India Blow Molded Industrial Packaging Product Market

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ABOUT US

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1 MARKET SYNOPSIS

1.1 DEFINITION OF INJECTION MOLDED PLASTICS

Injection molding is the process of injecting molten plastic material into a metal tool which then cools and ejects a plastic part from the machine which is known as injection molded plastics. The approach is well-suited to mass-production of items with complex geometries, and it plays a significant role in the field of plastic processing. Injection molded plastics is widely used in wide application including wire spools, packaging, cans, automotive dashboards, sensors, furniture, toys, among others.

1.2 DEFINITION OF BLOW MOLDED PLASTICS

Blow molding is a plastic manufacturing technique used to make hollow plastic products out of thermoplastic materials. A parison or preform is a plastic tube which is heated and inflated during the process. The parison is placed between the two dies that have the product's required shape. The tube is then expanded with air, causing the walls to thin and conform to the shape of the mold. The product is then cooled, ejected, trimmed, and processed for the secondary operations after the blowing process is completed.

1.3 DEFINITION OF INTERMEDIATE BULK CONTAINER

An Intermediate Bulk Containers (IBCs) are large, reusable containers used for the storage and transport of bulk materials. These containers typically have a capacity ranging from 200 to 3000 liters. IBCs are constructed with a rigid frame, often made of steel or plastic, and feature an integrated pallet base for easy handling with forklifts or pallet jacks. They are designed to withstand the rigors of industrial environments and ensure the safe containment of liquids, granules, or powders. IBCs are widely used across industries such as chemicals, food and beverages, and pharmaceuticals, offering a cost-effective and efficient solution for bulk material handling and storage.

1.4 DEFINITION OF POLYMER DRUMS & HM-HDPE

Polymer drums & HM HDPE are barrel that are lighter in weight than metal drums and can be kept in open conditions without the risk of rusting. Polymer drums, made from various polymers like HM HDPE, are durable containers for storing and transporting substances. These drums offer chemical resistance and lightweight design. HM HDPE, a high-density polyethylene polymer, is renowned for its strength and impact resistance. Used in manufacturing polymer drums, it ensures reliable storage and transportation of liquids, powders, or solids. Polymer drums find applications in industries like chemicals, pharmaceuticals, and food processing, providing cost-effective solutions for the safe handling and storage of materials.

1.5 DEFINITION OF MS-DRUMS

MS drums, commonly referred to as Mild Steel drums, are cylindrical containers designed for storing and transporting various substances. Manufactured from mild steel, these drums offer durability and strength. They typically have a removable lid and are sealed to prevent leaks or spills. MS drums are widely used in industries such as chemicals, pharmaceuticals, and food processing. They provide a secure and reliable solution for the

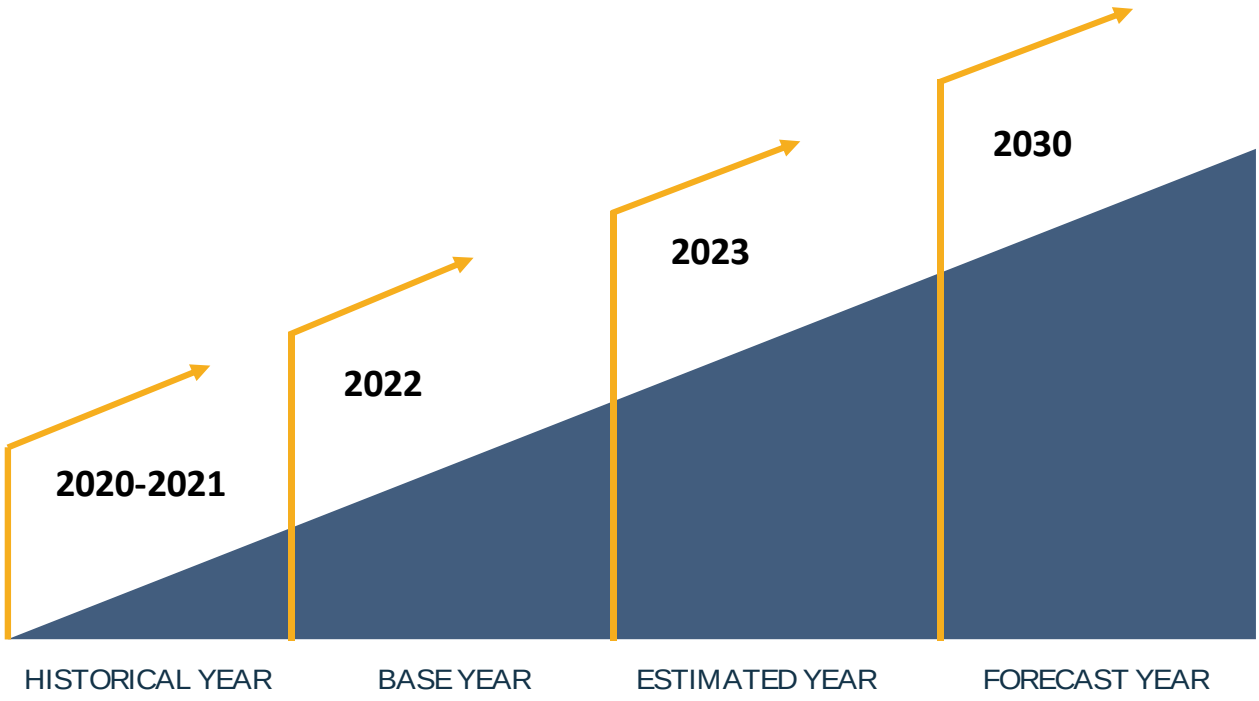
storage and transportation of liquids, powders, or solids. Their robust construction and compatibility with different substances make them a popular choice for industrial applications worldwide.

1.6 RESEARCH SCOPE & PREMISE

The report provides market value for base year 2021 and a yearly forecast from 2022 to 2030 in terms of revenue (INR Lakhs) & Volume for the Plastic Molded Market, Injection Molded Plastic Market and Blow Molded Plastic Market study volume is considered in (Kilo Tons) and for the Intermediate Bulk Containers Market, Polymer drums & HM-HDPE Market and MS-drums Market study volume is considered in (Million Units).

Key industry dynamics, regulatory scenario, material type dynamics, end-use dynamics, and future markets of blow molded plastics and injection molded are analyzed to understand their impact on demand for the forecast period. Growth rates have been estimated using correlation, regression, and time-series analysis.

FIGURE 1 YEARS CONSIDERED IN THE STUDY



1.7 RESEARCH METHODOLOGY

A research methodology is a systematic approach for assessing or conducting a market study. Researchers tend to draw on a variety of both qualitative and quantitative study methods, inclusive of investigations, surveys, secondary data, and market observation. Such plans can focus on classifying the products offered by leading market players or simply use statistical models to interpret observations or test hypotheses. While some methods aim for a detailed description of the factors behind an observation, others present the context of the current market scenario.

1.7.1 SECONDARY RESEARCH MODEL

Extensive data is obtained and cumulated on a substantial basis during the inception phase of the research process. The data accumulated is consistently filtered through validation from the in-house database, paid sources, as well as reputable industry magazines. A robust research study requires an understanding of the overall value chain. Annual reports and financials of industry players are referred thoroughly to have a comprehensive idea of the market taxonomy.

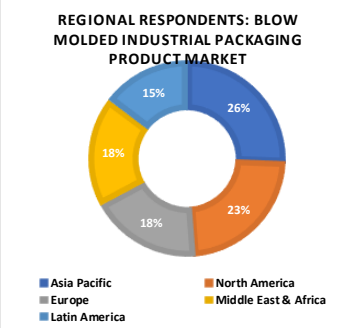
1.7.2 PRIMARY RESEARCH MODEL

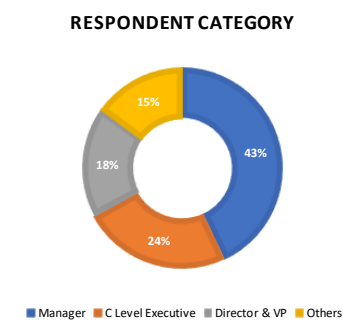
Post conglomeration of the data obtained through secondary research; a validation process is initiated to verify the numbers or figures. This process is usually performed by having a detailed discussion with the industry experts. Discussions with the subject matter experts were conducted to obtain quantitative and qualitative information and validate our market research findings.

However, we do not restrict our primary interviews only to the industry leaders. Our team covers the entire value chain while verifying the data. A significant number of raw material suppliers, local manufacturers, distributors, and stakeholders are interviewed to make our findings authentic. The current trends, which include the drivers, restraints, and opportunities, are also derived through the primary research process.

FIGURE 2 PRIMARY BREAKDOWN

Primary Interview Breakdown : Blow Molded Industrial Packaging Product Market





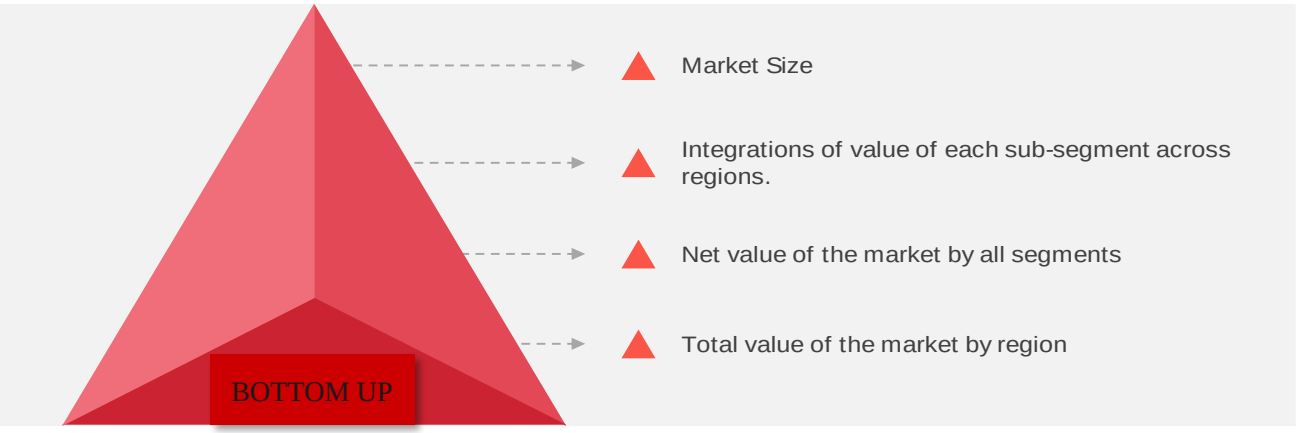
Stakeholder(s)	
Stakeholder Domain	**Percentage**
COO/EVP/VP/Executives	45%
Manufacturer/Project Management Executives	40%
Industry Experts	15%

1.8 MARKET ESTIMATION

The market estimation is conducted by analyzing the data collected through both secondary and primary research. This process involves market breakdown, bottom-up, and top-down approach.

Moreover, while forecasting the market, a comprehensive statistical time series model is designed for each market. Macroeconomic indicators have been taken into consideration to understand the current trends of the market. The process of data triangulation method to arrive at the final market estimates verifies each data point.

FIGURE 3 BOTTOM-UP APPROACH

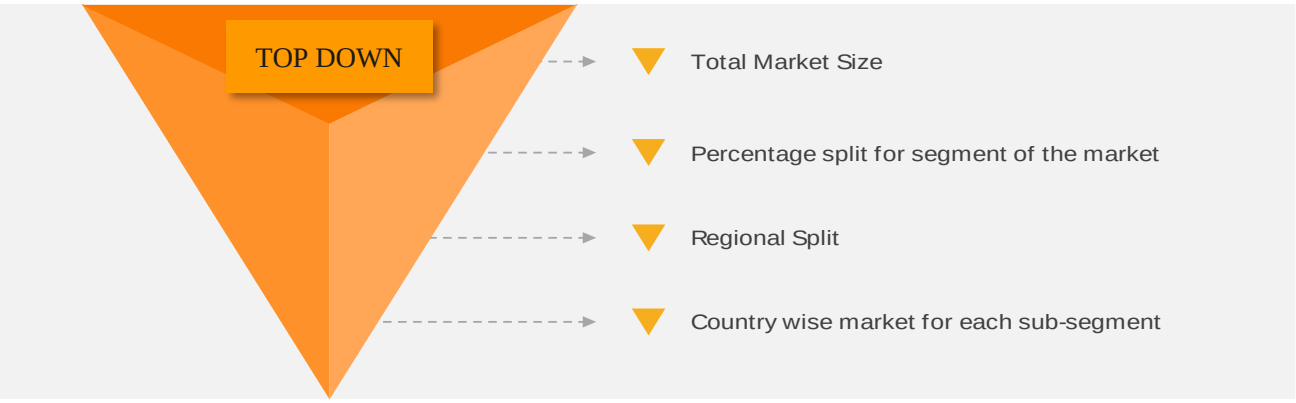


1.8.1 BOTTOM-UP APPROACH

Average selling price (ASP) of each product was determined. A comprehensive analysis was carried out to obtain average selling prices of all end use of products offered by market players operating in an individual region/country. The obtained data were used to calculate the average selling price for each product end use. Furthermore, value consumption for each product end use was determined in each region/country.

Market revenue was estimated using average selling price of products for each application segment in every region/country using the below mentioned method. The market values from both the approaches were triangulated to calculate the extrusion coated products market value.

FIGURE 4 TOP-DOWN APPROACH



1.8.2 TOP-DOWN APPROACH

The global as well as key regional market players involved in the market were identified through extensive research. The market share of major players for the total product was estimated in a manner that approximately 80% of the products market was covered. The market revenue was then extrapolated to reach the extrusion coated products market value for the market.

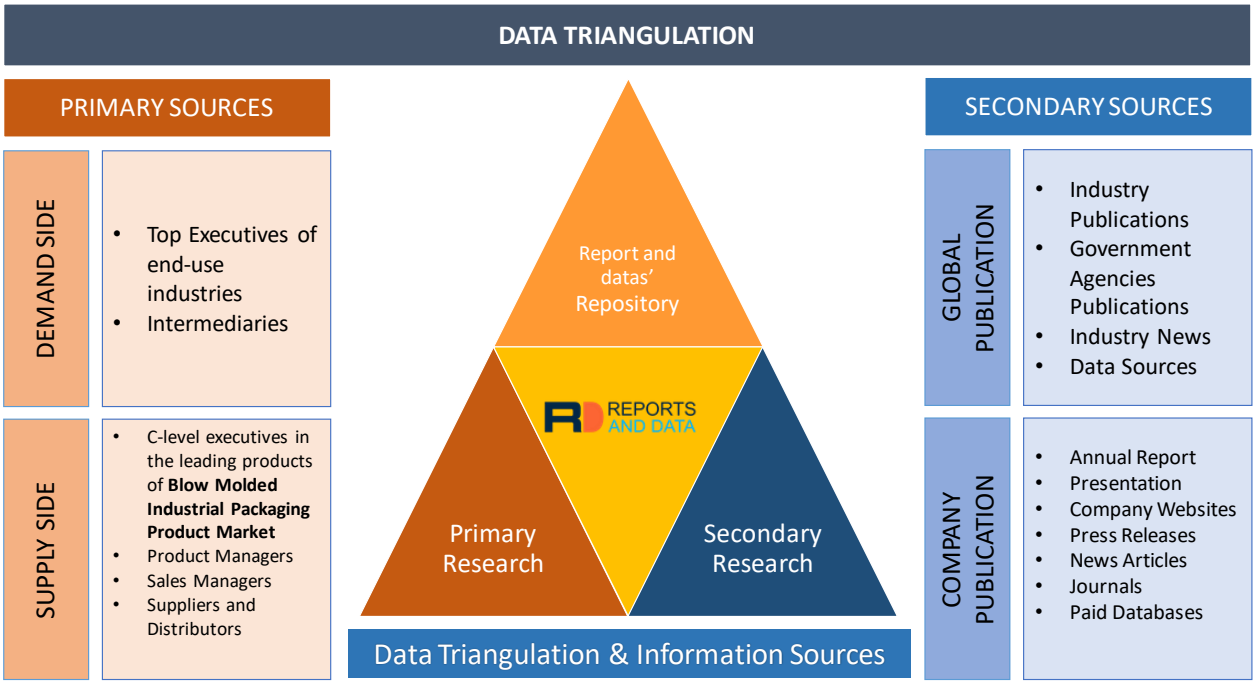
Brand-wise regional market for each player was estimated on the basis of the products offered by the companies present in each region/country. Along with products, the analyst also covered the regional as well as end-use market trends to determine the forecasts.

Thus, the regional/country-wise market was estimated for each product segment for each application.

1.8.3 DATA TRIANGULATION

The process of data triangulation method was applied to arrive at the final market estimates to verify each data point. Upon estimation of the blow molded industrial packaging product plastics market size using the market size estimation approaches as explained above; the market was split into several segments and sub-segments. To complete the overall market estimation process and reach accurate statistics of the individual market segment and sub segment, the data triangulation and market breakdown processes were applied, wherever applicable. The data was triangulated by studying various factors and trends from both the production side and consumption sides in the industry. Moreover, while forecasting the market a comprehensive statistical time series model was designed for the market. Macroeconomic indicators were taken into consideration to understand the current trends of the market.

FIGURE 5 DATA TRIANGULATION



1.9 ASSUMPTIONS & LIMITATIONS

Parameter	Description
Market Value	For the blow molded industrial packaging product market study value is considered in INR Lakhs
Market Volume	For the Plastic Molded Market, Injection Molded Plastic Market and Blow Molded Plastic Market study volume is considered in Kilo Tons For the Intermediate Bulk Containers Market, Polymer drums & HM-HDPE Market and MS-drums Market study volume is considered in Million Units
Price	Average Selling prices are considered
Economic & Political Stability	It is assumed that all countries have economic & political stability
Exchange Rate	The exchange rate fluctuations considered in the report includes in table 1.9.1

1.9.1 EXCHANGE RATE (USD TO INR)

Year	Exchange Rate (USD to INR)
2019	70.39
2020	74.10
2021	73.94
2022	75.87
2023	77.77
2024	79.54
2025	81.30
2026	83.07
2027	84.84
2028	86.60
2029	88.37
2030	90.13

2 GLOBAL MACROECONOMIC OVERVIEW

2.1 GLOBAL MACROECONOMIC OVERVIEW

According to the World Bank's Global Economic Prospects report, following a robust rebound in 2021, the global economy is now facing a significant slowdown. This deceleration is attributed to several factors, including the emergence of new COVID-19 variants, a surge in inflation rates, rising debt levels, and increasing income inequality. These challenges pose a threat to the recovery, particularly in emerging and developing economies. Additionally, according to estimates published by the Organization for Economic Co-operation and Development (OECD), in the first two decades of the 21st century, emerging markets have witnessed rapid economic development, although at different speeds across different regions. While the economic growth in the OECD member countries has consistently been below the world average, emerging Asian countries have systematically outperformed the economies of other regions.

2.1.1 ECONOMIC IMPACT OF COVID-19 PANDEMIC ON MAJOR ECONOMIES

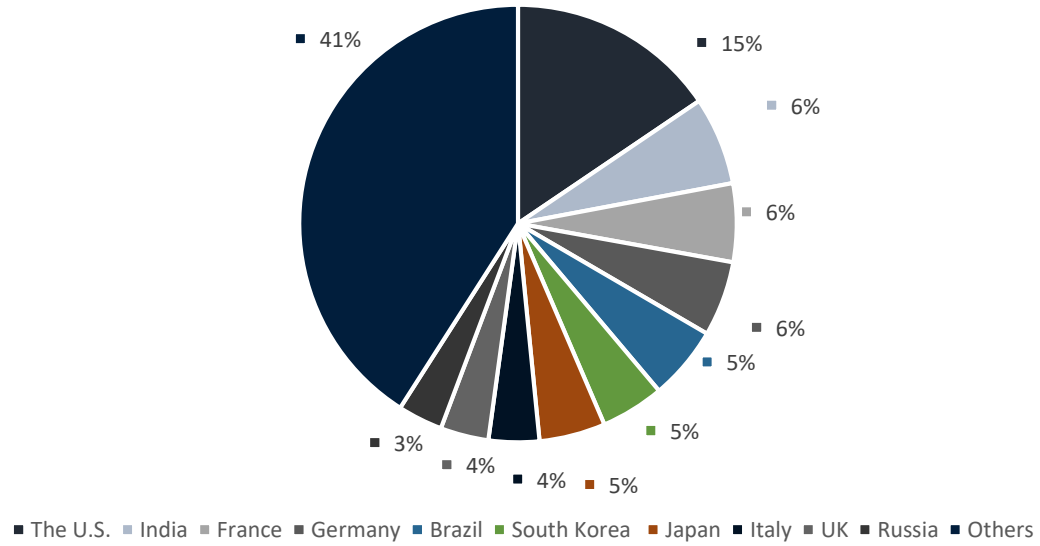
When the covid19 pandemic started in China it sent shock waves to countries across the globe. As the number of cases across the globe was on a rise, it caused the governments across the world to take drastic action in the form of lockdowns and implementation of strict social distancing measures, to stop the impending catastrophe. These actions had a dramatic impact on the global economy, as the industrialist across the globe were forced to halt their production, leading to supply chain disruptions and impairing of various industries. Thus, plummeting the global markets. With China being the epicenter of this pandemic, the export demand shrunk in these countries due to travel restrictions. However, there were possible interventions by the government such as policies providing transport subsidies for export commodities. Companies relying on Asian countries for supply have been hit with a supply crunch as the flow of materials was restricted, thus raising the importance of local players in the market to fulfill demand from end-use sectors that are ramping up productions. Companies are relying on lowering capital expenditure directed to the mines with the highest margins and lowest operating costs as companies are focusing on rebuilding profitability.

The coronavirus outbreak has overturned major economic sectors in the U.S., where the pandemic slowdown has deeply impacted business and jobs. In the global pandemic scenario, the global GDP fell by 2%, whereas developing countries accounted for a 2.5% fall in GDP along with 1.8% in industrial countries as a result of slowing down of economic activities, with supply and demand disruptions. With increasing awareness about the potential risks of COVID-19 across the globe, there have been massive efforts to add capacity and strength to the healthcare system rapidly. As a result of the novel coronavirus pandemic, governments have pushed several nations toward a lockdown. However, nowadays most countries are withdrawing lockdown measures due to COVID-19.

The spread of COVID 19 has disrupted economic activities and has hurt major industries like manufacturing along with the service industry. COVID 19 has dramatically diminished consumer discretionary spending to a freeze on

business activities including hiring, capital budgets, and reduction in essential operational expenses. Levying of import tariffs and export restrictions adds to the supply crisis in the market in the wake of the COVID- 19 outbreak.

FIGURE 6 COVID-19 CASES AMONG MAJOR AFFECTED NATIONS (AS OF 12TH JULY2023)

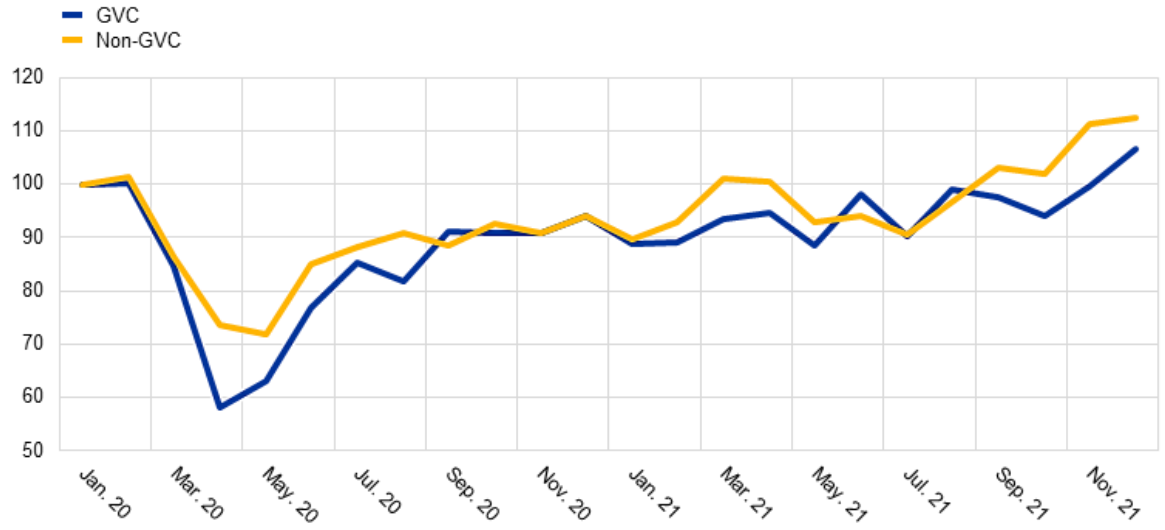


Source: World Health Organization (WHO), GST Council of India, India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data

As per the International Labor Organization, all the industries are witnessing a massive drop in demand and investment due to the covid-19 pandemic situation. It struggles with a widespread stoppage of economic activity, as workers stay at home, supply chains come to a halt, and factories are shut down. Restrictions imposed on citizens' movement and the sudden stoppage of economic activity are anticipated to affect severe contraction in the Gross Domestic Product. Companies engaged in prescheduled delivery contracts have delayed delivery dates for local and global clients, and at predetermined prices have to procure raw materials at high prices disturbing operating costs.

With an adverse multiplier effect on the economy through backward and forward linkages, especially in developed countries, the industrial sector plays a vital role as a growth driver. Production plants halting is the most persistent challenge faced by this market, the downfall in production has lowered the demand for the chemicals required to produce end-use products, resulting in lower capacity utilization, and cost pressure to sustain the market for the companies.

FIGURE 7 COVID-19 CRISIS ON EXPORT PERFORMANCE OVER TIME OF GVC FIRMS AND NON-GVC FIRMS



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On the supply side, measures taken to control the spread of the virus are compelling the chemical and petrochemical manufacturers to reduce the operating rates of their production units, which has not only caused the shortage of raw material availability for a large number of manufacturers but has also resulted in volatility in the prices of these raw materials worldwide. This disruption in the supply chain and the unavailability of the manufacturers to find alternative raw materials suppliers on the fact that international sea logistics systems have been heavily impacted by the virus have compelled the manufacturers to reshape their current and adapt strategies that can enable them to strengthen their supply chain. The global demand has stagnated, and historical capacity expansion has given way to regional overcapacity with a global average utilization of about 40-70%. Another challenge stems from the intensive capital investment required, and many manufacturing companies struggle to generate returns beyond their investment. However, local manufacturers may invest in capacity, increasing last-mile production.

2.1.2 IMPACT ON GLOBAL TRADE

The COVID-19 pandemic represents an unprecedented disruption to the global economy and world trade, as production and consumption are scaled back across the globe. The pandemic has had a noticeable impact on global economic growth. Based on estimates published by the World Trade Organization (WTO), the volume of world merchandise trade is expected to increase by 8.0% in 2021 after having fallen 5.3% in 2020, continuing its rebound from the pandemic-induced collapse that bottomed out in the second quarter of last year. However, the relatively positive short-term outlook for global trade is impaired by factors such as continued weakness in services trade, regional disparities, and lagging vaccination timetables, particularly in poor countries. Thus, the lingering effects of COVID-19 and the rising geopolitical tensions were the main factors impacting trade and output in 2022 and

this is likely to be the case in 2023 as well. Interest rate hikes in advanced economies have also revealed weaknesses in banking systems that could lead to wider financial instability if left unchecked. Governments and regulators need to be alert to these and other financial risks in the coming months.

2.1.3 SHUTDOWN OF FACTORIES

Manufacturing facilities are an integral part of a country's supply chain. Though shutting down of factories is a critical decision for both manufacturers and the government, the risk of growing concerns about the coronavirus, companies globally have been opting to go idle rather than risk spreading infection among workers and employees. While manufacturing countries in China and other countries in East and South-East Asia were the first ones to suffer the effects of pandemic, the rest of the countries globally registered production losses in the second and third quarters of the year. The containment measures imposed by the governments globally had severe impacts on both demand and supply due to uncertainties triggered by negative employment and income prospects, a worldwide halt of production for several months. However, based on estimates by the United Nations Industrial Development Organization, after one year of the pandemic, global manufacturing production is on a path of recovery. Estimates suggest that while in 2020, the global annual output growth had dropped by 6.8 % due to the early impacts of COVID-19, in the first quarter of 2021, the global annual output growth of 12.0 %.

2.1.4 SHORTAGE OF LABOR WORKFORCE

Based on studies conducted globally, the COVID-19 has severely impacted labor markets around the world. The pandemic had a devastating impact on the economy and jobs of nearly all countries notably due to lockdown and other containment measures taken by the government to curb the impact of the pandemic. The 2021 IMF World Economic Outlook estimates suggest, that while the output in emerging and developing economies witnessed a decline of 2.2 % in 2020, the advanced and developed nations witnessed an average fall of 4.7 %. Furthermore, the economic shock had a major impact on labor markets throughout the world, particularly in the middle-income countries. Reports published by the International Labor Organization (ILO), suggest that the overall, global working hours declined by 8.8 % in 2020, which is approximately equivalent to 2,550 lakh full-time jobs (assuming a 48-hour working week). These working-hour losses take into consideration both job losses as well as the reduction in working hours for those who remained in employment.

The first quarter of 2023 was marked by ongoing economic unpredictability, widespread strikes and protests by workers, and steady inflation, which raised concerns that the world economy would recover more slowly than initially anticipated. The global economy is projected to grow by 2.8% in 2023, which is below prior projections but likely to increase as consumer and corporate confidence rebound. The worldwide unemployment rate is still low even if the world economy appears to be slowly recovering. In the first quarter of 2023, the Organisation for Economic Co-operation and Development (OECD) members' unemployment rate decreased slightly from the fourth quarter of 2022 to remain stable at 4.89%. Workers around the world have voiced their dissatisfaction with the labour market as it stands. Strikes are likely to continue until economic conditions improve or demands

are met in the UK, France, Germany, and Spain. These strikes offer insight into the workers' perspective on the labour market.

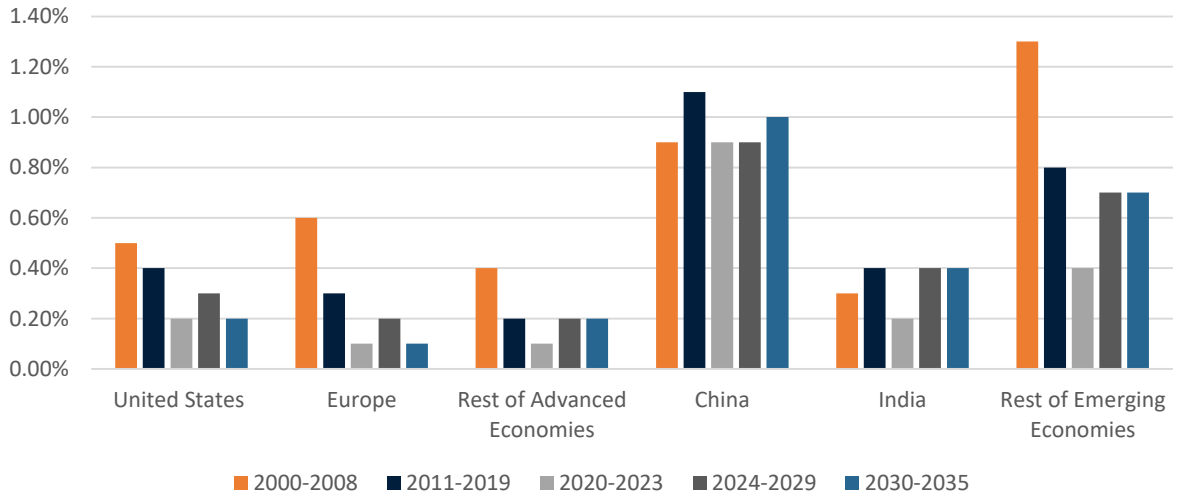
2.1.5 INSIGHT INTO ADVANCED ECONOMIES AND EMERGING MARKETS & DEVELOPING ECONOMIES

2.1.5.1 GLOBAL GDP

Advanced economies and emerging markets & developing economies offer distinct insights into the global economic landscape. Advanced economies, such as the United States, Germany, and Japan, boast developed financial systems, high per capita income, and advanced technologies. These economies drive global growth, innovate new products and services, and attract significant investments. They possess sophisticated infrastructure, well-developed institutions, and stable political environments, facilitating business operations and encouraging foreign direct investment. Furthermore, advanced economies prioritize research and development, education, and innovation, fostering technological advancements and enhancing productivity.

On the other hand, emerging markets and developing economies, including Brazil, India, and South Africa, showcase rapid economic growth potential and a large consumer base. These economies experience various challenges like infrastructure gaps, income inequality, and political instability. However, they offer promising investment opportunities due to their expanding middle class, abundant natural resources, and favorable demographics. Emerging markets often serve as manufacturing hubs and play a vital role in the global supply chain. They attract multinational corporations seeking cost advantages and market expansion.

FIGURE 8 REGIONAL CONTRIBUTIONS TO GLOBAL GDP GROWTH (AVERAGE ANNUAL % CHANGE)



Source: World Bank Data, GST Council of India, India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data

The global real GDP growth is projected to decline to 2.6 percent in 2023 from 3.3 percent in 2022. Europe, Latin America, and the US are the regions experiencing the most weakness, while Asian economies are expected to be the primary drivers of global growth due to reopening dynamics and lower inflationary pressures. The global GDP growth is anticipated to slow down further to 2.4 percent in 2024, mainly influenced by stagnant growth in the US.

Areas of weakness in the global economy include housing, bank lending, and the industrial sector. However, the strength in other sectors, particularly service-sector activities and labor markets, compensates for these weaknesses. First-half data for 2023 have exceeded expectations, leading to upward revisions in the full-year forecast for many economies. Despite inflationary pressures only moderately decreasing, tight monetary policies persist, making interest rate cuts unlikely for many central banks. The expectation remains for a slowdown in growth in the latter half of 2023 and the first half of 2024.

While country-specific deviations may occur, businesses should prepare for a deceleration in global economic growth moving forward. The global economy is projected to experience relatively slow growth of around 2.5 percent for 2023-2024, reflecting a shift to a slower growth environment for the next decade, estimated at an average annual pace of 2.6 percent compared to the pre-pandemic decade's average of 3.3 percent.

Regional Insights:

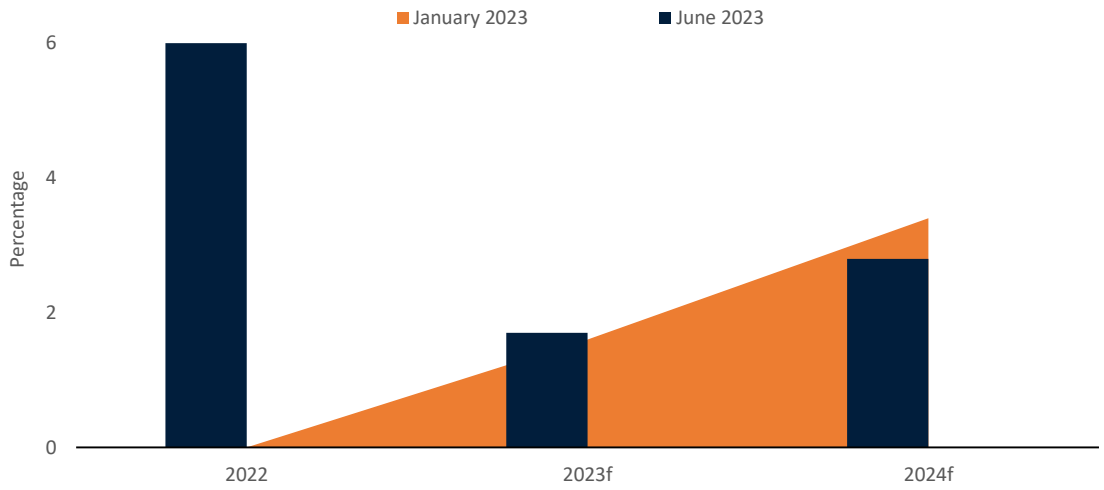
- East Asia and Pacific: The growth rate is expected to decrease to 5.1% in 2022, followed by a slight increase to 5.2% in 2023.
- Europe and Central Asia: The growth rate is predicted to decline to 3.0% in 2022 and further decrease to 2.9% in 2023.
- Latin America and the Caribbean: The growth rate is projected to slow down to 2.6% in 2022 and experience a slight increase to 2.7% in 2023.
- Middle East and North Africa: Growth is forecasted to accelerate to 4.4% in 2022 before decelerating to 3.4% in 2023.
- South Asia: The growth rate is expected to accelerate to 7.6% in 2022 and then decrease to 6.0% in 2023.
- Sub-Saharan Africa: Growth is forecasted to slightly accelerate to 3.6% in 2022 and further rise to 3.8% in 2023.

These projections highlight the diverse economic conditions across regions, indicating the need for tailored strategies and policies. Policymakers and businesses should closely monitor these trends to adapt and respond effectively to the changing economic landscape.

2.1.5.2 GLOBAL GDP AND TRADE ANALYSIS

Global trade is being dampened by subdued global demand and the continued rotation of consumption toward services. Energy prices have eased considerably since their peak in 2022 as a result of weaker global growth prospects and a warmer-than-usual winter, which reduced demand for energy for heating. Core inflation around the world has been persistent, resulting in continued monetary tightening. EMDE financial conditions continue to be restrictive, with less creditworthy borrowers facing greater financial strains.

FIGURE 9 GLOBAL TRADE (% OF 2022 & 2023 FORECAST)

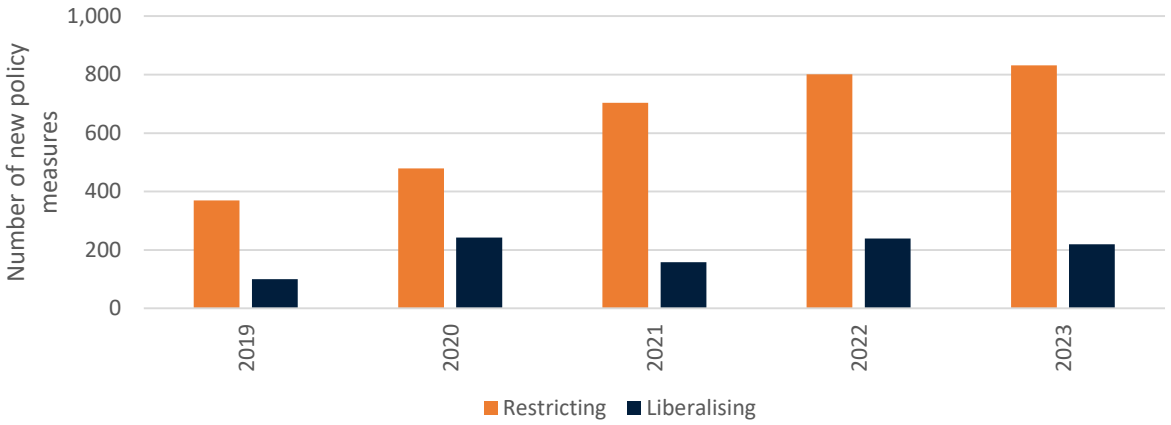


Source: OECD estimates, GST Council of India, India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI, World Bank, Company Annual Report, Primary Interviews, Reports and Data

Global growth in the trade of goods decelerated during the first half of 2023, mirroring the weakening trend in global trial production. In contrast, services trade continued to strengthen as mobility restrictions resulting from the pandemic were eased. The arrival of international tourists is projected to reach approximately 95 percent of 2019 levels in 2023, a significant increase from the 63 percent recorded in 2022 (UNWTO 2023). Pressures on global supply chains have subsided due to a decline in goods demand and improved global shipping conditions.

The Global Supply Chain Pressures Index and suppliers' delivery times reached their lowest levels in nearly four years during the first half of 2023, with expectations of remaining low. Throughout the pandemic, trade growth was supported by a shift in demand composition towards tradable goods and away from less trade-intensive services. However, as demand gradually returns to its pre-pandemic structure, trade growth has slowed. Additionally, the recovery in China is anticipated to be primarily driven by services, limiting the positive spillover effects on its trading partners' demand for goods and commodities. The increasing number of restrictive trade measures reflects escalating geopolitical tensions and efforts by major economies to adopt more inward-focused policies. In the long term, these factors are likely to reshape global supply chains and elevate trade costs.

FIGURE 10 GLOBAL NEW TRADE MEASURES: IN NUMBERS



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Consequently, the responsiveness of global trade to output changes, which had already declined in the 2010s compared to previous decades, is expected to further decrease. Against this backdrop, global trade growth is forecasted to decelerate from 6 percent in 2022 to 1.7 percent in 2023. Once global consumption returns to its pre-pandemic balance between goods and services, trade is predicted to recover to 2.8 percent in 2024, only slightly outpacing GDP growth. The trade outlook faces several downside risks, including weaker-than-expected global demand, tighter global financial conditions, escalating trade tensions among major economies, mounting geopolitical uncertainties, and a further rise in protectionist measures.

2.1.5.3 GLOBAL INFLATION IMPACT

In most economies that adhere to an inflation-targeting approach, the current inflation rate exceeds the target set by central banks. As of April, the global median headline inflation stood at 7.2 percent, a decrease from its peak of 9.4 percent in July 2022. This decline can be attributed to favorable base effects resulting from lower commodity prices and reduced pressures in the supply chain. The moderation in energy prices has also contributed to a slightly milder global inflation in the first quarter of 2023. However, measures of core inflation indicate that the decrease in inflation has been slow, suggesting that the trend of disinflation observed since last year has not made significant progress.

In recent months, emerging market and developing economies (EMDEs) have experienced a slowdown in median core inflation, while advanced economies have seen an increase. Despite improvements in supply chain pressures and declining energy prices, high inflation in advanced economies is primarily driven by excessive demand. Lingering supply capacity issues may also contribute to this situation. In Europe, energy prices hold particular influence as they impact broader prices and contribute to inflation persistence. The discontinuation of fiscal programs that have helped mitigate price spikes for end-users may further worsen this situation. The absence of economic slack, coupled with the ability of firms and workers to exercise pricing power, has made inflation more responsive to economic activity. Market-based measures of long-term inflation compensation in some advanced

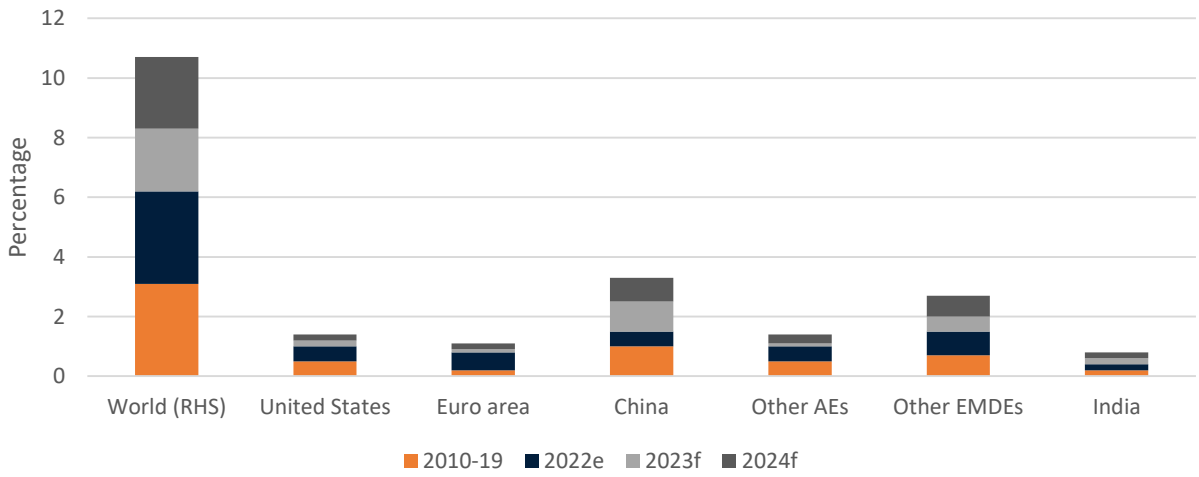
economies, such as the euro area, have increased despite a decline in oil prices. This suggests a higher risk of inflation remaining above the target level. Consumer surveys indicate that medium-term inflation expectations in the United States and the euro area have remained relatively stable in 2023.

In EMDEs, inflation is either accelerating or stabilizing at elevated levels. Responses to recent shocks, such as wage indexation to inflation and untargeted fossil fuel subsidies, have contributed to widespread inflationary pressures. Sustained high inflation could pose significant challenges for EMDEs, as inflation expectations in these economies are generally less stable and more influenced by current inflation rates compared to advanced economies. Forecasts indicate that EMDEs with inflation-targeting central banks are more likely to successfully reduce inflation in the long term. The reopening of China's economy is not expected to have a significant impact on global inflation. Although domestic inflation in China may increase due to stronger economic activity, it is limited by labor market slack and a recovery that is less dependent on commodities compared to previous periods of rapid growth.

2.1.5.4 GLOBAL OUTLOOKS AND RISKS

Global growth is expected to slow this year as credit conditions tighten due to ongoing monetary tightening and banking sector stress in advanced economies. The drag from tighter financial conditions is becoming increasingly apparent and is expected to peak this year. Inflation has proved persistent but should decline as demand slows and commodity prices moderate, provided longer-term inflation expectations remain stable. Stress in systemically important banks could lead to financial crisis and protracted economic losses. Unexpected persistence in core inflation or further commodity price shocks could result in greater -than-expected monetary tightening and hence increase the risk of a resurgence of financial stress. In the longer term, the slowdown in the fundamental drivers of growth may be exacerbated by trade fragmentation and intensified climate change.

FIGURE 11 CONTRIBUTIONS TO GLOBAL GROWTH: IN PERCENTAGE



Source: OECD estimates, GST Council of India, India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI, World Bank, Company Annual Report, Primary Interviews, Reports and Data

Bank balance sheets have sustained losses from recent economic weakness and the unusually rapid rise in interest rates. This could be exacerbated by declines in house prices, which are already taking place in countries accounting for half of global activity. The nature of banking sector vulnerabilities varies, with greater risks in some regions associated with potential loss of liquidity, and others suffering from low bank profitability or limited capital buffers. Financial stress scenarios center on a sharp tightening of financial conditions in advanced economies equivalent to 30 percent of that seen during the 2007-09 global financial crisis. In the first scenario, advanced economy stress does not lead to major spillovers, and the global economy avoids recession as central banks loosen policy, with inflation declining more rapidly than the baseline. In the second scenario, substantial spillovers lead to global financial stress. This pushes the global economy into recession, with inflation falling below target in many countries despite aggressive policy loosening.

Inflation forecasts have been repeatedly revised up—further such revisions could lead to more monetary tightening. Spillovers to emerging market and developing economies (EMDEs) from rising U.S. rates are especially severe when they reflect a more hawkish Federal Reserve, an important feature of the latest tightening cycle. Further increases in bond yields would make borrowing unaffordable for many EMDEs. Global potential growth may decline more than expected. On the upside, continued resilience in advanced-economy labor markets could boost consumption.

2.1.6 MARKET TECHNOLOGICAL INSIGHTS

2.1.6.1 AUTOMATION IN THE MANUFACTURING OF MOLDED PRODUCTS

The majority of jobs can be completed by automated systems without human involvement in the plastic mould, which is why every type of manufacturing is shifting more and more in favor of automation. The result is better machine utilization. A centralized control system is used to link and communicate amongst automated systems. This kind of molding machinery will produce analytics that let users find areas for improvement and warn human operators when components need inspection or malfunction. These systems are capable of uninterrupted process flow. Automated systems that are properly maintained would run continuously, enhancing per-unit productivity and accelerating order fulfillment. Robotic systems can complete tasks that once needed many people, enabling facilities to fulfill more orders with fewer employees. Ultimately, decreased direct labour costs and associated expense savings lead to lower project costs overall. improved manufacturing techniques. Automation reduces waste from rejected or deformed components since it produces large quantities of goods with low mistake rates.

Additionally, certain automation devices, such as collaborative robots (cobots) and robotic arms, help employees with their duties, whilst other automation devices do jobs totally on their own. Engineers and machine workers are kept safe throughout the large volume, stressful production processes by intelligent automation. One of the best automated mold-making processes is injection molding, which includes applications for loading and unloading, qualitative and visual inspection, and secondary and assembly services. The M3 micro-molding machine was released in 2016 by Georgetown, Ontario-based Mold Hotrunner Solutions (MHS). This turnkey, zero-waste injection molding machine offers new potential to manufacturers of medical devices and electronics.

Due to the internal development of technologies including Rheo-Pro hot runner nozzles and ISOKOR molding technology, the M3-D08 machine was able to produce direct-gated micro-components that weighed around 1.3 milligrams. In order to create a 32-cavity version of the M3 with quicker speeds, MHS is now expanding the M3 from a single module of eight micro-part cavities to four modules of eight in 2020. The new ALPHA M3-D32 has robots and an innovative control system to increase productivity without sacrificing quality. These innovations and development have increased the competition in the advancement of automated mold manufacturing machines.

2.1.6.2 INJECTION MOLDED PLASTICS

2.1.6.2.1 SOFTWARE ENHANCEMENTS FOR BETTER AUTOMATION

Recently, there has been rise in adoption of automation in the almost variety of sector, plastic molding is among one of them. These software helps in enhancing the plastic part and injection mold designs. It also helps in enhancing the efficiency of entire manufacturing process for injection molded plastics. The adoption of these software allows injection molded plastics manufacturers in enhancement of product's design quality and accuracy from initial stage of manufacturing and also helps in lowering cost which results in rise in future savings for the manufacturers. Some of the recent software also consists of ability to stimulate the how melted plastic flows during the injection molding process. This allows manufacturer to predict the manufacturing-related defects.

2.1.6.2.2 MULTI-MATERIAL INJECTION MOLDING

Over the past few years, there has been focus on development of injection molded plastics with varying colors, textures and strength. Few years back for manufacturing of these type of injection molded plastics, multiple injection molds were required that can have made components that fit together. But, in recent years, the adoption of multi-material injection molding for injection molded plastics has been coming into attention. This technology utilized variety of plastic materials within the same mold that can help in minimizing the complexity of components and also enhances strength along with thermal and chemical resistance. This technology can be utilized from toothbrush to heavy-duty construction power tools. The technology is also eliminating the need of secondary operations which are used for adding strategic logos and badging. It also eliminates the processes that are utilized for bonding of components together. This can help in minimizing the several cost parameters such as, solvents, labor and extra equipment to create new products.

2.1.6.2.3 INJECTION MOLDING USING GAS

The manufacturing of injection molded plastics with help of gas such as, nitrogen has been coming into attention over the past few years. In this process, the raw material plastic is injected into the mold with help of pressure exerted from gas. Various parts of mold are filled with pressure from gas and helps in pushing the plastic content. This pressure can be injected into cavity of mold through nozzle to push melted plastic for further product formation. This pressure can be exerted from variety points. This technique offers various benefits such as, less plastic material needed, decreased cycle time, reduced warpage and distortion, reduced part weight, reinforces ribbed parts, Increased design options for complex parts, increased part strength and rigidity, reducing multiple part assemblies and improved part appearance, among others.

2.1.6.3 BLOW MOLDED PLASTICS

2.1.6.3.1 DIGITALISATION

Over the past few years, digitalization is playing one of key role in blow molded plastics industry. It has been becoming a one of the key aspect for manufacturing industry and is continuously evolving year after year. Digitalization helps in measuring airflow and temperatures on the production line that can help in delivering excellent efficiencies. It also helps in enhancing the process improvements by the development of Intelligent Factories that can helps in advancement of blow molding technologies. Furthermore, Live Design process helps in bringing together experts from various areas including, marketing, engineering, design, operations and procurement, among others either in person or virtually to enhance the real-time product design.

2.1.6.3.2 SIMULATION AND MODELLING

Recent trend for the development of sustainable packaging container has been resulted in the focus on adoption of simulation and modelling in the market. The computer simulation helps in structural analysis for the prediction of bottle function before it reaches to the production line. When post-consumer resin (PCR) is used to lower the weight of a container, this ensures that performance and other characteristics are not compromised. Simulation and modelling have been coming into attention owing to advancements in blow molding technology, such as vertically applied processing.

2.1.6.3.3 ADOPTION OF BARRIER TECHNOLOGIES

The adoption of barrier technologies in the blow molded plastic packaging helps in enhancing the shelf life of the product by protecting it from various factors such as, light, oxygen and moisture, among others. If products are not protected from these factors this can adversely effect on flavor and freshness. Over the few years back, non-food grade recycled PET were unable to present in the inner layers of food grade containers owing to concern regarding contamination. Thus, owing to this concern the adoption of multilayer technologies were rise in the market as these technologies allows non-food grade recycled PET to be sandwiched between the layers of virgin PET.

2.1.7 MARKET SUPPLY CHAIN AND COST ANALYSIS

The supply chain analysis of injection molded plastics and blow molded plastics consists of raw materials manufacturers, raw materials suppliers, product manufacturers, product distributors, retailer and consumer. The major stake in the supply chain is of raw materials. The major raw materials used for the production of injection molded plastics include, polypropylene (PP), acrylonitrile butadiene styrene (ABS), high density polyethylene (HDPE) and polystyrene, among others. Whereas, materials used for the production of blow molded plastics include, polypropylene (PP), acrylonitrile butadiene styrene (ABS), polyethylene, polystyrene, polyvinyl chloride and polyethylene terephthalate (PET), among others. These materials are usually derived from petroleum hydrocarbons. The raw material manufacturers usually provide the materials to the supplier through the various modes of transportations such as, road and marine, among others. These suppliers act as wholesaler of the polymer resins that can be further utilized for the production of injection molded plastics and blow molded plastics. These

materials are taken by manufacturers that refine and process them into a finished product. Thereafter, these finished products are sent to distributors across the region and which are further delivered to the retailers. These retailers provide injection molded plastics and blow molded plastics to various end-use sectors including, packaging, consumer electronics, automotive and transportation, building and construction, consumer goods and medical, among others. Once, the consumer buys it, the supply chain cycle gets completed but it is the demand factor for the injection molded plastics and blow molded plastics that then goes back and enhances the production of raw materials and keeps cycle continues.

2.1.7.1 BLOW MOLDED PLASTICS

- Owing to rise in price pressure, the supply chain of the blow molded plastics is enforced towards the minimizing costs and maximizing operational efficiency. The manufacturers of blow molded plastics are trying to minimize the role of the converter by enhancing the controlling polymer procurement, acquiring cost transparency through self-manufacturing and rising competence in blow molding and injection molding. Moreover, as there is reduction on value-capture, converters are becoming one of the key specialists and also reduction in cost through operating fewer sites. Thus, various blow molded plastics manufacturers are focusing on technological advancement for enhancing value to their business in the market.
- Selecting a right sourcing strategy has become more complex in the plastic blow molding industry. Over the past few years, several players in the market were facing price down in their procurement of plastic components. As various suppliers were offering blow molded plastic products with relatively cheaper price and comparable quality. And the study suggests that, consumer tries to shift towards these manufacturers. Owing to comparatively lesser labor costs in the India, the region has resulted in the emerging of various standard end-use industries which in turn enhanced the demand for blow molded plastics in the region.

2.1.7.2 INJECTION MOLDED PLASTICS

- One of the most important things in the supply chain of plastic injection molding is high quality production combined with instituting specific policies, procedures and monitoring of the entire manufacturing process. In order to meet the product characteristics, there must be need to constantly examine both big-picture plans and day-to-day functions during the manufacturing of the desired injection molded plastics product. At the time of manufacturing of these products, the cost factors must be keep in accordance for enhancing the company budgets under tight control, keep logistic operations and production operations on track, supervise manufacturing processes, and assist administrative rules, among others.
- One of the most essential factor of the injection molded plastics supply chain management process includes, to maintain coordination during the entire product manufacturing process in line with manufacturing capabilities and consumer’s expectations for the production of optimal injection molded plastics finished products. In this industry there is need to monitor real-time information and availability

& scheduling of product for which there must be interaction between entire operating areas of the business including, mold builders, clients, design engineers, production teams, manufacturing engineers and research experts, among others. Furthermore, injection molded plastics as a finished products need to meet the consumer's expectations, needs and schedule for which efficient task management plays a one of the essential role in supply chain management of the plastic injection molding industry.

3 INDIAN MACROECONOMIC OVERVIEW

Following the challenging circumstances caused by the pandemic, the Russian-Ukraine conflict, and inflationary pressures, the Indian economy is currently making strides towards recovery, displaying a widespread revival across various sectors. This resurgence positions India to reclaim its pre-pandemic growth trajectory by the fiscal year 2023. Furthermore, economic indicators indicate that India's GDP growth is expected to maintain its strength in the fiscal year 2024, with forecasts ranging between 6% to 6.8%. An encouraging factor driving this recovery is the significant increase in private consumption during the first half of the fiscal year, reaching its highest level since FY15. Consequently, this upswing in consumption has stimulated production activities, leading to enhanced capacity utilization across sectors.

The involvement of both the Central Government's capital expenditure and private capital expenditure has emerged as pivotal drivers of growth for the Indian economy in the current year. Strengthened corporate balance sheets have facilitated higher private investment, while the government's capital expenditure has also contributed to this positive momentum. It is worth noting that the micro, small, and medium enterprises (MSME) sector has witnessed an average credit growth of over 30.6% from January to November 2022, indicating support for small businesses. Another positive development is the achievement of bringing retail inflation back within the target range set by the Reserve Bank of India (RBI) in November 2022. This accomplishment signifies effective monetary policy measures aimed at managing inflationary pressures. Additionally, the Indian Rupee has demonstrated favorable performance compared to other emerging market economies between April and December 2022, showcasing relative stability and resilience.

The Indian economy has also experienced robust direct tax collections from April to November 2022, further bolstering the optimistic economic outlook. Furthermore, there has been an improvement in employment generation, evident through a decline in urban unemployment rates and an accelerated net registration in the Employee Provident Fund, indicating an expansion of job opportunities. To sustain and enhance economic growth, India intends to capitalize on the expansion of public digital platforms and implement measures to augment manufacturing output. These strategies are expected to contribute further to the country's economic recovery and pave the way for a promising future.

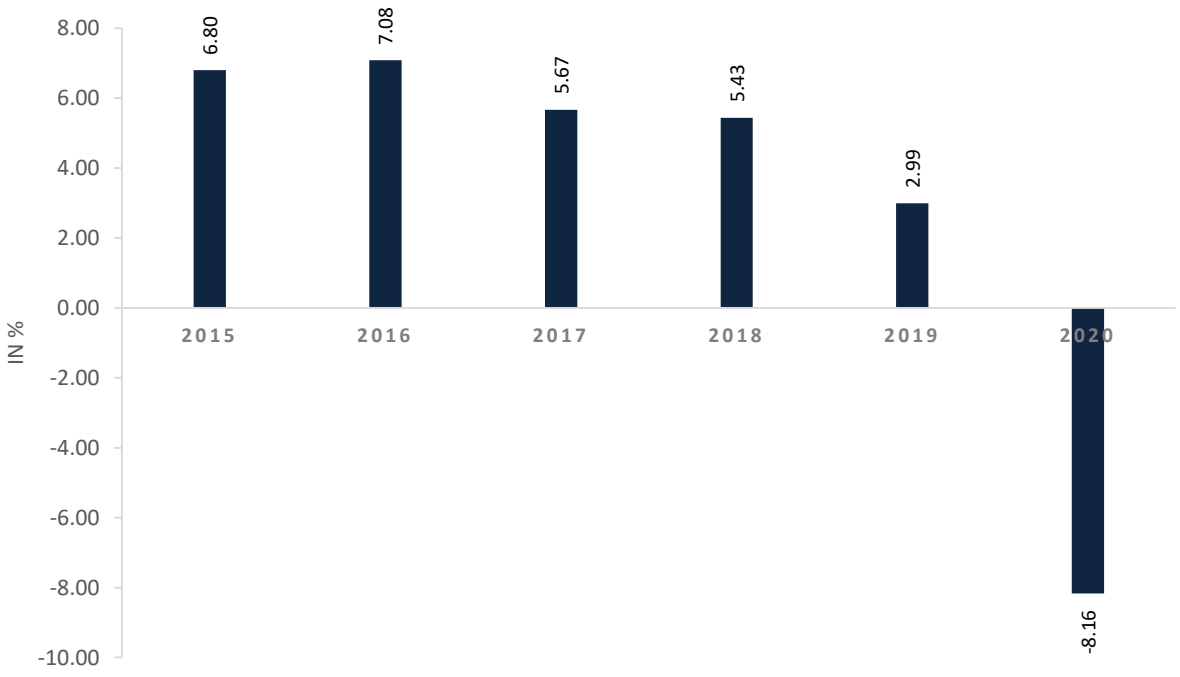
3.1 TREND IN GDP AND GVA

TABLE 1 INDIAN GDP, 2017-2023

Year	GDP (% Growth)	Growth/Decline
2017	6.80%	Decline 1.46%
2018	6.53%	Decline 0.26%
2019	4.04%	Decline 2.49%
2020	-7.96%	Decline 12.01%
2021	9.5%	Growth 17.6%
2022	6.01%	Decline 2.3%

Source: India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data

FIGURE 12 GDP PER CAPITA GROWTH (ANNUAL %)



Source: India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data

TABLE 2 INDIAN GDP, 2022-2026 (FORECASTED)

Year	GDP (INR LAKHS)	GDP GROWTH
2022	188,509,313,200.00	8.63%
2023	209,467,238,000.00	8.39%
2024	231,742,175,500.00	8.18%
2025	256,049,744,900.00	8.09%
2026	282,500,969,500.00	7.99%

Source: India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data

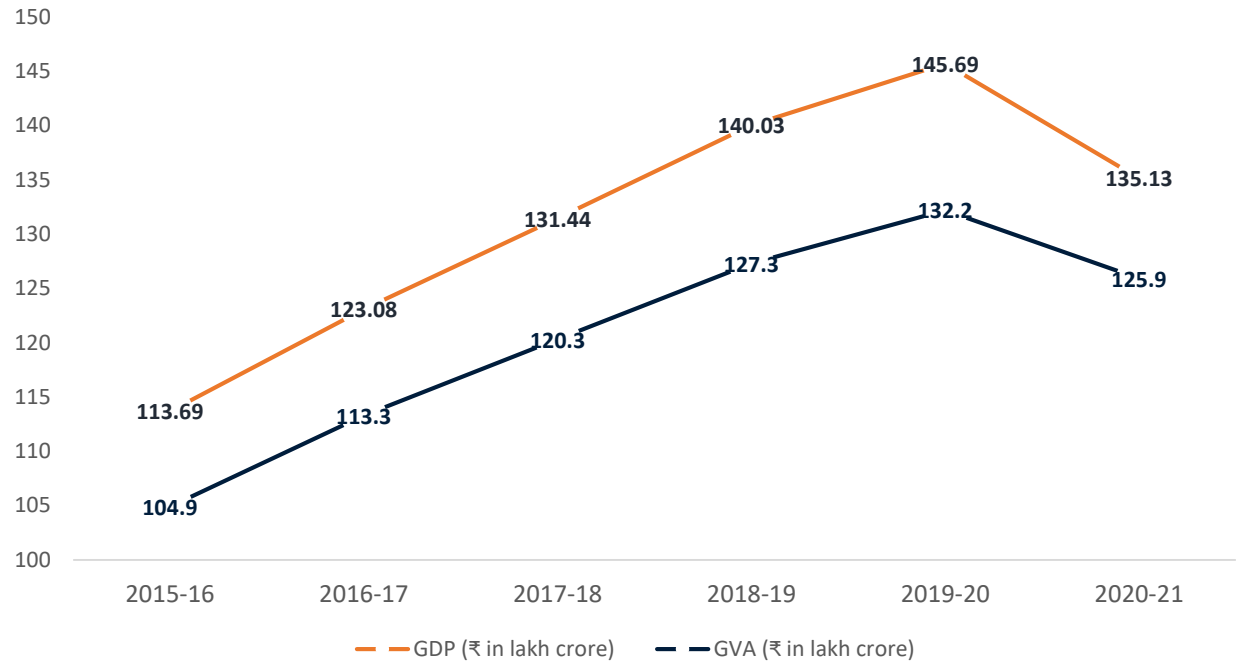
3.2 PER CAPITA GDP, INCOME AND PER CAPITA CONSUMPTION (PAST & OUTLOOK)

TABLE 3 GDP PER CAPITA, 2017-2020 (HISTORICAL), 2021-2023 (FORECASTED)

Year	GDP Per Capita (INR)
2017	172,628.48
2018	184,780.21
2019	202,066.75
2020	197,130.66
2021	234,963.36
2022	264,033.10
2023	302,257.16

Source: World Bank, Bureau of Indian Standards, Company Annual Report, Primary Interviews, Reports and Data

FIGURE 13 GDP AND GVA [AT CONSTANT (2011-12) PRICES]



Source: India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data

Gross Domestic Product (GDP) measures the annualized change in the inflation-adjusted value of all goods and services produced by the economy. It is the broadest measure of economic activity and the primary indicator of the economy's health. The most important and the fastest growing sector of the Indian economy are services. Trade, hotels, transport and communication; financing, insurance, real estate, and business services, and community, social and personal services account for more than 60% of GDP. Agriculture, forestry, and fishing constitute around 12% of the output but employs more than 50% of the labor force. Manufacturing accounts for 15% of GDP, construction for another 8%, and mining, quarrying, electricity, gas, and water supply for the remaining 5%.

