Industry Report On

Rigid Plastic Packaging Industry in India

21st June 2025

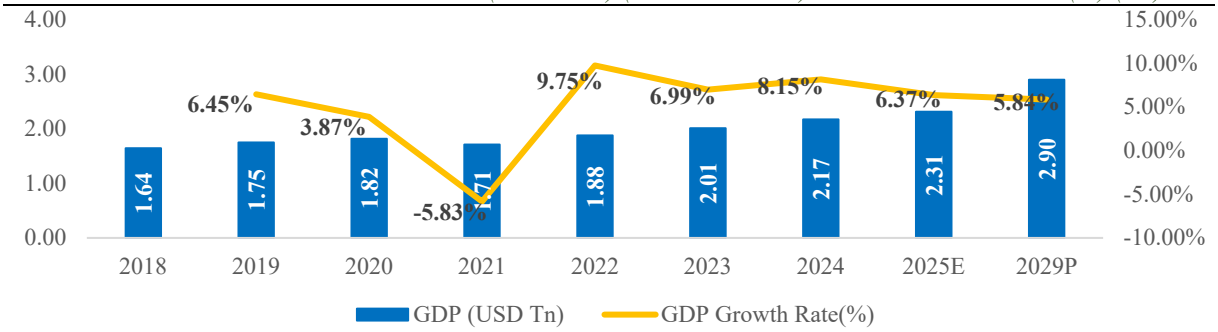
1. Overview of Indian Economy

1.1 Indian GDP and GDP Growth (Real and Nominal) - Historical, Current & Projected Trajectory

India is the world's 5th largest economy and is expected to be in top 3 global economies by FY 2030

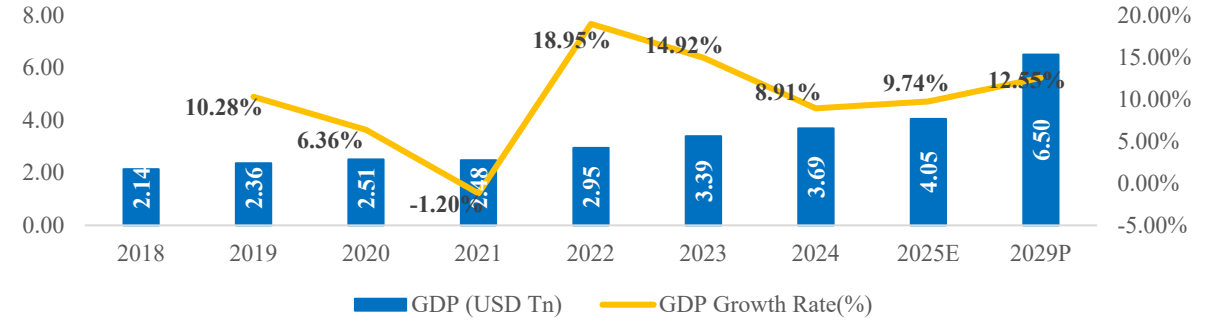
India ranks fifth in the world in terms of nominal gross domestic product ("GDP") for CY 2024 and is the third largest economy in the world in terms of purchasing power parity ("PPP"). India is expected to be a ~USD 6.50 trillion economy by FY 2029 and is estimated to become the third largest economy, surpassing Germany, and Japan.

Exhibit 1.1: India's GDP at Constant Prices (Real GDP) (In USD Trillion) and GDP Growth Rate (%) (FY)



Source: RBI, IMF Projections, Technopak Analysis
Note: 1USD = INR 80

Exhibit 1.2: India's GDP at Current Prices (Nominal GDP) (In USD Trillion) and GDP Growth Rate (%) (FY)



Source: RBI Data, IMF Projections Technopak Analysis
For calculation purposes, 1 USD = 80 INR

India's nominal GDP has grown at a CAGR of 9.36% between FY 2019 and FY 2024 and is expected to continue this upward trend by registering a CAGR of 11.98% for the 5-year time from FY 2024 to FY 2029.

Since FY 2005, the Indian economy's growth rate has been nearly twice as that of the world economy, and it is expected to sustain this growth momentum in the long-term. In the wake of COVID-19, India's nominal GDP contracted by 1.20% in FY 2021 followed by an 18.95% growth in FY 2022 and a 14.92% growth in FY 2023. Between FY 2024 and FY 2029, India's real GDP is expected to grow at a CAGR of 5.94%.

Several factors are likely to contribute to this long-term economic growth, including favorable demographics, reducing dependency ratio, rapidly rising education levels, steady urbanization, a growing young and working population, the IT revolution, increasing penetration of mobile and internet infrastructure, government policies, increasing aspirations, and affordability etc.

1.2 Private Final Consumption Expenditure

GDP growth in India is expected to be driven by rising private final consumption expenditure. The high share of this consumption to GDP has the advantage of insulating India from volatility in the global economy. India's

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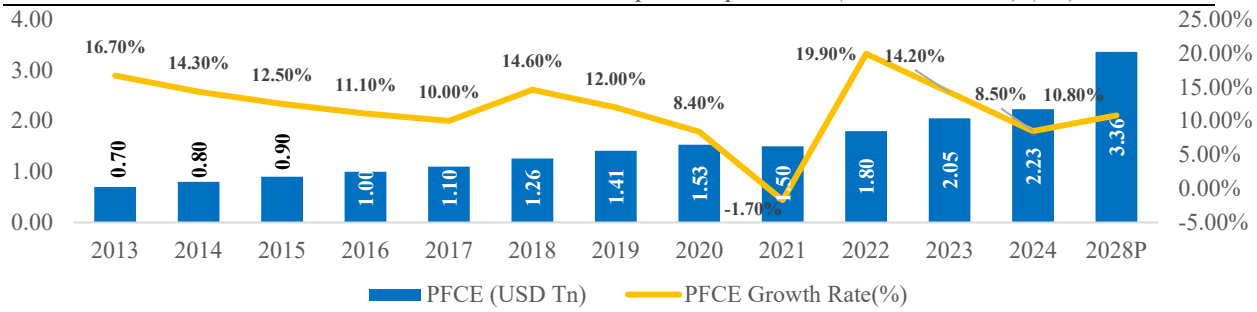
domestic consumption has grown at a CAGR of 10.22% between CY 2018 and CY 2023 and further expected to grow at a CAGR of 10.39% during the next four to five years. With the rapidly growing GDP and PFCE, India is poised to become one of the top consumer markets globally.

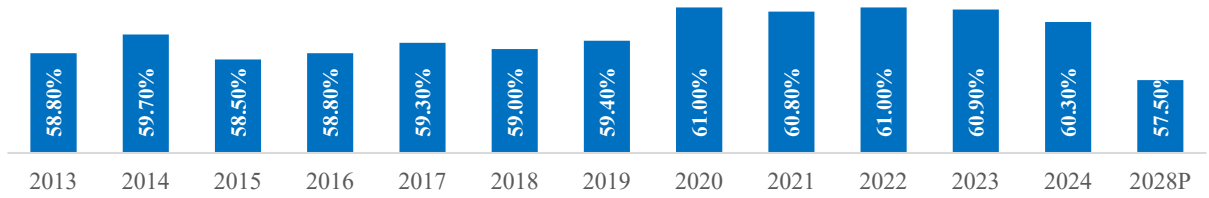
Exhibit 1.3: India's Households and Private Final Consumption Expenditure (In USD Trillion) (CY)



Source: Ministry of Statistics and Program Implementation

India's share of PFCE to GDP has increased over the years, reaching 60.30% in FY 2024, up from 58.50% in FY 2015. According to the Ministry of Statistics and Program Implementation, the share of India's PFCE to GDP is expected to decrease and reach approximately 57.50% by FY 2028.

Exhibit 1.4: Share of Private Final Consumption Expenditure to India's GDP (Nominal) (%) (FY)

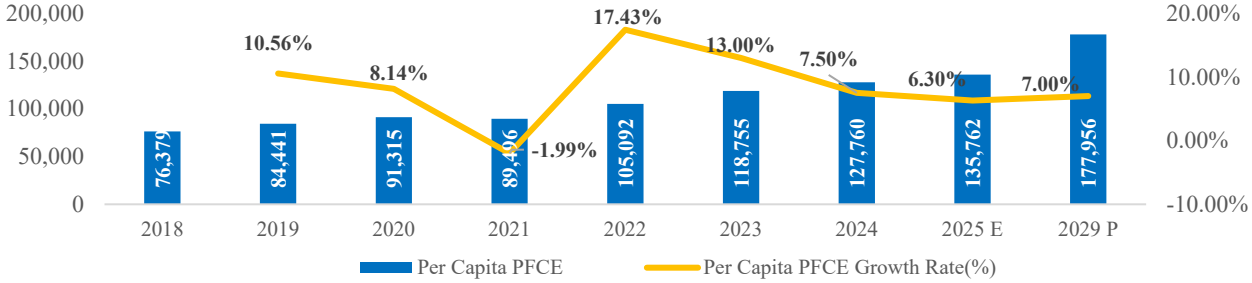


Source: Ministry of Statistics and Program Implementation

1.3 India Per Capita Final Consumption Expenditure

India's Per Capita Final Consumption Expenditure had shown significant growth pre COVID. In FY 2020, the average Per Capita Final Consumption expenditure was estimated at INR 91,315, a steep increase from INR 76,379 in FY 2018. Due to the emergence of COVID-19 in FY 2020, there was an approximately 1.99% drop in the Per Capita Final Consumption Expenditure to INR 89,496 in FY 2021. However, it recovered during FY 2023 to INR 1,18,755 and is expected to reach INR 1,35,762 in FY 2025.

Exhibit 1.5: India's Per Capita Consumption Expenditure (Current Prices) and Growth (%) (In INR) (FY)



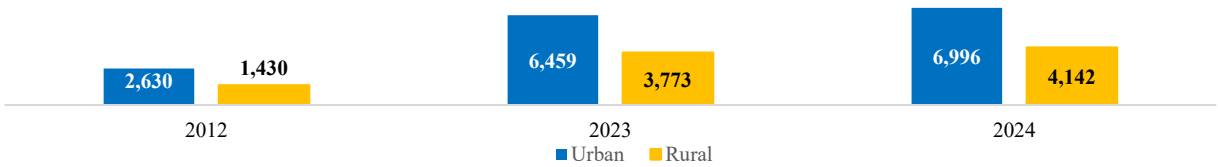
Source: Ministry of Statistics and Program Implementation, Technopak Analysis

1.4 Rural and Urban Consumption Demand

Urban Average Monthly Per Capita Expenditure (MPCE) has shown significant growth, increasing from INR 2,630 in FY 2012 to INR 6,996 in FY 2024, at a CAGR of 8.49%. During the same period, rural MPCE has also witnessed a substantial rise, growing from INR 1,430 to INR 4,142, with a slightly higher CAGR of 9.27%. Despite the higher growth rate in rural areas, urban regions continue to exhibit consistently higher consumption levels.

Notably, rural MPCE experienced a robust growth of 9.78% between FY 2023 and FY 2024, surpassing the urban growth rate of 8.31%. This recent trend signals a potential acceleration in rural consumption, driven by improved rural economic activity and increased spending capacity.

Exhibit 1.6: Average Monthly Per Capita Expenditure (FY) (INR)



Source: MoSPI, Secondary Research

Urban growth is driven by emerging sectors that align with evolving lifestyles and increasing urbanization. Notably, food and beverages, healthcare, housing and rent, conveyance, and entertainment services are demonstrating significant growth. While urban areas continue to lead in absolute consumption, the rural market presents significant untapped growth potential, driven by the emerging spending patterns.

Exhibit 1.7: Category wise Average Monthly Per Capita Expenditure (FY) (INR)

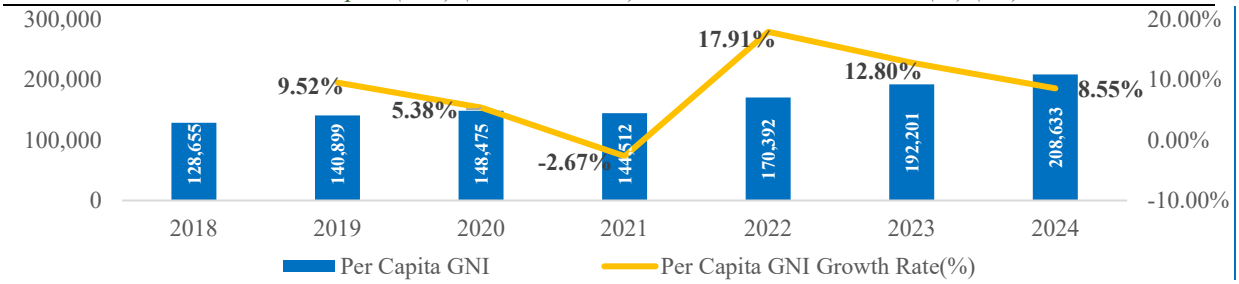
Category	Rural MPCE				Urban MPCE			
	2012	2023	2024	CAGR (2012-24)	2012	2023	2024	CAGR (2012-24)
Food	756	1,750	1,939	8.17%	1,121	2,530	2,776	7.85%
Pan, Tobacco & Intoxicants	46	143	158	10.83%	42	157	166	12.13%
Fuel and Light	114	251	252	6.83%	176	404	391	6.88%
Clothing & Footwear	100	230	273	8.73%	167	350	396	7.46%
Education	50	125	133	8.49%	182	374	418	7.17%
Medical	95	269	282	9.49%	146	382	409	8.96%
Conveyance	60	285	313	14.76%	171	555	592	10.90%
Other Consumer Service	57	192	217	11.78%	147	382	400	8.70%
Misc. Goods, Entertainment	76	234	256	10.65%	152	424	484	10.13%
Rent	7	30	23	10.42%	164	423	460	8.97%
Taxes and Cesses	4	5	9	6.99%	22	16	23	0.37%
Durable Goods	65	260	267	12.49%	139	463	481	10.90%
Total	**1,430**	**3,774**	**4,122**	**9.22%**	**2,630**	**6,460**	**6,996**	**8.49%**

Source: MoSPI, Secondary Research

1.5 Evolution of Per Capita Income

The per capita GNI (Gross National Income) for India stood at INR 2,08,633 in FY2024, marking a ~48.0% increase from INR 1,40,899 in FY 2019, exhibiting a CAGR of 8.17% during the period. A growing GNI indicates an expanding economy, driven by higher production, exports, and income from abroad. It reflects improved living standards, increased investments, and greater government revenue, all contributing to enhanced economic opportunities.

Exhibit 1.8: India's GNI Per Capita (INR) (Current Prices) And Y-O-Y Growth Trend (%) (FY)



Source: RBI, National Statistics Office, Technopak Analysis

1.6 Key Demographic Factors Shaping the Indian Economy

India has one of the youngest populations globally compared to other leading economies. The median age in India was ~29.5 years for CY 2023, as compared to 38.5 years and 39.8 years in the USA and China respectively and is expected to remain under 30 years until CY 2030. The younger population is naturally predisposed to adopting the latest trends and exploration, given their educational profile and exposure to media and technology. This presents an opportunity for domestic consumption in the form of branded products and organized retail.

Exhibit 1.9: Median Age: Key Emerging & Developed Economies (CY 2023)

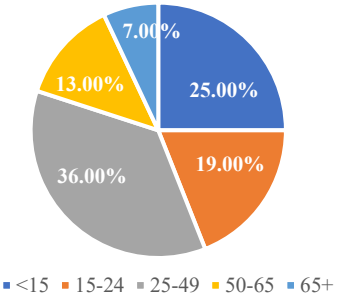
Country	India	China	USA	Singapore	Russia	South Korea	Canada	UK
Median Age (Yrs.)	29.5	39.8	38.5	38.9	41.5	45.0	42.4	40.6

Source: World Population Review
Note: For India, Data for CY 2023 refers to FY 2024

More than half of India's population falls in the 15–49 year age bracket

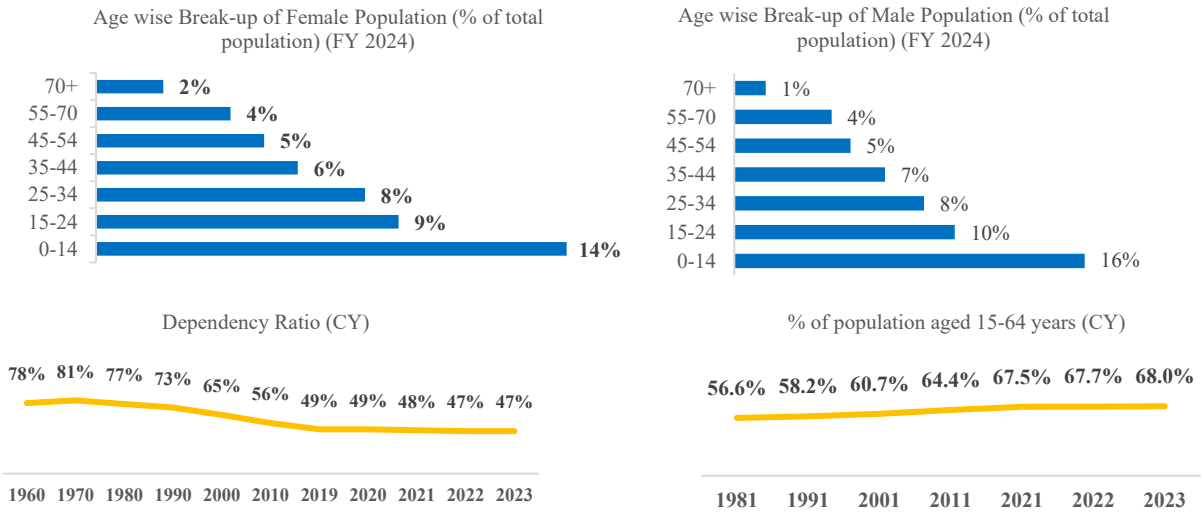
As of April 2024, India was the most populated country in the world, home to 1.44 billion people, which is approximately one sixth of the world's population. About 55% of the total population falls within the 15 to 49 years age group, while 80% of the population is below 50 years old. This demographic distribution highlights that India's youth and working age population not only contribute to positive demographics but are also more informed and open to experimentation which makes them early adopters of various brands, setting the stage for broader market trends. Despite varying disposable income, young consumers prioritize spending on experiences and convenience products that enhance their lifestyle and social status thereby driving market demand and innovation.

Exhibit 1.10: Population Distribution of India (%) (CY 2023)



Source: World Bank

Exhibit 1.11: Age Dependency Ratio



Source: Census of India 2011, World Bank, MOSPI; Age wise break up of population not adding up to 100% due to rounding off
Note: Dependency Ratio and Growth in population aged 15-64 years are in CY. CY 2023 for India refers to FY 2024 data and so on.
Dependency Ratio signifies the number of dependents to non-dependents (or working population) in a given population.

Demographic changes underway: Urbanization and Nuclearization

Urbanization is one of the most important pillars of India's growth story, as urban areas serve as the core drivers for economic growth. In CY 2023, approximately 519 million people, or 36.40% of India's total population, resided in urban areas. However, there is significant headroom for India's urbanization to further increase, given

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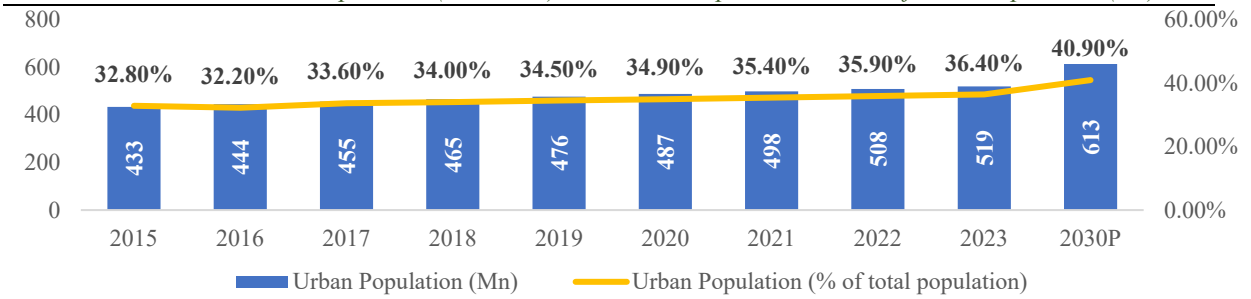
other countries such as the United States (83.2%), China (64.5%), and France (81.7%) have significantly higher urban populations.

By CY2030, it is anticipated that 40.90% of India's population will reside in urban centres. The younger and working age population in India is driving urbanization by transitioning from joint family systems in rural areas to nuclear family setups in urban agglomerations.

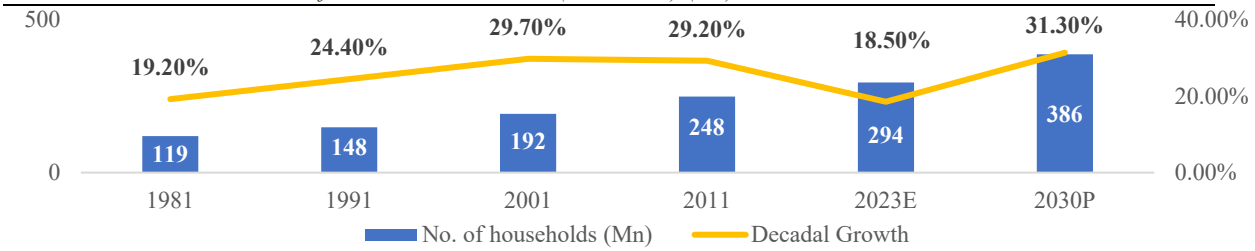
The growth in the number of households exceeds population growth, indicating an increase in nuclearization in India. The average household size in India is 4.1 persons per household, with rural areas averaging 4.4 persons per household and urban areas averaging 3.7 persons per household. This trend of increasing nuclearization is resulting in higher consumption across consumer goods and retail categories as the young, aspirational population exercises freedom in decision making, resulting in growing individualistic requirements and choices.

Exhibit 1.12: India's Urban Population (In million) and Urban Population as a % of Total Population (CY)



Source: World Bank, Technopak Analysis

Exhibit 1.13: Total Number of Households in India (In million) (FY)



Source: Census, Technopak Analysis
Note: Decadal growth for period 2011-2023E reflects a 15-year period and 2023E-2030P reflects 7-year period

Exhibit 1.14: Urban Population as a % of Total Population for Key Economies (CY 2023) (%)

Country	World	India	China	USA	Singapore	Russia	Malaysia	Vietnam	UK
Urban Population Share	57%	36%	65%	83%	100%	75%	79%	39%	85%

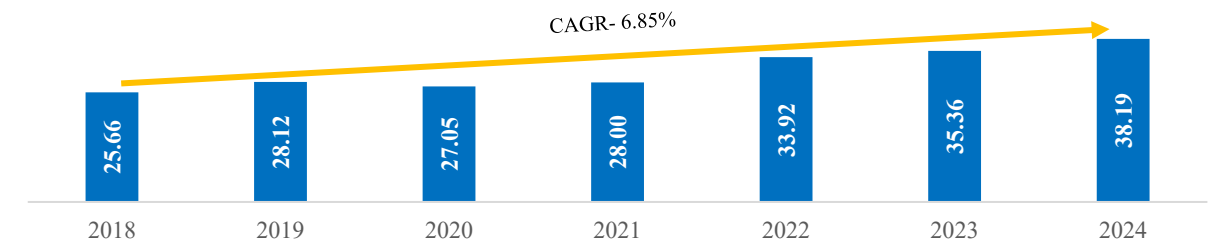
Source: World Bank

Manufacturing in India gaining traction

Manufacturing has emerged as one of the high growth sectors in India, with the better performance of key sectors like automotive, engineering, chemicals, pharmaceuticals, and consumer durables. Contributing around 14% to India's GDP in FY 2024, it is poised to grow to approximately 21%-22% in the next 5 years. According to the Department for Promotion of Industry and Internal Trade (DPIIT), India received a total foreign direct investment (FDI) inflow of USD ~44.42 billion in FY2024 and manufacturing exports reached their highest ever annual exports of USD 447.46 billion with 6.03% growth during FY 2023, surpassing the previous year FY 2022 record exports of USD 422.00 billion.

The manufacturing Gross Value Added (GVA) at current prices was INR 25.66 trillion in FY 2018, which has reached to INR 38.19 trillion in FY 2024 at a CAGR of 6.85% over the period. Furthermore, the Indian manufacturing sector is experiencing a surge in investments with various government initiatives such as 'Make in India,' and the Production Linked Incentive (PLI) scheme.

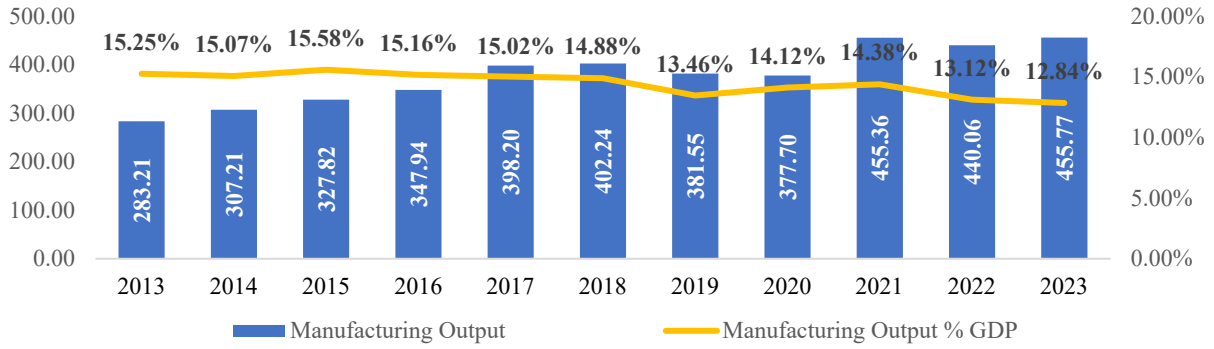
Exhibit 1.15: Manufacturing GVA at Current Prices (In INR trillion) (FY)



Source: RBI

India's manufacturing output experienced steady growth from CY 2013 to CY 2017. In CY 2023, manufacturing output reached USD 455.77 billion, marking a 3.57% growth from CY 2022. In CY 2023, India's manufacturing sector's share of GDP was around 12.84%, having declined from 15.25% in CY 2013. Despite this decline in GDP share, the sector remains a key contributor to India's economy, showcasing resilience amid global challenges.

Exhibit 1.16: Manufacturing Output & Manufacturing Output % of GDP (CY) (USD billion)



Source: Secondary Research, Technopak Analysis

The positive developments in the manufacturing sector, driven by production capacity expansion, government policy support, heightened M&A activity, and PE/VC led investment, are creating a robust pipeline for the country's sustained economic growth in the years to come. Contributing ~14% to the nation's GDP in FY 2024, the manufacturing sector plays a significant role in the Indian economy as India is gradually progressing on the road to Industry 4.0 through the Government of India's initiatives like the National Manufacturing Policy which aims to increase the share of manufacturing in GDP to 25.00% in next few years and the PLI scheme for manufacturing which was launched in 2022 to develop the core manufacturing sector at par with global manufacturing standards.

