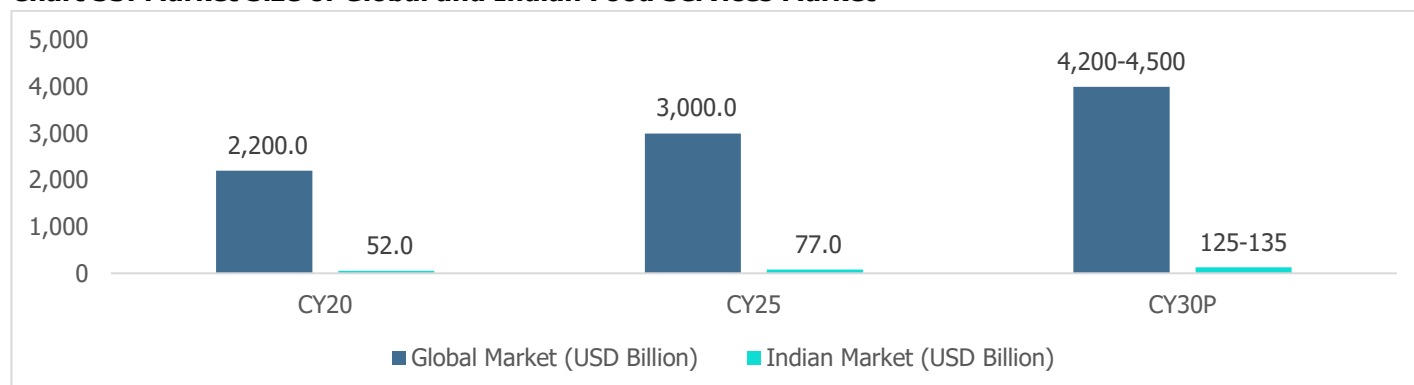
11.2 Overview of Indian Food Services, QSR, Cloud Kitchen Industry

11.2.1 Market Size of the Food Services Industry Market Size

The Indian food-services industry includes independent restaurants, QSRs, cafés, cloud kitchens, catering businesses and delivery-focused operators. The segment is an important end user of semi-rigid and rigid packaging because takeaway and delivery orders require containers that provide leak resistance, shape retention, secure sealing and protection during transport. Common products include PP meal containers, PET lids, compartment trays, portion cups and tamper-evident closures. The global foodservice packaging market is expected to grow driven by rising consumption

and delivery platforms. QSR chains are expanding store counts; this creates substantial new demand for take-away packaging (rigid/semi-rigid containers for delivery).

Chart 33: Market Size of Global and Indian Food Services Market



Source: Industry Sources, CareEdge Research, P denotes projected

India's food-services market reached around USD 77 billion in CY25, and is expected to reach USD 125–135 billion by CY30. Growth is expected to be supported by rising consumer expenditure, urbanisation, demand for convenience and the expansion of organised restaurants, QSRs and cloud kitchens. Digital ordering is an additional driver: online delivery represented approximately 10-11% of the market in FY26 and is projected to rise to 16-18% by FY30. Organised operators account for around 40–45% of the market and are expected to expand faster than unorganised outlets.

The shift towards organised and delivery-led food services should increase demand for standardised semi-rigid and rigid packaging. Delivery orders are particularly packaging-intensive, as individual meal components may require separate containers, lids and portion cups. However, lightweighting, recyclability requirements and restrictions on selected single-use plastic items will encourage food-service operators to adopt lower-weight, mono-material and alternative packaging products.

11.2.2 QSR Chain expansion store count growth, packaging spend per outlet

QSR growth and dine-out culture drive packaging volumes. As outlets increase, total packaging demand (boxes, trays, cups, lids, bags) grows roughly in proportion to store count and order volume. Meanwhile, rising raw-material prices (paper/plastic resins) put pressure on costs. Chains focus on cost control (bulk buying, design optimisation) more than on granular reporting of per-outlet packaging spend.

QSRs dominate foodservice packaging. Major listed QSR chains report rapidly expanding outlets. These chains invest heavily in expansion driving packaging demand. Non-listed chains and regional QSRs further add to volume.

Chain (Franchisor)	Stores (2020)	Stores (2025)	CAGR (2020–25)
Domino's India (JFL)	~1,250	~2,450	~13–14%
McDonald's India (WLF)	~300	~550	~15%
Burger King India (RBA)	~400	~513	~5–6%

Source: Company Reports

QSRs dominate foodservice packaging. Major listed QSR chains report rapidly expanding outlets. For example, Domino's India (Jubilant Foodworks) grew from ~1,227 stores in FY2019 to ~2,455 stores by Mar 2026 (roughly 13–14% CAGR 2020–25). McDonald's India (Westlife Foodworld) has over 550 outlets by mid-2020s (West/South India master-franchise), and Burger King India (Restaurant Brands Asia) reached 513 stores by FY2025. These chains invest heavily in expansion, driving packaging demand. Non-listed chains and regional QSRs further add to volume.

11.2.3 Cloud kitchen boom and its incremental demand for rigid/semi-rigid containers

Cloud kitchens are structurally more packaging-intensive than dine-in restaurants because their operating model is built around takeaway and delivery. Each order requires primary packaging to contain and protect the food during transport, while meals with several components may require separate containers for gravies, rice, breads, side dishes, sauces and desserts. This supports recurring demand for PP bowls and tubs, compartment trays, transparent PET lids, portion cups and tamper-evident seals.

The expansion of digital commerce is widening the addressable market for delivery-focused kitchens. ONDC's network was active across more than 616 cities as of May 2025, with food and beverages among its operating categories. Although ONDC's network data cannot be used as a direct measure of cloud-kitchen activity, the growing reach of digital ordering allows delivery-led food businesses to serve customers without investing in conventional dine-in outlets.

Cloud kitchens also tend to operate multiple brands and menus from a common facility. This increases the number of container sizes, labels and lid designs required, even where the underlying food preparation is centralised. Packaging manufacturers can reduce this complexity by offering standard container platforms that are customised through labels, sleeves or printed lids.

Incremental demand is likely to favour containers that are stackable, lightweight and resistant to leakage and deformation. Semi-rigid packaging is suitable for many short-distance deliveries, while heavier rigid containers remain relevant for hot, oily or liquid foods and orders involving longer delivery times. However, part of the demand may shift towards fibre-based, aluminium, certified compostable or reusable alternatives as food-service companies respond to environmental requirements.

11.2.4 Food delivery platforms driving single-use packaging volumes

Food-delivery platforms increase packaging use by converting restaurant meals into individually packed orders. Unlike dine-in service, delivery generally requires a separate primary container, lid or seal for each food component, together with secondary packaging for order consolidation. As a result, growth in delivery transactions can raise packaging-unit demand faster than the number of meals ordered.

India's digital commerce infrastructure provides evidence of the increasing reach of online ordering. ONDC reported more than 49 million cumulative transactions by April 2024. By May 2025, the network was processing 16 million monthly orders across all categories, with food and beverages included among the active domains.

Delivery also raises packaging-performance requirements. Containers must resist leakage, retain their shape when stacked, tolerate food temperature and provide visible evidence of opening. These requirements support demand for PP meal containers, PET lids, compartment trays, small sauce cups and locking or tamper-evident closures. Growth in snacks, desserts and beverages is particularly relevant to semi-rigid and rigid packaging because these products commonly use cups, tubs, bottles and protective trays.

The relationship between delivery growth and plastic consumption is not necessarily proportional. Lightweighting can reduce resin use per container, while cutlery opt-outs, paper-based secondary packs and alternative materials can lower plastic intensity. Accordingly, packaging unit volumes and market value may increase faster than plastic tonnage, especially as operators adopt lighter containers, better seals and recyclable mono-material designs.

India's regulation prohibits identified single-use plastic items such as plastic plates, cups, glasses, cutlery, straws and trays. Plastic packaging is separately covered under the Extended Producer Responsibility framework, creating a distinction between prohibited serviceware and permitted packaging products subject to applicable requirements. Food-delivery operators must therefore balance operational needs for hygiene, leak prevention and convenience with restrictions on selected items and growing obligations concerning recovery and recycling.

11.2.5 Regulatory tension: single-use plastic restrictions vs QSR operational needs.

India has implemented a phased approach towards regulating selected single-use plastic (SUP) items under the Plastic Waste Management (Amendment) Rules, 2021. Effective July 1, 2022, certain SUP items, including plastic cutlery,

stirrers, and specific categories of carry bags, were prohibited, while minimum thickness requirements for plastic carry bags were progressively increased. Certain packaging products, including rigid polypropylene containers commonly used in foodservice applications, were not covered under the initial restrictions and continue to be governed through evolving Extended Producer Responsibility (EPR) and waste management frameworks.

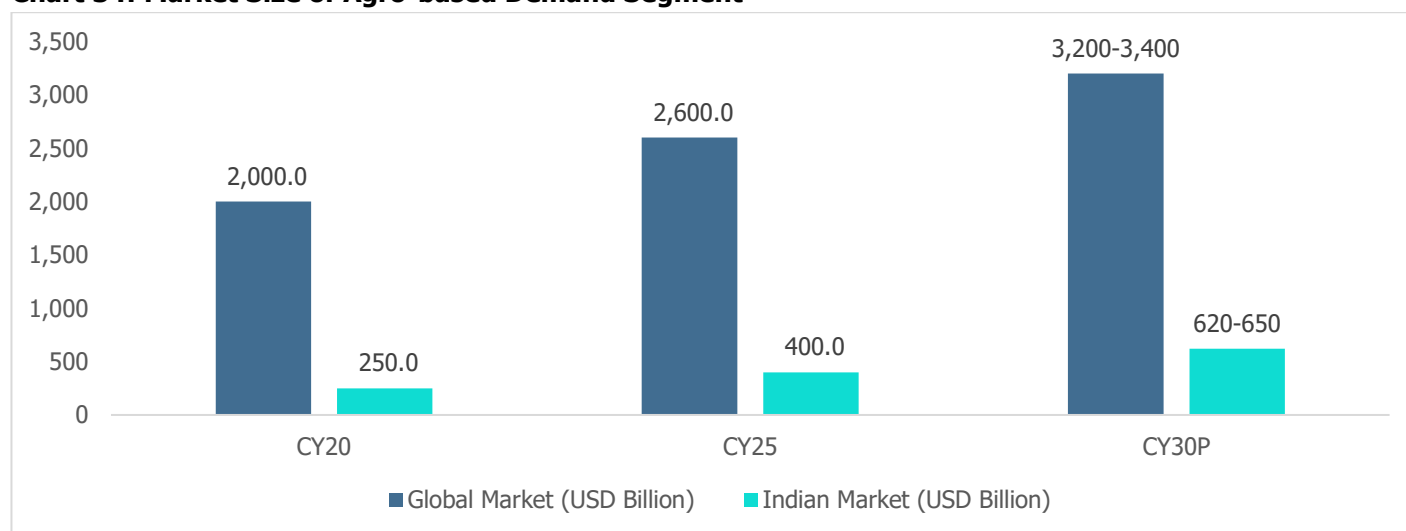
Impact on QSRs/Delivery: The evolving regulatory landscape has prompted QSRs, cloud kitchens, and food delivery operators to evaluate and diversify their packaging options. In response, industry participants have increasingly adopted alternative materials such as paper-based, moulded fibre, and compostable packaging products for selected applications. Many delivery platforms have also encouraged responsible usage practices, including providing cutlery only upon customer request. While alternative packaging solutions continue to gain traction, businesses remain focused on balancing functionality, cost efficiency, product protection, and sustainability requirements. Consequently, conventional plastics continue to play an important role in several food packaging applications due to their performance, safety, and scalability advantages, alongside the growing adoption of alternative materials where feasible.