Real GDP or GDP at Constant (2011-12) Prices in the year 2022-23 is estimated at INR 159.71 lakh crore, as against the First Revised Estimates of GDP for the year 2021-22 of INR 149.26 lakh crore. The growth in real GDP during 2022-23 is estimated at 7.0 per cent as compared to 9.1 per cent in 2021-22. 4. Nominal GDP or GDP at Current Prices in the year 2022-23 is estimated at INR 272.04 lakh crore, as against the First Revised Estimates of GDP for the year 2021-22 of INR 234.71 lakh crore. The growth in nominal GDP during 2022-23 is estimated at 15.9 per cent as compared to 18.4 per cent in 2021-22. 5. GDP at Constant (2011-12) Prices in Q3 2022-23 is estimated at INR 40.19 lakh crore, as against INR 38.51 lakh crore in Q3 2021-22, showing a growth of 4.4 percent. GDP at Current Prices in Q3 2022-23 is estimated at INR 69.38 lakh crore, as against INR 62.39 lakh crore in Q3 2021-22, showing a growth of 11.2 percent.

Gross value added (GVA) is defined as the value of output less than the value of intermediate consumption. While GVA gives a picture of the state of economic activity from the producers' side or supply side, the GDP gives the picture from the consumers' side or demand perspective. A sector-wise breakdown provided by the GVA measure can better help the policymakers decide which sectors need incentives/stimulus or vice versa. As with all economic statistics, the accuracy of GVA as a measure of overall national output is heavily dependent on the sourcing of data and the fidelity of the various data sources in capturing the vast labyrinth of activities that constitute a nation's economic life. To that extent, GVA is as susceptible to vulnerabilities from the use of inappropriate or flawed methodologies as any other measure.

3.3 INDUSTRIAL GROWTH AND TREND IN PRODUCTION

Industrial production refers to the output of industrial establishments and covers sectors such as mining, manufacturing, electricity, gas and steam and air-conditioning. This indicator is measured in an index based on a reference period that expresses change in the volume of production output. The Pyramid Technoplast Pvt. Ltd. would benefit from the GoI's 'Aatmanirbhar Bharat Abhiyaan', or Self - Reliant India, campaign, which provides a range of incentives to attract and localise manufacturing and production in the country.

The Production-Linked Incentive (PLI) Scheme is an initiative launched by the Government of India to boost domestic manufacturing across various sectors. The objective of the PLI scheme is to encourage local production and reduce import dependence. Under the scheme, the government offers financial incentives to eligible companies based on their production levels and performance. In the context of the blow molding industry, the PLI scheme can have a positive impact by incentivizing companies to expand their manufacturing capabilities and increase production of blow-molded products in India. This, in turn, can help reduce the country's reliance on imports of such products and create more job opportunities. The scheme offers financial incentives to eligible companies that meet certain performance criteria, such as minimum investment, production, and quality standards.

Further, the GOI has recently announced Production Linked Incentive (PLI) Scheme for the pharmaceutical sector. The objective of the PLI scheme for the pharmaceutical sector is to promote domestic manufacturing and reduce import dependence in the industry. The scheme is aimed at promoting the production of high-value drugs, APIs (active pharmaceutical ingredients), and medical devices. The PLI scheme for the pharmaceutical sector has a budgetary allocation of Rs. 15,000 Crore and is expected to attract significant investment in the industry. The financial year of 2022-2023 being the first year of production for the PLI Scheme, DoP has ear-marked Rs 690 crore as the budget outlay. The scheme is expected to create more than 20,000 jobs and help India become a global manufacturing hub for pharmaceuticals. As of January 31 2023, sales of about INR 36,000 cr have been reported by the select 55 applicants. The Department of Pharmaceuticals also implements two other PLI schemes, namely PLI for Bulk Drugs and PLI for Medical Devices, which have achieved significant milestones in the first year of implementation.

Moreover, On May 17, 2023, the Union Cabinet, led by Prime Minister Shri Narendra Modi, granted approval for the introduction of the Production-Linked Incentive (PLI) Scheme 2.0 for IT Hardware, aimed at enhancing

India's manufacturing capabilities and promoting exports under the Atmanirbhar Bharat initiative. The scheme was officially notified on May 29, 2023, and starting from June 01, 2023, applications for the PLI Scheme 2.0 for IT Hardware will be accepted. The primary objectives of the PLI Scheme 2.0 for IT Hardware are to bolster and expand the manufacturing ecosystem in India by encouraging local production of components and sub-assemblies. It also allows for a longer period for developing the domestic supply chain. The scheme offers increased flexibility and options for applicants, tying incentives to incremental sales and investment thresholds to further encourage growth. Notably, the scheme includes incentives for semiconductor design, IC manufacturing, and packaging as well. The approved budget for the PLI Scheme 2.0 for IT Hardware is INR 17,000 crore. It is anticipated that this scheme will result in a total production worth approximately INR 3.35 lakh crore, attracting an additional investment of INR 2,430crore in the electronics manufacturing sector, and generating around 75,000 additional direct job opportunities.

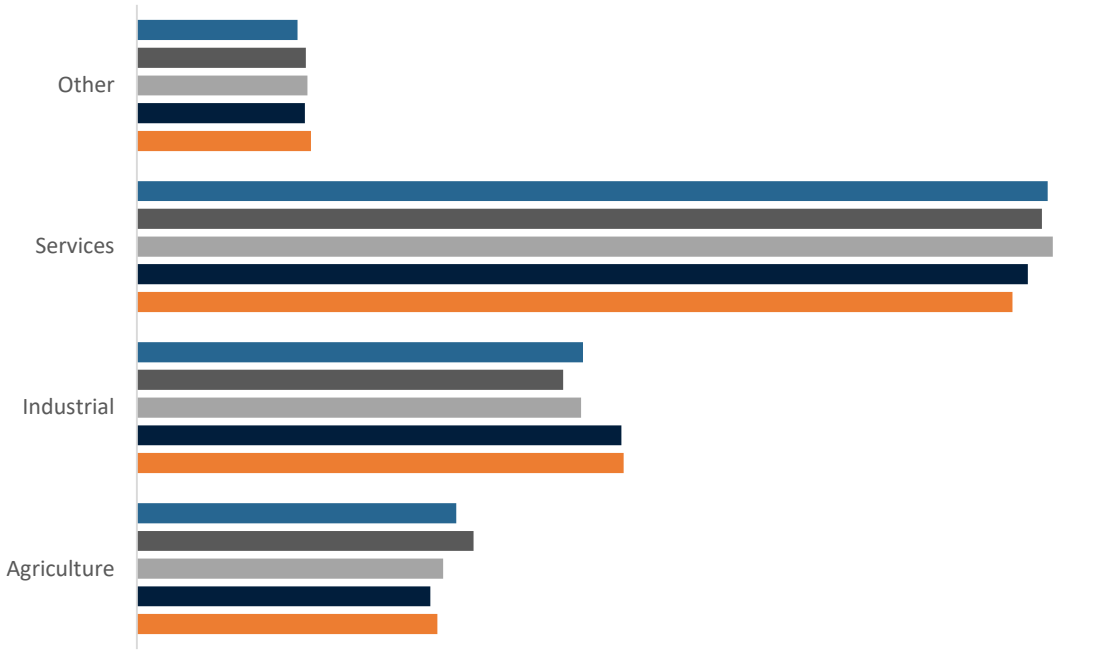
Additionally, it is expected that, GOI has also announce PLI Scheme chemicals sector. The objective of the PLI scheme for the chemical sector is to boost domestic manufacturing and reduce import dependence in the industry. The scheme is aimed at promoting the production of high-value chemicals and specialty chemicals, which are currently being imported. Under the Union Budget 2023-24 the government allocated INR 173.45 crore to the Department of Chemicals and Petrochemicals. PLI schemes have been introduced to promote Bulk Drug Parks, with a budget of INR 1,629 crore. Moreover, the scheme also aims to encourage local companies to set up or expand existing manufacturing units along with focusing on inviting foreign companies to set up manufacturing units in India. Increased production, sale and export by companies availing the PLI Scheme in these sectors would increase the demand for our industrial packaging products. Its future expansion plans have been formulated considering these growth opportunities and Company is geared up to exploit these for the benefit of all its stakeholders.

Further, the Quick Estimates of the Index of Industrial Production (IIP) for February 2023, based on the 2011-12 scale, indicate a value of 138.7. The individual sector indices for Mining, Manufacturing, and Electricity for the same month are 129.0, 136.8, and 174.0 respectively. It should be noted that these Quick Estimates are subject to revision in future releases, following the revision policy of IIP. Based on the Use-based classification, the indices for February 2023 are 139.7 for Primary Goods, 104.4 for Capital Goods, 143.2 for Intermediate Goods, and 164.0 for Infrastructure/Construction Goods.

Additionally, the indices for Consumer durables and Consumer non-durables in February 2023 are 108.4 and 154.3 respectively. Detailed information on the Quick Estimates of the Index of Industrial Production for February 2023, categorized by sector and 2-digit level of National Industrial Classification (NIC-2008), as well as by Use-based classification, can be found in Statements I, II, and III respectively. Statement IV provides month-wise indices for the past 12 months, categorized by industry groups (based on the 2-digit level of NIC-2008) and sectors, to aid users in understanding the changes in the industrial sector. The indices for January 2023 have undergone the first revision, while those for November 2022 have undergone the final revision, taking into account the updated data received from the source agencies. The Quick Estimates for February 2023, the first

revision for January 2023, and the final revision for November 2022 have been compiled with response rates of 92 percent, 94 percent, and 95 percent respectively.

FIGURE 14 SHARE OF INDIAN GDP BY SECTOR

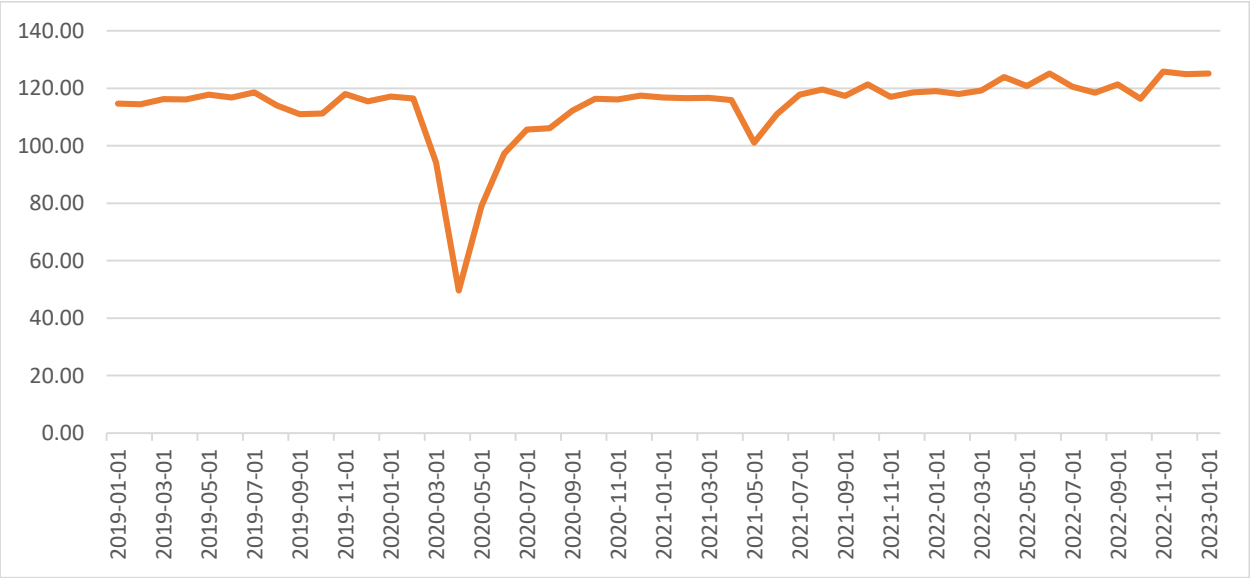


	Agriculture	Industrial	Services	Other
2021	17.38%	24.29%	49.58%	8.75%
2020	18.32%	23.21%	49.27%	9.20%
2019	16.68%	24.18%	49.86%	9.28%
2018	15.97%	26.38%	48.51%	9.14%
2017	16.36%	26.50%	47.67%	9.47%

Source: JSTOR, Bureau of Indian Standards, Company Annual Report, Primary Interviews, Reports and Data

Manufacturing has emerged as one of India's fastest growing sectors. The government in the region has been adopting several policies to ensure an increased production of goods and to make India a self-reliant economy. For instance, the Make in India program has been launched to map India as a manufacturing hub and make the Indian economy globally recognized. Through the scheme, the government aims to create 1,000 lakh new jobs in the industry by 2022. Moreover, the region is also likely to become a high-tech manufacturing center as global giants such as GE, Siemens, HTC, Toshiba and Boeing have established or are in the process of establishing manufacturing facilities in India with the help of Make in India. Similarly, to expand its smartphone assembly industry and improve its electronics supply chain, in March 21, the government announced cash incentives of more than INR 750,000 lakhs to each company which will set up chip fabrication units in the country.

FIGURE 15 INDIA INDUSTRIAL PRODUCTION (2019-2023)

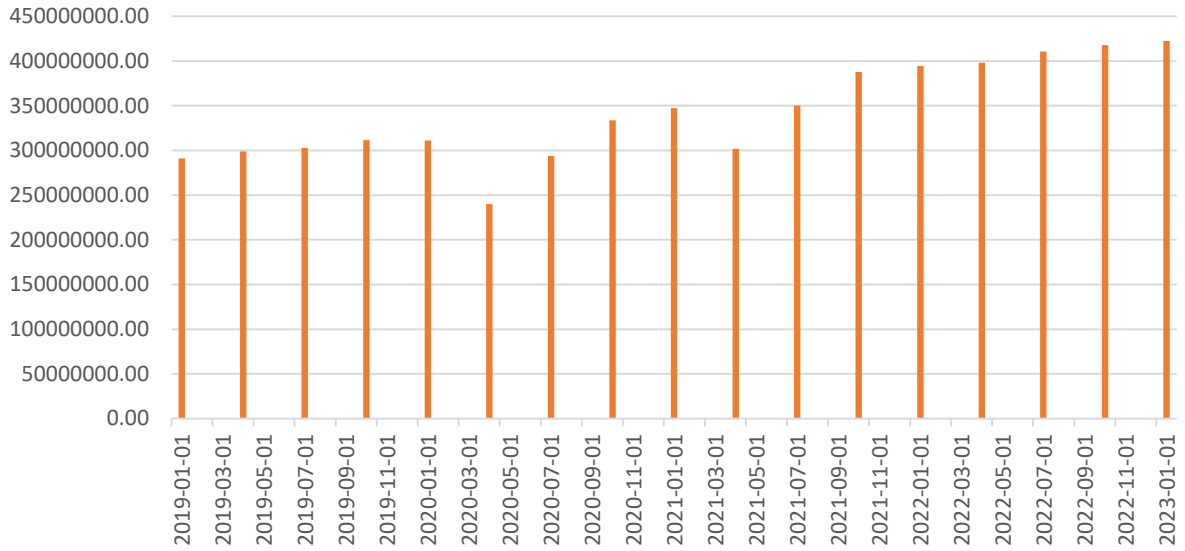


Source: Trading Economies, India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data

The region is also gradually progressing on the road to Industry 4.0 through the Government of India's initiatives. For instance, the Smart Advanced Manufacturing and Rapid Transformation Hubs or SAMARTH Udyog Bharat 4.0 is an Industry 4.0 initiative of Ministry of Heavy Industry & Public Enterprises, Government of India under its scheme on Enhancement of Competitiveness in Indian Capital Goods Sector. The adoption of this scheme is likely to increase productivity, efficiency and quality in processes, and also ensure greater safety for workers by reducing jobs in dangerous environments. The scheme would also aid in enhancing decision making with data-based tools and improve competitiveness by developing customized products.

3.4 TREND ANALYSIS OF PRIVATE FINAL CONSUMPTION EXPENDITURE (PFCE) AND OUTLOOK

FIGURE 16 PRIVATE FINAL CONSUMPTION EXPENDITURE IN INDIA, QUARTERLY, SEASONALLY ADJUSTED (INR LAKH)



Source: India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data

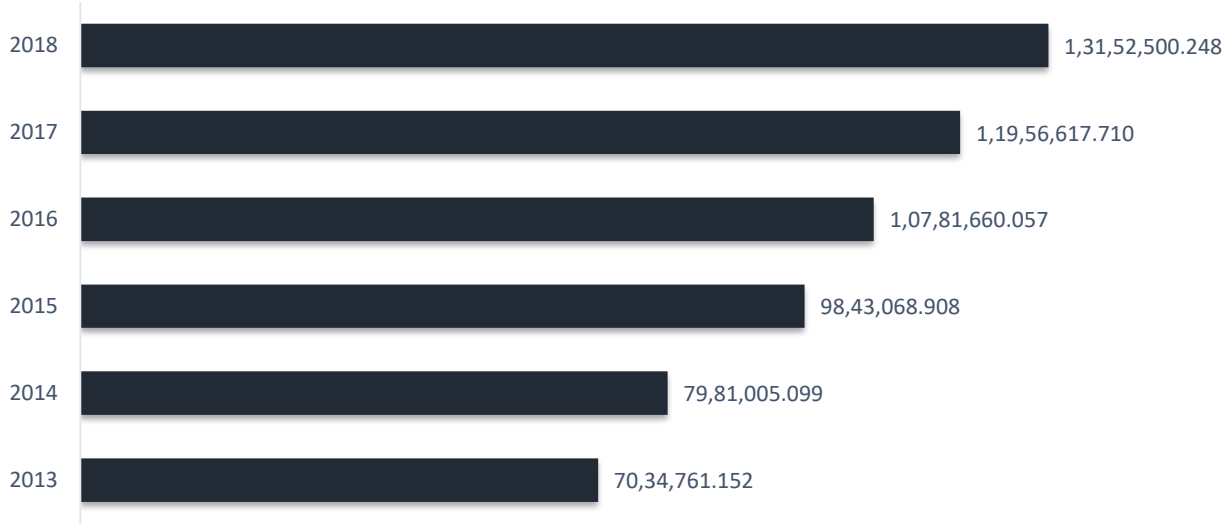
India's private final consumption expenditure (PFCE) declined by six% in nominal terms to Rs.115.7 lakh crore in 2020-21 from Rs.123.1 lakh crore in 2019-20. Consumption expenditure growth has been slowing through the last decade. Growth in PFCE that averaged at 16.2% per annum during 2010-14, fell to 12.1% per annum during 2014-17 and further down to 10.5% per annum during 2017-20.

The PFCE was also a predominant source of fall in India's real GDP in 2020-21. It declined faster than the fall in overall GDP. Contribution of PFCE to real GDP fell to 55.95% in 2020-21 from 57.1% in 2019-20. This shrinking of consumption expenditure has a direct impact on the intermediate industries that feed India's consumption engine. Industries like steel, fibers, chemicals and services such as transport, trade and finance will face headwinds as the PFCE shrinks. A sharp fall in PFCE also indicates a fall in the standard of living of people of India in general and, a possible rise in poverty. A return to earlier PFCE levels would require growth to accelerate and employment and household incomes to rise. But this is a significant challenge. The recent fall in per capita real PFCE is so steep that India needs to catch-up from its levels three years ago.

Purchasing power of households got eroded severely during 2020-21 due to a fall in income and high inflation. The year witnessed large-scale job and income losses. The average number of people employed reduced from 4,089 lakhs in 2020-19 to 3,877 lakhs in 2020-21. The average for 2020-21 glosses over big losses and gains as the informal workers moved in and out of the labor market in response to the lockdowns and their relaxations during the year. The impact of these movements was severe on household incomes.

3.5 TREND ANALYSIS OF DISPOSABLE HOUSEHOLD INCOME AND OUTLOOK

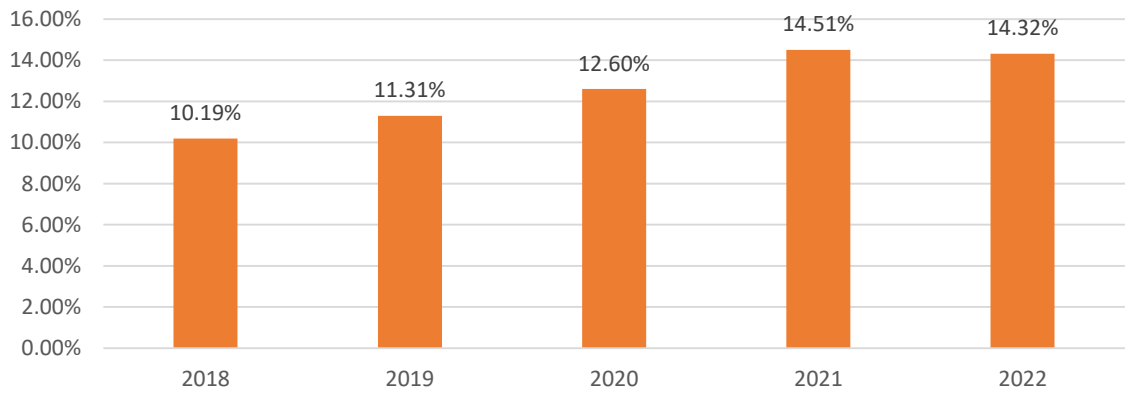
FIGURE 17 GROSS NATIONAL DISPOSABLE INCOME (INR LAKHS)



Source: GST Council of India, India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data

Disposable income is closest to the concept of income as generally understood in economics. Household disposable income is income available to households such as wages and salaries, income from self-employment and unincorporated enterprises, income from pensions and other social benefits, and income from financial investments (less any payments of tax, social insurance contributions and interest on financial liabilities). 'Gross' means that depreciation costs are not subtracted. Household income in India was drastically impacted due to the coronavirus (COVID-19) lockdown as of April, 2020. There was a significant decrease in the level of income with households reporting a fall in income from about nine% in late February to a whopping 45.7% in mid-April. Rise in income saw a contrasting trend indicating similar results; from 31% in late February to 10.6% on April, 2020.

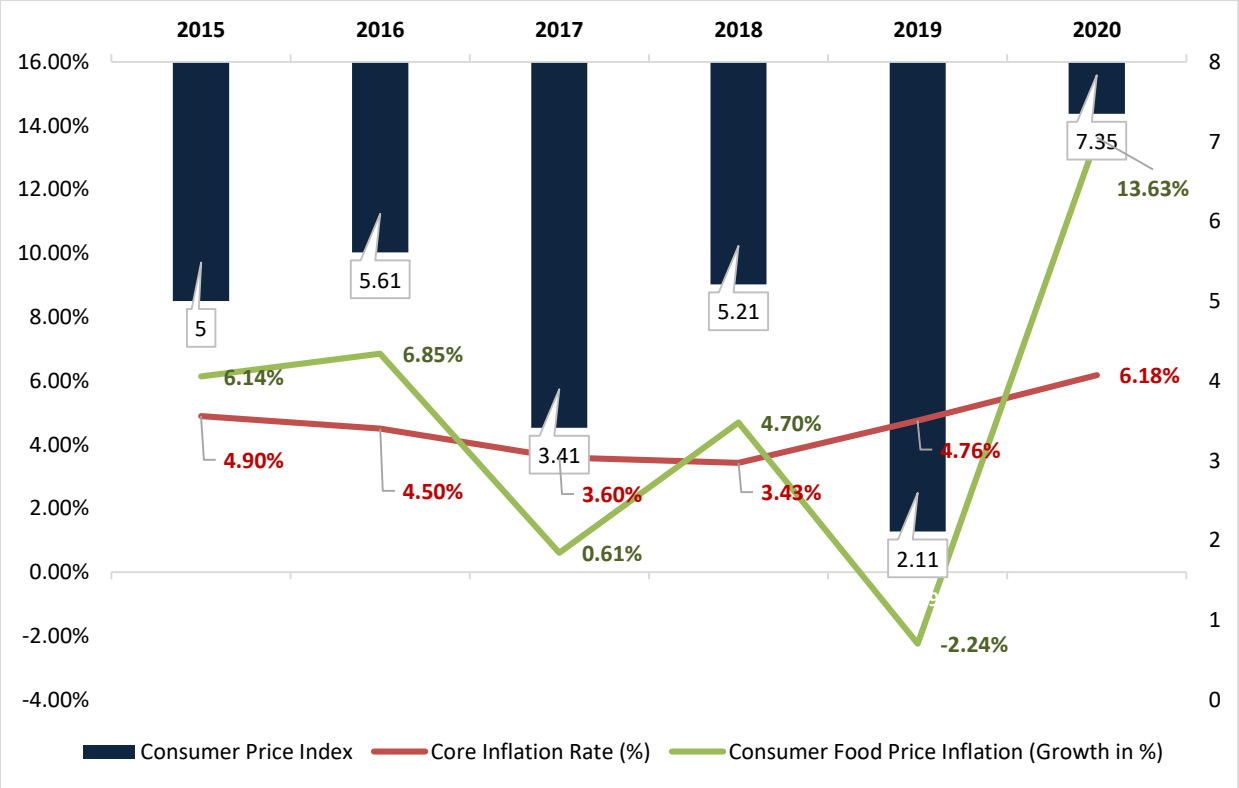
FIGURE 18 INDIA'S HOUSEHOLD DEBT: % OF GDP



Source: GST Council of India, India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data

3.6 CONSUMER PRICE INFLATION WITH DISAGGREGATION INTO CORE AND FOOD INFLATION

FIGURE 19 CONSUMER PRICE INDEX VS. CORE INFLATION RATE VS. CONSUMER FOOD PRICE INFLATION GROWTH



Source: GST Council of India, India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data

Consumer price inflation in India went through three phases in 2022. A rising phase up to April 2022 when it crested at 7.8 per cent, then a holding pattern at around 7.0 per cent up to August 2022 and then a decline to around 5.7 per cent by December 2022. The rising phase was largely due to the fallout of the Russia-Ukraine war and a shortfall in crop harvests due to excessive heat in some parts of the country. Prompt and adequate measures by the Government of India and the Reserve Bank of India (RBI) have reined in the rise in inflation and brought it within the Central Bank's tolerance limit. In contrast, major Western countries, which pumped stimulus during the pandemic periods, continue to grapple with high levels of inflation.

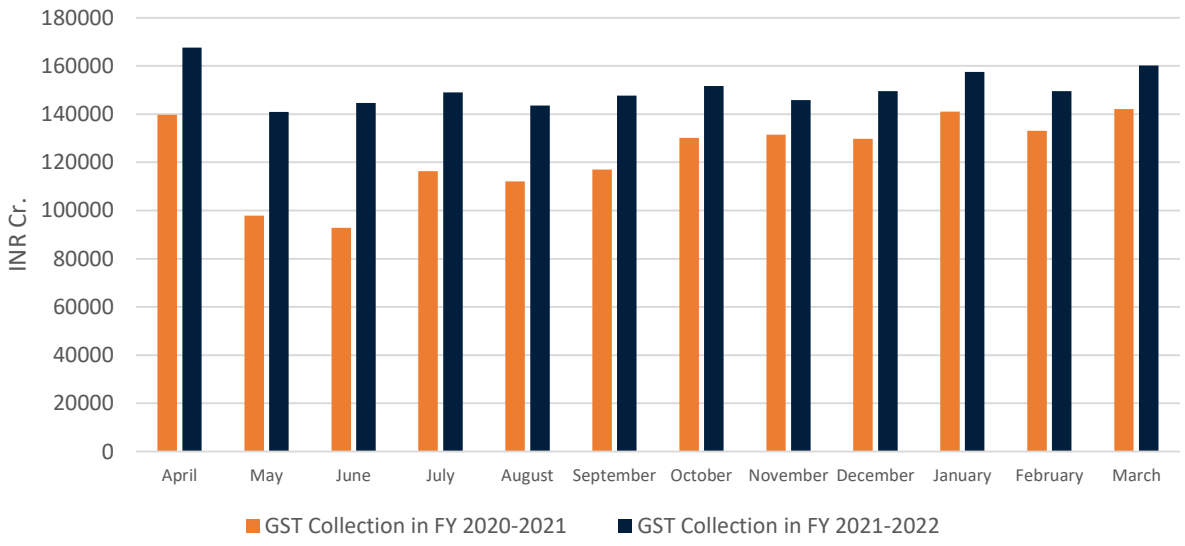
The rise in prices is a constant concern for policymakers because it disproportionately affects the general population. This issue is particularly felt in developing economies where essential items make up a larger portion of people's expenses compared to developed countries. In India, inflation has been relatively stable, staying below the Reserve Bank of India's target rate of 4 percent between 2017 and 2019. However, in 2020, disruptions in the supply chain caused inflation to exceed the upper limit of 6 percent set by the RBI. The COVID-19 pandemic had a greater impact on the supply of essential goods, food, medicine, and industrial products, leading to increased cost-push inflation in the country. As the pandemic subsided, a conflict between Russia and Ukraine caused inflation worldwide, primarily driven by soaring prices of crude oil and other commodities. Prices reached

a ten-year high, putting a strain on household budgets and prompting central banks to tighten monetary policies. Developed economies, faced with an ailing global economy and unprecedented inflation rates, had no choice but to raise interest rates.

The US Federal Reserve's rate hikes resulted in a stronger US dollar, making fuel imports more expensive. The IMF projects that inflation in advanced economies will rise from 3.1 percent in 2021 to 7.2 percent in 2022, the highest since 1982. In September 2022, the Euro area experienced a rate of 10.0 percent, while the US reached its highest inflation rate in 40 years at 9.1 percent in June 2022, which later moderated to 6.5 percent in December 2022. The UK witnessed a 9.2 percent annual price rise in December 2022, and Germany experienced inflation of 8.6 percent in the same month. Among emerging markets, Brazil saw a moderation in price trends, but Turkey faced inflation rates above 80 percent from August to November 2022, which slightly declined to 64.3 percent in December 2022. The war exacerbated the effects of a strong recovery in demand for goods and services following the pandemic. In emerging markets and developing economies (EMDEs), inflation is expected to have increased from 5.9 percent in 2021 to 9.9 percent in 2022, according to the IMF's projections in October 2022.

3.7 GST COLLECTIONS AND THEIR TREND

FIGURE 20 TREND IN GST COLLECTION (INR CRORE)



Source: GST Council of India, India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data

The month of March 2023 witnessed a significant milestone in India's tax landscape as the gross Goods and Services Tax (GST) revenue collection crossed the INR 1.5 lakh crore mark for the fourth time in the current fiscal year. This accomplishment, coupled with record-breaking Integrated GST (IGST) collections, reflects the strength and effectiveness of the GST system implemented in the country. This write-up presents an overview of the revenue collection figures for March 2023, highlights the growth compared to the previous year, discusses return filing trends, and provides state-wise data for GST collections.

Revenue Collection Figures for March 2023: In March 2023, the gross GST revenue collected amounted to INR 1,60,122 crore. The revenue distribution breakdown includes INR 29,546 crore for Central GST (CGST), ₹37,314 crore for State GST (SGST), INR 82,907 crore for IGST (including INR 42,503 crore from the import of goods), and INR 10,355 crore for cess (including INR 960 crore from the import of goods). Notably, the IGST collection reached its highest-ever level during this month.

Settlements and Total Revenue for CGST and SGST: As part of regular settlements, the government allocated INR 33,408 crore to CGST and INR 28,187 crore to SGST from IGST. Consequently, the total revenue for the Centre and the States for March 2023, after the IGST settlement, stood at INR 62,954 crore for CGST and INR 65,501 crore for SGST.

Growth Comparison and Return Filing Trends: The revenues generated in March 2023 exhibited a 13% increase compared to the GST revenues recorded in the same month of the previous year. Import of goods contributed to an 8% growth in revenue, while domestic transactions (including import of services) demonstrated a 14% surge in revenue compared to March of the preceding year. Moreover, the month of March 2023 witnessed the highest-ever filing of returns, with 93.2% of statement of invoices (in GSTR-1) and 91.4% of returns (in GSTR-3B) for February being filed by March 2023. These figures reflect a substantial improvement from the corresponding month in the previous year, which saw filing rates of 83.1% and 84.7% for statement of invoices and returns, respectively.

Gross Collection Figures for FY 2022-23: The total gross collection for the fiscal year 2022-23 reached INR 18.10 lakh crore, with an average monthly collection of INR 1.51 lakh crore. This represents a remarkable 22% increase in gross revenues compared to the previous year. In the final quarter of the fiscal year, the average monthly gross GST collection amounted to INR 1.55 lakh crore, surpassing the average monthly collections of INR 1.51 lakh crore, INR 1.46 lakh crore, and INR 1.49 lakh crore in the first, second, and third quarters, respectively.

3.8 INDIAN ECONOMY OUTLOOK & ECONOMIC IMPACT OF COVID-19 ON INDIAN ECONOMY

The pandemic's impact on India was evident in a large GDP decline in FY21. Despite the Omicron wave of January 2022, the Indian economy began to recover the next year, FY22. Since the pandemic's onset in January 2020, the third wave has had less of an impact on Indian economic activity than the prior waves. Mobility enabled by localised lockdowns, rapid vaccine coverage, light symptoms, and speedy recovery from the virus all helped to keep economic output losses to a minimum in the January-March quarter of 2022. As a result, output in FY22 surpassed its pre-pandemic level in FY20, putting the Indian economy ahead of many other countries in terms of full recovery. The Omicron variant experience inspired cautious optimism that it was possible to remain physically mobile and engage in economic activities despite the epidemic. Thus, FY23 began with the firm confidence that the pandemic was rapidly fading and that India was prepared to expand significantly and quickly return to its pre-pandemic growth path.

Some of the key highlights include

- The growth rates of Primary sector (comprising Agriculture, Forestry, Fishing and Mining & Quarrying), Secondary sector (comprising Manufacturing, Electricity, Gas, Water Supply & Other Utility Services, and Construction) and Tertiary sector (Services) have been estimated as 3.9 %, 12.0 % and 8.8 respectively in 2021-22 as against a growth of 2.4 %, -0.2 per cent and -8.2 %, respectively, in the previous year. The growth in real GVA during 2021-22 is on account of growth in 'Mining and Quarrying', 'Manufacturing', 'Electricity, Gas, Water Supply & Other Utility Services', 'Construction', 'Trade, repair, Hotels and Restaurants', 'Transport, Storage and Communication & Services related to Broadcasting' and 'Other services' as may be seen from Statement 4.2B. However, 'Agriculture, Forestry and Fishing', 'Financial Services', 'Real Estate, Ownership of Dwelling & Professional Services' and 'Public Administration and Defence' have witnessed modest growth during this period.
- Services account for more than half of the Indian economy and was the most impacted by the COVID-19 related restrictions, especially for activities that need human contact. Although the overall sector first contracted by 8.4 % in 2020-21 and then is estimated to grow by 8.2 % in 2021-22, it should be noted that there is a wide dispersion of performance by different sub-sectors. Both the Finance/Real Estate and the Public Administration segments are now well above pre-COVID levels. However, segments like Travel, Trade and Hotels are yet to fully recover. It should be added that the stop-start nature of repeated pandemic waves makes it especially difficult for these sub-sectors to gather momentum.
- India's exports of both goods and services have been exceptionally strong so far in 2021-22. Merchandise exports have been above INR 2,21,80,863 Lakhs for eight consecutive months in 2021-22, despite a rise in trade costs arising from global supply constraints such as fewer operational shipping vessels, exogenous events such as blockage of Suez Canal and COVID-19 outbreak in port city of China etc. Concurrently, net services exports have also risen sharply, driven by professional and management consulting services, audio visual and related services, freight transport services, telecommunications, computer and information services. From a demand perspective, India's total exports are expected to grow by 16.5 % in 2021-22 surpassing pre-pandemic levels. Imports also recovered strongly with revival of domestic demand and continuous rise in price of imported crude and metals. Imports are expected to grow by 29.4 % in 2021-22 surpassing corresponding pre-pandemic levels.
- Inflation would likely slow to 5% in FY2023, assuming oil and food prices remain stable, and then to 4.5% in FY2024 as inflationary pressures ease. In tandem, monetary policy is likely to be tighter in FY2023 as core inflation remains high, before becoming more flexible in FY2024. The current account deficit is expected to fall to 2.2% of GDP in fiscal year 2023 and 1.9% in fiscal year 2024. Goods export growth is expected to decrease in FY2023 before rebounding in 2024, as production-linked incentive schemes and initiatives to improve the business environment, such as reduced labour regulations, boost performance in electronics and other sectors of industrial growth. Growth in service exports has been strong, and it is likely to continue to boost India's overall balance of payments position.

3.9 CURRENT GEOPOLITICAL SENARIO

Since 2020, the global economy has been hit by at least three major shocks, breaking from the past pattern of severe but spaced out economic shocks. The pandemic caused a contraction of the global output, followed by the Russian-Ukraine conflict leading to worldwide inflation and synchronized policy rate hikes by central banks, including the Federal Reserve. This led to an appreciation of the US Dollar and wider Current Account Deficits (CAD) in net importing economies, as well as lower global growth forecasts for 2022 and 2023 by the IMF, due to persistent inflation and the frailties of the Chinese economy. The rising debt of the non-financial sector in advanced economies, combined with monetary tightening and persistent inflation, may lead to a financial contagion and elevated downside risks to the global outlook.

Post the pandemic, the global economic recovery was progressing until the Russia-Ukraine conflict started in Feb 2022, disrupting the restoration of supply chains and trade. This conflict has now lasted almost a year and caused as many disruptions as the pandemic did in two years. The prices of key commodities such as oil, gas, fertilizers, and wheat skyrocketed, worsening inflationary pressures fueled by large fiscal stimuli and accommodative monetary policies. Inflation in advanced economies, which received most of the global fiscal expansion and monetary easing, reached historical highs. Rising commodity prices also led to higher inflation in emerging markets, which were previously experiencing lower inflation due to their governments' calibrated fiscal stimulus to address the 2020 contraction.

The Indian economy has recovered from the pandemic and is poised for growth in FY23, outpacing many other nations. However, it faced inflation challenges in FY23, exacerbated by the European strife. The government and RBI, along with easing global commodity prices, managed to bring retail inflation within the RBI's upper tolerance target in November 2022. The depreciating rupee, although better than most currencies, remains a challenge, with the possibility of further policy rate hikes by the US Fed. The CAD may also persist due to elevated global commodity prices and strong growth momentum in the Indian economy.

Despite challenges, India is projected to be the fastest-growing major economy at 6.5-7.0% in FY23 by agencies worldwide. The optimistic growth forecasts are driven by the resilience of the Indian economy, seen in the rebound of private consumption as the leading driver of growth. This uptick in consumption has increased production activity and capacity utilization across sectors. The near-universal vaccination coverage overseen by the government, along with the world's second-largest vaccination drive involving over 2 billion doses, has brought people back to the streets to spend on contact-based services and lifted consumer sentiments, leading to a prolonged rebound in consumption.

3.10 COMPETITION FROM DOMESTIC AND INTERNATIONAL MANUFACTURERS AND TRADERS IN THE INDUSTRY

The manufacturing industry in India is facing intense competition from both domestic and international manufacturers and traders. With a growing economy and a large population, India is a highly attractive market for companies looking to expand their global footprint. However, this has led to a crowded and highly competitive market, where manufacturers and traders must constantly innovate and adapt to stay ahead of the competition. Indian manufacturers face competition from their international counterparts, who may have access to lower cost production methods and advanced technologies. The entry of multinational companies into the Indian market has increased competition significantly, especially in industries such as automotive, electronics, and pharmaceuticals. These companies often have significant resources at their disposal, which allows them to invest in research and development, marketing, and distribution on a much larger scale than domestic manufacturers.

To remain competitive in this environment, Indian manufacturers must focus on delivering high-quality products and exceptional customer service. They must also adopt new and innovative manufacturing processes, invest in research and development, and build strong relationships with customers and suppliers. Many Indian manufacturers have responded to this challenge by developing niche capabilities in areas such as precision engineering, high-tech manufacturing, and design, where they can offer unique value propositions that international competitors may find difficult to match. Indian manufacturers are also expanding their global footprint and entering new markets, such as Africa and Southeast Asia, to diversify their customer base and reduce their dependence on the Indian market. However, this strategy also requires significant investments in marketing, distribution, and logistics, as well as adapting to different regulatory environments and cultural nuances.

International manufacturers and traders entering the Indian market face significant challenges, including navigating complex regulatory environments and cultural differences. However, they are also attracted to the large and growing Indian market, which offers significant opportunities for growth and expansion. In some industries, such as automotive and electronics, international manufacturers have a significant advantage due to their advanced technologies, extensive supply chains, and established global brands. However, in other industries, such as textiles and handicrafts, domestic manufacturers have a competitive advantage due to their knowledge of local market needs and their ability to offer unique designs and craftsmanship.

To succeed in the Indian market, international manufacturers and traders must understand the unique challenges and opportunities presented by this dynamic and diverse market. They must also invest in local manufacturing, marketing, and distribution capabilities, as well as building strong relationships with customers and suppliers.

4 PLASTIC MOLDED INDUSTRY: GLOBAL

4.1 REGIONAL MARKET SIZING

4.1.1 GLOBAL PLASTIC MOLDED PLASTICS MARKET REVENUE ESTIMATES AND FORECASTS, BY REGION, 2019-2030 (INR LAKHS)

TABLE 4 GLOBAL PLASTIC MOLDED PLASTICS MARKET REVENUE ESTIMATES AND FORECASTS, BY REGION, 2019-2030 (INR LAKHS)

Region	2019	2020	2021	2022	2030	CAGR (2022-30)
Asia Pacific	133,747,218.97	137,715,236.98	143,442,549.52	153,746,955.47	264,120,063.70	**7.00%**
North America	72,333,198.94	74,532,637.14	77,533,827.38	82,996,703.43	141,034,979.06	**6.85%**
Europe	54,966,821.95	56,667,658.65	58,895,183.16	62,985,939.89	106,188,162.15	**6.75%**
Middle East & Africa	11,827,978.75	12,199,455.11	12,668,885.91	13,537,888.54	22,667,860.00	**6.66%**
Latin America	17,839,064.64	18,460,080.48	19,058,811.30	20,244,383.26	32,116,296.10	**5.94%**
Total	**290,714,283.24**	**299,575,068.36**	**311,599,257.26**	**333,511,870.60**	**566,127,361.01**	**6.84%**

Source: India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data

4.1.2 GLOBAL PLASTIC MOLDED PLASTICS MARKET VOLUME ESTIMATES AND FORECASTS, BY REGION, 2019-2030 (KILO TONS)

TABLE 5 GLOBAL PLASTIC MOLDED PLASTICS MARKET VOLUME ESTIMATES AND FORECASTS, BY REGION, 2019-2030 (KILO TONS)

Region	2019	2020	2021	2022	2030	CAGR (2022-30)
Asia Pacific	125,403.93	122,548.48	127,812.25	133,381.47	191,429.85	**4.62%**
North America	63,706.60	62,300.68	64,894.22	67,634.79	96,018.62	**4.48%**
Europe	47,345.85	46,325.08	48,209.12	50,198.13	70,703.24	**4.37%**
Middle East & Africa	10,149.22	9,934.87	10,330.67	10,748.20	15,035.38	**4.29%**
Latin America	15,070.46	14,810.08	15,293.57	15,798.56	20,719.86	**3.45%**
Total	**261,676.1**	**255,919.2**	**266,539.8**	**277,761.2**	**393,907.0**	**4.46%**

Source: India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data

4.1.3 ASIA-PACIFIC PLASTIC MOLDED PLASTICS MARKET REVENUE ESTIMATES AND FORECASTS, BY COUNTRY, 2019-2030 (INR LAKHS)

TABLE 6 ASIA-PACIFIC PLASTIC MOLDED PLASTICS MARKET REVENUE ESTIMATES AND FORECASTS, BY COUNTRY, 2019-2030 (INR LAKHS)

Country	2019	2020	2021	2022	2030	CAGR (2022-30)
China	72,866,562.83	75,054,594.06	78,127,677.18	83,687,646.06	143,005,963.22	**6.93%**
India	24,961,335.16	25,671,945.67	26,794,654.23	28,779,445.38	50,319,910.65	**7.23%**
Japan	13,813,901.92	14,225,390.43	14,813,946.05	15,874,812.71	27,223,019.28	**6.97%**
South Korea	7,004,493.35	7,227,595.55	7,499,964.01	8,008,190.74	13,321,092.54	**6.57%**
Rest of Asia Pacific	15,100,925.71	15,535,711.26	16,206,308.04	17,396,860.58	30,250,078.01	**7.16%**
Total	**133,747,218.97**	**137,715,236.98**	**143,442,549.52**	**153,746,955.47**	**264,120,063.70**	**7.00%**

Source: India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data

4.1.4 ASIA-PACIFIC PLASTIC MOLDED PLASTICS MARKET VOLUME ESTIMATES AND FORECASTS, BY COUNTRY, 2019-2030 (KILO TONS)

TABLE 7 ASIA-PACIFIC PLASTIC MOLDED PLASTICS MARKET VOLUME ESTIMATES AND FORECASTS, BY COUNTRY, 2019-2030 (KILO TONS)

Country	2019	2020	2021	2022	2030	CAGR (2022-30)
China	70,434.09	68,854.37	71,767.47	74,847.72	106,853.98	**4.55%**
India	23,640.63	23,075.42	24,116.12	25,219.48	36,839.43	**4.85%**
Japan	12,823.94	12,533.40	13,069.05	13,635.66	19,535.44	**4.60%**
South Korea	6,376.26	6,244.28	6,488.08	6,745.07	9,373.70	**4.20%**
Rest of Asia Pacific	12,129.01	11,841.02	12,371.53	12,933.54	18,827.31	**4.81%**
Total	**125,403.93**	**122,548.48**	**127,812.25**	**133,381.47**	**191,429.85**	**4.62%**

Source: India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data

4.1.5 EUROPE PLASTIC MOLDED PLASTICS MARKET REVENUE ESTIMATES AND FORECASTS, BY COUNTRY, 2019-2030 (INR LAKHS)

TABLE 8 EUROPE PLASTIC MOLDED PLASTICS MARKET REVENUE ESTIMATES AND FORECASTS, BY COUNTRY, 2019-2030 (INR LAKHS)

Country	2019	2020	2021	2022	2030	CAGR (2022-30)
Germany	14,164,958.36	14,599,081.05	15,180,658.60	16,243,443.40	27,504,452.33	**6.80%**
France	5,221,063.43	5,383,804.70	5,593,247.63	5,979,374.70	10,046,894.80	**6.70%**
U.K.	4,364,860.87	4,502,104.06	4,675,052.38	4,995,415.01	8,359,863.16	**6.65%**
Italy	7,185,121.47	7,399,942.17	7,704,649.15	8,254,819.07	14,132,911.81	**6.95%**
Spain	3,875,959.88	4,000,296.08	4,149,418.03	4,428,837.71	7,342,333.69	**6.52%**
Rest of Europe	20,154,857.94	20,782,430.59	21,592,157.38	23,084,050.01	38,801,706.36	**6.71%**
Total	**54,966,821.95**	**56,667,658.65**	**58,895,183.16**	**62,985,939.89**	**106,188,162.15**	**6.75%**

4.1.6 EUROPE PLASTIC MOLDED PLASTICS MARKET VOLUME ESTIMATES AND FORECASTS, BY COUNTRY, 2019-2030 (KILO TONS)

TABLE 9 EUROPE PLASTIC MOLDED PLASTICS MARKET VOLUME ESTIMATES AND FORECASTS, BY COUNTRY, 2019-2030 (KILO TONS)

Country	2019	2020	2021	2022	2030	CAGR (2022-30)
Germany	12,259.88	11,992.12	12,486.18	13,008.03	18,401.61	**4.43%**
France	4,461.49	4,366.26	4,542.06	4,727.58	6,636.43	**4.33%**
U.K.	3,838.37	3,757.44	3,906.89	4,064.54	5,682.74	**4.28%**
Italy	6,270.44	6,129.03	6,389.77	6,665.52	9,534.06	**4.58%**
Spain	3,302.25	3,234.61	3,359.58	3,491.26	4,835.55	**4.16%**
Rest of Europe	17,213.42	16,845.61	17,524.63	18,241.19	25,612.85	**4.33%**
Total	**47,345.85**	**46,325.08**	**48,209.12**	**50,198.13**	**70,703.24**	**4.37%**

4.1.7 NORTH AMERICA PLASTIC MOLDED PLASTICS MARKET REVENUE ESTIMATES AND FORECASTS, BY COUNTRY, 2019-2030 (INR LAKHS)

TABLE 10 NORTH AMERICA PLASTIC MOLDED PLASTICS MARKET REVENUE ESTIMATES AND FORECASTS, BY COUNTRY, 2019-2030 (INR LAKHS)

Country	2019	2020	2021	2022	2030	CAGR (2022-30)
The U.S.	61,127,337.33	63,005,937.86	65,506,312.27	70,081,975.23	118,518,769.81	**6.79%**
Canada	6,914,681.08	7,113,198.66	7,421,212.74	7,967,594.72	13,881,800.04	**7.19%**
Mexico	4,291,180.54	4,413,500.62	4,606,302.36	4,947,133.48	8,634,409.22	**7.21%**
Total	**72,333,198.94**	**74,532,637.14**	**77,533,827.38**	**82,996,703.43**	**141,034,979.06**	**6.85%**

Source: India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data

4.1.8 NORTH AMERICA PLASTIC MOLDED PLASTICS MARKET VOLUME ESTIMATES AND FORECASTS, BY COUNTRY, 2019-2030 (KILO TONS)

TABLE 11 NORTH AMERICA PLASTIC MOLDED PLASTICS MARKET VOLUME ESTIMATES AND FORECASTS, BY COUNTRY, 2019-2030 (KILO TONS)

Country	2019	2020	2021	2022	2030	CAGR (2022-30)
The U.S.	54,380.98	53,197.66	55,381.25	57,687.33	81,504.31	**4.41%**
Canada	5,982.34	5,840.68	6,101.57	6,378.06	9,283.82	**4.80%**
Mexico	3,343.28	3,262.33	3,411.40	3,569.40	5,230.49	**4.89%**
Total	**63,706.60**	**62,300.68**	**64,894.22**	**67,634.79**	**96,018.62**	**4.48%**

Source: India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data

4.1.9 MIDDLE EAST AND AFRICA PLASTIC MOLDED PLASTICS MARKET REVENUE ESTIMATES AND FORECASTS, BY COUNTRY, 2019-2030 (INR LAKHS)

TABLE 12 MIDDLE EAST AND AFRICA PLASTIC MOLDED PLASTICS MARKET REVENUE ESTIMATES AND FORECASTS, BY COUNTRY, 2019-2030 (INR LAKHS)

Country	2019	2020	2021	2022	2030	CAGR (2022-30)
Saudi Arabia	4,117,989.98	4,244,481.16	4,413,042.57	4,721,427.23	7,986,484.30	**6.79%**
South Africa	2,067,865.26	2,131,843.48	2,215,657.33	2,369,568.36	3,995,080.23	**6.75%**
Rest of MEA	5,642,123.50	5,823,130.46	6,040,186.01	6,446,892.96	10,686,295.47	**6.52%**
Total	**11,827,978.75**	**12,199,455.11**	**12,668,885.91**	**13,537,888.54**	**22,667,860.00**	**6.66%**

Source: India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data

4.1.10 MIDDLE EAST AND AFRICA PLASTIC MOLDED PLASTICS MARKET VOLUME ESTIMATES AND FORECASTS, BY COUNTRY, 2019-2030 (KILO TONS)

TABLE 13 MIDDLE EAST AND AFRICA PLASTIC MOLDED PLASTICS MARKET VOLUME ESTIMATES AND FORECASTS, BY COUNTRY, 2019-2030 (KILO TONS)

Country	2019	2020	2021	2022	2030	CAGR (2022-30)
Saudi Arabia	3,526.47	3,449.68	3,591.37	3,741.02	5,286.79	**4.42%**
South Africa	1,838.73	1,799.08	1,872.26	1,949.52	2,746.01	**4.38%**
Rest of MEA	4,784.03	4,686.11	4,867.04	5,057.66	7,002.59	**4.15%**
Total	**10,149.22**	**9,934.87**	**10,330.67**	**10,748.20**	**15,035.38**	**4.29%**

4.1.11 LATIN AMERICA PLASTIC MOLDED PLASTICS MARKET REVENUE ESTIMATES AND FORECASTS, BY COUNTRY, 2019-2030 (INR LAKHS)

TABLE 14 LATIN AMERICA PLASTIC MOLDED PLASTICS MARKET REVENUE ESTIMATES AND FORECASTS, BY COUNTRY, 2019-2030 (INR LAKHS)

Country	2019	2020	2021	2022	2030	CAGR (2022-30)
Brazil	4,664,449.35	4,825,046.67	4,984,848.55	5,298,490.17	8,452,863.87	**6.01%**
Rest of LATAM	13,174,615	13,635,034	14,073,963	14,945,893	23,663,432	**5.91%**
Total	**17,839,065**	**18,460,080**	**19,058,811**	**20,244,383**	**32,116,296**	**5.94%**

Source: India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data

4.1.12 LATIN AMERICA PLASTIC MOLDED PLASTICS MARKET VOLUME ESTIMATES AND FORECASTS, BY COUNTRY, 2019-2030 (KILO TONS)

TABLE 15 LATIN AMERICA PLASTIC MOLDED PLASTICS MARKET VOLUME ESTIMATES AND FORECASTS, BY COUNTRY, 2019-2030 (KILO TONS)

Country	2019	2020	2021	2022	2030	CAGR (2022-30)
Brazil	4,024.24	3,953.25	4,085.01	4,222.73	5,569.21	**3.52%**
Rest of LATAM	11,046.22	10,856.83	11,208.56	11,575.83	15,150.65	**3.42%**
Total	**15,070.46**	**14,810.08**	**15,293.57**	**15,798.56**	**20,719.86**	**3.45%**

Source: India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data

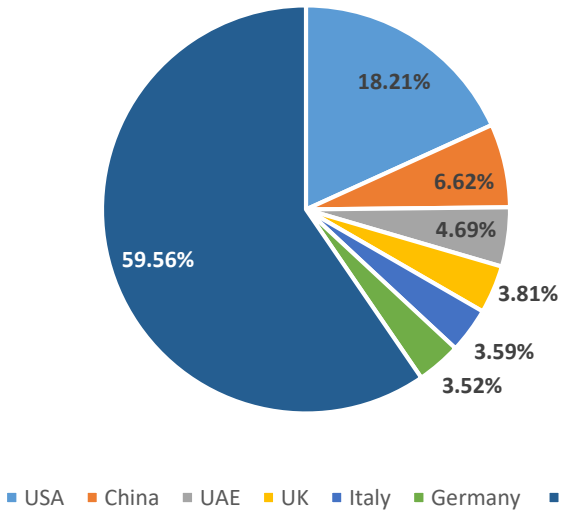
4.2 EXPORT AND IMPORT TRENDS

The packaging industry is one of the major consumers of molded plastic globally. It is used to manufacture the cans, containers, bottles, and packaging films. For the packaging of food and beverage, pharmaceutical, chemical, and industrial items, these products are frequently utilized. The primary reasons anticipated to propel the molded plastics industry are changing packaging trends, rising disposable income, bettering lifestyles, and rising per capita expenditure on food and beverage.

India exports plastic to almost 200 nations worldwide. The USA, Germany, Japan, France, and China are the top 5 importers of consumer and household goods. Britain, France, and Japan. India sells plastic and related goods to the USA, China, UAE, Germany, Italy, the UK, Bangladesh, Nepal, Turkey, France, Viet Nam, Indonesia, and other countries in huge quantities. The value of exports to the USA, the country that consumes the most products made of plastic in India, INR 10,985.10 Lakhs in 2020–2021, an increase of 8.2% year over year. China is India's second-largest export market for plastic goods, with a total export value of INR 9,360.62 Lakhs, up 20.9% year over year. In 2020–21, the USA and China accounted for 15.0% and 12.8% of global plastic exports, respectively.

Approximately INR 1,197.73 Lakh worth of plastic was exported from India to France in total in 2020–2021. In the first quarterly of 2021–2022, the PLEXCONCIL worked with the Indo–French Chamber to increase exports to France and Europe. Recently, Mr. Piyush Goyal, Minister of Commerce and Industry, Consumer Affairs, Food and Public Distribution, and Textiles, asked the sector to follow international standards to aid in growing its global presence. A free-trade agreement that India just inked with the UAE and Australia will open up new opportunities for the plastics industry.

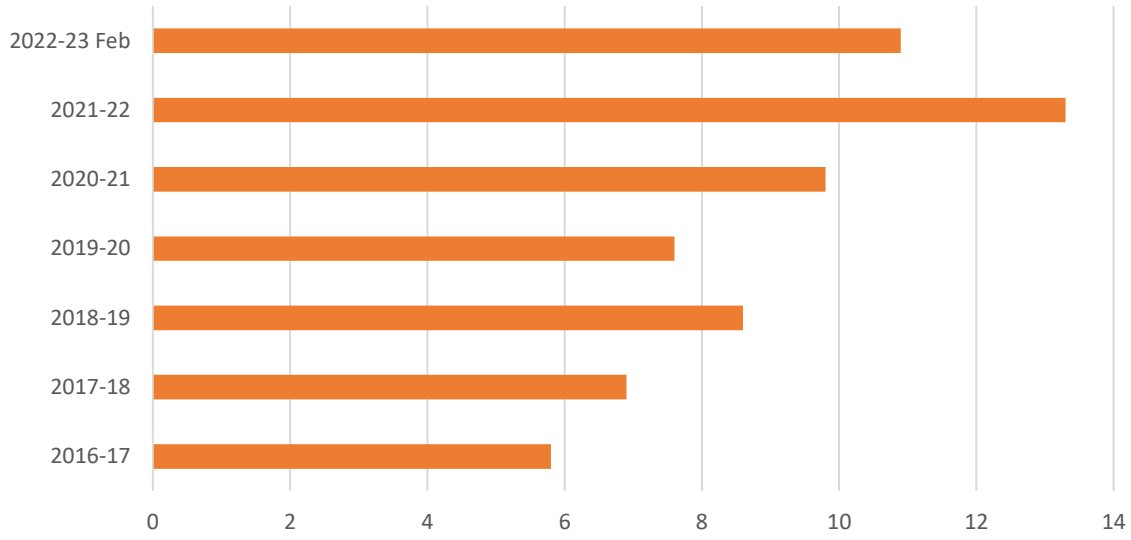
FIGURE 21 COUNTRY WISE SHARE IN EXPORT OF PLASTIC PRODUCTS: FY2022



Source: The Plastics Export Promotion Council (PLEXCONCIL), India Brand Equity Foundation, Industry News, Primary Interviews, and Reports and Data

The Union Ministry of Commerce and Industry of India targets to increase the plastic exports of the country to US$ 25 billion by 2025.