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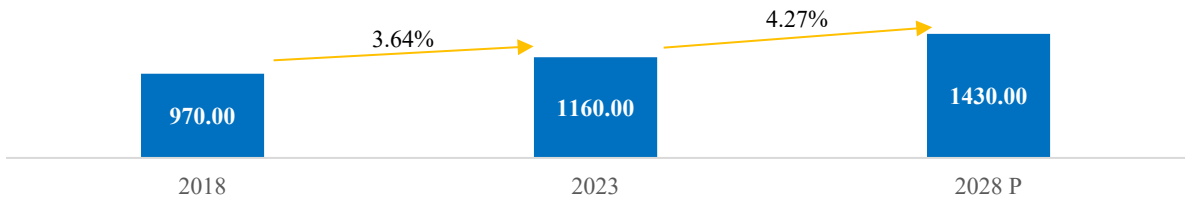
2. Global Market Overview of Packaging Industry

2.1 Global Packaging Market Overview

The packaging industry plays a critical role in the global economy, encompassing a vast range of materials and applications, it ensures the protection, transportation, and presentation of countless products. The global packaging market is estimated at USD 1,160.00 billion in CY 2023 and is projected to grow at a CAGR of 4.27% to reach a market size of USD 1,430.00 billion by CY 2028. This growth is majorly driven by the growing population, urbanization, rising income levels and rising consumption of packaged food, beverages, consumer goods etc. in the developing economies.

Exhibit 2.1: Global Packaging Market Size (In USD billion) (CY)



Source: Secondary Research, Technopak Analysis

Investment trends in Global packaging industry

The global packaging industry has attracted foreign investments, with a growing focus on sustainability. Key trends include the adoption of recyclable materials, market consolidation through mergers and acquisitions, and capacity expansion in high growth regions. Companies are investing in new technologies and production facilities to improve efficiency and competitiveness, reflecting a broader push towards innovation and global market expansion.

Exhibit 2.2: Illustrative of the Global investments details in the packaging industry

Company	Investment Details	Amount (USD)	Year	Impact
Amcor	Acquisition of Berry Global	8.43 billion	2024	Create a consumer and healthcare packaging company with $24 billion revenue
Smurfit Kappa & WestRock	Merger to form Smurfit WestRock	12.7 billion	2024	Form one of the world's largest packaging companies, focusing on sustainable solutions
UFLEX Limited	New recycling plants in Noida, India	38 million	2025	Boost production of rPET and rPE for food packaging, enhancing sustainability
Saica Group	Acquisition of Schumacher Packaging's Polish operations	NA	2024	Expand footprint in Poland, increase recycled paper and corrugated board capacity by 420,000 MTPA.
International Paper	Opening a 9,00,000 Sq. ft corrugated box plant in Waterloo, Iowa.	260.00 million	2025	Five times larger than the existing plant.
Klöckner Pentaplast	Constructing a 60,000 Sq. Ft addition to the existing plant	49.00 million	2022	Adding 15,000 metric tons of new capacity for producing post-consumer recycled (PCR) content PET
Polyplex Corporation	Expansion of US plant in Decatur, Alabama	90.00 million	2021	Increase BOPET film production capacity, tapping into regional demand

Source: Secondary Research, Technopak Analysis
Note: This is an illustrative of the Global investments details in the packaging industry
MT – metric tonnes

The Indian packaging industry presents a lucrative opportunity for investors, with the government allowing 100% FDI through a simplified route which encourages global players to invest and expand in India. Global players like SIG Combibloc and Amcor have invested in manufacturing facilities in the country. While Indian firms like Uflex have expanded through collaborations. This influx of capital and expertise has accelerated industry growth, modernized infrastructure, and improved product quality to meet global benchmarks.

2.2 Types of Packaging Material and Share

The global packaging market includes a wide variety of materials, such as metal, glass, plastic, paper, corks, and caps. Paper based packaging features products like kraft paper, packaging boards, and other specialized packaging papers. Plastic, a highly sought after material, is increasingly favored in industry due to its versatility, durability, and cost effectiveness, particularly in sectors like food, beverages, oil, automotive, energy etc. The global packaging market is categorized into two main segments: material type and product type.

Packaging type based on material: Based on the material type it can be segmented into 5 major segments:

Rigid Plastic: Composed of durable plastics such as polyethylene terephthalate (PET) and high-density polyethylene (HDPE), this category provides exceptional strength and clarity. Common rigid plastic products, including water bottles, detergent containers, and buckets, are manufactured using injection moulding and blow moulding techniques, ensuring precision and long-lasting performance. Rigid plastics find its application across a wide range of industries, including paint & lubricants, energy sector, food and beverages, personal care, consumer goods, e-commerce, pharmaceuticals, agrochemicals, etc. in the consumer rigid plastic. While the industrial rigid plastic packaging would include chemical and petrochemical, automotive, agriculture & agrochemicals, construction, electronics, medical & laboratory etc.

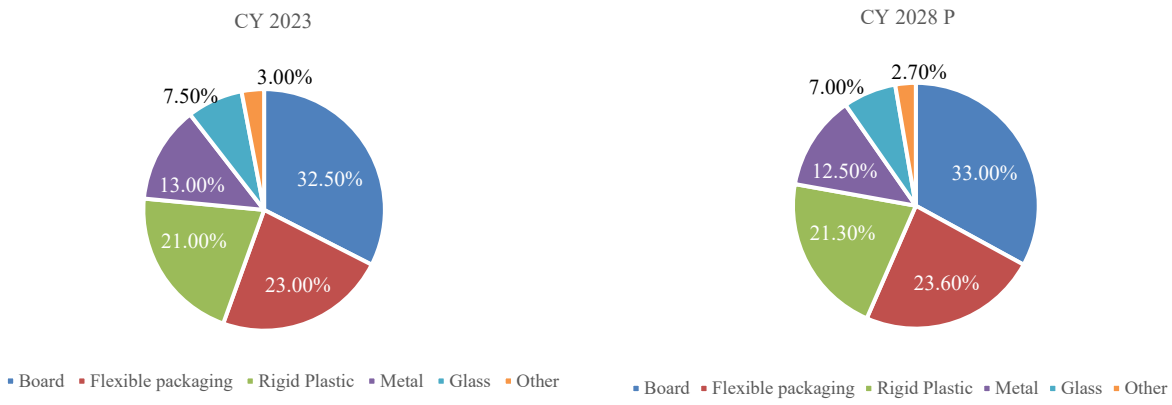
Flexible Packaging (Plastic & Paper): This segment utilizes lightweight, adaptable plastics like polyethylene (PE) and polypropylene (PP) which is appropriate for bread bags, food wraps, pouches, paper envelopes, e-commerce packaging and others. Flexible plastic packaging is most widely used in the Food and Beverage packaging industry, and somewhat in other industries like personal, home care, E-commerce etc.

Paperboard: This segment is derived from wood pulp. Paperboard, a thicker type of paper, is commonly used for products like cereal boxes and shoe cartons. It often features printed information, is lightweight, recyclable, and is often regarded as a biodegradable option. Paperboard packaging is widely utilized in the e-commerce and food and beverage industries, as well as for outer packaging in the personal care and pharmaceutical sectors.

Glass: This inert and transparent material is made from silica sand. Glass jars and bottles, commonly used in the food & beverage sector, are crafted by blowing molten glass. With excellent chemical resistance, glass is ideal for sensitive products and those undergoing high heat processing, while also offering clear visibility of the contents. The alcoholic beverage industry is the primary user of glass packaging, followed by its applications in personal care and pharmaceutical industries.

Metal: Metal packaging, made from materials like aluminum, steel, or tin, provides excellent protection and extends shelf life. Shaped through processes such as rolling and stamping, metal packaging is highly suitable for heat resistance, light protection, and long-term storage.

Exhibit 2.3: Global Packaging Type and Share (%) by Value for Material Type (CY)



Source: Secondary Research, Technopak Analysis
Note: Flexible packaging includes plastic & paper materials

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Exhibit 2.4: Packaging Material Product Type

Paper board	• **Product type**: Courragted boxes, paper boxes etc.
Flexible Packaging	• **Product type**: Shrink films, wrappers, pouches, bags- paper and plastic, envelopes etc.
Rigid Plastic	• **Product type**: bottles, jars, trays, tubs, pots, battery cases, containers etc. and other industrial packaging.
Metal	• **Product type**: Foil, tubes, metal containers, cans, closures etc.
Glass	• **Product type**: Bottles, jars, jug, vials etc.
Other	• **Product type**: wooden boxes, cloth bags, jute bags, etc.

Source: Secondary Research, Technopak Analysis

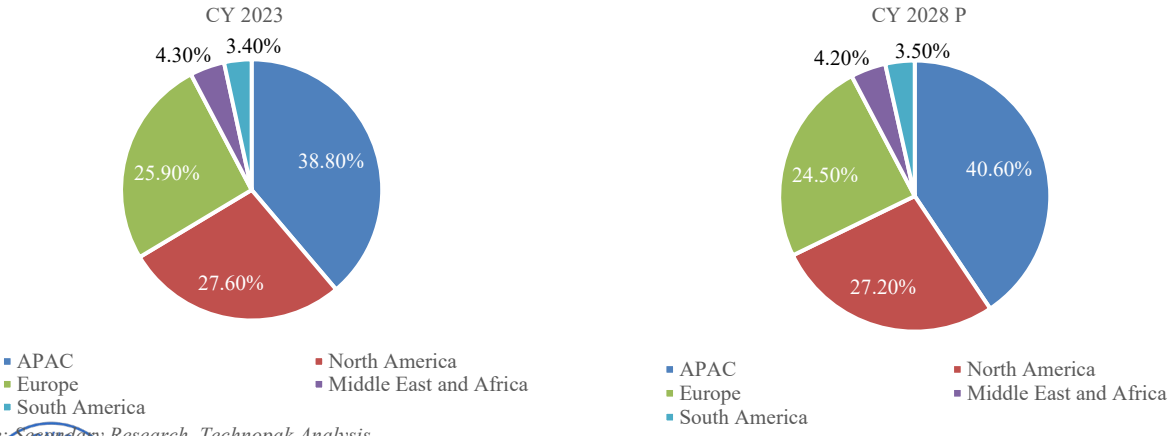
In the global packaging industry, board has the highest share of ~32.50% in CY 2023 (USD 377.00 billion) and is expected to see an upward growth to reach ~33.00% by CY 2028 (USD 471.90 billion) growing at a CAGR of ~4.59%. This is primarily due to the growing e-commerce industry which uses cardboard boxes as it is tertiary packaging. This is followed by flexible packaging as the second largest with a share of ~23.00% in the market in CY 2023 (USD 266.80 billion) and is expected to reach at ~23.60% by CY 2028 (USD 337.48 billion) growing at a CAGR of ~4.81%. Flexible packaging includes flexible plastic and paper packaging. Flexible plastic was 75.00% of the total flexible packaging market in CY 2023 (USD 200.10 billion) and it is growing faster as compared to paper packaging, which is relatively a smaller market (USD 66.70 billion). This is followed by rigid plastic packaging with a share of ~21.00% in CY 2023 (USD 243.60 billion), growing at a CAGR of ~ 4.57% by CY 2028 (USD 304.59 billion). In plastic packaging out of the two Rigid and Flexible plastic packaging, rigid plastic packaging is more recyclable as compared to the flexible plastic packaging. The share of glass is expected to decrease by CY 2028 (USD 100.10 billion) to reach 7.00% from 7.50% in CY 2023 (USD 87.00 billion) due to the heavy weight and inert nature of glass, the rigid plastic market share stands to benefit from this as an alternative material to glass.

2.3 Key Market by Geography

The Asia Pacific (APAC) region is projected to grow at a robust CAGR of ~5.22% from CY 2023 to CY 2028, maintaining its position as the largest market with a 40.60% share in CY 2028. Within APAC, India and China are driving this growth, supported by the expansion of their food and beverage, FMCG, and personal care industries. In India, this growth is further fuelled by the rapid rise of end user industries and the booming e-commerce sector, driven by an expanding digital consumer base and increasing online shopping trends. The region's thriving manufacturing sector also increases the demand for packaging solutions. While China leads in growth in APAC region, India is quickly catching up.

Following APAC, North America holds the second largest share at ~27.60% in CY 2023, with the USA contributing around 60.00% of this. The share of Middle East, Africa, and Europe is expected to decrease in the next 5 years by CY 2028 in the global packaging industry while there is growth in the South America region following a similar path as the Asian market, however, is too small in value.

Exhibit 2.5: Global Packaging Market Share (%) Split by Value for Key Geographies (CY)



Source: Secondary Research, Technopak Analysis

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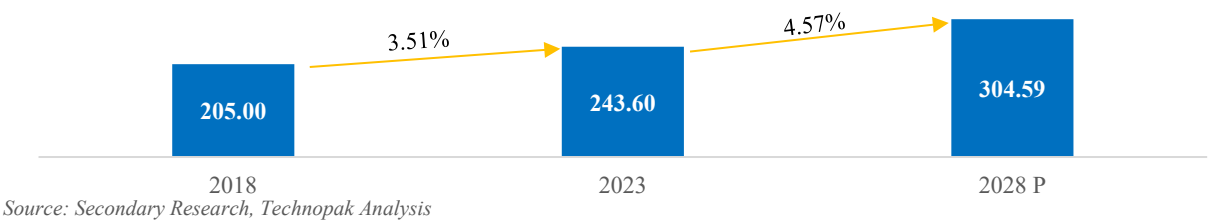
Exhibit 2.6: Global Rigid Plastic Packaging Market Size (In USD billion) by Value (CY)



Source: Secondary Research, Technopak Analysis

India is the fastest growing country in the Rigid Plastic Packaging Market (RPP) globally

India is the fastest growing RPP market globally, with a projected CAGR of 7.00% from CY 2023 to CY 2028, compared to the global RPP market's CAGR of around 4.57% during the same period. Between CY 2023 and CY 2028, the largest markets like the USA and China, are expected to grow at CAGRs of ~3.10% and ~4.40%, respectively. India's growth is driven by increasing demand from industries such as paint & lubricants, energy sector, food and beverages, personal care, e-commerce, pharmaceuticals, agrochemicals, etc., supported by a growing population and rising disposable incomes.

Exhibit 2.7: Key countries Rigid Plastic Packaging CAGR (%) by Value (CY)

Key countries	CAGR 2018-23	CAGR 2023-28P
India	3.60%	7.00%
China	4.18%	4.40%
Canada	3.35%	3.60%
Japan	2.95%	3.10%
US	2.82%	3.10%
Germany	2.19%	2.40%
UK	1.95%	2.20%

Source: Secondary Research, Technopak Analysis
Note: India's growth rate is based on FY market size

2.4 Key Growth Drivers and Trends of Global packaging industry

i. **Economic and Demographic Growth:** Global economic growth will be fueled by expanding consumer markets, especially in emerging economies. Urbanization in countries like China and India will support organized players, while aging populations, especially in Japan, will increase demand for healthcare products with specialized packaging. The growth of single person households will also drive the need for smaller portions and convenient packaging, such as microwaveable or transparent options.

ii. **Embracing Sustainability in Packaging:** In recent years, there has been a notable shift in the consumer preference for sustainable packaging and this trend is evident in both government policies and consumer preferences. Companies are increasingly focusing on sustainable packaging to reflect their environmental commitment. Additionally, there is a growing demand for recyclable packaging materials, positioning options like paper and rigid plastics as preferred choices for both brands and consumers. Adopting this trend could drive significant innovation and lead to increased use of rigid packaging solutions.

iii. **Changing Consumer Trends:**

- **E-commerce Retail Surge:** The global online retail market is growing quickly, fueled by greater Internet and smartphone access. As more consumers prefer shopping online, there is a higher demand for secure packaging solutions, especially corrugated board and rigid plastic packaging, to ensure safe delivery.
- **On-the-Go Consumption:** The influence of westernization in growing economies like India, coupled with lifestyle changes among a large population, has led to an increase in individuals consuming food, beverages, and pharmaceuticals while on the move. This shift is driving demand for convenient, portable packaging solutions, with flexible plastics emerging as a major beneficiary.
- **Convenience Shopping:** A rising trend of single person households, particularly among younger demographics, is reshaping shopping habits. Consumers are now ordering food from outside,

purchasing groceries in smaller quantities more frequently, especially for staples and food items. This behavior promotes and boosts demand for diverse packaging formats across product categories.

iv. **Rapid Growth of Electric Vehicles:** The global push toward reducing carbon emissions and government incentives such as subsidies, tax breaks, and investments in charging infrastructure have further boosted the adoption of EVs, driving demand for advanced battery casing solutions to ensure safety, durability, and thermal management.

v. **Energy Storage Systems Expansion:** The expansion of energy storage systems is another key factor propelling the battery casing industry. With the global push toward renewable energy sources such as solar and wind, ESS has become critical for storing excess energy during peak production and ensuring grid stability. This has created a need for packaging solutions that offer superior thermal management, scalability, and long-term durability. Moreover, the emphasis on sustainability has led to increased use of recyclable and eco-friendly materials in ESS packaging.

vi. **Technological Advancement and Trends:** Technological innovations are transforming the production of packaging materials, leading to lightweight, durable, and cost-effective solutions. Some significant advancements in the packaging industry include:

- Injection Stretch Blow Moulding (ISBM): Used for producing high quality PET bottles, jars for water, juices, edible oils, dairy products, personal care & cosmetics containers like shampoo bottles, lotions, and creams etc. with superior strength and clarity.
- Injection Moulding technologies: Injection Moulding enables high precision, high strength plastic product manufacturing, ideal for caps, closures, containers, battery casing and other rigid plastic components.
- Hybrid Moulding Technology: Combining injection and compression moulding, this technique produces lightweight, high strength plastic products.
- Microcellular Foaming (MuCell Technology): This process infuses polymers with gas to create microcellular structures, reducing material usage while maintaining strength.
- Ultrasonic & Laser Sealing: These energy efficient sealing methods enhance packaging integrity without the need for excess heat or adhesives.

These technological strides are helping meet consumer demands for safer, more convenient packaging and are also helping the brands to take ownership of their brands, fueling growth in the global packaging industry.

vii. **Trade Globalization**: With the growing impact of globalization, FMCG brands are expanding globally to access high growth markets and sectors. India is well positioned to benefit from the "China Plus One" strategy, as companies aim to diversify supply chains by including alternative manufacturing or sourcing hubs outside China. The trend is further supported by recent announcements of global investments in India. Additionally, the competitive landscape is being reshaped by industry consolidation through mergers and acquisitions, driving conglomerates to adopt more efficient and cohesive packaging strategies.

viii. **Circular Economy:** The plastic packaging industry is increasingly embracing circularity by focusing on sustainability, recyclability, and waste reduction. Companies are shifting towards a closed loop system, where materials are designed for reuse, recycling, and composability. Innovations such as 100% recycled plastics, bio-based alternatives, and lightweight packaging are gaining traction to minimize environmental impact. Advanced recycling technologies like chemical recycling and mechanical recycling enhance material recovery, while extended producer responsibility (EPR) programs encourage brands to take accountability for post-consumer waste. Collaborative efforts across industries, regulatory policies, and consumer awareness are driving the transition towards a more circular and eco-friendly plastic packaging ecosystem.

2.5 Challenges

i. **Economic and Market Conditions:** Economic fluctuations and market uncertainties have created supply shortages and price volatility within the packaging sector. In the first half of FY 2023, intermittent supply disruptions and fluctuating costs of resins and raw materials were observed, largely driven by market dynamics.

ii. **Inflation Impact:** Rising inflation has significantly affected the packaging industry, particularly through increased costs for energy, fuel, and labor. Inflationary pressures, especially prevalent in Europe and the United States, have led central banks to raise interest rates. This has resulted in higher interest expenses for companies with variable rate debt denominated in currencies like the U.S. dollar and Euro. Additionally, these inflation trends have influenced consumer behavior and contributed to customer destocking during fiscal year 2023.

iii. **Environmental Concerns:** The packaging industry is grappling with growing environmental concerns surrounding resource consumption and waste. Non-biodegradable materials, particularly plastics, and the excessive use of resources like paper, are causing pollution and habitat destruction. Although recycling efforts are improving, only materials like paper, cardboard, and rigid plastics are easily recyclable, while others, such as certain plastic types, remain challenging.

iv. **Regulatory Challenges:** The increasingly stringent regulatory environment presents hurdles for industry players, requiring them to comply with new standards while maintaining competitiveness and profitability. Adapting to these regulations often necessitates substantial investments in research, development, and infrastructure to ensure packaging materials adhere to environmental and safety standards.

2.6 Key Global Manufacturers

The global packaging industry is vast and diverse, with key players across different segments, including flexible packaging, rigid packaging, corrugated packaging, and specialty packaging. Some of the major global manufacturers and companies in the industry are WestRock, Amcor Plc, Berry Global Group, Sonoco, ALPLA Group, Toppan Inc., DS Smith Plc etc. The details of these companies are:

1. **West Rock:** WestRock is a multinational provider of sustainable fibre-based paper and packaging solutions. The company serves a wide range of industries, including food and beverage, consumer goods, e-commerce, and industrial sectors. The company focuses on fibre-based solutions such as corrugated and paperboard packaging, along with some flexible packaging in the form of folding cartons and inserts. Headquartered in Georgia, USA, WestRock operates across North America, South America, Europe, and Asia.

2. **Amcor:** Amcor has a diverse portfolio of primary packaging for fast moving consumer goods and industrial applications. The company operates in two reportable segments, flexible and rigid packaging. The flexible segment produces packaging for food, beverage, pharmaceutical, medical, home, and personal care, while the rigid packaging segment manufactures rigid containers primarily for food and beverage products. Amcor aims to create sustainable packaging solutions that are increasingly recyclable, reusable, and made with recycled content. Through its partnerships, Amcor targets to incorporate at least 30% recycled content across product portfolio by 2030.

3. **Berry Global:** Berry Global is a manufacturer rigid packaging products such as containers and pails, bottles and prescription vials, and tubes as well as flexible packaging products includes converter films, institutional can liners, food, and consumer films etc. It mainly caters to consumer-oriented markets such as healthcare, personal care, and food and beverage. The company operates a vast network of low –cost manufacturing facilities across multiple countries and is committed to advancing sustainability in packaging using recycled materials and innovative design. As of 2023, 86% of Berry's fast moving consumer goods packaging is reusable, recyclable, or compostable, reflecting significant progress toward sustainable packaging solutions. Berry Global has its headquarters in Indiana, United States.

4. **Sonoco:** Sonoco, headquartered in South Carolina, USA, offers a diverse range of packaging products providing solutions including both rigid and flexible packaging. The rigid packaging solutions include paper containers, metal packaging including food and aerosol cans, rigid plastic products such as thermoformed plastic trays and enclosures which constitutes consumer packaging segment. Flexible Packaging segment primarily, made of plastic caters to food and personal care industry. The company's operations are divided into two main segments consumer packaging and industrial paper packaging. The Industrial Paper Packaging segment focuses on uncoated recycled paperboard (URB) and converted URB products.

5. **Toppan Inc.:** Toppan is headquartered in Tokyo, Japan, is a provider of integrated solutions provider across various sectors, including packaging. It offers packaging solutions for lithium-ion batteries and related components in applications like Electric Vehicle or Hybrid Electric Vehicle, in vehicle, industrial, and

household batteries. Further, the company produces rigid packaging such as containers, flexible packaging such as paper containers with spouts, paper-based pouch, small paper-based containers, electronics packaging, fire extinguishing film, media, and supplies for printers,

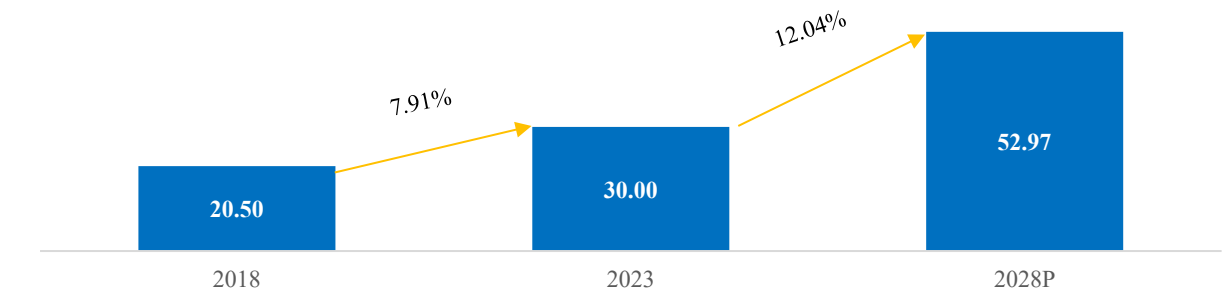
6. **DS Smith:** DS Smith is a provider of sustainable packaging solutions, specializing in corrugated packaging, paper products, cardboard based outer packaging and recycling services. Its flexible segment includes fibre-based alternatives to plastic and provides protective packaging for batteries. DS Smith serves industries including e-commerce, FMCG, industrial, and healthcare.

2.7 Global Battery Casing Market

The global battery casing market was valued at around USD 30.00 billion in CY 2023 and is projected to grow at a CAGR of approximately 12.04% from CY 2023 to CY 2028, projected to reach USD 52.97 billion by CY 2028. This growth is driven by the increasing use of electric vehicles (EVs), spurred by environmental concerns and government regulations. The rise in EV adoption has led to higher demand for battery packs, creating a need for specialized packaging to ensure their safety, efficiency, and durability.

The growing popularity of EVs and renewable energy storage systems is a key factor driving market expansion. As governments enforce stricter emission norms and promote clean energy initiatives, the demand for reliable and efficient battery solutions has risen sharply. Lithium-ion batteries, widely used in EVs and energy storage, have emerged as the preferred option due to their superior performance. This has further emphasized the need for advanced packaging solutions that safeguard battery performance, safety, and longevity.

Exhibit 2.8: Global Battery packaging market size (CY) (USD billion)



Source: Secondary Research, Technopak Analysis
Note: It Includes cardboard, plastic, metal, others

Ankur Bisen
Senior Partner

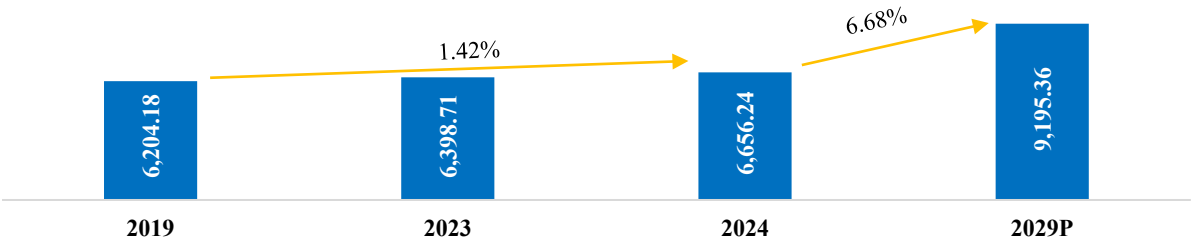
3. Overview of the Indian Packaging Industry

3.1 Indian Packaging Market

Valued at ~USD 83.20 billion, the India's packaging industry spans a variety of materials, formats, and applications, serving multiple industries. From major food & beverage companies to pharmaceutical firms, battery manufacturers to e-commerce businesses, effective and innovative packaging solutions are essential for product protection, preservation, branding, and enhancing consumer convenience. Additionally, government initiatives aimed at promoting organized retail and food safety are driving the need for high quality, standardized packaging solutions.

In FY 2024, the Indian packaging market was valued at INR 6,656.24 billion, marking a growth of ~1.42% CAGR from INR 6,204.18 billion in FY 2019. Further, the market is projected to expand at a CAGR of 6.68%, reaching INR 9,195.36 billion by FY 2029.