11.3 Agro-based Demand Segments

11.4.1 Overview and Market Agro-based Demand Segments

The agro-based processed-food industry comprises products derived from agricultural, horticultural, livestock and fisheries outputs that undergo some form of value addition before reaching consumers. Key categories include processed fruits and vegetables, cereals, pulses, edible oils, bakery products, snacks, beverages, meat products and dairy products. The industry plays a critical role in reducing post-harvest losses, extending shelf life, improving food availability and increasing value realisation for farmers. India benefits from a large agricultural resource base, being among the world's leading producers of milk, fruits, vegetables, cereals and spices, providing substantial opportunities for food processing and value addition. Government initiatives such as Mega Food Parks, agro-processing clusters and cold-chain infrastructure projects are further strengthening the processing ecosystem and supporting the transition towards organised and branded food products.

Chart 34: Market Size of Agro-based Demand Segment



Source: Industry Sources, CareEdge Research, P denotes projected

The global agro-based market is expected to grow from around USD 2,600 billion to USD 3,200-3,400 billion by CY30. India's agro-based processed-food market has reached around USD 400 billion in CY25 and is expected to reach USD 620-650 billion by CY30. The strong growth outlook is primarily driven by rising urbanisation, increasing disposable incomes, changing dietary preferences and growing demand for convenience foods. Significant headroom for expansion also exists because processing levels remain relatively low in several agricultural categories, particularly fruits and vegetables. Investments in food-processing infrastructure, cold-chain development, organised retail, e-commerce and

quick-commerce platforms are improving market access and enabling wider distribution of packaged food products. In addition, increasing consumer preference for branded, safe and hygienically packaged foods is accelerating the shift from unorganised to organised food processing, supporting long-term growth across the value chain.

11.4.1 Key Growth Drivers

- **Rising Farm Output & Exports:** India's record harvests and export push (e.g. record shipments of grains, spices) increase demand for bulk packaging (woven jute/PP sacks for wheat, rice, pulses). Government procurement schemes (e.g. public distribution system) also drive large-scale sack usage.
- **Cold Chain & HORECA:** Growth in refrigerated transport and hospitality creates need for packaging of perishables. Perishable fruits/vegetables (mangoes, grapes, onions, potatoes, etc.) are increasingly shipped in rigid crates and corrugated cartons to maintain quality. The government's focus on cold-storage (₹6,000+ cr. schemes) suggests crate/plastic crate demand will rise.
- **Processed Foods & Consumer Pack:** As more fresh produce is processed (e.g. juices, ready meals), demand grows for plastic bottles/jars (cooking oil, juices, ready-to-eat) and carton packs. Edible oil consumption (~20 Mt/year) means rigid PET bottles and cans. Dairy (milk powder, ghee) also uses cans/laminated pouches. Seed/chemical packaging (foils, bottles) adds to totals.
- **Sustainability & Regulation:** The agriculture sector is also adapting to plastic bans. Fertiliser and pesticide sacks (formerly low-grade polyethylene) are shifting toward biodegradable alternatives under 2022 regs.
- **E-commerce:** Growth of online grocery and farm-to-door services (e.g. Nature's Basket, BigBasket) adds packaging weight (cartons, shipping wrap) to agri retail chain.

Packaging Types by Commodity: The following table summarises priority crops/commodities, typical packaging, and implications:

Table 7: Drivers and Trends

Driver / Trend	Packaging Implication	Priority Crops / Commodities
Staple grains (wheat, rice) output & trade	High-volume bulk sacks (woven jute/PP, 50–100 kg bags)	Wheat, Rice, Pulses (gram, maize, etc.)
Fresh fruits & vegetables supply chain	Reusable rigid crates, corrugated boxes, thermoformed trays	Mangoes, Apples, Grapes, Tomatoes, Onions, Potatoes
Government procurement & food security scheme	Same as above (bulk sacks, plus 25 kg flour bags)	Wheat, Rice (govt stocks, PDS supply)
Edible oils & dairy products	Rigid PET bottles, tins, milk pouches	Edible Oil, Milk/Ghee powder, etc.
Seeds & agrochemicals	Multi-layer foil packets (seeds); HDPE drums/jerrycans	Hybrid seeds, Fertilisers, Pesticides
Organic & export produce	Vacuum packs, wooden crates for export quality	Spices, Herbs, Exotic Fruits (e.g. mangoes)
Sustainability regulations	Shift to biodegradable sacks/crates (bagasse trays, etc.)	All agri segments (substitution needed)

Source: Industry Sources, CareEdge Research

11.4 Dairy Segment

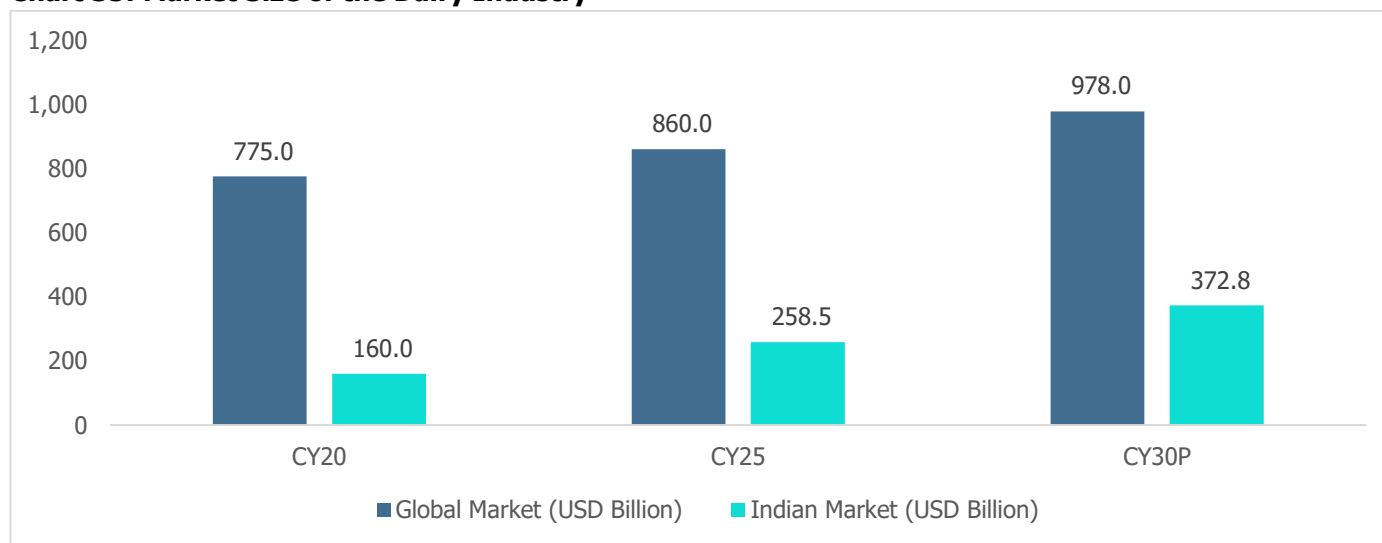
11.5.1 Overview & Market Size of the Industry

The dairy industry is India's largest agricultural commodity, contributing approximately 5% to the national economy and providing direct employment to over 80 million farmers, a significant proportion of whom are women. India continues to be the world's largest milk producer, accounting for nearly 25% of global milk production in CY25. The sustained growth in milk production has outpaced domestic consumption, highlighting the country's strong potential to strengthen its position in the global dairy market. According to the Basic Animal Husbandry Statistics 2025, India's per capita milk availability stood at 485 grams per day in FY25, significantly higher than the global average of 322 grams per day.

In India, approximately 37% of the milk produced is either consumed at the producer level or sold directly to consumers in rural areas. The remaining 63% is marketed through organised and unorganised channels. The organised sector comprises government agencies, producer-owned institutions (including dairy cooperatives and milk producer organisations), and private dairy companies, which provide a structured, transparent, and year-round milk procurement system at the village level. This organised network plays a crucial role in ensuring stable market access for farmers, maintaining quality standards, and supporting the growth of the formal dairy value chain.

The unorganised (informal) sector includes local milk vendors, dudhias, contractors, and other intermediaries. These players generally operate without a standardised pricing mechanism, with procurement prices varying based on local market conditions and competitive dynamics. Consequently, milk producers may not always receive fair and consistent remuneration. In addition, the risk of milk adulteration is relatively higher in the unorganised sector due to the absence of formal quality control and monitoring systems. In regions where organised dairy players have a strong presence, unorganised operators often offer higher procurement prices to remain competitive. However, in areas with limited organised sector participation, they may offer comparatively lower prices to milk producers.

Chart 35: Market Size of the Dairy Industry



Source: Technavio, EMIS Database, CareEdge Research, P denotes Projected

The Indian dairy market has witnessed steady growth over the years, with its market size expanding from Rs. 160 billion in CY20 to Rs. 258.5 billion in CY25. This growth has been supported by a 5%–6% increase in milk production volumes and a 4%–5% rise in price realisations within the dairy market. While milk continues to form the backbone of the industry, it is increasingly complemented by a wide range of value-added products such as paneer, curd, cheese, butter, ghee, khoa, skimmed milk powder, milkshakes, ice cream, yoghurt, and whey, which are expanding at a significantly faster pace than liquid milk.

Going forward, the Indian dairy market is expected to grow at a CAGR of approximately 7.6% through CY30, reaching an estimated size of Rs 372.8 billion, driven primarily by the robust growth in value-added dairy segments.

11.5.2 Key Growth Drivers

- **Growth in value-added dairy products**

Demand is broadening beyond liquid milk towards yoghurt, curd, cheese, flavoured drinks, spreads and desserts. These products carry higher packaging requirements and support demand for portion cups, resealable tubs, bottles and tamper-evident lids.

- **Expansion of organised processing and cold chains**

Investment in chilling, testing and processing enables dairy products to travel over longer distances and remain available for longer periods. Packaging must provide leak resistance, temperature stability and compatibility with automated filling and sealing lines.

- **Convenience and portion-based consumption**

Single-serve yoghurt cups, small beverage bottles and family-sized tubs address different consumption occasions. The resulting increase in pack sizes and product variants creates opportunities for standard container platforms with customised lids, labels and decoration.

- **Shift towards sustainable packaging**

Lightweight PP containers and approved food-grade rPET products may gain importance as dairy brands seek to reduce virgin-plastic use. Adoption will depend on food-contact compliance, resin consistency, appearance and performance under refrigerated conditions.

11.5 Bakery Segment

11.6.1 Overview of the Industry

India's bakery industry covers bread, buns, biscuits, cookies, cakes, pastries, rusks, breakfast cereals and other flour-based products. The sector includes national branded manufacturers, regional companies, industrial bakeries, neighbourhood outlets, home-based businesses and institutional suppliers. Bakery products are sold through traditional retail, supermarkets, cafés, specialist stores, online channels and food-service outlets.