FIGURE 22 INDIA'S PLASTICS AND LINOLEUM EXPORTS: BILLION



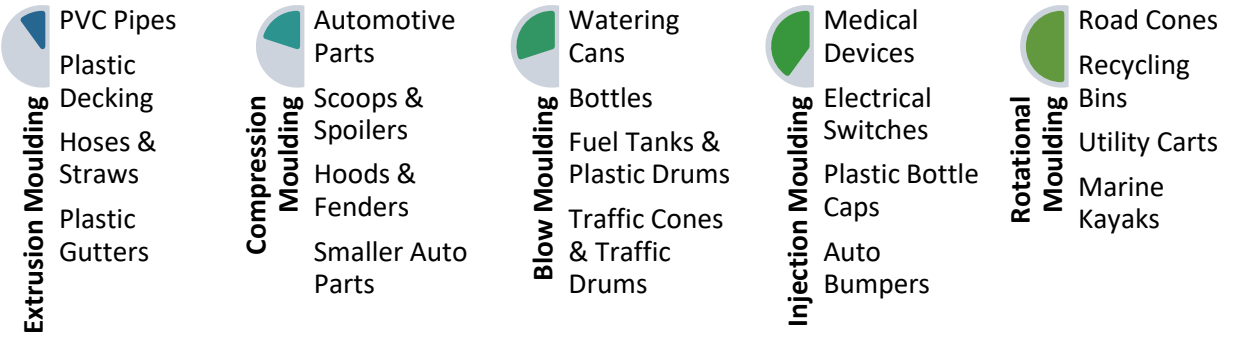
Source: The Plastics Export Promotion Council (PLEXCONCIL), India Brand Equity Foundation, Industry News, Primary Interviews, and Reports and Data

There are multiple plastic parks are being set up in the country in a phased manner that will help improve the plastic manufacturing outputs of the country. Under the plastic park schemes, funds of up to 50% of the project costs or a ceiling cost of Rs. 40 crore per project. Government initiatives like "Digital India", "Make in India", and "Skill India" will also boost India's Plastic industry. For instance, under the "Digital India" program, the government aims to reduce the import dependence of products from other countries, which will lift the local plastic part manufacturers. The government also launched a program for building Centres of Excellence (CoEs) to develop the existing petrochemical technology and promote the research environment pertaining to the sector in the country. This will aid in promoting and developing new applications of polymers and plastics in the country. Additionally, about 23 Central Institute of Plastics Engineering & Technology (CIPET) have been approved to accelerate financial and technological collaboration for promoting skills in chemicals and petrochemicals sector.

5 PLASTIC MOLDED INDUSTRY: INDIA

5.1 INDUSTRY OVERVIEW

Plastic molding is the process of pouring liquid plastic into a container or mold and allowing it to harden into the desired shape. These plastic molds can then be used for a variety of applications. When molding plastics, a powder or liquid polymer, such as polypropylene or polyethylene, is poured into a hollow mold and allowed to assume shape. Various ranges of heat and pressure are employed to create an end product depending on the type of process performed. There are many different types of plastic molding that are thought to be the most effective and popular. The following are the five most used plastic molding types and some of their major applications: -



Source: India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data

5.2 REGULATORY FRAMEWORK

REGULATION	DESCRIPTION
ISO 20457:2018 Plastics molded parts — Tolerances and acceptance conditions	• This document specifies possible manufacturing tolerances for plastic molded parts. • This document specifies all integral features with general tolerances with surface profile tolerance within a specified datum system. It allows for additional specifications in case of functional needs and requirements using the ISO-GPS-tools for dimensional and geometrical tolerating. • This document addresses injection molding, injection compression molding, transfer molding, compression molding and rotational molding of non-porous molded parts made from thermoplastics, thermoplastic elastomers, and thermosets of

	thermoplastics. This document is applicable to other plastic processes if agreed to by the contractual parties.
ISO 294-5:2017 Plastics — Injection molding of test specimens of thermoplastic materials — Part 5: Preparation of standard specimens for investigating anisotropy	• specifies a mold (designated the type F ISO mold) for the injection molding of plates with a preferred size of 80 mm × 120 mm and a minimum size of 80 mm × ≥90 mm and with a preferred thickness of 2 mm for single-point and multi-point data acquisition.
ISO 294-1:2017 Plastics — Injection molding of test specimens of thermoplastic materials — Part 1: General principles, and molding of multipurpose and bar test specimens	• This document specifies the general principles to be followed when injection molding test specimens of thermoplastic materials and gives details of mold designs for preparing two types of specimen for use in acquiring reference data, i.e. type A1 and type B1 test specimens and provides a basis for establishing reproducible molding conditions. • Its purpose is to provide consistent descriptions of the main parameters of the molding process and to establish a uniform practice in reporting molding conditions.
Guidelines for Disposal of Thermoset Plastic Waste including Sheet molding compound (SMC)/Fiber Reinforced Plastic (FRP)	• The preferred option for disposal of thermoset plastic - SMC/FRP wastes is therefore co-processing in cement plants due to its high temperature (upto2000°C and long residence time). The producers of thermoset plastic, major user like industries, Electricity authority etc., in consultation with local authority, cement plants shall work out modalities for co-processing of such waste in cement kiln. • The producers of SMC/FRP, major user like industries, Electricity authority etc. shall assist the cement plants for establishment of required facilities for utilization of SMC/FRP like shredding, feeding system, safety measures as applicable for incineration, online emission monitoring for PM, SO2 and NOx, and stack monitoring of heavy metals, dioxin and furans based on Extended Producers Responsibility.
Food Safety and Standards (Packaging and labelling) Regulations, 2011	• These regulations shall come into force on or after 5th August 2011 • Containers made of plastic materials should conform to the following Indian Standards Specification, used as appliances or receptacles for packing or storing whether partly or wholly, food articles namely:

	○ IS: 10146 (Specification for Polyethylene in contact with foodstuffs) ○ IS: 10142 (Specification for Styrene Polymers in contact with foodstuffs) ○ IS: 10151 (Specification for Polyvinyl Chloride (PVC), in contact with foodstuffs) ○ IS: 10910 (Specification for Polypropylene in contact with foodstuffs) ○ IS: 11434 (Specification for Ionomer Resins in contact with foodstuffs)

Source: India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data

5.3 DEMAND OUTLOOK

The demand growth in the molded plastics market is predicted to rise due to extensive expansion and development in the construction, automotive, and packaging industries. Molded plastics are utilized in the production of environmentally friendly, low-carbon-emission vehicles, which are increasingly in demand. Owing to the large outflow and inflow of fast moving consumer products, and rapid modernization in India has resulted in increased packaging sector expansion. These are used to produce bottles, containers, cans, and packaging films. Furthermore, molded plastics are in high demand in the electrical and electronic industry as they are utilized in the production of electronic equipment such as laptops, televisions, computers, and mobile phones.

Some of the major trends of using molded plastics affecting its demand are: -

- Molded plastics' design flexibility, chemical and moisture resistance are expected to drive their consumption in the packaging application.
- Molded plastics are increasingly being used in high-tech agricultural technologies such as irrigation systems, mulching, and greenhouses.
- Raw materials, additives, and operating properties such as formability, elasticity, hardness, rigidity, chemical and heat resistance can be varied by selecting the appropriate molding process.
- The majority of molded plastics are derived from fossil sources such as crude oil, natural gas, and naphtha. The ecological impact of petroleum-based molded plastics has prompted the development of bio-based plastics.

5.4 DRIVERS OUTLOOK

The growing demand for plastic components from various end-use industries including automotive, electrical & electronics, packaging, home appliances, and medical devices is anticipated to drive the market. Molding technology has become more important in the mass manufacturing of difficult plastic shapes as a result of modern advances to reduce the rate of faulty production. However, market expansion is projected to be hampered by variable pricing of raw materials such as benzene, ethylene, propylene, and styrene, as well as growing worries over their disposal.

Increased awareness of hygiene-related activities has fueled expansion in the packaging industry, where molded plastics are commonly utilized to create sophisticated and intricately structured plastics. The packaging business, for example, was worth over INR 64, 55,15,437 lakhs in 2019, according to a report published by the National Investment Promotion and Facilitation Agency in October 2020, and is predicted to grow at a CAGR of 2.8% from 2019 to 2024. This is one of the major factors driving the molded plastics market forward over the forecast period.

Companies are concentrating on developing molded plastics with bio-based equivalents. The versatility of finished products, such as higher heat and pressure resistance, makes them more useful to a wide range of sectors. The development of the plastics market has been aided by government support in the form of tax concessions and financial incentives in India to boost the flow of Foreign Direct Investments (FDI). Besides, India also has low-cost labor, which helps businesses lower their entire manufacturing costs. However, as a result of this shift, different plastic items have increased their capacity, influencing their costs. However, a slowdown or halt in production activities to prevent the spread of the coronavirus has resulted in a decrease in molding plastics consumption, affecting the demand in a variety of industries.

6 INJECTION MOLDED PLASTICS MARKET SEGMENTATION & IMPACT ANALYSIS

6.1 MARKET OVERVIEW

The fast-moving consumer goods (FMCG) sector, is India's fourth-largest industry, represents one of most prospects for packaging. Packaging is rapidly growing business in India. Food and beverages, cosmetics, personal care, and pharmaceuticals are the end-user sectors where plastic bottles and jars are most commonly used in the country. The growth of the packaging market in India is directly related to the growth of the retail industry. The Indian packaging business is experiencing exponential growth owing to increasing organized retail and the boom in the E-Commerce sector. It has resulted in thousands of packets being sent every day across the country, necessitating high-quality product packaging which is possible through injection molded plastics. The packaging industry in India is majorly driven by numerous logistic applications, technological advancements, and rising demand in the packaging sector across India's emerging market, which in turn simultaneously increases the demand for the injection molded plastics market within the region.

In addition, India is a significant player in the global pharmaceutical sector accounting for 20% of the world supply of generic medicines by volume. In June 2021, finance minister Ms. Nirmala Sitharaman announced an additional outlay of INR 197,000,000 Lakhs that will be utilized over five years for the pharmaceutical PLI scheme in 13 key sectors such as active pharmaceutical ingredients, drug intermediaries, and key starting materials. Up to 100%, FDI has been allowed through automatic route for Greenfield pharmaceuticals projects. For Brownfield pharmaceuticals projects, FDI allowed is up to 74% through automatic route and beyond that through government approval. The cumulative FDI equity inflow in the Drugs and Pharmaceuticals industry is US$ 20.96 billion during the period April 2000-September 2022. This constitutes almost 3.35% of the total FDI inflow received across sectors. Indian pharma companies have a substantial share in the prescription market in the US and EU. The largest number of FDA-approved plants outside the US is in India.

6.2 INJECTION MOLDED PLASTICS SEGMENTATION ANALYSIS

Material
• Polypropylene • Acrylonitrile Butadiene Styrene (ABS) • High Density Polyethylene (HDPE) • Polystyrene • Others

End Use

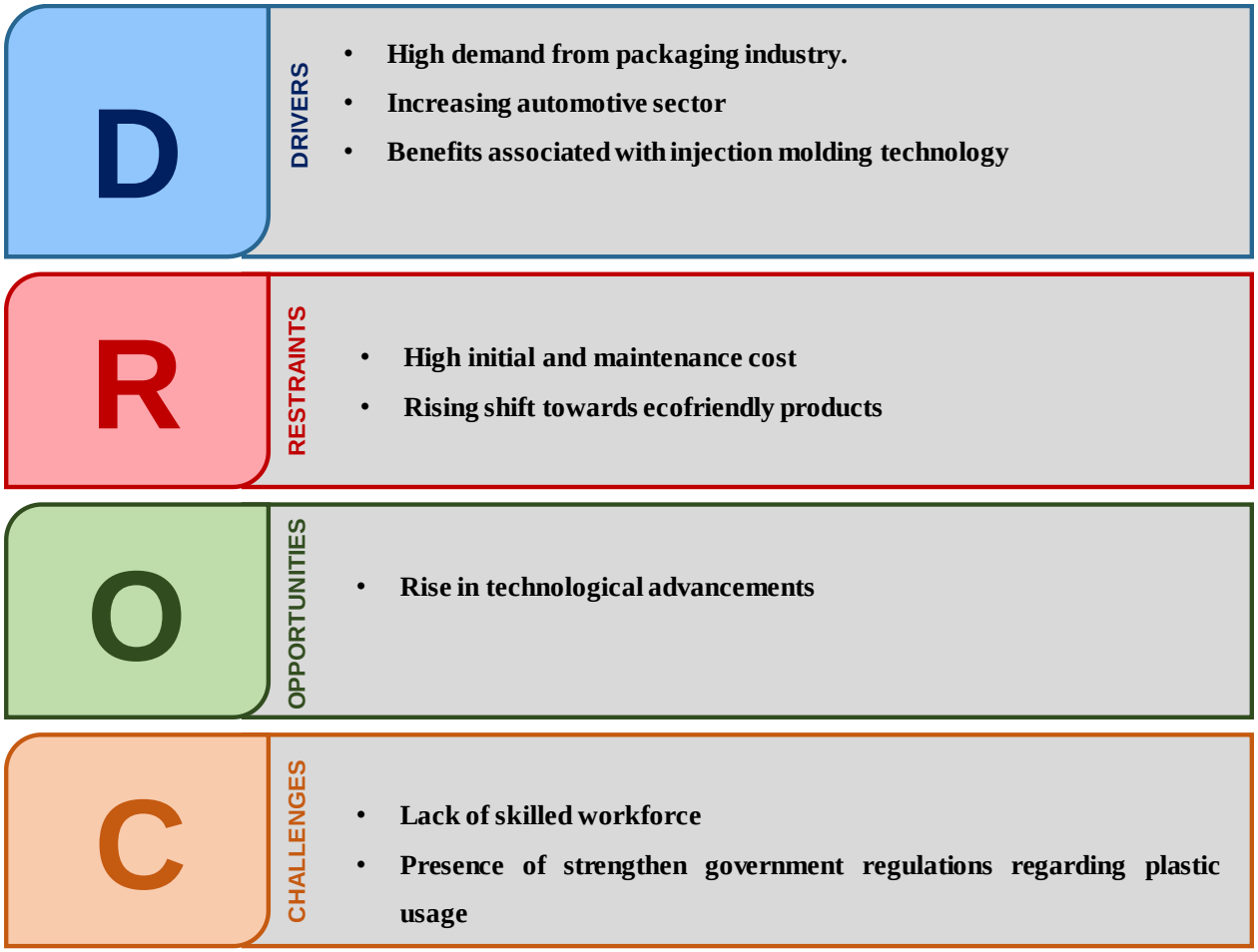
• Packaging
  • Cans
  • Jars
  • Drums
  • Containers
  • Others
• Consumer Electronics
  • Connectors
  • Modules
  • Sensors
  • Others
• Automotive & Transportation
  • Interiors & Exteriors
  • Engine Components
  • Panels
  • Handles
  • Dashboard
  • Others
• Building & Construction
• Consumer Goods
  • Furniture
  • Toys
  • Others
• Medical
• Others

Source: India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data

The estimations have been provided in terms of revenue (INR Lakhs) and volume (Kilo Tons) on the regional level, with 2021 as the base year and a forecast period from 2022 to 2030.

6.3 DROC'S ANALYSIS – INJECTION MOLDED PLASTICS

FIGURE 23 DROC'S ANALYSIS



Source: *India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data*

6.3.1 MARKET DRIVERS' ANALYSIS

6.3.1.1 HIGH DEMAND FROM MEDICAL AND PACKAGING INDUSTRY

Packaging in India is the fifth largest industry and it is experienced tremendous growth. According to the Packaging Industry Association of India (PIAI), the packaging industry in India is increasing at a rate of 22% to 25% annually. World-class products are being created locally at low cost due to an expanding number of production units, eco-friendly materials, and a greater focus on research and development. Government initiatives like 'Make in India' are expected to accelerate the process even more. The rising demand for packaging from various sectors including pharmaceuticals, food and beverages, transport, as well as households have raised the production of various innovative packaging, which has further propelled the demand for injection molded plastics products including cans, jars, drums, containers, and others. Injection molded packaging products act as

an excellent barrier to oxygen, water and carbon dioxide. They are resistant to acids, alkalis, and most solvents, ensuring the contents' freshness and hygiene, as well as the products' long-term durability. According to industry estimates, 35-40% of food produced in India are wasted due to a lack of infrastructure and processing capabilities. Plastics are used in food packaging to extend the shelf life and quality of the product while also reducing post-harvest losses.

Retail Industry is one of the most dynamic industries in India. It has experienced high growth over the past years, with a gradual shift towards modern retailing formats. Indian retail market has attracted and increased the presence of multinational companies which will favour demand in spaces such as F&B, consumers' products, and cosmetics. Rising income levels is another factor contributing towards organised retail which thus, increasing demand for innovative and attracting packaging concepts. Thus, promoting demand for plastic packaging in India which will favour market growth. Additionally, injection-molded plastics hold immense potential, particularly in the medical, food and automotive industries. Furthermore, the industry is also projected to witness the highest growth in the medical devices and components sector. Optical clarity, biocompatibility, and cost-effective method of production are key factors contributing towards product demand in the medical industry thereby propelling market growth for injection molded plastics.

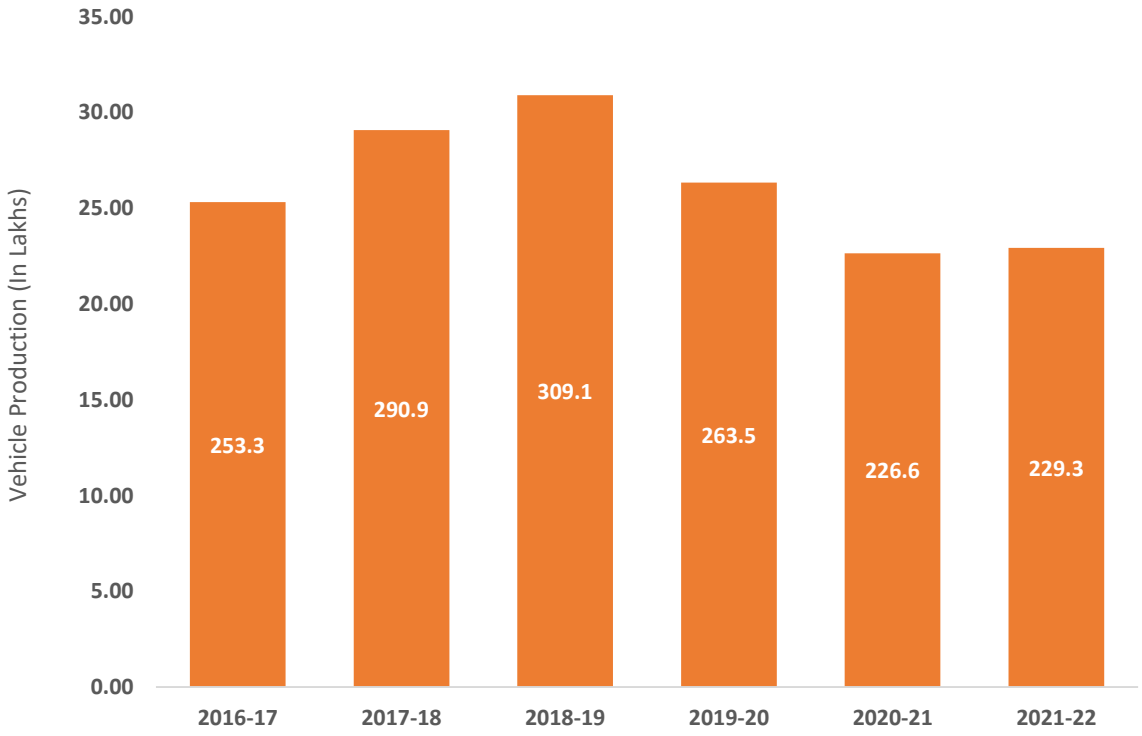
In the medical industry, plastic injection molding is used for a variety of products and equipment pieces that play a major role in several forms of healthcare. Plastic injection molded products come with several mechanical properties that are highly conducive to the medical environment. They are composed of materials that are able to hold up against repeated sterilization procedures, generally items like ABS and polycarbonate. As each piece is reusable and impact-resistant, they are ideal for products that need to be constantly reused and/or put through a great deal of wear and tear. For instance, the bed frame components provided to hospitals and other medical facilities are designed with a number of features that make them well-suited for the job.

Another common need within some medical settings is heat resistance, particularly when dealing with products that are meant to be sterilized in boiling water. In such scenarios, injection molded materials come out on top, due to their high melting points and overall chemical stability within extreme conditions.

6.3.1.2 INCREASING AUTOMOTIVE SECTOR

India, the world's fourth largest automotive market, and is expected to rise by 10% in 2022, owing to solid underlying demand arising from the general economic recovery and customers' preference for personal vehicles over public transportation. The electric vehicle (EV) market is estimated to reach Rs. 50,000 crore in India by 2025. According to NITI Aayog and the Rocky Mountain Institute (RMI), India's EV finance industry is likely to reach Rs. 3.7 lakh crore by 2030. A report by the India Energy Storage Alliance estimated that the EV market in India is likely to increase at a CAGR of 36% until 2026. In addition, the projection for the EV battery market is expected to expand at a CAGR of 30% during the same period. Indian automotive industry is targeting to increase the export of vehicles by five times during 2016-26. In FY22, total automobile exports from India stood at 5,617,246.

FIGURE 24 NUMBER OF AUTOMOBILES PRODUCED IN INDIA (IN LAKHS)



Source: Society of Indian Automobile Manufacturers

According to SIAM data reported, the industry produced a total of 2,59,31,867 vehicles including Passenger Vehicles, Commercial Vehicles, Three Wheelers, Two Wheelers, and Quadricycles in April 2022 to March 2023, as against 2,30,40,066 units in April 2021 to March 2022. The Total Passenger Vehicle Sales increased from 30,69,523 to 38,90,114 units. Sales of Passenger Cars also increased from 14,67,039 to 17,47,376, Utility Vehicles from 14,89,219 to 20,03,718 and Vans 1,13,265 to 1,39,020 units, in FY-2022-23, compared to the previous year. The overall Commercial Vehicles sales increased from 7,16,566 to 9,62,468 units. Sales of Medium and Heavy Commercial Vehicles increased from 2,40,577 to 3,59,003 units and Light Commercial Vehicles increased from 4,75,989 to 6,03,465 units, in FY-2022-23, compared to the previous year. Sales of Three Wheelers increased from 2,61,385 to 4,88,768 units, in FY-2022-23, compared to the previous year. Two Wheelers sales increased from 1,35,70,008 to 1,58,62,087 units, in FY-2022-23, compared to the previous year.

The exports In April 2022 to March 2023, Passenger Vehicle Exports increased from 5,77,875 to 6,62,891 units while Commercial Vehicle Exports decreased from 92,297 to 78,645, Three-Wheeler Exports decreased from 4,99,730 to 3,65,549 and Two Wheelers Exports decreased from 44,43,131 to 36,52,122 units over the same period last year. Thus, the demand for injection molded plastics components in automotive sector is expected to grow significantly during the forecast period. Injection molded plastics components are extensively used in the automobile sector. Some of the commonly parts made up of plastics injection molded includes panels and railings, mud guards, bumper supports, door and locking systems, seats, audio/video, brakes, and storage

systems, resonators, fuel tank systems, and electrical covers. Further, the automotive industry's growing desire for lightweight and efficient materials is driving up the demand for injection molded components significantly. Injection molded has revolutionized the automotive sector and its benefits associated including high efficiency, flexibility, reduced waste, complex part design and light weighted components has widely adopted in this sector.

6.3.1.3 BENEFITS ASSOCIATED WITH INJECTION MOLDING TECHNOLOGY

Injection molding technology is a very versatile manufacturing process, producing components of diverse shapes, sizes, and complexity. As a result, this method is widely used in a variety of applications and industries owing to its various benefits including strong, durable, and long-lasting components. The benefits associated with this technology includes high efficiency, strength and durability, produces precise and complex geometry, cost effective, production flexibility, high volume production and among others. Injection molding is able to produce extremely complicated parts with high consistency and the capability to mass-produce millions of nearly identical pieces. Key design considerations should be considered to boost the efficiency of high-volume injection molding and maximize the precision and quality of your products. The part design must be developed to take advantage of the high-volume molding's inherent efficiency. Parts can be produced consistently and with high quality with the appropriate design. Costly processing mistakes can be created without a suitable design. Thus, this factors hereby expected to drive the injection molded plastic market over the forecast period.

6.3.2 MARKET RESTRAINTS ANALYSIS

6.3.2.1 HIGH INITIAL AND MAINTENANCE COST

An injection mold is the most expensive technology as molds are made from strong materials that can withstand repeated use without deforming. Steel is the most commonly used material for injection molds, with the grade determined by the number of parts to be produced and the material to be injected into the mold. Additionally, the size and complexity of the part, the material used, and the number of parts produced are the primary factors that influence the cost of an injection mold. Also, the parts of injection molded are of high technology, is should be properly have the maintenance otherwise in case of motor failure, the high cost would be occurred as the whole system need to be changed.

6.3.2.2 RISING SHIFT TOWARDS ECOFRIENDLY PRODUCTS

Plastics role is increasing in packaging and consumer products, and additionally increasing %age of municipal solid waste streams and pose environmental challenges. It is regarded as a major threat to the environment and public health. Improper plastic disposal blocks water bodies, causes ground water pollution, and disrupts soil microbes. The release of poisonous chemicals endangers human health and the entire ecosystem. As a result of these negative consequences, society is being urged to ensure proper plastic disposal. Going forward, plastic recycling and shift towards ecofriendly products could be a vital step toward fostering innovation and sustainability. If plastics can be collected, disposed of, or recycled in accordance with established guidelines/rules, the issue of plastic waste can be properly recycled.

6.3.3 MARKET OPPORTUNITIES ANALYSIS

6.3.3.1 RISE IN TECHNOLOGICAL ADVANCEMENTS

The introduction of artificial intelligence (AI), machine learning, and advanced analytics, as well as various automation software options, are expanding the possibilities of plastic injection molding. These technologies enable reduced downtime and equipment malfunctions, the development of predictive maintenance programs, and faster production cycles. Simultaneously, new software enables companies to simulate injection molding cycles during the design process, allowing them to test for problems such as irregular fill patterns. This translates into fixing problems before moving on to the manufacturing process, saving time and money. Thus, the ongoing research and development of these technology would increase their adoption during the forecast period.

6.3.4 MARKET CHALLENGES ANALYSIS

6.3.4.1 LACK OF SKILLED WORKFORCE

Lack of skilled workforce is one of the major challenge in India. Injection molded plastics is a high technology and it requires skilled workforce to operate and the knowledge of engineering plastics material. The machine should be given proper instructions, to design, gate location and sizing, and runner and sprue geometry. For instance, in pharmaceutical application, it requires proper care to produce complex applications. And currently, one of the major challenges for market players is a lack of skilled labor. The technological advancements and application areas of injection molded plastic are rapidly changing. This necessitates operational labor to gain knowledge well on how to operate injection molded technology.

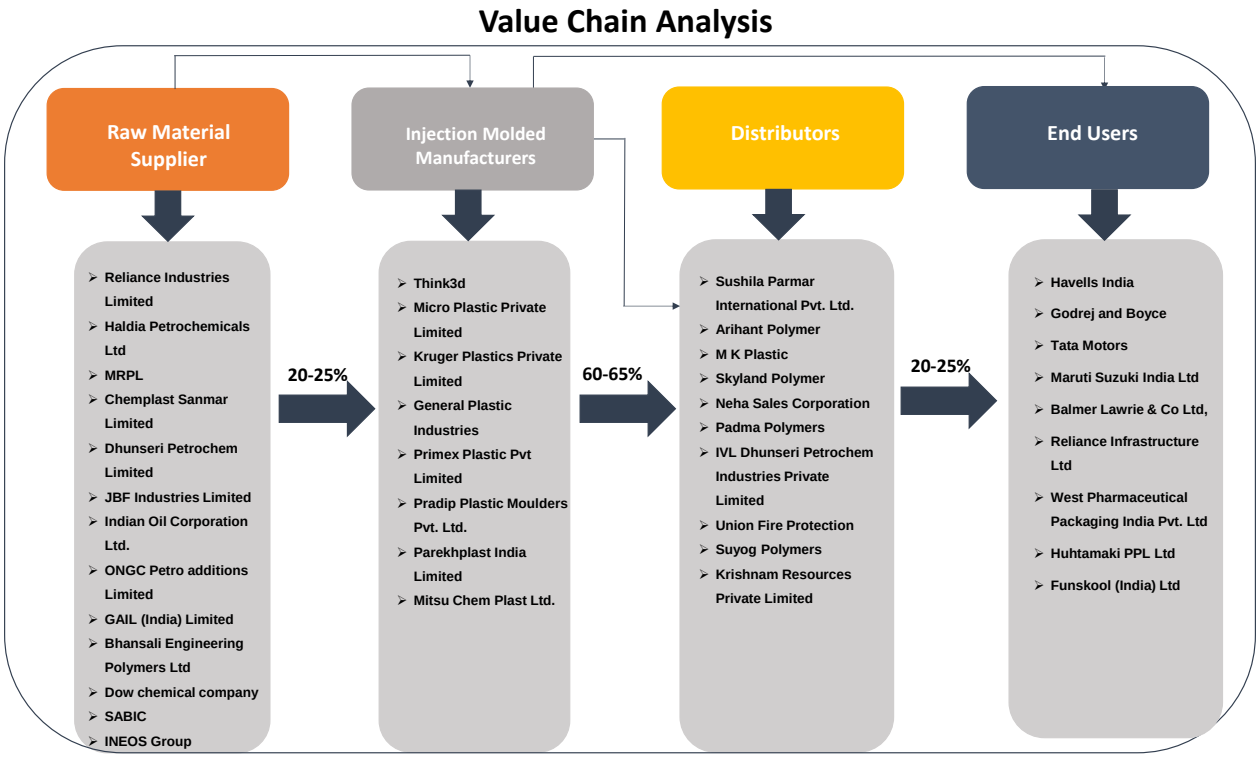
6.3.4.2 PRESENCE OF STRENGTHEN GOVERNMENT REGULATIONS REGARDING PLASTIC USAGE

The presence of government regulation regarding plastics is among one of the challenging factors for the market. Standardization in the field of plastics for use in packaging, building & construction. transportation, medical & health, electrical & electronics, agriculture, textiles, FMCG and sports & leisure items has been carried out by Bureau of Indian Standards (BIS). For instance, the Bureau of Indian Requirements (BIS) has released new polyethylene (PE) obligatory standards for companies to follow. Indian standard IS 7328:2020, titled Specification of Polyethylene Material for Molding and injection, has been revised to include the new specifications.

Also, the Ministry of Health and Family Welfare regulates food packaging materials under the Preventing Food Adulteration Act of 1954. As per this act, food must be maintained clean and sanitary, cannot be used for non-food storage, and must be stored properly to prevent contamination. The Bureau of Indian has formed a policy for plastic containers that come into contact with food. Polyethylene, styrene polyethylene, polyvinyl chloride, polypropylene, and nylon-6 polymer are among the materials which are properly checked as per standards. Thus, government and regulatory bodies have been laying focus on protecting food products from spoilage and contamination.

6.4 VALUE CHAIN AND PROFIT MARGIN ANALYSIS – INJECTION MOLDED PLASTIC

FIGURE 25 VALUE CHAIN ANALYSIS



Source: India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data

The value chain of Injection molded plastics industry consists of raw material suppliers, manufacturers, distribution channel and end-use industries.

Key Insights

- The raw material manufacturers add up margin unto 20-25% when they supply it to forging manufacturers.
- The forging manufacturers convert raw material into final product and adds margin unto 60-65%.
- The Wholesaler/supplier/distributor/Rental services adds up margin up to 20-25% and then the chain moves to the end-users.

The value chain of India injection molded plastics market starts with the procurement of raw materials suppliers from different sources. The primary raw material of injection molded plastics includes polypropylene, acrylonitrile butadiene styrene (ABS), high density polyethylene (HDPE), polystyrene, among others. The retrieval and refinement of injection molded plastics from the above materials is a complex, multi-step, and expensive process. The production process can impart different outcome & specifications on the final product and its uses. Many key players are vertically integrated into the production of the stages of the raw material while

other companies are strictly producers of raw material which is used in various end-use industries. Some of the key stakeholders at this stage includes are Reliance Industries Limited, Haldia Petrochemicals Ltd, MRPL, Chemplast Sanmar Limited, Dhunseri Petrochem Limited, Dow chemical company, SABIC, INEOS Group, JBF Industries Limited, Indian Oil Corporation Ltd., ONGC Petro additions Limited, GAIL (India) Limited, Bhansali Engineering Polymers Ltd. These companies supply raw materials for production of injection molded parts manufacturer, which are further used by end-use industries.

The next stakeholder in the market supply chain includes the manufacturers of injection molded plastics products. The companies engaged in the market require significant capital investment due to stringent specifications regarding testing and safety of injection molded plastics products, thereby discouraging entry of new players in the market. Some of the major manufacturers involved in the stage includes, Think3d, Micro Plastic Private Limited, Kruger Plastics Private Limited, General Plastic Industries, Primex Plastic Pvt Limited, Mitsu Chem Plast Ltd., Pradip Plastic Moulders Pvt. Ltd., and Parekhplast India Limited, among others.

The distributor for the market majorly includes, Texas Specialty Beverage, Vinayak Polyplast, S.B. Sales Corporation, Thermoplastic Technologies, Yashasvi Industries, Shah Plasto Moulders Pvt Ltd, Multitek Auto Parts, Urvi Corporation, Sona Technoplast, Amrutha Polymers Private Limited. In the injection molded plastics market, the distributors usually supply injection molded products to end-use companies that are majorly from the packaging, consumer electronics, automotive and transportation, building and construction, consumer goods, medical, among other sectors. The end-user for the market majorly includes, Havells India, Godrej and Boyce, Tata Motors, Maruti Suzuki India Ltd, Balmer Lawrie & Co Ltd, Reliance Infrastructure Ltd, West Pharmaceutical Packaging India Pvt. Ltd, Huhtamaki PPL Ltd, Funskool (India) Ltd among others.

6.5 KEY TRENDS IN THE INJECTION MOLDED PLASTICS INDUSTRY

Plastic injection molding is a common industrial method for mass-producing plastic components. This method has been around for a long time and has always been a fast-paced one. New trends bring unique benefits to manufacturers who use this technique as technology advances and consumers grow more particular about the attributes they desire in their components. The following are the top plastic injection molding trends that will become even more prevalent in the industry.

- **Opportunities in Medical Equipment**

Plastic injections will likely to become important in medical devices. All metal objects will be replaced with custom polymers, making them more compliant and opening up a large global market opportunity that metals cannot supply. Plastic injection molded equipment, as well as other electronic equipment, was in great demand during the Covid-19 crisis. Molding materials come in a wide range of shapes and characteristics. Sustainability's Impact on Global Climate Change Environmentalists and other leaders are attempting to cut emissions as well as other contaminants such as plastics. One of the solutions they're exploring is making customized injection-molded custom plastics from recycled plastics.

- **A renewed interest in bioplastics**

Many firms are researching the benefits of using bioplastic for mold-making and injection molding, inspired by the sustainability trend. Bioplastics, also known as PLA bioplastics, are petroleum-free polymers made from biomass such as corn, sugarcane, seaweed, or even shrimp shells. Bioplastics are biodegradable, carbon-neutral, and break down in natural conditions to only biomass, carbon dioxide, and water. Manufacturers who use bioplastics in their products and packaging can help create momentum for more environmentally friendly markets and lessen environmental harm.

- **Automated Plastic Injection Molding and new technologies**

Automated plastic injection molding is becoming more popular owing to new automation software, improved analytics, and AL equipment. Production cycles can be more efficient with less downtime and problems. For instance, Industrial robots can be used to automate the injection molding process by lifting plastic parts into the machine or placing finished pieces onto a conveyor belt. And, as human-operated injection molding allows for variation, the use of robots in the process ensures the highest quality, accurately cut, formed, and measured finished products are produced every time. The use of robotics provides manufacturers with a much-needed competitive advantage with notable increases in both productivity and part quality. Robots fitted with pneumatic grippers or vacuum can ensure the safe handling of newly injected molded parts.

- **Use of High Performance and lightweight materials**

The demand for lightweight material is increasing in various end use industries including, automotive, aerospace industry owing to lighter parts often translate to better gas mileage or longer battery life. When it comes to medical device manufacturing, lightweight joint replacements and stents can significantly improve patient outcomes. Engineers and product teams should include weight considerations more readily into their design plans as the light weighting trend aligns with the rising use of composite materials

6.6 INDUSTRY GROWTH: SEGMENT AND END-USE OVERVIEW

6.6.1 INDIA INJECTION MOLDED PLASTICS MARKET REVENUE ESTIMATES AND FORECASTS, BY MATERIAL, 2019-2030 (INR LAKHS)

TABLE 16 INDIA INJECTION MOLDED PLASTICS MARKET REVENUE ESTIMATES AND FORECASTS, BY MATERIAL, 2019-2030 (INR LAKHS)

Material	2019	2020	2021	2022	2030	CAGR (2022-30)
Polypropylene	5,410,551.11	5,975,261.99	6,235,311.09	6,653,648.92	11,467,753.13	**7.04%**
Acrylonitrile Butadiene Styrene	4,117,422.89	4,548,476.94	4,748,019.54	5,068,344.49	8,763,007.67	**7.08%**
High Density Polyethylene (HDPE)	2,549,444.28	2,813,710.57	2,933,954.91	3,128,335.22	5,353,654.99	**6.95%**
Polystyrene	1,822,067.07	2,009,487.04	2,093,608.24	2,230,360.46	3,786,911.92	**6.84%**
Others	1,687,379.85	1,859,739.28	1,936,119.69	2,060,931.40	3,472,771.89	**6.74%**
Total	**15,586,865.20**	**17,206,675.82**	**17,947,013.48**	**19,141,620.48**	**32,844,099.59**	**6.98%**

Source: India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data

6.6.2 INDIA INJECTION MOLDED PLASTICS MARKET VOLUME ESTIMATES AND FORECASTS, BY MATERIAL, 2019-2030 (KILO TONS)

TABLE 17 INDIA INJECTION MOLDED PLASTICS MARKET VOLUME ESTIMATES AND FORECASTS, BY MATERIAL, 2019-2030 (KILO TONS)

Material	2019	2020	2021	2022	2030	CAGR (2022-30)
Polypropylene	3,533.518	3,621.934	3,727.666	3,841.538	5,040.871	**3.45%**
Acrylonitrile Butadiene Styrene	2,606.551	2,672.542	2,751.480	2,836.523	3,733.837	**3.50%**
High Density Polyethylene (HDPE)	1,648.171	1,688.316	1,736.294	1,787.925	2,329.531	**3.36%**
Polystyrene	1,176.746	1,204.540	1,237.732	1,273.423	1,646.133	**3.26%**
Others	1,010.88	1,033.98	1,061.53	1,091.13	1,398.14	**3.15%**
Total	**9,975.868**	**10,221.311**	**10,514.707**	**10,830.537**	**14,148.509**	**3.40%**

Source: India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data

6.6.3 INDIA INJECTION MOLDED PLASTICS MARKET REVENUE ESTIMATES AND FORECASTS, BY END USE, 2019-2030 (INR LAKHS)

TABLE 18 INDIA INJECTION MOLDED PLASTICS MARKET REVENUE ESTIMATES AND FORECASTS, BY END USE, 2019-2030 (INR LAKHS)

End Use	2019	2020	2021	2022	2030	CAGR (2022-30)
Packaging	5,250,548.85	5,799,255.86	6,052,488.92	6,459,502.12	11,147,765.37	**7.06%**
Consumer Electronics	3,557,911.73	3,928,598.45	4,098,774.44	4,372,875.95	7,522,929.71	**7.02%**
Automotive & Transportation	3,107,317.46	3,430,481.70	3,578,381.77	3,816,903.47	6,554,389.28	**6.99%**
Building & Construction	1,400,828.19	1,545,661.71	1,611,265.94	1,717,514.35	2,931,538.02	**6.91%**
Consumer Goods	778,969.82	858,889.08	894,593.95	952,749.61	1,613,414.14	**6.81%**
Medical	786,917.72	867,861.00	904,191.42	963,252.22	1,635,498.56	**6.84%**
Others	704,371.44	775,928.02	807,317.04	858,822.75	1,438,564.51	**6.66%**
Total	**15,586,865.20**	**17,206,675.82**	**17,947,013.48**	**19,141,620.48**	**32,844,099.59**	**6.98%**

Source: India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data

6.6.4 INDIA INJECTION MOLDED PLASTICS MARKET VOLUME ESTIMATES AND FORECASTS, BY END USE, 2019-2030 (KILO TONS)

TABLE 19 INDIA INJECTION MOLDED PLASTICS MARKET VOLUME ESTIMATES AND FORECASTS, BY END USE, 2019-2030 (KILO TONS)

End Use	2019	2020	2021	2022	2030	CAGR (2022-30)
Packaging	3,500.46	3,588.48	3,693.75	3,807.14	5,002.30	**3.47%**
Consumer Electronics	2,223.76	2,279.02	2,345.09	2,416.23	3,164.76	**3.43%**
Automotive & Transportation	1,953.57	2,001.78	2,059.41	2,121.46	2,773.56	**3.41%**
Building & Construction	914.85	936.91	963.27	991.62	1,288.61	**3.33%**
Consumer Goods	513.44	525.45	539.77	555.18	715.78	**3.23%**
Medical	508.73	520.74	535.09	550.52	711.65	**3.26%**
Others	361.05	368.93	378.32	388.38	491.84	**3.00%**
Total	**9,975.87**	**10,221.31**	**10,514.71**	**10,830.54**	**14,148.51**	**3.40%**

Source: India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data

6.7 COMPETITIVE LANDSCAPE – INJECTION MOLDED PLASTICS

FIGURE 26 INJECTION MOLDED PLASTICS MARKET: COMPANY SNAPSHOT, 2022

Competition Landscape – India Injection Molding Market					
Company Profile	**Exxon Mobil Corporation**	**Dow chemical company**	**SABIC**	**LyondellBasell Industries**	**INEOS Group**
Headquarter	**Texas, United States**	**Michigan, United States**	**Riyadh, Saudi Arabia**	**Texas, United States**	**London, United Kingdom**
Revenue (INR)	**INR 32,51,442 Crore**	**INR 4,47,238.34 Crore**	**INR 2,45,147.16 Crore**	**INR 2,18,133 Crore**	**INR 1,01,305.36 Crore**
Product	• HDPE resin • Polypropylene Resin • Homopolymer Resins • ICP PP Resins	• EVERCAP Innovative Closure Resins • DOW LDPE 780E Low-Density Polyethylene Resin • CONTINUUM DMDC-1250 NT 7 Bimodal Polyethylene Resins • DOW 20 HEALTH+ Ultra-Pure Polyethylene • DOW HDPE KT 10000 UE High Density Polyethylene Resin • DOW DMDA-8007 NT 7 High Density Polyethylene Resin • DOW 08452N High Density Polyethylene Resin • DOW 08452N High Density Polyethylene Resin	• SABIC PP 310MK10 • SABIC PP 310MK10R • SABIC PP 310MK40 • SABIC PP 312MK10 • SABIC PP 312MK10 • SABIC PP 37M10R • SABIC PP 37MK10 • SABIC PP 38MK10R • SABIC PP 412MK49 • SABIC PP 412MN40 • SABIC 46MNK45 • SABIC PP 4935 • SABIC PP 49MCX40 • SABIC PP 5002P • SABIC PP FPC100	• Adflex C 200 F • Adflex KS 084 P • Adflex KS 084 P • Adflex KS 084 P • Adflex KS 084 P	• HIPS (High Impact Polystyrene) • Acrylonitrile Butadiene Styrene (ABS) • Styrene Acrylonitrile Copolymer (SAN) • Styrene-Butadiene Copolymers (SBC) • GPPS (General Purpose Polystyrene) • Lustran Standard (acrylonitrile butadiene styrene (mass ABS) • Styrene-Butadiene Block Copolymer (SBC) • Luran High Heat- (Heat alpha-methylstyrene acrylonitrile (AMSAN)) • Styrolux ECO resins • Luran ECO • Styroflex ECO
Market Presence	▪ United States ▪ Non-U.S.	▪ Asia Pacific ▪ U.S. & Canada ▪ Europe, Middle East & Africa ▪ Latin America	▪ KSA ▪ China ▪ Rest of Asia ▪ Europe ▪ America ▪ Others	▪ Internationally	▪ Europe ▪ Americas ▪ Others
Market Strategy			P N		P N

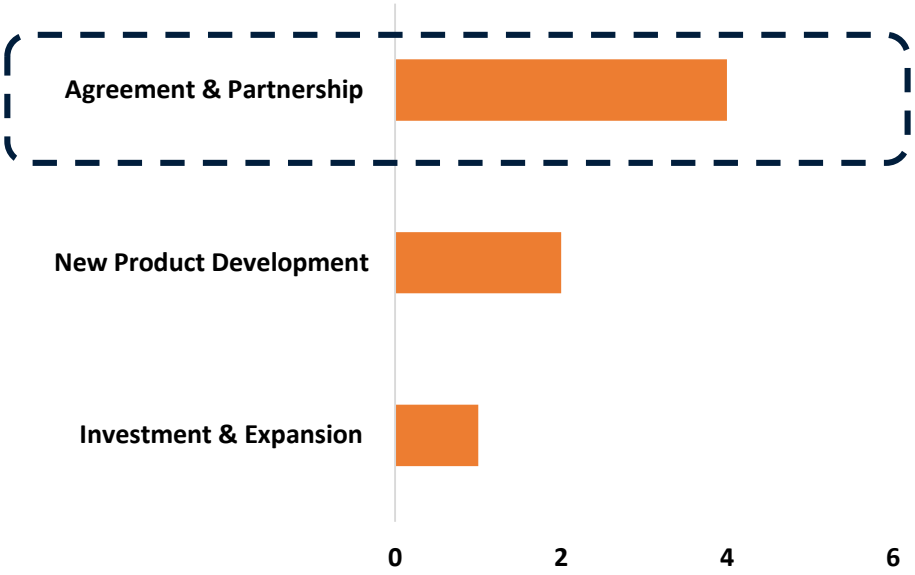
Agreements & Partnerships P **New Product Development** N **Investment & Expansion** I **Mergers & Acquisition** M

Source: Company Annual report, Reports and Data, Primary Interview

Key participants in the injection molded plastics market are Dow Chemical company., SABIC, Ineos Group, Lyondellbasell Industries, Exxon Mobile Corporation, Tooling Temple, Vikas Industries, Think3D, Micro Plastic Private Limited, and Primex Plastic Pvt Limited.

The market is currently witnessing increasing efforts by players in terms of agreement as companies try to gain a competitive edge over the market by sharing ideas and resources with their counterparts. Market players are also resorting to strategies like new product development and investment and expansions wherein they are strategically forming alliances with crucial end-users or organizations in both the public and private sectors. This is helping them to gain a competitive advantage in terms of sales.

6.7.1 STRATEGY BENCHMARKING



Players in the injection molded plastics market employed various strategies like investment and expansions and agreement & partnership over the study period of 2019-2023, in order to increase their market, share by reaching out to a newer portion of potential consumer base as well as holding the current consumer base through various tactics. The players in the market also heavily ramped up their efforts for research and development in order to develop a new product and thus make a unique offering in the market.

Of all the strategies employed during the review period, agreement and partnership was one of the leading strategies. Besides, since the market is dynamically growing, players in the market are making attempts to launch new products in regions across the globe to expand their geographical footprint in the market. Some of the notable strategies were adopted by SABIC, on Dec 2020, the company announced the collaboration with Unilever and Greiner Packaging for the development of an innovative new Knorr bouillon container using SABIC PP FLOWPACT FPC45 certified circular impact polypropylene (PP) from its TRUCIRCLE portfolio, that offers very good flowability for ease of processing on standard injection molding equipment and robust performance for high stackability.

TABLE 20 NEW PRODUCT DEVELOPMENT IN THE INJECTION MOLDED PLASTICS MARKET, 2019-2023

DATE	COMPANY NAME	DESCRIPTION
Sep-22	INEOS	The company announce the launch of its sustainable polystyrene. n mechanically-recycled polystyrene solutions in 2021. The new "ECO" products offer the performance of the respective virgin products, but with a significantly lower CO2 footprint. All products are drop-in solutions. They are typically used for food service, food packaging, refrigerator components, building & construction and healthcare applications. HIPS resins, also suitable for extrusion and injection molding, are typically used for yoghurt cups, food packaging, electronic devices and durable fridge liners
Jul-22	SABIC	The company introduced a specialized portfolio of SABIC PP compounds for foam injection molding (FIM). New mineral-reinforced SABIC PPc F9005, PPc F9007 and PPc F9015 grades can help deliver excellent aesthetics for visible automotive interior parts with complex geometries, such as door panels and trim, seat and trunk cladding, A/B/C/D pillar covers and center consoles.
Mar-19	SABIC	The company announced that four of the company's thermo-optical resins have been added in the materials database of the Zemax OpticStudio, the industry-standard in software for designing optical systems. These high-performance materials – including two grades of high-temperature LEXAN CXT polycarbonate (PC) copolymer, an ULTEM polyetherimide (PEI) resin and an EXTEM polyimide resin. These materials can withsand extreme molding conditions.

Source: Company Annual report, Reports and Data, Primary Interview

TABLE 21 AGREEMENT & PARTNERSHIP IN THE INJECTION MOLDED PLASTICS MARKET, 2019-2023

DATE	COMPANY NAME	DESCRIPTION
May-22	INEOS	Barnes and INEOS Styrolution collaborate on sustainable styrenics solutions that will make molding biomaterials and sustainable plastics easier. This strategy aims to expand their molding capabilities of post-consumer recyclate to meet the required product quality, and achieve the best results in the injection molding process with recycled ABS.
May-21	SABIC	The company announce the launch of its collaboration with KraussMaffei HighPerformance AG at the partner's Thin-Wall Packaging Application Center in Näfels, Switzerland, the site of KraussMaffei's Swiss subsidiary and manufacturer of high-performance injection molding systems known under the NETSTAL brand.
Dec-20	SABIC	The company announced a strategic partnership with KraussMaffei HighPerformance AG, KraussMaffei's Swiss subsidiary and manufacturer of high-performance injection molding systems known under the NETSTAL brand. SABIC will be using the innovation center to develop material solutions with potential for improving important properties of thin-wall packaging applications, such as balance of stiffness, impact strength, cycle time reduction and sustainability. The innovation center include laboratory for state-of-the-art injection molding and part performance evaluation.
Dec-20	SABIC	The company announced the collaboration with Unilever and Greiner Packaging for the development of an innovative new Knorr bouillon container using SABIC PP FLOWPACT FPC45 certified circular impact polypropylene (PP) from its TRUCIRCLE portfolio, that offers very good flowability for ease of processing on standard injection molding equipment and robust performance for high stackability.

Source: Company Annual report, Reports and Data, Primary Interview

TABLE 22 INVESTMENT & EXPANSIONS IN THE INJECTION MOLDED PLASTICS MARKET, 2019-2023

DATE	COMPANY NAME	DESCRIPTION
Apr-22	Think3D	The company announced the launch of its sister concern SINTERIZE, a USA headquartered digital manufacturing service provider catering to companies from USA & Europe looking to outsource manufacturing work to India.

Source: Company Annual report, Reports and Data, Primary Interview

6.8 THINK3D

Think3D	**Type:** Private
	Industry: Plastic Services
	Founded: 2014
	Headquarters : Telangana, India
	Website: www.think3d.in

6.8.1 COMPANY SUMMARY

Think3D was established in 2014 and is headquartered in Hydrabad, Telangana, India. The company is one of the largest integrated digital manufacturing service provider. The company offers 3D printing, CNC machining, injection molding, vacuum casting, 3D scanning, and 3D designing services. The company has around 20 3D printers, 10 CNC machines, 2 injection moulding machines and 5 3D scanners. The company also offers a wide range on thermoset, thermoplastics, resins & elastomers for rapid prototyping and batch production. The plastic materials offered by the company includes ABS, PLA, PC, Nylon, POM, polypropylene, PET, and others. The company provides state-of-art automation software and online ordering process for better customer experience.

6.8.2 PRODUCTS OFFERED

PRODUCT/SERVICE	DESCRIPTION
ABS	• It is a common thermoplastic with all-around good mechanical properties, excellent impact strength, good heat resistance, and good machinability.
PLA	• It is used for low-cost, non-functional prototyping. Offers greater detail than ABS, but is more brittle. Unsuitable for high-temperature applications.
Polycarbonate (PC)	• It is a thermoplastic with high toughness, excellent impact strength, and good machinability. It can be optically transparent.
Nylon - polyamide (PA)	• It is an engineering thermoplastic with excellent mechanical properties and high chemical and abrasion resistance.
POM Derlin Acetal	• It is an engineering thermoplastic used in precision parts requiring high stiffness, low friction, and excellent dimensional stability.
PEEK	• It is a high-performance engineering thermoplastic with excellent mechanical properties and chemicals over a very wide temperature range.

PTFE Teflon	• It is an engineering thermoplastic with excellent chemical and thermal resistance and the lowest coefficient of friction of any know solid
PMMA Acrylic	• It is a transparent rigid plastic often used as a substitute for glass
Polypropylene (PP)	• It is a thermoplastic polymer resin which has a tough, rigid and crystalline structure from a propene monomer. It′s the second most widely produced plastic (after PE) and is harder and more heat resistant than PE
PET	• It is an engineering thermoplastic that has excellent strength and stiffness. It can be machine able to tight tolerances.

INJECTION MOLDING	• With two horizontal injection molding machines from Toshiba and 1 vertical injection molding machine, the company provide injection molding service for various quantities and for different kinds of plastic materials.
	• Applications
	  ○ Low volume production
	  ○ Bridge tooling
	  ○ Pilot runs
	  ○ Functional prototyping

Source: Company Website, News & Press Releases

6.8.3 STRATEGIC INITIATIVES

DATE	STRATEGY	DESCRIPTION
Apr-22	Investments & Expansions	The company announced the launch of its sister concern SINTERIZE, a USA headquartered digital manufacturing service provider catering to companies from USA & Europe looking to outsource manufacturing work to India.

Source: Company Website, News & Press Releases

6.9 VIKAS INDUSTRIES

Vikas Industries	**Type:** Private
	Industry: Plastic Manufacturing
	Founded: 1967
	Headquarters : Maharashtra, India
	Website: www.vikasindus.com

6.9.1 COMPANY SUMMARY

Vikas Industries was established in 1967, and is headquartered in Mumbai, Maharashtra, India. The company is one of the leading manufacturers and suppliers of plastic moulds and moulded articles. The range of services offered by the company includes injection moulding, gas injection moulding, product development, mould manufacturing, large scale productions, assembly jobs and development of injection moulding techniques. The company has its business enterprise in multiple location and has the its state of art, modern manufacturing facilities at Mumbai, Thane, and Pune. The company's manufacturing facilities are equipped with around 20 injection moulding machines, ranging from 80 tonnes to 650 tonnes.

6.9.2 PRODUCTS OFFERED

SERVICE	DESCRIPTION
Plastic Injection Molds	• The company manufactures and supplies plastic moulds and moulded articles. • The company has 20 injection moulding machines, ranging from 80 tonnes to 650 tonnes. • It produce plastic molds for various end-use industries such as appliances, electronics, luggage, consumer & household, automobiles, and others.

Source: Company Website, News & Press Releases

6.10 TOOLING TEMPLE

Tooling Temple	**Type:** Private
	Industry: Plastic Manufacturing
	Founded: 1992
	Headquarters : Tamil Nadu, India
	Website: www.toolingtemple.com

6.10.1 COMPANY SUMMARY

Tooling Temple was established in 1992 and is headquartered in Coimbatore, Tamil Nadu, India. The company is engaged in design, manufacturing, production and sub assembly of plastic injection moulds & components. The company offers moulding of Nylon, Polycarbonate, POM, Norayl, ABS, PP, HDPE, GPPS, glass and fibre filled materials & all grades. The products offered finds application in several industries including automobile, textile, electrical, defence, aviation, electronics, machineries, computer, household parts etc. The range of service offered by the company include part modelling, proto type model for samples, designing of moulds, manufacturing plastic injection moulds, plastic injection moulded parts, & components sub-assembly as per customer specification.

6.10.2 PRODUCTS OFFERED

COMPONENTS	DESCRIPTION
ABS Parts	• It company mould components in all grade of ABS Material in different colours. Most of the moulds are multi cavity which gives high production. The company has moulded ABS components weighing up to 850 grams.
Acrylic Parts	• The components moulded in acrylic material are in mirror finish, moulded in a highly mirror polished moulds made using high grade mould steel material.
Ulterm Parts	• Ultem material is polyetherimide manufactured by Sabic industries used in high engineering components like in the application of Aircraft engineering. The company have developed and produced components up to 0.4 thickness in this material.
HDPE	• Components in this material are produced by the company with insert moulding with tolerated dimensions.
LDPE Parts	• The company manufactures components from 2 cavity mould in LDPE material.
Polyacetal Parts	• Components moulded in this material is used in textile, automobile & machinery sectors. Most of the components are having complex profiles and are closely tolerated by the company.

Polycarbonate Parts	• Components moulded in this material is has mirror finish, produced in the moulds manufactured in high-grade mould steel which is polished to a high mirror finish. These components are used in automobile industry and other engineering industries.
Polypropylene Parts	• Many components engineering & commercial products are developed in all grades of polypropylene material, and colour.
Moulded Medical Components	• These components are uses for medical applications, and are processed in high quality medical grade plastic graduals which are approved and certified.
Cleaning Machine Component	• The company develops these components for domestic appliances cleaning machines.

Source: Company Website, News & Press Releases

6.11 MICRO PLASTICS PRIVATE LIMITED

Micro plastics private limited	**Type:** Private
	Industry: Plastic Manufacturing
	Founded: 2005
	Headquarters : Karnataka, India
	Website: www.microplasticsindia.com

6.11.1 COMPANY SUMMARY

Micro Plastic Pvt. Ltd. was founded in 2005 and is headquartered in Bangalore, Karnataka, India. The company is one of the leading manufacturers of plastics products. It offers one stop solution to the customers with 125 state of the art injection molding machines, Tool Room, Press shop, Assembly Lines, Testing and Decoration facilities spread over 400000 Sq ft manufacturing space across three locations in Bangalore, India. The company achieved revenue of USD 30 Million (INR 200 Crore) with over 70% of revenue coming from exports to the US, UK, Europe & Asian countries. The Company offers plastic injection component, tooling and subassemblies. The company operate in design & tool room division, engineering product divison, and toys model hobby & sports division, and offers automotives sport equipments, power tools, appliances, electricals, electronics, telecoms & heavy engineering. The company is also engaged in distribution and is among the leading contract manufacturer and exporters of toys, model hobby kits and sport equipment's to US, UK and European brands, as well as Asian countries.

6.11.2 PRODUCTS OFFERED

TYPE	APPLICATION
INJECTION MOLDED PLASTICS	• The company manufacture plastic injection molded components and Sub-assemblies for Top International Toy Manufacturers of various industries: • Automotive • Connectors • Computer Peripherals • Pneumatics • Electrical • Telecommunication • Health Care • Modem parts.

Source: Company Website, News & Press Releases

6.12 PRIMEX PLASTICS PVT. LTD.

Primex Plastics Pvt.Ltd.	**Type:** Private
	Industry: Plastic Manufacturing
	Founded: 1991
	Headquarters : Karnataka, India
	Website: www.primexplast.com

6.12.1 COMPANY SUMMARY

Primex Plastics Pvt. Ltd. is a prominent company based in Bangalore, Karnataka, India, specializing in the manufacturing of injection and insert molded components. With its establishment in 1991, the company has amassed extensive experience and expertise in the field of plastic injection molding. The core focus of Primex Plastics is the production of high-quality components, which are supplied to leading original equipment manufacturers (OEMs) and their Tier 1 suppliers. These components find applications in a variety of industries, including automotive, electrical, furniture, white goods, and others. By catering to diverse end-use industries, Primex Plastics demonstrates its versatility and ability to meet the specific requirements of different sectors. In addition to manufacturing components, Primex Plastics also offers a wide range of injection molding equipment.

6.12.2 PRODUCTS OFFERED

PRODUCT	DESCRIPTION	APPLICATION
Engineering Plastic Parts	• The company manufactures industrial equipment • It utilizes high-quality plastics for the performance of countless applications.	• The products manufactured by the company are utilized in industries including: • Automotive • Aerospace • Healthcare • Appliances • Electronics • Packaging
Plastic Injection Molding Products	• The company manufactures different plastic products through injection molding techniques. • The company can match complexity level on any plastic project, and provides products as per the requirement.	• Car Seat Belts • Car Lightning • Car Gear Shift • Automobile Industry • Electrical Industry • White Goods Industry • Office Furniture

Source: Company Website, News & Press Releases

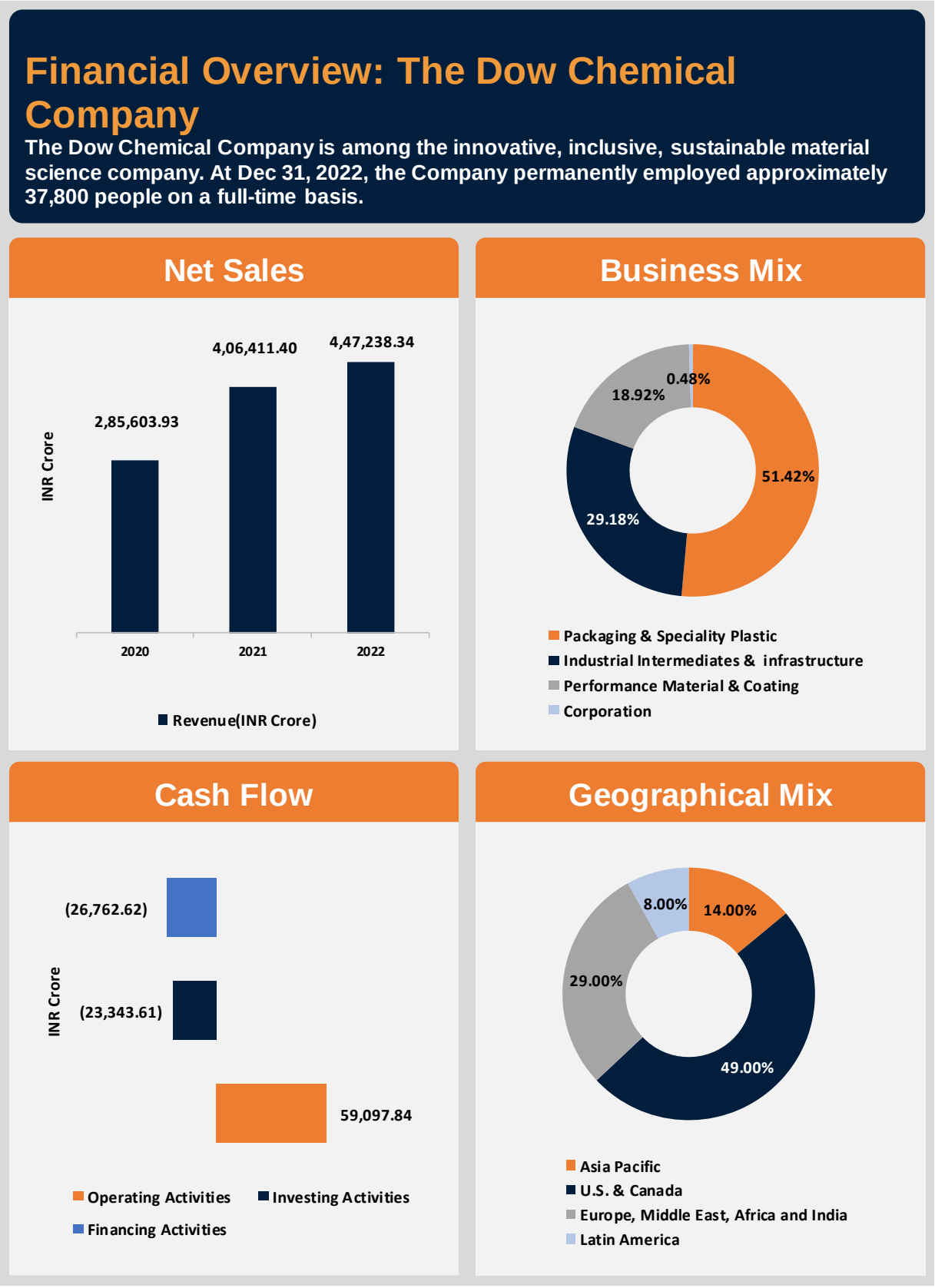
6.13 THE DOW CHEMICAL COMPANY

The DOW Chemical Company	**Type:** Public
	Industry: Chemical
	Founded: 1897
	Headquarters : Michigan, United States
	Website: www.dow.com

6.13.1 COMPANY SUMMARY

Dow is a multinational chemical company headquartered in Midland, Michigan, United States. Dow focuses on delivering sustainable future through material science expertise and collaboration. The company has six global business which are organized into operating segments including industrial intermediates & infrastructure, packaging & specialty plastics, and performance materials & coatings. The Company's manufacturing, processing, marketing and research and development facilities, as well as regional purchasing offices and distribution centers are located throughout the world. The company has around 104 manufacturing sites in around 31 countries which employs approximately 35,700 people. Dow has presence in around 31 countries in Europe, North America, Latin America, Africa, Middle East and Asia-Pacific.