Exhibit 3.1: Indian Packaging Market Size – By Value (In INR billion) (FY)

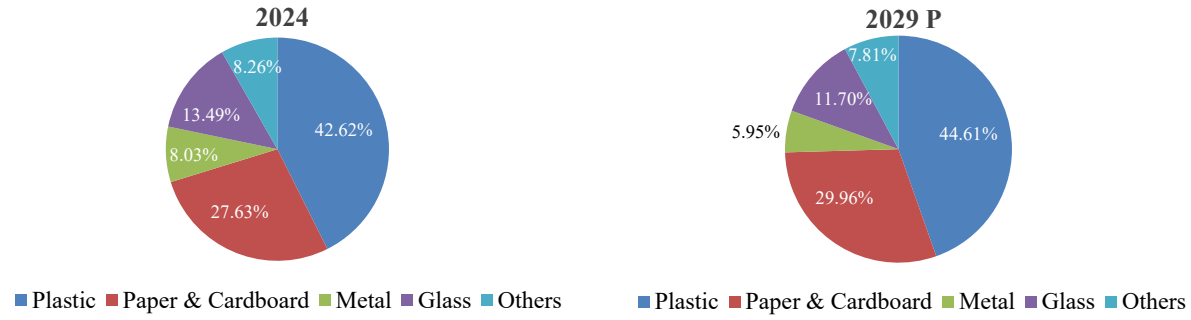


Source: Secondary Research, Technopak Analysis
Note: 1USD= INR 80

3.2 Indian Packaging Market - By Material

Packaging includes a variety of materials such as paperboard, metals, plastics, wood, glass, and others. However, among all the available alternatives, 'Plastic Packaging' is rapidly becoming the fastest growing trend in the industry. Plastics have become central to our "convenience consumer culture." Many traditional materials, including paperboard, metals, wood, and glass, have been replaced by plastics in numerous applications due to their favourable cost-to-performance ratio.

Exhibit 3.2: Indian Packaging Market Size – By Material Type – By Value (FY)



Material by Value (INR billion)	FY 2024	FY 2029 P	CAGR (FY 2024-29)
Plastic	2836.80	4102.00	7.65%
Paper & Cardboard	1839.42	2754.60	8.41%
Metal	534.31	547.04	0.47%
Glass	897.98	1083.52	3.83%
Others	547.73	718.56	5.58%

Source: Secondary Research, Technopak Analysis
Note: Other includes Cloth, Jute and Wood

Ankur Bisen
Senior Partner

Plastic: Plastic packaging holds a dominant ~43% share of the Indian packaging market in FY 2024. Manufactured through various moulding techniques, it is valued for its versatility, cost effectiveness, and lightweight nature. Indian consumers have a strong preference for rigid plastic packaging due to its reliability and reusability, adding value beyond the initial purchase. Common examples include bags, bottles, containers, films, cases, and pouches, which are extensively used across sectors like paint & lubricants, energy sector, food and beverages, personal care, e-commerce, pharmaceuticals, agrochemicals, etc.

Paper & Paperboard: Paper and paperboard packaging represent an environmentally friendly choice within the Indian packaging sector, accounting for a notable 28% share in FY 2024. This segment offers a range of solutions, including cartons, boxes, corrugated packaging, and paper bags, which are widely used in industries such as food and beverage, e-commerce, and manufacturing. Sustainability is a key driver of innovation in this area, fostering the use of recycled content in paperboard and the development of coated paperboard for enhanced moisture and grease resistance.

Metal: Metal packaging, primarily made from tinplate and aluminium, holds an 8% share of the Indian packaging market in FY 2024. It is favoured for products that require long shelf life and robust protection. Commonly used in paints, beverages, processed foods, chemicals, and industrial goods. The high recyclability of metal, particularly aluminium, enhances its appeal from a sustainability standpoint, catering to the growing demand for eco-friendly packaging solutions.

Glass: The Indian glass packaging market accounting for 13% of the overall packaging market in FY 2024. Renowned for its inert properties, recyclability, and premium appeal, glass packaging remains a key option in industries like food and beverage, pharmaceuticals, and cosmetics. However, despite its advantages, the market faces emerging challenges. Competition from alternative materials, particularly plastic and, in certain cases, metal, requires ongoing innovation within the glass packaging sector. Additionally, the increasing focus on environmental concerns has brought attention to the energy intensive nature of glass manufacturing.

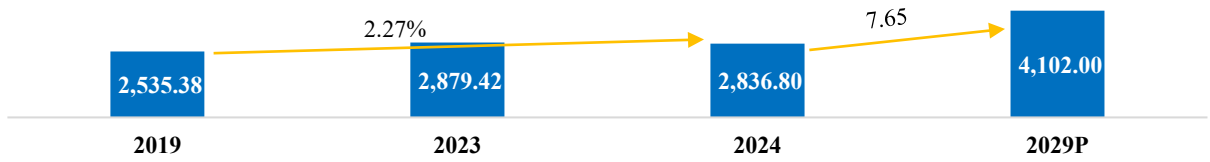
3.3 Indian Plastic Packaging Market

In FY 2024, the Indian plastic packaging market was valued at INR 2,836.80 billion, showing a CAGR of 2.27% growth from INR 2,535.38 billion in FY 2019. There was a slight decline in the industry during FY 2023-24, attributed to factors such as fluctuating raw material prices fluctuations and industry wide efforts to reduce packaging weight. Looking ahead, the market is expected to grow at a CAGR of 7.65% over the next five years, reaching INR 4,102.00 billion by FY 2029. This growth will be driven by the expanding consumer goods sector, increasing urbanization, evolving consumer preferences, and rising disposable incomes.

India's rapid urbanization and shift toward nuclear families are boosting demand for portion-controlled packaging. Urban consumers increasingly prefer smaller, easy-to-use formats that reduce waste and fit their fast-paced lifestyles. This trend, along with rising demand for ready-to-eat meals and on-the-go snacks, is driving growth in convenient packaging solutions. As one of the fastest-growing economies globally, India's rising middle class and growing disposable incomes have fuelled the demand for packaged goods across various industries, including paint & lubricants, energy sector, food and beverages, personal care, e-commerce, pharmaceuticals, agrochemicals, etc., where plastic packaging plays a critical role in product safety, shelf life, and distribution efficiency. This growing preference for improved customer experience is propelling demand for rigid plastic packaging—attributes valued in premium product categories.

Furthermore, ongoing investments in food processing, logistics, automobiles, infrastructure development etc. are driving demand for specialized plastic packaging solutions tailored to temperature sensitive and regulated products. Together, the macro and micro level drivers are positioning the Indian plastic packaging market for robust growth in the future years.

Exhibit 3.3: Indian Plastic Packaging Market Size – By Value (In INR billion) (FY)



Source: Secondary Research, Technopak Analysis
Note: 1USD= INR 80

The Indian plastic packaging market is divided into two segments based on product type: Rigid Plastic Packaging and Flexible Plastic Packaging.

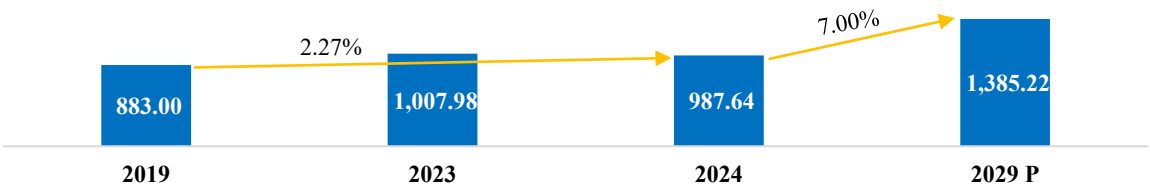
Exhibit 3.4: Indian Flexible Plastic Packaging Market Size – By Value (in INR billion) – By Type (FY))

Material by Value (INR billion)	FY 2024	FY 2029P	CAGR (FY 2024-29)
Rigid Plastic Packaging	987.64	1,385.22	7.00%
Flexible Plastic Packaging	1,849.16	2,717.03	8.00%

Source: Secondary Research, Technopak Analysis

1. **Rigid Plastic Packaging (RPP):** Rigid plastic packaging, made from durable materials like polypropylene (PP), polyethylene terephthalate (PET), high-density polyethylene (HDPE), and polyvinyl chloride (PVC), holds a significant 34.82% share of the plastic packaging market in FY 2024. The Indian RPP market has a large Total Addressable Market (TAM), with a current size of INR 987.64 billion in FY 2024. It is projected to grow at a CAGR of 7.00%, reaching INR 1,385.22 billion by FY 2029.

Exhibit 3.5: Indian Rigid Plastic Packaging Market Size- By Value (in INR billion) – By Type (FY)

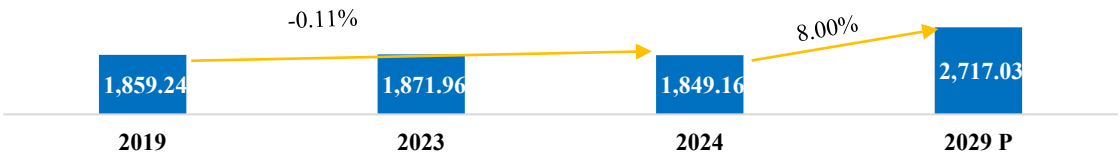


Source: Secondary Research, Technopak Analysis

2. **Flexible Plastic Packaging (FPP):** Flexible plastic packaging makes use of flexible plastic films or laminates, such as PE and PP, often combined with materials like aluminium foil or paper. Representing 65.18% of the plastic packaging market in FY 2024, the flexible plastic packaging market was valued at INR 1,849.16 billion and is expected to reach INR 2,717.03 billion in FY 2029, growing at a CAGR of 8.00% over the next five years.

Ankur Bisen
Senior Partner

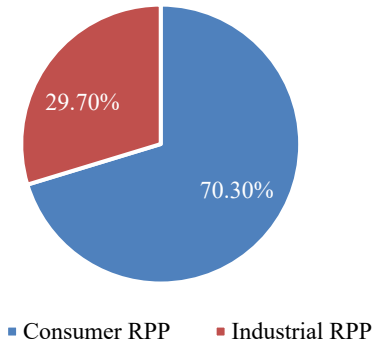
Exhibit 3.6: Indian Flexible Plastic Packaging Market Size – By Value (in INR billion) – By Type (FY))



Source: Secondary Research, Technopak Analysis

The sector is divided into two main segments: Consumer and Industrial. In FY 2024, rigid plastic packaging for the consumer segment accounted for 70.30% of the market, focusing on visually appealing containers, tubs, and bottles that are designed to attract consumer attention at the point of sale. Industries that utilize consumer rigid plastic packaging include paint & lubricants, energy sector, food and beverages, personal care, consumer goods, e-commerce, pharmaceuticals, agrochemicals, etc. On the other hand, the industrial segment of rigid plastic packaging includes durable, functional solutions like drums and stackable bins, designed to safely transport and store bulk materials throughout the supply chain. Key industries using industrial rigid plastic packaging include chemical and petrochemical, automotive, agriculture & agrochemicals, construction, electronics, medical & laboratory etc.

Exhibit 3.7: Indian Rigid Plastic Segmentation - By Usage Type (by Value) (FY 2024)



Source: Secondary Research, Technopak Analysis

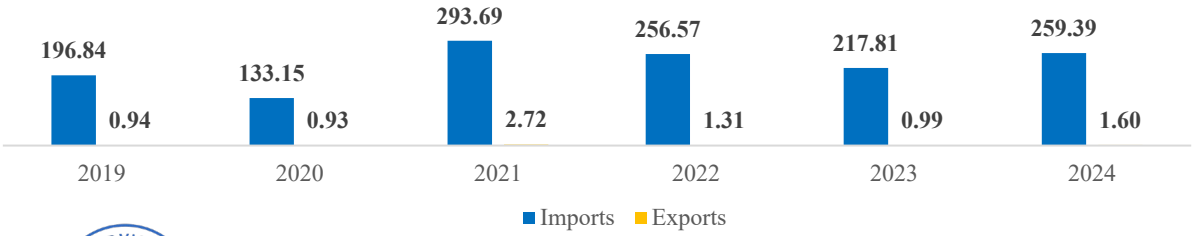
3.4 Overview of Raw materials used in the Rigid packaging.

3.4.1 Acrylonitrile Butadiene Styrene (ABS) Market Overview

ABS is a widely used thermoplastic polymer known for its excellent balance of toughness, rigidity, and impact resistance. As a copolymer composed of acrylonitrile, butadiene, and styrene, ABS offers strong mechanical properties, good dimensional stability, and a high-quality surface finish, making it suitable for a broad range of applications. It is extensively used in automotive components, consumer electronics, household appliances, and 3D printing due to its ease of processing and durability. While ABS is non-biodegradable, it is recyclable and can be repurposed into various lower-grade products. Some of the key global suppliers of ABS includes LG Chem Limited, Chi Mei Corporation, SABIC (Saudi Basic Industries Corporation) **,** INEOS Styrolution Group GmbH etc. On the domestic front, Bhansali Engineering Polymers Limited, Styrenix Performance Materials Limited (formerly known as INEOS Styrolution India Limited), Supreme Petrochem Limited, Styrolution India Private Limited etc. to name a few major suppliers of ABS in India.

ABS Imports have increased from USD 196.84 million in CY2019 to USD 259.39 million at CAGR of 5.67%, indicating a consistent rise in domestic demand and continued dependence on external supply sources. In comparison, exports have grown at a higher CAGR of 11.27% over the same period, from a lower base. This reflects a gradual strengthening of the sector's global competitiveness and an expanding footprint in international markets. Despite the higher growth rate of exports, imports continue to outpace them significantly in absolute volume, highlighting the need for further capacity enhancement and localization initiatives.

Exhibit 3.8: India's import & Export (CY) (USD million)



Source: ITC Trade map, HSN code: 39033000

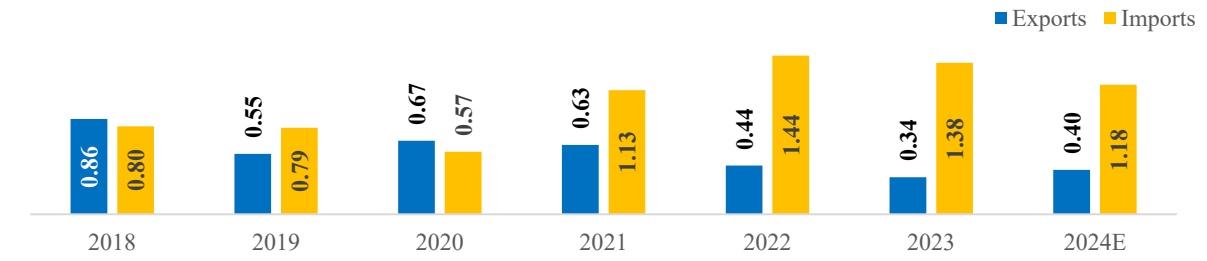
3.4.2 Polypropylene Copolymer (PPCP) Market Overview

In FY 2021, India's total Polypropylene (PP) consumption stood at 5.48 million MT and is projected to grow to 10.30 million MT by FY 2030, registering a CAGR of 7.26% between these periods. Among the various end use industries, PP utilized for packaging accounts for ~20% of the total PP consumption by volume.

Polypropylene Copolymer is a type of PP, a versatile thermoplastic widely utilized across various industries in India, including packaging, automotive, consumer goods etc. Some of the key players operating in India PPCP market include Reliance Industries Limited, Indian Oil Corporation Limited, Haldia Petrochemicals, Lyondell Basell Industries Holdings B.V., SABIC, Braskem S.A., Sinopec Group etc.

India's PPCP exports have decreased from USD 0.86 billion in CY 2018 to USD 0.34 billion in CY 2023 and is estimated at USD 0.40 billion in CY 2024. Imports have followed a rising trend, growing from USD 0.80 billion in CY 2018 to USD 1.38 billion in CY 2023, with an expected import of USD 1.18 billion in CY 2024.

Exhibit 3.9: India's PPCP Import & Export (CY) (USD billion)



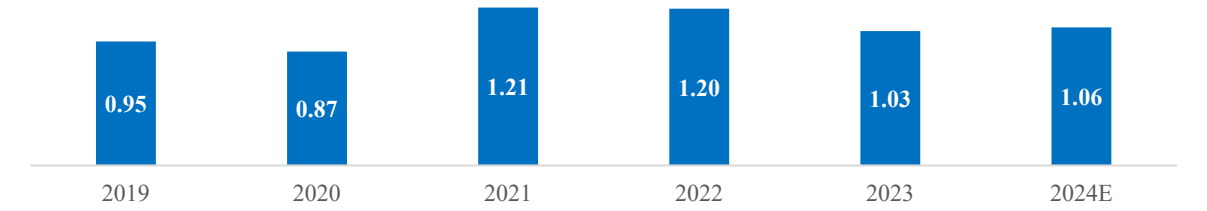
Source: Trade Map, HSN code: 390210

India has consistently remained a net importer of PPCP, with imports exceeding exports across all years, except CY 2020. The peak in import from CY 2021 was driven by increased industrial activity, while the subsequent decline may indicate supply chain disruptions and raw material price fluctuations. The rise in import post CY2021 reflects sustained demand from key industries such as automotive, packaging, consumer goods etc

The PPCP market in India is experiencing growth, driven by rising demand from key sectors. Further, the push for lightweight and durable materials, increasing adoption of electric vehicles, and government initiatives like Make in India and the Production Linked Incentive scheme are further propelling the market. However, the industry faces challenges such as fluctuating raw material prices, environmental concerns related to plastic waste, and limited recycling infrastructure.

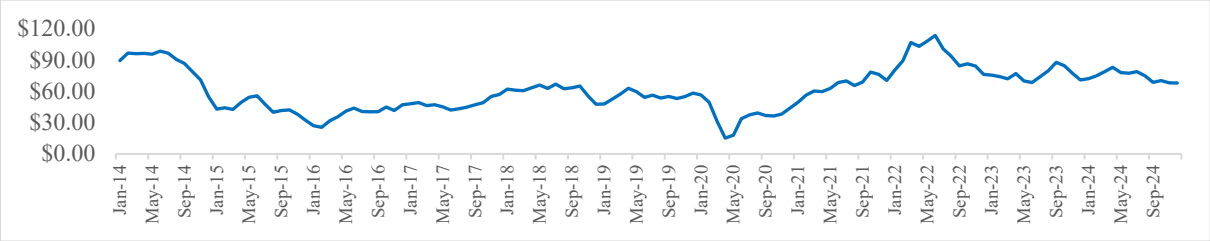
Over the past few years, the prices of PPCP have experienced notable fluctuations. However, on average, the PPCP price increased from ~INR 0.95 lakhs per MT in FY 2019 to ~INR 1.06 per MT in FY 2024, reflecting a CAGR of 2.2%. This upward trend can be attributed to various factors, including fluctuations in global crude oil prices, shifts in demand and supply, and broader economic conditions.

Exhibit 3.10: Price trend of PPCP in India (FY) (Avg. INR Lakhs /MT)



Source: Secondary Research
MT-Metric Tons

Exhibit 3.11: Price of crude oil (USD) per barrel (CY)



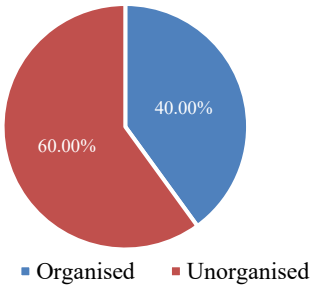
Source: Secondary Research

Crude oil price volatility exerts a substantial influence on the plastic packaging industry in India, given that crude oil derivatives such as PE, PP and PET serve as the primary raw materials for plastic production. When crude oil prices rise sharply, the cost of producing polymers like polyethylene, polypropylene and polyethylene terephthalate also increases. This leads to higher raw material costs for plastic packaging manufacturers, directly affecting their production expenses and profit margins. Conversely, when crude oil prices fall, raw material costs tend to decrease, but frequent fluctuations create uncertainty, making it challenging for manufacturers to plan long term pricing and investment strategies. In addition to the Crude oil price volatility, the ongoing tariff situation may further exacerbate the uncertainty in the raw material prices and procurement costs, leading to significant cost fluctuations for manufacturers. Tariff fluctuations on imported polymers and additives affect the availability and pricing of critical inputs, often putting pressure on supply chains and pricing strategies, making it essential for companies to adopt flexible sourcing and efficient material management to mitigate risks and maintain profitability.

3.5 Key Players in the Consumer Rigid Plastic Packaging (RPP) Industry

The Indian consumer RPP market is marked by a clear distinction between organized and unorganized players. The organized sector holds approximately 40.00% of the total Consumer RPP market share, with the remaining 60.00% belonging to the unorganized sector.

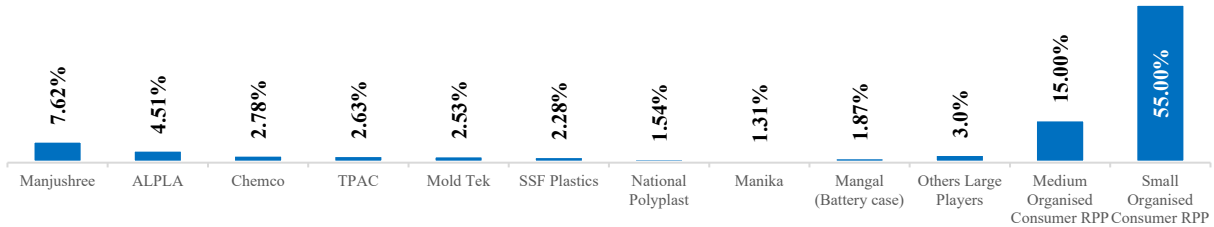
Exhibit 3.12: RPP market type (FY 2024)



Source: Secondary Research, Technopak Analysis

In the organized consumer RPP market, large players hold around 30% of the market share. This segment is further divided, with companies like Manjushree Technopack Limited and Alpla India Private Limited has a revenue share of 7.62% and 4.51% respectively in FY 2024. Other notable players include Manika Plastech Limited, Chemco Plastic Industries Private Limited, TPAC Packaging India Private Limited, Mold-Tek Packaging Limited, SSF Plastics India Limited, Mangal Industries and National Polyplast (India) Private Limited, with market shares of 1.31%, 2.78%, 2.63%, 2.53%, 2.28%, 1.87% and 1.54%, respectively. Additionally, other significant organized players such as SNJ Synthetics Limited, Weener Group, Secure Industries Private Limited, Alpha Packaging Private Limited, Innovative Tech Pack Limited, Tirth Polymers Private Limited, Bindal Technopolymer Private Limited, together represent approximately 3% of the organized consumer RPP market.

Exhibit 3.13: Market Share of Key Players in the Organized Consumer RPP Market- By Revenue (FY 2024)



Source: Secondary Research, Technopak Analysis

As the Indian economy grows and consumer and industrial demand for packaged goods rises, organized RPP players are positioned to capitalize on this growth by leveraging their financial resources, technological advancements and supply chain networks. Further, the larger players are expected to acquire smaller unorganized

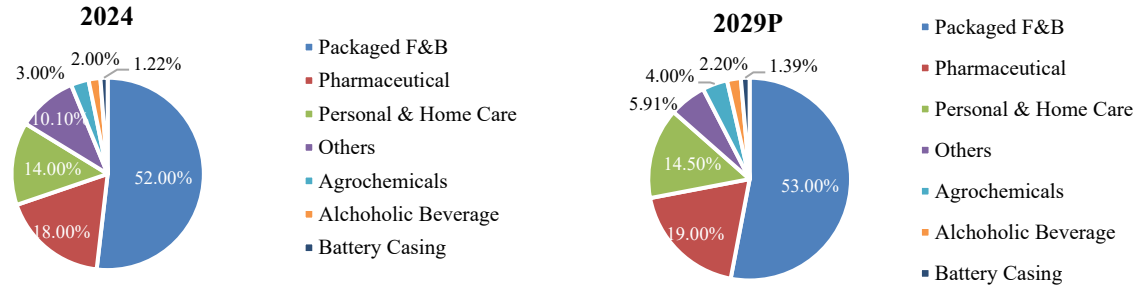
companies, thereby increasing their market share and improving operational efficiencies. It is anticipated that the share of the organized segment within the consumer RPP market in India will increase from 40% to over 48% between FY 2024 and 2028, highlighting the growing influence of organized players and the ongoing transformation of the RPP market.

The unorganized sector in the RPP market faces significant challenges, including limited access to capital, outdated equipment, and inconsistent product quality, which make it harder for these players to compete effectively over time. By merging with larger organized companies, smaller players can gain access to better resources, state-of-the-art manufacturing facilities, and more efficient distribution networks. Additionally, the trend toward consolidation is expected to be driven by the growing focus on sustainability and environmental regulations in the packaging industry. Organized players, with their stronger financial resources and advanced technical capabilities, are better equipped to invest in eco-friendly packaging, recycling programs, and sustainable production methods, giving them a competitive advantage over unorganized firms. In summary, although the Indian RPP market is currently fragmented, it is set to undergo significant consolidation, fuelled by the efforts of organized players to expand their market presence and leverage emerging opportunities through strategic mergers and acquisitions.

3.6 Major contributing industries as customers

The packaged food & beverages sector holds the largest share of the Indian plastic packaging market, with 52.00% in FY 2024 and is projected to have share of 53.00% in FY 2029. This dominant share is due to the increasing demand for packaged and convenience foods, driven by changing lifestyles, urbanization, and growing disposable incomes in India. The pharmaceutical sector ranks second, holding 18.00% of the market share in FY 2024, with an expected increase to 19.00% in FY 2029. The rising emphasis on healthcare and the expansion of India's pharmaceutical industry are key factors fuelling the ongoing demand for packaging solutions in this sector. The Personal & Home Care segment holds 14.00% share in FY 2024 and is expected to grow to 14.50% by FY 2029. This segment covers packaging for products like cosmetics, skincare items, household cleaners, and detergents. In addition to these major categories, other sectors such as alcoholic beverages, agrochemicals, industrial chemicals, paints, automotives, and electronics together make up the remaining 15.10% of the market share. Battery casing sector accounted a minimal share of ~1.22% of the total plastic packaging market in FY 2024.

Exhibit 3.14: Indian Plastic Packaging Market (By Value) - By End-User Industry (FY)



Source: Secondary Research, Technopak Analysis

3.7 Key growth drivers for the packaging industry in India

1. **Demographic and Lifestyle Shifts:** India's growing middle class has significant purchasing power, with rising discretionary incomes driving a preference for convenience and quality in packaged foods, beverages, personal care, home case, inverter etc. Furthermore, urbanization and smaller household sizes are fuelling the demand for portion-controlled packaging. Additionally, busy lifestyles are driving demand for ready-to-eat meals and snacks that require packaging solutions emphasizing convenience, ease of use, and portability.

2. **Shift from Unorganized:** The Indian packaging industry is undergoing a major transformation, shifting from its traditional, fragmented structure to a more organized and cohesive landscape. Despite this progress, unorganized players still dominate a large portion of the market, making up about 60% of the consumer RPP sector in FY 2024. Many packaged products in India have similar packaging, resulting in fierce competition among smaller regional players who primarily focus on pricing and cost competitiveness. Customers in this segment often work with multiple suppliers for the same product category to reduce supply side risks.

Consequently, smaller players are facing increased competitive pressure in an evolving industry. This situation presents an opportunity for organized companies to strengthen their position in the market, using their scale and capabilities to take advantage of emerging trends. Industry experts predict that the RPP market will gradually consolidate through mergers and acquisitions in the coming years, with larger, organized players likely to acquire smaller, unorganized ones. This will help expand market share and improve operational efficiencies.

- ***Organized Retail*:** The share of organized retail store in India's overall retail market is expected to rise from 10.10% in FY 2024 to ~12.00% by FY 2029. This growth in organized retail is reshaping the in-store shopping experience. In a competitive marketplace, having visually striking packaging that captures attention and clearly communicates brand identity is crucial. Rigid plastic packaging provides distinct advantages in this setting, supporting modern retail formats that enhance product presentation and meet the increasing demand for higher quality goods.
- ***Product Visibility:*** Transparent rigid plastics enable display of the product, boosting its appeal and fostering consumer trust.
- ***Enhanced Shelf Presence:*** The structural strength of rigid plastics enables the creation of distinctive shapes and designs that differentiate them from flexible packaging alternatives.
- ***Branding Potential:*** Rigid plastic's printability offers a larger surface for vibrant graphics and comprehensive product information.