Bakery as an important part of India's food-processing sector, with opportunities arising from the country's large supply of wheat, sugar, milk and edible oils. Packaging use differs by product. Bread, biscuits and rusks are primarily packaged in flexible films, laminates or paperboard cartons. Semi-rigid and rigid packaging is more important for delicate, premium or decorated products that require crush protection. PET trays, clear clamshell packs, PP tubs and rigid cake boxes protect pastries, muffins, cookies and cakes while allowing customers to inspect the product.

Formalisation is increasing the need for consistent pack sizes, batch information, food-safe materials and improved shelf presentation. Under the PMFME Scheme, 144,517 proposals had been approved by 30 June 2025, supporting the broader development of micro food-processing enterprises. Government initiatives relating to food-processing capacity, cold chains and formalisation should help regional bakery businesses reach organised retail and digital sales channels.

11.6.2 Key Growth Drivers

- **Convenience-led consumption**

Demand for ready-to-eat breakfasts, workplace snacks and individual portions supports packaged bakery products. Semi-rigid trays and tubs are particularly relevant for products that can be damaged in flexible packs.

- **Formalisation of smaller businesses**

Smaller bakeries entering organised retail require sealed, labelled and standardised packaging. This creates demand for stock trays and containers that can be customised through labels, sleeves or printed lids without high mould expenditure.

- **Premium and delivery-based bakery products**

Online ordering and home delivery increase the need for strong bases, secure lids and tamper-evident seals. Premium cakes and pastries require packaging that prevents movement, contact damage and deformation during transport.

- **Greater SKU and pack-size variety**

Individual servings, assorted boxes, celebration products and seasonal launches are increasing packaging complexity. Standard container platforms can help bakery companies control tooling costs and obsolete inventory while maintaining brand differentiation.

- **Shelf-life and product-protection requirements**

Bakery packaging must manage moisture, oxygen and physical damage. Semi-rigid containers provide shape protection, but may require seals, liners or secondary wrapping to preserve freshness.

11.6 Sweet & Confectionery Segment

11.7.1 Overview of the Industry

India's sweets and confectionery industry includes traditional milk-based and flour-based sweets, chocolate, candies, gums, toffees, sugar confectionery and packaged desserts. The sector is highly diverse, comprising national brands, regional manufacturers, local sweet shops, specialist chocolate businesses and a large base of small producers.

Traditional sweets are often sold fresh and close to the point of production. However, the expansion of branded retail, gifting, online ordering and inter-city delivery is increasing the use of sealed and labelled packaging. This transition is particularly important for products containing syrup, ghee, nuts or dairy ingredients, as these require effective barriers against leakage, contamination, moisture and physical damage.

Packaging requirements vary by product. Chocolate and confectionery are commonly packed in flexible materials or paperboard cartons, while rigid PET jars and PP containers are used for candies and larger assortments. Traditional sweets increasingly use semi-rigid trays, compartment inserts, PP tubs and transparent lids, often enclosed within decorated paperboard boxes. The inner pack provides product protection, while the outer pack delivers branding and gifting appeal.

Bakery and confectionery are a segment with opportunities for stronger supply chains, technology adoption, quality improvement and integration of smaller producers into the organised market. However, there is a need to improve access to quality raw materials, expand domestic input production and strengthen the competitiveness of regional and specialist manufacturers.

11.7.2 Key Growth Drivers

- **Festival and gifting demand**

Festivals, weddings and corporate gifting create strong seasonal demand for assortments and premium packs. Compartment trays protect individual items, while transparent lids support product visibility and decorative outer cartons provide branding space.

- **Wider geographic distribution**

Regional sweet producers are expanding beyond their local markets through branded stores, modern retail and digital channels. Longer transport distances increase the need for containers with secure closures, shape retention and leak protection.

- **Product protection and shelf-life requirements**

Syrup-based, dairy-based and high-fat sweets can interact with unsuitable packaging or lose quality during storage. Food-grade PP tubs, PET trays and sealed lids can improve hygiene and reduce contamination, leakage and physical damage.

- **Growth in food-processing infrastructure**

Cold-chain and preservation investments should help regional producers improve product life and market reach. As of 30 June 2025, 395 cold-chain projects had been approved under PMKSY, supporting the wider processing and distribution system.

- **Increasing SKU complexity**

Regional flavours, festive assortments and varied pack sizes create shorter production runs. Manufacturers can control packaging costs by using common trays and tubs with customised labels, sleeves and paperboard covers.

- **Growth of organised confectionery**

Formal retail increases the importance of consistent pack weight, product labelling and tamper evidence. This supports more standardised semi-rigid and rigid products compared with basic counter-service packaging.

11.7 Branded Packaging Segment

11.8.1 Overview of the Industry

Branded packaged food is a broad segment covering dairy products, bakery items, snacks, sweets, confectionery, sauces, spreads, spices, ready meals, breakfast products and processed foods sold under an identifiable brand. The segment includes national FMCG companies, regional manufacturers, cooperatives, private-label businesses and emerging direct-to-consumer brands.

The development of branded packaged food reflects the wider formalisation of India's food-processing industry. Food-processing gross value added is estimated to be around USD 500 billion in 2025.

Packaging performs several functions in this segment: containing and protecting the product, presenting mandatory information, establishing brand identity and providing evidence of opening. Rigid bottles and jars are important for beverages, oils, sauces and spreads, while semi-rigid tubs, cups and trays are used for dairy products, desserts, ready meals and premium foods. Caps, closures, dispensing features and tamper-evident seals add further value.

The Production Linked Incentive Scheme for Food Processing Industries is supporting manufacturing scale and Indian brand development. As of February 2026, 165 applications covering 274 project locations had been approved. Supported projects had created approximately 34 lakh tonnes of annual food-processing and preservation capacity and about 3.39 lakh jobs. Greater production scale should increase recurring demand for bottles, tubs, trays, lids and closures.

Branded food companies also require greater packaging consistency than unorganised manufacturers. Containers must perform reliably on automated filling lines, use standard dimensions and maintain uniform colour, wall thickness and sealing properties. These requirements can create longer relationships between food brands and approved packaging manufacturers.

11.8.2 Key Growth Drivers

- **Formalisation and manufacturing scale**

Government support for processing facilities and micro-enterprise formalisation is expanding the base of companies using labelled and standardised packaging. Larger production runs improve the economics of custom moulds, printed lids and branded containers.

- **Branding and premiumisation**

Distinctive shapes, colours, textures and dispensing systems help brands differentiate products. Rigid packaging provides a substantial branding surface, while semi-rigid tubs and trays can use sleeves, printed lids and in-mould labels.

- **Growth in organised retail and digital commerce**

Modern retail and online channels increase the need for consistent dimensions, barcode visibility and resistance to handling damage. Delivery also favours secure closures, tamper-evident seals and stackable packs.

- **Product and pack-size expansion**

Brands are launching more flavours, serving sizes, regional variants and promotional packs. This creates demand for packaging manufacturers capable of shorter runs, rapid artwork changes and modular container designs.

- **Food safety and tamper evidence**

Breakable rings, induction seals, sealed lids and tamper-evident bands provide visible evidence of opening. These features are especially important for dairy products, sauces, spreads, beverages and premium foods.

- **Lightweighting and recycled content**

Brands are reducing packaging weight while seeking to maintain strength and shelf life. Recyclable PP and PET containers, clearer material identification and approved food-grade rPET should gain relevance as environmental obligations increase.

- **Export-market requirements**

Processed-food exports require packaging that can withstand longer transport cycles and comply with destination-market rules. Export-oriented companies may require stronger traceability, higher testing standards and packaging designed for recycling.

- **Growth of regional and direct-to-consumer brands**

Digital channels allow smaller brands to reach customers without developing a nationwide physical retail network. These businesses create demand for lower minimum order quantities, stock containers and decoration-led customisation rather than expensive dedicated moulds.

12 Overview of Recycled PET Industry

Recycled polyethylene terephthalate (rPET) is becoming an important material for India's packaging sector as producers and brand owners work towards EPR compliance and lower their use of virgin plastic. India already has an established market for collecting used PET bottles, which are recycled into polyester fibre, sheets, straps and non-food containers. Food-grade rPET represents a smaller but growing segment because its production requires cleaner bottles, stronger traceability and more advanced processing.

• rPET Collection and Processing Infrastructure

India's PET recycling chain extends from independent waste collectors and scrap dealers to waste collection companies, sorting centres and registered recycling plants. PET bottles have a relatively high resale value, supporting their recovery from households, commercial establishments and public waste streams.

The Government has previously reported that more than **90% of PET waste was collected**. However, recycling plants still experienced shortages of suitable used PET bottles, leading the Government to permit controlled imports for authorised recycling companies. This indicates that a high collection rate does not necessarily translate into adequate supplies of clean, correctly sorted and usable material.

The EPR system is encouraging the development of a more organised recycling chain. As of December 2024, 44,659 producers, importers and brand owners were registered under the plastic-packaging EPR framework. Registered recycling plants issue EPR certificates after processing eligible plastic waste, subject to verification and audit by the relevant pollution-control authorities.

• Key Gaps in the Indian Collection System

The principal shortcomings include:

- Inadequate separation of PET bottles from mixed household waste;
- Contamination from food residue, labels, adhesives and caps;
- Mixing of clear, coloured and opaque bottles;
- Uneven collection coverage outside major cities;
- Limited automated sorting and advanced cleaning facilities; and
- Weak records on the source and movement of collected bottles.

India's independent waste collectors remain central to PET recovery. Greater integration of these workers with municipal bodies and registered recycling plants would improve material traceability while supporting a more dependable supply of used bottles.

• Food-Grade rPET: Availability, Quality and Pricing

Food-grade rPET requires stricter processing than material used for fibre, sheeting or industrial products. The collected bottles must undergo careful sorting, washing, advanced cleaning, purification and testing before the resulting resin can be considered suitable for direct food contact.

FSSAI has issued guidelines for accepting recycled PET as a food-contact material, and the relevant packaging regulations were amended on 28 March 2025. These requirements provide a regulatory basis for the use of approved rPET in food and beverage packaging.

Nevertheless, only a proportion of the PET collected in India is suitable for food-grade production. Resin quality can be affected by bottle colour, contamination, odour, previous use and the quality of the recycling process.

Factor	Food-grade rPET	Virgin PET
Raw material	Clean and properly sorted used PET bottles	Petrochemical raw materials
Supply	Dependent on bottle collection and sorting quality	Generally more consistent
Quality	May vary by source and recycling process	Usually more uniform
Processing	Requires advanced cleaning, purification and testing	Uses established resin-production processes
Regulatory position	Must meet FSSAI requirements for food-contact use	Widely used in food-contact packaging, subject to applicable standards
Price drivers	Collection cost, bottle availability, processing losses, quality and EPR demand	Crude oil, petrochemical prices and production levels

Food-grade rPET may not always be cheaper than virgin PET. The costs of collection, transport, sorting, cleaning, testing and unusable material can result in a price premium. Prices may also rise when demand from beverage and food companies grows faster than the supply of approved recycled resin.