6.13.2 FINANCIAL INSIGHTS



Source: Company Website, Company Annual Reports, News & Press Releases, Reports and Data

6.13.3 PRODUCT INSIGHTS

PRODUCTS	DESCRIPTION	APPLICATION
EVERCAP Innovative Closure Resins	• It is a type of polyethylene (PE) resins and offers high closure strength and durability. Their distinctive softness allows excellent seals without the use of liners. • Selected grades of the product also offer improved barrier performance with up to 40 percent higher oxygen barrier.	• It is used for caps, closures and fitments used in a multitude of beverage and non-beverage applications.
DOW LDPE 780E Low-Density Polyethylene Resin	• It is readily processed using conventional injection molding techniques utilizing melt temperatures between 140 and 250°C, a mold temperature between 10 and 50°C, and injection pressure between 50 and 150 MPa. • These resin exhibit: - excellent flow - good rigidity - good surface gloss.	• It is used in housewares, toys and leisures, containers and compounding
CONTINUUM DMDC-1250 NT 7 Bimodal Polyethylene Resins	• It is an organoleptic bi-modal HDPE utilized for compression and injection molding. • It offers benefits such as superior balance of stiffness, ESCR, slip and light weight. • This resin is designed to offer stress-crack resistance, stiffness, impact strength, and sensory, while maintaining good processing characteristics beneficial to molders.	• • Carbonated soft drink closures • Isotonic beverage closures • Pressurized bevarages • Hot fill beverage closures
DOW 20 HEALTH+ Ultra-Pure Polyethylene	• It is a specialty low density polyethylene resin is characterized by low melt index and intermediate crystallinity. • This product, produced via a unique polymerization process allows for the production of a very high purity product, vital for pharmaceutical applications. • It provides outstanding flexibility and environmental stress crack resistance	• Injection molded parts for medical and pharmaceutical packaging
DOW HDPE KT 10000 UE High Density Polyethylene Resin	• It is a UV stabilised resin with very narrow molecular weight distribution. • It offers excellent stiffness, combined with good impact strength to injection molded parts, at minimum warpage.	• Cases and boxes for industrial parts. • Farm produce and beverage crates. • Pails and buckets.

DOW DMDA-8007 NT 7 High Density Polyethylene Resin	• It is a high-density polyethylene homopolymer resin for injection molding applications. • This resin is a narrow molecular weight distribution high density homopolymer and offers excellent stiffness, low warpage, good/acceptable toughness, and good moldability.	• Crates • Cases • Trays • Tote bins
DOW 08452N High Density Polyethylene Resin	• It is a narrow molecular weight distribution copolymer designed to offer excellent impact strength and toughness with good stiffness. • This resin has good processability over a wide range of molding conditions. Offers excellent impact strength, toughness and good stiffness.	• It is intended for use in injection molding applications such as pails, industrial parts and other shipping containers • It can also be used for structural foamed parts.
DOW 25055E High Density Polyethylene Resin	• This resin provides high gloss, high surface finishing, and excellent mechanical properties	• It is used for injection molding application such as houseware, food container, and toy.

Source: Company Website, News & Press Releases

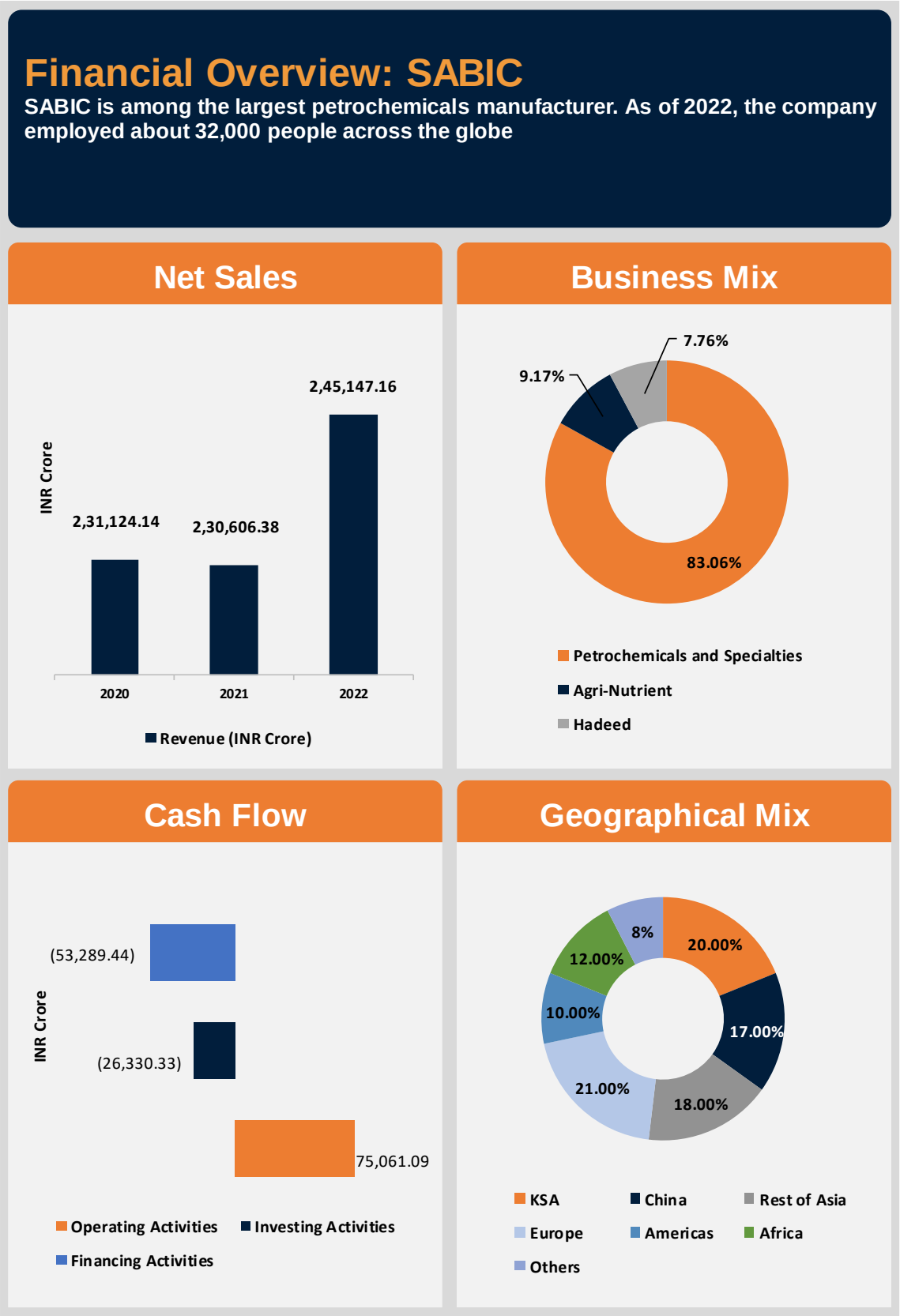
6.14 SABIC

SABIC	**Type:** Public
	Industry: Chemical
	Founded: 1976
	Headquarters : Riyadh, Saudi Arabia
	Website: www.sabic.com

6.14.1 COMPANY SUMMARY

SABIC is one among the largest petrochemicals manufacturers. The company is headquartered in Riyadh, Saudi Arabia which employs more than 32,000 people. SABIC operates through three strategic business units including petrochemicals, agri-nutrients and specialties and one standalone organization, metals (hadeed). The company support customers by identifying and developing opportunities in key end markets such as construction, medical devices, packaging, agri-nutrients, electrical and electronics, transportation and clean energy. The major industrial operations of the company are in the industrial city of Al-Jubail on the Arabian Gulf, as well as in Yanbu on the Red Sea. The company has presence in around 50 countries and their manufacturing, sales, technology and innovation facilities are located throughout the globe and are managed by four regional offices: the Middle East and Africa, Asia, the Americas and Europe.

6.14.2 FINANCIAL INSIGHTS



Source: Company Website, Annual Report, News & Press Releases

6.14.3 PRODUCTS OFFERED

PRODUCT	DESCRIPTION
SABIC PP 310MK10	• It is a nucleated polypropylene impact copolymer for injection molding applications. Molded parts made from this resin exhibit balanced impact and stiffness.
SABIC PP 310MK10R	• It is an impact copolymer polypropylene resin and is typically used for industrial injection molding application. • It has a medium melt flow and molded parts made from this resin typically exhibits good impact, high stiffness and good heat stability.
SABIC PP 310MK40	• It is a nucleated polypropylene impact copolymer resin typically used for injection molding applications. • Molded parts made from this resin exhibit balanced impact and stiffness. • It contains anti-static agent.
SABIC PP 312MK10	• It is a high flow nucleated polypropylene impact copolymer resin typically used for injection molding applications. • Molded parts made from this resin exhibit balanced impact and stiffness.
SABIC PP 36MK10	• It is a nucleated polypropylene impact copolymer resin used for general-purpose injection molding applications. • Molded parts made from this resin exhibit balanced impact and stiffness.
SABIC PP 37M10R	• It is an impact copolymer polypropylene resin and is typically used for industrial injection molding application. • Molded parts made from this resin typically exhibits good impact, high stiffness and good heat stability.

SABIC PP 37MK10	• It is a impact copolymer polypropylene resin and is typically used for industrial injection molding application. • Molded parts made from this resin typically exhibits good impact, high stiffness and good heat stability. This product is formulated with nucleating agent.
SABIC PP 38MK10R	• It is an impact copolymer polypropylene resin and is typically used for industrial injection molding application. • Molded parts made from this resin typically exhibits good impact, high stiffness and good heat stability.
SABIC PP 412MK49	• This resin is specially developed for producing injection molded articles. This grade contains nucleating and antistatic agents. • It has high flow properties and excellent impact – stiffness balance.
SABIC PP 412MN40	• It is a multi-purpose grade with good flow properties, combining stiffness and good balance in impact strength. • The material has a very low tendency for warpage and is typically used for the production of thin wall packaging articles. Cycle times can be very short. • It is formulated with a combined processing and antistatic additive package. • This grade is widely applied in thin wall technical injection moulded articles and thin-walled containers, in particular where dimensional stability is important.
SABIC 46MNK45	• It is a phthalate free polypropylene impact copolymer grade suitable for both injection and compression molding of beverage closures. • The benefits offered by this grade are very good processability, good stiffness and impact resistance. • This is a nucleated grade with slip and antistatic agent.
SABIC PP 4935	• It is a random copolymer with a very high molecular weight. • This grade has a special stabilization package. The stabilization and particular molecular structure make it suited for use in extremely demanding applications like coolant expansion vessels in cars. • The grade can be processed by injection molding. The material has a medium impact, is semi-transparent and has a good stress-whitening (low blushing) characteristic.

SABIC PP 49MCX40	• It is a high crystalline impact copolymer with outstanding mechanical properties. The product features an easy processability, an excellent combination of stiffness and impact strength and good gloss. • This product is a single component solution for high stiffness injection molding applications that is typically used as replacement of ABS and HIPS in small appliances. • This grade is also used in a wide range of appliances, such as housings for electrical appliances, furniture and technical components.
SABIC PP 5002P	• It is a polypropylene homopolymer multipurpose grade used for extrusion, injection and thermoforming applications, formulated with a low watercarry-over additive package.
SABIC PP FPC100	• It is nucleated and is characterized by a high crystallization temperature and excellent flow behaviour in combination with a nice stiffness to impact balance. • This grade is typically used for high-speed injection moulding and it enables very cost efficient processing on the basis of easy mould filling and very short cycle times. • It has a very good antistatic performance and permitseasy demoulding. • This material is typically used in thin wall packing applications both for food and non-food segments. This includes yellow fats/margarine tubs, dairy packaging and housewares.

Source: Company Website, News & Press Releases

6.14.4 STRATEGIC INITIATIVES

DATE	STRATEGY	DESCRIPTION
July-22	New Product Development	SABIC introduced a specialized portfolio of SABIC PP compounds for foam injection molding (FIM). New mineral-reinforced SABIC PPc F9005, PPc F9007 and PPc F9015 grades can help deliver excellent aesthetics for visible automotive interior parts with complex geometries, such as door panels and trim, seat and trunk cladding, A/B/C/D pillar covers and center consoles.
May-21	Partnership & Agreement	The company announce the launch of its collaboration with KraussMaffei HighPerformance AG at the partner′s Thin-Wall Packaging Application Center in Näfels, Switzerland, the site

		of KraussMaffei's Swiss subsidiary and manufacturer of high-performance injection molding systems known under the NETSTAL brand.
Dec-20	Partnership & Agreement	The company announced a strategic partnership with KraussMaffei HighPerformance AG, KraussMaffei's Swiss subsidiary and manufacturer of high-performance injection molding systems known under the NETSTAL brand. SABIC will be using the innovation center to develop material solutions with potential for improving important properties of thin-wall packaging applications, such as balance of stiffness, impact strength, cycle time reduction and sustainability. The innovation center include laboratory for state-of-the-art injection molding and part performance evaluation.
Dec-20	Partnership & Agreement	The company announced the collaboration with Unilever and Greiner Packaging for the development of an innovative new Knorr bouillon container using SABIC PP FLOWPACT FPC45 certified circular impact polypropylene (PP) from its TRUCIRCLE portfolio, that offers very good flowability for ease of processing on standard injection molding equipment and robust performance for high stack ability.
Mar-19	New Product Development	The company announced that four of the company's thermo-optical resins have been added in the materials database of the Zemax OpticStudio, the industry-standard in software for designing optical systems. These high-performance materials – including two grades of high-temperature LEXAN CXT polycarbonate (PC) copolymer, an ULTEM polyetherimide (PEI) resin and an EXTEM polyimide resin. These materials can withstand extreme molding conditions.

Source: Company Website, News & Press Releases

6.15 INEOS GROUP LTD.

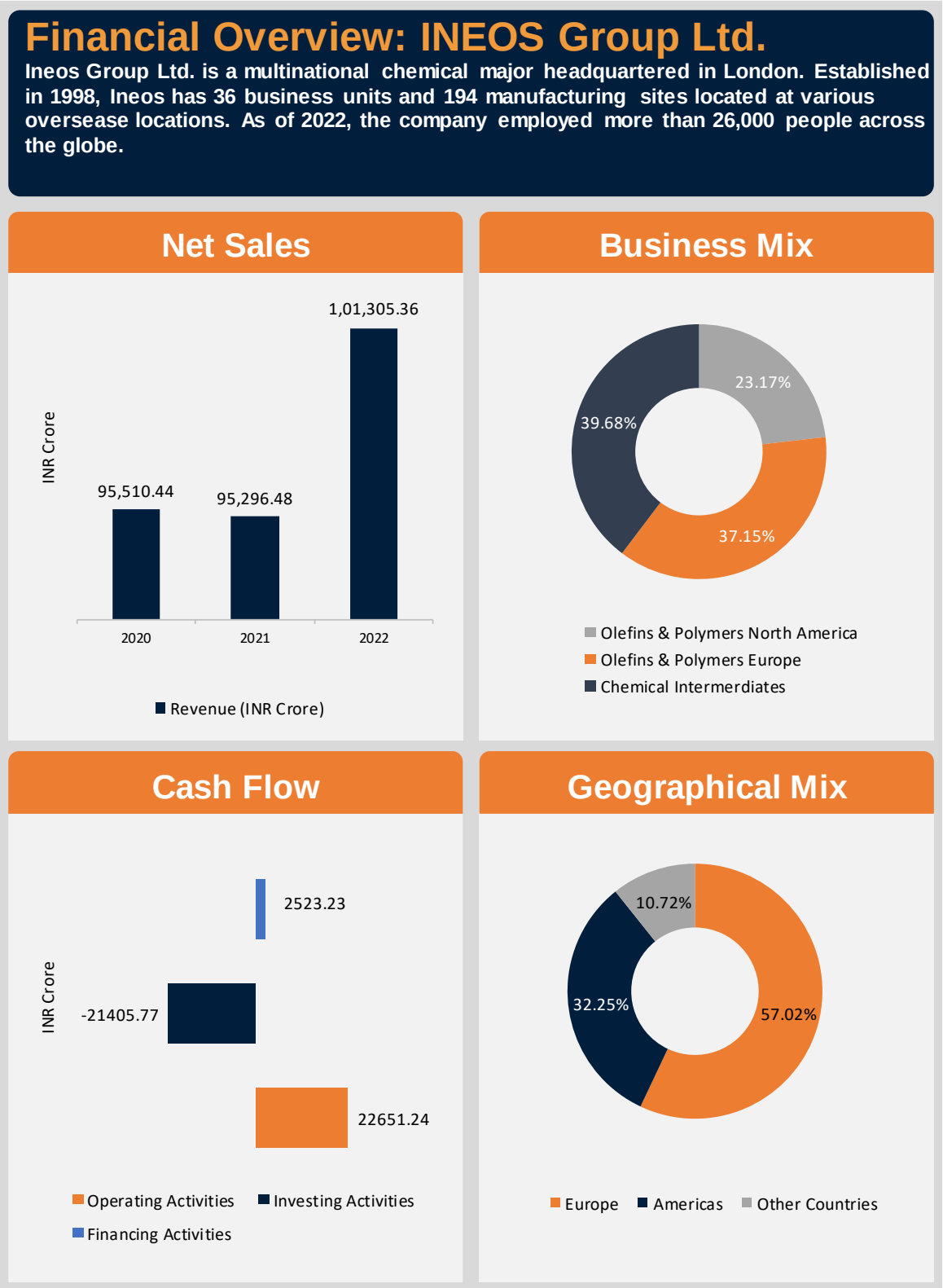
Ineos Group Ltd.	**Type:** Public
	Industry: Chemicals
	Founded: 1998
	Headquarters : London, United Kingdom
	Website: www.ineos.com

6.15.1 COMPANY SUMMARY

Ineos Group Ltd. was founded in 1998, and headquartered in London, United Kingdom. The company is one among the leading multinational chemical industry specializing in the production of fuel and petrochemical products. The diverse range of product portfolio offered by Ineos is categorized under three major verticals that include olefins and chemicals North America, olefins and polymers Europe, and chemical intermediates. Under the olefins and polymers segment, the company produces ethylene, propylene, butadiene, benzene and other cracker-based polyolefin polymers, at 18 sites in multiple locations. The chemical intermediates section conforms to the production of industrially important chemicals like phenol, alpha olefins, ethylene oxide, nitriles etc., form olefin raw materials. The company's products find application in end user sectors like electronics, construction, household, automotive, food and non-food packaging.

Ineos has 36 business units and 194 manufacturing sites spread across several overseas locations which has aided the company to exhibit a strong hold over global market. The company's chemical businesses are combined into a number of larger financial groups including INEOS Group, INEOS Styrolution, INOVYN and INEOS Enterprises. Among these INEOS Styrolution is the leading, global styrenics supplier with world-class production facilities that focuses on styrene monomer, polystyrene, ABS Standard and styrenic specialties. As of 2021, Ineos has an employee strength of 26,000.

6.15.2 FINANCIAL INSIGHTS



Source: Company Website, Company Annual Reports, News & Press Releases, Reports and Data

6.15.3 PRODUCTS OFFERED

BRAND	PRODUCT	DESCRIPTION
Styrolution	• HIPS (High Impact Polystyrene)	• These are PS impact modified polystyrene resins, and are a line of robust grade. • They are suitable in extrusion and injection moulding. • These resins are used for the production of both single use and durable plastic application. • These resins can meet the demands of technically challenging applications.
Novodur	• Acrylonitrile Butadiene Styrene (ABS)	• The product line contains grades with a well-balanced mix of properties for injection moulding, including good impact strength, dimensional stability. • It is easy to process and gives a high aesthetic colourful surface appearance. • This product line is available pre-coloured and contains products with many unique features such as flowability, and high gloss to fit the requirements of various applications.
Luran	• Styrene Acrylonitrile Copolymer (SAN)	• The product offers a well-balanced property profile ranging from good transparency and excellent chemical resistance to high stiffness, extraordinary heat resistance as well as very good dimensional stability. • This product portfolio comprises a broad selection of grades designed for injection moulding as well as extrusion applications. It is an ideal solution for variety of products, such as durable household goods and cosmetics packaging.
Styrolux	• Styrene-Butadiene Copolymers (SBC)	• This is a range of thermoplastic SBC. • The products in this range offers several features such as high transparency, brilliance and impact resistance. • The good miscibility of the product and polystyrene can be adjusted to attain desired toughness, while at the same time reducing material costs. • It can be extruded, thermoformed and injection moulded into a variety of high-quality products.

Styrolution	• GPPS (General Purpose Polystyrene)	• These resins are transparent polymers suitable for injection molding or extrusion applications. • These products are used in various applications including food service and food packaging to refrigerator components, healthcare and diagnostic labware as well as XPS insulation.
Lustran	• Lustran Standard (acrylonitrile butadiene styrene (mass ABS)	• The product line contains grades with a well-balanced mix of properties for injection molding, including good impact strength, dimensional stability, and both high and low gloss surface appearance. • The products fulfill the requirements of many industry segments including sheet extrusion, automotive, healthcare, household, electronics and construction.
Styroflex	• Styrene-Butadiene Block Copolymer (SBC)	• It is a styrene-butadiene block copolymer (SBC) with the properties of a thermoplastic elastomer (S-TPE), suitable for extrusion (including both blown and cast film) and injection molding. • It offers high resilience and toughness, optical clarity and process stability. • It also offers a good printability and good adhesion to many different polymers. • It provides excellent stretch recovery, superior transparency and puncture resistance, high oxygen and moisture permeability, in film applications. • It is also employed as a high performance additive to increase toughness and e.g. the stress cracking resistance of styrenic and olefinic polymers.
Luran	• Luran High Heat- (Heat alpha-methylstyrene acrylonitrile (AMSAN))	• These copolymers provide an outstanding heat resistance. • The excellent property SAN copolymer profile which ranges from high stiffness and very good chemical resistance to excellent dimensional stability, as well as good scratch and UV resistance, render Luran HH and are highly opted for a huge variety of injection molding applications.

Styrolux	• Styrolux ECO resins	• These resins are a range of thermoplastic styrene-butadiene copolymers (SBC). • These products offer high transparency, and impact resistance. • The good miscibility of the product and polystyrene allows adjustment to the desired toughness, while at the same time reducing material costs. • It can be extruded, thermoformed and injection moulded into a variety of high-quality products. • These resins are compliant product leading to a substitution of fossil source styrene with an RSB-certified bio-attributed styrene.
Luran	• Luran ECO	• This is a styrene acrylonitrile copolymer (SAN), it provides several features such as good transparency and excellent chemical resistance to high stiffness, extraordinary heat resistance as well as very good dimensional stability. • This product range comprises a broad selection of grades designed for injection moulding and extrusion applications. • It is an ideal solution for a variety of products, such as durable household goods and cosmetics packaging. • It is made using renewable feedstock, based on a mass balance process certified by ISCC PLUS.
Styroflex	• Styroflex ECO	• These resins are a compliant product leading to a substitution of fossil source styrene with RSB-certified bio-attributed styrene. • These resins provide greenhouse gas savings compared to a fossil fuel equivalent, over its production lifecycle.

Source: Company Website, News & Press Releases

6.15.4 STRATEGIC INITIATIVES

DATE	STRATEGY	DESCRIPTION
Sep-22	New Product Development	The company announce the launch of its sustainable polystyrene. n mechanically-recycled polystyrene solutions in 2021. The new “ECO” products offer the performance of the respective virgin products, but with a significantly lower CO2 footprint. All products are drop-in solutions. They are typically used for food service, food packaging, refrigerator components, building & construction and healthcare applications. HIPS resins, also suitable for extrusion and injection molding, are typically used for yoghurt cups, food packaging, electronic devices and durable fridge liners.
May-22	Partnership & Agreement	Barnes and INEOS Styrolution collaborate on sustainable styrenics solutions that will make molding biomaterials and sustainable plastics easier. This strategy aims to expand their molding capabilities of post-consumer recyclate to meet the required product quality, and achieve the best results in the injection molding process with recycled ABS.

Source: Company Website, News & Press Releases

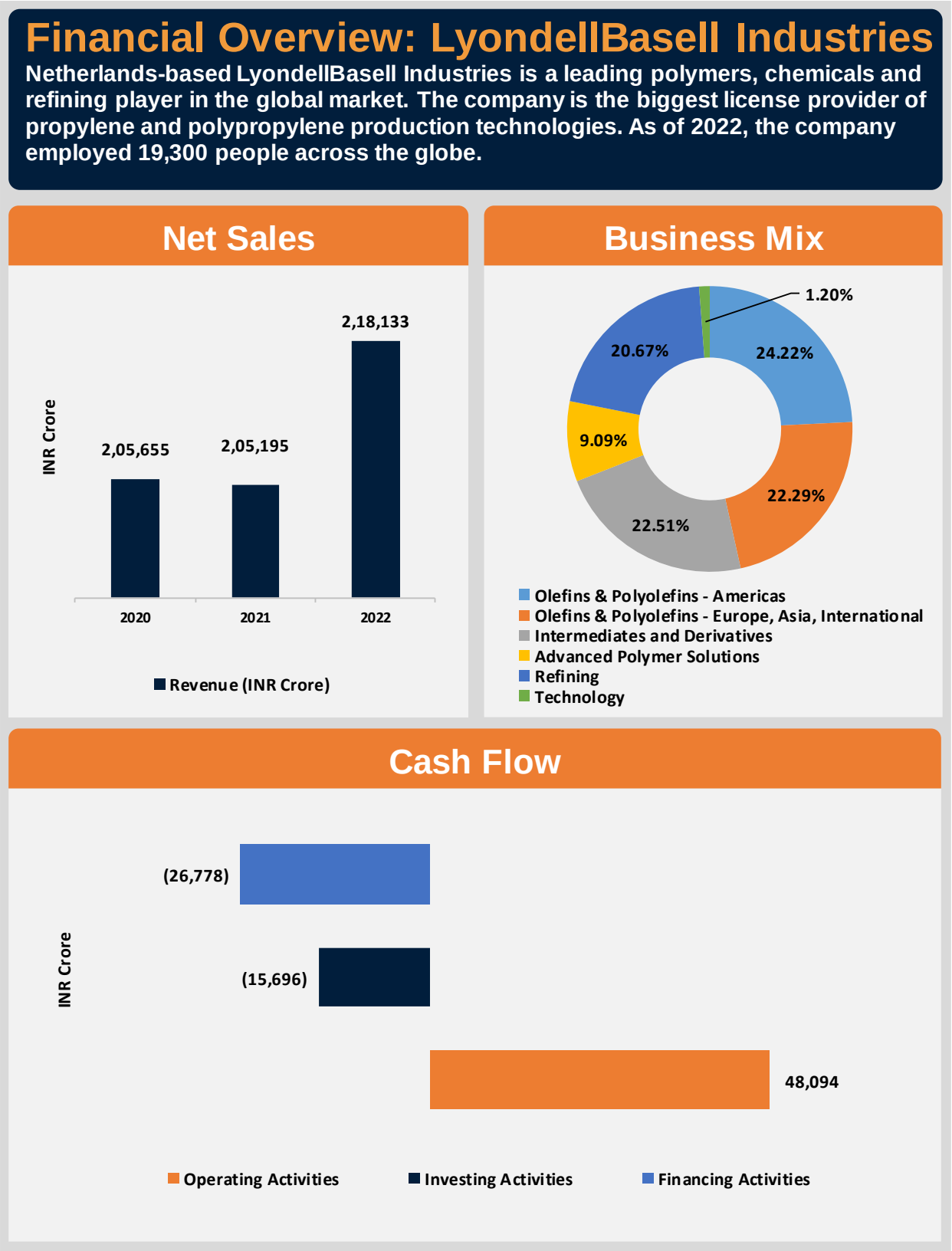
6.16 LYONDELLBASELL INDUSTRIES

LyondellBasell Industries	**Type:** Public
	Industry: Chemicals
	Founded: 2007
	Headquarters : Texas, United States
	Website: www.lyondellbasell.com

6.16.1 COMPANY SUMMARY

Texas-headquartered LyondellBasell Industries is a multinational company engaged in polymer, chemicals and fuel business. The company is also a globally acclaimed licensor of polyolefin production technologies. It is the largest producer of oxyfuels at the global level, and is one of the leading polypropylene producer in Europe and North America. LyondellBasell in indulges in the production of materials and products such as flexible and lightweight food-packaging, safe and pure water supplies through strong pipes, increasing automobile fuel efficiency, and making advanced and durable electronic components. The company offers a broad range of plastic resins such as polypropylene, polypropylene compounds and polyethylene. These materials produce a variety of products like automobile parts, renewable energy technologies, packaging, piping and textiles. Established in 2007 following the merger of Basell and Lyondell, the company operates in over 100 countries and has 19,200 employees globally.

6.16.2 FINANCIAL INSIGHTS



Source: Company Website, Company Annual Reports, News & Press Releases, Reports and Data

6.16.3 PRODUCTS OFFERED

PRODUCT	DESCRIPTION	APPLICATION
Adflex C 200 F	• It is used for the central layer of tough, transparent co-extruded cast-film structures. • It combines transparency with high softness, • It provides high toughness even at low temperatures and an excellent compatibility with other polyolefins. • It does not contain any slip nor anti-blocking agents.	It is used in bags & pouches, barrier film, breathable film, film wrap, food packaging film, lamination film, peelable film, stationery film.
Adflex KS 084 P	• It is a reactor TPO (thermoplastic polyolefin) manufactured using Catalloy process technology. • Key characteristics are a high melt flow and a low modulus. • It is used for commercial and industrial extrusion applications.	It is used in carpet backing, healthcare applications, impact modification, roofing underlayment.
Adflex X 100 G	• It is a reactor TPO (thermoplastic polyolefin) manufactured using the Catalloy process technology. • It is developed as an impact modifier for polypropylene and can be used both in extrusion and in injection moulding applications. • It does not alter the transparency of the modified polypropylene (homopolymer or random copolymer) • It provides high softness and a low modulus, with a relatively high Melt Flow Index. • It does not contain any slip nor anti-blocking agents. • The grade is available in natural pellet form.	It is used in crates, hot melt adhesives, housewares, impact modification, industrial packaging, peelable film, sports, leisure & toys.
Adstif EA5074	• It is a medium flow heterophasic copolymer with low TVOC, good stiffness impact balance, good thermal resistance.	It is used in bumpers, exterior automotive applications, interior automotive applications, opaque containers.
Adflex Z101H	• It is a reactor TPO (thermoplastic polyolefin) manufactured using the Catalloy process technology. • It exhibits high softness and low modulus, with high melt flow index.	It is used in bitumen modification, bulk continuous filament & continuous filament, carpet backing, filament yarn, hygiene nonwoven, impact modification, nonwovens, soft touch applications.

	• It is used to replace atactic polypropylene copolymers (APP) used for the modification of bitumen in roofing membranes. • Its structure is tailored to obtain easy dispersion and phase inversion in the bitumen blend. • It is available in natural pellet form.

Source: Company Website, Annual Report, News & Press Releases, Reports and Data

6.17 EXXON MOBIL CORPORATION

Exxon Mobil Corporation	**Type:** Public
	Industry: Chemical
	Founded: 1999
	Headquarters : Texas, United States
	Website: www. corporate.exxonmobil.com

6.17.1 COMPANY SUMMARY

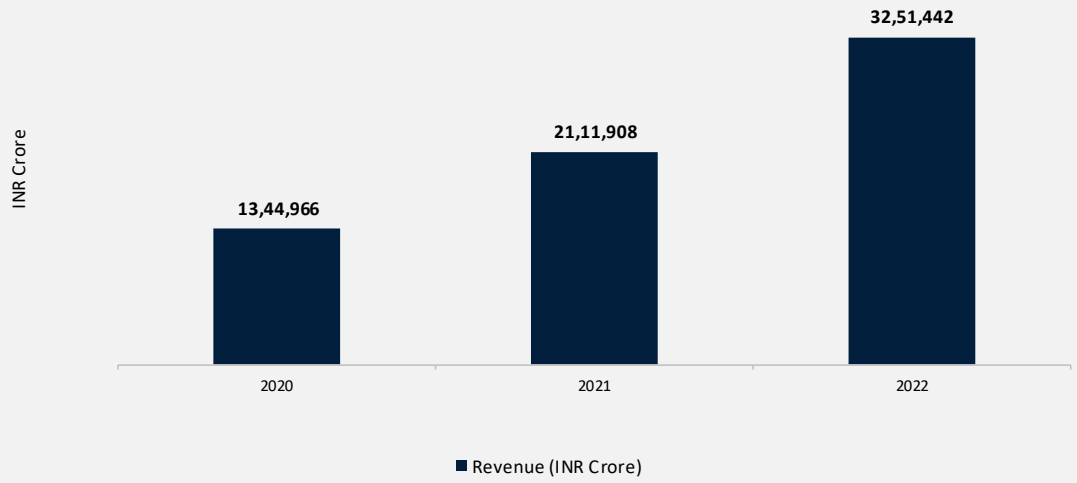
Exxon Mobil Corporation is among the largest publicly traded energy chemical manufacturers and providers. The company markets fuels, lubricants and chemicals globally under four brands, which includes Esso, Exxon, Mobil and ExxonMobil. Company's principal business involves exploration for, and production of, crude oil and natural gas and manufacture, trade, transport and sale of crude oil, natural gas, petroleum products, petrochemicals and a wide variety of specialty products. Exxon Mobil operate facilities or market products in most of the world's countries, explore for oil and natural gas on six continents, and research and develop next-generation technologies to help meet the dual challenge of fueling global economies while addressing the risks of climate change.

6.17.2 FINANCIAL INSIGHTS

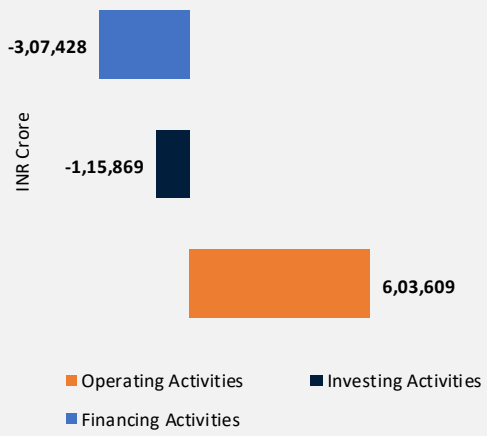
Financial Overview: Exxon Mobil Corporation

Exxon Mobil Corporation was incorporated in the State of New Jersey in I 882. Divisions and affiliated companies of ExxonMobil operate or market products in the United States and most other countries of the world. As of 2022, the company has about 62,000 employees.

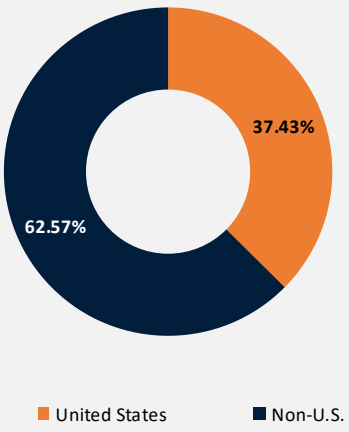
Net Sales



Cash Flow



Geographical Mix



Source: Company Website, Annual Report, News & Press Releases

6.17.3 PRODUCT INSIGHTS

BRAND	PRODUCT	DESCRIPTION	APPLICATION
ExxonMobil	• HDPE resins	• These resins offer an excellent balance of processability and performance for improved product protection and cost savings in blown film extrusion, blow molding and injection molding applications.	• These are used for a wide range of applicatios such as IBCs and storage tanks; crates and pallets; pails and lids; automotive components; bottles and caps; toys and water sports equipment.
ExxonMobil	• Polypropylene (PP) Resins	• These resins offer consistent, high-quality products that meet industry demands for high-performing solutions • These offer several benefits including: • Fast cycle times and high productivity • Low part weight and cost • Excellent stiffness and impact balance • Outstanding processability • Cost reduction through manufacturing efficiencies and raw material savings	• These resins are used in various end-use industries: • Automotive • Consumer • Healthcare • Hygine and personal care • Compounding • Packaging •
ExxonMobil	• Homopolymer resins	• These are ranslucent, crystalline propylene polymers that offer excellent heat and chemical resistance, hPP maintains good stiffness performance.	• They offer proven performance across a wide range of applications.
ExxonMobil	• ICP PP (Impact copolymer)resins	• These offers high stiffness and impact strength properties. • These are easy-to-process, low-density grades are ideal for high impact injection molded parts, thermoforming and extrusion	• These are used in automotive, appliance and industrial applications.

Source: Company Website, Annual Report

6.18 INDUSTRY SWOT ANALYSIS

6.18.1 MARKET STRENGTH ANALYSIS

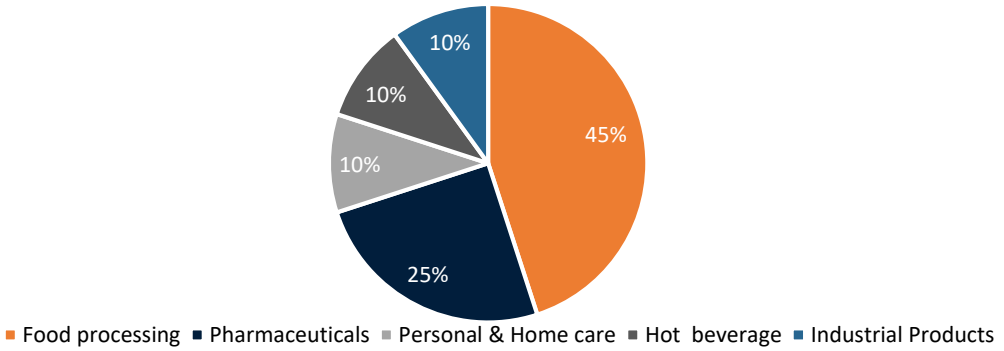
The packaging industry sector has established itself as one of the most rapidly expanding industries worldwide. The global packaging industry was valued INR 6,779,738.63 Lakhs in 2019 and is expected to grow at a CAGR of 2.8% to reach INR 7,763,059.50 Lakhs by 2024. Emerging in both science and engineering, packaging is a successful contributor to sectors including electronics, FMCG, and pharmaceuticals.

India packaging industry is fifth largest sector in Indian economy and one of the fastest growing sectors in the country. The Packaging Industry Association of India (PIAI) estimates that the Indian packaging industry is expanding at a CAGR of around 24%. The consumption of packaging in India has increased 200% over the last ten years, from 4.3 kilograms per person per year (pppa) to 8.6 kg pppa as of FY20, according to the Indian Institute of Packaging (IIP).

In 2021, the packaging category contributed around 35% of the total revenue share in Indian injection molding plastic market. To meet regulatory standards and end-user specifications, the completed products used in packaging go through a number of development stages. A few specifications that plastics must satisfy for packaging applications are better wear & tear resistance, excellent durability, and extending the shelf life of food products. Injection-molded plastics hold immense potential, particularly in the medical and automotive industries.

The strong and favorable demographics, rising levels of disposable income, expanding consumer awareness, and the need for processed foods are the main drivers of this increase in consumption in the developing Indian economy. Food, beverage, FMCG, and pharmaceutical end-user segment expansion will have a trickle-down effect on expanding packaging solution demand. The following list of end-user industries currently uses packaging materials:

FIGURE 27 CONSUMPTION OF PACKAGING MATERIALS BY END USER INDUSTRIES



Source: Opportunities in Indian packaging sector, Invest India Company Annual Report, Primary Interviews, Reports and Data

6.18.2 MARKET WEAKNESS ANALYSIS

Plastic injection molding has a lot of benefits, but it also has certain disadvantages. Start-up costs are high is one of them. Since each injection molded part requires custom tooling, there are significantly high initial start-up costs, making low-volume production runs uneconomical. In contrast, creating huge, sophisticated molds ready for full-scale production might cost many times the amount which invested initially. Tooling for a simple design and a small production run can range in price from INR 150,000 to INR 370,000.

6.18.3 MARKET OPPORTUNITY ANALYSIS

The global pharmaceutical packaging market has been predicted to double to INR 1,101,615.11 Lakhs in a decade, with India one of the markets currently producing a large quantity of plastic pharmaceutical packaging. India's market for generic drug is a major factor in the country's expanding healthcare packaging sector. A total of 20% of the world's supply of generic drugs by volume comes from India. Furthermore, the country's healthcare packaging market is expanding as a result of the regulatory shift. For instance, the Indian government has permitted 100% FDI in brownfield pharmaceuticals, attracting more healthcare packaging businesses to the nation. Additionally, the low manufacturing costs are pushing numerous pharmaceutical and medical enterprises towards the Indian market, which is propelling the market for healthcare packaging.

6.18.4 MARKET THREAT ANALYSIS

One of India's biggest problems is the lack of skilled labor. A professional team and expertise of engineering plastics are needed to operate the high-tech injection molded plastics industry. The machine needs to be provided with the correct design, gate placement and size, and runner and sprue geometry specifications. For instance, producing complicated applications in the pharmaceutical industry demands appropriate caution. Injection molded plastic is continually evolving in terms of both technology and application areas. To learn how to use injection molding technology effectively, operational work is required.

7 BLOW MOLDED PLASTICS MARKET SEGMENTATION & IMPACT ANALYSIS

7.1 MARKET OVERVIEW

In India, the demand for food and beverages, and FMCG product packaging is increasing due to hectic lifestyles, rising awareness of hygiene and clean labelled products, and growing desire for sustainable and long-lasting products by customers. Additionally, demand for packaging from variety of sectors including pharmaceuticals, consumer electronics, automotive, building and construction, as well as households have raised the production of packaging products, which is expected to drive the market for blow molded plastics. Products made with blow molded plastics are widely used in food and beverages industries such as bottles, jars, containers, and among others. Blow molded plastics is one of the most cost-effective ways to manufacture hollow product and a quick technique to make a large quantity.

Also, increasing demand for automotive vehicles is expected to drive the demand for blow molded plastics market. The automotive components such as bumpers, spoilers, air ducts, fuel tanks, interior and exterior components is made up from blow molded plastics. Further, growing construction activities in the region is driving the demand owing to exceptional properties including water resistance, durability, light-weight and energy conservation.

7.2 BLOW MOLDING PLASTICS SEGMENTATION ANALYSIS

Materials	End Use

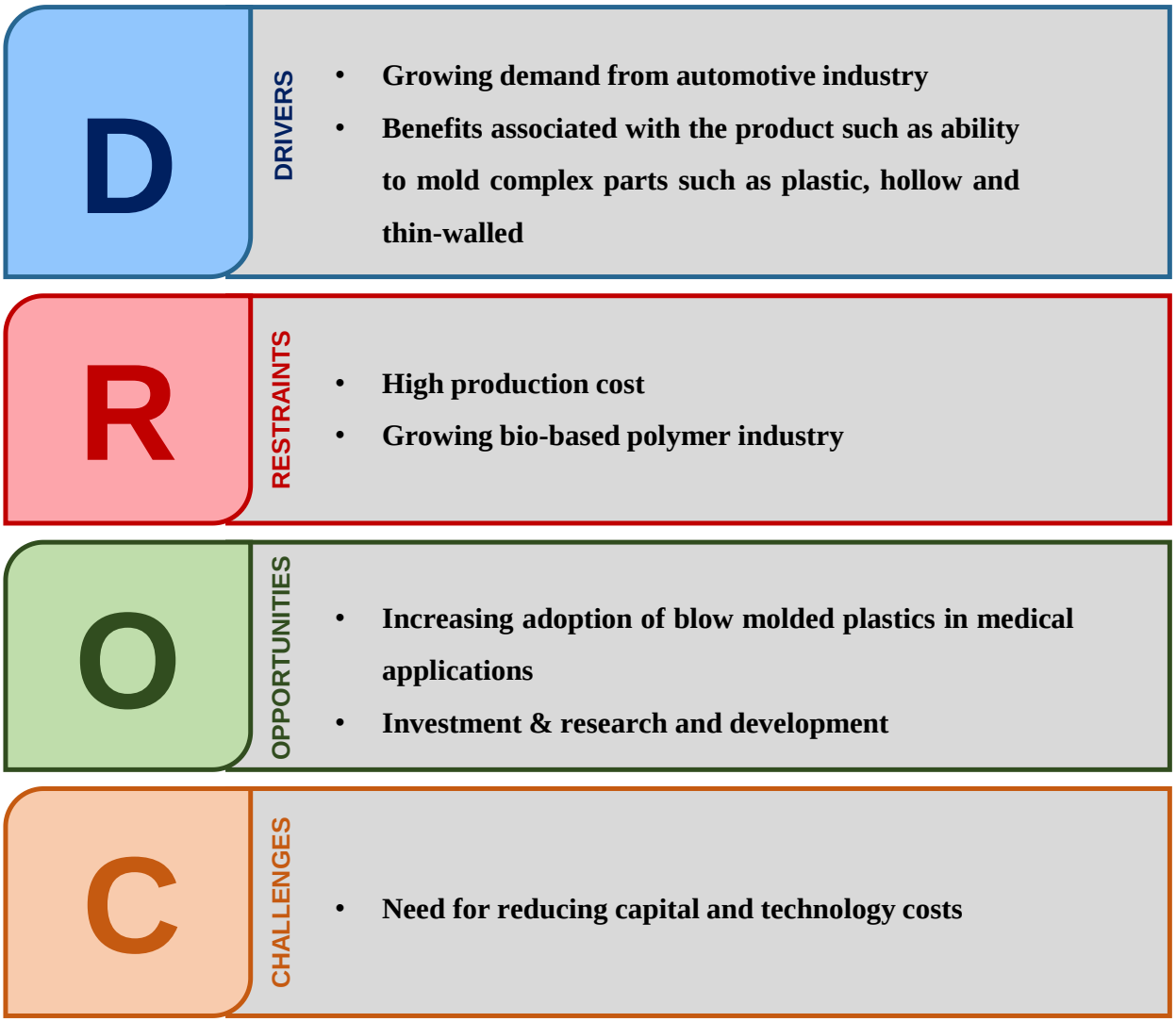
• Polypropylene
• Acrylonitrile Butadiene Styrene
• Polyethylene
• Polystyrene
• Polyvinyl Chloride
• Polyethylene Terephthalate
• Others
	• Packaging
	  • Bottles
	  • Jars
	  • Containers
	  • Others
	• Consumer Electronics
	  • Connectors
	  • Micro-Switches
	  • Others
	• Automotive And Transportation
	  • Interior And Exteriors
	  • Fuel Tanks
	  • Others
	• Building And Construction
	• Consumer Goods
	  • Furniture
	  • Sporting Goods
	  • Others
	• Medical
	• Others

Source: India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data

The estimations have been provided in terms of revenue (INR Lakhs) and volume (Kilo Tons) on the regional level, with 2021 as the base year and a forecast period from 2022 to 2030.

7.3 DROC'S ANALYSIS – BLOW MOLDED PLASTICS

FIGURE 28 DROC'S ANALYSIS



Source: India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data

7.3.1 MARKET DRIVERS ANALYSIS

7.3.1.1 GROWING DEMAND FROM THE AUTOMOTIVE INDUSTRY

The automotive sector is one of India's most important economic drivers, with considerable engagement in global value chains. This sector's expansion has been fueled by significant government backing, which has allowed it to establish a distinct route among India's industrial sectors. The autos manufactured in the nation are distinctive in that they cater to the needs of low- and middle-income sectors of the population, distinguishing this sector from other automobile-producing countries. Total passenger car, three-wheeler, two-wheeler, and quadricycle manufacturing totaled 1,860,809 units in January 2022. Furthermore, by 2030, India might be a leader in shared transportation, opening up prospects for electric and driverless cars.

As demand for electric vehicles grows in India, the nation is projected to see a surge in demand for blow-molded plastic automobile parts such as cooling system overflow containers, windshield washer fluid bottles, and even gasoline tanks. This need is assisted further by the accompanying benefits of blow-molding in the automobile sector, such as the ease of design and mass manufacturing of automotive parts, low mold and tooling cost, short lead times, compatibility with various plastic materials, and easy external threading.

7.3.1.2 BENEFITS ASSOCIATED WITH THE PRODUCT SUCH AS THE ABILITY TO MOLD COMPLEX PARTS SUCH AS PLASTIC, HOLLOW AND THIN-WALLED

Blow molding is a plastic shaping technique used to make hollow plastic items out of thermoplastic materials. Plastic blow molding may be readily created by infusing tiny amounts of air into the molten material. There are a lot of advantages to blow molding plastics for producing a large number of items. Fast production rates, the capacity to mold complicated parts, the flexibility to include handles into the design, as well as strength and durability, are all key benefits that increase the demand for blow molding for several applications. As each mold generates a unique wall shape, blow molds allow for more design flexibility between mold halves. In the case of blow molding, the mold is crucial, but there are other factors that have increased the implementation rate such as wall thinning, air leaks, flash, and streaks. For instance, wall thickness variation is frequently an important consideration for product designers. Water bottles, shampoo and other tiny bottles, automobile components, stadium seats and chairs, watering cans, coolers, and any other hollow parts are examples of parts and products made by blow molding. With the rising consumer awareness and preference toward brand recognition that offers sustainable packaging along with aesthetic and appealing appearance, the demand for blow-molded plastic products has surged significantly.

7.3.2 MARKET RESTRAINTS ANALYSIS

7.3.2.1 HIGH PRODUCTION COST

Despite the fact that this technology can already automate the production of vast quantities of items, it is now limited to hollow forms. This is due to the requirement of exact thickness, and waste material from processing containers of certain dimensions that may occur and lead to high production costs. Although thermoplastic is stretched to save material, the end product can sometimes be of inferior quality. This material loss raises total manufacturing costs, and the product generated is confined to hollow sections with poor strength. These qualities lower the product's value to some extent and are projected to limit market expansion. Furthermore, when barrier characteristics improve, multilayer parisons of various materials are utilized, which cannot be entirely recycled, which is another big stumbling block as the industry strives for sustainability and recyclable goods. Furthermore, owing to these procedures necessitating more modern equipment and machinery, they use a lot of energy and demand a lot of professional work, which increases the production cost.

7.3.2.2 GROWING BIO-BASED POLYMER INDUSTRY

Environmental concerns and the understanding that petroleum supplies are finite are driving interest in bio-based polymers. Bio-based polymers not only replace traditional polymers in a variety of applications but also provide unique features for novel applications, owing to the improvements in biotechnologies and public awareness, from commodity to high-tech applications. For instance, StyroflexECO a product of Ineos styrosolutions, provides greenhouse gas savings compared to a fossil fuel equivalent, over its production lifecycle. Despite these improvements, there are still some limitations that prohibit the widespread commercialization of bio-based polymers in many applications; nevertheless, this limitation may be used as an opportunity for market players to produce improved materials. Drop-in bio-based polymers are also chemically similar to their petrochemical counterparts but are generated at least partially from biomass. This category is led by partially bio-based polyethylene terephthalate (PET) developed by The Coca-Cola Company's Plant PET Technology Collaborative (PTC). The second most dynamic development is anticipated for polyhydroxyalkanoates (PHA), which, unlike bio-based PET, are novel polymers with similar growth rates to bio-based PET. Polybutylene succinate (PBS) and polylactic acid (PLA) have also seen a significant increase. These increases in the development and implementation of bio-based polymers are expected to hinder the market growth for chemical polymers in the long run.

7.3.3 MARKET OPPORTUNITIES ANALYSIS

7.3.3.1 INCREASING ADOPTION OF BLOW-MOLDED PLASTICS IN MEDICAL APPLICATIONS

The medical sector in India is predicted to grow at a faster rate, owing to an increase in the number of medical facilities, which would increase the demand for medical equipment in the market. In addition, many government programs, such as the "Production Linked Incentives (PLI) Scheme for Medical Devices 2020" and the establishment of medical parks, are intended to help meet this need. Plastics are in high demand for clean drinking water supplies and medical devices such as surgical instruments, drips, aseptic medical packaging, and pill blister packs. Blow-molded plastic goods are commonly used for this equipment because they provide specificity in drug packaging and medication, as well as the ability to protect the medicine from light, heat, water vapor, and oxygen. Furthermore, the Indian Council of Medical Research (ICMR) collaborated with the Indian Institutes of Technology (IITs) in November 2021 to establish 'ICMR at IITs' by establishing Centres of Excellence (CoE) for Make-in-India product development and commercialization in the medical devices and diagnostics space, according to IBEF. These measures are projected to boost demand for blow-molded plastic goods while also providing market participants with many chances.

7.3.3.2 INVESTMENT & RESEARCH AND DEVELOPMENT

The need for blow molded plastics has increased in India as the country becomes more industrialized. Plastics are increasingly being used to replace raw resources such as glass, metal, rubber, wood, and other natural materials, particularly in vehicles and industrial gear. Furthermore, increased worries about metals' carbon emissions have led to the replacement of metals with lightweight polymers. As a result of lower carbon emissions, low-density polymers aid to enhance fuel efficiency and machinery performance. Governments are launching efforts that will enhance demand for plastics in a variety of uses across practically every industry, including automotive, packaging, consumer products, and others. This has prompted businesses and organizations to invest in the creation of more environmentally friendly and sustainable plastics that can be totally melted and recycled, in order to increase their usage in the medical field. For instance, polyhydroxyalkanoate-based biodegradable mirel, and floreon are among the widely opted bio-polymer for moldings. Furthermore, some institutes are working on innovative varieties of all-electric technology that can do blow molding with improved dimensions and precision while still being cost-effective. These investments give producers and end-users the possibility to supply high-quality products to their customers.

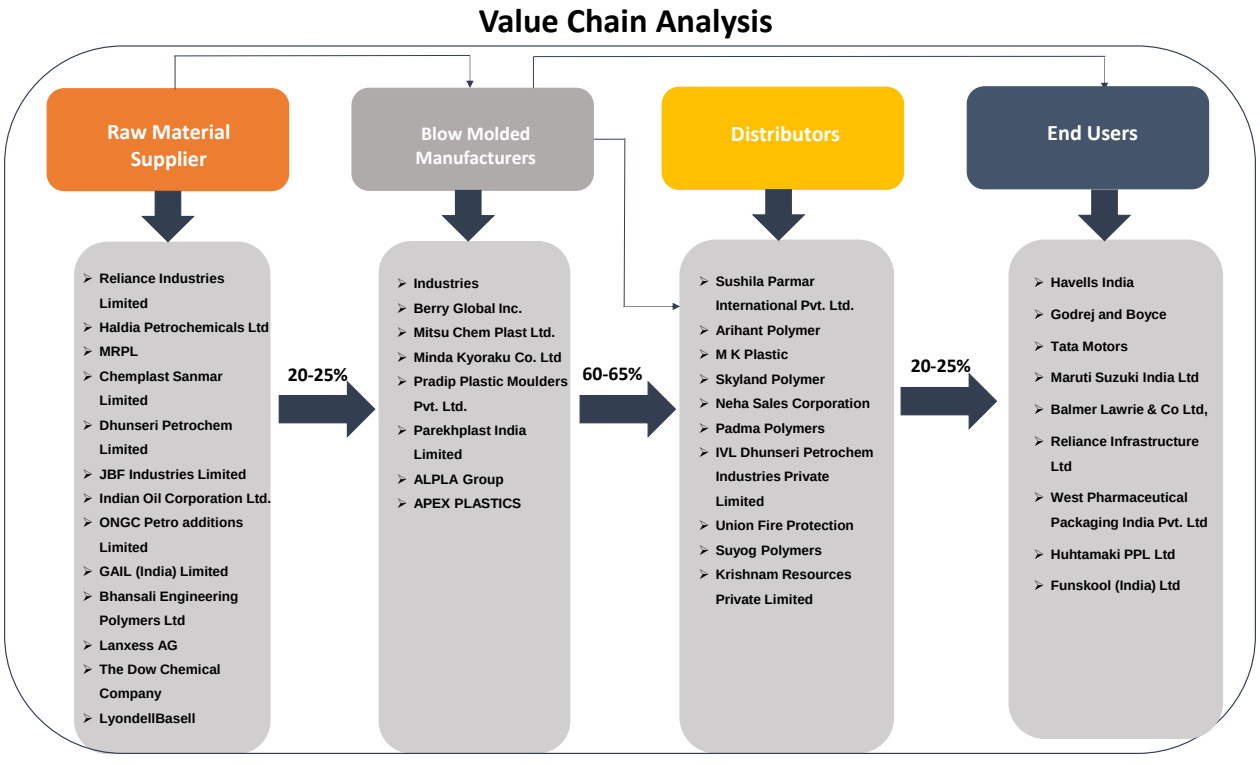
7.3.4 MARKET CHALLENGES ANALYSIS

7.3.4.1 NEED FOR REDUCING CAPITAL AND TECHNOLOGY COSTS

Depreciation and amortization are costs connected with the development, purchase, implementation, deployment, and maintenance of technological assets. To better exploit the potential of emerging technologies, these expenses necessitate a policy agenda and reforms that must aim to strengthen the enabling environment for businesses and people in order to mitigate the increased difficulties posed by technological development and improve their ability to adapt to market trends. Furthermore, the technology may appear to be costly during the implementation stage, necessitating the development of a low-cost technical solution to replace a high-cost, low-tech application. Market participants must assess the costs and benefits of implementing technology. These expenses include the upfront costs of acquiring hardware and software, as well as the costs of employing experts to set up the new system and the continuing expenditures of maintenance and management. Furthermore, equipment that can be reused for several purposes or elections will be less expensive than technology that can only be used once before needing to be replaced. These are high-tech machinery, software, and hardware that raise the entire cost of the product and pose a long-term challenge to the participants.

7.4 VALUE CHAIN AND PROFIT MARGIN ANALYSIS – BLOW MOLDED PLASTIC

FIGURE 29 VALUE CHAIN ANALYSIS



Source: India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data

The value chain of blow molded plastics industry consists of raw material suppliers, manufacturers, distribution channel and end-use industries.

Key Insights

- The raw material manufacturers add up margin unto 20-25% when they supply it to forging manufacturers.
- The forging manufacturers convert raw material into final product and adds margin unto 60-65%.
- The Wholesaler/supplier/distributor/Rental services adds up margin up to 20-25% and then the chain moves to the end-users.

The value chain of blow molded plastics usually starts with the procurement of raw material manufacturers/suppliers. Many key players are vertically integrated into the production of the stages of the raw material while other companies are strictly producers of raw material which is used in various end-use industries. Materials used for manufacturing blow molded plastics include, polypropylene (PP), acrylonitrile butadiene styrene (ABS), polyethylene, polystyrene, polyvinyl chloride and polyethylene terephthalate (PET), among others. Some of the key stakeholders at this stage includes, Reliance Industries Limited, Haldia Petrochemicals Ltd, MRPL, Chemplast Sanmar Limited, Dhunseri Petrochem Limited, JBF Industries Limited, Indian Oil Corporation Ltd., Lanxess AG, The Dow Chemical Company, LyondellBasell Industries, ONGC Petro additions Limited, GAIL (India) Limited and Bhansali Engineering Polymers Ltd. These companies supply raw materials for production of blow molded plastics, which are further used for bottles, jars, containers, connectors, micro-switches, automotive interior and exteriors, fuel tanks, furniture and sporting goods, among others.

The next stakeholder in the market value chain includes the manufacturers of blow molded plastics. The companies engaged in the market require significant capital investment due to stringent specifications regarding testing and safety of blow molded plastics, thereby discouraging entry of new players in the market. Some of the major manufacturers involved in the stage includes, Berry Global Inc., Mitsu Chem Plast Ltd., Minda Kyoraku Co. Ltd, Pradip Plastic Moulders Pvt. Ltd., Parekhplast India Limited, Alpla Group and Apex Plastics.

The distributor for the market majorly includes, Subhatu Industries Private Limited, Maruthi Metals & Plastic Pvt. Ltd., Surya Ventures, Neelgiri Mold Plast, Prince Multiplast Pvt Ltd, Balkrishna Polymers, Laxmi Narayan Industries, Jain Tools Private Ltd, Blow Molded Products, Amcor Rigid Plastics. In the blow molded plastics market, the distributors usually supply the blow molded plastics to end-use companies that are majorly from packaging, consumer electronics, automotive and transportation, building and construction, consumer goods, and medical, among others. Some of the major key end-use manufactures includes, Havells India, Godrej and Boyce, Tata Motors, Maruti Suzuki India Ltd, Balmer Lawrie & Co Ltd, Reliance Infrastructure Ltd, West Pharmaceutical Packaging India Pvt. Ltd, Huhtamaki PPL Ltd and Funskool (India) Ltd.