Furthermore, increasing environmental concerns are prompting stricter regulations on packaging materials and waste management. Organized companies are more adept at complying with these regulations, implementing sustainable practices, and adopting eco-friendly materials.

3. **Premiumization**: The growing consumer preference for premium products is fuelling substantial growth in the rigid plastic packaging sector. This shift towards higher quality and improved product experiences is closely aligned with the benefits provided by rigid plastic packaging.

4. **Growth of paint and pails containers**: Increasing demand from the construction and infrastructure sectors has led to a rise in paint and pails segment, thereby fuelling the need for durable and efficient packaging solutions. With rapid urbanization and infrastructure development, there has been a significant increase in residential, commercial, and industrial construction activities. This has directly driven the demand for decorative and industrial paints, which in turn fuels the need for robust, cost effective, and scalable packaging solutions like plastic pails containers.

5. **Rising need of battery casing and storage solution**: As energy demands continue to grow, the need for reliable backup power solutions has become a necessity. The widespread electrification of households has increased reliance on inverters and home battery systems to ensure uninterrupted power supply. This surge in demand has, in turn, driven the growth of the battery casing sector, as durable and efficient casings are essential for battery safety and performance.

6. **Growth of packaged food and beverage market:** The growth of India's packaged food and beverage sector has significantly fuelled the demand for rigid plastic packaging. With consumers increasingly favouring convenient food and longer shelf lives, the demand for packaged food and beverages has surged. This, in turn, has led to a higher need for durable packaging solutions, boosting the rigid plastic packaging industry.

3.8 Innovation and Technology in RPP

Technological advancements and a focus on sustainability are reshaping the RPP landscape:

1. **Recycled Content:** Driven by both consumer demand and regulatory shifts, RPP manufacturers in India are increasingly integrating recycled polyethylene terephthalate (rPET) into their product lines, fostering a more circular economy. This trend is not only reducing the environmental impact of plastic production but also opening new market opportunities for innovative, eco-friendly packaging solutions. The adoption of rPET is being further accelerated by advancements in recycling technologies, which are improving the quality and consistency of recycled materials.

2. Different types of Mounding technologies

- **In-Mould Labelling (IML):** In-Mould Labelling (IML) is an advanced decorating technology used primarily in the plastic packaging industry, where preprinted labels are inserted into a mould during the plastic moulding process. These labels become an integral part of the final product as the molten plastic fuses with the label during injection moulding, blow moulding, or thermoforming. IML offers a seamless, high-quality finish that enhances both aesthetics and durability, setting it apart from traditional post moulding labelling methods. IML improves the durability of labels under extreme conditions such as refrigeration, moisture, and handling stress. It also streamlines the manufacturing process by integrating decoration and moulding into a single step, which reduces labour costs, machine handling, and postproduction waste.
  IML is widely used in packaging for food containers, dairy products, beverages, cosmetics, and household goods. In the food industry, IML is especially popular for yogurt cups, ice cream tubs, margarine containers, and ready-to-eat meal trays due to its hygiene, barrier properties, and vibrant branding. In non-food applications, IML finds use in automotive components, electronic enclosures, and home appliances where durable labelling and intricate design details are required.

- **Blow Moulding:** Blow moulding is a manufacturing process used to create hollow plastic parts such as bottles and containers. The process begins by heating plastic until molten, which is then formed into a tube-like shape called a *parison*. The parison is clamped into a mould, and compressed air is blown into it, forcing the plastic to expand and conform to the shape of the mould cavity. After cooling, the mould opens, and the finished part is ejected. Blow moulding is especially advantageous for producing lightweight, uniform, and cost-effective containers in high volumes. It allows for the creation of complex shapes, thinwall, consistent thickness and good structural strength. Common applications include beverage bottles, detergent containers, automotive fuel tanks, and packaging for personal care products.

- **Extrusion Moulding:** Extrusion moulding is a continuous process used to create objects with a fixed cross-sectional profile, such as pipes, straws, and films. Plastic pellets or granules are fed into a heated barrel, where they are melted and pushed through a shaped die by a rotating screw. As the molten plastic exits the die, it cools and hardens into the desired profile. The key benefit of extrusion moulding lies in its ability to produce long, continuous shapes with high efficiency and low material wastage. Applications include irrigation pipes, packaging films, insulation for wires, and profiles used in construction.

- **Thermoforming:** Thermoforming involves heating a plastic sheet until it becomes pliable, then forming it over a mould using vacuum, pressure, or mechanical force. Once shaped, the plastic is cooled and trimmed to produce the final part. The process can be further classified into vacuum forming (using suction to pull the sheet onto the mould) and pressure forming (applying additional air pressure for more detailed features).

- **Rotational Moulding:** Rotational moulding is a flexible process ideal for creating large, hollow, and seamless plastic parts. In this method, powdered plastic is placed inside a hollow mould, which is then heated and rotated along two perpendicular axes. The centrifugal force spreads the softened plastic across the mould's interior, where it fuses into a uniform layer. Once cooled, the part is removed from the mould. The main advantage of roto moulding is its ability to produce stress free, durable products with uniform wall thickness and no seams or weld lines. Common applications include water tanks, playground equipment, storage bins, and outdoor furniture.

- **Compression Moulding:** Compression moulding involves placing a measured amount of plastic material—typically thermosets, or composites—into a heated mould cavity. The mould is then closed, and pressure is applied to shape the material as it cures. Compression moulding is known for its ability to produce high strength parts with excellent surface finish and dimensional stability. It is commonly used in the automotive and electrical industries to produce parts like circuit breakers, gaskets, bumpers, and structural panels.

- **Moulded Pulp:** Moulded pulp, also known as moulded fibre, is a sustainable packaging solution made from recycled paper or natural fibres. In this process, a slurry of paper pulp is formed around a mould using vacuum suction, then dried and sometimes thermally pressed to improve rigidity and finish. The resulting products are biodegradable, recyclable, and compostable. Moulded pulp is increasingly used as an eco-friendly alternative to plastic in protective packaging, food trays, egg cartons, and disposable service ware.

- **Injection Moulding:** Injection moulding is one of the most widely used processes for producing plastic parts at high volumes. It involves injecting molten plastic into a steel or aluminium mould under high pressure. Once cooled and solidified, the mould opens, and the part is ejected. The process is highly automated and ideal for mass production of complex, precision components with tight tolerances. In packaging, it creates bottle caps, containers, and closures with excellent consistency and fast turnaround. Consumer goods like toys, appliance parts, and household items also benefit from injection moulding's ability to produce complex shapes with fine details.

- **Injection Stretch Blow Moulding (ISBM):** ISBM is a versatile and advanced plastic forming process used to manufacture high quality, hollow plastic containers. The process combines injection moulding, stretching, and blow moulding in a two or three stage process, enabling superior material distribution, clarity, strength, and precision.

  Its usage is most prevalent in industries where clarity, strength, and barrier performance are critical, such as beverage bottles, personal care and cosmetic containers, pharmaceutical packaging etc. ISBM is especially popular for manufacturing PET bottles used in packaging mineral water and jars for juices, edible oils, and dairy products. For the cosmetics and personal care industry leverage this technology to produce robust containers such as shampoo bottles, lotion dispensers etc. In pharmaceutical, it is commonly used to manufacture bottles for syrups, oral liquids, suspensions, and other medical solutions, where precision and protection are critical.

Nissei ASB Machine Group is the largest manufacturer of ISBM and Injection Moulding machines. The industry heavily relies on machine manufacturers like Nissei ASB for advanced Moulding technologies, ensuring high quality production and operational efficiency.

3. **Tamper Evident Solutions:** Rigid plastic packaging innovations increasingly prioritize tamper evident designs. New cap solutions incorporate visible indicators of tampering, addressing both product safety and consumer confidence. These tamper evident features are integrated with a focus on material efficiency, with lightweight constructions ensuring resource optimization. Further innovations have resulted in double tamper evidence capabilities for products requiring enhanced security, alongside non littering designs for a positive sustainability impact.

4. **Design Innovation:** RPP manufacturers in India are prioritizing functional and aesthetic design features, ranging from easy pour spouts and resealable lids to visually striking shapes and textures, enhancing brand appeal on the shelf.

5. **Mono material Structures:** Simplified RPP designs consisting of a single material type are becoming increasingly prevalent in the Indian market to bolster recyclability and sustainability. Companies like Amcor have introduced mono material packaging solutions for various products, including food and beverages.

3.9 Key Trends and recent development in the rigid packaging industry

Driven by key advantages like cost effectiveness, adaptability, and a growing consumer preference, RPP is steadily replacing traditional materials such as glass, metal, and even some forms of flexible packaging across diverse industries. Key trends driving the growth and transformation of the RPP sector include:

1. **Application Specific Standard Products (ASSP):** ASSPs refer to packaging formats (bottles, jars, and containers) developed with specific applications in mind. They are designed to adhere to industry standards - such as JIS (Japanese Industrial Standards) and DIN (Deutsches Institut für Normung), ensuring compatibility with existing filling and labelling lines and providing consistent performance characteristics. Companies such as Manika Plastech Limited is compliant with these standards, ensuring reliability and compliance. Unlike fully custom packaging, ASSPs focus on functionality and standardization. Through the utilization of pre-designed, standardized formats, ASSPs eliminate the need for extensive research and development, including tooling and Mould creation expenses.

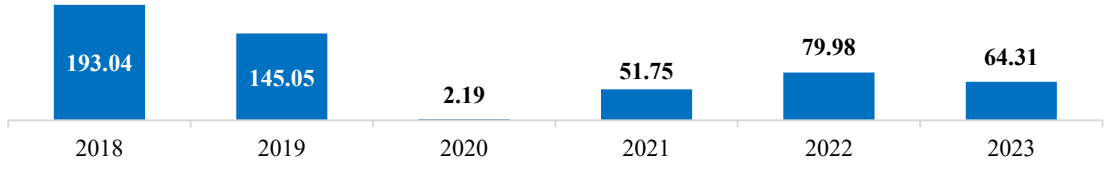
2. **Lightweighting:** In the Indian RPP market, there is a notable trend towards lightweight packaging. This shift is primarily driven by cost saving opportunities associated with reduced material usage. Additionally, lightweight packaging aligns with sustainability goals, as it reduces carbon footprint and waste generation.

3. **The Shift from Glass and Metal:** The packaging industry is witnessing a shift from metal and glass to increased demand for plastic products, and rigid plastic is one of the most sustainable packaging substrates, as it offers 100% recyclability making it an environmentally friendly packaging solution. In the beverage sector, plastic bottles have captured significant market share from legacy glass formats. Similarly, iconic brands like Kissan Ketchup and Maggi Sauces have embraced squeezable RPP formats in place of traditional glass bottles.

4. **Rigid Plastic Recycling in India:** India is rapidly becoming a hub for rigid packaging recycling, fuelled by rising plastic consumption and supportive regulatory measures. India has a recycling rate for plastic stands at ~8%, which is at par with global average of 9%. The Government of India introduced new EPR Guidelines in 2022, setting a recycling target of 50% for rigid plastic and 30% for flexible plastic in FY 2025. In 2023, the plastic recycling market in India reached ~10 million tons and is projected to increase significantly, reaching ~24 million tons by 2032. The Indian government has mandated that consumer brands include a minimum of 30% recycled plastic content in their packaging by 2026, with the requirement set to rise to 60% by 2029, thereby driving increased demand for recycled materials in the rigid plastic category.

5. **Import of Plastic waste In India:** Plastic waste is crucial for recycling as it provides raw materials for new products, helping conserve resources and reduce environmental impact. Before China's 2018 ban, India, along with other developing countries, was a major recipient of plastic waste from developed nations. However, India struggled with limited infrastructure, leading to improper disposal and environmental harm. In response, India restricted most plastic scrap imports in 2019 and focused on improving domestic recycling.

Exhibit 3.15: Import of Plastic waste In India in '000 Tons (CY)

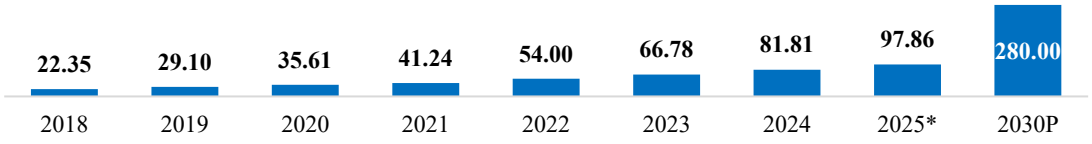


Source: Trade Map (HSN Code: 3915)

6. **Rise in Energy Storage Solutions:** Energy storage solutions are booming due to the rapid growth of renewable energy sources like solar and wind, household electrification as well as the rise of automobile and EV sales, all of which require reliable energy (battery) storage to manage production and consumption. This surge in demand for energy storage is driving innovation in battery technology and materials, many of which in turn are contributing to the rigid packaging industry.

   - **Solar Energy**: India's installed solar power capacity reached ~ 97.86 GW in December 2024. Solar energy in India is entering an accelerating growth phase, characterized by rapid increases in its share of the power generation. Solar energy is increasingly used in commercials and homes for both on-grid and off-grid systems, providing a sustainable and cost-effective way to generate electricity, reduce energy bills, and decrease reliance on traditional power sources. Rapid rising energy needs in India, coupled with growing environmental awareness and a shift toward renewable energy, are driving the increased adoption of solar power as a sustainable solution. This is in turn is driving demand for energy storage solutions.

Exhibit 3.16: Solar Energy Capacity in India (GW) (Years in FY)



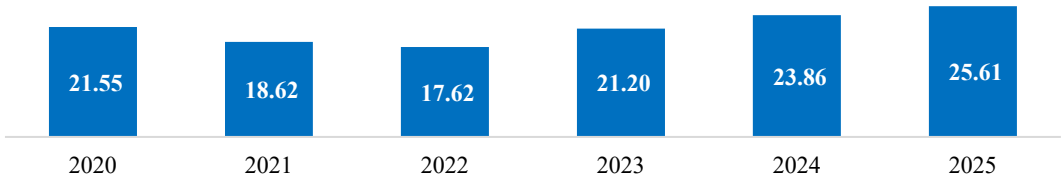
Source: Ministry of New and Renewable energy

Ankur Bisen
Senior Partner

- **Household Electrification:** The rapid electrification of households has increased the demand for reliable backup power solutions, driving the market for inverters and home battery systems. As more homes invest in energy storage to ensure uninterrupted power supply, the need for durable and efficient battery casings has also risen. These casings play a crucial role in protecting batteries, enhancing safety, and improving performance. Consequently, the growth of the inverter and battery market has fuelled expansion in the battery casing sector, supporting advancements in energy storage technology.

- **Automobile Sales in India:** The automobile sector in India has demonstrated sustained growth in recent years, underlining the country's expanding consumer base, rapid urbanization, and favourable economic environment. As one of the world's third largest automotive markets, India encompasses demands into the diverse segments including passenger vehicles, two-wheelers, commercial vehicles, three-wheelers etc. The rise in automobile sales in India is driving higher demand for automotive batteries, which in turn boosts the need for durable and efficient battery casings to ensure safety and performance.

Exhibit 3.17: Number of Automobiles Sold in India ('000) (Years in FY)



Source: Society of Indian Automobile Manufacturers

- **Electric Vehicles and Electric Three-Wheeler Sales in India:** The increasing adoption of EVs is significantly boosting battery sales. EVs rely on high performance lithium-ion batteries, leading to a surge in battery production as well as import of the same to meet this rising need.

Exhibit 3.18: Total Annual Production of Electric Vehicles in India (in '000) (Years in FY)

Category	2020	2021	2022	2023	2024
Passenger Vehicles	3.30	5.83	22.36	62.28	92.17
Commercial Vehicles	0.53	0.41	2.22	3.11	8.66
Three-Wheelers	143.83	91.97	185.38	404.88	632.78
Two-Wheeler	26.84	44.83	252.78	728.21	948.42
Total	**174.50**	**143.04**	**462.74**	**1198.48**	**1682.03**

Source: Secondary Research, PIB

In FY 2024, India's EV battery consumption varies regionally, driven by higher sales of EV in the Indian states. North India leads the EV sales by ~34.78% market share, followed by Southern region accounting to 23.18%. East and Western region hold a nominal share of 17.64% and 16.80% of EV sales, whereas Central India hold just 7.60% of the total EV market share in India.

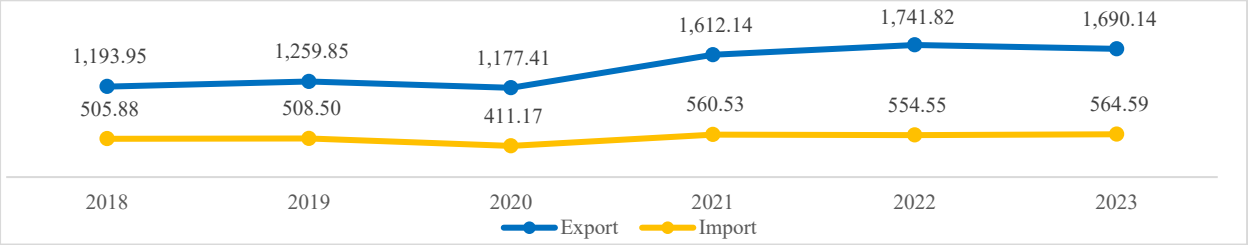
Electric three-wheelers typically use lead-acid due to their affordability and durability. The number of electric three-wheelers and auto rickshaws across India is projected to reach approximately 4 million units by FY 2030. The increasing demand for last mile connectivity, especially in urban and semi urban areas, has also contributed to the electric three-wheeler market's expansion, is increasing the need for high performance lead-acid batteries. This directly drives demand for robust battery casings that can protect batteries from mechanical shocks, thermal runaway, and environmental factors.

3.10 Export and Import of Packaging Materials

As a rapidly developing economy, India exports a wide range of packaging materials, including rigid and flexible packaging – plastics packaging, glasses, cartons, boxes etc. catering to global demand across sectors such as paint & lubricants, energy sector, food and beverages, personal care, e-commerce, pharmaceuticals, agrochemicals other industries.

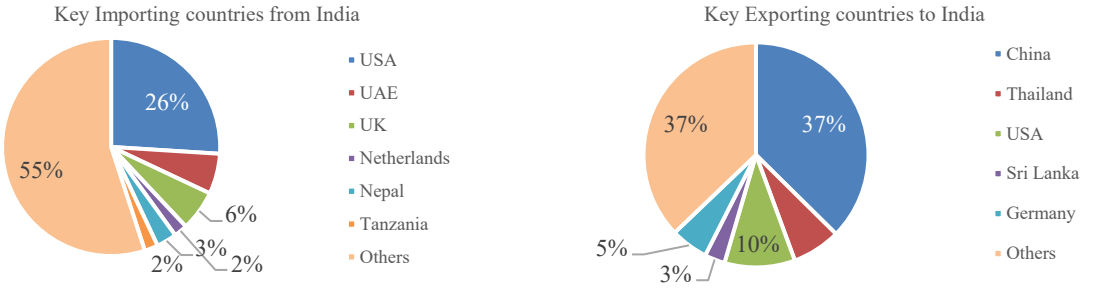
In CY 2023, exports of packaging materials were valued at USD 1,690.14 million, while imports amounted to USD 564.59 million. The export of packaging materials grew with CAGR of 7.20% from CY 2018 to CY 2023.

Exhibit 3.19: India's Export and Import of Packaging materials (CY) (USD million)



Source: Trade map (HS Code: 7010,3923,4819)

Exhibit 3.20: Key Exporting and Importing Countries of Packaging materials (FY 23)



Source: Trade Map (HSN Code: 7010,3923,4819)

The United States emerged as the key importer of packaging materials, accounting for ~26% of the Packaging materials. Other leading destination where India exports to are the United Arab Emirates, United Kingdom, Netherlands, Nepal, Tanzania, etc. China emerged as the leading exporter of packaging materials to India, accounting for ~37% of total India's imports, followed by the United States, Thailand, Germany etc.

3.11 Key risks and challenges faced by the rigid packaging industry

The packaging industry continually grapples with various challenges, including cost constraints, design complexity, regulatory compliance, and environmental sustainability. Shifting economic conditions and evolving consumer preferences further compound the industry's need to adapt to a dynamic environment.

1. **Environmental and Sustainability Concerns:** The rigid plastic packaging industry faces increasing pressure to address environmental concerns amid growing awareness of plastic pollution. Strict government regulations and evolving recycling policies demand continuous adaptation to new standards, EPR mandates, and material restrictions. Additionally, pressure from regulators, consumers, and environmental organizations has intensified, necessitating a shift towards sustainable practices. Innovations in biodegradable alternatives, such as compostable packaging materials made from plant-based polymers, are gaining traction. Rigid plastics have an advantage over flexible plastics as they are more recycled and comparatively have a higher recyclability rate than end-consumers.

2. **Competition and Cost Pressures:** Intense competition characterizes the rigid packaging industry in India, with both domestic and international players vying for market share. This competitive landscape often leads to price wars and margin pressures, challenging manufacturers' profitability and hindering investments in innovation and sustainability initiatives. As seen in the beverage sector, aggressive pricing strategies by major players like PepsiCo and Coca-Cola exert downward pressure on packaging prices, further intensifying competition

3. **Raw Material Volatility:** The rigid packaging industry is susceptible to fluctuations in raw material prices, particularly crude oil, and natural gas, which significantly impact production costs. Fluctuations in crude oil prices in response to geopolitical tensions or market dynamics directly influence the cost of petrochemical based plastic resins. Consequently, managing raw material price volatility and ensuring a stable supply chain poses considerable challenges, affecting cost predictability and profitability for industry players.

4. Regulatory Environment

4.1 Key regulations regarding plastic packaging industry

The packaging industry in India has emerged as a vital component of the country's manufacturing sector, catering to the ever-growing demands of diverse end user segments. As consumer preferences evolve and environmental concerns gain prominence, the regulatory landscape surrounding packaging, particularly plastic packaging, has undergone significant transformations. The Indian government has instituted a comprehensive set of regulations to address the environmental challenges posed by plastic packaging waste. The centrepiece of these efforts is the Plastic Waste Management (PWM) Rules, 2016, and its subsequent amendments in 2018, 2021, 2022, and 2024 consecutively.

Exhibit 4.1: Timeline of the PWM Rules in India

Source: Technopak Analysis, Secondary Research

Key highlights of the Plastic Waste Management Rules:

- **Plastic Waste Management Rules, 2016**: This comprehensive set of rules by the Ministry of Environment, Forest and Climate Change aims to regulate the manufacture, use, and disposal of plastic products, including packaging materials. It mandates the generators of plastic waste to take steps to minimize generation of plastic waste while also mandating the responsibilities of local bodies, gram panchayats, waste generators, retailers, and street vendors to manage plastic waste. It mandates the use of recycled plastics, sets recycling targets, and introduces the concept of Extended Producer Responsibility (EPR) for plastic waste management.

- **Plastic Waste Management (Amendment) Rules, 2018**: The amended Rules laid down the phasing out of Multilayered Plastic (MLP) which are "non-recyclable, or non-energy recoverable, or with no alternate use." They also prescribed a central registration system which were to be evolved by Central Pollution Control Board (CPCB) for the registration of the producer/importer/brand owner. While a national registry was prescribed for producers with presence in more than two states, a state level registration was also prescribed for smaller producers/brand owners operating within one or two states.

- **Plastic Waste Management (Second Amendment) Rules, 2021**: These amendments prohibited identified single use plastic items by 2022 and increased the thickness of plastic carry bags from 50 to 75 microns from 30th September 2021 and to 120 microns from 31st December 2022, respectively.

- **Plastic Waste Management (Amendment) Rules, 2022**: These amendments further strengthen the EPR regime by introducing specific targets for the recycling of plastic packaging waste and mandating the use of recycled plastics in various applications. All obligated entities of EPR were also told to register on the central registration system as evolved by the Central Pollution Control Board (CPCB).

- **Plastic Waste Management (Amendment) Rules, 2024**: These amendments highlight significant efforts to address plastic pollution in India, particularly by targeting microplastics and setting stricter criteria for biodegradable plastics.

Other common Indian regulations and standards applicable in the packaging industry include:

- **Food Safety and Standards (Packaging and Labelling) Regulations, 2011:** These regulations, under the Food Safety and Standards Act, 2006, specify the types of materials that can be used for packaging food items, including plastics. They also outline requirements for labeling, ensuring consumer safety and transparency.

- **Legal Metrology (Packaged Commodities) Rules, 2011:** These rules regulate the packaging and labeling of packaged commodities, including requirements for net quantity declarations, ensuring fair trade practices, and preventing malpractices.

- **Drugs and Cosmetics Rules, 1945:** These rules, under the Drugs and Cosmetics Act, 1940, provide guidelines for the packaging of pharmaceutical and cosmetic products, ensuring safety, quality, and efficacy.

- **Bureau of Indian Standards (BIS):** BIS has established several standards for plastic packaging materials, including specifications for materials, dimensions, testing methods, and safety requirements.

In addition to these regulations and standards, there are also **prescriptive guidelines** in place as per the India Plastics Pact. It is a collaborative initiative launched in September 2021 by the Confederation of Indian Industry (CII) and WWF-India, enabling businesses, government, NGOs, and other stakeholders to work together towards a common goal of creating a circular economy for plastics in India. It has over 50 members and supports, including notable brands like ITC, Amcor, Tata Consumer Products, and Huhtamaki to name a few.

Exhibit 4.2: Guidelines for Plastic Packaging and Waste Management in India

Parameter	Guidelines
Awareness	• Public/private initiative bringing together businesses, government, NGOs fostering circularity principles
Recycling targets	• 50% of plastic packaging should be recycled by 2030
Reusability targets	• 100% of plastic packaging to be reusable, recyclable or compostable by 2030
Recycled content portion targets	• 25% of the average recycled content across all plastic packaging by 2030

Source: India Plastics Pact, Secondary Research

4.2 India's EPR Regime and its impact on the packaging Industry

Extended Producer Responsibility (EPR), which falls under the regime of Plastic Waste Management Rules, 2016, in India is a cornerstone of India's evolving policy framework for plastic waste management. EPR mandates that producers, brand owners, importers and plastic waste processors of plastic packaging are accountable for its collection and sustainable disposal. This approach shifts the burden of waste management from municipalities to the entities that bring packaging materials into the market. By placing financial and operational responsibility for end-of-life product management on producers, this regime is driving transformative changes within the packaging industry.

The EPR Guidelines covers the following with respect to plastic packaging:

- Reuse
- Recycling
- Use of Recycled Plastic Content
- End of life disposal

Obligated Entities of EPR:

- **Producer (P)** of plastic packaging
- **Importer (I)** of all imported plastic packaging and/ or plastic packaging
- **Brand Owners (BO)** including online platforms/marketplaces and supermarkets/retail chains other than those, which are micro and small enterprises as per the criteria of Ministry of Micro, Small and Medium Enterprises, Government of India
- **Plastic Waste Processors (PWPs)** except cement kilns and road construction

Key components of India's EPR regime include:

- **Phased Collection Targets:** Producers are obligated to collect and ensure the recycling or environmentally sound disposal of escalating percentages of plastic waste they generate.
- **Financial Mechanisms:** Companies can either establish in-house collection and recycling systems or collaborate with Producer Responsibility Organizations (PROs).