Packaging manufacturers must therefore consider production efficiency, bottle appearance, rejection rates and material consistency in addition to the purchase price per kilogram.

• Role of rPET in Meeting EPR Targets

PET bottles and containers fall under Category I rigid plastic packaging within India's EPR framework. The minimum recycling requirement for Category I packaging is 60% of the EPR target in 2025–26, increasing to 70% in 2026–27 and 80% from 2027–28 onwards.

rPET can support compliance in two main ways:

1. Recycling used PET bottles through registered plants can generate EPR certificates.
2. Approved rPET can replace part of the virgin PET used in new packaging, helping brand owners meet recycled-content requirements.

However, EPR certificates confirm that plastic waste has been recycled; they do not necessarily ensure that a packaging company has secured sufficient physical supplies of food-grade rPET. Companies may therefore need separate long-term arrangements for purchasing approved recycled resin.

13 Regulatory Environment in the Packaging Industry

13.1 Common Regulations and Standards that are Applicable in the Packaging Industry

- **Waste, Recycling, and Extended Producer Responsibility (EPR)**
 - EPR shifts end-of-life responsibilities to producers, importers, and brand owners.
 - It typically includes registration, data reporting (such as tonnage and material types), and payment of fees or participation in compliance schemes.
 - Many jurisdictions establish targets for recyclability, reuse, and labelling that influence design choices.
 - Focus on designing for material reduction and recyclability; implement packaging data capture and budget for EPR costs.
- **Food Contact Materials (FCM) and Consumer Safety**
 - Packaging that meets food must meet migration limits and be made from authorised substances.
 - Documented declarations of compliance and, when relevant, migration testing reports are required.
 - Inks, adhesives, and additives must be controlled and verified.
 - Collect supplier declarations, maintain testing reports, and ensure materials comply before market placement.
- **Chemical Regulation and Substances of Concern**
 - Inks, adhesives, plasticisers, and additives may be subject to restricted substance rules and the Substances of Very High Concern (SVHC) lists.
 - This may involve pre-market screening, substitution planning, and notifications if articles contain certain substances.
 - Keep supplier declarations updated and develop a substitution or mitigation plan.
- **Transport of Dangerous Goods**
 - Transport rules are based on UN Model Regulations and apply to ADR (road), IMDG (sea), and IATA DGR (air).
 - Packaging for hazardous goods often requires UN testing, specific markings, and precise documentation.
 - Use UN-tested packaging and comply with modal requirements for chemicals, batteries, aerosols, etc.
- **National and Regional Design & Labelling Requirements**
 - Markets may impose thresholds for producer obligations, deposit-return schemes, and limitations on packaging elements.
 - Specific labelling, markings, or producer identifiers may be required.
 - Map requirements by market and avoid a one-size-fits-all packaging approach unless it meets the strictest jurisdictional standards.
- **Voluntary Standards and Certification**
 - Retailers and large buyers often require third-party certification or conformity to recognised standards.
 - These typically encompass areas such as food safety, hygiene, traceability, and management systems.
 - Plan for audits and maintain documented systems (e.g., quality, hygiene, traceability) to fulfil commercial entry requirements.
- **Environmental Standards and Eco-Design**
 - Environmental and lifecycle standards help structure eco-design and establish measurable KPIs (e.g., material intensity, recyclability rates).
 - Standardise continuous improvement and reporting.

- Use standards to set targets, measure improvements, and demonstrate performance to customers and regulators.
- **Compostability and Biodegradability Claims**
 - Claims of compostability or biodegradability must be supported by accredited third-party testing and appropriate certification.
 - Clearly distinguish between industrial and home composting; local waste infrastructure must be compatible.
 - Avoid unverified claims; secure certification that is appropriate for the relevant waste streams.
- **Performance, Transport, and Sector-Specific Testing**
 - Transit simulation, drop, vibration, compression, and environmental tests should mirror real distribution risks and product fragility.
 - Certain sectors (e.g., medical, sterile products) require specialised validation standards.
 - Choose tests that reflect actual distribution challenges to minimise damage and returns.
- **Labelling, Traceability, and Recycling Marks**
 - Proper usage of recycling codes, reuse marks, and producer identifiers is becoming increasingly prescriptive.
 - Laws and buyers may require machine-readable or more detailed labelling to support sorting and reuse.
 - Keep artwork and labelling templates current and ensure compliance with local marking rules.

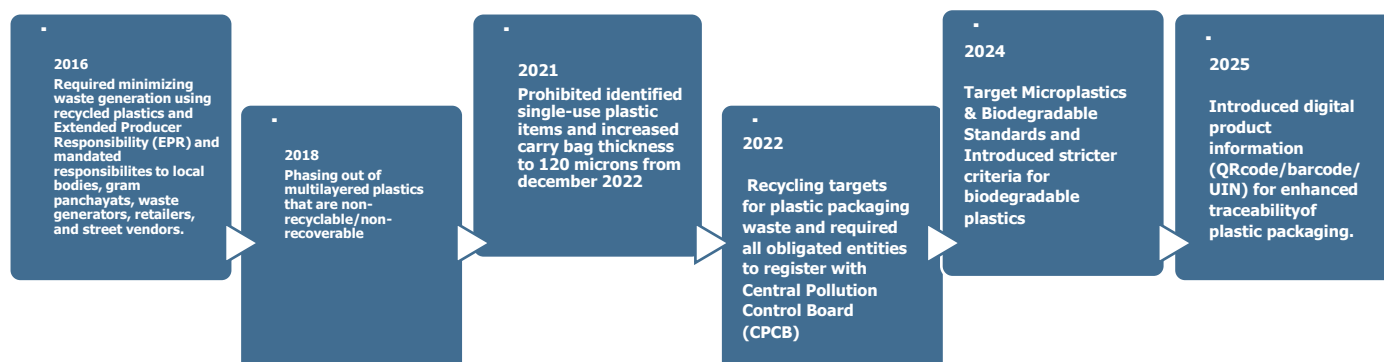
13.2 Regulations for Plastic Packaging and Waste Management in India, the European Union, and the USA

Aspect	India	European Union (EU)	United States (USA)
Current recycling rate (plastic/plastic packaging)	India currently recycles approximately 13% of its plastic waste, according to the official national inventory from the Central Pollution Control Board (CPCB) for FY21. This figure highlights the significant challenges India faces in managing plastic waste effectively. Specifically for PET bottles, the output recycling rate is 64%.	In contrast, the European Union has made considerable strides, with about 41% of plastic packaging waste being recycled, as reported in the aggregated figures for 2022 by the European Commission. This demonstrates a more developed infrastructure and commitment to recycling across member states.	The United States lags, with an estimated recycling rate of just 8.7% for plastics as per the Environmental Protection Agency (EPA) in 2018.
Main national/regional regulation(s)	In India, the principal legislation regulating plastic waste is the Plastic Waste Management Rules, originally established in 2016 and amended in FY22, FY24 and FY25. A	The European Union employs a comprehensive approach with its Packaging and Packaging Waste Directive (PPWD) alongside the new Packaging and Packaging Waste Regulation	In the United States, there is no overarching federal legislation specifically addressing packaging and EPR. Instead, the EPA promotes a national strategy aimed at

	notable 2025 update mandates traceability and packaging information on products (QR/barcodes) to improve accountability and recycling tracking. This framework governs the production, use, collection, and recycling of plastics and includes Extended Producer Responsibility (EPR) in Schedule II, which mandates that producers take responsibility for the lifecycle of their products.	(PPWR). Together, these regulations set binding recycling and reduction targets, along with obligations for recyclability and design-for-recycling, ensuring that member states adhere to shared standards.	reducing plastic pollution through a lifecycle approach. However, many states have developed their own regulations, including deposit schemes and individual EPR proposals, leading to a fragmented regulatory landscape.
Practical guidelines/implementation tools	India's CPCB provides EPR Guidelines alongside a centralised EPR portal, which facilitates registration, reporting, and target tracking for producers, importers, and brand owners. The system sets annual recycling and reuse targets, helping to create accountability within the industry.	The European Union has established EU-level binding targets and measures that include recyclability rules, design requirements, and reuse targets, as well as limits on items identified as problematic. Member states are responsible for implementing their own collection and recycling systems to meet these EU directives, contributing to a coordinated effort in waste management.	Conversely, the EPA in the U.S. offers guidance and has outlined a National Strategy for 2024, but implementation varies widely across states due to the existence of a patchwork of state laws and voluntary industry pacts. Many initiatives remain either voluntary or state-driven, limiting the potential for a cohesive national effort in addressing plastic pollution.

13.3 Key Regulations in India for the Packaging Industry

13.3.1 Plastic Waste Management Rules



The Plastic Waste Management Rules of 2016, along with subsequent amendments in 2018, 2021, 2022, 2024 and 2025 form the primary legal framework for the management of plastic packaging and waste in India. These regulations encompass the entire life cycle of plastics, from production and consumption to collection, recycling, and final disposal. Enforcement falls under the Ministry of Environment, Forest and Climate Change (MoEFCC) and the Central Pollution Control Board (CPCB).

The Plastic Waste Management (Amendment) Rules, 2025 further enhanced traceability by permitting mandatory product information to be provided through a barcode, QR code or Unique Identification Number (UIN) on plastic packaging, while also improving transparency under the Extended Producer Responsibility (EPR) framework.

The 2024 amendment further strengthens the framework by expanding the definitions of producers, importers, and sellers, mandating CPCB certification and labelling for biodegradable and compostable plastics and enhancing reporting and registration requirements. It also empowers local bodies to assess plastic waste generation, enforce bans on prohibited single-use plastics, and ensure that manufacturers sell raw materials only to registered entities, improving traceability across the value chain.

The rules obligate producers, importers, and brand owners to take responsibility for the waste generated by their products. This includes establishing or supporting collection and recycling systems under Extended Producer Responsibility (EPR). Since July 2022, certain single-use plastic items, such as straws, plates, and polystyrene products, have been banned nationwide. The 2022 amendment also introduced a phased increase in the minimum thickness of plastic carry bags from 50 microns to 75 microns (effective September 2021) and further to 120 microns from December 2022, aimed at promoting reuse and reducing littering.

Manufacturers are required to print their registration numbers and relevant details on packaging to ensure accountability. Local authorities are tasked with organising collection and segregation, often collaborating with Producer Responsibility Organisations (PROs). Additionally, the government acknowledges the vital role of India's informal waste sector, which significantly contributes to the collection and recycling of plastics. There is a growing effort to integrate these informal workers into formal systems to enhance traceability and compliance in recycling.

In the short to medium term, these regulations are expected to increase compliance costs and encourage companies to adopt recyclable, mono-material designs, such as PET or HDPE. We can also anticipate new investments in waste segregation, digital traceability, and recycling infrastructure. While smaller firms may face challenges in meeting

compliance requirements, the rules are helping to foster a stronger circular economy with enhanced accountability and improved waste recovery.