7.5 KEY TRENDS IN THE BLOW MOLDED PLASTICS INDUSTRY

- **Use of Bio-based polymer**

Biopolymers have emerged as a viable alternative to non-biodegradable plastic in a food and beverage applications. Conventional plastics have been made and used for packaging applications in various industries for many years. The need for packaging material is rising in parallel with the increase of the food industry. Plastics have raised the food business; yet, typical petroleum-based plastics are non-biodegradable, posing major environmental problems such as a harm to marine life and deteriorating air quality. Biodegradable polymers, also known as biopolymers, have emerged as a viable alternative to non-biodegradable plastic in a variety of industrial uses. Also, companies are introducing a biopolymer specially developed for extrusion blown molding that can be processed in conventional lines.

- **Adoption of lightweight material:**

The demand for lightweight material is increasing in various end use industries including, automotive, aerospace industry owing to lighter parts often translate to better gas mileage or longer battery life. When it comes to medical device manufacturing, lightweight joint replacements and stents can significantly improve patient outcomes. Engineers and product teams should include weight considerations more readily into their design plans as the light weighting trend aligns with the rising use of composite materials. expansion plans and investment scenario. Additionally, containers must be redesigned to endure a more severe transit journey from manufacturing to end-user than the traditional retail distribution channel. Detergent containers, beverage bottles, and household cleansers must be able to withstand dents and dings while being lightweight to facilitate shipping.

- **Incorporation of Post-Consumer Recycled Content (PCR) Materials**

A material made from recycled plastic, such as water and beverage bottles and other packaging, is known as post-consumer recycled resin (PCR resin). It provides a more environmentally friendly alternative to virgin plastic resin for packaging films, containers, sheets, and many other items. PCR resins are compliant with food, pharmaceutical, medical, electronics, and general retail packaging laws, making them ideal for almost any packaging purpose.

7.6 INDUSTRY GROWTH: SEGMENT AND END-USE OVERVIEW

7.6.1 INDIA BLOW MOLDED PLASTICS MARKET REVENUE ESTIMATES AND FORECASTS, BY MATERIAL, 2019-2030 (INR LAKHS)

TABLE 23 INDIA BLOW MOLDED PLASTICS MARKET REVENUE ESTIMATES AND FORECASTS, BY MATERIAL, 2019-2030 (INR LAKHS)

Material	2019	2020	2021	2022	2030	CAGR (2022-30)
Polypropylene	334,208.54	363,838.65	376,388.72	400,573.20	647,246.50	**6.18%**
Acrylonitrile Butadiene Styrene	252,257.54	274,546.87	283,931.13	302,082.93	486,871.03	**6.15%**
Polyethylene	483,376.51	526,537.70	545,049.63	580,446.17	942,944.76	**6.25%**
Polystyrene	359,065.39	390,671.78	403,887.89	429,561.48	690,359.15	**6.11%**
Polyvinyl Chloride	370,576.14	403,513.37	417,526.58	444,455.70	719,517.09	**6.21%**
Polyethylene Terephthalate	617,367.99	672,378.39	695,886.39	740,937.76	1,201,763.45	**6.23%**
Others	160,663.71	174,737.38	180,569.67	191,962.49	307,316.44	**6.06%**
Total	**2,577,515.82**	**2,806,224.15**	**2,903,240.00**	**3,090,019.74**	**4,996,018.41**	**6.19%**

Source: India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data

7.6.2 INDIA BLOW MOLDED PLASTICS MARKET VOLUME ESTIMATES AND FORECASTS, BY MATERIAL, 2019-2030 (KILO TONS)

TABLE 24 INDIA BLOW MOLDED PLASTICS MARKET VOLUME ESTIMATES AND FORECASTS, BY MATERIAL, 2019-2030 (KILO TONS)

Material	2019	2020	2021	2022	2030	CAGR (2022-30)
Polypropylene	622.02	644.02	669.26	695.65	960.26	**4.11%**
Acrylonitrile Butadiene Styrene	349.39	361.65	375.71	390.41	537.54	**4.08%**
Polyethylene	817.87	847.29	881.05	916.39	1,271.78	**4.18%**
Polystyrene	486.03	502.92	522.29	542.54	744.89	**4.04%**
Polyvinyl Chloride	580.81	601.48	625.18	649.99	898.93	**4.14%**
Polyethylene Terephthalate	753.47	780.44	811.38	843.76	1,169.14	**4.16%**
Others	228.20	236.00	244.93	254.26	347.15	**3.97%**
Total	**3,837.79**	**3,973.80**	**4,129.79**	**4,293.00**	**5,929.68**	**4.12%**

Source: India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data

7.6.3 INDIA BLOW MOLDED PLASTICS MARKET REVENUE ESTIMATES AND FORECASTS, BY END USE, 2019-2030 (INR LAKHS)

TABLE 25 INDIA BLOW MOLDED PLASTICS MARKET REVENUE ESTIMATES AND FORECASTS, BY END USE, 2019-2030 (INR LAKHS)

End Use	2019	2020	2021	2022	2030	CAGR (2022-30)
Packaging	976,898.88	1,063,945.18	1,101,143.31	1,172,430.84	1,901,623.33	**6.23%**
Consumer Electronics	255,979.96	278,741.28	288,432.30	307,046.92	497,227.16	**6.21%**
Automotive & Transportation	786,172.04	856,340.87	886,414.50	943,944.05	1,532,968.24	**6.25%**
Building & Construction	123,735.29	134,673.08	139,281.59	148,191.53	238,917.89	**6.15%**
Consumer Goods	213,993.45	232,806.10	240,654.44	255,922.71	410,909.15	**6.10%**
Medical	141,133.56	153,577.75	158,797.17	168,916.99	271,814.96	**6.13%**
Others	79,602.64	86,139.89	88,516.69	93,566.70	142,557.69	**5.40%**
Total	**2,577,515.82**	**2,806,224.15**	**2,903,240.00**	**3,090,019.74**	**4,996,018.41**	**6.19%**

Source: India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data

7.6.4 INDIA BLOW MOLDED PLASTICS MARKET VOLUME ESTIMATES AND FORECASTS, BY END USE, 2019-2030 (KILO TONS)

TABLE 26 INDIA BLOW MOLDED PLASTICS MARKET VOLUME ESTIMATES AND FORECASTS, BY END USE, 2019-2030 (KILO TONS)

End Use	2019	2020	2021	2022	2030	CAGR (2022-30)
Packaging	1467.76	1520.30	1580.58	1643.66	2277.50	**4.16%**
Consumer Electronics	388.13	401.95	417.81	434.40	600.97	**4.14%**
Automotive & Transportation	1142.02	1183.06	1230.15	1279.44	1775.07	**4.18%**
Building & Construction	182.95	189.38	196.75	204.45	281.60	**4.08%**
Consumer Goods	326.13	337.43	350.38	363.93	499.18	**4.03%**
Medical	209.72	217.04	225.43	234.21	321.97	**4.06%**
Others	121.08	124.64	128.69	132.90	173.39	**3.38%**
Total	**3837.79**	**3973.80**	**4129.79**	**4293.00**	**5929.68**	**4.12%**

Source: India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data

7.7 COMPETITIVE LANDSCAPE – BLOW MOLDED PLASTICS

FIGURE 30 BLOW MOLDED PLASTICS MARKET: COMPANY SNAPSHOT, 2022

Competition Landscape – India Blow Molded Plastic Market					
Company Profile	**LANXESS AG**	**Dow chemical company**	**LyondellBasell Industries**	**Berry Global Inc.**	**Mitsu Chem Plast Ltd.**
Headquarter	**Cologen, Germany**	**Michigan, United States**	**Texas, United States**	**Indiana, United States**	**Maharashtra, India**
Revenue (INR)	**INR 60,455.13 Crore**	**INR 4,47,238.34 Crore**	**INR 2,18,133 Crore**	**INR 1,13,927.80 Crore**	**INR 258.68 Crore**
Product	• BC700HTS DUSXBL • BC550Z DUSXBL • BKV315ZH2.0 • BKV320ZH2.0 • BKV325ZH2.0 • AKV320ZH2.0 • AKV320ZXTS2 • AKV325H2.0	• UNIVAL DMDA-6147 NT 7 High Density Polyethylene Resins • UNIVAL DMDA-6400 NT 7 High Density Polyethylene Resins • UNIVAL DMDG-6240 NT 7 High Density Polyethylene Resins • DOW 20-6064 HEALTH+ Ultra-Pure Polyethylene • CONTINUUM DMDD-6620 HEALTH+ Bimodal Polyethylene Resins • UNIVAL DMDF-6230 NT High Density Polyethylene Resins	• Adflex 7637 XCP • Adflex KS 021 P • Adflex Q 100 F • Hifax EBC 911P T 2065 • Hostalen ACP 5331 A • Hostalen ACP 5531 B	• 25-30ml HDPE PP snap on bottle • 87.5mm LDPE Nasal Applicator Dip Tube - N/D-0019-A • 250 ml PE Enema Bottle • 500ml HDPE Tubular • 500ml HDPE Boston Round	• Automotive Components • Molded Industrial Packaging • Healthcare Furniture • Infrastructure Furniture
Market Presence	▪ EMEA ▪ North America ▪ Latin America ▪ Asia Pacific	▪ Asia Pacific ▪ U.S. & Canada ▪ Europe, Middle East & Africa ▪ Latin America	▪ Europe ▪ America ▪ Asia ▪ Others	▪ U.S. & Canada ▪ Europe ▪ Rest of the World	▪ Asia
Market Strategy	I			I	I

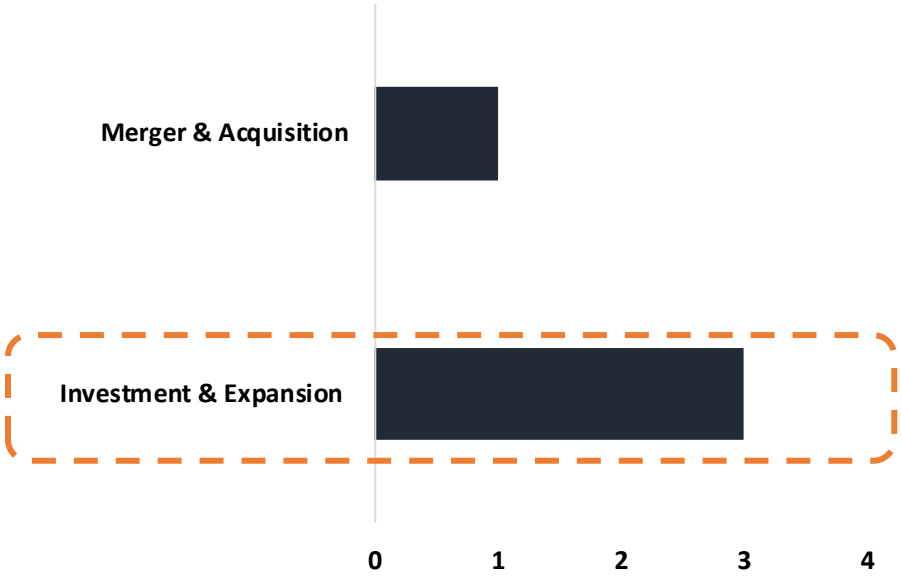
Agreements & Partnerships P **New Product Development** N **Investment & Expansion** I **Mergers & Acquisition** M

Source: Company Annual report, Reports and Data, Primary Interview

Key participants in the blow molded plastics market are Lanxess AG, The Dow Chemical Company, LyondellBasell Industries, Berry Global Inc., Mitsu Chem Plast Ltd., Minda Kyoraku Co. Ltd, Pradip Plastic Moulders Pvt. Ltd., Parekhplast India Limited, ALPLA Group, Apex Plastics, The Plastic Forming Company, Champion Plastics (India) Private Limited, Premier Seals (India) Pvt. Ltd., JSG Innotech and Maxtech Manufacturing Limited.

The market is currently witnessing increasing efforts by players in terms of expansions as companies try to gain a competitive edge over the market by sharing ideas and resources with their counterparts. Market players are also resorting to strategies like partnerships & agreements, and mergers & acquisitions wherein they are strategically forming alliances with crucial end-users or organizations in both the public and private sectors. This is helping them to gain a competitive advantage in terms of sales.

7.7.1 STRATEGY BENCHMARKING



Source: Company Annual report, Reports and Data, Primary Interview

Players in the blow molded plastics market employed various strategies like investment and expansions, mergers and acquisitions, over the study period of 2019-2023, in order to increase their market, share by reaching out to a newer portion of potential consumer base as well as holding the current consumer base through various tactics. The players in the market also heavily ramped up their efforts for research and development in order to develop a new product and thus make a unique offering in the market.

Of all the strategies employed during the review period, investment & expansion is one of the leading strategies. Besides, since the market is dynamically growing, players in the market are making attempts for mergers & acquisitions in regions across the globe to expand their geographical footprint in the market. Some of the notable strategies were adopted by Berry Global Inc., LANXESS AG, ALPLA Group among others. For instance, in September, 2020, ALPLA Group has acquired the Amcor facility in western India for the production of preforms for PET bottles. Through this acquisitions, the company has expanded its core business in the PET area in India. In another instance, in May, 2022, Berry Global Inc., has started construction of new manufacturing facility and global Centre of Excellence in India. The new manufacturing facility will serve the healthcare and other key market sectors. The company will also extend its R&D innovation and scale up production to support rising demand from South Asia and India.

TABLE 27 MERGERS AND ACQUISITIONS IN THE BLOW MOLDED PLASTICS MARKET, 2019-2023

DATE	COMPANY NAME	DESCRIPTION
Sep-20	ALPLA Group	ALPLA Group has acquired the Amcor facility in western India for the production of preforms for PET bottles. Through this acquisitions, the company has expanded its core business in the PET area in India.

Source: Company Annual report, Reports and Data, Primary Interview

TABLE 28 INVESTMENT & EXPANSIONS IN THE BLOW MOLDED PLASTICS MARKET, 2019-2023

DATE	COMPANY NAME	DESCRIPTION
May-22	Berry Global Inc.	Berry Global Inc., has started construction of new manufacturing facility and global Centre of Excellence in India. The new manufacturing facility will serve the healthcare and other key market sectors. The company will also extend its R&D innovation and scale up production to support rising demand from South Asia and India.
Jul-19	LANXESS AG	LANXESS has intensified its blow molding activities and invested in blow molding system. This is due to the growing demand for air management components, like blow-molded charge air pipes, particularly from Asia.
Jan-19	Mitsu Chem Plast Ltd.	Mitsu Chem Plast Ltd. has inaugurated a new state of the art plant with latest technology at Khalapur, India. The new unit has latest technology in plant and machineries to produce the wide range of moulded products for multiple industrial & domestic uses.

Source: Company Annual report, Reports and Data, Primary Interview

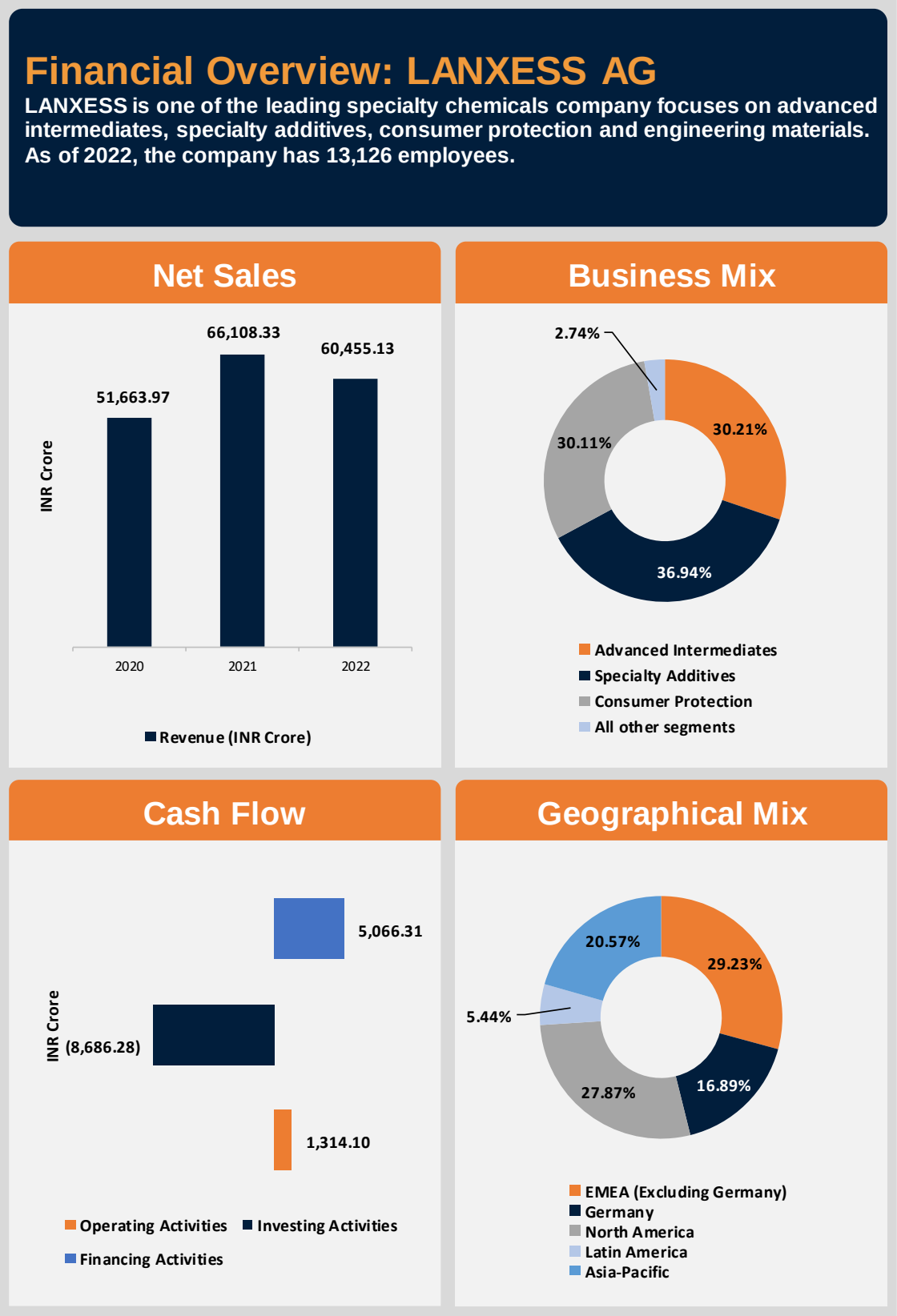
7.8 LANXESS AG

LANXESS AG	**Type:** Public
	Industry: Specialty Chemicals
	Founded: 2004
	Headquarters : Cologne, Germany
	Website: www.lanxess.com

7.8.1 COMPANY SUMMARY

LANXESS AG is one among the leading specialty chemicals company based in Cologne, Germany. The company's primary expertise involves with producing, developing and marketing chemical intermediates, additives, specialty chemicals and plastics. LANXESS has four operating segments: Advanced Intermediates, Specialty Additives, Consumer Protection and Engineering Materials. Advanced intermediates segment includes advanced industrial intermediates and inorganic business units. Specialty additives segment has polymer additives, lubricant additives business and Rhein Chemie business units. Consumer protection has material protection products, liquid purification technologies and saltigo as business units. Engineering materials has high performance materials and urethane systems business units. The company has 14,866 employees across 33 countries in Asia, Europe, Americas and Middle East & Africa.

7.8.2 FINANCIAL INSIGHTS



Source: Company Website, Annual Report, News & Press Releases

7.8.3 PRODUCT INSIGHTS

PRODUCT	DESCRIPTION	APPLICATIONS
BC700HTS DUSXBL	• It is a PA6 non-reinforced, impact resistant product. • It has high toughness and very low stiffness and use temperature. • It has very good blow-by resistance and high flexibility. • It is cost effective as it allows the production of lines with bellows directly in the blow mold and make additional rubber bellows superfluous.	• It is used in clean air ducts and extrusion applications.
BC550Z DUSXBL	• It is a PA6 non-reinforced, impact resistant product. • It has high toughness and low stiffness and use temperature. • The product is used where barrier properties and extreme toughness at low temperatures are required. • It has excellent melt stiffness and high surface quality.	• It is used in high pressure gas tank systems, non-auto fuel tanks, and extrusion applications.
BKV315ZH2.0	• It is a PA6 GF15 product. • It has great stiffness and use temperature and moderate toughness. • It has glass fiber reinforced for rigid clean air lines or the cold side of the charge air lines.	• It is used in clean air ducts and charge air ducts.
BKV320ZH2.0	• It is a PA6 GF20, heat stabilized product. • It has moderate stiffness and use temperature and toughness. • It has glass fiber reinforced for charge air lines. • Its temperature range can up to approx. 160 °C continuous operating temperature.	• It is used in clean air ducts and charge air ducts.
BKV325ZH2.0	• It is a PA6 GF25, heat stabilized product. • It has great stiffness and use temperature and moderate toughness. • It has highest glass fiber reinforcement for high mechanical requirements.	• It is used in charge air ducts.
AKV320ZH2.0	• It is a PA66 GF20, heat stabilized product. • It has great stiffness and use temperature and moderate toughness. • It has maximum continuous operating temperature of 180 °C and peak temperatures up to 220 °C. • It has excellent weldability and very good processing properties.	• It is used in charge air ducts.

AKV320ZXTS2	• It is a PA66 GF20, highly heat stabilized product. • It has great stiffness and use temperature and moderate toughness. • It can be used at extreme operating temperatures of up to 230 °C. • The product also offers good performance across the entire temperature range. • It has excellent processability and weldability.	• It is used in charge air ducts.
AKV325H2.0	• It is a PA66 GF 25, heat stabilized product. • It has high stiffness and use temperature. • It has highest fiber reinforcement.	• It is used in charge air ducts.

Source: Company Website, Annual Report

7.8.4 STRATEGIC INITIATIVES

DATE	DEVELOPMENT	DESCRIPTION
Jul, 19	Investment & Expansion	LANXESS has intensified its blow molding activities and invested in blow molding system. This is due to the growing demand for air management components, like blow-molded charge air pipes, particularly from Asia.

Source: Company Website, Annual Report, News & Press Releases

7.9 THE DOW CHEMICAL COMPANY

The DOW Chemical Company	**Type:** Public
	Industry: Chemical
	Founded: 1897
	Headquarters : Michigan, United States
	Website: www.dow.com

7.9.1 COMPANY SUMMARY

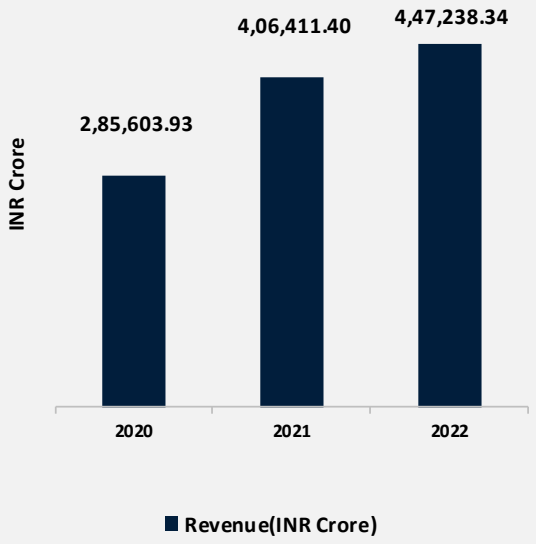
Dow is a multinational chemical company headquartered in Midland, Michigan, United States. Dow focuses on delivering sustainable future through material science expertise and collaboration. The company has six global business which are organized into operating segments including industrial intermediates & infrastructure, packaging & specialty plastics, and performance materials & coatings. The Company's manufacturing, processing, marketing and research and development facilities, as well as regional purchasing offices and distribution centers are located throughout the world. The company has around 104 manufacturing sites in around 31 countries which employs approximately 35,700 people. Dow has presence in around 31 countries in Europe, North America, Latin America, Africa, Middle East and Asia-Pacific.

7.9.2 FINANCIAL INSIGHTS

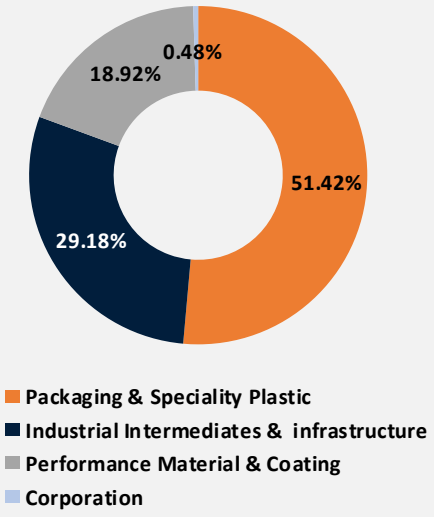
Financial Overview: The Dow Chemical Company

The Dow Chemical Company is among the innovative, inclusive, sustainable material science company. At Dec 31, 2022, the Company permanently employed approximately 37,800 people on a full-time basis.

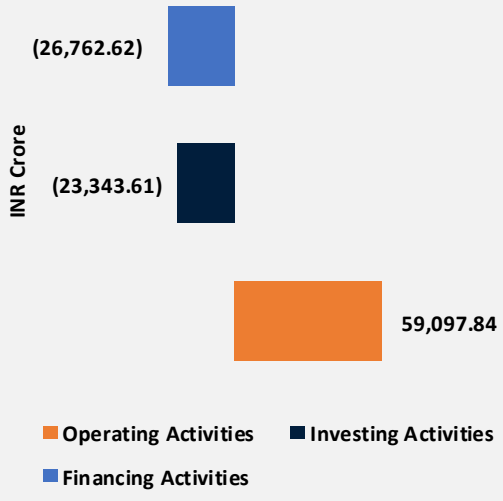
Net Sales



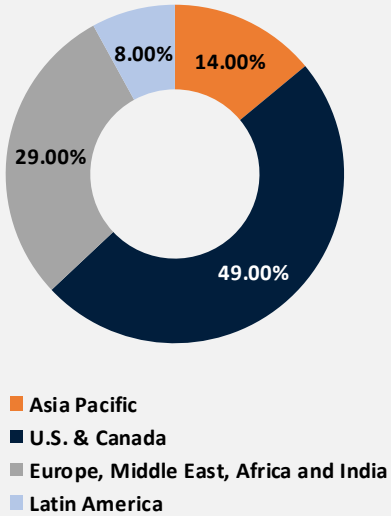
Business Mix



Cash Flow



Geographical Mix



Source: Company Website, Company Annual Reports, News & Press Releases

7.9.3 PRODUCT INSIGHTS

PRODUCTS	DESCRIPTION	APPLICATION
UNIVAL DMDA-6147 NT 7 High Density Polyethylene Resins	• It has broad molecular weight distribution and high molecular weight. • It provides excellent combination of extrudability and parison stability. • It is ideal for blow molding containers such as the 5-55 gallon (19-212 litre) closed head shipping containers and other similar parts. • It also provides outstanding environmental stress-crack resistance, excellent parison melt strength, good processability and rigidity.	It is used in large part blow molding, industrial chemicals, latex paints, printing inks, food stuffs, adhesives and other chemical specialties.
UNIVAL DMDA-6400 NT 7 High Density Polyethylene Resins	• It provides maximum stiffness and high impact strength. • It has top load strength and moderate swell. • It provides excellent taste and odour characteristics and produces very white bottles.	It is used in food & beverage industry for dairy, water, juice and other packaging applications and also in houseware items.
UNIVAL DMDG-6240 NT 7 High Density Polyethylene Resins	• The product provides excellent processing in all extrusion blow molding equipment. • Characteristics of the product includes excellent processability, high melt strength and excellent ESCR.	It is used to package household industrial chemicals, such as laundry detergent, health and medicinal aids as well as agricultural and food products.
DOW 20-6064 HEALTH+ Ultra-Pure Polyethylene	• Polyethylene resin has low melt index and intermediate crystallinity. • This resin has specially-designed release agent which is compatible with many pharmaceutical formulations. • Benefits provided by the product includes outstanding flexibility, environmental stress crack resistance and contains polyethylene glyvol (PEG) as an injection blow molding release agent.	It is used in injection blow molded bottles, in medical and pharmaceutical packaging.
CONTINUUM DMDD-6620 HEALTH+ Bimodal Polyethylene Resins	• It is a pharmaceutical bi-modal HDPE designed for CBF, IBM, and EBM blow molding processes. • It provides benefits like lightweight extended shelf life, gaseous barrier, Improved top load processability, regulatory compliance and notification of change.	It is used in lightweight pharmaceutical bottles.
UNIVAL DMDF-6230 NT High Density Polyethylene Resins	• It offers high impact strength, outstanding environmental stress crack resistance, and good extrusion characteristics. • It is formulated with a non-food grade antistatic agent.	It is blow molded into thin walled parts and houseware items, packaging household industrial chemicals, health and medicinal aids.

Source: Company Website, Annual Report

7.10 LYONDELLBASELL INDUSTRIES

LyondellBasell Industries	**Type:** Public
	Industry: Chemicals
	Founded: 2007
	Headquarters : Texas, United States
	Website: www.lyondellbasell.com

7.10.1 COMPANY SUMMARY

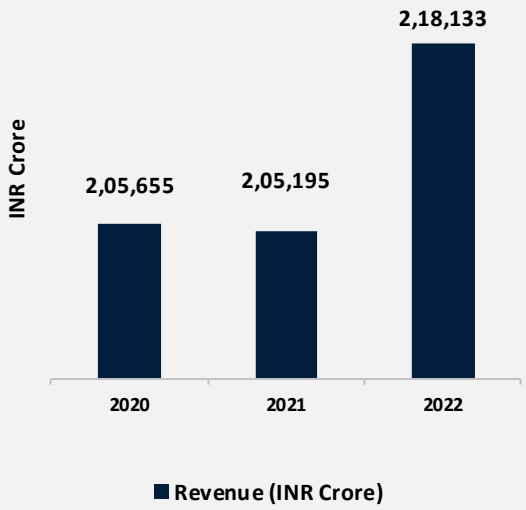
Texas-headquartered LyondellBasell Industries is a multinational company engaged in polymer, chemicals and fuel business. The company is also a globally acclaimed licensor of polyolefin production technologies. It is the largest producer of oxyfuels at the global level, and is among the leading polypropylene producer in Europe and North America. LyondellBasell in indulges in the production of materials and products such as flexible and lightweight food-packaging, safe and pure water supplies through strong pipes, increasing automobile fuel efficiency, and making advanced and durable electronic components. The company offers a broad range of plastic resins such as polypropylene, polypropylene compounds and polyethylene. These materials produce a variety of products like automobile parts, renewable energy technologies, packaging, piping and textiles. Established in 2007 following the merger of Basell and Lyondell, the company operates in over 100 countries and has 19,200 employees globally.

7.10.2 FINANCIAL INSIGHTS

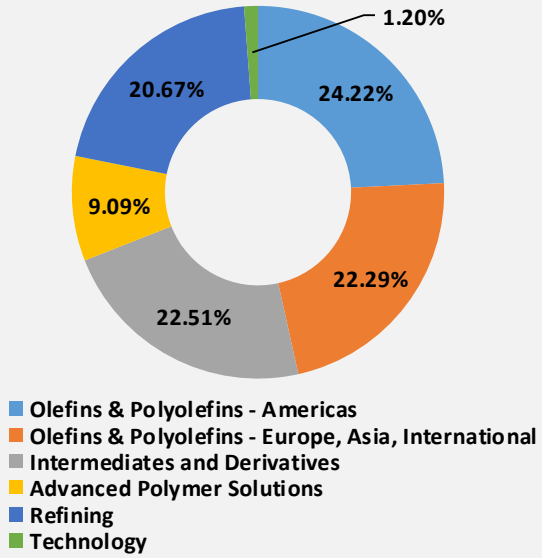
Financial Overview: LyondellBasell Industries

Netherlands-based LyondellBasell Industries is a leading polymers, chemicals and refining player in the global market. The company is the biggest license provider of propylene and polypropylene production technologies. As of 2022, the company employed 19,300 people across the globe.

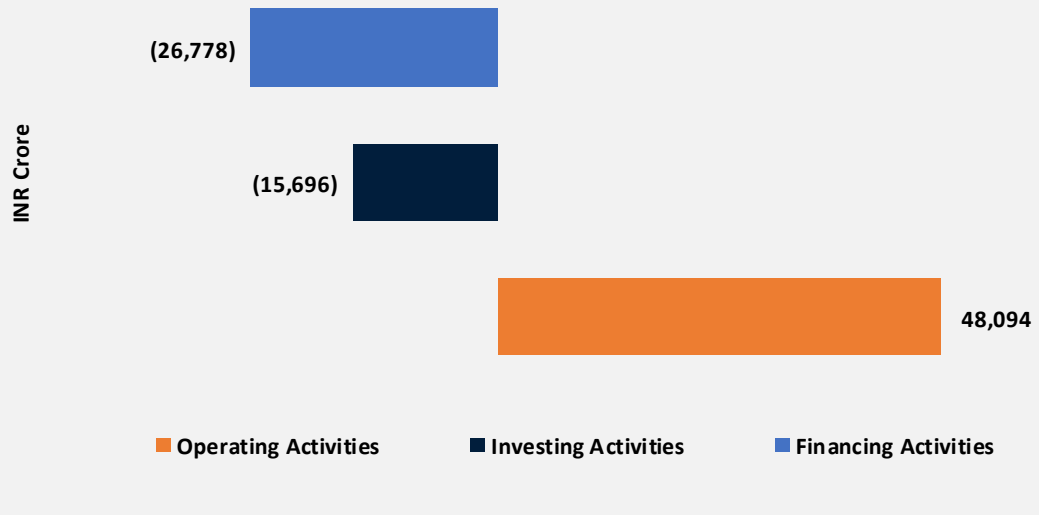
Net Sales



Business Mix



Cash Flow



Source: Company Website, Company Annual Reports, News & Press Releases

7.10.3 PRODUCTS OFFERED

PRODUCT	DESCRIPTION	APPLICATION
Adflex 7637 XCP	• It is a thermoplastic polyolefin. • It is used as impact/toughener modifier of polypropylene homopolymer in extrusion applications. • It is blown on standard LDPE or LLDPE film lines.	It is used in bags & pouches, bottles for consumer goods, bottles for industrial use, collapsible tubes, and others.
Adflex KS 021 P	• It is a reactor TPO (thermoplastic polyolefin) manufactured using Catalloy process technology. • Key characteristics are flexibility and low temperature impact resistance. • The grade is available in natural pellet form.	It is used in interior automotive applications, polymer modifier, soft profile & sheets, soft touch applications, sports, leisure & toys, and others.
Adflex Q 100 F	• It is a thermoplastic polyolefin. • The product features very high softness and very low modulus. • It can be easily processed on conventional LDPE or LLDPE blown film lines.	It is used in bags & pouches, collapsible tubes, interior automotive applications, and others.
Hifax EBC 911P T 2065	• It is a 20% talc filled PP copolymer, with low melt flow rate offering a good impact/stiffness balance. • It is available as a customized color matched, pellet form.	It is used in exterior automotive applications.
Hostalen ACP 5331 A	• It is a high density polyethylene with an excellent combination of stiffness and ESCR and a good impact resistance. • It is in pellet form and contains antioxidants.	It is used in drums, industrial packaging, and jerry cans.
Hostalen ACP 5531 B	• It is a high density polyethylene with an excellent combination of stiffness and ESCR and a good impact resistance. • It is in pellet form and contains antioxidants.	It is used in drums, industrial packaging, and jerry cans.

Source: Company Website, Annual Report, News & Press Releases

7.11 BERRY GLOBAL INC.

Berry Global Inc.	**Type:** Public
	Industry: Manufacturing
	Founded: 1967
	Headquarters : Indiana, United States
	Website: www.berryglobal.com

7.11.1 COMPANY SUMMARY

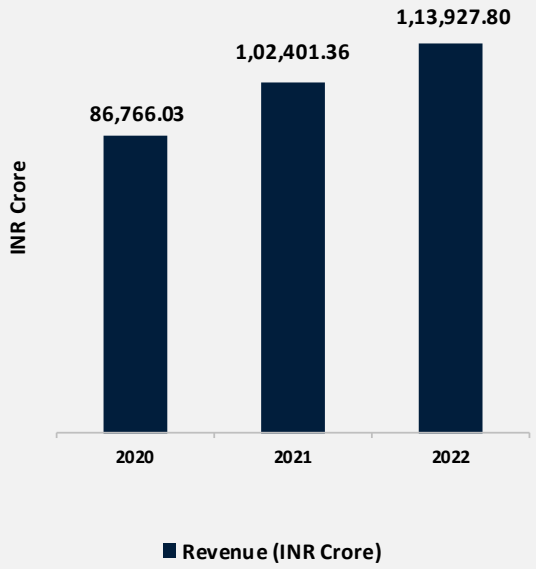
Indiana-headquartered Berry Global Inc. is one among the leading global supplier of a broad range of innovative rigid, flexible and non-woven products used every day within consumer and industrial end markets. The company focuses on four reporting segments which includes consumer packaging international, consumer packaging North America, engineered materials, and health, hygiene & specialties. Consumer packaging segment focuses on closures and dispensing systems, pharmaceutical devices and packaging, bottles and canisters, containers, and technical components. Engineered materials focuses on stretch and shrink films, converter films, institutional can liners, food and consumer films, retail bags, and agriculture films. The company has operations in North America, Europe and rest of the world and employees around 47,000 across more than 295 locations.

7.11.2 FINANCIAL INSIGHTS

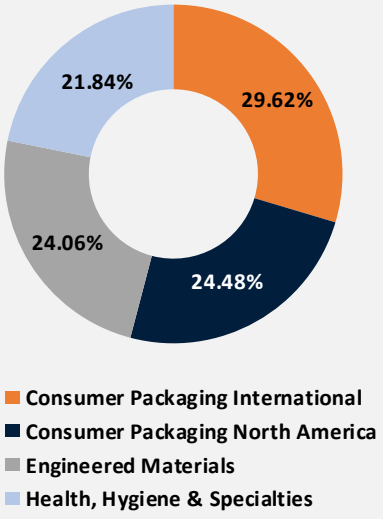
Financial Overview: Berry Global Inc.

Berry Global Inc. focuses on broad range of products under consumer packaging, engineered materials, health, hygiene & specialties. At the end of fiscal 2022, the company employed approximately 46,000 employees.

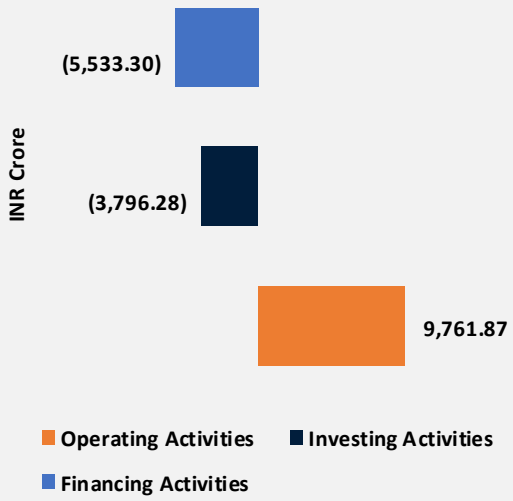
Net Sales



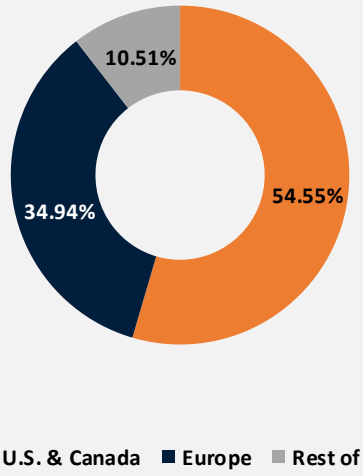
Business Mix



Cash Flow



Geographical Mix



Source: Company Website, Company Annual Reports, News & Press Releases, Reports and Data

7.11.3 PRODUCTS OFFERED

PRODUCT	DESCRIPTION	APPLICATION
25-30ml HDPE PP snap on bottle	• The product has capacity of 25ml with snap on neck type. • The product is manufactured using plastic, HDPE, PEHD and PP materials using injection blow molding.	It is used in medical applications.
87.5mm LDPE Nasal Applicator Dip Tube - N/D-0019-A	• The product is manufactured using plastic, LDPE, and PELD materials using injection blow molding.	It is used in nasal applicator.
250 ml PE Enema Bottle	• It is special range of rectal nozzle. • The product has capacity of 250ml with screw neck type. • The product is manufactured using plastic, and PE using extrusion blow molding process.	It is used for medical use.
500ml HDPE Tubular	• The product has capacity of 500ml with screw neck type. • It is widely recyclable depending on material used. • It is available in HDPE, Polypropylene, recycled HDPE, Sugarcane HDPE and others.	It is used in hair care, skin care, baby care, sun care, pet care, laundry, cleaners and polishes, auto care.
500ml HDPE Boston Round	• The product has capacity of 500ml with screw neck type. • It is widely recyclable depending on material used. • It is available in HDPE, Polypropylene, recycled HDPE, Sugarcane HDPE and others.	It is used in hair care, skin care, baby care, sun care, pet care, laundry, cleaners and polishes, auto care.

Source: Company Website, Annual Report, News & Press Releases

7.11.4 STRATEGIC INITIATIVES

DATE	DEVELOPMENT	DESCRIPTION
May, 22	Investment & Expansion	Berry Global Inc., has started construction of new manufacturing facility and global Centre of Excellence in India. The new manufacturing facility will serve the healthcare and other key market sectors. The company will also extend its R&D innovation and scale up production to support rising demand from South Asia and India.

Source: Company Website, Annual Report, News & Press Releases

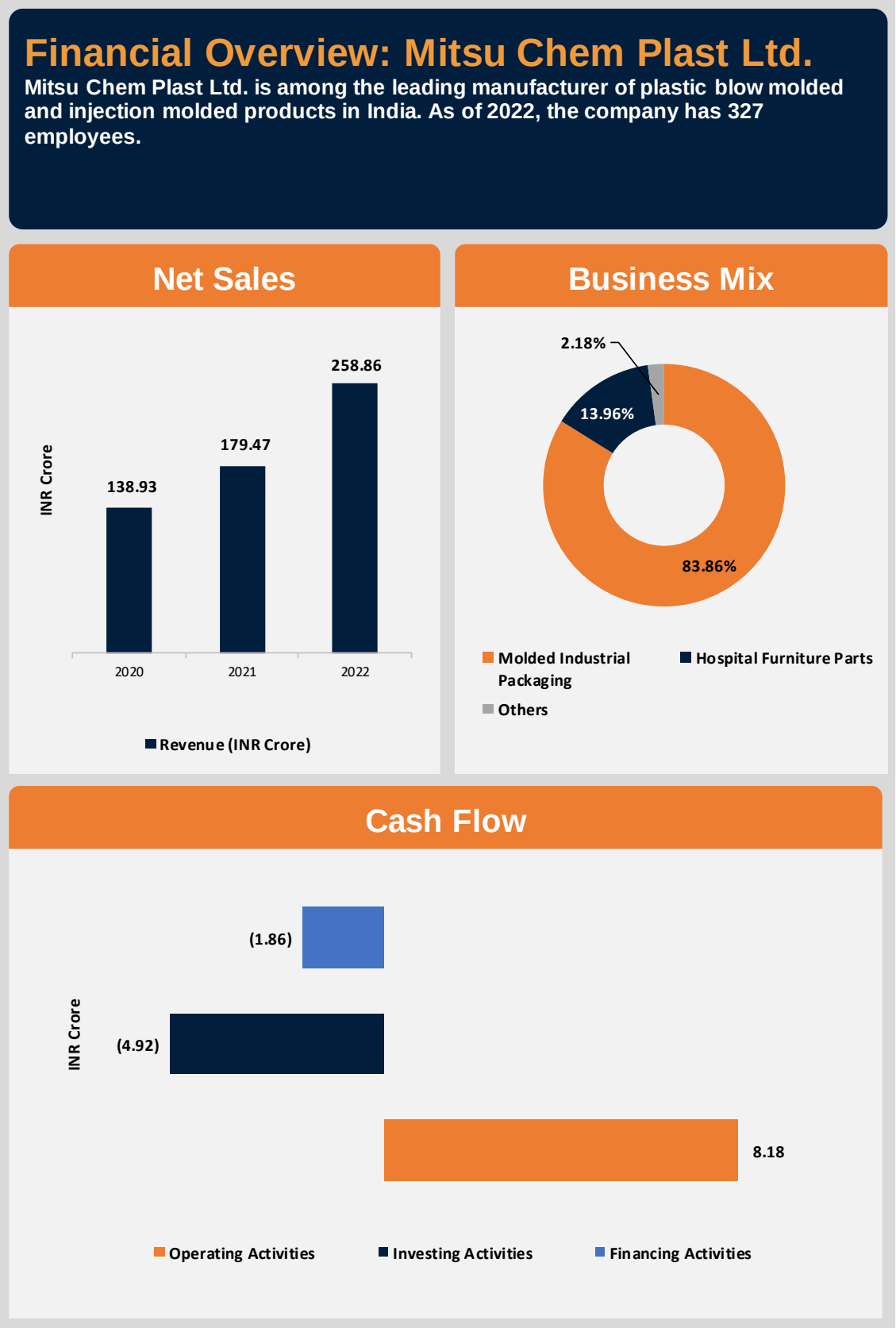
7.12 MITSU CHEM PLAST LTD.

Mitsu Chem Plast Ltd.	**Type:** Public
	Industry: Manufacturing
	Founded: 1990
	Headquarters : Maharashtra, India
	Website: www.mitsuchem.com

7.12.1 COMPANY SUMMARY

India based Mitsu Chem Plast Ltd. was established in the year 1990 is one among the leading manufacturer of plastic blow molded and injection molded products. Molded products produced by the company are associated with business in industrial molding packaging, hospital furniture, infrastructure furniture and automotive components. Mitsu Chem offers various blow molding and injection molding solutions for automotive industry, which are produced at Rudrapur and Tarapur plants. Under industrial packaging, company offers industrial containers like bottles, jerry cans, drums - narrow mouth, wide mouth, open top and others. The company's manufacturing sites has capacity of more than 14,500 MTPA, which is spread over 83,000 sq. ft. In December, 2018, a bigger manufacturing unit in Khalapur, Maharashtra of 7300 sq. mts. was started and inaugurated in 2019.

7.12.2 FINANCIAL INSIGHTS



Source: Company Website, Company Annual Reports, News & Press Releases

7.12.3 PRODUCTS OFFERED

CATEGORY	DESCRIPTION	PRODUCTS
Automotive Components	• The company produces automotive components using blow molding and injection molding solutions.	• AC products • Injection molded articles • Penguin tanks • Washer tanks • Snorkel • Rainhood • Pipe plastic products
Molded Industrial Packaging	• The company produces industrial containers using blow molding technique.	• Jerry cans • Drums • Jars • Small containers • Agro chemical products • Pharma packaging products • Bulk drugs & fine chemicals • Diagnostic products • Cosmetics • Consumables
Healthcare Furniture	• The products under this category offers pleasing aesthetics and finish. • The products can be customised according to designs, décor and colour.	• ABS panel • Other healthcare plastic parts
Infrastructure Furniture	• The company offers wide range of products under this category which can be customised according to colour.	• Plastic chair shells • Plastic seat shells • Plastic stadium seat • Plastic chair seats • Plastic chair parts • Plastic baby car seat shell • Bus seat

Source: Company Website, Annual Report, News & Press Releases

7.12.4 STRATEGIC INITIATIVES

DATE	DEVELOPMENT	DESCRIPTION
Jan, 19	Investment & Expansion	Mitsu Chem Plast Ltd. has inaugurated a new state of the art plant with latest technology at Khalapur, India. The new unit has latest technology in plant and machineries to produce the wide range of moulded products for multiple industrial & domestic uses.

Source: Company Website, Annual Report, News & Press Releases

7.13 ALPLA GROUP

ALPLA Group	**Type:** Private
	Industry: Packaging Manufacturing
	Founded: 1955
	Headquarters : Vorarlberg, Austria
	Website: www.alpla.com

7.13.1 COMPANY SUMMARY

ALPLA Group was founded in 1955 and is headquartered in Hard, Vorarlberg in Austria. The company is focusing on packaging solutions for bottles, preforms, caps, extrusion blow moulding, injection moulding, closures, preforms, pet stretch blow moulding, injection blow moulding, recycling, HDPE, LDPE, PP, 6-layer Coex, PET, and PET-G. Currently, company has technical centers at seven locations including Hard/Austria, Toluca/Mexico, São Paulo/Brazil, Atlanta/USA, Bangkok/Thailand, Shanghai/China and Hyderabad/India. ALPLA has around 22,100 employees across 45 countries in 177 production plants to produce high-quality plastic packaging for brands in the food, beverage, milk & dairy, pharmaceutical, oil and lubricant, crop protection, home, and beauty care industries. The company has presence in Americas, Europe, Asia Pacific, Middle East and Africa.

7.13.2 PRODUCTS OFFERED

CATEGORY	DESCRIPTION	PRODUCTS
Extrusion Blow Moulding	• Plastics used in this category are HDPE, LDPE, PP and extrudable PET. • It provides benefits like variety of designs (round, angular, oval, with handle), flexible production output.	• Bottles and packaging for cosmetics • Household products • Drinks and food • Oils and lubricants
Injection stretch Blow Moulding	• Plastics used in this category are PS, PE, PP and PET. • It provides benefits like premium surface quality, and no transfer ring necessary.	• High end cosmetics • Wide-mouth jars • Pharmaceutical packaging
Injection Blow Moulding	• Plastics used in this category are PE, PP and PET. • It provide benefits like high dimensional accuracy, low weight fluctuation, and good finish quality.	• Jars for cosmetic products • Roll-on deodorants • Containers for pharmaceutical products

Source: Company Website, Annual Report, News & Press Releases

7.13.3 STRATEGIC INITIATIVES

DATE	DEVELOPMENT	DESCRIPTION
Sep, 20	Mergers & Acquisitions	ALPLA Group has acquired the Amcor facility in western India for the production of preforms for PET bottles. Through this acquisitions, the company has expanded its core business in the PET area in India.

Source: Company Website, Annual Report, News & Press Releases

7.14 APEX PLASTICS

Apex Plastics	**Type:** Private
	Industry: Packaging Manufacturing
	Founded: 1970
	Headquarters : Missouri, United States
	Website: www.apexplastics.com

7.14.1 COMPANY SUMMARY

Apex Plastics was founded in 1970 and is headquartered in Missouri, United States. Apex Plastics is an extrusion blow-molding plastics company has many decades of experience in mold design and production. The company's business operations focus on producing custom and proprietary blow-molded bottles, containers, and other shapes. Also, the company works with other major packaging manufacturers, contact fillers, and packaging decorators to offer its customers a wide variety of packaging solutions. At the beginning of the 2018, Apex added the capability of Injection Blow Molding. Apex Plastics became subsidiary of Plastic Companies Enterprises (PCE) of Lincoln, Nebraska in 1993. PCE continues to invest in Apex Plastics equipment, processes and people. PCE has the capabilities in 3 types of plastics manufacturing which are blow-molding, injection molding and pipe & profile extrusion. The company has presence across the globe.

7.14.2 PRODUCTS OFFERED

PRODUCT	DESCRIPTION
Plastic Oval Containers	• The company produces oval containers in variety of sizes and styles. • The company offers 4 in oval finger grip, smooth oval, flat oval, 4.5 in large oval and 6 in oval finger grip, 6 in large oval, 6 in smooth oval, 6 oz. flat oval, 8 in large oval and others.
Plastic Round Bottles	• The plastic round bottles ranges from 4oz to 1 gallon. • The company offers 4 oz modern round, 8 oz cylinder, 16 oz bullent, cylinder and 625 serum and others.
Plastic Oblong Bottles	• The company produces various styles with an oblong base. • The company offers 16 oz alcohol, 16 oz carafe, decanter, pinch, 32 carafe and decanter.
Plastic Juice Bottles	• The company produces bottle sizes ranging from 8 oz. to 59 oz. • The company offers 8 oz PET juice, 16 oz PET juice, 32 oz PET juice and 59 oz PET juice.

Source: Company Website, Annual Report, News & Press Releases

7.15 CHAMPION PLASTICS (INDIA) PRIVATE LIMITED

Champion Plastics (India) Private Limited	**Type:** Private
	Industry: Manufacturing
	Founded: 1992
	Headquarters : Tamil Nadu, India
	Website: www.championplasticsindia.com

7.15.1 COMPANY SUMMARY

Champion Plastics (India) Private Limited was founded in 1992 and is headquartered in Tamil Nadu, India. The company is privately owned focusing on blow moulding industry and manufactures engineered blow moulded components for automotive sector. The company mainly produces reservoir tanks, fuel tanks, air intake systems including both atmospheric air inlets and engine air inlet ducts, resonators, and bellows catering to all sectors in automobiles ranging from two- wheelers to eight-wheelers. Also, the company processes a wide variety of raw materials such as polyethylene, polypropylene, thermoplastics, hytrel and others. The company's state of the art facility is located at SIDCO Industrial Estate, Hosur with an annual maximum capacity of 48 lakh parts. Furthermore, the total manufacturing facility of comprises of 26,000 square foot, of which the assembly area is 8,000 square foot and blow moulding facility has a land area of 8,000 square foot.

7.15.2 PRODUCTS OFFERED

PRODUCT	DESCRIPTION
Fuel Tanks	• These fuel tanks are for scooters and auto with volumes ranging from 3 – 11 litres. • This product is assembled with bought out parts such as cap assembly, breather outlet, pencil filters, rubber hoses and hose clips. • The company is also in process of developing of 20L fuel tanks for tractors.
Reservoir Tanks	• These are fuel tanks for scooters and auto with volumes ranging from 3 – 11 litres • These tanks are assembled with bought out parts such as cap assembly, breather outlet, pencil filters, rubber hoses and hose clips.
Air Intake Ducts	• These 3D parts are developed in 2D machine. • Both atmospheric air intake and outlet to engine ducts developed. • These ducts are assembled as snorkel for intake for CVs.
Bellows	• The PP+EPDM is used for replacement of rubber based parts. • It has fine profiling at ends • It has parting line height less than 0.1mm.
Resonators	• The product is available in multicavity moulds of two, four, & eight cavities developed. • The cooling fixtures is in process to avoid shrinkage.

Source: Company Website, Annual Report, News & Press Releases

7.16 PREMIER SEALS (INDIA) PVT. LTD.

Premier Seals (India) Pvt. Ltd.	**Type:** Private
	Industry: Manufacturing
	Founded: 1986
	Headquarters : Maharashtra, India
	Website: www.sme.in

7.16.1 COMPANY SUMMARY

Premier Seals (India) Pvt. Ltd. was founded in 1986 and is headquartered in Maharashtra, India. The company is one among the leading companies in Manufacturing of various types of Rubber Components, Moulded items, Rubber to Metal bonded items in different types of Polymers like natural rubber, EPDM, nitrile, silicon, viton, polyacrylic, vamac, butyl, neoprene, SBR. Raw materials used in plastics includes PPE, HDPE, Nylon ABS. The company is currently supplying various bonded items along with moulded components like propller shaft damper/centre bearing, anti-vibration mountings, torsional vibration damper, gaskets, bellows, oil seals, rear and front spring buffer, boots, flexible coupling, bushes, hoses, rubber seals, rubber bumpers, rubber buffer for swing arm, plastic blow and injection moulding, fuel tanks and others to major original equipment customers.

7.16.2 PRODUCTS OFFERED

PRODUCT	DESCRIPTION
Plastic Blow Mold Parts	• The company offer high qualitative plastic blow mold parts with specific norms. • The company uses premium quality material in manufacturing process of these products. • These products include fuel tanks, air ducts, snorkel and others.

Source: Company Website, Annual Report, News & Press Releases

7.17 JSG INNOTECH

JSG Innotech	**Type:** Private
	Industry: Manufacturing
	Founded: 2010
	Headquarters : Haryana, India
	Website: www.jsginnotech.com

7.17.1 COMPANY SUMMARY

India based JSG Innotech has been manufacturing, designing, developing, and distributing Adornment, safety enhancement, garnishing and upgrade accessories for automobiles in India. The company offers diverse solutions that serves any industry that needs plastic molding, SS stamping, chrome plating on plastics, LED mounted components, and others. The main processed used by the company includes industrial design, die & mould, plastic processing, sheet stamping & cutting, metal fabrication & assay, printing, electronics & electrical, and testing and validation. JSG Group is among the leading plastic injection and blow moulding parts manufacturer in India with state-of-the-art moulding plant, equipment, systems, facilities, processes, and manpower to service its clients across automobile and other sectors. The company employees more than 2,000 people with two manufacturing sites across the India. The company has served to more than 30 corporate clients in its decades of business experience.

7.17.2 PRODUCTS OFFERED

CATEGORY	DESCRIPTION
Blow Molding	• The company has blow molding machines with 120 litre blowing capacity equipped with 100 Point Parasion Programming Controller & 10 kg accumulator capacity for wide variety of raw material and mold handling capabilities. • The company has in house raw-material manufacturing unit for PVC, TPV, TPO raw material. • The products offered by the company under this category includes automobile accessories and medical beds.

Source: Company Website, Annual Report, News & Press Releases

7.18 INDUSTRY SWOT ANALYSIS

7.18.1 MARKET STRENGTH ANALYSIS

Blow molding transformed the industrial sector by enabling businesses to utilize it extensively to satisfy customer demand for plastic goods. This plastic production process has several advantages over other methods, such as quick production and high outputs, which allows us to make a lot more plastic containers. The majority of liquid-holding plastic containers in the market today were created exclusively through the blow molding process only. Engineers were able to experiment with a range of applications and designs because to blow molding's widespread use, which led to several useful applications. Fuel tanks, car seat supports, flower pots, and toy wheels are a few examples of products made using this technology. The advancement of this technology has always been aimed at making plastic production a global industry. Manufacturers are now able to generate bigger volumes in a lot less time because to a major rise in production capacity. A considerably quicker production cycle has been made possible by the use of machines that enable 3D moldings.

7.18.2 MARKET WEAKNESS ANALYSIS

Similar to the gas industry, the blow molding industry is heavily dependent on millions of gallons of petroleum to make plastic goods. Oil is a crucial component of thermoplastics, which are automated and streamlined, therefore the technology has become a persistent danger to the world's declining oil supply. This Blow molding technology poses a significant risk to the environment due to its heavy reliance on petroleum and role in the production of polymers. Along with contributing to the depletion of oil reserves, it also produces plastic that is not biodegradable. In a sense, it can boost plastic manufacturing, but it can't take away the risks its goods pose to the environment.

7.18.3 MARKET OPPORTUNITY ANALYSIS

Blow molding process widely used in the creation of cuffs, balloons, flexible fluid, breather bags, multi-chamber, blow molded bags, vials, bellows and other plastic product used in the medical industry. Growing number of medical institutions will increase market demand for medical equipment. Demand will further be increased by a number of government initiatives, including the "Production Linked Incentive (PLI) Scheme for Medical Devices 2020" and the creation of medical parks. By 2025, it is anticipated that India's market for medical technology will be worth around INR 369,669.50 Lakhs.

7.18.4 MARKET THREAT ANALYSIS

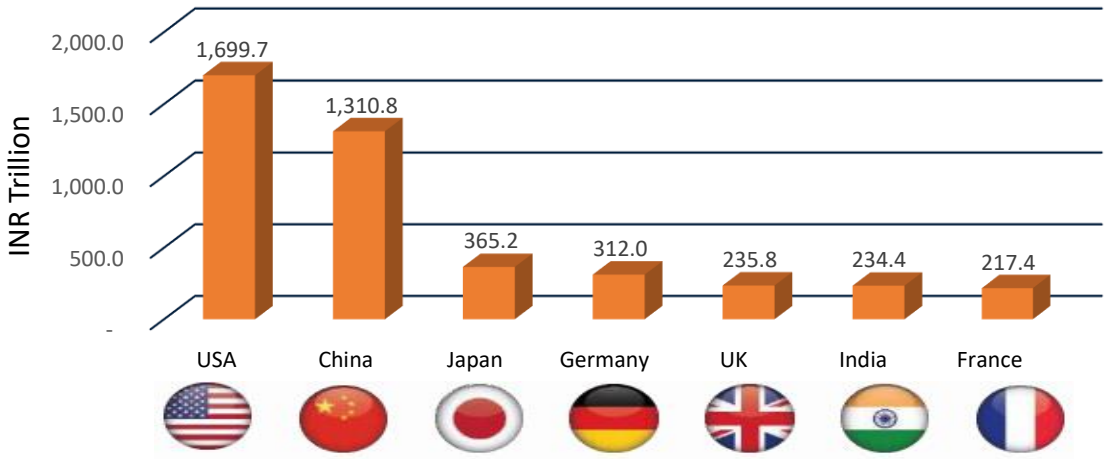
Bio-based polymers are gaining popularity due to environmental concerns and the knowledge that petroleum reserves are limited. Due to advancements in biotechnologies and increased public awareness, bio-based polymers not only replace conventional polymers in a number of applications but also offer distinctive qualities for new ones. Increasing eco-awareness among consumers, mandates & regulations, corporates becoming more focused on sustainability, technology stabilization and cost reduction are factors

driving the India bio-plastics polymers market. The growing demand for bio-based polymers is expected to hamper the demand for the blow-molded plastic in India.