- **Penalties for Non-Compliance:** Failure to meet EPR targets can result in financial penalties and reputational damage.

In June 2020, the Unified framework for EPR proposed three implementation models which are under discussion stage. This includes a system of plastic credit, through Producer Responsibility Organizations (PRO) and setting up a fee-based mechanism. The new draft framework also has provisions to impose stringent penalties on producers if they fail to meet their targeted collection. The government is pushing for more evidence-based mechanisms so that authorities can monitor how companies undertake EPR obligations.

PROs (Producer Responsibility Organizations) work closely with stakeholders throughout the product-to-waste value chain, including brand owners, retailers, recyclers, and municipalities, to fulfill their missions. Their responsibilities include:

- **Waste Prevention and Consumer Awareness:** PROs work to educate consumers about waste prevention and promote sustainable practices.
- **Litter Prevention and Recycling:** They collect and recycle packaging waste to reduce litter and promote environmental responsibility.
- **Eco-Design Improvement:** PROs collaborate with stakeholders to improve the eco-design of products and packaging, aligning with life-cycle analyses and changing consumer habits.
- **Municipal and Waste Management Cooperation:** They work with municipalities and waste management companies to establish efficient collection and sorting systems based on administrative, territorial, and demographic factors.
- **Support for Circular Economy Development:** PROs invest in R&D to advance new circular economy sectors focused on reduction, reuse, and recycling, enhancing the value chain from collection to recycling.

These complementary missions help PROs drive sustainability and environmental responsibility across the entire product lifecycle. Karo Sambhav is one such PRO which is India's first producer governed and owned PRO.

The Guidelines on EPR for plastic packaging vide PWM (Amendment) Rules, 2022, on 16th February 2022 stipulate mandatory targets on EPR, recycling of plastic packaging waste, reuse of rigid plastic packaging and use of recycled plastic content for the various obligated entities of EPR.

Exhibit 4.3: Plastic Packaging Categories covered under EPR:

Category I	Rigid Plastic Packaging
Category II	Flexible Plastic Packaging of single layer or multilayer (more than one layer of different kinds of plastic), plastic sheets or like and covers made of plastic sheet, carry bags, plastic sachet or pouches
Category III	Multi layered plastic packaging (at least one layer of plastic and at least one layer of material other than plastic)

We discuss the stipulated targets for **Producers (P)** below-

EPR targets:

Eligible Quantity in MT (Q1) shall be the average weight of plastic packaging material (category wise) sold in the last two financial years (A) plus average quantity of pre-consumer plastic packaging waste in the last two financial years (B) minus the annual quantity (C) supplied to the entities covered under sub-clause 4(iii) in the previous financial year as given below-

Q1 (in MT) = (A+B) – C

Exhibit 4.4.: Plastic Packaging Categories covered under EPR: Extended Producer Responsibility Target

Plastic packaging category	Year	EPR target (as a percentage of Q1- category-wise)
I	2021-22	25%
II	2022-23	70%
III	2023-24	100%

Obligation for recycling:
The producer shall ensure minimum level of recycling (excluding end of life disposal) of plastic packaging waste collected under EPR target, category-wise, as given below-

Exhibit 4.5: Minimum level of recycling (excluding end of life disposal) of plastic packaging waste as a % of EPR target

Plastic packaging category	2024-25	2025-26	2026-27	2027-28 onwards
I	50	60	70	80
II	30	40	50	60
III	30	40	50	60

Obligation for use of recycled plastic content:
The producer shall ensure use of recycled plastic in plastic packaging category-wise as given below-

Exhibit 4.6: Mandatory use of recycled plastic in plastic packaging (% of plastic manufactured for the year)

Plastic packaging category	2024-25	2025-26	2026-27	2027-28 onwards
I	30	40	50	60
II	10	10	20	20
III	5	5	10	10

End of Life Disposal

(i) Only those plastics, which cannot be recycled will be sent for end-of-life disposal such as road guidelines issued by Indian Road Congress or Central Pollution Control Board from time to time.

(ii) The producers shall ensure end of life disposal of the plastic packaging waste only through methodologies specified in Rule 5 (1) (b) of Plastic Waste Management Rules, 2016.

4.3 Rigid Plastics Best Placed to Meet EPR Targets

Exhibit 4.7: Rigid Plastic Packaging best placed to meet EPR Targets

Category (As per EPR)	Recycling target (2025)	Recycled Content Target (2025)	Current Recycling Rates	Feasible Recyclability	Reusability
I-Rigid Plastics	50%	30%	>60% for PET	100%	100%
II- Flexible Packaging	30%	10%	<10%	Technically feasible, commercial viability lowdown-recycled into other applications such as road construction, waste-to-energy, downcycling and upcycling	Not reusable
III- MLP	30%	5%	0-0.5%	-	Not reusable

India's regulations, together with the growing awareness among consumers, have increased the demand for higher value recycling applications. In turn, industry participants have enhanced focus on increasing the post-consumer recycled content in their products and adopting other innovative recycling improvements and technologies.

4.4 Impact on the Packaging Industry

Extended Producer Responsibility (EPR) is prompting significant changes in how packaging is designed, manufactured, and recovered in India. The following key areas demonstrate the transformative impact of EPR:

- **Sustainable Design:** Companies are reimagining packaging to enhance recyclability and reduce complexity, shifting away from hard-to-recycle multi-materials. For instance, in 2022, Manjushree Technopack Limited, one of the players in the rigid plastic packaging segment, partnered with the Indian Institute of Science, Bengaluru, to innovate sustainable plastic packaging solutions. Their collabo`ration aimed to upcycle and recycle thermoplastics for use in various rigid plastic packaging, focusing on transitioning from non-recyclable to recyclable monolayer materials. Manika Plastech Limited adopts sustainable design strategies that minimize

material usage, such as lightweight thinwall packaging solutions that use less material while maintaining strength & durability eco-friendly IML.

- **Recycled Content:** The emphasis on incorporating recycled plastics into packaging has stimulated the recycling ecosystem and created a market for collected waste. ALPLA collaborated with Coca-Cola India to launch Kinley, India's first packaged drinking water brand using 100% recycled PET (rPET) bottles. WEPL provides low impact alternatives such as post-consumer recycled and circular polymers to minimize the use of fossil feedstock, targeting 100% recyclability, reusability, or refill ability by 2025. Manika Plastech Limited incorporates recycled and eco-friendly materials, along with energy-efficient production processes. The company has partnerships with recycled polymer companies & worked with them to procure their recycled polymers plastic. In the last 3 years, Manika Plastech Limited has increased the use of recycled content from 9.92% in FY 2022 to 15.69% in 9M FY 2025.

- **Investment in Waste Management:** Companies are investing in waste collection infrastructure, collaborating with PROs and municipalities, and exploring advanced recycling technologies to achieve EPR goals. Chemco Group, for instance, integrates recycled ocean plastics into their products and operates recycling plants across India. They source post-consumer materials like bottles and caps to enhance sustainability. Another company, Tetra Pak, recycles 54% of its cartons annually, converting them into paper and other products. The company aims to achieve a 100% recycling rate and has identified four recycling partners across India with the technology to convert cartons into different products. Manika Plastech Limited collaborates with recycling firms & raw material suppliers to enhance waste management efficiency.

- **Innovation:** EPR encourages the exploration of alternative materials like bio based and biodegradable options, as well as reusable and refillable packaging models. For instance, ecovative design introduced innovative, mycelium-based packaging solutions that use mushroom roots to create biodegradable and compostable materials, reducing the reliance on non-renewable resources.

4.5 Actions and Commitments by Packaging players:

Exhibit 4.8: Actions and Commitments by brands:

Players	Actions & Commitment
Manika Plastech Limited	• The company processed 2,805 MT of recycled polymers in FY 2024 and 2,916 MT during the 9M FY 2025. • In 9M FY2025, 64% of the total energy consumed by the manufacturing plant situated at Hosur is generated through solar power.
SSF Plastics India Limited	• In the year 2024-25, the Company is planning to spend about INR 8,000 lakhs as Capital Expenditure green initiatives. • In FY 2024 5% of the total energy consumed by the manufacturing plants is generated through solar panels. • In FY2024, the company processed approximately 2,500 MT of post-consumer recycled.
Manjushree Technopack Limited	• Commitment to achieving Net-Zero emissions by CY2050, aligned with the Science-Based Targets Initiative (SBTi). • Aiming to achieve 71% renewable energy utilization across overall operations by FY 2027. • Targeting a 10% reduction in both hazardous and non-hazardous waste by the end of FY 2030. • Planning for a 25% reduction in both hazardous and non-hazardous waste by the end of FY 2050. • Between FY2023 and FY2024 45.21% of the energy utilized in operations during FY2024 was sourced from renewable energy. • 410% increase in in-house solar power utilization was recorded from FY2020 to FY2024. • Incorporated rainwater harvesting ability to reserve 60 million litres of water
Mold-Tek Packaging Limited	• Post-consumer recycled raw materials accounted for 15.36% of the total raw materials used in FY 2023-24, with a goal to increase this share to 30% by 2029. • 10% of the energy utilized in operations during FY 2023-24 was sourced from renewable energy. • Solar power systems installed across units contributed to an estimated carbon offset of 3,990.3 tons per year. • A significant 67% reduction in CO2 emissions per ton of output was achieved, decreasing from 0.90 metric tons in FY2023 to 0.60 metric tons in FY2024.

Players	Actions & Commitment
TPAC Packaging India Private Limited	• In CY 2023, TPAC reduced total energy consumption by 5.64% compared to CY 2022. • Total water consumption was reduced by 12.0% from CY2022 to CY 2023. • Between CY2022 to CY 2023 Hazardous Waste Reduction by 7.7% and Non-hazardous waste reduction of 31.2%. • In CY 2023 TPAC processed 5.4 tons of post-consumer recycled resin. • Committed to carbon neutrality by 2050. • Aiming for Net Zero emissions for Scope 1 and 2 by 2065.
National Polyplast (India) Private Limited	• Installed solar panels across manufacturing facilities and adopting renewable energy sources like solar and wind power to reduce reliance on non-renewable energy by 2027. • Adopt closed-loop systems where waste from one process becomes input for another, minimizing overall resource usage by 2027. • Upgrade to energy-efficient machinery that minimizes energy consumption while maintaining production capacity by 2027.
Weener Empire Plastics Limited	• By CY2025, all products will be designed to be recyclable, reusable, or refillable, supporting the company's commitment to a circular economy. • Targeting an increase in renewable energy usage from 52% to 90% by 2030, with 75% of energy already being renewable. • Aiming for a 70% reduction in Scope 1 and 2 greenhouse gas emissions by CY2030, the company has already achieved a 37% reduction in emissions from the baseline year of CY2019 to CY 2023. • The company targets to achieve zero waste to landfill by FY2025, having successfully reduced landfill waste from 5.3% to 2.3% in From CY 2019 to CY 2023.

Source: Company website, annual reports, secondary research,

Increasing Focus on EPR Compliant.

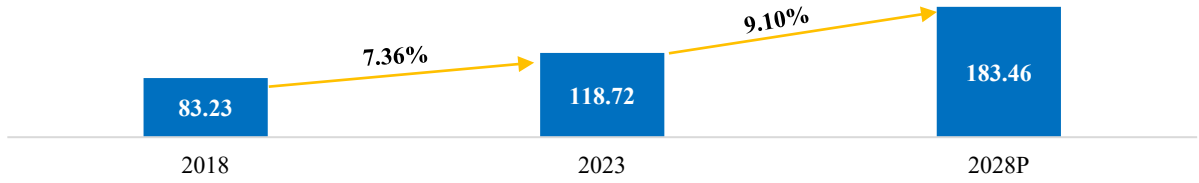
The increasing focus of end use segments and brands on being EPR compliant underscores a shift towards sustainable practices in response to regulatory pressures and consumer demand for environmentally responsible products. Companies are proactively adopting Extended Producer Responsibility initiatives to manage waste, promote recycling, and minimize their environmental footprint. By aligning with EPR frameworks, brands not only mitigate legal risks but also enhance their reputation, build customer loyalty, and access opportunities in the growing circular economy. This transition reflects a broader commitment to sustainability, operational efficiency, and long-term resource conservation, reinforcing their position as responsible and forward thinking market leaders.

5. Analysis of the End Use Industry in India – Battery Storage

5.1 Global and India battery market size and growth

The global battery market is expected to grow from USD 118.72 billion in CY 2023 to USD 183.46 billion in CY 2029 at a CAGR of 9.10%. Asia Pacific was the largest region in the batteries market in CY 2023, accounting for 40.45% of the global batteries market.

Exhibit 5.1: Global battery market size & Growth (USD billion) (CY)



Source: Secondary Research, Technopak Analysis

The United States leads as the top battery importer in the world, with imports rising from USD 7.88 billion in 2019 to USD 29.8 billion in CY 2023 growing at a 30.47% CAGR, driven by strong EV and energy storage demand. Germany follows closely with an import value of USD 26.52 billion in CY 2023. The below data highlights increasing global demand for battery across different countries.

Exhibit 5.2: Top 10 Importers of Battery (USD billion) (CY)

Importers	2018	2019	2020	2021	2022	2023	CAGR (2018-23)
USA	7.88	8.11	9.47	15.07	23.91	29.77	30.47%
Germany	4.61	5.54	8.11	12.77	18.40	26.52	41.87%
South Korea	1.55	1.58	2.00	3.67	6.09	8.83	41.60%
Czech	0.56	0.63	1.38	2.48	4.39	5.91	60.40%
Mexico	1.25	1.32	1.45	2.70	3.46	4.78	30.77%
Italy	0.99	1.01	1.27	2.29	3.53	4.64	36.24%
Belgium	0.67	1.12	1.45	1.97	3.24	4.44	46.01%
France	2.35	2.53	2.55	3.00	3.38	4.36	13.17%
United	1.66	1.93	1.82	2.33	3.30	4.34	21.21%
Japan	1.60	1.90	1.86	2.32	2.99	3.87	19.35%

Source: ITC Trade Map, Technopak Analysis
Note: Import values represent the total import of Secondary Batteries. HSN Code: 8507

China leads global battery exports, with global battery exports, growing at a 36.41% CAGR between CY 2018 to CY 2023, reaching USD 69.86 billion in CY 2023 driven by its dominance in its battery production, strong domestic supply chains, and government support. Its advanced manufacturing capabilities and cost advantages make it a key supplier for the global EV and energy storage markets.

Exhibit 5.3: Top 10 Exporter of Battery (USD billion) (CY)

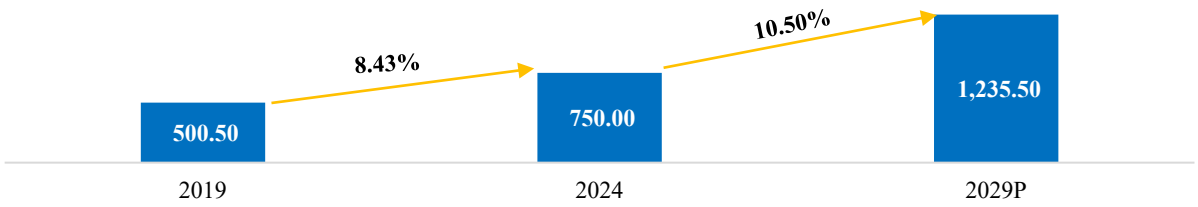
Exporters	2018	2019	2020	2021	2022	2023	CAGR (2018-23)
China	14.79	16.87	20.16	33.62	57.23	69.86	36.41%
Poland	1.50	2.80	5.33	8.74	9.58	12.53	52.83%
Hungary	0.84	1.45	2.93	4.48	7.42	11.29	68.04%
South Korea	7.23	7.42	7.51	8.67	9.98	9.83	6.34%
Germany	3.58	4.22	5.64	8.43	8.09	8.88	19.96%
USA	3.73	3.77	3.44	3.54	4.14	5.42	7.75%
Japan	5.16	4.65	4.53	5.60	5.43	4.91	-0.98%
Czech Republic	0.84	0.86	1.11	1.93	3.18	4.54	40.09%
Hong Kong	3.21	3.41	3.72	4.71	4.34	3.57	2.17%
Mexico	1.50	1.60	1.81	1.91	2.17	2.57	11.40%

Source: ITC Trade Map, Technopak Analysis
Note: Export values represent the total Export of Secondary Batteries Using HSN Code: 8507

India is emerging as a key player in the global battery industry, with battery demand projected to grow from 13 GWh in FY 2024 to 244 GWh by FY 2035. As of the end of CY 2023, India's lithium-ion battery manufacturing capacity is in its early stages, with a commissioned capacity of 6.7 GWh. Further, India has a well-established lead-acid battery manufacturer, catering primarily to the automotive including three-Wheeler (E-Rickshaw), telecommunications, inverter, and industrial segments. The sector is also witnessing significant capital expenditure, INR 11,000–12,000 crore allocated from FY 2024 to FY 2026 to enhance capacity, integrate lead recycling and diversifying into lithium-ion batteries.

The Indian batteries market is expected to grow from INR 750.00 billion in FY 2024 to INR 1235.50 billion in FY 2029 at a CAGR of ~10.50%. This growth is driven by rising demand across multiple sectors, particularly telecommunications, where reliable power backup is essential. Additional momentum comes from the automotive industry, renewable energy storage needs, and other emerging applications—further supported by government initiatives such as the PLI scheme.

Exhibit 5.4: India's battery market size & Growth (INR billion) (FY)



Source: Secondary Research, Technopak Analysis

Battery manufacturers in India include Exide Industries Private Limited, Amara Raja Batteries Limited, Luminous Power Technologies Private Limited, Livguard Energy Technologies Private Limited, Okaya Power Private Limited, HBL Power Systems etc. These companies play a crucial role in catering to the growing demand across automotive, industrial, renewable energy sectors and others.

Exhibit 5.5: India's battery manufacturer Revenue from Operation (INR Cr.)

Battery Manufacturers in India	FY 2019	FY 2024	CAGR (FY 2019-24)
Exide Industries Limited	14,720.88	16,769.73	2.64%
Amara Raja Energy & Mobility Limited	6,709.06	11,588.00	11.55%
Luminous Power Technologies Private Limited	3,402.58	4,387.03	5.21%
Livguard Energy Technologies Private Limited	1,240.73	3,499.41	23.04%
HBL Engineering Limited (Battery Division)	976.62	1,422.79	7.82%
Okaya Power Private Limited	820.80	NA	NA
Sakthi Accumulators Private Limited	79.47	NA	NA

Source: Annual reports &, Technopak Analysis

The country is witnessing rapid investments in battery production and recycling, strengthening its position in the evolving energy storage ecosystem.

Exhibit 5.6: Key major investment announcement in India's Battery Sector (CY)

Company	Investment Amount (INR) (Cr)	Location	Production Capacity	Year of Announcement / Completion
Amara Raja Batteries	9,500	Telangana	16 GWh (cells), 5 GWh (packs)	Announced 2023, Completion by 2033
Exide Industries	6,600	Karnataka	6 GWh (Phase 1), expandable to 12 GWh	Announced 2022, Phase 1 by 2024
GODI India	NA	Hyderabad	Plans for a giga factory	Announced 2022, Giga factory by 2024

International Battery Company	8,000	Karnataka	NMC prismatic cells	Announced 2023
Log 9 Materials	NA	Bengaluru	50 MWh (current), expanding to 1 GWh (cells) and 2 GWh (packs)	Announced 2023, Expansion by 2025
Nsure Reliable Power Solutions	1,000	Karnataka	1 GWh (initial), expandable to 5 GWh	Announced 2023, Completion Phase 1 by 2024
Ola Electric Mobility	NA	Tamil Nadu	1 GWh (initial), expandable to 20 GWh	Announced 2023, Operational from early 2024
Rajesh Exports	One of the three beneficiaries of the ₹ 18,100 crore PLI Scheme for ACC Battery Storage	Karnataka	5 GWh (advanced chemistry cells)	Announced 2023
Reliance New Energy	NA	Gujarat	Giga factory for LFP and sodium-ion batteries	Announced 2023, Completion by 2026
Tata Group (Agratas Energy Storage)	13,000	Gujarat	20 GWh	Announced 2023, Construction to begin in 2024
TDS Lithium-Ion Battery Gujarat Private Limited	NA	Gujarat	Lithium-ion battery exports worth INR 750 crore	Announced 2024, Exports beginning 2024

Source: Secondary research, Technopak Analysis

5.2 Growth drivers of the battery storage space sector in India

India's battery storage sector is witnessing significant growth, fuelled by the country's focus on renewable energy, the rising adoption of electric vehicles (EVs), and the increasing use of distributed energy systems. As India advances toward a sustainable energy future, battery storage is becoming essential for maintaining grid stability, enhancing energy efficiency, and enabling decarbonization. The primary drivers of this market include:

i. **Renewable Energy Expansion**: India aims to reach 500 GW of renewable energy capacity by 2030, with solar and wind playing key roles. However, their intermittent nature poses grid reliability challenges. Battery storage systems are vital in addressing the challenges, storing excess energy during peak generation, and supplying it during low output to stabilize the grid. They also support off-grid and microgrid solutions in remote areas, enhancing energy access. By enabling reliable, flexible power supply, battery storage is essential to integrating renewables and advancing India's clean energy goals.

ii. **Energy Access to rural and urban settings**: India's push for rural electrification and the growing need for backup power in remote areas are driving demand for battery storage in off-grid and microgrid systems. In rural areas, government led initiatives like Saubhagya and Deen Dayal Upadhyaya Gram Jyoti Yojana have significantly improved electrification rates, bringing power to millions of previously underserved households. These solutions are especially critical in regions with unreliable grid power, providing a dependable and uninterrupted energy supply. The government's electrification initiatives aim to provide energy access to the nearly 600,000 villages across India, many of which have limited or no connection to the central grid. Furthermore, Urban electrification in India has seen substantial advancement over the past few decades, with nearly universal access to grid electricity in most cities and towns.

With the rise in electrification, there has been a parallel increase in the dependence on stable, round-the-clock electricity access. This growing dependency is driving the demand for household energy storage solutions such as batteries, inverters etc., which provide backup during outages and enhance energy security, especially in regions still facing intermittent power supply.

The expansion of distributed renewable energy systems, particularly rooftop solar in both rural and urban homes, is further accelerating the need for localized energy storage. Households are increasingly integrating battery systems to store surplus solar energy for use during the night or during grid downtimes. This surge in demand for energy storage has direct implications for the battery casing industry. Battery casings, which serve as critical components ensuring the safety, durability, and efficiency of energy storage devices, are witnessing a parallel growth trajectory.

iii. **Increasing Automobile Sales Driving Battery Demand:** The growth of the automobile industry in India—spanning two-wheelers, passenger vehicles, commercial transport, and agricultural machinery—has a significant impact on the battery storage sector. Every internal combustion engine (ICE) based vehicle relies on a battery for essential functions such as ignition, lighting, and powering electronic components. As vehicle sales continue to rise, the demand for automotive batteries, grows in parallel. Importantly, this surge is not limited to new vehicle production; it extends substantially into the replacement market, which constitutes a major and recurring revenue stream for the battery storage sector. Automotive batteries typically have a lifespan of 3 to 4 years under normal driving and climatic conditions. Given India's expanding vehicle base—the replacement cycle creates a steady and predictable demand for batteries, regardless of new vehicle sales.

iv. **Electric Vehicle (EV) Acceptance**: The government's FAME II policy, along with incentives for EV manufacturing, has significantly boosted the demand for battery storage systems. EV batteries form a major share of the battery storage market, with demand expected to rise sharply as the adoption of electric vehicles accelerates across passenger, commercial, and two-wheeler segments. The demand for battery storage systems has surged in tandem with the rise of electric vehicles. As EV adoption gains momentum across passenger vehicles, commercial fleets, two and three-wheelers segment, the market for EV batteries and, consequently, battery storage systems, is expected to expand exponentially.

v. **Industrial and Commercial Demand**: Industries and commercial establishments are increasingly adopting energy storage systems to manage peak load demands and minimize dependence on costly diesel generators. This transition is fuelled by the potential for cost savings and a heightened focus on sustainability. One of the primary drivers for energy storage adoption is the ability to effectively manage peak load demands. Energy intensive industries often face significant spikes in energy consumption during peak hours, leading to higher electricity tariffs. By utilizing energy storage systems, these establishments can store electricity during off-peak hours when tariffs are lower and deploy the stored energy during peak periods. This not only reduces operational costs but also ensures uninterrupted power supply without overloading the grid.

For many commercial and industrial users, diesel generators have traditionally been the go-to solution for backup power. However, the rising cost of diesel fuel and growing concerns over its environmental impact have prompted a shift toward cleaner alternatives. Energy storage systems, particularly those powered by renewable energy sources like solar, provide a cost effective and eco-friendly replacement for diesel generators. These systems reduce greenhouse gas emissions, lower operational costs, and align with global sustainability goals.

The financial benefits of adopting energy storage solutions extend beyond tariff optimization. With advancements in battery technologies, the upfront costs of energy storage systems have been declining, making them increasingly accessible for businesses of all sizes. Furthermore, government incentives and subsidies aimed at promoting clean energy adoption further enhance the economic viability of these systems. In an era where environmental, social, and governance (ESG) considerations are becoming central to business operations, energy storage solutions offer a tangible way for companies to demonstrate their commitment to sustainability. By integrating ESS into their energy strategies, businesses can reduce their carbon footprint, enhance energy efficiency, and contribute to the global transition toward a cleaner energy future.

vi. **Regulatory Support from the Government**: The Indian government has been instrumental in driving the adoption and growth of energy storage systems (ESS) through robust regulatory support and targeted policy interventions. Key initiatives, such as the National Energy Storage Mission (NESM), aim to establish India as a global hub for energy storage solutions by fostering domestic manufacturing, encouraging research and development (R&D) in advanced battery technologies, and creating a conducive ecosystem for innovation and investment.

a) ***National Energy Storage Mission (NESM)***: The NESM serves as a foundation policy for accelerating energy storage adoption in India. Its objectives include:
   - Promoting Domestic Manufacturing: The mission emphasizes the development of local manufacturing capabilities for advanced batteries, reducing reliance on imports and fostering self-reliance in the energy storage sector.
   - Encouraging Research and Development: By incentivizing R&D activities, the NESM seeks to drive innovation in battery technologies, particularly in areas like lithium-ion, solid state, and other next generation batteries.
   - Enabling Large Scale Deployment: The policy aims to facilitate large scale deployment of ESS across renewable energy projects, electric vehicles, and grid applications, ensuring scalability and cost effectiveness.

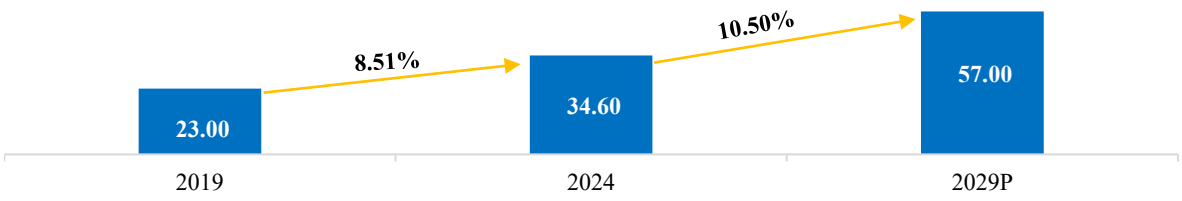
b) ***Make in India Initiative***: Aligned with the NESM, the Make in India initiative provides additional impetus to domestic battery production by:
   - Offering Financial Incentives: The government has introduced schemes such as PLI to attract investments in battery manufacturing.
   - Simplifying Regulatory Frameworks: Streamlined approval processes and favourable taxation policies are reducing entry barriers for manufacturers.
   - Encouraging Export Potential: By building a strong domestic manufacturing base, the initiative aims to position India as an exporter of battery storage systems and components.