13.3.2 Other Indian Regulations and Standards Applicable in the Packaging Industry

- **Food Safety and Standards (Packaging & Labelling) Regulations (FSSAI)**

These regulations focus on ensuring that food packaging materials are safe and hygienic. All food packaging must be made from food-grade materials that do not interact with or contaminate their contents. For metal packaging, such as tin or aluminium cans, specific requirements for sealing, quality control, and cleanliness are enforced. FSSAI mandates testing of these materials in accredited laboratories to ensure their safety before use, safeguarding consumers from harmful substances that could leach into food.

- **Legal Metrology (Packaged Commodities) Rules, 2011**

These rules aim to protect consumers by ensuring that all packaged products carry clear and accurate information. Each package must display essential details such as weight, maximum retail price (MRP), manufacturing date, and manufacturer information. These regulations ensure transparency in the marketplace by preventing misleading packaging or hidden costs, with penalties for non-compliance.

- **Drugs and Cosmetics Rules**

These rules govern the pharmaceutical and cosmetics sectors, ensuring that packaging is safe and of high quality. Packaging for medicines must be tamper-proof, safeguarding the product from contamination and damage. Labels are required to include vital details such as manufacturing dates, batch numbers, expiry dates, and storage conditions. These regulations are crucial for maintaining the integrity of medical products, ensuring patient safety and trust in the healthcare system.

- **Bureau of Indian Standards (BIS)**

BIS sets quality and safety standards for packaging materials across various industries. These standards outline how packaging should be designed, tested, and utilised to maintain product quality. They cover materials such as plastic, metal, glass, and paper. For example, BIS has specific standards for food cans, drums, and industrial containers to ensure their durability and safety for intended uses. Many export-oriented companies also comply with BIS norms to meet both Indian and international quality standards.

13.3.3 Central Insecticides Board & Registration Committee - Agrochemical Packaging Rules

The CIBRC, under the Department of Agriculture and Farmers Welfare, regulates how agrochemicals and pesticides are packaged, labelled, transported, and disposed of in India. These requirements are part of the Insecticides Rules, 1971, and are aimed at ensuring safety for users, the public, and the environment.

Packaging for agrochemicals must be strong, tamper-evident, and compatible with the chemical inside. Common materials such as HDPE, PET, and metal are allowed only after product compatibility testing. Labelling must clearly state the product name, toxicity class, usage instructions, safety warnings, and disposal methods. Any damaged or leaking container must be withdrawn from the market immediately.

Used containers cannot be reused for household or food-related purposes. They must be triple-rinsed and returned through designated collection points for safe disposal. Only authorised recyclers are allowed to handle such waste, and even then, the recycled material may only be used for non-food industrial purposes.

To align with national circularity goals, agrochemical producers are also expected to follow EPR principles, setting up container take-back and safe disposal systems, especially for HDPE drums and larger packs. The sector is gradually adopting QR-coded labels for enhanced traceability and exploring bulk refill options to reduce small single-use packaging.

However, any change to the material or structure of containers must first be tested for compatibility and then approved by the CIBRC, which can make transitions slower.

In the short to medium term, agrochemical manufacturers are likely to invest in stronger collection networks and cleaner packaging systems. This will improve safety in rural waste management and reduce the chances of chemical contamination from discarded containers. Coordinating EPR mechanisms between MoEFCC and CIBRC could further streamline compliance and reporting in the coming years.

13.3.4 Extended Producer Responsibility (EPR)

- **Guidelines (Including both plastic as well as metal)**

Under India's Plastic Waste Management Rules, EPR has become a fundamental compliance requirement for all producers, importers, and brand owners using packaging. The EPR Guidelines (Schedule II) establish year-on-year obligations for the collection, recycling, and reuse of packaging waste. These guidelines apply to both plastic and metal packaging, though most targets and reporting currently focus on plastics.

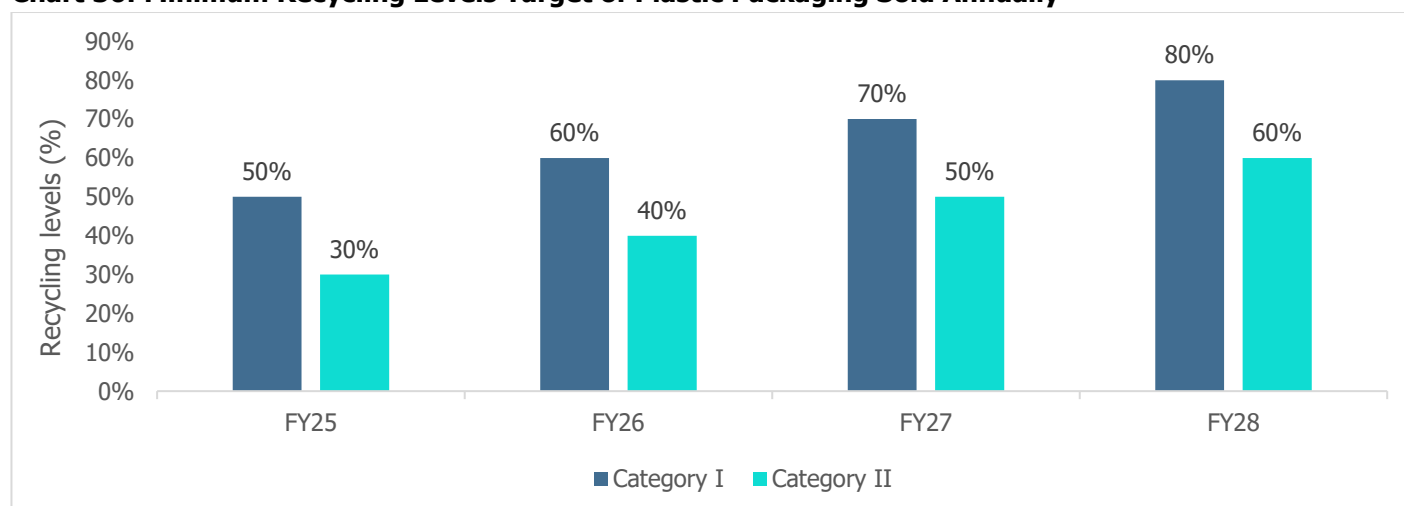
For plastic packaging, categories are defined based on the material type: rigid, flexible, and multilayered. In the case of metal packaging, such as aluminium or tin, the emphasis lies on promoting recyclability and recovery through authorised recyclers and encouraging the use of recycled metal wherever feasible. Metal packaging already enjoys high recovery rates in India due to its scrap value and established recycling networks, shifting the focus towards traceability and extended collection mechanisms rather than solely volume-based targets.

- **EPR Targets (Rigid vs Flexible Plastics)**

-Rigid Plastics (Category I): This category encompasses items like bottles, drums, and containers. These items are easier to collect and recycle, resulting in higher targets assigned for both reuse and recycled content. From FY26 onwards, large rigid containers (over 5 litres) are expected to achieve reuse rates starting at approximately 70%, escalating to 85% by FY29. Meanwhile, smaller rigid packs will gradually reach a reuse rate of 25%. Producers are also obligated to incorporate a minimum share of recycled plastic in new packaging each year.

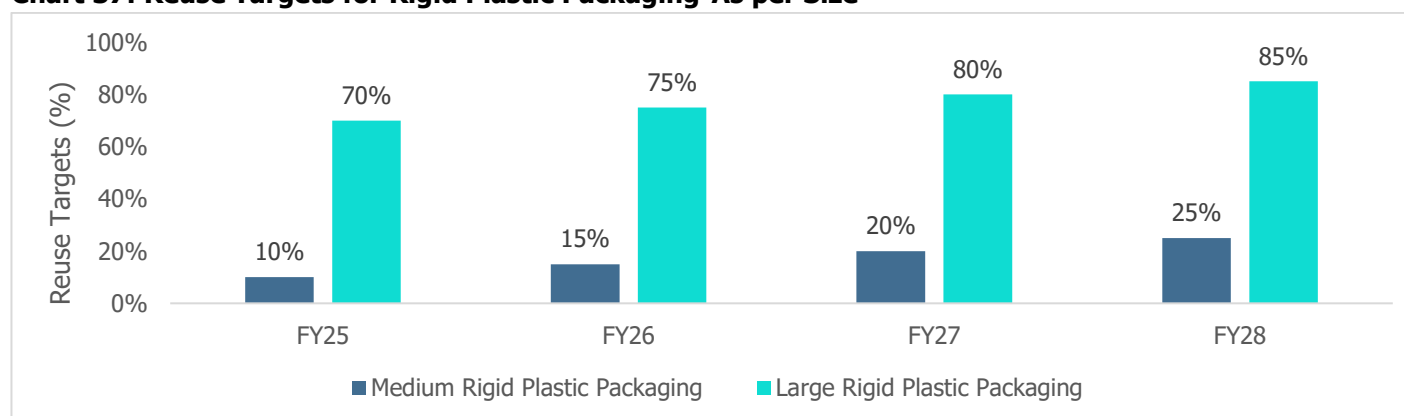
-Flexible Plastics (Category II & III): This includes films, sachets, and multilayer laminates used for snacks and personal care products. These materials are more challenging to recycle mechanically due to their composition of different materials in thin layers. Consequently, initial EPR targets are lower, typically ranging from 30% to 50% in the early years, progressing to 60% to 80% by FY28, depending on the product family. The aim is to gradually transition towards mono-material designs that are easier to process. In summary, rigid plastics are expected to achieve stricter targets sooner due to their recyclability, whereas flexible plastics will experience a slower transition as recycling technology advances.

EPR obligations vary depending on the nature of packaging, reflecting the ease or difficulty of recycling

Chart 36: Minimum Recycling Levels Target of Plastic Packaging Sold Annually


Source: PIB, CareEdge Research

There is a trend of progressive increase in minimum recycling levels for three plastic packaging categories from FY25 to FY28 onwards. Category I leads with the highest targets, while Categories II follow similar but slightly lower trajectories.

Chart 37: Reuse Targets for Rigid Plastic Packaging-As per Size


Source: PIB, CareEdge Research

The chart shows the increasing reuse targets for medium and large rigid plastic packaging from FY25 to FY29. Large packaging consistently leads with significantly higher targets, reflecting its greater potential for reuse.

• Impact

In the short to medium term, the implementation of EPR will drive significant changes in packaging design and material use. Companies are increasingly moving towards simpler, mono-material products such as single-layer polyethylene films, recyclable PET, and aluminium. There is also a growing emphasis on refillable or returnable systems for bulk and industrial packaging. However, these changes may lead to higher short-term costs. Meeting EPR targets necessitates new collection networks, certified recyclers, and increased usage of recycled resins, all of which can temporarily elevate packaging and compliance costs. Restructuring of supply chains will be necessary to ensure traceability and accurate reporting.

On the upside, this transformation presents new opportunities for innovation in recycling technologies, chemical recycling methods, and the development of new packaging materials designed for circularity. In the medium term, early adopters

can expect to benefit from lower long-term compliance costs and enhanced brand positioning as sustainability expectations grow in importance across markets.

13.3.5 Actions and Commitments by End-Use Segments

FMCG and Consumer Goods: Manufacturers are rethinking packaging to enhance recyclability. This includes replacing multi-layer laminates with mono-material designs and increasing post-consumer recycled (PCR) content in bottles. For instance, advancing recyclable or recycle-ready products to meet national extended producer responsibility (EPR) requirements, raising the PCR content in certain PET bottles. Many companies are investing in or collaborating on collection and waste management initiatives to promote circularity in plastic packaging. Many global FMCG brands have made commitments to improve packaging collection and redesign. Additionally, trials for refill and reuse options are being conducted with high-volume SKUs to diminish reliance on single-use plastics, as documented through industry programs and reuse studies in India.