7.19 ECONOMIC COMPARISON FOR MANUFACTURING & DISTRIBUTION

India's economy is a developing market economy with a middle income level. By nominal GDP, it is the fifth-largest economy in the world, and by purchasing power parity, it is the third-largest (PPP). According to the International Monetary Fund (IMF) (PPP), India ranked 125th by nominal GDP and 142nd by nominal GDP in terms of per capita income, respectively

FIGURE 31 GDP GROWTH OF COUNTRIES: 2021

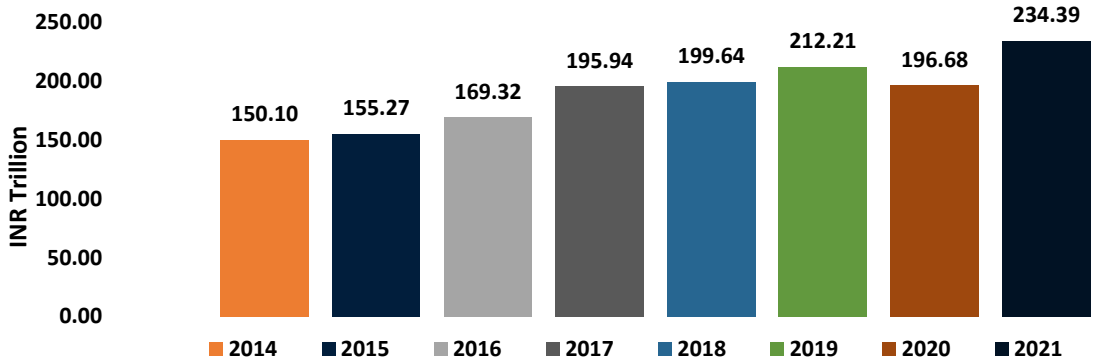


In 2022, India surpassed UK in GDP and becomes the 5th Largest

Source: World Bank, IBEF, PLASTINDIA FOUNDATION

Since the beginning of the twenty-first century, annual average GDP growth has ranged from 6% to 8%, and from 2013 to 2021, India's major economy exceeded China in terms of its rate of expansion. For the majority of recorded history, up to the start of colonialism in the early 19th century, the Indian subcontinent had the greatest economy in the world. India's GDP growth is expected to remain robust in FY24. GDP forecast for FY24 to be in the range of 6-6.8%.

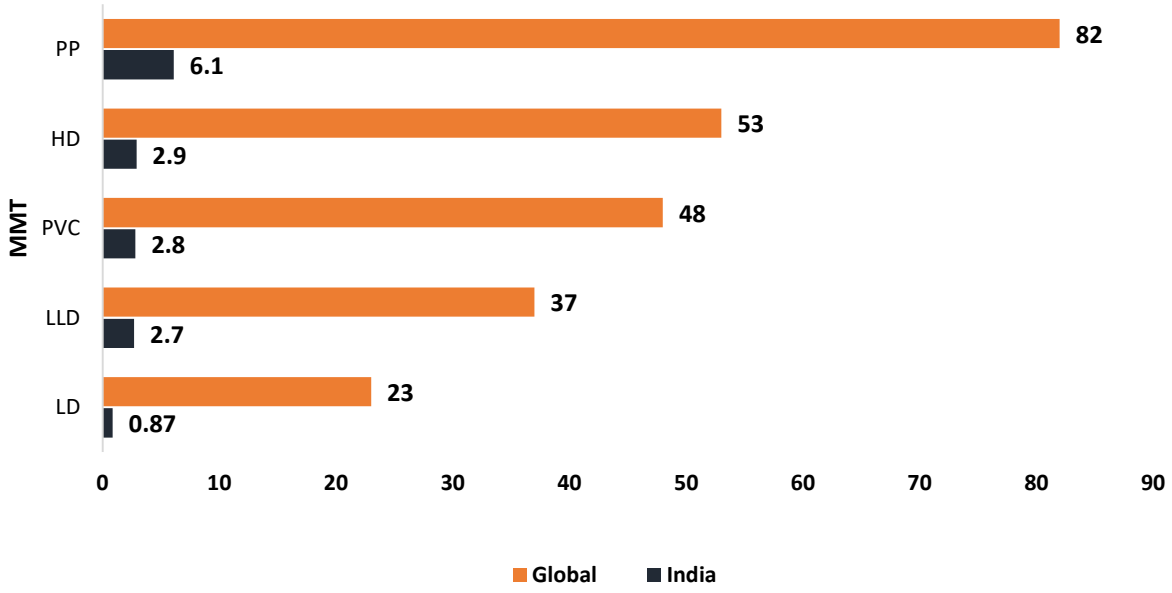
FIGURE 32 INDIA'S GROSS DOMESTIC PRODUCTION



Source: World Bank, IBEF, PLASTINDIA FOUNDATION

PlastIndia stated that in India, 170 lakh tones of plastics were produced in 2018–19. The industry had a 2018–19 market value of INR 5.1 lakh crore and 4000 converting units. The amount of plastic produced has significantly increased over time. In order to appraise the existing situation and comprehend future predictions and financing, it is essential to understand the complex structure and organization of the Indian plastics sector. India plastic demand is 6.3% of global demand.

FIGURE 33 MAJOR PLASTICS DEMAND 2021 GLOBAL VS INDIA

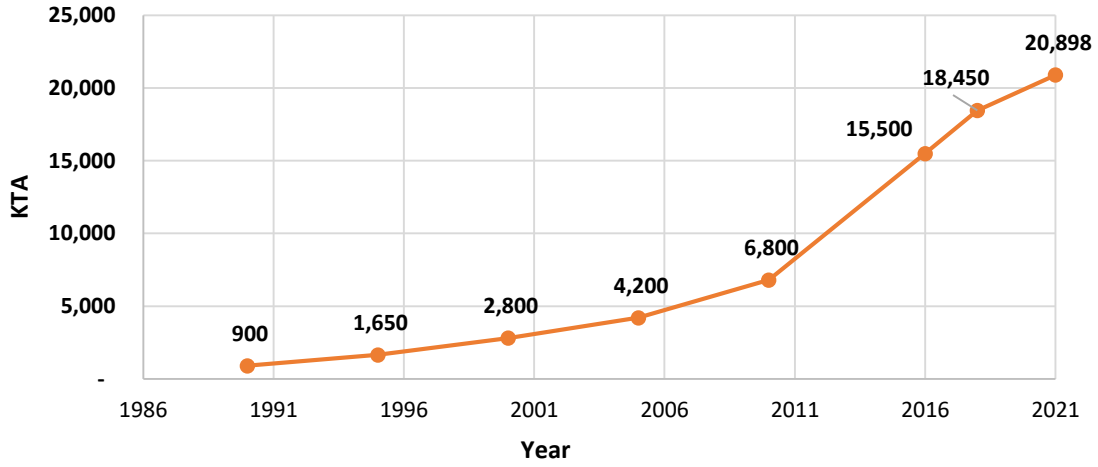


Source: World Bank, IBEF, PLASTINDIA FOUNDATION

Indian polymer Industry Snapshots

- Thermoplastics capacity 2021-2022 is 181.9 lakh tons
- Demand all plastics 2021-2022 is 208.9 lakh tons
- Polymer industry size INR 7.1 lakh crores
- India recycles around 60% of post-consumer plastics

FIGURE 34 GROWTH OF POLYMER DEMAND



Source: World Bank, IBEF, PLASTINDIA FOUNDATION

8 INTERMEDIATE BULK CONTAINERS INDUSTRY: INDIA

8.1 MARKET OVERVIEW

An intermediate bulk containers (IBC) are known to be reusable industrial containers which are extensively utilized for the handling, storage and transportation of variable states of products including, pastes, liquids and solids. These containers are named as intermediate as they are relatively larger than drum and comparatively smaller than tanks. These containers are widely adopted across various end-use industries including, pharmaceuticals, chemicals, and food & beverages, among others. The rapid growth in these sectors in the Indian region would enhance the demand for the intermediate bulk containers. As the adoption of these containers offers various benefits including, customizable, durable, reusable, cost efficient, ease of logistics usage, capability to handle pressure during transportation, and optimised storage space, among others. For instance, key chemical manufacturers widely use intermediate bulk containers for the transportation and storage of various kinds of powders that are constituents in a chemical product and also be utilized to contain a liquid that serves as a catalyst to quicken chemical reactions. These containers are one of the major storage and transportation medium in pharmaceutical sector, as they are widely used for active pharmaceutical ingredients, excipients, and raw packaging materials. And India has positive growth potential in pharmaceutical sector which would enhances the demand for intermediate bulk containers in the region. Food & beverage sector extensively utilizes these containers for the transportation and storage of food syrups, powdered foods, raw ingredients, and liquid food products, among others. Additionally, they play vital role in beverage sector for applications such as, fermenting, distilling, blending and storage & transportation of beverages. Furthermore, in oil & gas industry, intermediate bulk containers are widely used for the transportation of samples from a particular well extraction or for emergency water for highly remote projects. In addition, they can be also used at airports to store and move deicing agents. Thus, owing to wide range of adoption of intermediate bulk containers (IBC) across various end-use industries and rapid growth of these industries in the Indian region would have positive influence on the product demand in the forecast period.

The materials used for the intermediate bulk containers includes, plastics, composite, and metals, among others. Some of most widely used materials include, high density polyethylene (HDPE), polypropylene, stainless steel, carbon steel, and aluminium, among others. The selection of material usually relies on factors such as, whether or not the IBC will be reused, legal constraints and the required level of durability, among others. For rigid intermediate bulk containers which having cubical shape, the inside containers are usually composed of plastics such as, polyethylene or high density polyethylene (HDPE). Other materials, such aluminium or galvanised iron can also be used for the similar purpose. Galvanized tubular steel or iron are used to construct the rigid outer container or cage. Furthermore, flexible intermediate bulk containers also termed as bulk bags are constructed from a variety of durable materials, like woven polypropylene or polyethylene. Thus, on the area of application for intermediate bulk containers, the materials are chosen for the construction of these containers.

Usually, there are two types of intermediate bulk containers such as, rigid intermediate bulk containers (RIBC) and flexible intermediate bulk containers (FIBC). Rigid intermediate bulk containers are most widely used IBC in the market. They are usually made up from hard plastics and metals with a wood, plastic, or hybrid base in

order to maintain their shape while being stored and transported. In most of the cases, these rigid containers are used to transport and store liquids across long distances and for extended periods of time. Owing to their design, they may be stacked in warehouses or shipping containers without losing the integrity of the container or its contents. Thus, these types of IBCs are widely adopted in the industries such as, chemical, water distribution and chemical manufacturing, among others. In addition, to transport rigid IBCs from processing manufacturing facilities to clients and vice versa, rigid IBC holders need a pooling system. Furthermore, flexible bulk intermediate containers also termed as bulk bag, jumbo, big bag or super sack are containers usually made up from flexible fabric. These bags are usually constructed from materials such as, polypropylene, wood, aluminium and fibreboard, among others. These flexible bulk intermediate containers available in a variety of sizes, shapes, specifications and capacities relying on the application area for the product for transferring dry bulk materials in industries such as, pharmaceutical, chemical and food, among others. As these containers can be easily customized as per management, measurements, releasing, filling and barrier depending on the end-user industries. Some of the modern flexible containers feature a woven bag which can transform into cube-shaped when it is filled and also has a discharge spout at the bottom of each woven bag that allows users to conveniently distribute material. Additionally, they entirely collapse when they are empty, making them portable when they are empty. Granular materials from the building & construction industry including, sand or concrete mix are frequently transported in these containers. Thus, the demand for intermediate bulk containers (IBC) would rise in the India in the upcoming years.

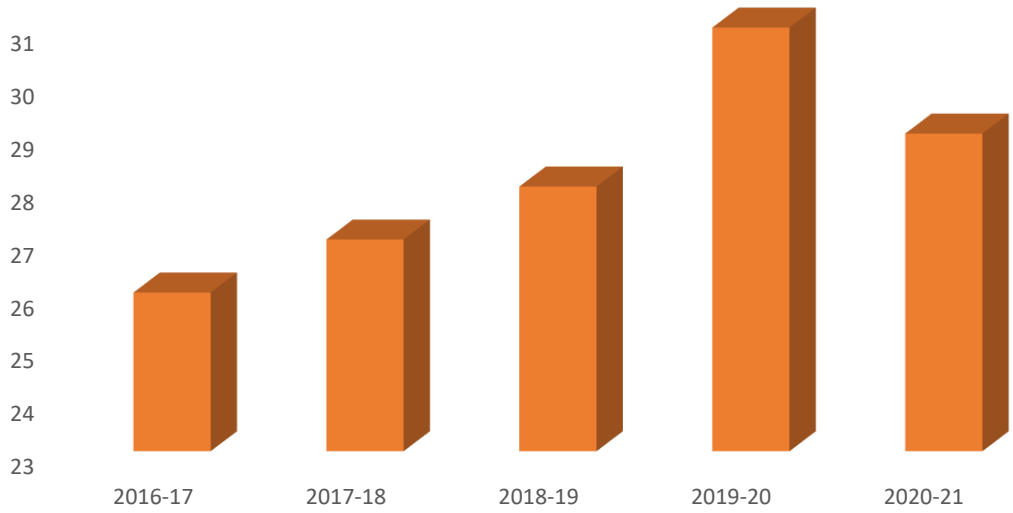
8.2 COVID 19: SCENARIO AND IMAPCT ASSESSMENT

The covid-19 pandemic have been adversely impacted on the Indian economic activity. Up until the middle of March 2020, the cross-border connectivity issues were the among key economic drag on the country. Indian authorities implemented a number of measures to prevent the pandemic after COVID-19 began to spread due to local infection, including a national lockdown that began on March 25 and significantly hampered economic activity nationwide. Shutdowns and other non-pharmaceutical interventions for inhibiting the spread of COVID-19 have large financial implications, hence government frequently come with policy measures to lessen their impact on the economy. In response, the Reserve Bank of India and the Government of India both declared actions to help individuals and companies who were negatively impacted.

The covid-19 has adversely impacted on the Indian packaging industry. The intermediate bulk containers (IBC) market is not an exception by the covid-19 impact. The sudden lockdown was imposed by the government of India across the entire country which resulted in halt in intermediate bulk container industry in the region. As these containers are widely manufactured by using materials such as, plastics, metals and composite, among others, the halt in production activity of these materials and restricted international trade activities have created shortage of raw materials for the intermediate bulk containers. The industries such as, pharmaceutical, essential chemicals and food & beverages were supposed to be relatively less affected industries. But owing to shortage of labor work force in the Indian region have been created slowdown of production of essential products in the region during the lockdowns.

Furthermore, as per Department of Chemicals and Petrochemicals, the production of chemicals was observed to be nearly decline by 50 percent between April and May 2020 as the equivalent time last year. In comparison to the average production during the previous five years (2015–16 to 2019–20) for the same period, the production in April and May of 2020 is also 43 percent lower. Similarly, the production of petrochemicals decreased significantly by approximately 33 percent between April and May 2020 as equivalent time last year. The production in April and May of 2020 is also 27 percent lower than the average production over the previous five years (2015–16 to 2019–20) for the same time period. Thus, decline in the end-use industries during the pandemic has resulted in lessen the demand for the intermediate bulk containers.

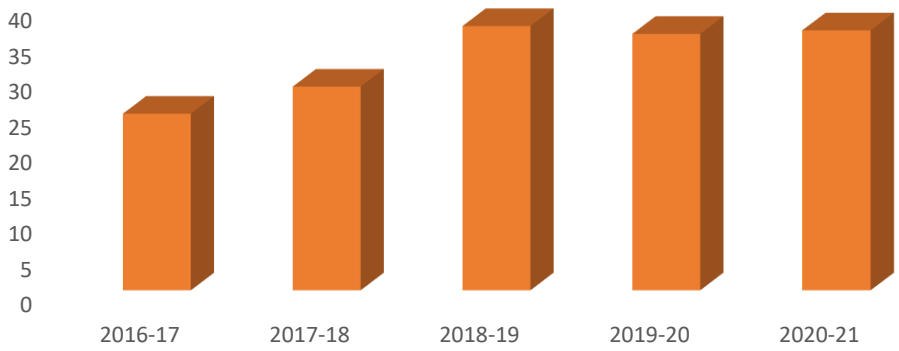
FIGURE 35 INDIA BASIC MAJOR CHEMICALS AND PETROCHEMICALS PRODUCTION (MILLION METRIC TONNES)



Source: India Brand Equity Foundation (IBEF)

But after the post pandemic when the Indian industries were on back on track they were facing extreme shortage for the intermediate bulk containers. This has created imbalance between demand and supply side for the product demand from the end-use industries such as, chemical, pharmaceutical and food & beverage, among others. India is among one the key exporter of chemicals including, petrochemicals, tanning and dyes, inorganic and organic chemicals, plastics, agrochemicals, filaments and synthetic rubber, among others. The value of Indian chemical exports in 2021–2022 reached a record high of INR 2,16,63,000 Lakhs. This represented a 106 percent increase in exports from 2013–2014. As these rise in export activities of the Indian chemical industry resulted in the greater demand for intermediate bulk containers. But this rise was after the pandemic and during the pandemic intermediate bulk container market was negatively impacted which have been creating shortage of supply of these containers during the post pandemic.

FIGURE 36 INDIA CHEMICAL AND PETROCHEMICAL PRODUCTS EXPORTS (INR)



Source: India Brand Equity Foundation (IBEF)

The petrochemical industry comprises of vast range of raw materials and chemical solution which are produced from petroleum and other fossil fuels, which are then used to make countless consumer goods. Both the major petrochemical industries and the vertical markets that support petrochemical development, refining, and end-use production widely utilizes the intermediate bulk containers. India's chemical and petrochemical exports in 2020–21 were valued at INR 2,70,61,000 Lakhs, making up roughly 13 percent of all exports from the nation, up from 10 percent in 2016–17. Moreover, Under the Union Budget 2023-24, the government allocated Rs. 173.45 crore to the Department of Chemicals and Petrochemicals. PLI schemes have been introduced to promote Bulk Drug Parks, with a budget of Rs. 1,629 crore. Thus, this rise post pandemic would enhance the demand side of intermediate bulk containers and which would be difficult for the key players in the intermediate bulk containers market to fulfil this demand in the region owing to halt in production during the pandemic

8.3 INTERMEDIATE BULK CONTAINERS (IBCS) SEGMENTATION ANALYSIS

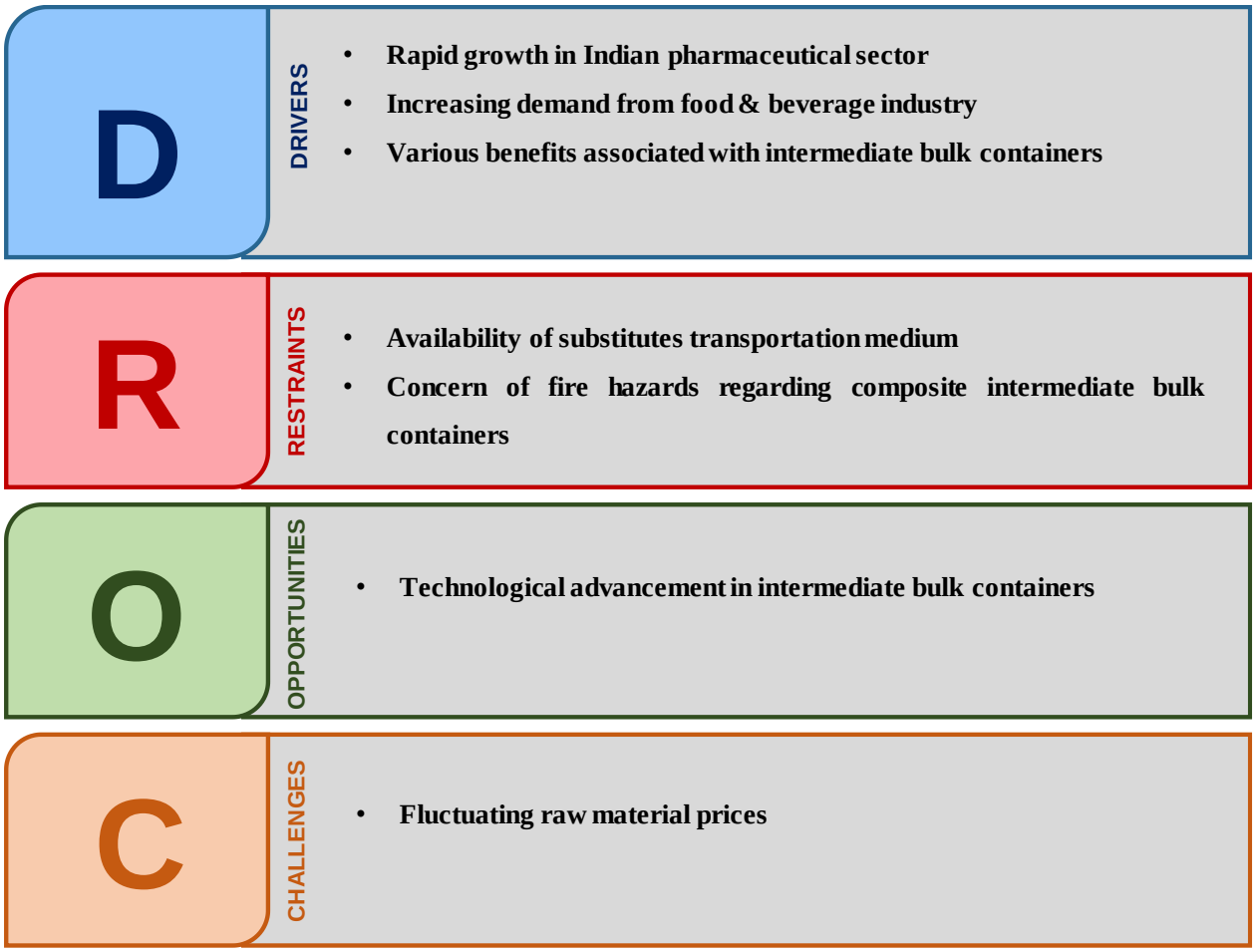
Type	End-Use
Flexible	Chemical Industry
Rigid	Pharmaceutical Industry
	Food and Beverage Industry
	Other

Source: India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data

The estimations have been provided in terms of revenue (INR Lakhs) and volume (Million Units) on the regional level, with 2021 as the base year and a forecast period from 2022 to 2030.

8.4 DROC'S ANALYSIS

FIGURE 37 DROC'S ANALYSIS



Source: India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data

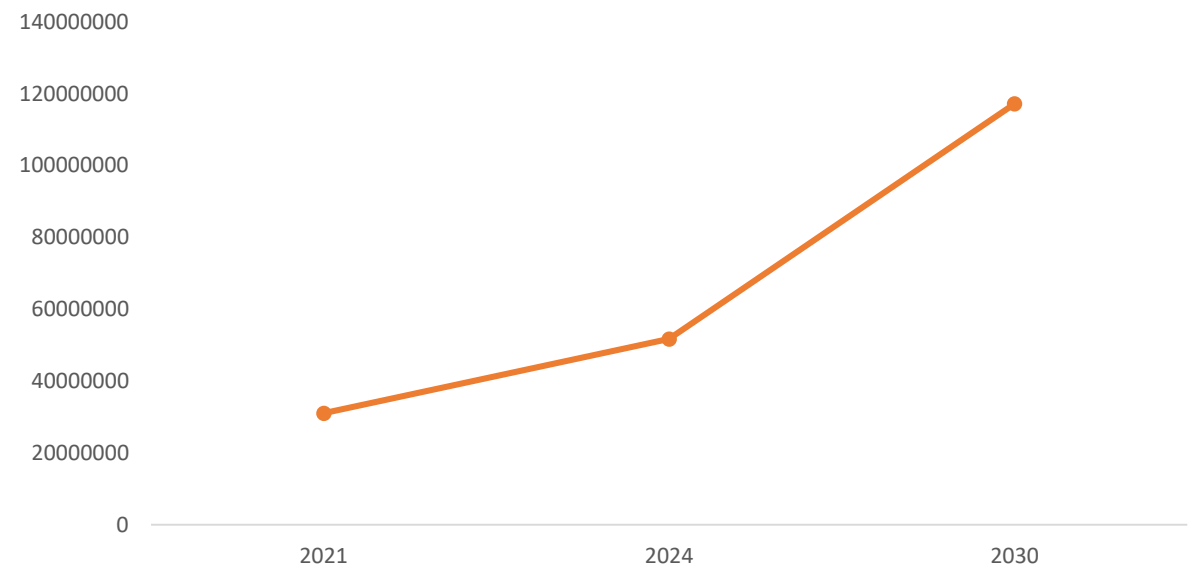
8.4.1 MARKET DRIVERS ANALYSIS

8.4.1.1 RAPID GROWTH IN INDIAN PHARMACEUTICAL SECTOR

The India is among one the world largest supplier of generic drugs globally. Over 50 percent of global demand for various vaccine is provided by the Indian pharmaceutical sector, while in around 40 percent of United States generic demand and approximately 25 percent of United Kingdom all medicines. India is the third-largest pharmaceutical producer in the world by volume and the fourteenth-largest by value. The Indian domestic pharmaceutical sector comprises of approximately 10,500 manufacturing facilities and in around 3,000 drug companies. As per estimates published by India Brand Equity Foundation (IBEF), the Indian domestics market for pharmaceutical is anticipated to grow by 3x in the upcoming decade. The domestic pharmaceutical market in India, which was valued at INR 3,10,53,000 Lakhs in 2021, is projected to grow to up to INR 5,17,01,000 Lakhs by 2024 and further up to INR 10,81,56,000 to 11,71,69,000 Lakhs by 2030. This, rise in Indian pharmaceutical sector would enhance the demand for intermediate bulk container in the upcoming years. As these containers are widely used for the transportation of medicinal ingredients owing to their ability to resist damage, contamination

prevention and reduces product waste, among others. These cost-effective containers allow manufacturers and customers alike keep prices down even for the expensive products.

FIGURE 38 INDIAN PHARMACEUTICAL MARKET (INR LAKHS)



Source: India Brand Equity Foundation (IBEF)

8.4.1.2 INCREASING DEMAND FROM FOOD & BEVERAGE INDUSTRY

The demand for intermediate bulk containers in the food & beverage industry is anticipated to grow significantly in the estimated period in the Indian market. Both the types of intermediate bulk containers including, rigid as well as flexible containers are widely adopted in the food & beverage industry. Rigid containers are usually light in weight and are designed in way to reduce sloshing during travel, punctures resistant and pour cleanly. In the food & beverage sector this types of containers are used to transport liquid or semi-liquid goods such as, drinking water, alcoholic beverages, non-alcoholic beverages and syrups, among others. Whereas, flexible intermediate bulk containers are widely used for the transportation of granulated and powdered food products. Some of these products includes, salt, sugar, starch, grains and legumes, among others. Both the types of containers are extensively adopted in the food & beverage market players owing to several benefits associated with them including, store products without food loss or destruction, efficient shipping, and prevention of contamination from allergens, among others. Thus, owing to which the demand for intermediate bulk containers in the food & beverage industry would rise in the upcoming years.

8.4.1.3 VARIOUS BENEFITS ASSOCIATED WITH INTERMEDIATE BULK CONTAINERS

The adoption of intermediate bulk containers across end-use industries such as, food & beverage, chemical and pharmaceutical, among others is rapidly increasing owing to various benefits associated with it. Some of the major benefits associated with intermediate bulk containers includes, efficient, customizable, multi-use, versatile, and cost-effective shipping container, among others. The one of the major benefits owing to which the demand for intermediate bulk containers is rapidly increasing is customization of containers relying on the product to be shipped. Some of the factors includes, metals used in the wire cage, reinforcing materials and lining material,

among others. These characteristics have made the intermediate bulk container a very well-liked transportation container in various manufacturing sectors. Furthermore, IBC containers' strength and ability to resist long-distance transport is one key factor driving the market revenue growth. The container’s supporting cage safeguards the containers from shocks and other types of disturbance, and their robust design overall assures that they can withstand lengthy voyages in shipping containers.

8.4.2 MARKET RESTRAINTS ANALYSIS

8.4.2.1 AVAILABILITY OF SUBSTITUTES TRANSPORTATION MEDIUM

The substitutes for intermediate bulk containers includes, flexitanks, drums and barrels, among others which are widely available in the market. Flexitanks are one of the most popular alternative for the intermediate bulk containers which are extensively used for the transportation of non-hazardous liquids in bulk. Along with cost efficient transportation medium these tanks are considered to be eco-friendly in nature. These tanks provide excellent inner content protection, ensuring that there are no contamination risks and that the inner contents are completely safe. The flexitanks have relatively excellent efficiency over the other the other transportation medium which makes them ideal substitute for intermediate bulk containers. These types of tanks are considered ideal for transportation of liquid for longer distance routes. When the liquid is to be transported through sea route, the flexibility of the flexitanks makes them a practical shipping choice as they can be placed in another container comparatively very easier. Thus, owing to availability of substitute transportation mediums would hamper the product demand in the forecast years.

8.4.2.2 CONCERN OF FIRE HAZARDS REGARDING COMPOSITE INTERMEDIATE BULK CONTAINERS

Though composite intermediate bulk containers (CIBCs) are widely adopted across various end-use industries for convenient storage and transportation but they also present a special fire risk that is frequently disregarded. Composite containers that comprises of flammable or combustible liquids when kept collectively in warehouses or other facilities may cause dangerous pool fires. The containers which consists of flammable or combustible liquids can leak a significant amount of these liquids when they malfunction. The high heat release rates, if ignited, might overwhelm the majority of fire sprinkler systems. No matter how the IBC is built, this risk still exists which can hamper the market revenue growth. Furthermore, these types of containers can be easily breached by being exposed to even a small fire. Additionally, the composite could also catch fire after the device has been emptied and contribute to the liquid pool. The pool firs caused by these containers may be disastrous incidents and have the power to completely demolish the premises where they take place. Buildings nearby could potentially be in danger from a spreading pool fire. Thus, the concern regarding to fire hazards of composite intermediate bulk containers would have negative influence on the market revenue growth.

8.4.3 MARKET OPPORTUNITIES ANALYSIS

8.4.3.1 TECHNOLOGICAL ADVANCEMENT IN INTERMEDIATE BULK CONTAINERS

Owing to rapidly growing demand for intermediate bulk containers across various end-use industries, several intermediate bulk containers manufacturers are developing or enhancing their product portfolio with the advanced technological approaches. As the end-use industries are becoming more digitalized, container

manufacturers have been focusing on customization of IBC monitoring that has been developed into a logistical asset throughout supply chain. The sensors and transmitters used in these remote monitoring systems are frequently mounted on or inside IBC containers. These transmitters and sensors then transfers the data remotely to a cloud system, which may be viewed through apps and software. These monitoring systems are widely used for several purposes including, remotely measuring fill levels, providing usable data, locating inventory and alerting operations staff to potential emergencies, among others. In these monitoring systems, IoT has a key role. For accurate and efficient stock level monitoring, storage facilities rely on these technologies. Thus, owing to technological advancement in the field of intermediate bulk containers market, the demand for them would have positive influence in the forecast period.

8.4.4 MARKET CHALLENGES ANALYSIS

8.4.4.1 FLUCTUATING RAW MATERIAL PRICES

IBCs are classified into three types: RIBCs, FIBCs, and folding IBCs. These are constructed from a variety of basic materials, including metal (stainless steel), polymers, wood, and corrugated fiberboard. The prices of various basic commodities fluctuate owing to a mismatch between demand and supply. Metal IBCs are the best packaging material for petrochemicals and paints. They are becoming increasingly popular since they are reusable, recyclable, and long-lasting. Steel prices are influenced by changes in oil prices. Due to the continual volatility in raw material costs, steelmakers find it difficult to estimate them. Steel producers are also encountering difficulties as a result of the COVID-19 epidemic. Some steel processing factories have curtailed output. Such price variations create market uncertainty, diminish vendor profit margins, and have a negative impact on manufacturing costs.

Furthermore, PET, or Poly Ethylene Terephthalate, is a byproduct of crude oil/ petroleum production. When the price of oil falls, so do the expenses of producing fresh PET plastic. The cost of virgin plastic has dramatically decreased due to declining crude oil prices and advancements in technology. Manufacturers are drawn to the cheaper cost of virgin plastic, and as demand declines, rPET prices are negatively impacted. According to Hindustan Times, India manufactures roughly a million tonnes of PET virgin plastic annually, with just 65% of that material being recycled. The need for rPET plastic is still erratic due to the shifting price of crude oil. Demand for rPET is rising as a result of the increased attention being paid to laws governing PET production and recycling. The high fluctuation in rPET price would have a significant impact on IBC prices.

Additionally, the prices of HDPE raw materials can fluctuate based on a variety of factors, including supply and demand, global economic conditions, and geopolitical events. One of the primary drivers of HDPE prices is the price of crude oil, as HDPE is derived from petroleum. Changes in the price of crude oil can have a direct impact on the price of HDPE. Additionally, the availability of HDPE feedstocks can be affected by factors such as natural disasters, political instability, and trade disputes. Another factor that can influence the price of HDPE is the level of demand for the product. Increased demand for HDPE can lead to higher prices, particularly if supply is limited. Conversely, a decrease in demand can cause prices to fall. Market competition can also impact the prices of HDPE. For example, if a new supplier enters the market or if existing suppliers increase their production, this can lead to lower prices as competition increases.

8.5 MARKET ESTIMATES AND FORECAST IN TERMS OF REVENUE (INR LAKHS) AND VOLUME (MILLION UNITS) FOR SEGMENTS AND REGIONS

8.5.1 INDIA INTERMEDIATE BULK CONTAINER MARKET REVENUE ESTIMATES AND FORECASTS, BY TYPE, 2019-2030 (INR LAKHS)

TABLE 29 INDIA INTERMEDIATE BULK CONTAINER MARKET REVENUE ESTIMATES AND FORECASTS, BY TYPE, 2019-2030 (INR LAKHS)

Type	2019	2020	2021	2022	2030	CAGR (2022-30)
Flexible	254,629.91	258,270.82	281,829.84	312,963.60	705,641.89	**10.70%**
Rigid	3,005,317.21	3,051,727.58	3,325,610.68	3,688,298.20	8,226,260.05	**10.55%**
Total	**3,259,947.12**	**3,309,998.40**	**3,607,440.52**	**4,001,261.80**	**8,931,901.94**	**10.56%**

Source: India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data

8.5.2 INDIA INTERMEDIATE BULK CONTAINER MARKET VOLUME ESTIMATES AND FORECASTS, BY TYPE, 2019-2030 (MILLION UNITS)

TABLE 30 INDIA INTERMEDIATE BULK CONTAINER MARKET VOLUME ESTIMATES AND FORECASTS, BY TYPE, 2019-2030 (MILLION UNITS)

Type	2019	2020	2021	2022	2030	CAGR (2022-30)
Flexible	61.39	57.98	62.37	66.79	120.05	**7.60%**
Rigid	6.99	6.67	7.09	7.50	12.15	**6.22%**
Total	**68.38**	**64.65**	**69.45**	**74.29**	**132.20**	**7.47%**

Source: India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data

8.5.3 INDIA INTERMEDIATE BULK CONTAINER MARKET REVENUE ESTIMATES AND FORECASTS, BY END USE, 2019-2030 (INR LAKHS)

TABLE 31 INDIA INTERMEDIATE BULK CONTAINER MARKET REVENUE ESTIMATES AND FORECASTS, BY END USE, 2019-2030 (INR LAKHS)

End Use	2019	2020	2021	2022	2030	CAGR (2022-30)
Chemical	980,562.43	995,206.94	1,085,173.83	1,204,201.72	2,698,801.98	**10.61%**
Pharmaceutical	648,067.06	659,915.47	716,729.91	792,384.75	1,720,240.12	**10.17%**
Food and Beverage	1,126,512.87	1,139,254.83	1,247,554.47	1,389,970.20	3,223,838.70	**11.09%**
Others	504,804.77	515,621.16	557,982.31	614,705.13	1,289,021.15	**9.70%**
Total	**3,259,947.12**	**3,309,998.40**	**3,607,440.52**	**4,001,261.80**	**8,931,901.94**	**10.56%**

Source: India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data

8.5.4 INDIA INTERMEDIATE BULK CONTAINER MARKET VOLUME ESTIMATES AND FORECASTS, BY END USE, 2019-2030 (MILLION UNITS)

TABLE 32 INDIA INTERMEDIATE BULK CONTAINER MARKET VOLUME ESTIMATES AND FORECASTS, BY END USE, 2019-2030 (MILLION UNITS)

End Use	2019	2020	2021	2022	2030	CAGR (2022-30)
Chemical	20.43	19.30	20.75	22.20	39.67	**7.52%**
Pharmaceutical	13.57	12.86	13.77	14.68	25.41	**7.10%**
Food and Beverage	23.84	22.45	24.24	26.04	48.15	**7.98%**
Others	10.54	10.03	10.70	11.36	18.97	**6.62%**
Total	**68.38**	**64.65**	**69.45**	**74.29**	**132.20**	**7.47%**

Source: India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data

8.6 INDIA INTERMEDIATE BULK CONTAINERS (IBCS) ANALYSIS

The demand for intermediate bulk containers in India is anticipated to grow significantly in the forecast years. This can be attributed owing to rapid growth in end-use industries such as, chemical, pharmaceutical and food & beverage, among others in the region. In the region, the product demand is rapidly increasing owing to availability of cheap labour as well as rising transportation and storage needs. For instance, chemical industries usually utilize intermediate bulk containers owing to various benefits associated with them including, enhanced cost efficiency, reduced storage space, enhanced safety features, easy loading and unloading and improved handling and maneuverability, among others. Thus, owing to these benefits, chemical manufacturers in India uses intermediate bulk containers for the transportation, storage and protection chemicals that can be in variety of form such as, semi – bulk, dry and liquid forms. These containers consisting of industrial chemicals can be transported through various transportation mediums such as, road, rail, sea and air. Furthermore, these containers are widely used for the handling and transportation of industrial hazardous chemicals, thus several intermediate bulk containers manufacturers also offer specially made containers for potentially hazardous substances. These containers are usually features with additional factors such as, extra insulation for prevention of chemical leakage, and these chemical grade containers adhere to strict governmental and industry safety regulations.

The rapid growth in Indian chemical industry would have positive influence on the demand of intermediate bulk containers. The Indian chemical industry comprises of in around 80,000 commercial products covering various chemical categories including, specialty chemicals, bulk chemicals, polymers, agrochemicals, petrochemicals and fertilizers. India is among fourth largest producer of agrochemicals behind the China, Japan and United States. It accounts nearly 16 percent of global dyestuffs and dye intermediates production. With 15 percent of global market share, the Indian colorants industry has become a significant player in the sector. India ranks 14th in global export of chemicals and 8th in import of global chemicals market. Thus, exchange of chemicals from Indian region would enhances the demand for intermediate bulk container for the transportation.

Furthermore, as per estimates published by India Brand Equity Foundation (IBEF), the Indian chemicals market was valued at INR 12,53,02,000 Lakhs in 2019 and is anticipated to grow by 9.3 percent CAGR to reach 30,40,000 lakhs by the 2025. By 2025, it is anticipated that the demand for chemicals would increase by 9% annually. By 2025, the chemical sector is anticipated to contribute INR 24,39,00,000 Lakhs to India's GDP. It is expected that investment of INR 8,73,00,000 Lakhs in the Indian chemicals and petrochemicals industry by the 2025. Thus, this rise in Indian chemical industry would have positive influence on intermediate bulk container market in the region.

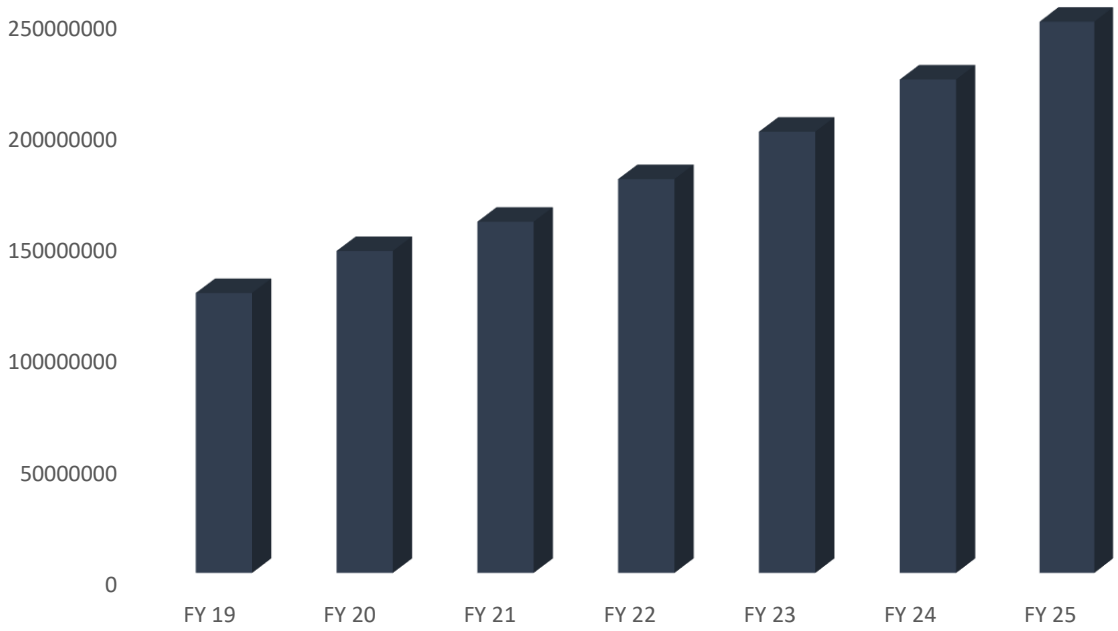
For enhancing the Indian chemical industry, government of India is taking several steps. The government has launched a number of steps, such as requiring BIS-like certification for imported chemicals, to stop the dumping of cheap and substandard chemicals into the country. Some of the few government initiatives includes:

- The Department of Chemicals and Petrochemicals was announced a funding of INR 2,08,11,000 Lakhs through the Union Budget 2022-23 from the government.
- To enhance the domestic production and exports in the chemical industry, the Indian government is considering implementation of production linked incentive (PLI) scheme.

- The production linked incentive (PLI) scheme have been launched to promote Bulk Drug Parks.

For enhancing the domestic production, attract investments in the sector and minimize imports, the Indian government has established a 2034 vision for the chemicals and petrochemicals industry. In order to develop an environment for end-to-end manufacturing through the expansion of clusters, the government intends to adopt a production-link incentive scheme with 10 to 20 percent output incentives for the agrochemical sector.

FIGURE 39 INDIAN CHEMICAL INDUSTRY (INR LAKHS)



Source: India Brand Equity Foundation (IBEF)

8.7 INDUSTRY SWOT ANALYSIS

8.7.1 MARKET STRENGTH ANALYSIS

The Indian packaging sector will expand significantly. Rising awareness of the need for clean water, safe food, and pharmaceuticals, as well as the adoption of next-generation digital technologies, will aggressively enter and drive the Indian packaging business. Packaging is India's fifth largest industry and one of the fastest-growing businesses in the country. The sector is developing at a CAGR of 22% to 25%, according to the Packaging Industry Association of India (PIAI). Over the last several years, the packaging industry has played a vital role in driving technology and innovation growth in the country, as well as delivering value to other manufacturing sectors like agriculture and FMCG. This has considerably expanded the Indian market for IBC. Furthermore, the Indian Institute of Packaging (IIP) reports that packaging consumption in India has surged 200% over the last decade, going from 4.3 kilograms per person per annum (pppa) in FY10 to 8.6 kg pppa in FY20. Despite the high increase over the previous decade, there is substantial space for growth in this sector when compared to other developed areas across the world, which tends to be a big and important strength of the Indian market for industrial bulk containers (IBC).

8.7.2 MARKET WEAKNESS ANALYSIS

The vast production of plastic garbage in India is a result of the country's growing urbanization, the expansion of retail chains, and plastic packaging used in everything from grocery stores to cosmetics to food and vegetable goods. According to PlastIndia 2015, India's plastic usage, at 11 kg, is still less than one-tenth that of the US and less than one-third that of China. However, the expected high GDP growth rates and the country's ongoing, fast urbanization point to an upward trend in plastic use and garbage generation in India. In 2018, the plastic processing industry predicted that the consumption of polymers, of which roughly half is single-use plastic, will increase by 10.4% between 2017 and 2022. Now that more options are available, it is possible to start taking suitable and practical steps to develop the required institutions and mechanisms, preferably before seas become a thin soup of plastic that will persist for generations. However, there isn't a single solution that can solve all of the problems associated with the horrifying handling of plastic garbage in the nation. Therefore, it is now necessary to create comprehensive National Action Plans, and while doing so, the nation will build more transparency to address plastic hazards in a more long-term and comprehensive manner. The market for plastic industrial bulk containers has been greatly impacted by consumers' growing awareness of this pollution.

8.7.3 MARKET OPPORTUNITY ANALYSIS

India will priorities the shift of this business to sustainability and smart solutions. The introduction of a single-use plastic prohibition legislation, as well as an emphasis on recycling and biodegradability, would result in a significant revolution in this industry. The Indian packaging sector now utilizes more polymers than the world average. This demonstrates the industry's reliance on upstream feedstock production (ethylene, propylene, styrene, etc). In reality, India now imports over 1.7 MTPA of polyethylene (PE) while using around 73% of its local ethylene output for PE. The Indian packaging sector accounts for a sizable share of this demand for PE. This presents India with a once-in-a-lifetime opportunity to drive this industry toward sustainability, bio-based/paper-based packaging, and thus reduce the import bill while diverting valuable domestic ethylene production toward import substitution of other critical chemicals/polymers such as methyl ethyl ketone, PVC, and ethylene oxide. The combined expansion of these industries over the next decade will propel this industry to new heights. To further incentivize innovation in this sector, the Government of India implemented a host of measures such as the single-use plastic ban legislation, profit-linked tax incentives for food packaging, and the approval of the National Packaging Initiative. As a result, several champions have risen to the occasion and made substantial gains in the previous five years. In addition, there has been an increase in material technology research-based firms that are developing novel sustainable packaging materials.

8.7.4 MARKET THREAT ANALYSIS

Large stores may decide to produce their own biodegradable packaging to save money, reducing the market and increasing susceptibility. Another issue is competition from businesses that begin manufacturing biodegradable packaging. Bio-plastics are fast gaining popularity, and many novel techniques and approaches are developing as a consequence of extensive R&D activity. Many sectors throughout the world are putting in new production capacity. Bio-plastics have piqued the interest of political leaders, particularly in light of the emerging bio-economic orientation, due to their utilization of renewable resources and their implications on sustainable growth. Market determinants are defined, categorized, and utilized as the foundation for their own estimations. A system dynamics technique is used to estimate the evolution of global production capacity on a yearly basis up to 2030. To capture the inherent volatility in the long term prediction, numerous scenarios are found and included to the model to represent different trends in the price of GDP, oil, and bioplastic feedstock. If crude oil prices fall and additional fossil fuel is discovered, the perceived demand for services may be pushed farther into the future, posing a challenge to the bottom line.

8.8 COMPETITIVE LANDSCAPE

FIGURE 40 INTERMEDIATE BULK CONTAINERS MARKET: COMPANY SNAPSHOT, 2022

Competition Landscape – India Intermediate Bulk Containers Market					
Company Profile	Time Technoplast Ltd	Pyramid Technoplast Pvt Ltd.	Sintex Plastics Technology Limited	TPL Plastech Limited	A To Z Industrial Solutions
Headquarter	Maharashtra, India	Maharashtra, India	Gujarat, India	Maharashtra, India	Uttar Pradesh , India
Revenue (INR)	INR 3,652.80 Crore	-	INR 3,059.70 Crore	INR 3,652.80 Crore	-
Product	• GNX Bulktainer -PP • GNX Bulktainer -CP • GNX Bulktainer –WP	• Off White IBC Containers • Wooden Pallet IBC • Composite Pallet Intermediate Bulk Containers • Steel Pallet Intermediate Bulk Container	• Intermediate Bulk Containers	• QuBC and COBO IBC	• IBC Container • IBC Bulk Container • IBC Storage Container • Used IBC Tank
Market Presence	▪ Within India ▪ Outside India	▪ India	▪ India ▪ Outside India	▪ India	▪ India

Agreements & Partnerships (P) New Product Development (N) Investment & Expansion (I) Mergers & Acquisition (M)

Source: Company Annual report, Reports and Data, Primary Interview

Key participants in the intermediate bulk containers market are Time Technoplast Ltd, Pyramid Technoplast Pvt Ltd., Sintex Plastics Technology Limited, Tripak Solutions, KMS Plastworld Pvt. Ltd, A To Z Industrial Solutions, Sri Wari Textiles, TPL Plastech Limited, Shree Engineering Service, and Pmr Engineers & Contractor.

The market is currently witnessing increasing efforts by players in terms of expansions as companies try to gain a competitive edge over the market by sharing ideas and resources with their counterparts. Market players are also resorting to strategies like merger & acquisition wherein they are strategically forming alliances with crucial end-users or organizations in both the public and private sectors. This is helping them to gain a competitive advantage in terms of sales.

9 COMPANY PROFILES

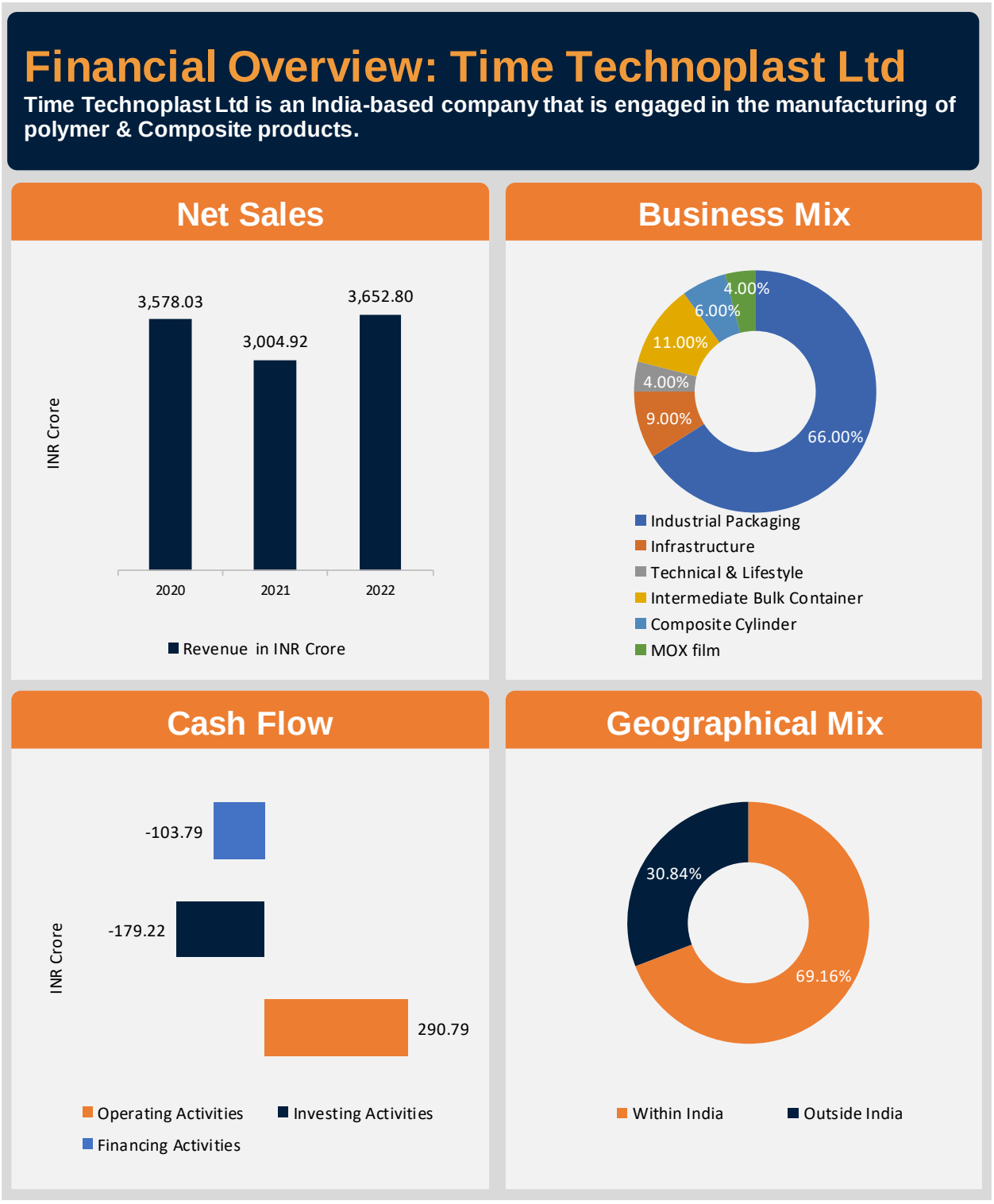
9.1 TIME TECHNOPLAST LTD

Time Technoplast Ltd	**Type:** Public
	Industry: Manufacturing
	Founded: 1989
	Headquarters : Maharashtra, India
	Website: www.timetechnoplast.com

9.1.1 COMPANY SUMMARY

Time Technoplast Ltd is an India-based company that is engaged in the manufacturing of polymer & Composite products. The company has operations in Bahrain, Egypt, Indonesia, India, Malaysia, U.A.E, Taiwan, Thailand, Vietnam, Saudi Arabia & U.S. The company offers a range of technology-based polymer products catering to the growing sectors of the Indian economy with Industrial and Consumer Packaging Solutions Lifestyle Products Auto Components Healthcare Products and Construction / Infrastructure related products. Their product portfolio consists of packaging products including Drums / Containers Pails PET sheets Entrance Matting Turfs Garden Furniture Automotive Components Auto Disabling Medical Disposables and Warning Nets. In India, the company has their manufacturing facilities located at Baddi in Himachal Pradesh Pantnagar in Uttarakhand Sahibabad in Uttar Pradesh Mahad in Maharashtra Hosur in Tamil Nadu Daman & Diu and Silvassa among others.

9.1.2 FINANCIAL INSIGHTS



Source: Company Website, Company Annual Reports, News & Press Releases, Reports and Data

9.1.3 PRODUCT INSIGHTS

PRODUCTS	DESCRIPTION
GNX Bulktainer -PP	• Single piece all plastic pallet • U-profile steel reinforcement channel • 4-way, runner pallet • Earthed for ground contact • Plastic drip area — no rust/corrosion • Ideally suited for high frequency multi-trip usage • Interstackability is provided for all pallets
GNX Bulktainer -CP	• Better option to all steel pallet • Block / connectors made of PE – rust and corrosion-proof • Does not get damaged easily with fork lift handling equipment • Plastic drip pan – no rust, longer life • Easily serviceable • Earthed for ground contact • Interstackability is provided for all pallets
GNX Bulktainer –WP	• ISPM — 15 heat treated pallet • Economical & reliable • 4-way entry & interstackable with all versions

Source: Company Website, News & Press Releases

9.2 PYRAMID TECHNOPLAST PVT LTD.

Pyramid Technoplast Pvt Ltd.	**Type:** Private
	Industry: Containers Manufacturer
	Founded: 1996
	Headquarters : Maharashtra, India
	Website: www.pyramidtechnoplast.com

9.2.1 COMPANY SUMMARY

Founded in the year 1996, Pyramid Technoplast is the India based company which is one of the leading manufacturer of plastic IBC containers supplying a broad range of products to industries, commercial and residential applications. IBC containers also known as IBC totes, are the reusable industrial container that are primarily designed for storage and transport needs of bulk liquid. It is one of the few manufacturers of Rigid Intermediate Bulk Containers (IBC) in India having the know-how, technology and equipment to manufacture 1,000 litre capacity IBC. The company serves its product to various industries including chemicals, refinery, medical waste, wineries and distillery and IBC containers for oil & gas industry and paint industry. The company offers different types of IBC including composite pallet IBC, wooden pallet IBC and steel pallet IBC. The company has a manufacturing plant located in Bharuch and production capacity of 20,000 units on a monthly basis. Further, the company also offers a wide range of containers for various purposes.

9.2.2 PRODUCTS OFFERED

PRODUCT	DESCRIPTION	APPLICATION
Off White IBC Containers	• Customized dimensions and load capacity options • Feature smooth edge finish • Container available in a variety of sizes and capacities • Provide for ideal storage and logistics handling solutions • Suitable for use in warehouses and transportation areas • Non-standard types can also be customized • Surface treatment options of galvanized or powder coated finish	• Pharma industries, • Automobile industries, • Warehousing, • Logistic companies
Wooden Pallet IBC	• Ensures zero wastage during filling or discharge process • Guarantees transfer, free of dust and pollution • Generates revenues through savings • Serves your storage and transportation needs for a long time without depreciation in quality and quantity standards • Conforms to international product packaging standards and guidelines	• Chemicals and fertilizers • Pharmaceuticals • Solvents and lubricants • Food & beverage • Cosmetics • General manufacturing • Granular plastics
Composite Pallet Intermediate Bulk Containers	• Ideal for Bulk packaging to every industry • Inner Container UV Stabilized- standard and optional • Pallet Type- Standard • Filling Opening-Standard • Gasket for filling Opening-Standard • Discharge Valve-Standard and optional • Identification valve- optional	• Chemicals • Agricultural • Medical waste • Transportation Food & Beverages • Petrochemicals • Paint & Oil
Steel Pallet Intermediate Bulk Container	• Inner Container UV Stabilized- optional • Pallet Type- Standard • Filling Opening-Standard • Gasket for filling Opening-Standard • Discharge Valve-Standard and optional • Identification valve- optional	• Chemicals • Agricultural • Medical waste • Transportation • Food & Beverages • Petrochemicals • Paint & Oil

Source: Company Website, News & Press Releases port, Primary Interviews, Reports and Data

9.3 SINTEX PLASTICS TECHNOLOGY LIMITED

Sintex Plastics Technology Limited	**Type:** Public
	Industry: Plastics Manufacturing
	Founded: 1931
	Headquarters : Gujarat, India
	Website: www.sintexplastics.com

9.3.1 COMPANY SUMMARY

Sintex Plastics Technology Limited, headquartered in Kalol, Gujarat, is a globally-respected plastic processing conglomerate that caters to diverse high-growth sectors. In India, the company's presence is catered to by its two subsidiaries Sintex-BAPL Limited and Sintex Prefab and Infra Limited. Sintex BAPL Limited company develops and provide custom moulding solutions to various user sectors in India and Sintex Prefab and Infra Limited undertakes EPC contracts for various infrastructure projects across the nation.

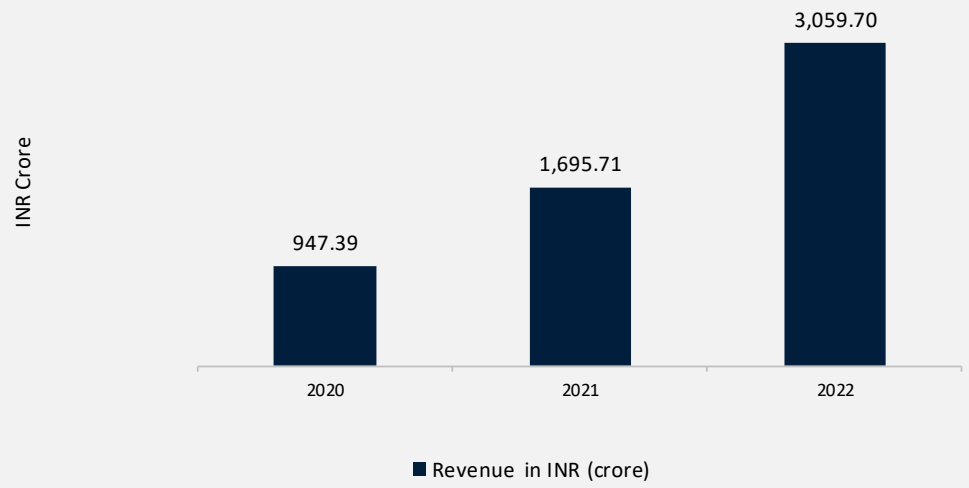
The company provides plastic storage and material handling products. The Company offers water tanks, electrical pillar boxes, connection boards, mater boxes, motors, pumps, cables, plates, ladders, panels, insulated crates, containers, home furnishing, and other related products. The company offers IBC based on composite pallet IBC, wooden pallet IBC and steel pallet IBC. It has 17 manufacturing plants across the country and 18 internationally and operates in Asia, Europe, America, and Africa.

9.3.2 FINANCIAL INSIGHTS

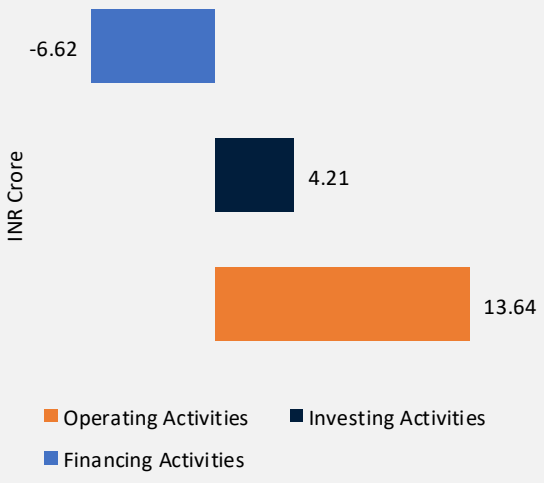
Financial Overview: Sintex Plastics Technology Limited

Sintex Plastics Technology Limited, headquartered in Kalol, Gujarat, is a globally-respected plastic processing conglomerate

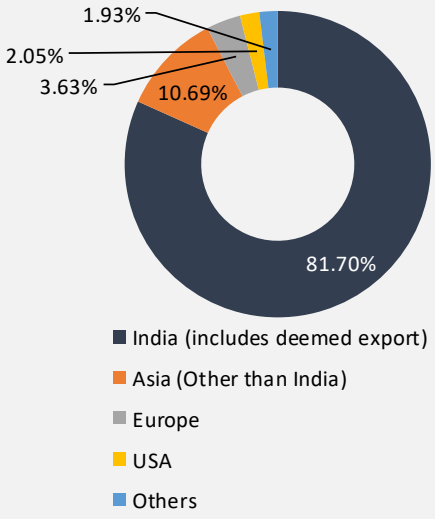
Net Sales



Cash Flow



Geographic Mix



Source: Company Website, Company Annual Reports, News & Press Releases, Reports and Data

9.3.3 PRODUCTS OFFERED

PRODUCT	FEATURES
Intermediate Bulk Containers	• Threaded lid • Available with option of timber/composite plastic/ metal pallet base • Ball type bottom valve • Standard colour: Natural for containers • Standard: For liquids up to density 1.0 • Heavy duty: For liquids up to density 1.2

Source: Company Website, News & Press Releases port, Primary Interviews, Reports and Data

9.4 TRIPAK SOLUTIONS

Tripak Solutions	**Type:** Private
	Industry: Manufacturing
	Headquarters : Maharastra, India
	Website: www.tripak.co.in

9.4.1 COMPANY SUMMARY

Tripak Solutions is a Pune based company which is involved in developing, designing and manufacturing Returnable Transit Packaging (RTP). The company offers various products including crates, pallets, waste bins, foldable container, and protective packaging. Tripak Solutions is one of the leading manufacturer and supplier of intermediate bulk containers in Pune. The company produces various types of containers consist of foldable large container, rigid pallete container, intermediate bulk container, and pallet sleeve box. Some of the intermediate bulk containers includes combo fructus, combo life 285BD DD, combolife IBC 65, combolife IBC 65 BD and others. The company serves its product to seven key segments such as agriculture, automotive, food and food processing, retail, pharma, FMCG, consumer durables, logistics and protective packaging through customers.