The government's proactive initiatives are fostering a conducive environment for investment and innovation within the energy storage sector. Notable results of these efforts include a reduction in costs, with increased domestic production expected to make battery storage systems more affordable and accessible for diverse applications. Moreover, by decreasing dependency on imports, India is bolstering its energy security, gaining greater control over essential technologies.

5.3 Overview of Battery casing sector in India

The battery casing sector in India is gaining momentum alongside the rapid growth of battery storage systems and renewable energy integration. Battery casings are critical components that ensure the safety, structural integrity, and thermal management of battery packs. The battery casing market in India is valued at INR 34.60 billion in FY 2024 and is expected to grow at a CAGR of ~10.5% in the next five years to reach a market value of INR 57.00 billion by FY 2029. As the country scales up domestic battery manufacturing under initiatives like the PLI scheme and focuses on reducing import dependency, demand for high quality, locally produced casings is rising.

Exhibit 5.7: India Battery casing market size (INR billion) (FY)



Source: Secondary research, Technopak Analysis

The battery casing is a fundamental component that significantly impacts the overall safety, efficiency, and reliability of the final battery system. Beyond serving as a physical enclosure, it plays a crucial role in protecting internal cells from mechanical shocks, environmental factors, and potential thermal or electrical hazards. Considering that the energy storage in vehicles and power backup systems are critical products, the performance, and the quality of the battery casing products of companies like Manika Plastech Limited, Bindal Technopolymer Private Limited, Tirth Polymers Private Limited and all other players, play a key role in ensuring the durability and performance of the final products. The growth of the battery casing sector is closely aligned with the rapid expansion of sectors such as renewable energy, battery storage systems, home inverters, automobiles including EVs etc. As the demand for advanced energy solutions rises, the need for reliable, safe, and efficient battery casings becomes increasingly critical.

5.3.1 Types of players that cater to the battery casing demand and comparison of their respective proposition

In India, several types of players cater to the growing demand for battery casings, driven primarily by the expansion of the electric vehicle and renewable energy sectors. These players vary in their core offerings, technology expertise, and target markets. Here is an overview of the different types of players in the Indian battery casing market, followed by a comparison of their respective propositions:

Exhibit 5.8: Types of Players in the battery casing market

Company	Technology	Products	End User Industries
Manika Plastech Limited	Injection Moulding Technology	Battery Casing, Pail packaging, IML containers etc.	Automotive, Railways, UPS/ Inverter, Solar, Telecom, Paints & Lubricants, Food, Ice Cream and Dairy etc.
Bindal Technopolymer Private Limited	Injection Moulding Technology	Plastic battery box container, water purifiers, Plastic Evaporative Air Cooler, Trench Drains etc.	Automotive, Consumer, UPS/Inverter, Solar, etc.
Tirth Polymers Private Limited	Injection Moulding Technology	Heat sealed battery containers, covers & accessories	Automotive, Inverter/UPS, etc.

Source: Secondary research, Technopak Analysis

5.3.2 Key trends if any in the battery casing space towards packing solutions

The battery casing industry, especially in applications like electric vehicles (EVs) and energy storage systems (ESS), is witnessing key trends that emphasize safety, efficiency, sustainability, and cost effectiveness. Here are the prominent developments shaping the sector:

- **Lightweight and Durable Materials**: The demand for lightweight and strong materials in battery casing design is increasing, especially in electric vehicles where weight impacts efficiency and range. Advanced materials like carbon fibre, composites, and high strength aluminium alloys are being adopted to reduce weight while maintaining structural integrity.
- **Modular and Scalable Designs**: Modular battery pack designs are gaining traction in EVs and ESS applications. These designs offer scalability, customization, and ease of maintenance. Battery casings are now engineered to house modular cells, enabling easy replacement, expansion, or reconfiguration without a complete system redesign.
- **Sustainability and Recycling**: Sustainability in battery manufacturing is becoming a priority. Manufacturers are designing casings with recyclable materials like aluminium and biodegradable plastics. Additionally, recycling initiatives are being introduced to minimize the environmental impact of battery production and disposal.
- **Smart Casings with Monitoring Systems**: Advanced battery management systems (BMS) and embedded sensors are now integrated into casings to monitor temperature, voltage, and cell health in real time. These smart features enable predictive maintenance, reducing the likelihood of battery failure and enhancing overall system reliability.
- **Cost-Effective High-Volume Production**: To meet growing demand for EVs and renewable energy storage, manufacturers are prioritizing cost-efficient production methods. Automation, injection moulding, and die-casting are increasingly used to achieve precision, scalability, and cost reductions in high volume manufacturing.
- **3D-Printed Casings**: Additive manufacturing is enabling the creation of highly customized and intricate battery enclosures. This approach is particularly useful for lightweight designs and complex geometries that improve performance and maximize space utilization, especially in niche applications.
- **Integrated Designs with Battery Cells**: Manufacturers are advancing toward enclosures that integrate directly with battery cells, streamlining efficiency and compactness. These integrated designs enable the casing to serve multiple purposes, including heat dissipation, structural support, and safety shielding, all within a single package.

5.3.3 Analysis of the growth in Solar and Auto sector and outline the growth potential therefore for the battery casing space for both new & replacement demand

The battery casing market is set for significant expansion, fuelled by the growing solar and EV industries. Rising demand for both new and replacement casings will drive innovation, with customized and high-performance materials becoming essential to the evolving market landscape.

Category	Solar	Automotive (EVs)	Battery Casing growth potential
Key Growth Drivers	Government schemes (PM-KUSUM, Rooftop Solar, PLI for Batteries), rising energy storage demand	FAME-II subsidies, rising fuel prices, EV adoption by OEMs	Increasing need for lightweight, durable, and thermally efficient casings
New Demand	Growth in off-grid & residential solar battery storage	Rising EV battery production for 2W, 3W, and passenger EVs	Need for customized, impact resistant, and heat-resistant battery casings
Replacement Demand	Lead-acid batteries require replacement every 4-5 years, shift to lithium-ion requires new casings	EV battery lifecycle of 6-8 years, demand for refurbished & second life battery casings	Recycling & second life applications will drive casing demand
Key Materials & Innovation	Durable, corrosion resistant casings (Aluminium, Composite Polymers)	Lightweight, high strength materials (Aluminium alloys, Carbon Composites)	Advanced polymer & metal fabrication technologies for efficiency
Opportunities	Increasing residential & industrial adoption of solar + battery storage systems	Growth in battery swapping & retrofitted EV kits	Strong demand for scalable, modular casing solutions for next gen batteries
Challenges	Cost of lithium-ion storage, limited battery recycling infrastructure	High initial EV cost, battery disposal & recycling challenges	Need for standardized designs for easy integration & second life applications

Source: Technopak's analysis

5.4 Key sub-industries served by company

i. **Home UPS**: The India Home UPS market is experiencing significant growth, driven by the increasing need for reliable power solutions amid frequent outages and the rise in digitization and remote work. The primary factors leading to market growth include:

- Persistent power instability across various regions in India, especially in rural areas with underdeveloped infrastructure.
- The surge in digital activities and remote working arrangements, necessitating uninterrupted power for devices.
- Growing consumer awareness regarding the importance of power backup solutions.

Few challenges hindering market expansion encompass are:

- High initial costs associated with quality UPS systems, which can deter price sensitive consumers.
- Ongoing maintenance expenses, particularly for traditional lead-acid battery-based systems.

The Home Inverter/DUPS market size in India has been witnessing steady growth, driven by increasing power demand, electrification, and technological advancements. The market is growing at a CAGR of ~10%-12%. Major drivers include urbanization, power backup demand, and the shift toward lithium-ion battery adoption. The market is expected to exceed INR 18,500 crore by FY 2026, with increasing adoption of smart inverters and hybrid energy solutions. Lead-Acid Batteries maintains the highest market share at ~65% followed by Nickel cadmium batteries & Lithium-Ion batteries.

Exhibit 5.9: Home UPS market size

Financial Year	Market Size *(INR crores)*
FY 2021	11,500.00
FY 2022	12,650.00
FY 2023	13,915.00
FY 2024	15,306.00
FY 2026E	18,520.00

Source: Secondary research, Technopak Analysis

Ankur Bisen
Senior Partner

ii. **Solar Energy Sector**: India's solar sector is experiencing rapid growth, fuelled by the country's ambitious target of achieving 500 GW of renewable energy capacity by 2030, with a significant portion coming from solar power. The government's push for solar energy adoption, exemplified by initiatives such as the National Solar Mission, is accelerating the expansion of solar infrastructure across the nation. As India increasingly relies on solar energy, energy storage systems (ESS) have become essential for maintaining a steady and reliable power supply, driving the demand for high-capacity batteries. This, in turn, has created a need for advanced battery casings that can effectively store solar energy.

In FY 2018, the installed capacity stood at 22.35 GW, which rose to 35.60 GW in FY 2020, reflecting substantial progress in solar energy adoption. This upward trend continued in FY 2022, reaching 54.00 GW, and further accelerated to 81.81 GW in FY 2024. The consistent rise in capacity underscores India's commitment to expanding its solar energy infrastructure, driven by ambitious renewable energy targets and supportive government initiatives.

Exhibit 5.10: Solar Energy installed Capacity (in GW)(FY)

Source: Ministry of New and Renewable Energy

The ongoing decentralization of the energy grid further promotes the deployment of energy storage solutions for solar energy, particularly in residential and commercial spaces. As the adoption of solar energy continues to grow, it will lead to a surge in demand for battery enclosures, as new energy storage systems are installed. These batteries require casings that are durable, lightweight, and heat resistant to optimize their performance. Furthermore, as solar systems age and technology advances, there will be an increasing need for the replacement of older battery casings. Over time, wear and tear can compromise the effectiveness of older casings, which will drive the demand for replacements to accommodate newer, more efficient battery technologies.

iii. **Electric Three-Wheeler:** The electric three-wheeler sector in India is experiencing rapid growth, driven by government policies like FAME II (Faster Adoption and Manufacturing of Hybrid and Electric Vehicles), PM E-DRIVE - which incentivize around 3.2 lakhs of EV three-wheeler. The demand for batteries is rising as electric three-wheelers are become more popular means of local transport, due to their lighter weight and greater fuel/ energy efficiency. Efforts to increase the range and reduce the cost of EVs are also spurring innovations in battery technologies.

The electric three-wheelers market in India has witnessed substantial growth between FY 2020 and FY 2024. electric three-wheelers sold from 143,051 units in FY 2020 to 632,485 units in FY 2024, with a steady 10% increase between FY 2020-2022 and a sharp 91% growth from FY 2022-2024, indicating strong demand in the commercial and shared mobility sectors.

This growth in the EV sector significantly impacts the demand for battery casings. Electric vehicle batteries are large and often require custom designed enclosures to ensure safety, heat management, and structural integrity, driving a considerable need for high quality, durable battery casings that comply with safety standards. As the EV market expands, battery casings will eventually face wear and tear due to aging, accidents, or performance issues, creating a growing need for replacement. Additionally, as battery technology evolves rapidly, older casings may need to be replaced with newer, more efficient designs. The degradation of battery packs over time further contributes to the demand for replacement or upgraded enclosures.

Several key factors drive the demand for battery casings in both the solar and EV sectors. Technological advancements in battery systems require casings that can meet evolving specifications and safety standards, such as heat resistance, impact resistance, and lightweight materials. Stricter safety regulations surrounding battery powered systems also increase the need for advanced casings that can prevent thermal runaway, leakage, and physical damage. Additionally, sustainability considerations are becoming increasingly

important, with a growing demand for battery casings made from recyclable materials, as both the solar and EV sectors aim to reduce their environmental footprint.

The market for battery casings holds significant growth potential. The ongoing rise in EV adoption, driven by government incentives and environmental concerns, will continue to fuel both new and replacement demand for battery enclosures. As automakers, both global and local, shift toward electrification, this market is poised for rapid growth. Furthermore, as more solar energy systems rely on energy storage solutions especially in off-grid and hybrid applications the demand for battery casings in the solar sector is set to see strong growth in commercial and residential applications. Over time, older systems in both the automotive and solar sectors will require battery pack replacements, ensuring a consistent demand for replacement enclosures as battery technologies evolve.

iv. **Telecommunications**: The telecom industry relies on an extensive network of mobile phone towers and field facilities to ensure uninterrupted communication and internet services. These facilities require a stable and highly reliable power supply, primarily sourced from the electrical grid, and converted into direct current (DC) at -48 volts for wired networks and +24 volts for wireless networks. To maintain operational continuity, most telecom facilities are mandated to have at least 8 hours of backup power. However, in regions prone to prolonged outages, such as hurricane prone areas, backup systems must provide power for 24 to 72 hours. This is typically achieved using lead-acid batteries, which remain charged through the grid and supply stored electricity when needed.

Lead-acid batteries continue to dominate the telecom industry due to their affordability compared to newer technologies like lithium-ion (Li-ion) batteries. Their cost effectiveness and reliability make them a preferred choice for backup power solutions. However, with the growing need for energy efficient solutions to prevent power failures and reduce generator fuel consumption, the industry is gradually shifting toward more advanced battery technologies. These emerging solutions aim to enhance operational efficiency, ensure sustainability, and reduce dependency on traditional backup power sources.

Exhibit 5.11: Wireless Subscriber Base (In million) (FY)

Source: Telecom Regulatory Authority of India (TRAI)

v. **Railways**: The Indian Railways is undergoing a major transformation, with the government spearheading large scale projects to modernize, expand, and upgrade the sector. These initiatives are expected to drive significant demand for industrial batteries. Key advancements include the development of high-speed passenger and freight corridors, large scale gauge conversions, improved network connectivity, digital transactions, advanced signalling systems, and renewable energy-powered backup systems. In response, leading regional battery manufacturers such as HBL, Exide, and Amara Raja are diversifying their industrial battery portfolios to strengthen their market positions, primarily through railway battery supply contracts.

A key driver of this demand is the Dedicated Freight Corridor (DFC) project. In January 2021, the government inaugurated a 306 km section of the Western DFC between Rewari and Madar, designed to alleviate congestion by creating dedicated freight tracks. In a strategic effort to enhance its freight transportation capabilities, Indian Railways aims to increase freight traffic from 1.2 billion MT in 2019 to 3.3 billion MT by 2030. This ambitious expansion will be driven by the development of Dedicated Freight Corridors (DFCs), which are designed to improve cargo transport efficiency and strengthen the logistics infrastructure. To support this initiative, Indian Railways has awarded a contract worth Rs. 1,617 crores for the supply of 4,000 BOXNS wagons, which will play a crucial role in increasing freight capacity. BOXNS wagons offer superior performance compared to traditional BOBRN wagons, with an axle load capacity of 25 MT instead of 22.9 MT and a load capacity of 81.25 MT compared to 80.00 MT. This upgrade will significantly enhance the efficiency and carrying capacity of the existing fleet. The initiative represents a major milestone in Indian Railways' long-term strategy to increase its share of freight traffic from 27% to 45% by 2030, aligning with broader efforts to modernize and optimize the nation's transportation network.

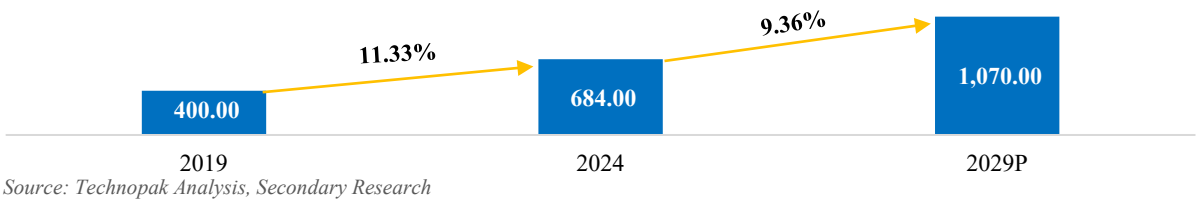
6. Analysis of the End Use Industry in India - Others

India's packaging industry is projected to grow at a rate of 6.68% from FY 2024 to FY 2029, driven by the country's expanding economy, rapid urbanization, and evolving consumer preferences. The packaging sector plays a vital role in protecting products, enhancing their appeal, and ensuring convenience across industries such as FMCG – paints, food and beverages, dairy, pharmaceuticals, agrochemicals, personal care, consumer durables, alcoholic beverages etc. With a growing focus on environmental sustainability, regulatory compliance, and technological advancements, the industry is transitioning from traditional packaging materials to innovative solutions like smart packaging and eco-friendly alternatives. These factors position the Indian packaging industry for continued growth and transformation in the years ahead.

6.1 Overview of Paints and coatings Industry

Indian paints and coatings market was valued at INR 400.00 billion in FY 2019 and reached INR 684.00 billion in FY 2024, growing at a CAGR of ~11.33%. It is projected to reach INR 1070.00 billion by FY 2029, growing at a CAGR of ~9.36% between FY 2024 and FY 2029. This growth is driven by factors such as rapid urbanization, rising disposable incomes, and increased infrastructure development. As per the secondary resource, the market was estimated at USD 9.50 billion in CY 2024 and further expected to reach USD 15.00 billion by CY 2029.

Exhibit 6.1: Indian paints and coatings market (INR billion) (FY)



Source: Technopak Analysis, Secondary Research
For calculation purposes, 1 USD = 80 INR

The Indian paints industry is primarily categorized into two major segments: Decorative paints and Industrial paints. The decorative paints segment dominates the market, accounting for about 70-75% of the market share, primarily fuelled by the demand for home and building aesthetics, propelled by India's expanding middle class, rapid urbanization, and a growing emphasis on home improvement. This segment includes several types, such as emulsion paints, Enamel paints, Distemper paints etc. On other hand, the industrial paints, which constitute the remaining 25% of the market, are tailored for manufacturing, automotive, and protective purposes.

As the Indian Paints and coatings market is growing, landscape is becoming increasingly competitive, with new entrants like Grasim Paints (Birla Opus), JSW etc. entering the market, capturing the market share of major players in the segment. However, the market is still being dominated by key players in the Indian paints industry Asian Paints, Berger Paints, and Kansai Nerolac - collectively hold a dominant market share of over ~80%, reflecting their strong presence in both decorative and industrial segments. Other emerging companies in the paints segment in India include Akzo Nobel India, JSW Paints, Grasim Paints (Birla Opus), Indigo Paints etc.

Exhibit 6.2: India's key paint and coating manufacturer and their Revenue from Operation (INR billion)

Paint Manufacturers in India	FY 2019	FY 2024	CAGR (FY 2019-24)
Asian Paints	192.49	354.95	13.02%
Berger Paints	60.62	111.99	13.06%
Kansai Nerolac	54.24	78.01	7.54%
Akzo Nobel India	29.18	39.62	6.30%
JSW paints	NA	20.97	NA
Indigo Paints	5.36	13.06	21.72%

Source: Annual reports &, Technopak Analysis

6.1.1 Key Growth Drivers of Paints and Coatings Industry in India

- **Rapid urbanization:** The need for housing and commercial spaces is escalating as India's urban population continues to grow. As of CY 2023, 36.40% of India's population resided in an urban setup.

It requires more construction to accommodate the rising population leading to a surge in construction activity. This fuels the demand for paints for both interior and exterior applications, contributing to the growth of the paints market.

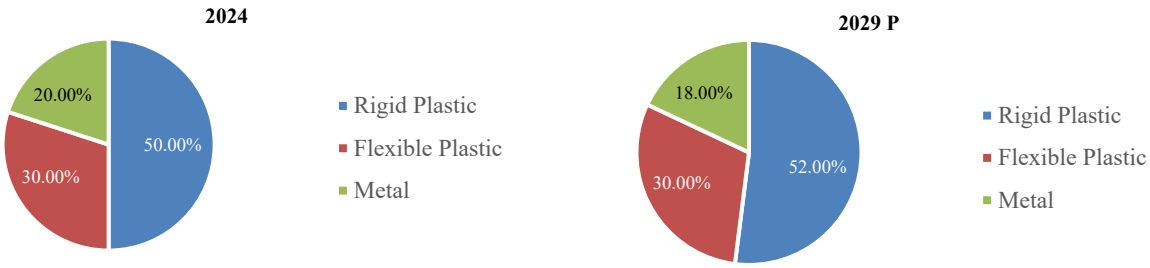
- **Infrastructure Initiatives**: Government programs like the Pradhan Mantri Awas Yojana (PMAY) and Smart City Mission are fostering extensive infrastructure development, creating a robust demand for both architectural coatings and thinwall used in construction.
- **Residential and commercial renovation:** In addition to the new construction, the renovation and repairing of existing structures are common in India as homeowners and businesses seek to upgrade and modernize their properties to be in line with the prevailing trends of colour, designs, and constructions. These trends add to the demand for paints as consumers invest in new paintings and coatings solutions.
- **Water Based and Eco-Friendly Options:** The shift towards water-based paints and environmentally friendly products is gaining momentum, aligning with global sustainability trends and regulatory pressures.
- **Expansion of retail distribution networks:** The expansion of retail distribution networks, including paint and hardware stores, home improvement centres, and e-commerce platforms, improves accessibility and availability of paints to consumers across urban and rural areas. Enhanced distribution channels facilitate market penetration and contribute to the growth of the paints industry.

6.1.2 Share of the Packaging Market in Paints Industry- By Material Type

The expansion of the paint sector has a direct and significant impact on the growth of the plastic packaging industry. As demand for paints rises the need for efficient, durable, and cost-effective packaging solutions also increases. Plastic packaging, particularly in the form of PP pails, HDPE containers, and laminated flexible pouches, plays a critical role in meeting the functional and logistical needs of paint manufacturers. Plastic containers are preferred due to their lightweight nature, ease of handling, and resistance to corrosion and chemical reaction with paint contents.

The market for paints packaging is broadly divided into three categories based on the type of material: Rigid Plastic, Flexible Plastic and Metal. Out of these, rigid plastic is the most popular material used in paint packaging owing to its attributes of recyclability and reusability, which ensures less spillage and low cost of production. Rigid plastic packaging attributed ~50.00% to the fast growing in paints. This is followed by flexible plastic that accounted for ~30.00% in the paints packaging market for FY 2024.

Exhibit 6.3: Share of Paints Packaging Market- By Material Type (FY)



Source: Technopak Analysis, Secondary Research

6.1.3 Applications of Pails in Paints and coatings industry

Pails are versatile containers widely used across industries due to their durability, stickability, and ability to store both solid and liquid materials securely. They are extensively used in the paints and coatings industry for the storage, packaging, and transportation of various products. They serve as ideal containers for both water based and solvent based paints, offering airtight sealing that helps maintain product quality and extend shelf life. The design of pails—typically with secure lids, strong handles, and stackable shapes—ensures ease of handling during shipping and storage, even in large volumes. Given these factors, the demand for durable and reliable packaging solutions such as plastic pails is anticipated to grow in parallel with the expanding paints and coatings industry. Pail division of companies such as Manika Plastech Limited caters to sectors such as paints, lubricants, agrochemicals, etc.

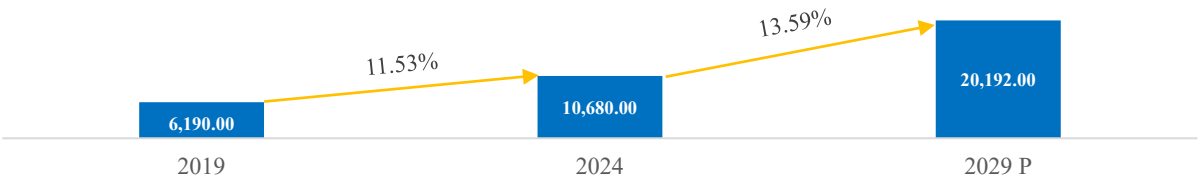
6.2 Overview of the FMCG Industry in India

6.2.1 Packaged Food (Includes Packaged Beverages and Nutraceuticals)

Indian packaged food and beverage market was valued at INR 6,190.00 billion in FY 2019 and reached to INR 10,680.00 billion in FY 2024, growing at a CAGR of ~11.53%. It is projected to reach INR 20,192.00 billion by FY 2029, growing at a CAGR of ~13.59% between FY 2024 and FY 2029.

The overall ice cream market in India is expanding at an annual growth rate of 12-15%, projected to grow from INR 272.00 billion in FY 2023 to over INR 400.00 billion by FY 2025. This surge in ice cream consumption further fuels the demand for polypropylene packaging, particularly for tubs, containers, and other packaging formats used in frozen desserts.

Exhibit 6.4: Indian Packaged Food and Packaged Beverages Market (in INR billion) (FY)



Source: Technopak Analysis, Secondary Research
Note: Packaged Food & Beverage market includes Packaged Staples, other Packaged Food, Packaged Dairy (Fresh), Packaged Meat, Nutraceuticals and Packaged Beverage)
Packaged Beverages, does not include Alcoholic Beverages

Packaging plays a pivotal role in branding, marketing, and product differentiation in the packaged food and beverage sectors. It enhances product appeal through design and convenience, while also ensures product quality, extends shelf life, and provides safety during transportation. Major players in the industry, such as Britannia, Nestlé India, and ITC in packaged food, and PepsiCo, Coca-Cola, and Parle Agro in beverages, rely heavily on effective packaging solutions to meet market demands. As the market continues to grow, packaging remains a critical factor for success, driving innovation and sustainability.

6.2.2 Key Growth Drivers of Packaged Food and Packaged Beverages Industry in India

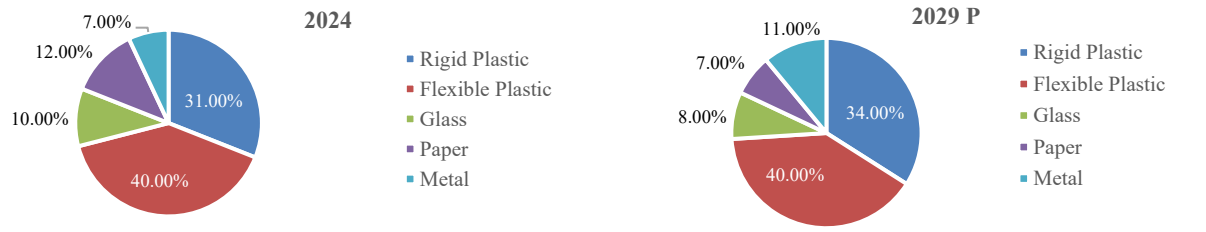
- **Urbanization & Busy Lifestyles:** With 36.40% of India's population residing in cities and the rise of dual income households, demand for ready-to-eat (RTE) meals, snacks, and beverages is increasing. The RTE market is projected to reach INR 25.00 billion by FY 2025, driven by convenience and time constraints. Additionally, busy lifestyles have fuelled the growth of online food delivery, with consumers preferring to order meals instead of cooking.
- **Health Consciousness**: Consumers are increasingly opting for organic, low sugar, and functional beverages like plant-based drinks and fortified juices. Health focused segments, including bottled water and energy drinks, are seeing strong demand, particularly among millennials and Gen Z, who prioritize nutritional transparency.
- **Demographic Shifts:** A growing youth workforce and an expanding middle class are driving demand for convenient and branded food products. The transition from multi generational to nuclear families has further boosted the preference for consistent quality and hassle-free meal solutions. Notably, Gen Z prefers ordering food online, contributing to the rapid growth of food delivery platforms.