Food Services, QSR and Cloud Kitchen Services: Food service operators, including quick service restaurants (QSRs) and cloud kitchens, are increasingly adopting packaging solutions that improve recyclability while maintaining food safety, product quality and delivery performance. Efforts include transitioning towards recyclable and paper-based packaging where feasible, reducing the use of unnecessary plastic components and introducing fibre-based alternatives for takeaway and delivery applications. Companies are also collaborating with packaging manufacturers to develop lightweight, leak-resistant and sustainable packaging solutions that comply with evolving regulatory requirements. In addition, several leading food service brands are piloting reusable packaging models and strengthening waste collection and recycling initiatives to reduce the environmental impact of food delivery packaging.

Agrobased Segment: Manufacturers in the agro-based segment are increasingly strengthening packaging safety and sustainability while ensuring product integrity and regulatory compliance. Key initiatives include the adoption of tamper-evident and child-resistant closures, improved product labeling and disposal instructions, and durable packaging designed to withstand storage and transportation. Companies and industry associations are also promoting the collection and environmentally sound disposal of used agrochemical containers through take-back programmes, while exploring bulk packaging, refill systems and traceability solutions such as QR codes to improve container management and discourage the unsafe reuse of empty containers.

Dairy: Dairy companies are enhancing packaging sustainability while maintaining product freshness, hygiene and shelf life. Key initiatives include increasing the use of lightweight and recyclable packaging products, redesigning bottles and pouches to improve recyclability, and reducing overall material consumption without compromising product integrity. Manufacturers are also collaborating with packaging suppliers to develop mono-material packaging solutions and improve the collection and recycling of post-consumer packaging waste. In addition, several dairy companies are incorporating recycled content in secondary packaging and strengthening sustainable sourcing practices to support their broader circular economy and packaging sustainability commitments.

Bakery: Bakery manufacturers are increasingly adopting high-barrier recyclable packaging solutions that preserve product freshness while reducing environmental impact. Companies are replacing conventional multi-layer laminates with recycle-ready mono-material films where technically feasible and optimizing packaging designs to reduce material consumption without compromising moisture and oxygen barrier properties. Manufacturers are also introducing recyclable paper-based packs for select bakery products and collaborating with packaging suppliers to develop sustainable flexible packaging that extends shelf life and minimizes food wastage while meeting evolving regulatory and consumer sustainability expectations.

Sweet & Confectionery: Manufacturers are redesigning confectionery wrappers and flexible packaging to improve recyclability while maintaining the moisture, oxygen and aroma barrier properties required for product quality. Industry

efforts include reducing the use of complex multi-layer laminates, optimizing film structures to lower material consumption and increasing the use of recyclable paperboard cartons for premium and gifting products. Companies are also collaborating with packaging suppliers to develop recycle-ready flow wraps and flexible packaging solutions that balance shelf-life requirements with evolving EPR obligations and sustainability commitments.

Branded Packaging Segment: Brand owners are increasingly redesigning premium packaging to reduce material consumption while maintaining product aesthetics and brand differentiation. Key initiatives include the adoption of recyclable paperboard, fibre-based packaging, FSC-certified paper, water-based inks and coatings, and the elimination of unnecessary packaging components such as plastic windows, inserts and laminates. Companies are also optimizing pack designs to improve recyclability, increase the use of recycled fibre and support circular packaging commitments without compromising product presentation or consumer experience.

14 Certifications and Quality Standards as Entry Barriers

14.1 Key Certifications required for food-grade packaging FSSAI, ISO, BIS, FDA

Manufacturers supplying food-grade plastic packaging are required to comply with stringent quality, safety and hygiene standards to ensure that packaging materials are suitable for direct food contact. In addition to regulatory compliance, customers such as FMCG companies, dairy manufacturers, beverage companies and food processors typically require suppliers to possess recognised quality certifications and successfully clear vendor qualification audits before commercial approvals. Consequently, the need for continuous investments in quality infrastructure, testing capabilities and process controls favours organized manufacturers with established quality management systems and long-standing customer relationships.

Certification / Standard	Strategic Importance
FSSAI (Food Safety and Standards Authority of India)	Ensures packaging materials intended for food contact comply with applicable food safety requirements and are suitable for direct contact with food products.
BIS (Bureau of Indian Standards)	Establishes product quality and material specifications for notified plastic products, enhancing product consistency and regulatory compliance.
ISO 9001:2015	Demonstrates a structured quality management system focused on process consistency, continual improvement and customer satisfaction
ISO 22000 / FSSC 22000	Strengthens food safety management through hazard identification, risk control and traceability across the manufacturing process.
US FDA / Other International Food-contact Standards	Facilitates access to export markets by demonstrating compliance with international food-contact material requirements and customer specifications.

14.2 Quality Certifications as Entry Barriers

- Certifications have evolved beyond regulatory compliance and are increasingly becoming an important differentiator in the food-grade packaging industry. Leading FMCG, food processing and beverage companies generally prefer sourcing packaging materials from manufacturers with established quality management systems and recognised certifications, as they reduce product safety risks and ensure consistent quality standards. Consequently, certified manufacturers are better positioned to secure long-term supply contracts and establish relationships with large domestic and multinational customers.
- Obtaining and maintaining these certifications requires continuous investments in quality infrastructure, laboratory testing, process validation, employee training and periodic third-party audits. In addition, manufacturers are often required to undergo customer-specific supplier audits and comply with stringent quality assurance protocols before receiving commercial approvals. These requirements increase the cost and complexity of operations, making it relatively difficult for smaller and unorganized manufacturers to compete in regulated end-use segments.

14.3 Customer Audit Requirements

- Large FMCG, dairy, beverage and food processing companies typically follow stringent supplier qualification processes before approving packaging manufacturers. In addition to regulatory compliance and quality certifications, packaging suppliers are required to undergo comprehensive customer audits covering manufacturing infrastructure, quality management systems, hygiene practices, traceability, testing capabilities, process controls and regulatory compliance. Periodic surveillance audits and performance evaluations are also conducted to ensure consistent product quality and adherence to customer specifications.
- For packaging manufacturers, successfully clearing these audits is often a prerequisite for securing long-term supply agreements with leading brands such as Amul, Haldiram's, Nestlé, Britannia, ITC, Parle, Coca-Cola and PepsiCo. Consequently, manufacturers with established quality systems, robust testing infrastructure and a proven compliance track record are generally better positioned to cater to large organized customers.
- Customer audits generally extend beyond certification verification and involve a detailed assessment of manufacturing capabilities and operational controls. Audit parameters commonly include raw material approval procedures, production hygiene, preventive maintenance practices, laboratory testing facilities, product traceability, complaint handling mechanisms, change management procedures, warehouse conditions and employee training programmes. Manufacturers are also expected to demonstrate the implementation of corrective and preventive actions (CAPA) and continuous improvement practices identified during previous audits.

14.4 Compliance Cost Burden on Organized vs. Unorganized Players

- Compliance with food-grade packaging regulations and quality standards involves substantial investments across the manufacturing value chain. In addition to obtaining certifications, manufacturers are required to establish dedicated quality management systems, testing laboratories, traceability mechanisms and documented operating procedures to ensure consistent compliance with applicable regulatory and customer requirements. Recurring expenditure on certification renewals, third-party audits, equipment calibration, employee training, product testing and process validation further adds to the overall cost of compliance.
- Beyond regulatory certifications, manufacturers supplying to leading FMCG, food processing, dairy and pharmaceutical companies are also required to meet customer-specific quality requirements, which often exceed statutory standards. These include periodic supplier audits, hygiene assessments, validation of manufacturing processes, product migration testing, batch traceability and corrective action monitoring. Consequently, packaging manufacturers must continuously invest in infrastructure, technology and skilled manpower to maintain approved vendor status and retain long-term customer relationships.

These compliance requirements are generally more manageable for organized manufacturers owing to their larger scale of operations, established quality systems and stronger financial resources. In contrast, smaller and unorganized manufacturers often face challenges in absorbing the recurring costs associated with quality assurance and regulatory compliance, limiting their ability to supply packaging for highly regulated end-use sectors. As a result, compliance capabilities have emerged as an important competitive differentiator, favouring organized players in the food-grade packaging industry.

15 Key Threats and Challenges

15.1 Indian Rigid Plastic Packaging Industry

1. Environmental and Sustainability Considerations

The rigid plastic packaging industry is adapting to evolving sustainability expectations as awareness around resource efficiency, waste management, and circular economy principles continues to grow. Regulatory bodies, consumers, and industry stakeholders are increasingly encouraging the adoption of sustainable packaging solutions. In response, many global brands have announced targets to increase the use of recycled content and enhance packaging circularity.

Rigid plastics offer advantages in terms of durability, product protection, and relatively established recyclability pathways compared to several other packaging products. Consequently, industry participants are investing in recycling infrastructure, material innovation, and improved waste-management systems to enhance sustainability outcomes. Emerging solutions such as bio-based and alternative polymers are also expanding the range of packaging options available in the market.

2. Evolving Consumer Preferences

Consumer preferences are increasingly influenced by sustainability, convenience, product safety, and packaging innovation. This trend has encouraged brands to explore packaging solutions that balance environmental considerations with functionality and product protection requirements. As a result, rigid plastic packaging manufacturers are focusing on product innovation, lightweighting initiatives, higher recycled content, and improved recyclability while maintaining cost-effectiveness, quality, and performance standards.

3. Evolving Regulatory Landscape

Governments across the world are strengthening frameworks related to packaging waste management, recycling, and circular economy objectives. In India, initiatives such as the Plastic Waste Management Rules and Extended Producer Responsibility (EPR) framework are encouraging greater use of recyclable materials, recycled content, and responsible end-of-life management practices.

While these developments require industry participants to adapt their operations and compliance processes, they are also supporting investments in sustainable packaging technologies, recycling capabilities, and product innovation. As regulatory requirements continue to evolve across regions, manufacturers are increasingly prioritizing flexibility and compliance-oriented product development strategies.

4. Dependence on Petrochemical Feedstocks

Rigid plastic packaging is primarily manufactured using resins such as PET, HDPE, PP, and PVC, which are derived from petrochemical feedstocks. As a result, raw material costs are influenced by movements in global crude oil and natural gas markets. Changes in feedstock prices can impact resin costs and industry cost structures, highlighting the importance of procurement planning, inventory management, and customer pricing strategies.

Manufacturers with strong sourcing capabilities, diversified customer bases, and effective cost pass-through mechanisms are generally better positioned to manage fluctuations in raw material pricing and maintain operational stability.

5. Economic Cyclicality

Demand for rigid plastic packaging is closely linked to consumption trends across key end-user industries such as FMCG, beverages, pharmaceuticals, automotive, and personal care. As these sectors continue to expand and evolve, packaging demand typically reflects broader economic and consumption patterns.