9.4.2 PRODUCTS OFFERED

PRODUCT	FEATURES
Intermediate Bulk Containers	• These bulk containers, available in both collapsible and stationary constructions, have many potential applications • Ideal alternative to steel GLT containers, pallet cages or wooden containers.

Source: Company Website, News & Press Releases port, Primary Interviews, Reports and Data

9.5 KMS PLASTWORLD PVT LTD

KMS Plastworld Pvt. Ltd	**Type:** Private
	Industry: Manufacturing
	Founded: 1995
	Headquarters : Tamil Nadu, India
	Website: www.kmsplastworld.co.in

9.5.1 COMPANY SUMMARY

KMS Plastworld Pvt. Ltd is a Tamil Nadu based company which is a market leader in supply of plastic products in India, having branches in Bengaluru and Hyderabad. The company provide wide range of customized solutions for material handling products, environmental products, industrial storage products, prefabricated solutions, building divisions, and waste treatment solutions. The company offers industrial storage product such as chemical/acid storage tank, white chemical/acid storage tanks, electroplating pickling tanks, CV tanks, intermediate bulk containers, underground fuel storage tanks, on ground chemical storage tanks. The company serves its products to various industries including automobile, pharmaceutical, engineering, catering, logistics, super markets, textiles, electronics, retail, food industry, agricultural and sea food, chemical industry and construction.

9.5.2 PRODUCTS OFFERED

PRODUCT	FEATURES
Intermediate Bulk Containers	• Threaded Lid • Available with option of Timber/Composite Plastic/Metal Pallet base • Ball type bottom valve • Standard: For liquids up to density 1.0 • Heavy duty: For liquids up to density 1.2 • Available Size: 1200X1000MM, 1200X800MM

Source: Company Website, News & Press Releases port, Primary Interviews, Reports and Data

9.6 A TO Z INDUSTRIAL SOLUTIONS

A To Z Industrial Solutions	**Type:** Private
	Industry: Manufacturing
	Founded: 2013
	Headquarters : Uttar Pradesh , India
	Website: www.atozindia.net

9.6.1 COMPANY SUMMARY

A To Z Industrial Solutions is an Indian proprietorship company incorporated on 2013 and has headquartered in Noida, Uttar Pradesh, India. The product range offered by the company consists of Pallet Truck, Electric Stacker, Forklift tyre solid & pneumatic, material handling equipment, fortlift attachments & accessories, fortlift repairing services, fortlift hiring services, fortlift spare parts, traction battery, plastic pallets, and others. The company also offers rigid intermediate bulk containers are stackable, reusable, versatile containers with an integrated pallet base mount that provides forkliftand/or Pallet Jackmaneuverability. These containers can be made from metal, plastic, or a composite construction of the two materials.

9.6.2 PRODUCTS OFFERED

PRODUCT	FEATURES	APPLICATION

IBC Container	• Container is uniquely manufactured using the optimum grade basic material and modern technology in synchronization with the set industry standards
	• IBC container has features such as:
	  ○ Sturdy structure
	  ○ Superior strength
	  ○ Rugged construction
	• Container Type: Dry Container, Open Top Container
		• Storage

IBC Bulk Container	• Material type: HDPE with metal cage
	• Storage material: chemicals/oils, waste, water, gases
	• IBC bulk container has features such as:
	  ○ Excellent strength
	  ○ Fine finish
	  ○ Sturdy construction
		• Storage

IBC Storage Container	• Material type: HDPE
	• Storage material: chemicals/oils, waste, water, gases
	• IBC storage container has features such as:
	  ○ Robust construction
	  ○ Spacious
	  ○ Optimum strength
		• Storage

Used IBC Tank	• Storage material: waste
	• IBC tank has features such as:
	  ○ Spacious
	  ○ Optimum quality
	  ○ Sturdiness Specifications
		• Industrial

Source: Company Website, News & Press Releases port, Primary Interviews, Reports and Data

9.7 SRI WARI TEXTILES

Sri Wari Textiles	**Type:** Private
	Industry: Manufacturing
	Founded: 1999
	Headquarters : Tamil Nadu, India
	Website: www.sriwari.com

9.7.1 COMPANY SUMMARY

Sri Wari Textiles is a Tamil Nadu based company which is established in the year 1999. The company is one of the leading manufacturer of intermediate bulk container from Coimbatore, India, and engages in trade, retail, supply and distribution. Further, the company is also a wholesale trader of products including injection moulded pallet, roto molded plastic pallet, insulated ice box, supreme roto moulded crate, supreme roto moulded crate, hydraulic pallet truck, etc. The company also offers Plastic pallets, plastic crates, storage baskets, doffing baskets, water storage tanks, chemical storage tanks, processing containers, processing trolleys, rectangular tanks, septic tanks, heavy duty Dustbins, moulded toilets, etc. It is also specialized in Allwin Ice box, Allwin insulated fish box, watchman cabins, pallet trucks, lifter, fork lift, stacker etc.

9.7.2 PRODUCTS OFFERED

PRODUCT	FEATURES	APPLICATION
Intermediate Bulk Containers	• Container Type: Dry Container • Material: HDPE • Color: White • Frame Material: Galvanized Iron	• Storage of Chemicals

Source: Company Website, News & Press Releases port, Primary Interviews, Reports and Data

9.8 TPL PLASTECH LIMITED

TPL Plastech limited	**Type:** Public
	Industry: Manufacturer
	Founded: 1992
	Headquarters : Maharashtra, India
	Website: www.tplplastech.com

9.8.1 COMPANY SUMMARY

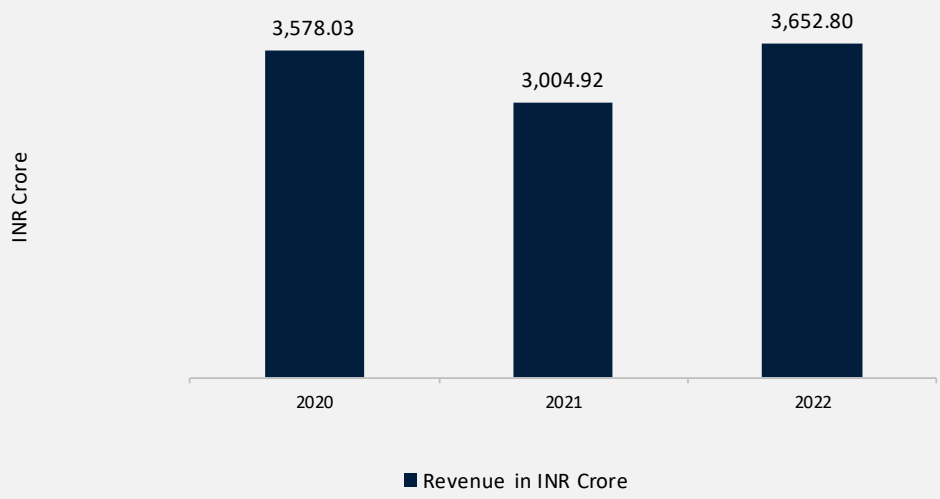
TPL Plastech limited (Tainwala Chemicals and Plastics (India) Limited), found in 1992 and headquartered at Maharshtra, India, is part of the Converted Paper Product Manufacturing Industry. The company has 113 total employees across all of its locations and there are 85 companies in the TPL Plastech limited corporate family. The company was incorporated for the manufacture of 2.5 lacs extrusion blow moulded high molecular, high density Polyethylene containers (HMHDPE) (220 litres capacity) per annum. TPL Plastech limited is one of the leading plastic processing group in Asia. The company's portfolio consists of a comprehensive range of narrow mouth, wide mouth and open top drums ranging from 25 ltrs to 250 ltrs capacity. The Company has a large client base and caters to more than 250 customers in various industries like chemical & petrochemicals, specialty chemicals, pharmaceutical, FMCG, etc

9.8.2 FINANCIAL INSIGHTS

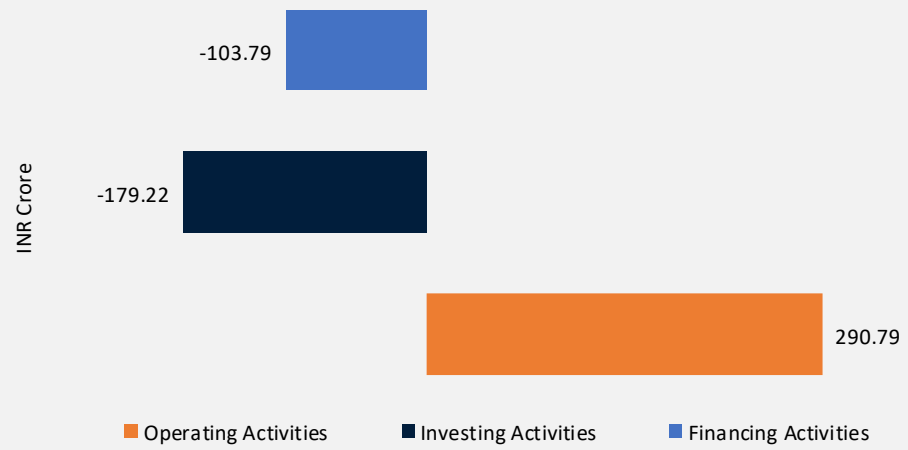
Financial Overview: TPL Plastech limited

The company has 113 total employees across all of its locations and there are 85 companies in the TPL Plastech limited corporate family.

Net Sales



Cash Flow



Source: Company Website, Annual Report, News & Press Releases

9.8.3 PRODUCTS OFFERED

PRODUCT	DESCRIPTION	MATERIAL	FEATURES
QuBC and COBO IBC	• These Intermediate Bulk Container (IBC) are of 1000 litre capacity and Re-bottled (COBO) IBC with a reconditioned cage and a brand new inner container. • These IBCs are UN certified and available with range of pallet options. • Conforming to global standards, these IBCs have standard dimensions, are optimally designed and have the latest features of Cage Tube profiles. • Designed to withstand rigors of local and international export shipments, the IBCs have remarkable performance parameters. • QuBC is backed by global collection service for efficient and sustainable collection of QuBCs, post emptying.	• Composite steel Pallet • Wooden Pallet	• Elegant look • Standard cage combination • D shaped 2star profile for high stack & weld strength • Smooth curved surface (ehs compliance) • Globally accepted standard dimensions • Option of composite steel & wooden pallet • High quality discharge valve • Top lid

Source: Company Website, News & Press Releases

9.9 SHREE ENGINEERING SERVICE

Shree Engineering Service	**Type:** Private
	Industry: Manufacturer/Exporter/Supplier
	Founded: 2019
	Headquarters : Gujarat, India
	Website: www.shreeengineeringservice.com

9.9.1 COMPANY SUMMARY

Shree Engineering Service is an Indian company founded in 2019 and headquartered in Gujarat, India. The company is an engineering company active in providing wide range of industry verticals. It specializes in design, engineering, manufacturing and supply of different types of equipment. The products offered by the company finds application in several industries including Pharmaceuticals, Chemicals, Food & beverages and Cosmetic product manufacturing industries. The company also manufactures and supplies different type of equipment for Milling, Sieving & Grading, Mixing & Blending, Drying equipment. It optimizes effective integration of Technology & adherence to well-defined standards and procedures along with continuous monitoring. The company cover markets in India, Bangladesh, Sri Lanka, Latin America, USA & Saudi Arabia.

9.9.2 PRODUCTS OFFERED

PRODUCT	DESCRIPTION	APPLICATION
Intermediate Product Container	• This is a cGMP Model with sanitary design • The product is offered with SS 316 / SS 316 L grade contact parts with SS 304 grade non-contact parts • Capacities ranging from 50 Ltr to 1500 Ltr, and more. • The product is offered with fixed or detachable trolley, as per requirement • The company also offer the option of customization of the product.	• Industrial

Source: Company Website, News & Press Releases

9.10 PMR ENGINEERS & CONTRACTOR

Pmr Engineers & Contractor	**Type:** Private
	Industry: Manufacturing
	Founded: 2015
	Headquarters : Maharashtra, India
	Website: www.pmrindia.com

9.10.1 COMPANY SUMMARY

PMR Engineers and Contractor is an India-based company, founded in 2015, headquartered in Maharashtra, India. The company is a trusted business house since its inception. The company has come to be known for its customer centric approach. It engaged as the foremost manufacturer of Milk Processing Plant, CIP System, etc. The products are high in demand due to their premium quality and affordable prices. Furthermore, the company also Provide Piping Engineering Service, Automation Engineering Service, Mechanical Engineering Service and Vacuum Packing Service.

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9.10.2 PRODUCTS OFFERED

PRODUCT	DESCRIPTION	FEATURES
Intermediate Bulk Container - IBC	• It is an Unapproved IBCs (intermediate bulk containers), eatable containers, food containers for aseptic applications and special containers in stainless steel. • The company offers completely safe and reliable container systems for liquid and solid substances, especially for sectors with special requirements for transport and storage. • The company also offers option for customization from perfect and officially approved standard systems, such as tank, round and silo containers, right up to tailor-made customized solutions.	• 100% Stainless-steel Tank • Individual transport frame • Wall thickness 2.0/2.5 mm • Manhole Dn400/ DN 475 mm • Customized Seals • Over Pressure Safety valve • Individual discharge valves

Source: Company Website, News & Press Releases

10 POLYMER DRUMS & HM-HDPE INDUSTRY: INDIA

10.1 MARKET OVERVIEW

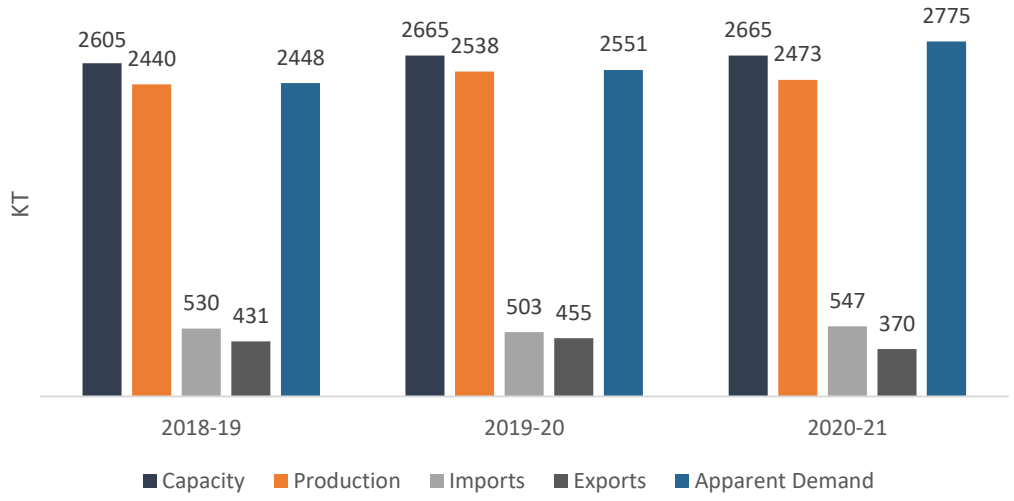
High-density polyethylene, or HDPE, is the specific type of plastic used in the production of polymer drums. For storing and moving goods, barrels and drums have been used for millennia. The oldest of these containers were built of readily accessible materials like wood or clay. Steel production enabled the creation of steel drums a century ago, and synthetic polymer drum and barrel production quickly followed.

Modern technology made it possible to mass-produce plastic at low cost. Since HDPE was created to be sturdy and long-lasting enough to hold even the most dangerous chemicals, it swiftly gained popularity during the 20th century. HDPE, a polymer-based plastic, is ideal for an industrial application because it doesn't react with many everyday components and won't react with many other chemicals and substances. HDPE barrels are made using plastic mould, which make it simple to build a smooth, cylindrical-shaped drum in great quantities while keeping expenses to a minimum.

Polymer drums come in two basic types: open head and tight head. For storage or transportation, open head polymer drums can be sealed with a tight lid and fasteners or left open-topped. The top of the container will be used for both filling and emptying because it has the single entrance. This type of polymer drum is available in a wide range of sizes. These drums with an open head are sturdy, resilient, and capable of holding hazardous waste. Furthermore, polymer drums with a tight head are sealed at the top and bottom. With the exception of one or two specific apertures designed to funnel liquids in and out, they are entirely sealed. These tiny gaps are themselves closed off using a bung or other sturdy stopper. Tight-head polymer drums are frequently considered to be more secure than open-head polymer drums since they are sealed. They are produced in a smaller range of capacities.

Due to the need for simple funneling of the contents into and out of the drum, tight-head drums are ideal for the storage and transportation of liquids. They are useful for liquids like oils, big volumes of beverages, and others. Drums with tight heads offer more protection for liquids than those with open heads. Open-head polymer drums are excellent for storing semi-solids, powders, and thick liquids since the lid may be removed for considerably simpler access to the contents. An open-head drum is frequently used to store food, but it can also be used to store chemicals or hazardous waste.

FIGURE 41 HDPE: INDIA DEMAND SUPPLY IN KT



Source: CPMA

The demand of high-density polyethylene in India is witnessing a steady growth. In general, there is a good demand for higher quality barrels for industrial and domestic usage. As Indians are getting exposure to better quality products in all sectors, the demand for even high standards of plastic products for daily usage is also going up. Furthermore, the ban of single use of plastics in India is contributing to the growth of some polyethylene grades including HDPE. These polymer drums are commonly used for transporting chemicals. They are used throughout the industrial shipping industry. They can transport and store any type of cargo, from food to chemicals and pharmaceuticals. Thus, growth of transportation of cargoes for various product has positive impact on the demand for polymer drums & HM-HDPE.

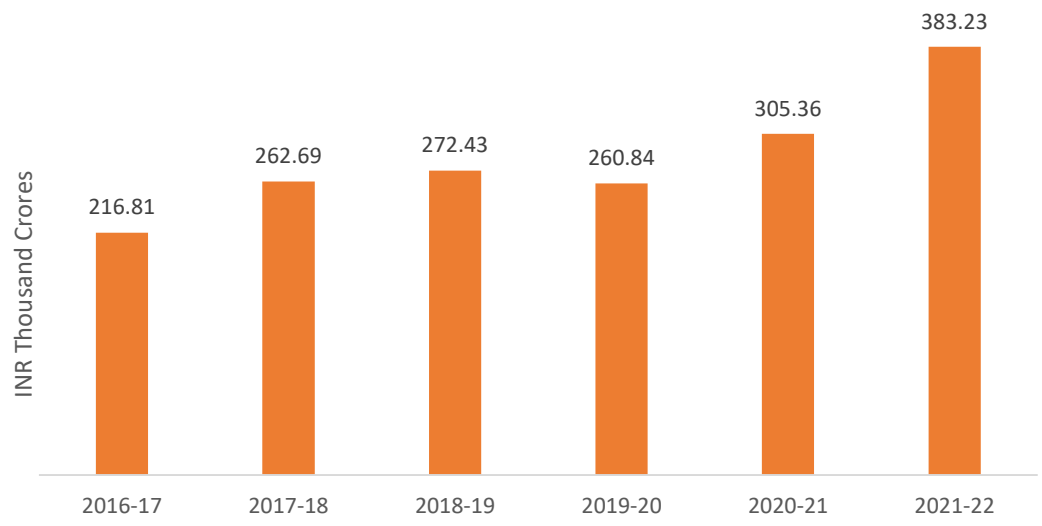
10.2 COVID 19: SCENARIO AND IMAPCT ASSESSMENT

The coronavirus pandemic's effects on India have primarily disrupted economic activities and resulted in fatalities. Almost every industry has suffered as domestic demand and exports have dramatically decreased, with some notable outliers where strong growth has been seen. The impact is probably going to be minimal on both primary agricultural production and utilization of agro-inputs because agriculture is the backbone of the nation and a category of essentials according to the government. Due to ambiguous movement limitations and the suspension of logistics vehicles, online food e-commerce platforms are severely disrupted.

Furthermore, Since the Covid-19 pandemic began, the pharmaceutical business has grown, particularly in India, the world's top producer of generic medications. It has been expanding in India, supplying hydroxychloroquine to countries throughout the world, mainly the US, UK, Canada, and the Middle-East, with a market size of INR 4,07,56,000 Lakhs by the beginning of 2020. Due to the industry's high reliance on imports, interrupted supply chains, and workforce shortages brought on by social exclusion, generic medications are the most affected. The pharmaceutical business is simultaneously having difficulties as a result of government-imposed restrictions on the export of essential medicines, machinery, and PPE kits in order to guarantee sufficient supplies for the nation.

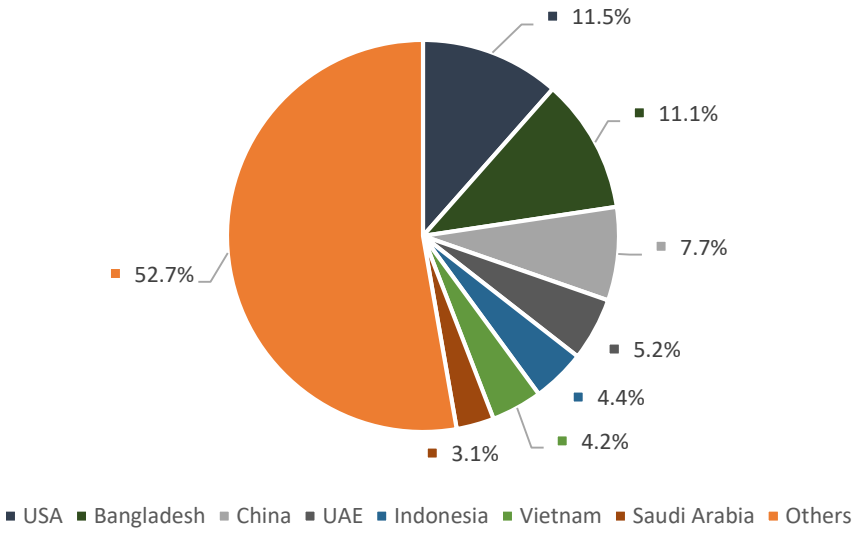
The trend in GDP and the level of industrial activity in India are directly correlated with the need for industrial, bulk, and transportation packaging, hence the severe dip associated with COVID-19 results in a decrease in packaging demand. Industrial customers, who stockpile their purchases of polymer drums and barrels, counteract some of this by temporarily driving up demand. At the same time, a number of industries continue to experience strong demand, including packaging for the food and pharmaceutical sectors.

FIGURE 42 INDIA AGRICULTURE EXPORTS TREND



Source: The Ministry of Commerce & Industry

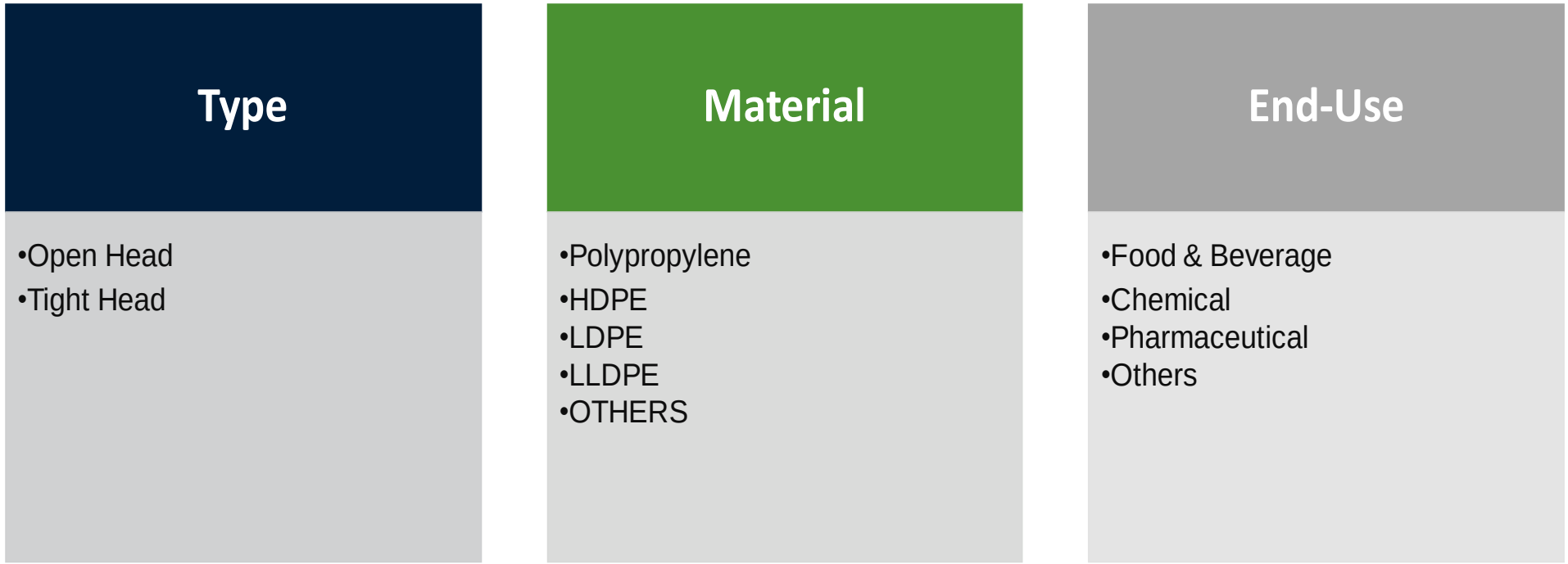
FIGURE 43 COUNTRY WISE SHARE OF AGRICULTURE PRODUCT EXPORTS (IN PERCENTAGE) (2021-22)



Source: The Ministry of Commerce & Industry

According to IBEF, the largest importers of India's agricultural products are USA, Bangladesh, China, UAE, Indonesia, Vietnam, Saudi Arabia, Iran, Nepal and Malaysia. The other importing countries are Korea, Japan, Italy, and the UK. During 2021-22, USA was the largest importer of Indian agricultural products at INR 42,14,000 Lakhs with share at 11.5% of the total exports. Bangladesh is the major importer of Agri & allied products at INR 28,09,000 Lakhs followed by UAE at INR 17,00,000 Lakhs. USA and China are major importer of India's marine products. As, the growth of food & beverage industry has direct impact on the agriculture sector in India. Thus, growing import-export activities of agriculture products post Covid is also expected to boost the demand for industrial packaging including polymer drums.

10.3 POLYMER DRUMS & HM-HDPE SEGMENTATION ANALYSIS

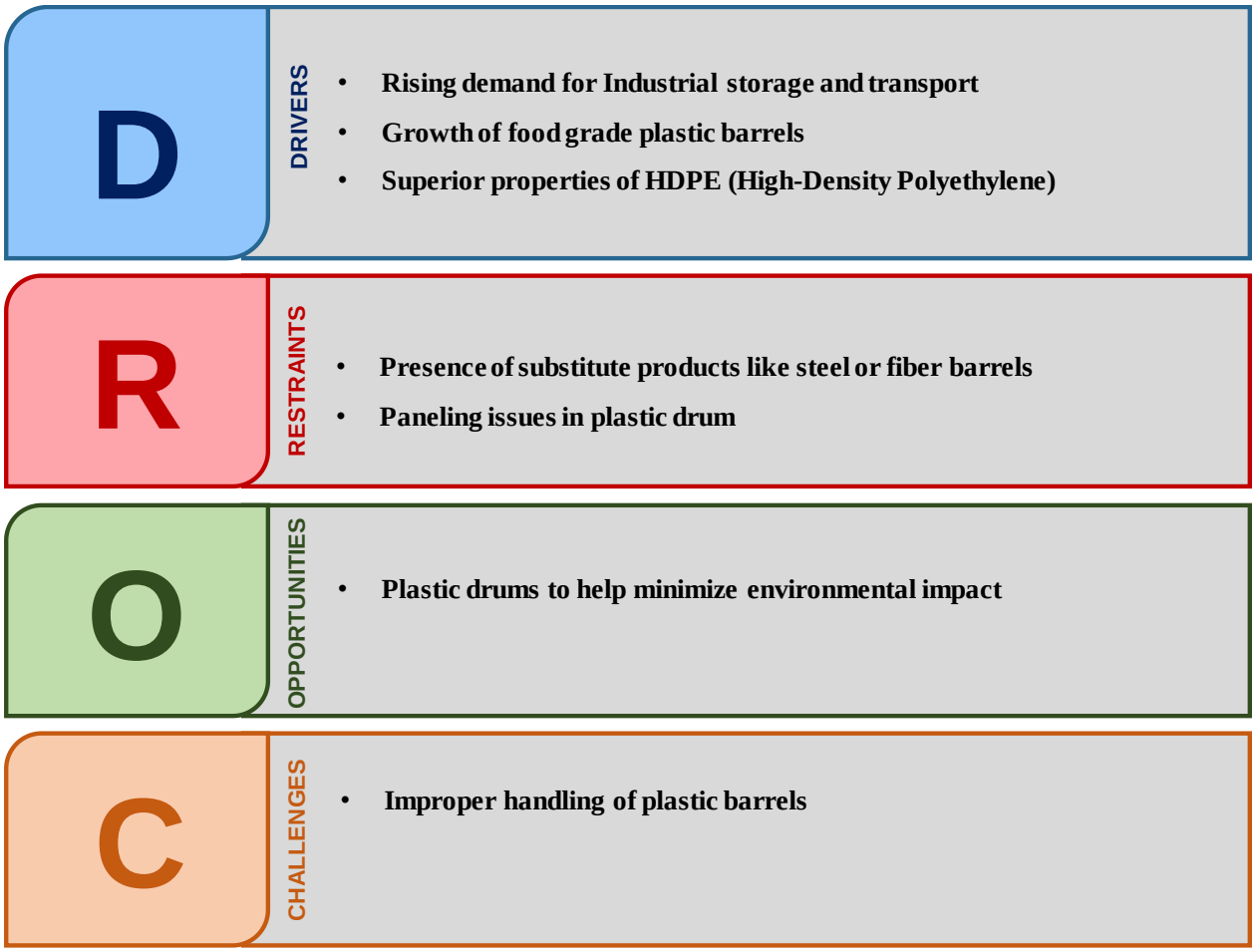


Source: India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data

The estimations have been provided in terms of revenue (INR Lakhs) and volume (Million Units) on the regional level, with 2021 as the base year and a forecast period from 2022 to 2030.

10.4 DROC'S ANALYSIS

FIGURE 44 DROC'S ANALYSIS



Source: India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data

10.4.1 MARKET DRIVERS ANALYSIS

10.4.1.1 RISING DEMAND FOR INDUSTRIAL STORAGE AND TRANSPORT

A large variety of various industrial commodities can be kept in polymer drums. The most prevalent ones include sand, grains, food ingredients, liquids, oils and lubricants, medications, chemicals, solvents, and pharmaceuticals. The popularity of polymer drums for storage and transportation can be attributed to their adaptability and durability. They can be employed in an industrial setting because they come in a variety of sizes. Drums that are sturdy and corrosion-free are necessary for storing chemical and medicinal items. These polymer drums are perfect for these uses because they are made of high density, high molecular HDPE. These chemicals and dangerous items won't harm the drums or contaminate the contents because they can tolerate their effects. Polymer drums are also the best container for gathering and getting rid of a lot of industrial trash. For managing garbage, these drums serve as a secure, reliable, and safe container. Thus, growing industrial storage and transportation activities in India will boost the demand for polymer drums & HM-HDPE during the forecast period.

10.4.1.2 GROWTH OF FOOD GRADE POLYMER DRUMS

The rising urbanization along with the growing population has positively influenced the food industry in India. Industry studies estimate that every year, 1,040 lakh tons of perishable produce are transported between Indian cities, of which 1,000 lakh tons are transported in non-refrigerated containers. Food grade polymer drums, in particular, are great for securely storing and transporting food. These food industry drums must be properly decontaminated and certified as safe to transport and store consumables over an extended period of time. Furthermore, they are also inexpensive, strong, and long-lasting, which makes them a smart investment for companies that need to transport and store huge amounts of food. All polymer drums are reusable, making them an excellent choice for enterprises concerned about the environment. Larger containers feature plastic handles to make them simpler to lift. Large quantities of liquids, such as commercial quantities of cooking oil and beverages, large quantities of semi-solid foods, such as commercial quantities of condiments or sauces, like ketchup or mayonnaise, and large quantities of powdered foods, such as commercial quantities of cooking spices or powdered milk, are the main uses of food grade polymer drums. These factors will thus enhance the demand for food grade barrels during the forecast period.

10.4.1.3 SUPERIOR PROPERTIES OF HDPE (HIGH-DENSITY POLYETHYLENE)

The polymer drums made of HDPE (high-density polyethylene) are most commonly used as they can be used for a wide variety of products. HDPE is great for storing and transporting both hazardous and non-hazardous liquid items since it is resistant to both high and low pH contents. HDPE is a material with a very high molecular weight that was created for large objects that need great impact resistance. It is optimized for density, molecular weight, and molecular weight distribution. Due to its high molecular weight, HDPE demonstrates outstanding Environmental Stress Crack Resistance (ESCR) and outperforms comparable goods constructed of LDPE resins. Additionally, HDPE barrels offer abrasion resistance, high tensile strength, and UV protection. These factors will thus boost the demand for HDPE for plastic barrel manufacturing and hence drive the overall market.

10.4.2 MARKET RESTRAINTS ANALYSIS

10.4.2.1 PRESENCE OF SUBSTITUTE PRODUCTS LIKE STEEL OR FIBER BARRELS

It is necessary to determine which type of barrel is right for storage or shipping needs. Any hazardous material can be utilized with steel and plastic. Additionally, fibre drums can be used to hold some hazardous solids, but their use to hazardous materials is severely constrained. The greatest choice for food, caustic chemicals, and pharmaceuticals are polymer drums. Steel is also the ideal material for top-notch protection. Fiber drums are a wonderful solution for businesses who wish to cut shipping expenses and have the flexibility of custom producing the drums. Drums made of fibre, steel, and plastic are all often used, but each has advantages and disadvantages of its own. While certain solutions are very strong and long-lasting, others are better suited to particular products. Thus, presence of substitute drums can hamper the market growth during the forecast period.

10.4.2.2 PANELING ISSUES IN POLYMER DRUM

The walls of polymer drums are around few millimeters thick. The purpose of them is not as pressure vessels. However, in some industrial applications, they must be controlled to external and internal pressure pressures. However, in a few instances, the pressures applied fall within the allowed ranges for that product. A distortion

in the drums' outer surface may be seen when the pressure applied to them is outside of the allowable tolerance ranges. Paneling is the conventional name for this phenomena. Variations in temperature, product penetration through the container wall, storage of an oxygen scavenger product in the drum, and changes in air pressure conditions are all causes of problems with polymer drum paneling. Thus, these factors can hamper the usage of polymer drums in some industrial applications.

10.4.3 MARKET OPPORTUNITIES ANALYSIS

10.4.3.1 POLYMER DRUMS TO HELP MINIMIZE ENVIRONMENTAL IMPACT

Polymer drums and drums are becoming important aspect in industrial and commercial activities. They not only contain or keep chemicals and completed goods in place until they are ready for disposal, but they also aid in holding garbage until it is time. Polymer drums also contribute to lessening the negative consequences of human activity on the environment. Polymer drums lessen our environmental impact by using less energy, materials, and emitting less carbon. When compared to other materials, employing these polymer drums and drums for the containment, storage, and transportation of consumer goods is less expensive. They can also be recycled and used to create new goods. Plastics are the most suited materials for the pharmaceutical, chemical, paint, glue, and food sectors to store, package, distribute, and contain a variety of items due to their eco-friendliness. Thus, they do not add to environmental contamination because they can be recycled.

10.4.4 MARKET CHALLENGES ANALYSIS

10.4.4.1 IMPROPER HANDLING OF POLYMER DRUMS

Drums made of plastic are great containers for moving commodities and hazardous chemicals. The polyethylene-based drums must be used with the appropriate caution. To reduce the chance of a catastrophic accident or spill, the polyethylene barrel must be handled carefully. To confirm that the polyethylene barrel is appropriate for such substances, it is required to check the Dangerous Material Regulations (HMR) before using it to transport or contain hazardous chemicals. Additionally, it should be emphasized that these barrels should not be rolled during handling. Instead, proper-sized pallets must be used to load and transport the polymer drums. During stacking process, the loads must be spread uniformly. In order to prevent an explosion when shipping dangerous chemicals, it is also important to keep these drums out of direct sunlight or UV rays. Thus, inappropriate handling of these polymer drums due to a lack of knowledge and education on material transportation can be challenging for the industrial activities.

10.5 MARKET ESTIMATES AND FORECAST IN TERMS OF REVENUE (INR LAKHS) AND VOLUME (MILLION UNITS) FOR SEGMENTS AND REGIONS

10.5.1 INDIA POLYMER DRUMS MARKET REVENUE ESTIMATES AND FORECASTS, BY TYPE, 2019-2030 (INR LAKHS)

TABLE 33 INDIA POLYMER DRUMS MARKET REVENUE ESTIMATES AND FORECASTS, BY TYPE, 2019-2030 (INR LAKHS)

Type	2019	2020	2021	2022	2030	CAGR (2022-30)
Tight Head	74,876.97	76,180.04	81,918.29	90,037.43	192,609.09	**9.97%**
Open Head	31,316.81	31,949.88	34,259.81	37,547.34	78,328.30	**9.63%**
Total	**106,193.78**	**108,129.91**	**116,178.10**	**127,584.77**	**270,937.39**	**9.87%**

Source: India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data

10.5.2 INDIA POLYMER DRUMS MARKET VOLUME ESTIMATES AND FORECASTS, BY TYPE, 2019-2030 (MILLION UNITS)

TABLE 34 INDIA POLYMER DRUMS MARKET VOLUME ESTIMATES AND FORECASTS, BY TYPE, 2019-2030 (MILLION UNITS)

Type	2019	2020	2021	2022	2030	CAGR (2022-30)
Tight Head	9.55	9.05	9.59	10.17	16.97	**6.61%**
Open Head	4.33	4.12	4.35	4.60	7.50	**6.29%**
Total	**13.88**	**13.16**	**13.94**	**14.77**	**24.46**	**6.51%**

Source: India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data

10.5.3 INDIA POLYMER DRUMS MARKET REVENUE ESTIMATES AND FORECASTS, BY MATERIAL, 2019-2030 (INR LAKHS)

TABLE 35 INDIA POLYMER DRUMS MARKET REVENUE ESTIMATES AND FORECASTS, BY MATERIAL, 2019-2030 (INR LAKHS)

Material	2019	2020	2021	2022	2030	CAGR (2022-30)
Polypropylene	26,414.38	26,865.30	28,898.53	31,773.49	68,169.68	**10.01%**
HDPE	36,422.68	36,996.13	39,849.02	43,872.69	95,237.13	**10.17%**
LDPE	20,721.59	21,147.51	22,668.59	24,835.21	51,666.42	**9.59%**
LLDPE	16,170.62	16,524.00	17,689.37	19,354.32	39,802.66	**9.43%**
Others	6,464.51	6,596.98	7,072.60	7,749.06	16,061.50	**9.54%**
Total	**106,193.78**	**108,129.91**	**116,178.10**	**127,584.77**	**270,937.39**	**9.87%**

Source: India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data

10.5.4 INDIA POLYMER DRUMS MARKET VOLUME ESTIMATES AND FORECASTS, BY MATERIAL, 2019-2030 (MILLION UNITS)

TABLE 36 INDIA POLYMER DRUMS MARKET VOLUME ESTIMATES AND FORECASTS, BY MATERIAL, 2019-2030 (MILLION UNITS)

Material	2019	2020	2021	2022	2030	CAGR (2022-30)
Polypropylene	3.43	3.25	3.45	3.66	6.12	**6.65%**
HDPE	4.66	4.41	4.68	4.97	8.41	**6.80%**
LDPE	2.85	2.71	2.86	3.03	4.91	**6.24%**
LLDPE	2.04	1.94	2.04	2.16	3.46	**6.08%**
Others	0.90	0.85	0.90	0.96	1.55	**6.25%**
Total	**13.88**	**13.16**	**13.94**	**14.77**	**24.46**	**6.51%**

Source: India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data

10.5.5 INDIA POLYMER DRUMS MARKET REVENUE ESTIMATES AND FORECASTS, BY END USE, 2019-2030 (INR LAKHS)

TABLE 37 INDIA POLYMER DRUMS MARKET REVENUE ESTIMATES AND FORECASTS, BY END USE, 2019-2030 (INR LAKHS)

End Use	2019	2020	2021	2022	2030	CAGR (2022-30)
Chemical Industry	30,381.49	30,893.42	33,238.88	36,553.88	78,579.27	**10.04%**
Food and Beverage Industry	26,360.53	26,902.35	28,837.36	31,593.59	65,726.35	**9.59%**
Healthcare	19,624.13	20,075.23	21,466.53	23,459.70	47,762.10	**9.29%**
Other	29,827.62	30,258.91	32,635.34	35,977.60	78,869.68	**10.31%**
Total	**106,193.78**	**108,129.91**	**116,178.10**	**127,584.77**	**270,937.39**	**9.87%**

Source: India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data

10.5.6 INDIA POLYMER DRUMS MARKET VOLUME ESTIMATES AND FORECASTS, BY END USE, 2019-2030 (MILLION UNITS)

TABLE 38 INDIA POLYMER DRUMS MARKET VOLUME ESTIMATES AND FORECASTS, BY END USE, 2019-2030 (MILLION UNITS)

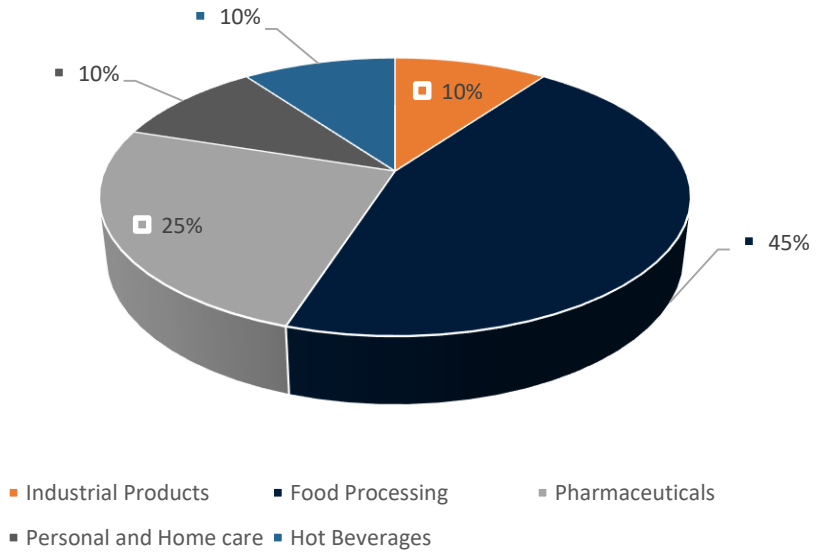
End Use	2019	2020	2021	2022	2030	CAGR (2022-30)
Chemical Industry	4.15	3.93	4.16	4.42	7.41	**6.67%**
Food and Beverage Industry	3.49	3.32	3.50	3.71	6.01	**6.24%**
Healthcare	2.45	2.33	2.46	2.59	4.12	**5.95%**
Other	3.79	3.58	3.81	4.05	6.92	**6.93%**
Total	**13.88**	**13.16**	**13.94**	**14.77**	**24.46**	**6.51%**

Source: India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data

10.6 INDIA POLYMER DRUMS & HM-HDPE ANALYSIS

The growth of polymer drums & HM-HDPE in India is owing to the rising demand for food & beverage products & ingredients, industrial packaging, chemical industry, pharmaceutical and others. With a median age of 28 years old, the Indian population is significantly younger than that of several other Asian nations. With 34.5% of the population residing in urban areas, the urban population is growing. The middle class in India, which makes up 5% of the population in 2020, is predicted to steadily expand to represent 40% of all consumption in India by 2025. Due to increasing urbanization and the fast expanding young population, which is changing consumer needs, this trend has a significant impact on the food and beverage business.

FIGURE 45 CONSUMPTION OF PACKAGING MATERIALS BY END USE INDUSTRIES IN INDIA

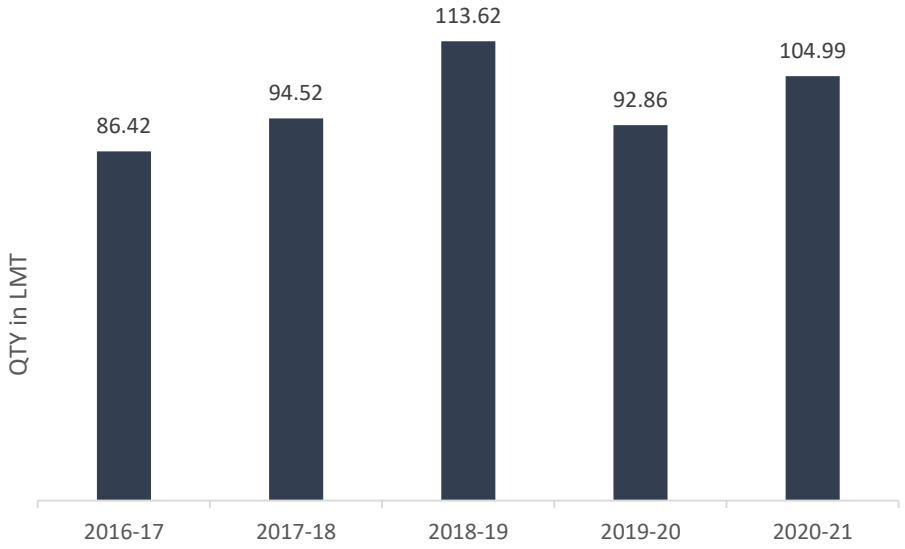


Source: Invest India

The strong favorable demographics, rising levels of disposable income, expanding consumer awareness, and the demand for processed foods are the main drivers of the increase in packaging consumption in India. Food, beverage, FMCG, and pharmaceutical end-user segment expansion will have a trickle-down effect on expanding packaging solution demand. Furthermore, the transportation and storage of chemicals, solvents, oil & lubricants in India is contributed by the rigid packaging. It constitutes of drums and containers materials made of hard plastic, glass, aluminum, tin or cardboard.

The polymer drums in India are majorly used by industries like pharmaceutical, fertilizer & chemical and others. These barrels are ideal for storing and transportation of solid/liquid goods. Since, the agriculture business of India is the important industry, the demand for fertilizer and chemicals in the country will be continuously rising, which in result will have positive impact on the growth of polymer drums & HM-HDPE. Following the Covid, fertilizer imports have increased, and it has been stated that nationwide fertilizer availability has remained good for the current Rabi 2021–22 growing season. However, some states noted a shortage of DAP fertilizer during the interim, notably in a few districts. DAP rakes were subsequently shifted to satisfy the requirement in accordance with the requirements of the State Governments.

FIGURE 46 IMPORT OF P&K FERTILIZERS IN INDIA



Source: Press Information Bureau, India

India is home to several industrial facilities and warehouses that display the ubiquitous blue polymer drum. The blue polymer drum is a crucial part of the safe and secure storage and transportation of many different industrial commodities since it is versatile, reliable, and long-lasting. A blue polymer drum may securely carry oils, foodstuffs, even harmful chemicals and hazardous waste, making it a popular and affordable option for many industrial organizations. Moreover, according to IBEF, India aims to be self-reliant in overall fertilizer production by 2023 as the government is constructing new manufacturing units to reduce dependency on imports. In addition, the government is likely to spend INR 1.19 trillion in FY2021 in the form of subsidy components to the farmers for the fertilizers. Following this and the government's action plans under the 'Aatmanirbhar Bharat' initiative will aid and accelerate India's steps in becoming self-reliant to manufacture phosphatic fertilizers in years to come.

Additionally, as per IBEF, India is the world's 12th exporter of medical supplies. More than 200 nations throughout the world get Indian medications for export, with the US serving as the main market. The country is the world's leading supplier of generic pharmaceuticals with 20% of worldwide exports made up of generic medications. In FY22 and FY21, Indian medication and pharmaceutical exports totaled INR 1,90,06,000 Lakhs and INR 1,80,70,000 Lakhs, respectively.

Certain types of authorized plastic containers can be used to securely store suitable flammables. Polymer drums may also be used to store pharmaceutical goods, and some types of polymer drums can also be utilized to safely store food and beverage sector items. Polyethylene (HDPE) polymer drums may be utilized for a variety of industrial applications due to its high density and molecular weight. Since the HDPE material used to make the containers is chemically inert and extremely resistant to both low and high pH contents, polyethylene drums are outstanding and more appropriate for industrial uses. These factors of high compatibility with various materials and wide usability are expected to aid the growth of the polymer drums market in India.

10.7 INDUSTRY SWOT ANALYSIS

10.7.1 STRENGTHS

The growth of bulk packaging in India is expanding due to the rising industrial activities. Significant advancements in logistics, warehousing, and material handling systems in recent years have had a significant impact on the growth of the India bulk packaging market. Furthermore, material reduction, space saving, and light weighting are becoming increasingly important in the selection of bulk packaging material, both in terms of cost reduction and escalating environmental concerns. As a result, these factors have a positive impact on the demand for HDPE barrels. Drums are widely used in the transportation of hazardous materials due to their low cost and reusability, as well as their good safety profile. Small retailers and those who cannot accommodate intermediate bulk containers also prefer them. Polymer drums are important in the shipping industry because they take up less space on ships, allowing more cargo to be transported and facilitating faster exports.

In addition, unlike steel and other materials, polymer drums can be recycled. They can be crushed into pellets and used in other ways. Recycling is also much easier than it is for steel or aluminium. The drums can be reused. They can be repurposed for a variety of purposes. They can also be reused multiple times. This saves money while lowering the environmental impact of plastic products, but they must be thoroughly cleaned after each use. Some of these barrels still stink. As a result, it's critical to ensure that there's enough room for stacking the drums.

10.7.2 WEAKNESS

Lack of domestic technology is the major weakness of Indian plastic packaging industry. The domestic plastic processing industry is no exception to the shift in the Indian manufacturing industry from low output/low technology machines to high output/high technology machines. With a greater emphasis on increasing capacity utilization, the emphasis on developing cutting-edge R&D is declining. Domestic machinery is manufactured using modern technologies to improve productivity and energy efficiency, allowing processors to compete on a global scale. The majority of technical components are imported from Europe, the United States, and Japan. These imports are subject to some customs duty, resulting in massive losses. However, in areas such as high production and automatic blow moulding machines, multilayer blow moulding, stretch/blow moulding machines, and specific projects involving high capital expenditure, India's technology needs are acute. Furthermore, packaging industry is labor intensive and requires skilled manpower for design development and innovation. Availability of skilled manpower has been a continuous challenge for the industry in India. Since, the production of polymer drums is dependent on the blow molding machineries along with skilled manpower, these factors can pose challenges for the growth of polymer drums & HM-HDPE market.

10.7.3 OPPORTUNITES

The expansion of end-use industries, as well as consumerism and the expansion of manufacturing hubs in India, will support industrial packaging in the future. In India, there has been a tremendous increase in the growth of industries such as food and beverage, pharmaceutical, and chemicals, which has a direct impact on the growth of the packaging sector. Additionally, rising consumerism will contribute to rising demand. Consumers'

preference for convenient and affordable packaging is driving the flexible and rigid packaging market in India. Consumers today are increasingly looking for products that are easy to handle, long lasting, and easy to store, and because plastics can be used in a variety of ways, they have been the preferred choice in packaging. Furthermore, the Indian government is focusing on transforming the country into a global manufacturing hub, which will benefit both the plastic and packaging industries. The plastic industry is also benefiting from the support of various organizations in India. Furthermore, the need of the hour is to arrive at a sustainable solution through the adoption of technologies, upcoming innovations, and environmentally friendly solutions. An organized development addressing cost effective plastic processing, as well as streamlining operations of plastic recycling, could pave the way for this industry's growth.

10.7.4 THREATS

The market for polymer drums and HM-HDPE is being threatened by the increasing use of steel and fibre barrels. Industries also use these barrels for product packaging, containment, and storage. Steel drums, on the other hand, are more durable and can withstand more damage and forces than plastic and fibre drums. Steel drums are thus used for processes requiring fire resistance, weight, and exposure to extreme weather conditions. Fiber drums, on the other hand, are more corrosion resistant than plastic or steel drums. This is due to the fact that the interior of the paper is frequently coated with a poly or foil lining. As a result, corrosion resistance is improved.

Although polymer drums are better suited for transporting liquids, semi-liquids, and hazardous materials, the other two drums can also be used to contain, store, and transport dry, solid, liquid, semi-liquid, hazardous, and non-hazardous materials. Also, fibre barrels are less expensive than steel and polymer drums. In addition, technological advancements in fibres and coatings in fiber based barrels are compelling industries to use more cost-effective and better solutions for bulk material storage and transportation. As a result, these factors can pose threats to the growth of polymer drums and HM-HDPE market.

10.8 COMPETITIVE LANDSCAPE

FIGURE 47 POLYMER DRUMS & HM-HDPE MARKET: COMPANY SNAPSHOT, 2022

Competition Landscape – India Polymer Drums & HM-HDPE Market					
Company Profile	Berry Global Inc.	Greif, Inc.	Time Technoplast Ltd.	Mitsu Chem Plast Ltd.	Gujarat Containers Ltd.
Headquarter	Indiana, United States	Ohio, United States	Maharashtra, India	Maharashtra, India	Gujarat, India
Revenue (INR)	INR 1,13,927.80 Crore	INR 49,509.80 Crore	INR 3,652.80 Crore	INR 258.68 Crore	INR 149.78 Crore
Product	• 64oz HDPE Round container	• PC Series Polymer drum	• Polymer drums	• HDPE Polymer drums	• HMHDPE Barrels
Market Presence	▪ U.S. & Canada ▪ Europe ▪ Rest of the World	▪ United States ▪ Europe, MEA ▪ Asia Pacific, and other America	▪ India ▪ Outside India	▪ India ▪ China ▪ Qatar	▪ India
Agreements & Partnerships (P)	New Product Development (N)	Investment & Expansion (I)	Mergers & Acquisition (M)		

Source: Company Annual report, Reports and Data, Primary Interview

Key participants in the polymer drums & HM-HDPE market are Bombay Chemical Pvt. Ltd., Gujarat Containers Ltd., Greif, Inc., Time Technoplast Ltd, GOODLUCK Plastic Industries, ASL Plastic Private Limited, Schütz GmbH & Co. KGaA, Berry Global Inc., Mitsu Chem Plast Ltd., and The Cary Company.

The market is currently witnessing increasing efforts by players in terms of merger & acquisition as companies try to gain a competitive edge over the market by sharing ideas and resources with their counterparts. Market players are also resorting to strategies like merger & acquisition wherein they are strategically forming alliances with crucial end-users or organizations in both the public and private sectors. This is helping them to gain a competitive advantage in terms of sales.

10.9 STRATEGY BENCHMARKING

Players in the polymer drums & HM-HDPE market employed various strategies like merger & acquisition over the study period of 2019-2023, in order to increase their market, share by reaching out to a newer portion of potential consumer base as well as holding the current consumer base through various tactics. The players in the market also heavily ramped up their efforts for research and development in order to develop a new product and thus make a unique offering in the market.

Of all the strategies employed during the review period, merger & acquisition was one of the leading strategies. Besides, since the market is dynamically growing, players in the market are making attempts to acquire the companies in regions across the globe to expand their geographical footprint in the market. Some of the notable strategies were adopted by Schütz GmbH & Co. KGaA. In Oct-21, The company announced to acquire GEM Plastics Limited. Through this acquisition, the company is expanding its product portfolio in the field of industrial packaging and further increasing its performance for customers in Ireland and the United Kingdom.

TABLE 39 INVESTMENT & EXPANSION IN THE POLYMER DRUMS & HM-HDPE MARKET, 2019-2023

DATE	COMPANY NAME	DESCRIPTION
Oct-21	Schütz GmbH & Co. KGaA	The company announced to acquire GEM Plastics Limited. Through this acquisition, the company is expanding its product portfolio in the field of industrial packaging and further increasing its performance for customers in Ireland and the United Kingdom.
Oct-21	The Cary Company	The company has acquired Containers Unlimited in order to place among the leading provider of drums, IBCs and industrial packaging and expands the geographical presence in the Intermountain and West Coast regions

Source: Company Annual report, Reports and Data, Primary Interview

10.10 BOMBAY CHEMICAL PVT. LTD.

Bombay Chemical Pvt. Ltd.	**Type:** Private
	Industry: Manufacturing
	Founded: 1942
	Headquarters : Maharashtra, India

10.10.1 COMPANY SUMMARY

Bombay Chemical Pvt. Ltd., formed in 1942, is one of the largest manufacturers of public health natural pyrethrum products & pest control products in India. The company involved in manufacturing metal and HM HDPE barrels, tortoise brand mosquito coils and other household products. The company distribute its barrel products in domestic as well as in export markets. The company offers various types of metal barrels such as epoxy coated, food grade, poly lined, galvanized, open mouth, closed mouth with one, two or three bungs. The company's HM-HDPE barrels are also available in different capacities, weights and colors.

10.10.2 PRODUCTS OFFERED

PRODUCT	DESCRIPTION
HM-HDPE barrels	• HM HDPE Drum that are designed and fabricated from high quality raw material and thus successfully meet the set international quality standards. • Available in different capacities, weights and colors

Source: Company Website, News & Press Releases

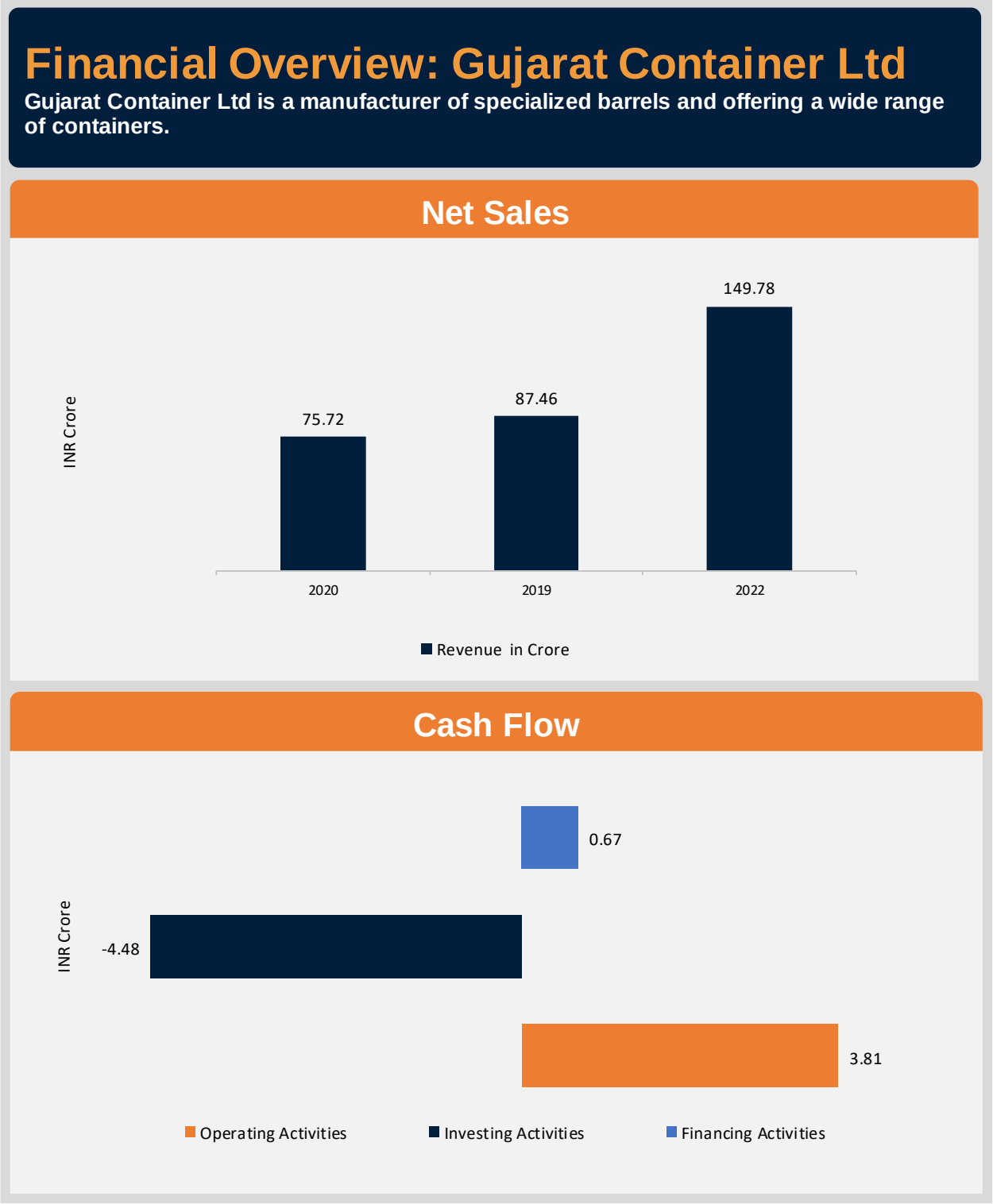
10.11 GUJARAT CONTAINERS LTD.

Gujarat Containers Ltd.	**Type:** Public
	Industry: Manufacturing
	Founded: 1992
	Headquarters : Gujarat, India
	Website: www.gujaratcontainers.com

10.11.1 COMPANY SUMMARY

Gujarat Containers Ltd. was founded in 1992 and is headquartered in Gujarat, India. The company has only one reportable business segment of manufacturing of steels barrels as the primary reportable business segment. The company is a manufacturer of specialized barrels and offering a wide range of containers. The company offer a choice of configurations, linings and covers to transit materials. The company offers wide range of barrels such as galvanized barrels, epoxy barrels. composite barrels, all side welded barrels, open top barrels, M.S. Plain barrels, NRV barrels, carboys & liners, GP sheet barrels, HM-HDPE barrels & jerry cans. Its products are served to different industries including plethora of chemicals, agro chemicals (pesticides, insecticides, etc.), aromatic products, paints, coatings and dyestuff, food products, petroleum products & their by-products, lubricating oils, pharmaceutical, hazardous chemicals, and resins.