6.2.3 Share of the Market in Packaged Food and Packaged Beverages Industry- By Material Type

The market for packaged food is broadly divided into five categories based on the type of material: Rigid Plastic, Flexible Plastic, Glass, Paper, and Metal. Out of these, flexible plastic is the most popular material used in food

packaging owing to its recyclability and reusability followed by rigid plastic. Flexible plastic packaging contributed ~40.00%, followed by rigid plastic which accounts for ~31.00% in the packaged food market for FY 2023.

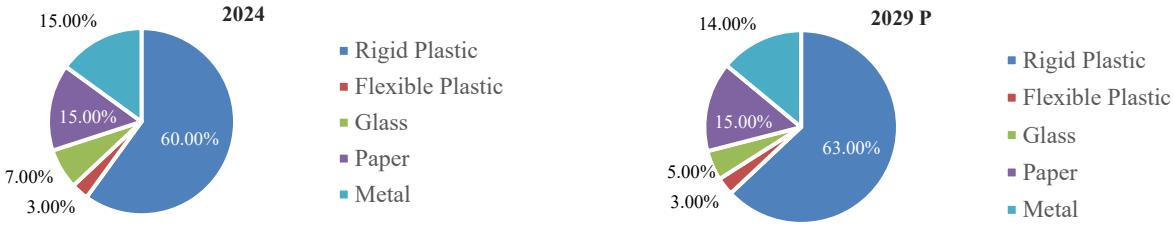
Exhibit 6.5: Share of Packaged Food Market - By Material Type (FY)



Source: Technopak Analysis, Secondary Research

The market for packaged beverages is broadly divided into five categories based on the type of material: Rigid Plastic, Flexible Plastic, Glass, Metal & Paper. Out of this rigid plastic is the most popular material used in packaged beverages owing to its attributes such as recycling, and reusability followed by metal and paper which assures less spillage. In FY 2024, rigid plastic packaging dominated the packaged beverage market, comprising approximately 60.00% of the total. Metal and paper packaging each contributed around 15.00%, highlighting their significant but smaller roles in the industry.

Exhibit 6.6: Share of Packaged Beverages Market - By Material Type (FY)

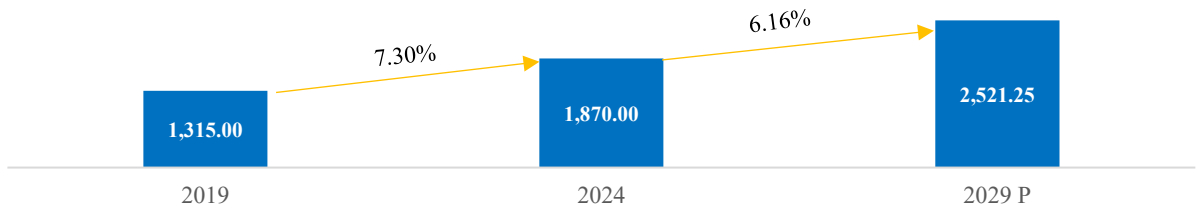


Source: Technopak Analysis, Secondary Research

6.3 Non-Food FMCG (Includes Beauty & Personal Care and Home Care)

Indian non-food FMCG market was valued at INR 1,315.00 billion in FY 2019 and reached INR 1,870.00 billion in FY 2024, growing at a CAGR of ~7.30%. Further, it is projected to reach INR 2,521.25 billion by FY 2029, growing at a CAGR of ~6.16% from FY 2024.

Exhibit 6.7: Indian Non-Food FMCG Market (in INR billion) (FY)



Source: Technopak Analysis, Secondary Research

6.3.1 Key Growth Drivers of Non-Food FMCG (Including Beauty & Personal Care) Industry in India

- **E-commerce Growth & Digital Penetration**: The rise of e-commerce and digital platforms has transformed the beauty, personal care, and home care industries in India. Increasing internet penetration and affordable smartphones have enabled even Tier 2 and Tier 3 consumers to shop online. Marketplaces like Nykaa, Amazon, and Flipkart offer competitive pricing, doorstep delivery, and AI-driven recommendations, enhancing convenience.
- **Modern Retail as a Growth Driver**: The FMCG sector is shifting towards organized retail due to changing consumption habits and the growth of modern trade. Consumers, especially in metro cities, prefer

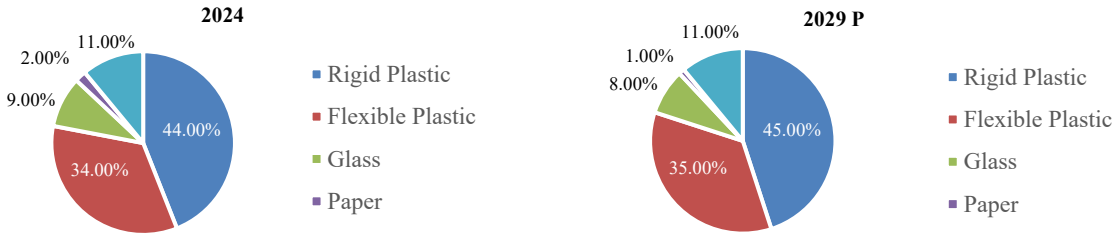
supermarkets, e-commerce, and wellness focused pharmacies, which now offer beauty and personal care products. E-commerce platforms further support this shift, covering ~80% of serviceable pin codes in India.

- **Rural Penetration & Consumption**: Rising awareness, disposable incomes, and connectivity are driving FMCG growth in rural areas, particularly in home and personal care segments.
- **Expansion of Organized Retail**: The rise of supermarkets, hypermarkets, and specialty stores is increasing accessibility, offering wider product choices and a better shopping experience, while digital integration enhances consumer reach.

6.3.2 Share of the Market in Beauty & Personal Care Industry

The market for beauty and personal care packaging is broadly divided into 5 categories based on the type of material: Rigid Plastic, Flexible Plastic, Glass, Metal and Paper. Out of these, rigid plastic is the most popular material used in beauty & personal care packaging owing to its attributes of recyclability and reusability, followed by flexible plastic. The rigid plastic packaging attributed to ~44.00%, followed by flexible plastic accounting for ~34.00% in the beauty and personal care packaging market for FY 2024.

Exhibit 6.8: Share of the Beauty & Personal Care Market- By Material Type (FY)



Source: Technopak Analysis, Secondary Research

6.3.3 Application of Thinwall packaging containers in Food and Non-Food FMCG.

Thinwall packaging containers, produced primarily through high-speed injection moulding, have become an essential packaging solution across the FMCG sector due to their lightweight, durable, and cost-efficient nature. In the food industry, these containers are widely used for products such as yogurt, curd, butter, cheese spreads, ice creams, ready-to-eat meals, snacks, sauces, dips etc. Their excellent barrier properties protect food from moisture and oxygen, helping to maintain freshness and extend shelf life. In the non-food FMCG segment, thinwall packaging is increasingly popular for personal care products like creams, gels, and scrubs, etc. Their thin yet durable design allows for easy customization in shape, size, and branding, making them ideal for retail packaging and enhancing shelf appeal.

The demand for thinwall packaging containers will rise simultaneously with the growth of industries such as food and beverages including dairy, pharmaceuticals, personal care, consumer goods etc. As these sectors expand, there is an increasing need for efficient, lightweight, and cost-effective packaging solutions that can protect products while minimizing material usage and transportation costs. Thinwall containers (IML packaging division) of companies such as Manika Plastech Limited offer a storage solution for ice cream, food, and dairy products.

7 Competitive Landscape

7.1 Key Players and their Manufacturing Capabilities in India

The Indian packaging industry is highly fragmented, comprising both domestic and international companies. Local players like Manjushree Technopack Limited, Manika Plastech Limited, SSF Plastics India Limited, and Mold-Tek Packaging Limited, alongside global companies such as TPAC Packaging India Private Limited, have established a strong presence in the country over the years. These companies, with vast experience and strategically located plants across India, are key to the sector's growth. The diverse range of packaging solutions highlights their significant role in addressing market demands and driving innovation within the industry.

Manika Plastech Limited, equipped with 88 moulding machines and a manufacturing capacity of 27,000+ metric tons.

Exhibit 7.1: Key Players and their Manufacturing Capabilities in India (FY 2024)

Player Name	Year of Inception	Manufacturing Capacity (FY2024)	Number of Plants	Location of Plants
Manika Plastech Limited	1996	27,000+ MT	7	Silvassa, Hosur (Manufacturing facility), Hosur (Paint Facility), Una, Dehradun Unit I, Dehradun Unit II, Panipat
Peer Companies				
Manjushree Technopack Limited	1987	268,940 MT	23	Amritsar (Punjab), Bangalore (Karnataka), Baddi (Himachal Pradesh), Guwahati (Assam), Jalgaon (Maharashtra), Kanpur (Uttar Pradesh), Manesar (Haryana), Nandyal (Andhra Pradesh), Pantnagar (Uttarakhand), Dadra, Vizag (Andhra Pradesh), others
TPAC Packaging India Private Limited	1983	NA	9	Haridwar (2), Dadra (2), Coimbatore, Silvasa, Umbergaon, Thudiyalur, Alwar
Mold-Tek Packaging Limited	1986	50,000 MT	10	Telangana-5, Daman, Maharashtra, Karnataka, Uttar Pradesh, Andhra Pradesh
SSF Plastics India Limited	1985	40,000 MT	13	Daman-5, Hosur (Tamil Nadu), Baddi (Himachal Pradesh)-5, Dehradun (Uttarakhand)-2, Pardi, Hyderabad
Hitech Corporation Limited	1991	40,000 MT	11	Baddi (Himachal Pradesh), Vizag (Andhra Pradesh), Sriperumburdur (Tamil Nadu), Mysuru (Karnataka), Sanaswadi (Maharashtra), Khandala (Maharashtra), Naroli (Dadra and Nagar Haveli), Sarigam (Gujarat), Umbergaon (Gujarat), Dahej (Gujarat), Rohtak (Haryana)
National Polyplast (India) Private Limited	1992	80,000 MT	7	Faridabad (Haryana), Hasur (Maharashtra) (2), Pondicherry, Chennai, Himachal Pradesh, Tamil Nadu
Weener Empire Plastics Limited	1960	NA	7	NA
Bindal Technopolymer Private Limited	1986	10,000 MT	5	Greater Noida (Uttar Pradesh) (2), Mohan Ram Nagar (Himachal Pradesh) (2), Amabala (Haryana)
Tirth Polymers Private Limited	2004	NA	1	Vapi

Source: Company website, annual reports, secondary research
NA refers to Not Available
MT- Metric Tonnes
Note: The above shortlisted peer companies are arranged based on their revenue for FY 2024.
Note: Please note that Shaily Engineering Plastics Limited has not been included in the operational benchmarking chapter because the company's product portfolio and end use industry areas non comparable to Manika Plastech Limited and other peers, for example, the company operates across multiple segments, including consumer home furnishing, medical devices, toys, FMCG, pharmaceutical packaging, automotive, appliances, engineering, and consumer electronics. Additionally, ~74% of Shaily's revenue (FY 2024) is generated from exports.

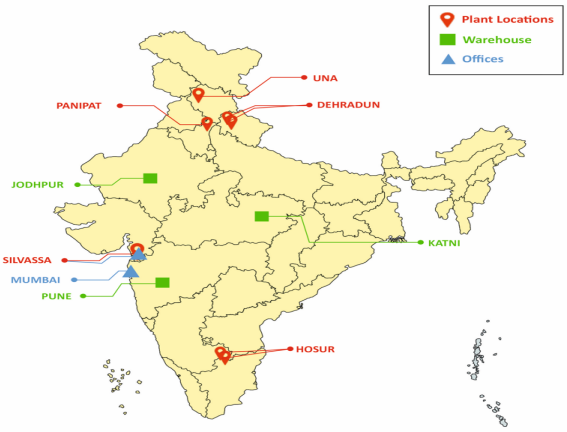
Manika Plastech Limited's manufacturing plants are located in industrially developed regions such as Panipat, Silvassa, Dehradun, Una, and Hosur, catering to key regions of North, West and South India.

Exhibit 7.2: Key Players and their geographical manufacturing presence in India

Key Players	North	South	West	East
Manika Plastech Limited	✓✓	✓	✓	-
Peer Companies				
Manjushree Technopack Limited	✓✓	✓✓	✓	✓
TPAC Packaging India Private Limited	✓✓	✓	✓	-
Mold-Tek Packaging Limited	✓	✓✓	✓	-
SSF Plastics India Limited	✓✓	✓	✓✓	-
Hitech Corporation Limited	✓	✓✓	✓✓	-
National Polyplast (India) Private Limited	✓	✓	-	-
Weener Empire Plastics Limited	NA	NA	NA	NA
Bindal Technopolymer Private Limited	✓✓	-	-	-
Tirth Polymers Private Limited	-	-	✓	-

✓ *- up to two facilities in that region and* ✓✓ *- more than two facilities in that region*
NA – Information not available

Exhibit 7.3: Manika Plastech Limited geographical presence in India



Manika Plastech Limited's manufacturing plants in Panipat, Dehradun, Una, Silvassa, and Hosur are located near major industrial and commercial centres, enabling connection with customers' supply chains. These locations are well connected by road, and rail infrastructure, which facilitates timely procurement of essential inputs like polymers, additives, and other packaging materials.

The company's warehouses located in Jodhpur, Pune (Western India), and Katni (Central India) can serve clients across the country. Further pan-India footprint of a company, comprising multiple plants, warehouses, and offices, enables it to stay close to its diverse customer base across industries.

7.2 Product Portfolio by Business Unit (BU)

The plastic packaging industry comprises diverse players specializing in containers, automotive plastics, battery casing, recycling, and other niche packaging solutions. Manika Plastech Limited, Bindal Technopolymer Private Limited and Tirth Polymers Private Limited are into the production of battery cases and packaging. Manjushree Technopack Limited offerings across containers, caps & closure, Pumps and Dispensers etc. while companies like SSF Plastics India Limited focus on specific segments like caps & closures and recycling. Mold-Tek Packaging Limited cater to dispensing solutions, highlighting diversification. The industry reflects a mix of broad-spectrum providers and niche specialists, with an increasing emphasis on sustainable and recyclable packaging solutions.

Exhibit 7.4: Key Players Product Portfolio by Business Unit (FY 2024)

Key Players	Battery Cases	Pails	Food Containers	Caps and closure	Automotive plastic	Recycle	Others
Manika Plastech Limited	✓	✓	✓	-	-	-	Ice Cream Containers
Peer Companies							
Manjushree Technopack Limited	-	✓	✓	✓	-		Pumps and Dispensers
TPAC Packaging India Private Limited	-	-	✓	✓	-	-	

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Mold-Tek Packaging Limited	-	✓	✓	-	-	-	Pumps and Dispensers
SSF Plastics India Limited	-	-	✓	✓	-	✓	Pumps and Dispensers, Electronics – casings and housings
Hitech Corporation Limited	-	✓	✓	✓	-	✓	-
National Polyplast (India) Private Limited	-	-	✓	-	✓	-	Crates, Display Racks, Preforms
Weener Empire Plastics Limited	-	-	✓	✓	-	-	Pumps and Dispensers, Roll Ons
Bindal Technopolymer Private Limited	✓	✓	-	-	-	✓	Plastic furniture pars, Air coolers, water purifiers, Trench Drains
Tirth Polymers Private Limited	✓	-	-	-	-	-	-

Source: Company website, annual reports, secondary research
Note: (✓) Refers to presence in categories

The packaging companies serve clients across diverse sectors, some of which experience strong seasonal demand patterns. For example, within the food and beverages segments, categories such as ice cream, soft drinks etc., are influenced by seasonal consumption trends, directly impacting demand for packaging and component solutions. The ice cream sector sees a significant uptick in demand during the summer months and festive seasons, driving the need for packaging containers. Similarly, demand for consumer battery systems and inverters typically peaks during the warmer months, especially in regions that experience frequent power outages due to increased consumption of heavy electronic devices. Conversely, the consumption tends to decline in cooler months as reduced use of such devices leads to fewer power disruptions.

Exhibit 7.5: Revenue share segmentation (%) of key players based on their Product Category (FY)

Key Player's segments	2024	2023	2022
Manika Plastech Limited			
Battery Casings	67.26%	68.86%	74.11%
Pails and Thinwall Containers	23.30%	20.04%	18.87%
Others (Paint shops Services, Meter Box, Grinding & Trading)	9.44%	11.10%	7.02%
Manjushree Technopack Limited			
Containers	48.94%	49.92%	54.21%
Preforms	35.62%	38.78%	38.46%
Caps and Closures	8.05%	4.81%	0.00%
Pumps and Dispensers	5.24%	4.70%	5.79%
Recycle	0.73%	0.62%	0.12%
Others	1.43%	1.16%	1.42%
TPAC Packaging (Thai Plaspac Public Company Limited)*			
Food & Beverage sector	81.00%	80.00%	NA
Pharmaceutical & Personal Care sector	12.00%	14.00%	NA
Home Care and Industrial sector	7.00%	6.00%	NA
SSF Plastics India Limited			
Bottles and containers	48.56%	51.68%	46.66%
Caps, closures, and tubs	33.95%	31.97%	36.44%
Engineering plastics components	8.85%	7.78%	10.56%
Others	8.64%	8.57%	6.34%

Source: Company's DRHPs, Investor's Presentation.
**Note: Product level segmentation is available for Overseas global revenue, while Indian revenue segmentation is not available. However, revenue from India contributed 45% in CY 2023.*
Note: For other peer companies, segment wise revenue data was not publicly available; therefore, they were not included in the above exhibit.

Exhibit 7.6: Key Players Product Matrix

Player	Product Type	Size	Material Type
Manika Plastech Limited	Battery Casing	2.5AH – 1000AH	PPCP, ABS
	Pails	250 ml – 25L	PPCP

		1Kg – 20 Kg	
	Thinwall Packaging Containers	100 ml – 1L	PPCP
Peer Companies			
Manjushree Technopack Limited	Caps and closures	-	HDPE, PP, PET
	Preforms	-	PET
	Containers	XS-XL	HDPE, PP, PET, rPET, COEX
	Pumps & Dispenser	-	HDPE, PP
	IML Tubs	-	PET, PP
TPAC Packaging India Private Limited	Preforms	S-XL	PET
	Bottles	S-XL	PET
	Jars	XS-L	PET, rPET
	Pharmaceutical packaging	XS-M	-
Mold-Tek Packaging Limited	Containers	XS-XXL	-
	Pharmaceutical packaging	-	-
	Pumps	-	-
	Sanitizer packs	-	PP
	IML Tubs	-	PET, PP
SSF Plastics India Limited	Bottles and Containers	S-XL	HDPE, PP, PET, rPET
	Caps and Closures	S- XL	HDPE, PP
	Pharmaceutical packaging	XS-M	PET, PP
	Droppers	-	LDPE, HDPE
	Pumps & Dispenser	-	HDPE, LDPE
	IML Tubs	-	PP
National Polyplast (India) Private Limited	Preforms	S-XL	PET
	Crates	-	HDPE
	Display Racks	-	-
	IML Tubs	-	-
Weener Empire Plastics Limited	Cream Jars	XS-M	HDPE, PP, PET, PET G
	Bottles	XS-L	HDPE, PP, PET
	Pharma Packaging	XS-M	HDPE, LDPE, PET, PP, LLDPE, PE
	Closures and dispensing	-	PP, HDPE, LDPE
	Roll Ons	XS	PET, PVC, HDPE, PP, SAN
Bindal Technopolymer Private Limited	Battery Containers	XS-XL	PPCP and ABS
	Recycled Plastic Granules	-	-
	Home Furniture Parts	-	-
	Home electrical	-	-
	PVC Walls	-	PVC
Tirth Polymers Private Limited	Battery Containers	XS-XL	-

Source: Company website, annual reports, secondary Research
NA- The data is not available in the public domain.
Sizes – (XS: <150 ml, S:150 ml-350 ml, M: 350 ml -500 ml, L: 500 ml-1 L, XL: 1 L- 10 L, XXL: >10 L)
LLDPE- Linear Low-density Polyethylene LDPE- Low-density Polyethylene, HDPE- High-density Polyethylene, rHDPE- Recycled High-Density Polyethylene, PC- Polycarbonate, PETG- Polyethylene Terephthalate G, SAN-Styrene-acrylonitrile resin, PP- Polypropylene, PVC-Polyvinyl chloride, PET-Polyethylene Terephthalate, COEX- Co-extruded, MPED- Medium Density Polyethylene, ABS-Acrylonitrile Butadiene Styrene, AH – Ampere Hour

The plastic packaging industry caters to a diverse range of sectors including paints, battery casing, food, beverages, personal care, pharmaceuticals, agrochemicals, home care, automotive, lubricants and oils. Overall, the industry showcases a mix of broad-spectrum providers and specialized players, addressing diverse packaging needs.

Exhibit 7.7: Key players end user industry matrix

Key Players	Battery Casing	Paints	Lubricant & Oils	Agrochemicals	Food	Beverages	Alcoholic Beverages	Personal Care	Pharmaceutical	Home Care	Auto
Manika Plastech Limited	✓	✓	✓	✓	✓	✓	-	-	-	-	✓
Peer Companies											
Manjushree Technopack Limited	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	-

TPAC Packaging India Private Limited	-	-	-	-	✓	✓	-	✓	✓	✓	-
Mold-Tek Packaging Limited	-	✓	✓	✓	✓	✓	-	-	✓	-	-
SSF Plastics India Limited	-	-	✓	✓	✓	✓	-	✓	✓	✓	-
Hitech Corporation Limited	-	✓	✓	✓	✓	✓	-	✓	✓	✓	-
National Polyplast (India) Private Limited	-	-	-	-	✓	✓	-	-	-	-	✓
Weener Empire Plastics Limited	-	-	-	-	✓	✓	-	✓	✓	✓	-
Bindal Technopolymer Private Limited	✓	✓	-	-	-	-	-	-	-	✓	✓
Tirth Polymers Private Limited	✓	-	-	-	-	-	-	-	-	-	-

Source: Company website, annual reports, secondary research
Note: (✓) Refers to presence in categories
**Beverages does not include alcoholic beverages*

7.3 Certifications and Patents held by Key Players

Certification is crucial in the Indian packaging industry, as it ensures that products meet quality standards and comply with regulatory requirements. Since much of the packaging directly interacts with products, strict control and monitoring are essential to maintain integrity throughout the supply chain. These certifications reflect a commitment to quality, sustainability, and safety, influencing every stage of an organization's operations, from product development to market expansion. They help enhance a company's reputation, foster customer loyalty, and reduce potential risks.

The packaging sector is approval intensive, with certifications from Original Equipment Manufacturers (OEMs) playing a key role. OEM certifications validate that packaging materials meet specific standards required by manufacturers, ensuring compatibility and safety.

Exhibit 7.8: Certifications And Patents Held by Key Players

Key Players	Certification and Patents
Manika Plastech Limited	• ISO 45001:2018 • ISO 9001:2015 • ISO 14001:2015 • IATF 16949 • EPR • 34 patents registered for product design and 2 patents under renewal
Peer Companies	
Manjushree Technopack Limited	• ISO 14001:2015 • ISO 9001:2015 • FSSC 22000 • DMF • SEDEX Compliant • GMP certified • LEED Gold certification • Golden Peacock Sustainability Award
TPAC Packaging India Private Limited	• ISO 9001:2015 • ISO 22000
Mold-Tek Packaging Limited	• ISO 9001-2015 • ISO 15378:2017 • US-DMF and Health Canada DMF • 3 registered patents and 4 filings pending
SSF Plastics India Limited	• ISO 9001:2015 • BRCGSGS certified • ISO 15378:2017 • ISO 13485:2016 • FDA registered • DMF • SEDEX SMETA 4 Pillar Compliance

Hitech Corporation Limited	• ISO 15378-2017 • ISO 9001:2015
National Polyplast (India) Private Limited	• FSSC 22000 • ISO 9001:2015 • ISO 14001:2015 • IATF 16949:2016
Weener Empire Plastics Limited	• ISO 9001 • ISO 14001 • BRC Packaging Certification • SEDEX Compliant • CDP Certification
Bindal Technopolymer Private Limited	• ISO 9001
Tirth polymers Private Limited	• ISO 9001

Source: Company website, annual reports, secondary research

7.4 Key Innovations and Technology in Indian Packaging Industry

The packaging industry is undergoing a transformation driven by innovation and sustainability. These innovations not only help streamline production processes but also focus on creating environmentally friendly solutions. Innovations such as recyclable valves and probiotic bottles are helping to reduce the environmental footprint of packaging while ensuring better functionality and safety. Research and development play a crucial role in this evolution, with many companies establishing specialized labs and technical centres to foster innovation. Features like child resistant closures, anti-counterfeiting QR codes, and the use of recycled materials are becoming increasingly common, reflecting the industry's push toward sustainability and cost-effectiveness. As a result, the industry is steadily moving towards packaging solutions that are not only functional but also eco-conscious, aligning with global trends towards sustainability.

Exhibit 7.9: Key Innovations, Technologies Used, and R&D Spends by Key Players

Key Players	Key Innovation	Technology	Types of Moulding Technologies used	R&D
Manika Plastech Limited	Designed and developed 40+ moulds.	SAP-Integrated Smart Manufacturing, IML technology	Injection Moulding Machine	In-house product design and development, supported by in-house tool room facilities, for designing and development of moulds, located in Mumbai and Dehradun
Peer Companies				
Manjushree Technopack Limited	Use of Modified Atmospheric Packaging to increase the shelf life for Food & Beverage products. Use of foaming processes to reduce packaging weight Manufacturer of recyclable valves for two-way caps designed specifically for inverted bottles	Foaming technology Compression moulding Barrier co-extrusion moulding Recycled plastic layer	Extrusion blow moulding Injection moulding	Manjushree Technopack Limited in collaboration with Ganesha Ecosphere group to co-develop and provide packaging products made from up to 100% recycled plastic Manjushree Technopack Limited has signed a MOU with IISc, Bengaluru to establish centre of excellence for upcycling and recycling and create innovative solutions to convert waste into rigid plastic packaging
TPAC Packaging India Private Limited	NA	*NA*	Moulding Technologies Injection, extrusion blow, PET, In-mould labelling	NA
Mold-Tek Packaging Limited	Incorporation of unique QR coded labelling to prevent counterfeiting	In-mould labelling	Injection blow moulding	In-house research and development of moulds and in-house tool room for designing

Key Players	Key Innovation	Technology	Types of Moulding Technologies used	R&D
				and development of moulds for new products located in Hyderabad
SSF Plastics India Limited	Introduced tamper-evident caps with intricate anti-counterfeiting designs, Angular Blow Moulding, Logo Embossing Use of Thinwall Technology to reduce the container weight but retain its strength Use of probiotic bottle which features immediate closure to minimize contamination risks	Extrusion Blow Moulding in Multi-Layer, view strips, Pad Printing, Auto Labelling with vision inspection, clean room moulding setups, , Sleeving, Wadding, Feature Phone Assemblies, Insert Moulding, Multi-Layer Blow Moulding, ISBM for PET, PP ISBM, EBM Jars, IBM Pots, Injection Moulding with IML, Labelling and assembly	Bi-Injection moulding, Injection Blow Moulding ISBM	The company has established a R&D lab
Hitech Corporation Limited	Developed proficiency in working with high performance materials like Ultem®, PEEK, and TPU/TPV Developed an Anti-counterfeit packaging.	SAP-Integrated Smart Manufacturing	2-Shot Injection Moulding Over moulding and Insert Moulding	The company has Dedicated Excellence centre for R&D.
National Polyplast (India) Private Limited	Working on innovations for light weighting, lower carbon footprint packaging solutions	All electric machines and precise high-speed robots are utilized for production	NA	NA
Weener Empire Plastics Limited	Innovated the world's first 100% recyclable valve for squeeze bottle Cif eco-refill for lightweight recyclable refills	NA	Automation and injection moulding machines	NA
Bindal Technopolymer Private Limited	Rapid Prototyping with Production Grade Materials – Enables quick design validation, functional testing, and early-stage modifications before full-scale production.	Robotics installation, Plastic Moulding Technology, CNC machines, EDM (Electrical Discharge Machining)	Injection moulding	NA
Tirth Polymers Private Limited	NA		Cold Forging technology	NA

Source: Company website, annual reports, secondary research.
Note: NA refers to Not Available

7.5 Sustainability and Recycling initiatives

Sustainability is gaining traction, with a focus on renewable energy, emission reductions, and recycling. Many companies are increasing their use of recycled materials and aiming for zero waste to landfill. In India, the packaging industry is also prioritizing sustainability, driven by regulations that encourage higher recyclable content and circularity. Manufacturers and retailers are aligning with corporate sustainability goals and responding to consumer and regulatory demands for eco-friendly packaging solutions.