While changes in macroeconomic conditions, currency movements, and inflation can influence demand and input costs, the industry's diversified end-user base and its essential role in product protection, storage, and transportation provide a degree of demand resilience across market cycles.

15.2 Indian Semi-rigid Plastic Packaging Industry

1. Sustainability and Circular Economy Initiatives

The semi-rigid plastic packaging industry is increasingly aligning with evolving sustainability objectives and waste management frameworks. Products such as thermoformed trays, cups, tubs, and clamshell containers are benefiting from ongoing efforts to improve collection, sorting, and recycling systems. Manufacturers are actively developing recyclable packaging products, increasing the use of recycled content, and optimizing material usage while maintaining product protection and functionality. These trends are driving investments in packaging innovation, material advancements, and recycling infrastructure across the industry.

2. Availability of Recycled Plastic Materials

The growing focus on circular economy practices has increased demand for post-consumer recycled (PCR) plastics across packaging applications. While the availability of high-quality recycled polymers for food-grade, healthcare, and other specialized applications is still developing, continued investments in recycling technologies, waste collection systems, and material processing capabilities are expected to improve supply availability. These developments are supporting the industry's transition toward greater use of recycled content.

3. Raw Material Cost Dynamics

The industry utilizes petrochemical-based materials such as polypropylene (PP), polyethylene terephthalate (PET), high-density polyethylene (HDPE), and polystyrene (PS), with raw material costs influenced by global energy and feedstock markets. Changes in crude oil prices, supply-demand conditions, and global trade dynamics can impact resin pricing trends. As a result, effective procurement planning, inventory management, and customer engagement strategies remain important for maintaining operational efficiency and cost competitiveness.

4. Evolving Regulatory Framework and EPR Adoption

The implementation of Plastic Waste Management Rules and Extended Producer Responsibility (EPR) requirements is encouraging greater adoption of recyclable packaging solutions and recycled content across the packaging value chain. These developments are supporting investments in packaging redesign, recyclability enhancements, and sustainable product development. As regulatory frameworks continue to evolve in India and globally, manufacturers are increasingly focusing on innovation and compliance-oriented growth strategies.

5. Performance Requirements in Food and Healthcare Applications

Semi-rigid plastic packaging plays an important role in dairy products, ready-to-eat meals, pharmaceuticals, confectionery, and fresh produce applications, where packaging performance, hygiene, and product protection are critical. Manufacturers continue to invest in material and design innovations that enhance sustainability while meeting requirements related to shelf life, sealing performance, chemical resistance, and product safety.

6. Technology Advancement and Manufacturing Investments

Growing demand for lightweight, high-performance, and sustainable packaging solutions is encouraging the adoption of advanced thermoforming, injection moulding, in-mould labelling (IML), digital printing, and automation technologies. These investments are improving manufacturing efficiency, product quality, and customization capabilities, while supporting the development of innovative packaging solutions across end-use industries.

7. Evolving Competitive Landscape

The packaging industry continues to witness the use of a diverse range of materials, including paperboard, moulded fibre, glass, aluminium, and plastics, depending on specific application requirements. Semi-rigid plastic packaging remains widely used due to its durability, lightweight properties, design flexibility, and cost efficiency. As customer requirements evolve, manufacturers are increasingly expanding their product offerings and developing application-specific solutions to address changing market preferences and sustainability goals.

16 Competitive Landscape

16.1 Company Profile

S. D International Limited was incorporated in 2008 and is engaged in the manufacture of semi-rigid and rigid plastic packaging products, primarily for food-related applications in India. The Company's products are used across various end-use segments, including takeaway and food-service establishments, dairy, sweets and confectionery, bakery, branded food products and agro-based produce. Its presence across multiple end-use segments likely moderates the impact of seasonality on its business. The Company undertakes inventory planning based on anticipated customer demand, historical sales trends, order pipeline, production schedules, raw-material procurement lead times and seasonality, where applicable.

As of FY26, the Company along with its subsidiary, "S.D Plastware Private Limited" offered more than 250 stock keeping units ("SKUs") across multiple product categories and had an aggregate installed manufacturing capacity of 20,100 metric tonnes per annum. The Company and its subsidiary, S.D Plastware Private Limited has served 800+ customers in FY26, across India and international markets, both directly and through its distribution network, which includes channel partners. Its customer base comprises B2B customers, Corporates and distributors operating across various end-use sectors. The Company's domestic customer and distribution network extends across multiple regions in India.

The Company manufactures packaging products intended to address customer requirements relating to functionality, hygiene, food-contact safety and product presentation. Its packaging solutions are used for applications such as takeaway and food-service packaging, dairy products, bakery and confectionery items, branded food products and fresh produce.

The Company's product portfolio includes in-mould labelled ("IML") containers, tamper-evident containers, takeaway containers, sipper glasses, polyethylene terephthalate ("PET") hinged, round and square containers, PET sauce cups, leak-resistant containers, agro and punnet boxes, bakery packaging products, lids, meal boxes and polypropylene ("PP") sealable containers.

The Company uses manufacturing equipment and processes incorporating technologies sourced from Germany, Japan, Taiwan, Turkey and China across its thermoforming, thin-wall injection moulding, tooling and automation operations. Such equipment and processes are used to manufacture semi-rigid and rigid packaging products with varying specifications, production volumes and application requirements.

The Company's manufacturing facilities are located in proximity to certain customers and consumption markets, including those situated in Uttar Pradesh, Bihar and West Bengal. This location facilitates customer coordination, alignment with product specifications and order execution.

The Company has obtained certifications including ISO 9001:2015 for quality management systems, ISO 14001:2015 for environmental management systems and ISO 22000:2018 for food safety management systems. The applicability and scope of these certifications are limited to the facilities, activities and validity periods specified in the respective certificates.

The Company also undertakes initiatives relating to material efficiency and waste reduction and uses recyclable materials and post-consumer recycled plastics in certain packaging products, where permitted under applicable laws and customer specifications. Such initiatives are undertaken with reference to applicable regulatory requirements and evolving industry practices relating to resource utilisation and packaging waste management.

16.2 Operational Paramters

Table 8: Key Products Offered

Name	Products
SD International	IML Containers
	Tamper-Evident Containers
	Takeaway Containers
	PP Sealable Containers & Meal Boxes
	Parcel Meal Boxes
	Leak-Proof Containers
	PET Hinged Containers (Round & Rectangular)
	PET Round & Square Containers
	PET Agro & Punnet Boxes
	PP/PET Lids & Beverage Glasses
	Sipper Beverage Glasses
Glen Industries LTD	Thin wall food containers
	Paper Straws
Rajshree Polypack LTD	Platics Rigid and Semi Rigid Sheet
	Packaging solution
TPL Plastech LTD	Industrial Plastic Drums
	Plastic Carboys & Chemical Storage Containers
	Open-Head Plastic Drums
	Intermediate Bulk Containers (IBCs) & Bulk Packaging
	Small-Volume Industrial Packaging
Mold-Tek Packaging LTD	Industrial Pails & Buckets
	Lubricant
	Twist Lock Pack
	Foodservice Packaging
	Dairy & Frozen Food Packaging
	Pharmaceutical Packaging

Source: Company Websites, Annual Reports

Table 9: Manufacturing Locations

Name	North	South	West	East
SD International Limited	Uttar Pradesh (Gorakhpur)	-	-	-
GLEN industries LTD	-	-	-	West Bengal (Howrah)
Rajshree Polypack LTD	-	-	Dadra & Nagar Haveli and Daman & Diu (Daman)	-
	-	-	Gujarat (Sarigam)	-
TPL Plastech LTD	Uttarakhand	Andhra Pradesh (Visakhapatnam)	Gujarat (Kutch and Dahej)	-
	-	-	Madhya Pradesh (Ratlam)	-

	-	-	Dadra & Nagar Haveli and Daman & Diu (Silvassa)	-
Mold-Tek Packaging LTD	Uttar Pradesh	Telangana	Maharashtra	West Bengal
	Haryana	Karnataka	Dadra & Nagar Haveli and Daman & Diu	
	-	Andhra Pradesh	-	-
	-	Tamil Nadu	-	

Source: Company Websites, Annual Reports

Table 10: Installed Capacity (FY26)

Name	Capacity
SD International Limited	20,100 MT*
Glen Industries LTD	Thin Wall Food Containers-7,986 PLA Straws-1,928 Paper Straws- 1,134
Rajshree Polypack LTD	Extrusion Capacity- 25,600 MT Injection Moulding- 4,800 MT Thermoforming- 12,120 MT
TPL Plastech LTD	38,200 MT
Mold-Tek Packaging LTD	63,000 MT

Sources: Company Reports, Websites. *Includes subsidiary

Table 11: End User Industry

Industry Segment	SD International	Glen Industries LTD	Rajshree Polypack LTD	TPL Plastech LTD	Mold-Tek Packaging LTD
Food	✓	✓	✓	x	✓
Beverages	✓	✓	✓	x	x
Sauces and condiments	✓	x	x	x	x
Gravies, curries and sauces	✓	x	x	x	x
India Food Services, QSR & Cloud Kitchen Segment	✓	x	x	x	x
Dairy	✓	x	x	x	x
Bakery	✓	x	✓	x	x
Sweets & Confectionary	✓	x	✓	x	x
Punnets for Fruits & Vegetables	✓	x	✓	x	x
Branded Packaging	✓	x	x	x	x

Sources: Company Reports, Websites

Table 12: Attrition Rate

Financial Year	SD International	Glen Industries LTD	Rajshree Polypack LTD	TPL Plastech LTD	Mold-Tek Packaging LTD
FY26	22.6%	10.0%	16.3%	20.0%	15.5%
FY25	5.9%	10.0%	16.3%	5.0%	22.5%
FY24	24.7%	10.0%	16.3%	5.0%	12.2%

Sources: Company Annual Report

16.3 Financial Benchmarking

Table 13: Revenue from Operation (INR Millions)

Company Name	FY24	FY25	FY26	CAGR
S.D. International LTD	1,740.65	2,253.88	3,022.84	31.78%
Glen Industries LTD	1,445.84	1,706.61	2,031.26	18.53%
Rajshree Polypack LTD	2,743.92	3,297.35	3,321.84	10.03%
TPL Plastech LTD	3,129.06	3,493.35	4,225.53	16.21%
Mold-Tek Packaging LTD	6,986.50	7,813.20	8,866.10	12.65%

Source: Annual Report and CareEdge Research

Table 14: Gross Profit (INR Million)

Company Name	FY24	FY25	FY26
S.D. International LTD	604.79	877.92	1,097.54
Glen Industries LTD	434.16	608.44	618.42
Rajshree Polypack LTD	1,059.72	1,251.95	1,373.66
TPL Plastech LTD	502.70	565.42	663.72
Mold-Tek Packaging LTD	3,019.61	3,410.61	4,066.66

Source: Annual Report and CareEdge Research

Table 15: Gross Profit Margin (%)

Company Name	FY24	FY25	FY26
S.D. International LTD	34.75%	38.95%	36.31%
Glen Industries LTD	30.03%	35.65%	30.45%
Rajshree Polypack LTD	38.62%	37.97%	41.35%
TPL Plastech LTD	16.07%	16.19%	15.71%
Mold-Tek Packaging LTD	43.22%	43.65%	45.87%

Source: Annual Report and CareEdge Research

Gross Profit Margin= Gross Profit/ Revenue from Operations

Table 16: EBITDA (INR Million)

Company Name	FY24	FY25	FY26
S.D. International LTD	297.52	438.85	578.25
Glen Industries LTD	248.22	403.44	370.35
Rajshree Polypack LTD	329.49	349.00	445.40
TPL Plastech LTD	360.45	405.81	482.76
Mold-Tek Packaging LTD	1,331.76	1,416.13	1,732.26

Source: Annual Report and CareEdge Research

EBITDA = (Earnings Before Interest, Taxes, Depreciation, and Amortization)

Table 17: EBITDA Margin (%)

Company Name	FY24	FY25	FY26
S.D. International LTD	17.09%	19.47%	19.13%
Glen Industries LTD	17.17%	23.64%	18.23%
Rajshree Polypack LTD	12.01%	10.58%	13.41%
TPL Plastech LTD	11.52%	11.62%	11.42%
Mold-Tek Packaging LTD	19.06%	18.12%	19.54%

Source: Annual Report and CareEdge Research

EBITDA margins is calculated as EBITDA/ Revenue from operations.