Among the selected peers, Manika Plastech Limited is one of the top three players for recycled polymers/ post-consumer recycled processing output in CY 2023/ FY 2024.

Exhibit 7.10: Key Players Sustainability Initiatives and Recycling Ability

Key Players	Sustainability Initiatives	Waste Management	Recycling Abilities
Manika Plastech Limited	• Manika Plastech Limited is compliant with Extended Producer Responsibility.	• Manika Plastech Limited collaborates with recycling firms & raw material suppliers to enhance waste management efficiency. • Grinds plastic waste from its operations to reduce material loss	• Processed 2,805 MT of recycled polymers in FY 2024 and 2,916 MT during the 9M FY 2025
Peer Companies			
Manjushree Technopack Limited	• In FY 2024, expanded its in-house solar panel capacity by 162% (8,123.07MWh) over the FY2021(3,016.10MWh) baseline. • In FY2024 usage of renewable energy is 45.21% (79,474.4 MWh) in overall power consumption in (1,73,049.25 MWh) FY2024 and aiming to achieve 71% by 2027. • Reduced 20.09% of scope 1 CO2e emissions from 911.81MT in FY22 to 728.68 FY2024. • Reduced 79.7% of scope 2 CO2e emissions from 74437.81 MT in FY22 to 59352.23 FY2024.	• Total waste recycled / reused 773.62 MT In FY 2024. Total Waste disposed 26.66 MT in FY 2024. • The Company aims to 10% reduction in both hazardous and non-hazardous waste by the end of FY-2030.	• Manjushree Technopack Limited has a greenfield captive recycling unit in Bidadi with a capacity to produce 6,000 MT of PP, HDPE recycled resin annually, with a quality comparable to that of virgin materials
TPAC Packaging India Private Limited	• In CY 2023, TPAC reduced total energy consumption by 5.64% compared to CY 2022.Aming to power 100% of plants from Renewable sources for operations by CY2025.	• Between CY2022-23 Hazardous Waste Reduction by 7.7% and Non-hazardous waste reduction of 31.2% and zero waste into the landfill.	• Processed 5.4 MT post-consumer recycled resin in CY2023
Mold-Tek Packaging Limited	• In FY2024 usage of renewable energy is 10% (11,999 MWh) in overall power consumption (122,143 MWh) in FY2024. • Reduced 45% of scope 1 CO2e emissions from 469.04 MT in FY2023 to 260.3 FY2024. • Reduced 29% of scope 2 CO2e emissions from 30,439 MT in FY2023 to 21,462.7 FY2024.	• Recycled or re-used input material to total material used in 15.36% in FY2024 compared to 9.38% in FY2023. • Between FY2023-24 Hazardous Waste Reduction by 7.7% and Non-hazardous waste reduction of 31.2% and zero waste into the landfill.	• Plastic recycling processing capacity of 1,177 MT in FY 2024.
SSF Plastics India Limited	• Opting renewable energy as a power source using 81% of power in the south unit from renewable sources. • Regular Energy audits to monitor consumption of our plants. Moreover, converted 5% of the total energy being consumed by manufacturing plants in solar.	• NA	• Process 2500 MT of post-consumer recycled content annually.
Hitech Corporation Limited	• Increased Use of Recycled Polymers • Shift Towards Renewable Energy	• NA	• Emphasising the use of recycled polyolefins to reduce reliance on virgin polymers and promote long-term sustainability
National Polyplast (India) Private Limited	• Reduction CO2e emission for Scope 1 emissions by 17.75 MTCO2e from FY2023 to FY2024. • Reduction CO2e emission for Scope 2 emissions by 1975 MTCO2e from FY2023 to FY2024.	• Reduce the weight of hazardous waste in 1,728 Kgs from FY2023 to 2024. • Reduce the weight of non-hazardous waste by 13,019 Kgs from FY2023 to 2024.	• Increase in total weight of waste recovered is 1.95 MT in FY 2024.

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Key Players	Sustainability Initiatives	Waste Management	Recycling Abilities
Weener Empire Plastics Limited	• The company is targeting an increase in renewable energy usage from 68% in CY 2023 to 90% by 2030.	• The company aims to Zero waste to landfill by 2025. Aiming for a 70% reduction in Scope 1 and 2 GHG emissions by CY2030, the company has already achieved a 37% reduction in emissions from the baseline year of CY 2019 to CY 2023.	• Process 4,465 MT of post-consumer recycled content in CY 2023
Bindal Technopolymer Private Limited	• NA	• NA	• NA
Tirth Polymers Private Limited	• NA	• NA	• NA

Source: Company website, annual reports, secondary research; NA refers to Not Available
rPET: Recycled PET, PP: Polypropylene, PCR: Post consumer recycled, PP: Polypropylene, HDPE: High-density Polyethylene
Recycled polymers/ post-consumer recycled processing data available in public domain, only for selected players.

8. Financial Benchmarking

8.1 Revenue from operations

Revenue from operations refers to the income earned by a company through its primary business activities, including the sale of goods and services, excluding any non-operating income or gains. Manika Plastech Limited reported an operating revenue of INR 3,328.22 million in FY 2022 and INR 3,607.72 million in FY 2024.

Exhibit 8.1: Revenue from Operations (INR million) (Years in FY)

Key Players	FY 2022	FY 2023	FY 2024	9M FY 2025
Manika Plastech Limited	3,328.22	3,965.09	3,607.72	2,955.81
Manjushree Technopack Limited	14,670.48	20,963.39	21,170.03	NA
TPAC Packaging India Private Limited	5,440.26	7,891.98	7,279.38	NA
Mold-Tek Packaging Limited	6,314.70	7,299.25	6,986.50	5,787.11
SSF Plastics India Limited	5,238.22	5,987.43	6,309.06	NA
Hitech Corporation Limited	5,884.55	5,586.74	5,617.95	4,121.34
National Polyplast (India) Private Limited	3,038.45	4,239.53	4,268.66	NA
Weener Empire Plastics Limited	2,461.31	2,657.21	NA	NA
Bindal Technopolymer Private Limited	1,330.47	1,708.65	1,743.45	NA
Tirth Polymers Private Limited	441.51	587.77	572.37	NA
Shaily Engineering Plastics Limited	5,677.07	6,070.66	6,438.71	5,689.70

Source: Annual Reports, Secondary Research, Technopak Analysis, MCA reports
Figures of Mold-Tek Packaging Limited, National Polyplast (India) Private Limited, SSF Plastics India Limited, Weener Empire Plastics Limited, Tirth Polymers Private Limited, Bindal Technopolymer Private Limited, Hitech Corporation Limited (FY 2022 to FY 2024) are standalone; others are consolidated numbers.
NA stands for Not Available and Na stands for Not Applicable.
Note: Shaily Engineering Plastics Limited has not been included in the operational benchmarking chapter because the company's product portfolio and end use industry areas non comparable to Manika Plastech Limited and other peers, for example, the company operates across multiple segments, including consumer home furnishing, medical devices, toys, FMCG, pharmaceutical packaging, automotive, appliances, engineering, and consumer electronics. Additionally, ~74% of Shaily's revenue (FY 2024) is generated from exports.

8.2 EBITDA and EBITDA Margin

EBITDA is a financial metric that measures a company's core profitability by excluding non-operating and non-cash expenses. EBITDA of Manika Plastech Limited was recorded as INR 319.55 million in FY 2022 and INR 309.82 million in FY 2024. EBITDA Margin is a profitability ratio that measures the percentage of a company's revenue that is converted into EBITDA, providing insight into its operational efficiency. EBITDA Margin of Manika Plastech Limited recorded as 9.60% in FY 2022 and 8.59% in FY 2024, which has increased to 10.18% during the 9M FY 2025.

Exhibit 8.2: EBITDA (INR million) and EBITDA Margin (%) (Years in FY)

EBITDA & EBITDA Margin								
	FY 2022		FY 2023		FY 2024		9M FY 2025	
Key Players	EBITDA	Margin	EBITDA	Margin	EBITDA	Margin	EBITDA	Margin
Manika Plastech Limited	319.55	9.60%	337.42	8.51%	309.82	8.59%	300.96	10.18%
Manjushree Technopack Limited	2,357.32	16.07%	2,935.08	14.00%	3,733.30	17.63%	NA	NA
TPAC Packaging India Private Limited	771.02	14.17%	947.47	12.01%	975.77	13.40%	NA	NA
Mold-Tek Packaging Limited	1,206.94	19.11%	1,354.48	18.56%	1,331.76	19.06%	1,031.08	17.82%
SSF Plastics India Limited	825.53	15.76%	898.86	15.01%	1,057.31	16.76%	NA	NA
Hitech Corporation Limited	858.00	14.58%	726.80	13.01%	723.77	12.88%	459.61	11.15%
National Polyplast (India) Private Limited	284.75	9.37%	337.33	7.96%	408.40	9.57%	NA	NA
Weener Empire Plastics Limited	321.44	13.06%	170.27	6.41%	NA	NA	NA	NA
Bindal Technopolymer Private Limited	46.84	3.52%	104.68	6.13%	119.32	6.84%	NA	NA
Tirth Polymers Private Limited	16.22	3.67%	21.60	3.68%	42.00	7.34%	NA	NA
Shaily Engineering Plastics Limited	811.89	14.30%	918.91	15.14%	1,169.40	18.16%	1,215.57	21.36%

Source: Annual Reports, Secondary Research, Technopak Analysis, MCA reports
Figures of Mold-Tek Packaging Limited, National Polyplast (India) Private Limited, SSF Plastics India Limited, Weener Empire Plastics Limited, Tirth Polymers Private Limited, Bindal Technopolymer Private Limited, Hitech Corporation Limited (FY 2022 to FY 2024) are standalone, others are consolidated numbers.
NA stands for Not Available and Na stands for Not Applicable.

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EBITDA= (Finance Cost + D&A + PBT)- Other Income - Exceptional Item
EBITDA Margin = EBITDA before exceptional items/Revenue from Operation

8.3 PAT and PAT Margin

PAT (Profit After Tax) is the net earnings of a company after deducting all expenses, including taxes, from its total revenue, representing the final profit attributable to shareholders. PAT of Manika Plastech Limited was recorded at INR 99.66 million in FY 2022 and INR 115.46 million in FY 2024. PAT Margin is a profitability ratio that indicates the percentage of revenue that remains as profit after all expenses, including taxes, have been deducted**.** PAT Margin of Manika Plastech Limited was reported to be 2.99% in FY 2022 and 3.13 % in FY 2024.

Exhibit 8.3: PAT (INR million) and PAT Margin (%) (Years in FY)

PAT & PAT Margin								
	FY 2022		FY 2023		FY 2024		9M FY 2025	
Key Players	**PAT**	**Margin**	**PAT**	**Margin**	**PAT**	**Margin**	**PAT**	**Margin**
Manika Plastech Limited	99.66	2.99%	113.19	2.84%	115.45	3.13%	116.90	3.87%
Manjushree Technopack Limited	708.10	4.80%	592.30	2.81%	1,407.90	6.61%	NA	NA
TPAC Packaging India Private Limited	-92.92	-1.70%	-40.90	-0.51%	298.41	4.06%	NA	NA
Mold-Tek Packaging Limited	636.55	10.06%	804.31	11.00%	665.86	9.51%	442.84	7.63%
SSF Plastics India Limited	318.43	6.06%	485.83	8.09%	461.00	7.27%	NA	NA
Hitech Corporation Limited	373.97	6.35%	283.29	5.04%	220.03	3.91%	79.25	1.91%
National Polyplast (India) Private Limited	83.18	2.73%	91.60	2.15%	111.68	2.61%	NA	NA
Weener Empire Plastics Limited	100.24	4.02%	-37.24	-1.39%	NA	NA	NA	NA
Bindal Technopolymer Private Limited	22.32	1.66%	44.49	2.60%	49.00	2.81%	NA	NA
Tirth Polymers Private Limited	2.93	0.65%	2.70	0.45%	10.58	1.79%	NA	NA
Shaily Engineering Plastics Limited	352.66	6.12%	351.50	5.75%	572.91	8.81%	645.30	11.30%

Source: Annual Reports, Secondary Research, Technopak Analysis, MCA reports
Figures of Mold-Tek Packaging Limited, National Polyplast (India) Private Limited, SSF Plastics India Limited, Weener Empire Plastics Limited, Tirth Polymers Private Limited, Bindal Technopolymer Private Limited, Hitech Corporation Limited (FY 2022 to FY 2024) are standalone; others are consolidated numbers.
NA stands for Not Available and Na stands for Not Applicable.
PAT Margin= PAT / Total Income

8.4 Return on Equity and Return on Capital Employed

ROE (Return on Equity) is a financial ratio that measures a company's profitability in relation to shareholders' equity, indicating how effectively the company uses its equity to generate profits. Manika Plastech Limited reported ROE of 11.10% in FY 2022 and 10.70% in FY2024. ROCE (Return on Capital Employed) is a financial ratio that measures a company's profitability and the efficiency with which it uses its capital employed to generate earnings. ROCE of Manika Plastech Limited was reported to be 13.10 % in FY 2022 and 8.91 % in FY 2024.

Exhibit 8.4: ROE (%) and ROCE (%) (Years in FY)

ROE & ROCE								
	ROE				ROCE			
Key Players	**FY 2022**	**FY 2023**	**FY 2024**	**9M FY 2025**	**FY 2022**	**FY 2023**	**FY 2024**	**9M FY 2025**
Manika Plastech Limited	11.10%	11.52%	10.70%	9.96%	13.10%	13.09%	8.91%	9.56%
Manjushree Technopack Limited	7.86%	6.23%	13.97%	NA	10.16%	9.58%	12.58%	NA
TPAC Packaging India Private Limited	-2.66%	-1.10%	7.73%	NA	-0.32%	1.65%	8.64%	NA
Mold-Tek Packaging Limited	13.93%	14.40%	11.20%	NA	19.45%	17.55%	13.17%	NA
SSF Plastics India Limited	12.23%	15.72%	12.92%	NA	13.73%	14.32%	10.39%	NA
Hitech Corporation Limited	17.24%	11.65%	8.35%	NA	17.88%	14.60%	12.79%	NA
National Polyplast (India) Private Limited	7.92%	8.02%	8.91%	NA	9.08%	10.02%	9.65%	NA
Weener Empire Plastics Limited	7.24%	-2.76%	NA	NA	8.48%	-2.03%	NA	NA
Bindal Technopolymer Private Limited	17.51%	26.18%	22.38%	NA	12.86%	20.47%	19.59%	NA
Tirth Polymers Private Limited	4.63%	4.09%	13.79%	NA	0.19%	1.36%	10.23%	NA
Shaily Engineering Plastics Limited	9.61%	8.76%	12.48%	NA	11.07%	10.37%	12.67%	NA

Source: Annual Reports, Secondary Research, Technopak Analysis, MCA reports
Figures of Mold-Tek Packaging Limited, National Polyplast (India) Private Limited, SSF Plastics India Limited, Weener Empire Plastics Limited, Tirth Polymers Private Limited, Bindal Technopolymer Private Limited, Hitech Corporation Limited are standalone; others are consolidated numbers.
NA stands for Not Available and Na stands for Not Applicable

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Senior Partner

ROE = PAT / Net Worth
ROCE=EBIT (EBITDA – Depreciation & amortization) / Capital Employed (Net Worth + Current Borrowings + non-current borrowings - cash and cash equivalents & bank balance)

8.5 Net Working Capital Cycle

The Working Capital Cycle is the period it takes for a company to convert its net working capital into cash, reflecting the efficiency of its short-term financial management. It involves the time taken to purchase inventory, sell it, and collect receivables before paying liabilities. Working Capital cycle of Manika Plastech Limited was reported to be 80 in FY 2020 and 68 in FY 2024.

Exhibit 8.5: Working Capital Cycle (Years in FY)

Key Players	FY 2022	FY 2023	FY 2024	9M FY 2025
Manika Plastech Limited	80	59	68	71
Manjushree Technopack Limited	78	65	67	NA
TPAC Packaging India Private Limited	78	68	86	NA
Mold-Tek Packaging Limited	116	84	108	NA
SSF Plastics India Limited	94	95	150	NA
Hitech Corporation Limited	37	37	36	NA
National Polyplast (India) Private Limited	105	84	103	NA
Weener Empire Plastics Limited	50	39	NA	NA
Bindal Technopolymer Private Limited	22	29	35	NA
Tirth Polymers Private Limited	28	41	35	NA
Shaily Engineering Plastics Limited	87	79	85	NA

Source: Annual Reports, Secondary Research, Technopak Analysis, MCA reports
Figures of Mold-Tek Packaging Limited, National Polyplast (India) Private Limited, SSF Plastics India Limited, Weener Empire Plastics Limited, Tirth Polymers Private Limited, Bindal Technopolymer Private Limited, Hitech Corporation Limited are standalone; others are consolidated numbers.
NA stands for Not Available and Na stands for Not Applicable
Net Working Capital Cycle= 365 / Working capital ratio (275 for 9M FY 2025)
Working capital ratio = Revenue from operations / Net Working Capital (Total current assets - (cash and cash equivalents + bank balances other than cash and cash equivalents) - (total current liabilities - current borrowings)

8.6 Inventory Turnover Ratio

Inventory Turnover Ratio is a financial ratio that measures a company's efficiency in managing its stock of goods. Inventory Turnover ratio of Manika Plastech Limited was reported to be 6.40 in FY 2022 and 7.00 in FY 2024.

Exhibit 8.6: Inventory turnover Ratio (Years in FY)

Key Players	FY 2022	FY 2023	FY 2024	9M FY 2025
Manika Plastech Limited	6.40	7.56	7.00	4.69
Manjushree Technopack Limited	3.21	4.15	3.89	NA
TPAC Packaging India Private Limited	7.37	13.26	8.70	NA
Mold-Tek Packaging Limited	5.18	5.55	4.93	NA
SSF Plastics India Limited	4.04	4.73	4.66	NA
Hitech Corporation Limited	10.57	10.30	10.40	NA
National Polyplast (India) Private Limited	3.16	4.13	3.83	NA
Weener Empire Plastics Limited	6.23	6.89	NA	NA
Bindal Technopolymer Private Limited	27.16	28.29	18.86	NA
Tirth Polymers Private Limited	7.07	7.82	6.77	NA
Shaily Engineering Plastics Limited	4.59	4.67	5.42	NA

Source: Annual Reports, Secondary Research, Technopak Analysis, MCA reports
Figures of Mold-Tek Packaging Limited, National Polyplast (India) Private Limited, SSF Plastics India Limited, Weener Empire Plastics Limited, Tirth Polymers Private Limited, Bindal Technopolymer Private Limited, Hitech Corporation Limited are standalone; others are consolidated numbers.
NA stands for Not Available
Inventory turnover Ratio = COGS / Average Inventory
COGS includes Cost of materials consumed, Purchase of Trading Goods, Changes in inventory and manufacturing expenses (part of other expenses which includes stores & spares, Power & fuel, labour charge and sub-contracting charge

8.7 Fixed Asset Turnover Ratio

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Fixed Asset Turnover is a financial ratio that measures how efficiently a company uses its fixed assets (like property, plant, and equipment) to generate sales or revenue. Manika Plastech Limited has a Fixed Asset Turnover ratio of 4.24 in FY 2022, 4.71 in FY 2023 and 3.04 in FY 2024, is the second highest among the peer companies in FY 2022 and FY 2023 and third highest among the peer companies in FY 2024, respectively.

Exhibit 8.7: Fixed Asset Turnover Ratio (Years in FY)

Key Players	FY 2022	FY 2023	FY 2024	9M FY 2025
Manika Plastech Limited	4.24	4.71	3.04	2.08
Manjushree Technopack Limited	2.10	2.74	2.71	NA
TPAC Packaging India Private Limited	2.62	2.79	2.09	NA
Mold-Tek Packaging Limited	2.45	2.00	1.50	NA
SSF Plastics India Limited	1.92	2.24	1.69	NA
Hitech Corporation Limited	2.71	2.76	2.52	NA
National Polyplast (India) Private Limited	2.52	2.99	2.39	NA
Weener Empire Plastics Limited	2.90	3.17	NA	NA
Bindal Technopolymer Private Limited	8.53	7.45	5.95	NA
Tirth Polymers Private Limited	3.34	4.19	4.08	NA
Shaily Engineering Plastics Limited	1.76	1.74	1.48	NA

Source: Annual Reports, Secondary Research, Technopak Analysis, MCA reports
Figures of Mold-Tek Packaging Limited, National Polyplast (India) Private Limited, SSF Plastics India Limited, Weener Empire Plastics Limited, Tirth Polymers Private Limited, Bindal Technopolymer Private Limited, Hitech Corporation Limited are standalone; others are consolidated numbers.
NA stands for Not Available
Fixed Asset Turnover Ratio = Revenue from Operation / Property, Plant, and Equipment or Tangible Assets

8.8 Debt-to-Equity Ratio

The Debt-to-Equity Ratio is a financial indicator that evaluates a company's level of financial leverage by measuring the proportion of total debt relative to total equity. It is a financial metric that indicates the proportion of a company's financing that comes from debt compared to equity. Manika Plastech Limited has a Debt-to-Equity ratio of 0.76 in FY 2022, 0.64 in FY 2023 and 0.86 in FY 2024.

Exhibit 8.8: Debt-to-Equity Ratio (Years in FY)

Key Players	FY 2022	FY 2023	FY 2024	9M FY 2025
Manika Plastech Limited	0.76	0.64	0.86	0.85
Manjushree Technopack Limited	0.75	0.85	0.75	NA
TPAC Packaging India Private Limited	0.46	0.37	0.53	NA
Mold-Tek Packaging Limited	0.10	0.08	0.21	NA
SSF Plastics India Limited	0.56	0.40	1.00	NA
Hitech Corporation Limited	0.44	0.25	0.27	NA
National Polyplast (India) Private Limited	0.90	0.98	1.26	NA
Weener Empire Plastics Limited	0.04	0.04	NA	NA
Bindal Technopolymer Private Limited	0.87	1.23	1.12	NA
Tirth Polymers Private Limited	1.68	2.19	1.60	NA
Shaily Engineering Plastics Limited	0.47	0.47	0.45	NA

Source: Annual Reports, Secondary Research, Technopak Analysis, MCA reports
Figures of Mold-Tek Packaging Limited, National Polyplast (India) Private Limited, SSF Plastics India Limited, Weener Empire Plastics Limited, Tirth Polymers Private Limited, Bindal Technopolymer Private Limited, Hitech Corporation Limited are standalone; others are consolidated numbers.
NA stands for Not Available
Debt-to-Equity Ratio = Total Borrowings (Current + Non-Current Borrowings)/ Total Shareholder's Equity

8.9 Net Cash from/ (used in) Operating Activities to EBITDA Ratio

The Net Cash from (or used in) Operating Activities to EBITDA Ratio is a financial metric that compares a company's operating cash flow with its EBITDA. It offers insights into how effectively a company converts its earnings into actual cash from core business operations. High ratio indicates a strong cash generation and operational efficiency. Manika Plastech Limited has the highest Net Cash from Operating Activities to EBITDA ration, among the peer companies - 1.12 and 1.14 during FY 2023 and FY 2024, respectively.

Exhibit 8.9: Net Cash from (or used in) Operating Activities to EBITDA Ratio (Years in FY)

Key Players	FY 2022	FY 2023	FY 2024	9M FY 2025
Manika Plastech Limited	0.76	1.12	1.14	0.82
Manjushree Technopack Limited	1.04	1.10	0.94	NA
TPAC Packaging India Private Limited	0.96	0.74	0.53	NA
Mold-Tek Packaging Limited	0.02	1.12	0.59	NA
SSF Plastics India Limited	0.71	0.59	0.55	NA
Hitech Corporation Limited	0.85	0.95	0.75	NA
National Polyplast (India) Private Limited	0.82	0.67	0.40	NA
Weener Empire Plastics Limited	0.79	1.11	NA	NA
Bindal Technopolymer Private Limited	1.03	0.33	0.64	NA
Tirth Polymers Private Limited	NA	NA	NA	NA
Shaily Engineering Plastics Limited	0.68	0.98	0.79	NA

Source: Annual Reports, Secondary Research, Technopak Analysis, MCA reports
Figures of Mold-Tek Packaging Limited, National Polyplast (India) Private Limited, SSF Plastics India Limited, Weener Empire Plastics Limited, Tirth Polymers Private Limited, Bindal Technopolymer Private Limited, Hitech Corporation Limited are standalone; others are consolidated numbers.
NA stands for Not Available
Net Cash from (or used in) Operating Activities to EBITDA Ratio = Net Cash from/ (used in) Operating Activities/ EBITDA

Ankur Bisen
Senior Partner

Annexures

About Manika Plastech Limited

Manika Plastech Limited is a design-led, precision engineered, rigid polymer packaging manufacturing company, catering to diversified critical industries such as energy storage products, dairy and edible food products, paints, and chemicals. The company's products are designed and developed in-house, with 36 designs registered as unique intellectual property, out of which two have been applied for renewal, under the Designs Act, 2000 and the Designs Rules, 2001.

With focus on application specific performance, durability, product safety and efficiency, Manika Plastech Limited has its product portfolio built around precision engineered solutions such as high-performance battery casings, pail and thinwall containers, each tailoring to serve industrial and consumer use cases. These offerings cater to a broad spectrum of industries, including automotive, energy storage, telecommunications, paints, lubricants, agrochemicals, food, and dairy, among others. The company undertakes production in injection moulded, rigid polymer components, such as precision battery casings that are integral to the performance and durability of energy storage systems. While pails serve packaging needs across paints, lubricants, and industrial chemicals, the food grade thinwall containers are used for secure packaging and distribution of dairy and edible products. The packaging is designed to align with the shelf life of the product it holds, ensuring that its structural strength, ability to protect, and ease of handling are maintained throughout the product's expected lifecycle, across different end use environment. Their battery casing business contributed approximately 66% - 74% of revenue from operations in nine-month period ended December 31, 2024, and preceding three Fiscals, and the pail and thinwall container business contributed approximately 19% - 28%, during the same period.

Manika Plastech Limited has 7 operating facilities across India, including locations in Silvassa, Hosur, Una, Dehradun, and Panipat. These facilities are equipped with microprocessor-based injection Moulding machines, contributing to a total production capacity of 27,000+ metric tons.

Facts & Figures about Manika Plastech Limited	
Key Product Categories	Battery casings, pails, food, and ice-cream containers.
Global Presence	India
Production Locations	Silvassa, Hosur (Manufacturing facility), Hosur (Paint Facility), Una, Dehradun Unit I, Dehradun Unit II and Panipat
Revenue FY 2024	INR 3,607.72 million
EBITDA FY 2024	INR 309.82 million
EBITDA Margin	8.59%

Source: Company website, Secondary Research

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