Table 18: PAT (INR Million)

Company Name	FY24	FY25	FY26
S.D. International LTD	181.16	203.65	324.52
Glen Industries LTD	85.16	182.23	165.03
Rajshree Polypack LTD	86.41	79.61	172.53
TPL Plastech LTD	198.48	235.93	290.71
Mold-Tek Packaging LTD	665.86	605.52	728.74

Source: Annual Report and CareEdge Research

Table 19: PAT Margin (%)

Company Name	FY24	FY25	FY26
S.D. International LTD	10.41%	9.04%	10.74%
Glen Industries LTD	5.89%	10.68%	8.12%
Rajshree Polypack LTD	3.15%	2.41%	5.19%
TPL Plastech LTD	6.34%	6.75%	6.88%
Mold-Tek Packaging LTD	9.53%	7.75%	8.22%

Source: Annual Report and CareEdge Research

PAT Margin= PAT/Total Income

Table 20: ROE (%)

Company Name	FY24	FY25	FY26
S.D. International LTD	29.56%	24.84%	29.51%
Glen Industries LTD	20.78%	35.06%	16.66%
Rajshree Polypack LTD	6.10%	5.06%	10.09%
TPL Plastech LTD	16.15%	16.98%	18.37%
Mold-Tek Packaging LTD	11.55%	9.83%	10.98%

Source: Annual Report and CareEdge Research; Return on Equity is calculated as Restated Profit/(Loss) for the year/period divided by average equity.

Table 21: ROCE (%)

Company Name	FY24	FY25	FY26
S.D. International LTD	17.56%	17.09%	19.66%
Glen Industries LTD	13.55%	17.12%	11.72%
Rajshree Polypack LTD	8.33%	7.98%	10.82%
TPL Plastech LTD	18.23%	17.39%	21.57%
Mold-Tek Packaging LTD	12.95%	11.35%	12.35%

Source: Annual Report and CareEdge Research

ROCE (Return on Capital Employed) = EBIT ÷ Capital Employed

Table 22: Net Working Capital Cycle Days

Company Name	FY24	FY25	FY26
S.D. International LTD	23	-3	-9
Glen Industries LTD	-6	-80	-103
Rajshree Polypack LTD	-56	-31	-36
TPL Plastech LTD	47	35	31
Mold-Tek Packaging LTD	12	2	4

Source: Annual Report and CareEdge Research

Net Working Capital Days is calculated as Net Working Capital divided by Revenue from operations multiplied by 365. Net Working Capital is calculated as Inventories add Trade Receivables less Trade Payables (micro and small enterprises and other than micro and small enterprises)

Table 23: Debt to Equity Ratio

Company Name	FY24	FY25	FY26
S.D. International LTD	1.08	1.25	0.95
Glen Industries LTD	1.96	2.27	0.86
Rajshree Polypack LTD	0.56	0.72	0.68
TPL Plastech LTD	0.23	0.31	0.11
Mold-Tek Packaging LTD	0.21	0.28	0.31

Source: Annual Report and CareEdge Research

Debt= Current Borrowings + Non-Current Borrowings + Total Lease Liabilities

Debt to Equity Ratio is calculated as debt divided by total equity.

Table 24: Net Debt to EBITDA Ratio

Company Name	FY24	FY25	FY26
S.D. International LTD	2.54	2.67	2.07
Glen Industries LTD	3.55	3.24	2.35
Rajshree Polypack LTD	2.11	2.73	2.28
TPL Plastech LTD	0.55	0.94	0.25
Mold-Tek Packaging LTD	0.94	1.23	1.23

Source: Annual Report and CareEdge Research

Debt= Current Borrowings + Non-Current Borrowings – Cash and cash equivalents

Net Debt to EBITDA is calculated as Net Debt divided by EBITDA.

Table 25: Fixed Assets Turnover Ratio

Company Name	FY24	FY25	FY26
S.D. International LTD	3.39	2.73	2.95
Glen Industries LTD	1.88	1.81	1.88
Rajshree Polypack LTD	2.48	2.90	2.78
TPL Plastech LTD	4.94	4.15	4.74
Mold-Tek Packaging LTD	1.68	1.55	1.53

Source: Annual Report and CareEdge Research

Fixed Assets Turnover Ratio= Revenue from Operations/(Property, Plant and Equipment)

Table 26: Abbreviations and its Full Forms

Term / Abbreviation	Full Form
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
AI	Artificial Intelligence
Apr-May	April to May
ASI	Annual Survey of Industries
ASTM	ASTM International (formerly American Society for Testing and Materials)
ASTM D6400	Standard Specification for Labelling of Plastics Designed to be Aerobically Composted in Municipal or Industrial Facilities
B2B	Business-to-Business
BE	Budget Estimates
BIS	Bureau of Indian Standards
BRC	British Retail Consortium
C&F	Clearing and Forwarding
CAD	Current Account Deficit
CAGR	Compound Annual Growth Rate
CAPA	Corrective and Preventive Action
Capex	Capital Expenditure
CIBRC	Central Insecticides Board and Registration Committee
CMIE	Centre for Monitoring Indian Economy
CO2	Carbon dioxide
Co-packing	Contract packing
CPCB	Central Pollution Control Board
CPI	Consumer Price Index
Cr.	Crore

CY	Calendar Year
D2C	Direct-to-Consumer
DFCCIL	Dedicated Freight Corridor Corporation of India Limited
DGR	Dangerous Goods Regulations
DPIIT	Department for Promotion of Industry and Internal Trade
E	Estimated / Estimate
EBIT	Earnings Before Interest and Tax
EBITDA	Earnings Before Interest, Taxes, Depreciation and Amortisation
Eco-design	Ecological design
EDFC	Eastern Dedicated Freight Corridor
EN 13432	Requirements for Packaging Recoverable through Composting and Biodegradation
EPA	United States Environmental Protection Agency
EPR	Extended Producer Responsibility
EU	European Union
F	Forecast
FCM	Food Contact Materials
FDA	United States Food and Drug Administration
FDI	Foreign Direct Investment
FE	Final Estimates
FMCG	Fast-Moving Consumer Goods
FRE	First Revised Estimates
FSC	Forest Stewardship Council
FSSAI	Food Safety and Standards Authority of India
FSSC 22000	Food Safety System Certification 22000
FY	Financial Year
GDP	Gross Domestic Product
GNDI	Gross National Disposable Income
GST	Goods and Services Tax
GVA	Gross Value Added
H1FY25	First half of Financial Year 2024-25
H1FY26	First half of Financial Year 2025-26
HDPE	High-Density Polyethylene
HIPS	High-Impact Polystyrene
HORECA	Hotels, Restaurants and Catering
HSBC	Hongkong and Shanghai Banking Corporation
HSN	Harmonised System of Nomenclature
IATA	International Air Transport Association
IBC	Intermediate Bulk Container
IIoT	Industrial Internet of Things
IIP	Index of Industrial Production
IMDG	International Maritime Dangerous Goods Code
IMF	International Monetary Fund
IML	In-Mould Labelling
INR	Indian Rupee
ISO	International Organization for Standardization

IT	Information Technology
Jan-Jun	January to June
JFL	Jubilant FoodWorks Limited
JNPT	Jawaharlal Nehru Port
kg / Kg / Kgs	Kilogram(s)
KPI	Key Performance Indicator
L	Litre
Lamitube	Laminated tube
LDPE	Low-Density Polyethylene
LHS	Left-Hand Side
LLDPE	Linear Low-Density Polyethylene
LPI	Logistics Performance Index
MEA	Middle East and Africa
Micron	Micrometre
MLPD	Million Litres per Day
MoEFCC	Ministry of Environment, Forest and Climate Change
MOQ	Minimum Order Quantity
MOSPI	Ministry of Statistics and Programme Implementation
MRP	Maximum Retail Price
MSME	Micro, Small and Medium Enterprises
MT	Metric Tonne
MTPA	Metric Tonnes per Annum
NCR	National Capital Region
NICDC	National Industrial Corridor Development Corporation Limited
OEM	Original Equipment Manufacturer
ONDC	Open Network for Digital Commerce
P	Projected / Projection
PAT	Profit After Tax
PCR	Post-Consumer Recycled
PDS	Public Distribution System
PE	Polyethylene
PE	Provisional Estimates
PET	Polyethylene Terephthalate
PFCE	Private Final Consumption Expenditure
PIB	Press Information Bureau
PLA	Polylactic Acid
PLI	Production Linked Incentive
PM GatiShakti	Prime Minister GatiShakti National Master Plan
PMFME	Prime Minister Formalisation of Micro Food Processing Enterprises Scheme
PMI	Purchasing Managers' Index
PMKSY / PM Kisan SAMPADA Yojana	Pradhan Mantri Kisan SAMPADA Yojana
PMP	Phased Manufacturing Programme
PP	Polypropylene
PPP	Purchasing Power Parity

PPWD	Packaging and Packaging Waste Directive
PPWR	Packaging and Packaging Waste Regulation
PRO	Producer Responsibility Organisation
PS	Polystyrene
Pty	Proprietary
PVC	Polyvinyl Chloride
QR code	Quick Response code
QSR	Quick-Service Restaurant
R&D	Research and Development
RBI	Reserve Bank of India
RE	Revised Estimates
ROCE	Return on Capital Employed
ROE	Return on Equity
rPET	Recycled Polyethylene Terephthalate
Rs / Rs. / ₹	Indian Rupees
S&P Global	Standard & Poor's Global
SKU	Stock Keeping Unit
SPMEI	Scheme for Promotion of Manufacturing of Electronic Components and Semiconductors
SSP	Solid-State Polycondensation
SUP	Single-Use Plastic
SVHC	Substances of Very High Concern
TPA	Tonnes per Annum
UAE	United Arab Emirates
UIN	Unique Identification Number
UK	United Kingdom
ULIP	Unified Logistics Interface Platform
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
US / U.S. / USA	United States of America
USD	United States Dollar
WDFC	Western Dedicated Freight Corridor
WLF	Westlife Foodworld Limited
YoY / Y-o-Y	Year-on-Year

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