10.11.2 FINANCIAL INSIGHTS



Source: Company Website, Annual Report, News & Press Releases

10.11.3 PRODUCTS OFFERED

PRODUCT	DESCRIPTION	APPLICATION
HMHDPE Barrels	• HM HDPE Barrels are compatible with fuming compounds, penetrating attitude of any solvents and chemicals. • Product has a variable capacity for HMHDPE barrel in packing variant 200 and 210 Lit.	• Cosmetic, • Food & beverage • Paint & solvent sectors

Source: Company Website, News & Press Releases

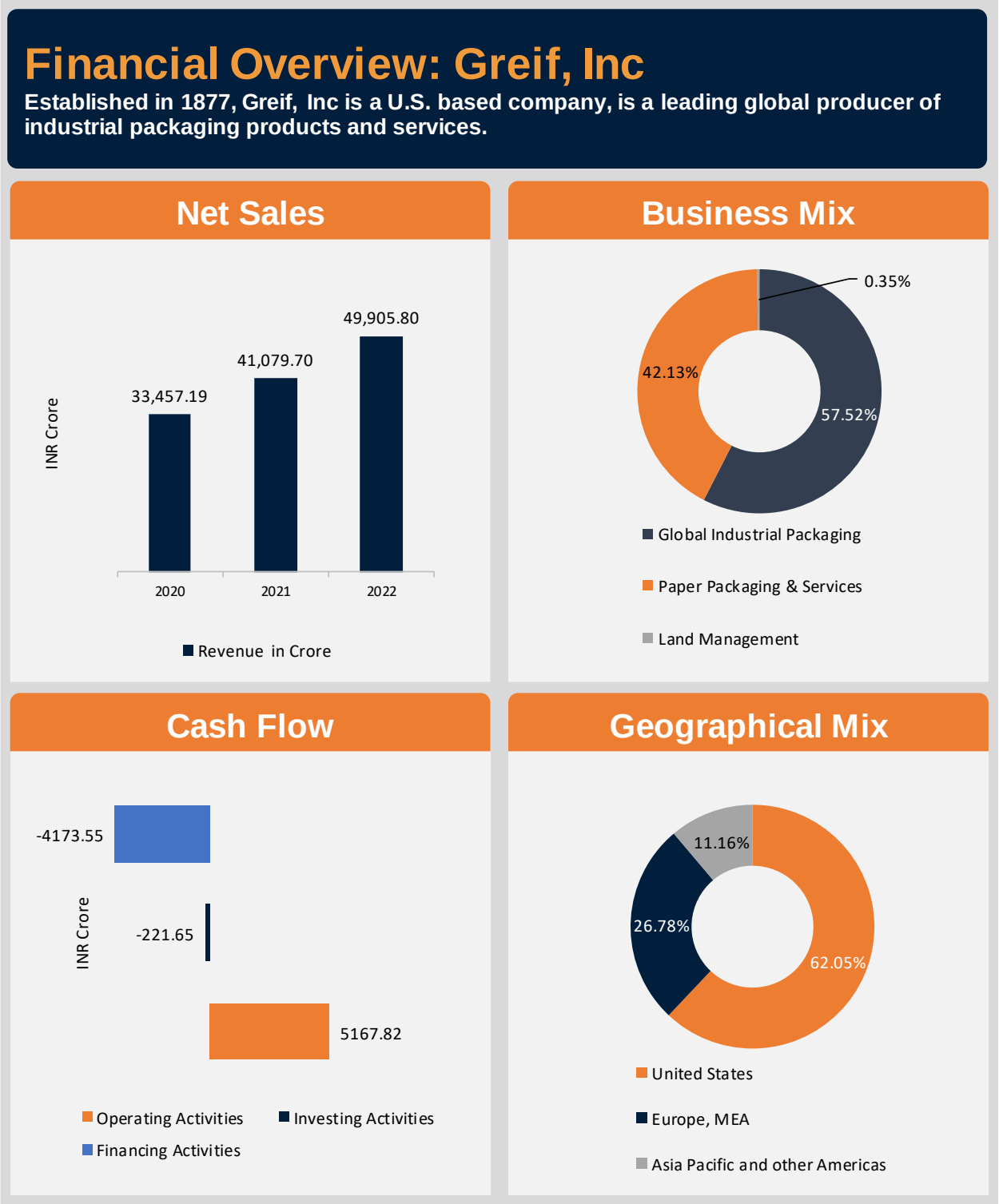
10.12 GREIF, INC.

Greif, Inc.	**Type:** Public
	Industry: Packaging
	Founded: 1877
	Headquarters : Ohio, United States
	Website: www.greif.com

10.12.1 COMPANY SUMMARY

Established in 1877, Greif, Inc is a U.S. based company, is among the leading global producer of industrial packaging products and services and offers a comprehensive line of rigid industrial packaging products, such as steel, fibre and polymer drums, rigid intermediate bulk containers, closure systems for industrial packaging products, transit protection products, water bottles and remanufactured and reconditioned industrial containers, and services, such as container life cycle management, filling, logistics, warehousing and other packaging services. Further, the company produce and sell containerboard, corrugated sheets, corrugated containers and other corrugated products to customers in North America in industries such as packaging, automotive, food and building products. The company also produce and sell coated recycled paperboard and uncoated recycled paperboard, some of which used to produce and sell industrial products (tubes and cores, construction products, protective packaging and adhesives). In addition, company also purchase and sell recycled fiber. The company is one of the leading global producer of flexible intermediate bulk containers and related services and has operations in over 40 countries.

10.12.2 FINANCIAL INSIGHTS



Source: Company Website, Annual Report, News & Press Releases

Note: Exchange rate for 2021, 1 USD = INR73.346, for 2020 1 USD = INR 74.102, for 2019 1 USD = INR 70.394

10.12.3 PRODUCTS OFFERED

PRODUCT	DESCRIPTION	APPLICATION
PC Series Polymer drum	• PC Series of polymer drums from Greif are typically used for transporting hazardous and non-hazardous liquid products. • It has capacities ranging from 15 to 55 gallons (56-210 liters) • Blow-molded • High molecular content polyethylene • Stable stacking square design	• Commodity chemical • Health & Beauty • Food & Beverage

Source: Company Website, News & Press Releases port, Primary Interviews, Reports and Data

10.13 TIME TECHNOPLAST LTD

Time Technoplast Ltd	**Type:** Public
	Industry: Manufacturing
	Founded: 1989
	Headquarters : Maharashtra, India
	Website: www.timetechnoplast.com

10.13.1 COMPANY SUMMARY

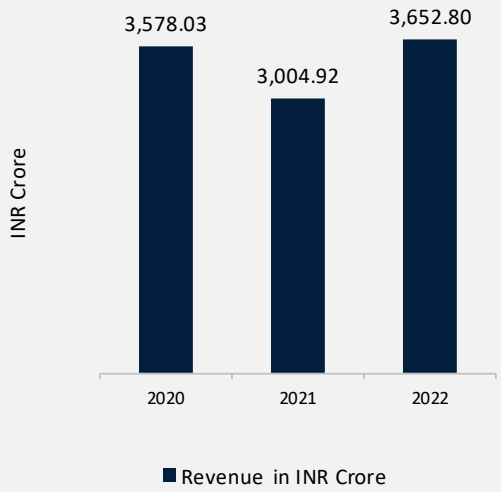
Time Technoplast Ltd is an India-based company that is engaged in the manufacturing of polymer & Composite products. The company has operations in Bahrain, Egypt, Indonesia, India, Malaysia, U.A.E, Taiwan, Thailand, Vietnam, Saudi Arabia & U.S. The company offers a range of technology-based polymer products catering to the growing sectors of the Indian economy with Industrial and Consumer Packaging Solutions Lifestyle Products Auto Components Healthcare Products and Construction / Infrastructure related products. Their product portfolio consists of packaging products including Drums / Containers Pails PET sheets Entrance Matting Turfs Garden Furniture Automotive Components Auto Disabling Medical Disposables and Warning Nets. In India, the company has their manufacturing facilities located at Baddi in Himachal Pradesh Pantnagar in Uttarakhand Sahibabad in Uttar Pradesh Mahad in Maharashtra Hosur in Tamil Nadu Daman & Diu and Silvassa among others.

10.13.2 FINANCIAL INSIGHTS

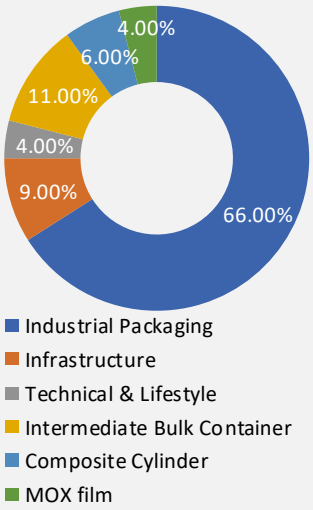
Financial Overview: Time Technoplast Ltd

Time Technoplast Ltd is an India-based company that is engaged in the manufacturing of polymer & Composite products.

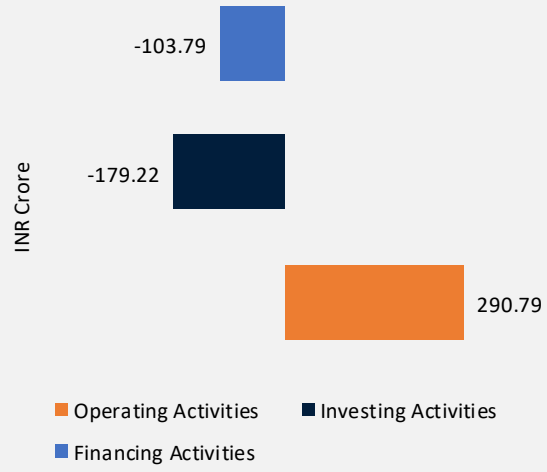
Net Sales



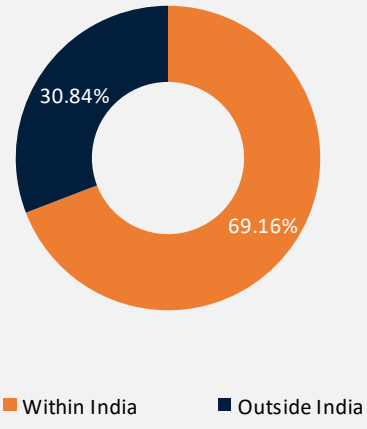
Business Mix



Cash Flow



Geographical Mix



Source: Company Website, Company Annual Reports, News & Press Releases, Reports and Data

10.13.3 PRODUCT INSIGHTS

PRODUCTS	DESCRIPTION	APPLICATION
Polymer drums	• Polymer drums are manufactured through extrusion blow molding process out of special grade of polymers • Products are made out of special grade High Molecular - High Density Polyethylene which offers excellent mechanical strength against tough and multiple handling conditions. • Offer wide compatibility and long shelf life for filled in goods	• Specialty Chemicals • Paints • Inks • Pharmaceutical • FMCG Intermediates • Conception Chemicals • Additives, • Lube Oils & Additives • Food industry

Source: Company Website, News & Press Releases

10.14 GOODLUCK PLASTIC INDUSTRIES

GoodLuck Plastic Industries	**Type:** Public
	Industry: Manufaturing
	Founded: 1992
	Headquarters : Gujarat, India
	Website: www.goodluckplastic.com

10.14.1 COMPANY SUMMARY

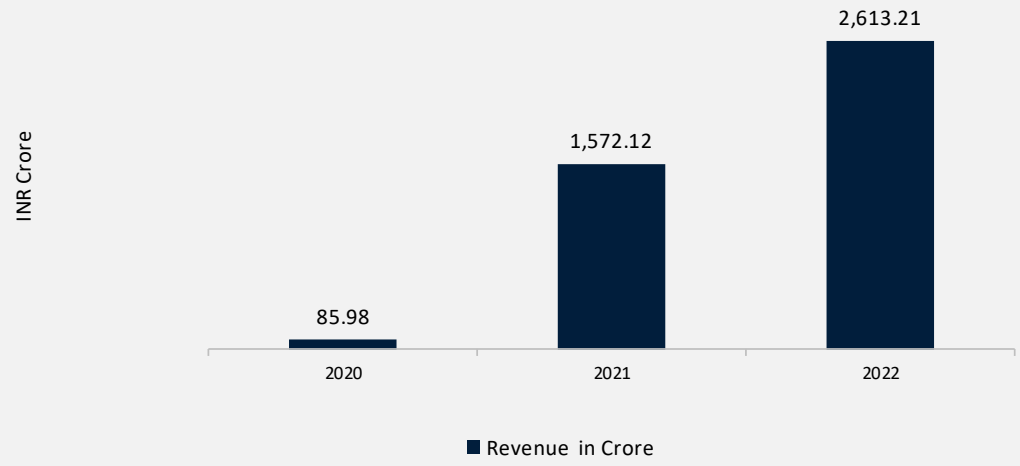
Established in 1992, GoodLuck Plastic Industries is an India based company, is a manufacturer of Blow mould plastic containers which Includes wide & Narrow Mouth drums & carboys in all possible colors & shapes. The company consist of product portfolio consist of HM-HDPE Plastic carboys & Drums in 10 to 60 Liter capacity. The company serves its products to various industries including food & beverage industries, pharma & bulk drugs industries, agro, pesticide, fertilizer industries, dyestuff & intermediate industries, textile chemicals, dairy, animal, marine products, paint & pigment & industries, oil & petroleum industries, cosmetics, perfumes & fragrance, construction chemical, water treatment chemicals and mineral & electro plating chemicals.

10.14.2 FINANCIAL INSIGHTS

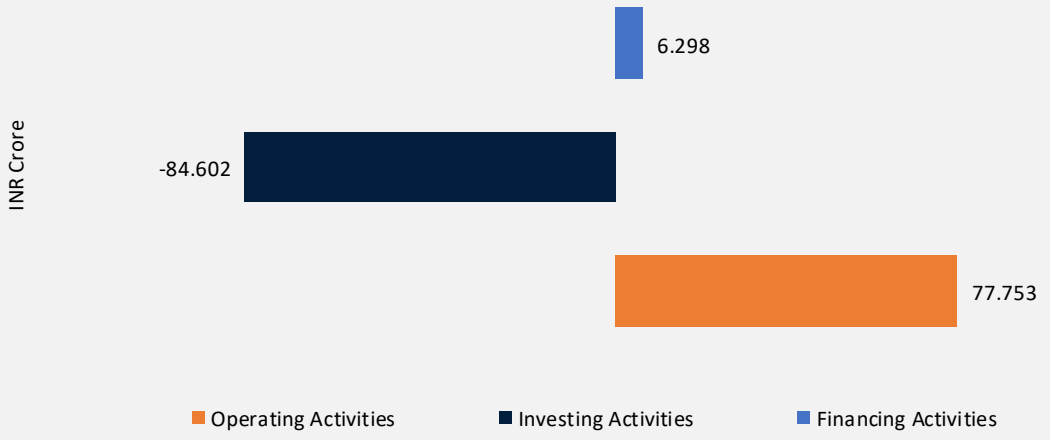
Financial Overview: GoodLuck Plastic Industries

Established in 1992, GoodLuck Plastic Industries is a India based company, is a manufacturer of Blow mould plastic containers which Includes wide & Narrow Mouth drums & carboys in all possible colors & shapes.

Net Sales



Cash Flow



Source: Company Website, Annual Report, News & Press Releases

10.14.3 PRODUCTS OFFERED

PRODUCT	FEATURES
HM/H.D.P.E. 10 Ltrs. Open Top Drum	• Nominal Capacity 10 Ltr. • Brim full Capacity 12 Ltr • Height 370 mm • Diameter 235 mm • Int. mouth opening 200 mm
HM/H.D.P.E. 35 Ltrs. Screw Cap Drum(Rotocan)	• Nominal Capacity 35 Ltr. • Brim full Capacity 39 Ltr • Height 540 mm • Diameter 335 mm • Int. mouth opening 260 mm
HM/H.D.P.E.45 Ltrs. Open Top Drum	• Nominal Capacity 45 Ltr. • Brim full Capacity 47 Ltr • Height 540 mm • Diameter 365 mm • Int. mouth opening 265 mm

Source: Company Website, News & Press Releases port, Primary Interviews, Reports and Data

10.15 ASL PLASTIC PRIVATE LIMITED

ASL Plastic Private Limited	**Type:** Private
	Industry: Manufacturing
	Founded: 2007
	Headquarters : West Bengal, India
	Website: www.aslplastic.in

10.15.1 COMPANY SUMMARY

ASL Plastic Private Limited is a private limited company and is located in Kolkata, West Bengal. The company offers various products include HM HDPE drums, Plastic Mug, plastic jars, plastic jerry cane, plastic PET bottles, HDPE drums, narrow mouth drums, plastic containers, automotive components, hygiene disinfectant and sanitizer bottle, paper bags & cover, and others. These products are available in the varied thicknesses, sizes and colors and finds extensive application in different industries. All the products are developed using superior grade materials. The company has a production capability of processing all wide range of thermoplastic raw materials including PP, HDPE, LDPE, ABS, EVA, Engineering plastics like Nylon, Polycarbonate, Talc filed, EPDM, TPE, TPV and others.

10.15.2 PRODUCTS OFFERED

PRODUCT	DESCRIPTION	APPLICATION
HM HDPE Drums	• HM HDPE Drums are made up of high density polyethylene material and modern technology • HM HDPE Drums are integrated with high storage capacity which makes them appreciated in the market.	• Storage • Transportation

Source: Company Website, News & Press Releases port, Primary Interviews, Reports and Data

10.16 SCHÜTZ GMBH & CO. KGAA

Schütz GmbH & Co. KGaA	**Type:** Private
	Industry: Packaging and Containers Manufacturing
	Founded: 1958
	Headquarters : Westerwald, Germany
	Website: www.schuetz.net

10.16.1 COMPANY SUMMARY

Schuetz GmbH & Co. KGaA is a Germany based company and founded in the year 1958. The company is consisting of business divisions including packaging system, industrial services, composites and energy systems. In packaging system division, products consist of Schütz ticket service, IBCs, drums, and spare parts. Schuetz provides plastic and steel drums, underfloor heating and harvesting systems, coils, plates, and split bars and serves customers worldwide. In industrial service division, it consists of steel service center, machine, plant & tool construction, SMP fluorination. In composite division, it consists of honey comb, engineering core, sandwich panels, and model & mould manufacturing. And in energy system, product consist of airconomy system, underfloor heating system, heating oil storage tanks.

The company provides wide range of drums based on different sizes and colors. Some of the drums includes Schütz F1 tight-head drums, Schütz S-DS1 open-head drums, Schütz OC open-head drums, Schütz SDF corrugated open-head drums and Schütz SSF corrugated tight-head drums. The company serves products to the chemical, lubricant, food and beverage, and pharmaceutical industries. In addition to established polymer drums and jerrycans, the company has extensive product range also includes specific packaging solutions for individual customer requirements. The company has over 50 production and service locations worldwide with more than 7000 employees.

10.16.2 PRODUCTS OFFERED

PRODUCT	DESCRIPTION	APPLICATION
EB-55 Tight-Head Drums.	• High-density and high molecular weight polyethylene • The body has a ring on the top for easier execution and handling • Buttress type screw caps or NPS • Resistant to UV radiation	• Ideal for packing liquids from the food, chemical or pharmaceutical industries
Plastic open-head drums.	• High-density and high molecular weight polyethylene • Removable lid with galvanized steel lever-locking ring • Resistant to UV radiation	• Ideal for packing solid, semi-solid and semi-liquid products

Source: Company Website, News & Press Releases port, Primary Interviews, Reports and Data

10.16.3 STRATEGIC INITIATIVES

DATE	TYPE	DESCRIPTION
Oct-21	Merger & Acquisition	The company announced to acquire GEM Plastics Limited. Through this acquisition, the company is expanding its product portfolio in the field of industrial packaging and further increasing its performance for customers in Ireland and the United Kingdom..

Source: Company Website, News & Press Releases

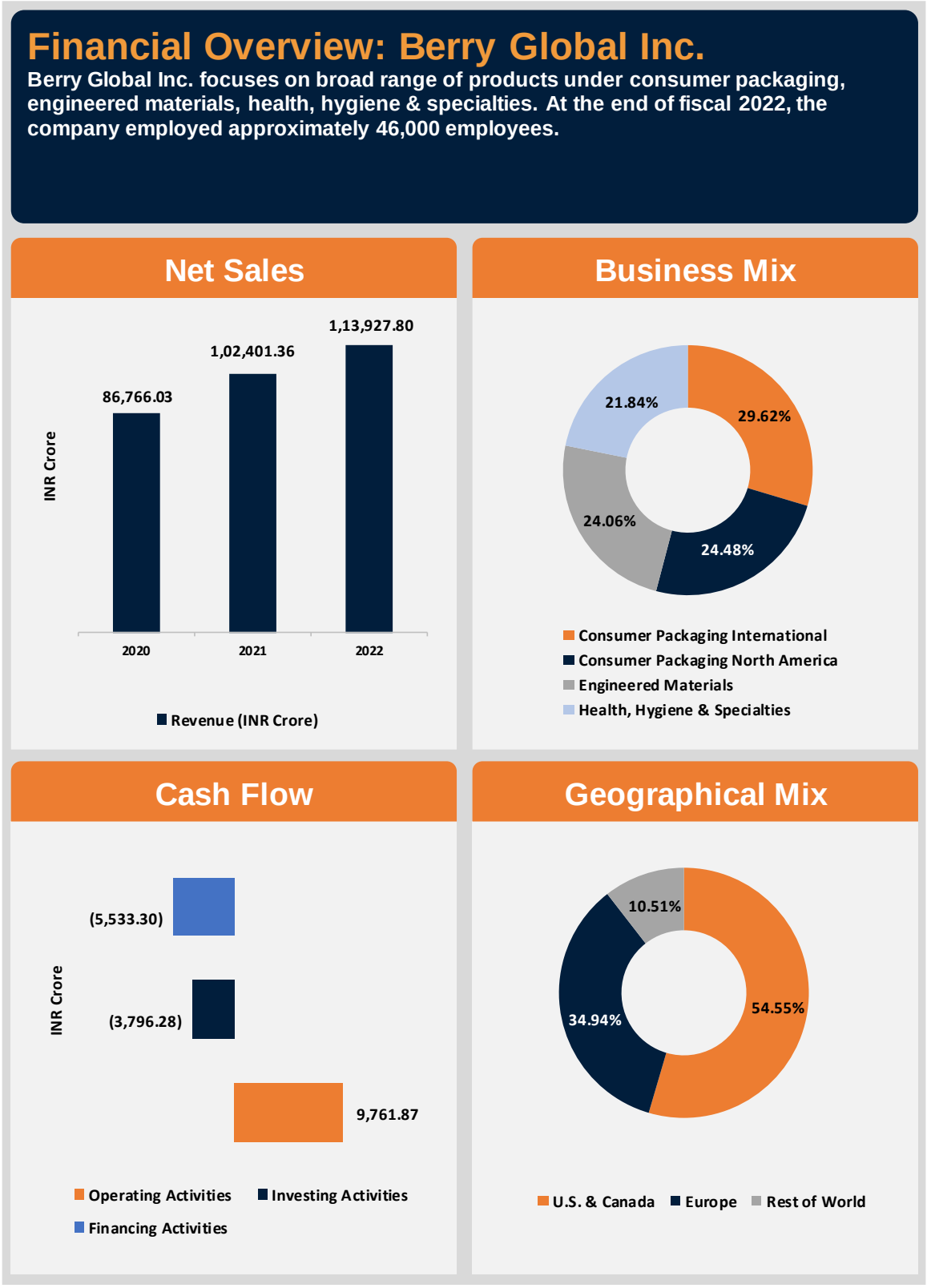
10.17 BERRY GLOBAL INC.

Berry Global Inc.	**Type:** Public
	Industry: Manufacturing
	Founded: 1967
	Headquarters : Indiana, United States
	Website: www.berryglobal.com

10.17.1 COMPANY SUMMARY

Indiana-headquartered Berry Global Inc. is one among the leading global supplier of a broad range of innovative rigid, flexible and non-woven products used every day within consumer and industrial end markets. The company focuses on four reporting segments which includes consumer packaging international, consumer packaging North America, engineered materials, and health, hygiene & specialties. Consumer packaging segment focuses on closures and dispensing systems, pharmaceutical devices and packaging, bottles and canisters, containers, and technical components. Engineered materials focuses on stretch and shrink films, converter films, institutional can liners, food and consumer films, retail bags, and agriculture films. The company has operations in North America, Europe and rest of the world and employees around 47,000 across more than 295 locations.

10.17.2 FINANCIAL INSIGHTS



Source: Company Website, Company Annual Reports, News & Press Releases, Reports and Data

Note: Exchange rate for 2021, 1 USD = INR73.346, for 2020 1 USD = INR 74.102, for 2019 1 USD = INR 70.394

10.17.3 PRODUCTS OFFERED

PRODUCT	DESCRIPTION	APPLICATION
64oz HDPE Round container	• Available in white, translucent and variety of other colors • Offset print decoration • Made with HDPE	• Food and Building Materials

Source: Company Website, Annual Report, News & Press Releases

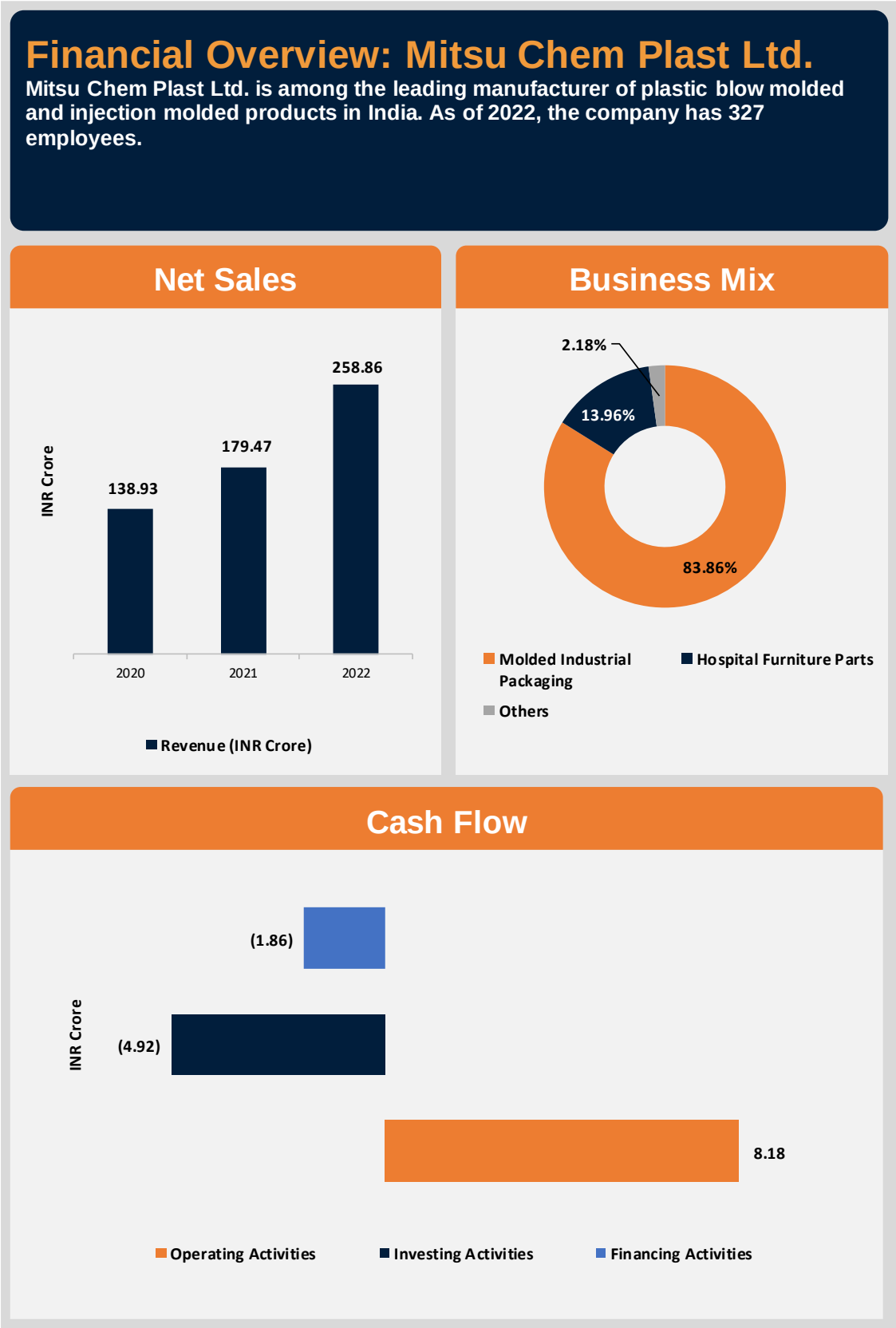
10.18 MITSU CHEM PLAST LTD.

Mitsu Chem Plast Ltd.	**Type:** Public
	Industry: Manufacturing
	Founded: 1990
	Headquarters : Maharashtra, India
	Website: www.mitsuchem.com

10.18.1 COMPANY SUMMARY

India based Mitsu Chem Plast Ltd. was established in the year 1990 is among the leading manufacturer of plastic blow molded and injection molded products. Molded products produced by the company are associated with business in industrial molding packaging, hospital furniture, infrastructure furniture and automotive components. Mitsu Chem offers various blow molding and injection molding solutions for automotive industry, which are produced at Rudrapur and Tarapur plants. Under industrial packaging, company offers industrial containers like bottles, jerry cans, drums - narrow mouth, wide mouth, open top and others. The company's manufacturing sites has capacity of more than 14,500 MTPA, which is spread over 83,000 sq. ft. In December, 2018, a bigger manufacturing unit in Khalapur, Maharashtra of 7300 Sq. Mts. was started and inaugurated in 2019.

10.18.2 FINANCIAL INSIGHTS



Source: Company Website, Company Annual Reports, News & Press Releases

10.18.3 PRODUCTS OFFERED

PRODUCT	DESCRIPTION	APPLICATION
HDPE Polymer drums	• Available in different shapes, sizes and capacities. • All these products are strictly tested on well-defined parameters before being supplied to the customers.	• Lubricants, Chemicals, Plasticizers

Source: Company Website, Annual Report, News & Press Releases

10.19 THE CARY COMPANY

The Cary Company	**Type:** Private
	Industry: Packaging and Containers Manufacturing
	Founded: 1895
	Headquarters : Illinois, United States
	Website: www.thecarycompany.com

10.19.1 COMPANY SUMMARY

Founded in 1895, the Cary Company is one of the leading supplier for packaging & containers, pail, drums & IBC totes, filtration products, temperature control products and spill control & containment and others. The company offers a wide selection of packaging and containers from plastic, glass and metal containers to drums, IBCs and paint cans. In addition to bottles and jars, the company carry a variety of caps, sprayers, pumps, shrink bands and more. It also offers design and labeling services to customize the container. In addition to these products, it also specializes in logistics and design services, including specialty shipping of chemicals and other sensitive items. Furthermore, the company serve its products to myriad industries such as paint and coatings, apiary, asphalt, automotive, brewery, building, chemical, electronics, food, foundries, graphic arts, oil and grease, paper, plastics, personal care, pharmaceuticals, putty, caulks, sealants, rubber, detergents and wallpaper.

10.19.2 PRODUCTS OFFERED

PRODUCT	DESCRIPTION	APPLICATION
77 gallon blue open head drum	• Made of FDA approved polyethylene for storage of food items • Blow molded high molecular weight high density polyethylene (HMWHDPE) construction • Open head drums feature a removable cover for convenient access to drum contents • Weather resistant for outside storage • Two sidewall rolling hoops • Recyclable and reusable	• Food and beverage • Industrial

Source: Company Website, News & Press Releases port, Primary Interviews, Reports and Data

10.19.3 STRATEGIC INITIATIVES

DATE	TYPE	DESCRIPTION
Oct-21	Merger & Acquisition	The company has acquired Containers Unlimited in order to place a leading provider of drums, IBCs and industrial packaging and expands the geographical presence in the Intermountain and West Coast regions.

Source: Company Website, News & Press Releases

11 MS-DRUMS INDUSTRY: INDIA

11.1 MARKET OVERVIEW

Mild steel, a ferrous metal comprised of iron and carbon, is used to make the MS drums, a safe and secure rigid packaging option. These barrels have a number of distinguishing qualities, including low cost, ease of handling, safety & security while shipping, fire resistance, reusability, recycling, and many more. Mild steel is a cheap material with qualities that make it appropriate for most common engineering applications. The mild steel barrels' corrosion resistance, solid structure, thermal stability, and compact shape make them ideal for storing liquids, such as the commonly used heavy-duty drums used to store paints, dyes, and other chemicals.

These mild steel barrels are also used to store various items in environments with high levels of ambient moisture. The quality of mild steel containers is consistently upheld in compliance with international requirements thanks to the use of complete quality management. The pesticide, fuel, medicine, fragrance, food, resin, lubricant, coating, chemical, and metallurgy sectors all utilize them extensively. They are widely available in a variety of categories, including open steel drums, closed steel drums, polymer drums, and steel-plastic composite drums.

Low-carbon mild steel is referred to as "ferromagnetic" because of the high iron content that gives it strong magnetic characteristics. Mild steel has a maximum carbon content of 0.16% to 0.29% and a comparatively high melting point of 1450°C to 1520°C. Steels with a higher carbon content melt at a lower temperature than mild steel. Due to its high melting temperature, mild steel becomes more ductile under heat, which makes it particularly appropriate for forging, drilling, cutting, and welding. It is also simple to build. Low-carbon mild steel's qualities make it significant in a variety of end-use sectors, resulting in an astounding demand.

The increased demand for drums for packaging will add to the market's rapid expansion. Mild steel drums are a popular choice in the packaging sector due to qualities like as recyclability for reuse, durability, high sustainability, outstanding strength, and eco-friendliness. Mild steel barrels are used as a transportation container for chemicals and other liquids in the food, coatings, construction, and healthcare industries. It is also great for bulk packing. Rapid expansion in the food and beverage sector, along with increased packaging innovation, will help to increase product consumption.

One of the primary elements boosting mild steel barrel sales is the manufacturing and industrial sector's output performance. The main players in several end-use sectors have moved their production facilities and expanded their markets in South and East Asia as a result of the cheap manufacturing costs in developing nations like India. The necessity for improved industrial packaging is obvious with stabilized manufacturing sector activity since there is a strong association between industrial output and demand for industrial packaging.

The repercussions of the economic crisis caused by the Covid-19 pandemic closures remain, despite the fact that most economies throughout the world have reopened. Commodity prices soared dramatically, as observed in prior similar economic swings. For example, agricultural and energy commodity prices rose, but there was no substantial difference between pre-pandemic levels, especially in energy. Although there is a remedy in the form of metal recycling, the price of industrial metals is rising at an unheard-of rate. Steel prices soared in 2021,

mirroring those observed during the Great Recession of 2008. In March 2020, the pre-pandemic steel price ranged between INR 38,631 and INR 61,811. This price will be increased to 1,39,074 in July 2021, a 200% increase.

This price increase has accelerated the transition toward environmentally friendly items and methods such as recycling. Metal recycling benefits a wide range of industries and enterprises. Metal-using companies usually create a substantial quantity of waste after creating their goods, therefore recycling the metal scrap instead of dumping it may assist strengthen the economy and contribute to the creation of new employment. According to the National Institute of Health, incinerating 10,000 tons of garbage generates one employment, whereas landfilling the waste generates six. Recycling the same garbage, on the other hand, will provide 36 employments. Mild steel especially galvanized items, is recyclable, which has raised the demand for mild steel barrels. Corten steel, a type of mild steel, is becoming a popular choice for many projects because it is strong, long-lasting, resistant to all types of weather, recyclable, and, most importantly, cost-effective property.

Recycling assists businesses by lowering raw material prices, increasing profits, and lowering the company's carbon impact. Furthermore, recycling may contribute to the development of a strong workplace culture, which attracts top talent. These are just a few examples of how recycling might help a business. Recycling is important to both government organizations and commercial firms. In many situations, having a robust recycling program qualifies firms for scholarships and other fantastic possibilities. This advantage should not be underestimated because it may be a valuable resource for the organization, especially when first starting out.

11.2 COVID 19: SCENARIO AND IMPACT ASSESSMENT

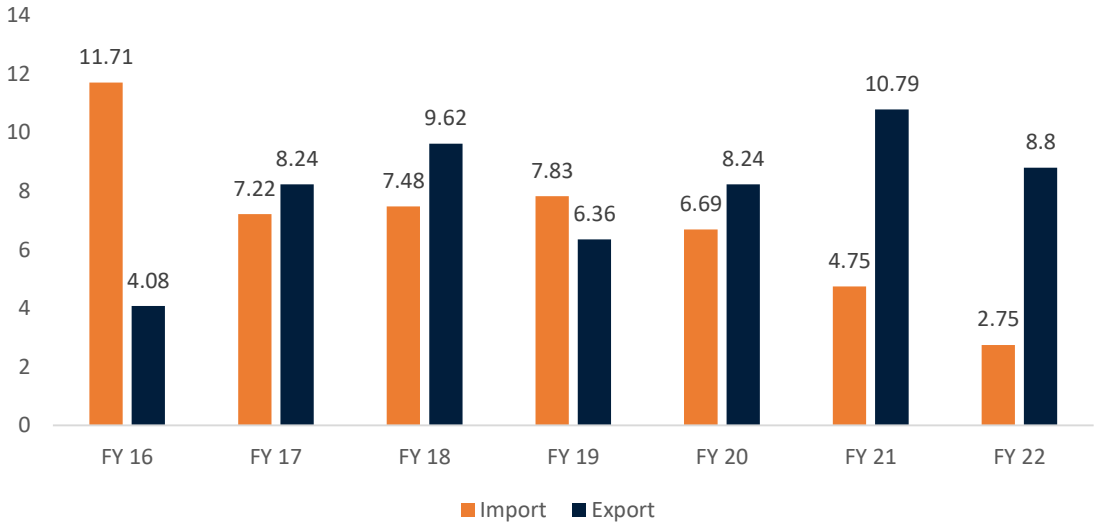
The demand for various metal packaging types was affected by the coronavirus in various ways. Demand for beverage containers has increased as a result of the implementation of lockdown orders in India in H1 2020 as consumers switch to socially isolating home consumption from pubs and restaurants. As a result of the interruption to global commerce, only these forms will see an 80% decrease in demand by 2020 for bulk metal containers and shipping barrels and drums. Beverages make up 45% of the end-use sectors by volume, and future developments will include soft drinks, energy drinks, and beer.

Furthermore, the lockdown during the first six months of 2020 has had a significant negative impact on manufacturers of automobile paint. April and the first half of May in 2020, saw no sales in the Indian car sector. Sales figures have now increased, but Society of Indian Automobile Manufacturers (SIAM) representatives issued a warning in May 2020 that a two percent decline in the Indian economy may result in a 45 percent decline in the sale of cars, trucks, and motorcycles. The paint and coating businesses had suffered greatly as a result of the lockdowns and social exclusion. The need for packing barrels was further decreased by this downturn.

Oil consumption fell by more than 8% in 2020 as a result of India's severe economic downturn, while the demand for coal for industrial use and power production fell by 5% and 11%, respectively. The market for barrels made of mild steel has been considerably influenced by the collapse in these sectors. The market was further impacted by a shortage of resources at the producing locations during the COVID-19 epidemic. Lockdowns had a negative effect on the supply chain as well. Nevertheless, the market began to rebound in the final two quarters of 2021, with several nations exhibiting recovery and a decline in the number of reported cases. Precautionary procedures enabled the operation to continue while lowering the danger. The re-opening of ports for shipping and cross-border commerce relieved the drum manufacturing industry, as sales were ramped up to meet demand.

According to preliminary forecasts, the Indian economy would expand by 9.2 percent in real GDP in 2021–2022 after declining in 2020–2021. This suggests that the total level of economic activity has risen above pre-pandemic levels. Almost all indications suggest that the economic effect of the "second wave" in Q1 was far lower than that of the complete lockdown phase in2020-21, despite the fact that the health impact was greater.

FIGURE 48 INDIA FINISHED STEEL EXPORTS AND IMPORTS (IN MILLION TONS)



Source: The India Brand Equity Foundation

According to IBEF, In FY22, the production of crude steel and finished steel stood at 133.596 MT and 120.01 MT, respectively. The consumption of finished steel stood at 105.751 MT in FY22. In April 2022, India's finished steel consumption stood at 9.072 MT. In FY22, exports and imports of finished steel stood at 13.49 MT and 4.67 MT, respectively. In FY22, India's export rose by 25.1% YoY, compared with 2021. In FY21, India exported 9.49 MT of finished steel..

11.3 MS-DRUMS SEGMENTATION ANALYSIS

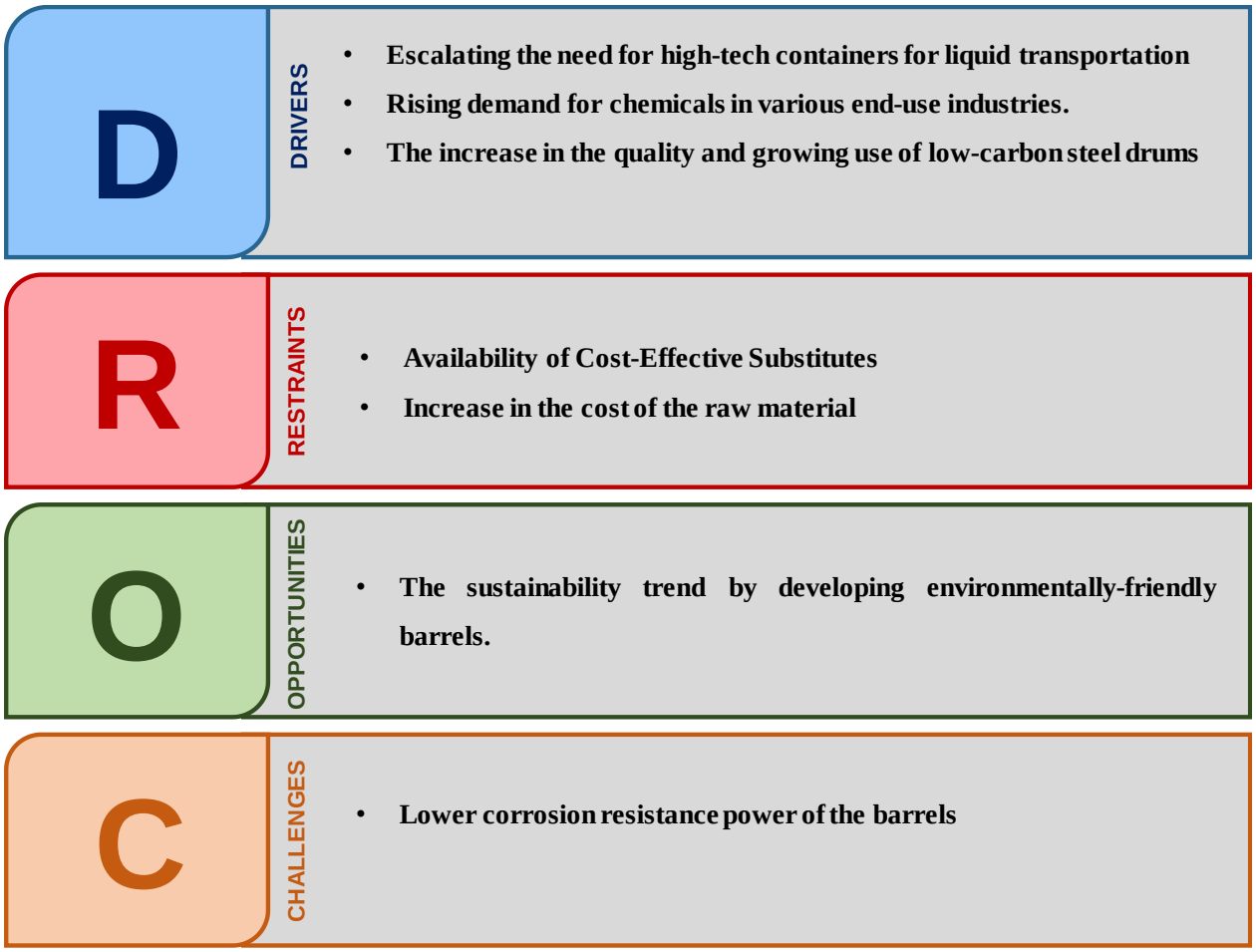
Type	End-Use
Flexible	Chemical Industry
Rigid	Pharmaceutical Industry
	Food and Beverage Industry
	Other

Source: India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data

The estimations have been provided in terms of revenue (INR Lakhs) and volume (Million Units) on the regional level, with 2021 as the base year and a forecast period from 2022 to 2030.

11.4 DROC'S ANALYSIS

FIGURE 49 DROC'S ANALYSIS



Source: India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data

11.4.1 MARKET DRIVERS ANALYSIS

11.4.1.1 ESCALATING THE NEED FOR HIGH-TECH CONTAINERS FOR LIQUID TRANSPORTATION

Standard packaging has transformed the whole liquid logistics business, resulting in significant performance gains and trade facilitation. However, the need to diversify container volumes, as well as growing cost and time challenges, necessitates the development of new container forms and packaging techniques, particularly in the context of general-use logistics networks and the same expansion of urban distribution. To accommodate the amount of single orders handled through e-commerce, a new type of packaging is also required. By decreasing human intervention, warehouse automation has boosted efficiency, speed, and production. Pick and place technologies such as Automated Guided Vehicles (AGVs), Robotic Picking, Automated Storage and Retrieval (ASR) and put-wall picking reduce error rates and increases warehouse productivity. Automated Guided Vehicles substitute human labor for addressing challenges regarding processing high-volume liquid at scale. Adverb Technologies is an Indian startup that offers a customized dynamo AGV with different guidance systems

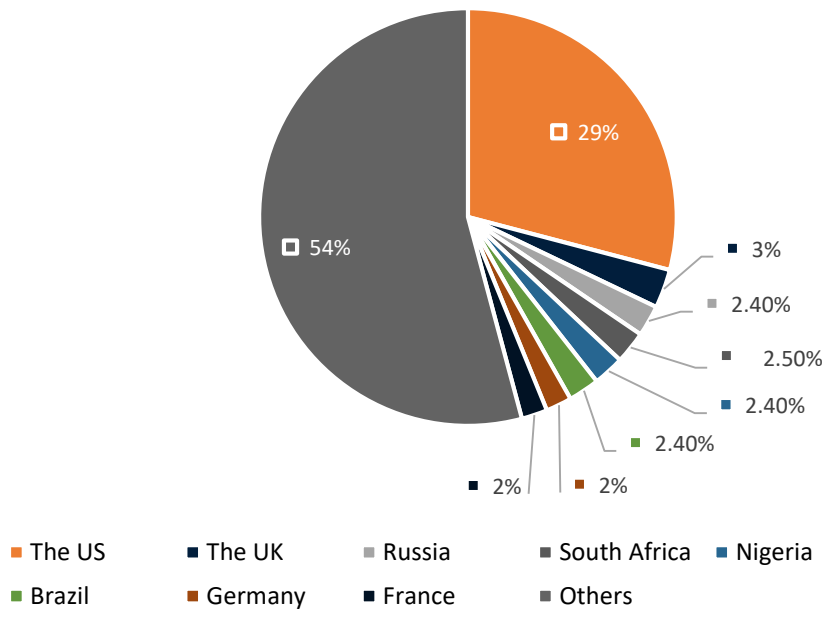
including laser, inertial, wire, and magnetic tape. Dynamo requires minimum to no human interference in the execution of loading and unloading of liquid materials.

These cutting-edge containment systems are used by liquid shipping businesses to safeguard the goods and win consumers' trust. According to experts, using bigger, more robust bulk liquid containers is more cost-effective than using smaller containers, which often have a shorter service life. The logistics sector uses modern, environmentally friendly barrels. It makes use of bulk containers like drums and totes, which are essential in the liquid logistics sector. The Indian liquid logistics business is concentrating on ramping up capacity, improving customer centricity, and accelerating the deployment of new technology in response to the steadily rising consumer demands and a shift in preferences towards product diversity and tailored services. It will make it possible for the liquid logistics sector to meet the potential rise in demand in end-user industries.

11.4.1.2 RISING DEMAND FOR CHEMICALS IN VARIOUS END-USE INDUSTRIES

The demand for chemicals and petrochemicals has significantly expanded as a result of the new trend of consumption and production migrating to South Asian nations across all industries. The government is expanding options for foreign direct investment in these sectors since innovation is the dominant trend in this business. Future success factors for this industry may depend on factors such as proximity to high-growth markets, increased domestic production, ease of doing business, and further development of PCPIRs. The primary growth categories of this business are predicted to be: Petroleum and petrochemicals, specialty chemicals, Chlor alkali, pesticides, medicines, and bulk medications based on all the aforementioned trends and success factors.

FIGURE 50 INDIA DRUGS, PHARMACEUTICALS AND FINE CHEMICAL EXPORTS (2021-22)



Source: The India Brand Equity Foundation

India ranks eighth in worldwide imports and fourteenth in exports of chemicals, giving it a dominant position in both markets (excluding pharmaceuticals). More than 80,000 commercial goods are covered by India's chemicals

sector, which had a market value of INR 12,53,02,000 Lakhs in 2018–19. Due to increased end-user demand for specialized chemicals and petrochemicals, the sector is predicted to develop at a 9.3% CAGR to reach INR 23,48,000 Lakhs by 2025. By 2025, the market for specialized chemicals is anticipated to grow to INR 3,50,000 Lakhs. Regarding the transportation and storage of liquid resources, the barrel is becoming more and more popular. The best rigid packaging options for moving both hazardous and non-hazardous materials, particularly liquids, are these barrels. The mild steel barrels are very simple and practical for storing.

11.4.1.3 THE INCREASE IN THE QUALITY AND GROWING USE OF LOW-CARBON STEEL DRUMS

Low-carbon steels are neither overly ductile nor too brittle because of their low carbon content. They are soft and have little tensile strength. Wear and tear are increased during sliding and rolling contact with tougher materials due to their low hardness. The strength and hardness of steel both rise as the carbon concentration does. Additionally, it loses ductility and gains a little bit more brittleness with lower fatigue strength, which affects its weldability and machinability. The carburization procedure, which is utilized to increase mechanical strength, toughness, wear resistance, corrosion resistance, fatigue strength, ductility, surface hardness, and relief of internal tensions, is being employed by the industry players to address this issue. The use of barrels produced from these materials has expanded due to the mild steel's improved characteristics.

Moreover, the approval for mild steel to be used for storing beverages has significantly increased the demand for these barrels. As the industry is shifting toward sustainable and environment-friendly measures, the demand for recyclable products is also increasing, carbon-steel or mild steel barrels are among the materials that can be recycled even after galvanization, which makes them more prominent in the packaging, storing, and transporting among the end-users.

11.4.2 MARKET RESTRAINTS ANALYSIS

11.4.2.1 AVAILABILITY OF COST-EFFECTIVE SUBSTITUTES

The available substitutes for mild steel barrels are hindering market growth. For instance, Fiber drums are developing into very adaptable industrial transport and storage options. Although fiber drums are made of cardboard, they can store a remarkably wide variety of items, materials, and merchandise. Fiber drums are frequently used to store semi-solids and solids, such as sand, powders, or spices, but they may also be used to hold liquids provided they are equipped with waterproof drum liners. The pharmaceutical, food and beverage, and industrial industries are just a few of the many businesses that regularly employ fiber drums. Since fiber drums are UN-rated, it is safe to store potentially hazardous items in them.

In terms of storage and transportation, mild steel barrels are less expensive than Intermediate Bulk Containers (IBCs). Looking at the form, steel drums' circular shape results in wasted space, whereas IBCs result in optimal space usage. Moving on to the usability aspect, mild steel barrels are less usable than IBCs. Furthermore, because IBCs are fastened to pallets from the bottom, they are easier to handle than drums. IBCs can drain entirely, however, mild steel barrels cannot because the residue accumulates at the bottom. As a result of all of these variables, end-use sectors may gradually shift to IBCs, resulting in a 75% cost savings. Overall, the advantages afforded by IBCs operate as a limitation on the mild steel barrels’ industry.

11.4.2.2 INCREASE IN THE COST OF THE RAW MATERIAL

According to the World Steel Association, reducing carbon emissions from steelmaking would likely result in high initial costs and steel trade concerns as first-mover firms faced with high conversion costs compete with incumbents. Steel and long product prices have risen dramatically since December 2020, as supply has been insufficient to meet end-use demand and supply chain restocking. The Covid-19 issue seriously impacted long product production outside of China, and the recovery was sluggish but surpassed by improvements in perceived demand. Due to a lack of supply and growing demand from steelmakers, global average scrap prices have risen dramatically in 2021. Lower economic activity and tight social distancing measures in 2020, along with bad weather early in 2021, reduced waste creation and collection. The restart of idled steel mills and increased output from others increased scrap demand. Steel sector companies are feeling the heat as a result of high raw commodity costs, as completed steel products have begun to fall since the outbreak of the Russia-Ukraine war.

11.4.3 MARKET OPPORTUNITIES ANALYSIS

11.4.3.1 THE SUSTAINABILITY TREND BY DEVELOPING ENVIRONMENTALLY-FRIENDLY BARRELS

The shift to greener steel in the steel sector will be uneven across areas. Steel manufacturers in Western areas and nations that have previously invested in enhancing sustainability are expected to embrace low-carbon technology more quickly than steel makers in India, where the mix of newer capital assets and cost constraints will compel a more gradual shift. Even in slower-moving nations, steelmakers should make modest investments in process innovations to reduce energy intensity, carbon emissions, and material efficiency, and support the circular economy. Given the sector's relatively huge carbon footprint, even tiny changes will make a significant effect in getting the industry closer to carbon neutrality.

In order to exploit the promise of new technologies and obtain economies of scale while enhancing sustainability throughout the steel value chain, this change will require a tiered digital road plan. And in order to create a greener steel sector, steelmakers will need to collaborate with a wide variety of stakeholders, including governments, the United Nations, universities, communities, and the World Steel Association. Steel is one of the most durable, endlessly recyclable materials on the earth. It is also the most recycled material. As green steel is used to produce green barrels, investing in the development of a more environmentally friendly production method will pay off in the long run.

11.4.4 MARKET CHALLENGES ANALYSIS

11.4.4.1 LOWER CORROSION RESISTANCE POWER OF THE BARRELS

Corrosion resistance power is another significant issue that restricts the market expansion of steel drums. Because the steel barrels can't withstand corrosion, the likelihood of contamination rises. In carbon steel, corrosion is accelerated by a number of circumstances, but the root cause remains constant. The major problem with carbon steel is how much iron is in it. As a result, it is a robust, strong, and reliable solution for construction. Iron, however, has a drawback. When iron is in contact with moisture, oxygen tries to bind with it. Rust, also known as iron oxide, is the end consequence. Rust doesn't just stay in one place when it develops. It has a propensity to spread swiftly and destroy metal. This can quickly result in leaks, pressure losses, and ruptures in a pipe system.

When two metals with different properties come together, an electrochemical process known as galvanic corrosion begins. For example, if stainless steel and carbon steel are joined, the stainless steel may take electrons away from the carbon steel. It can so consume carbon metal. Pitting corrosion develops when your steel's exterior layer develops chips or voids. In essence, this kind of wear creates tiny holes where liquids, chemicals, or other corrosive substances can collect. Concentrated corrosion of this kind might be difficult to detect and result in leaks or serious structural damage. Corrosion can be accelerated by exposure to moisture, dirt, chemicals, and air that is particularly salty. However, anything that erodes metal's surface can allow corrosive substances to get inside and damage metal.

11.5 MARKET ESTIMATES AND FORECAST IN TERMS OF REVENUE (INR LAKHS) AND VOLUME (MILLION UNITS) FOR SEGMENTS AND REGIONS

11.5.1 INDIA MS-DRUMS MARKET REVENUE ESTIMATES AND FORECASTS, BY TYPE, 2019-2030 (INR LAKHS)

TABLE 40 INDIA MS-DRUMS MARKET REVENUE ESTIMATES AND FORECASTS, BY TYPE, 2019-2030 (INR LAKHS)

Type	2019	2020	2021	2022	2030	CAGR (2022-30)
Tight Head	179,059.69	184,226.10	194,920.14	210,975.55	392,461.10	**8.07%**
Open Head	59,428.20	61,380.19	64,689.78	69,740.17	125,333.52	**7.60%**
Total	**238,487.89**	**245,606.29**	**259,609.92**	**280,715.72**	**517,794.62**	**7.95%**

Source: India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data

11.5.2 INDIA MS-DRUMS MARKET VOLUME ESTIMATES AND FORECASTS, BY TYPE, 2019-2030 (MILLION UNITS)

TABLE 41 INDIA MS-DRUMS MARKET VOLUME ESTIMATES AND FORECASTS, BY TYPE, 2019-2030 (MILLION UNITS)

Type	2019	2020	2021	2022	2030	CAGR (2022-30)
Tight Head	4.71	4.53	4.72	4.93	7.13	**4.72%**
Open Head	1.72	1.66	1.72	1.79	2.51	**4.30%**
Total	**6.43**	**6.19**	**6.45**	**6.73**	**9.65**	**4.61%**

Source: India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data

11.5.3 INDIA MS-DRUMS MARKET REVENUE ESTIMATES AND FORECASTS, BY END USE, 2019-2030 (INR LAKHS)

TABLE 42 INDIA MS-DRUMS MARKET REVENUE ESTIMATES AND FORECASTS, BY END USE, 2019-2030 (INR LAKHS)

End Use	2019	2020	2021	2022	2030	CAGR (2022-30)
Chemical Industry	63,661.69	65,495.88	69,300.63	75,011.96	139,587.96	**8.07%**
Oil and Petroleum	33,492.84	34,472.41	36,459.39	39,447.07	73,135.04	**8.02%**
Food and Beverage Industry	60,495.46	62,406.47	65,851.98	71,082.20	129,185.36	**7.75%**
Healthcare	52,923.44	54,691.81	57,607.92	62,070.25	111,065.24	**7.54%**
Other	27,914.46	28,539.73	30,389.99	33,104.26	64,821.01	**8.76%**
Total	**238,487.89**	**245,606.29**	**259,609.92**	**280,715.72**	**517,794.62**	**7.95%**

Source: India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data

11.5.4 INDIA MS-DRUMS MARKET VOLUME ESTIMATES AND FORECASTS, BY END USE, 2019-2030 (MILLION UNITS)

TABLE 43 INDIA MS-DRUMS MARKET VOLUME ESTIMATES AND FORECASTS, BY END USE, 2019-2030 (MILLION UNITS)

End Use	2019	2020	2021	2022	2030	CAGR (2022-30)
Chemical Industry	1.79	1.72	1.80	1.88	2.72	**4.73%**
Oil and Petroleum	0.92	0.88	0.92	0.96	1.39	**4.68%**
Food and Beverage Industry	1.62	1.56	1.62	1.69	2.39	**4.42%**
Healthcare	1.39	1.34	1.40	1.45	2.02	**4.21%**
Other	0.71	0.68	0.71	0.75	1.14	**5.41%**
Total	**6.43**	**6.19**	**6.45**	**6.73**	**9.65**	**4.61%**

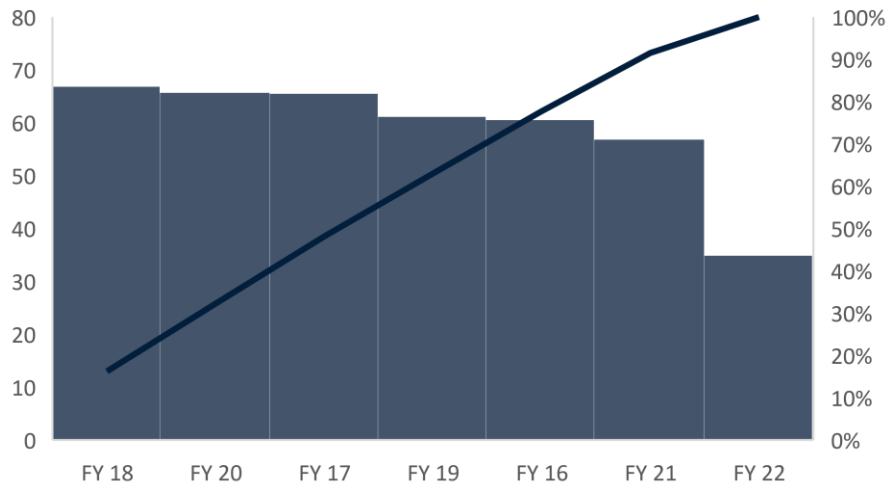
Source: India Plastics Manufacturers' Association (AIPMA), Indian Plastics Federation, Packaging Industry Association of India, Plastics Trade Association, IPMMI, PIAI, PMMAI Company Annual Report, Primary Interviews, Reports and Data

11.6 INDIA MS-DRUMS ANALYSIS

The mild steel barrels are basically consumed by chemical, beverage, paints & coatings, lubricant, inks & dye industries due to the rising demand for secure and rigid packaging in various end-use industries. The chemical sector is growing at a faster pace. The chemical industry is expanding at a quicker rate. According to the India Brand Equity Foundation (IBEF), the Indian chemical sector's market size is predicted to reach INR 17,97,000 Lakhs by 2022, up from INR 15,03,000 Lakhs in 2020. Additionally, India is exporting more chemicals abroad. Chemical exports totaled INR 1,452 Lakhs in 2019, rising to INR 1,607 Lakhs in 2020. The big chemical companies are eyeing the Indian market for chemical manufacture, which would enhance exports.

India is taking a number of steps to increase the export of Indian wine, which presents a chance for the producers of mild steel barrels. For instance, the London Wine Fair, 2022 from June 7–9, which is regarded as one of the most significant wine trade events in the world, was made possible by the Agricultural and Processed Food Products Export Development Authority (APEDA), which operates under the auspices of the Ministry of Commerce and Industry. Resvera wines, Sula vineyards, Good drop wine cellars, Hill Zill wines, KLC wines, Soma vine village, Grover Zampa vineyard, Plateaux Vintners, ASAV vineyards, and Fratelli vineyards were among the Indian exporters who took part in the London Wine Fair. There are 12 joint venture businesses with a permitted capacity of 33,919 kilo-liters per annum for the manufacturing of alcoholic beverages made from grains, with India being the third-largest market for alcoholic drinks in the world. A total of 56 facilities manufacture beer with permission from the Indian government. This suggests that there will be a continuous demand for barrels for storage, transport, and export, further boosting the market demand of mild steel barrels in India.

FIGURE 51 THE EXPORT OF PETROLEUM PRODUCTS FROM INDIA FY2022 (MMT)

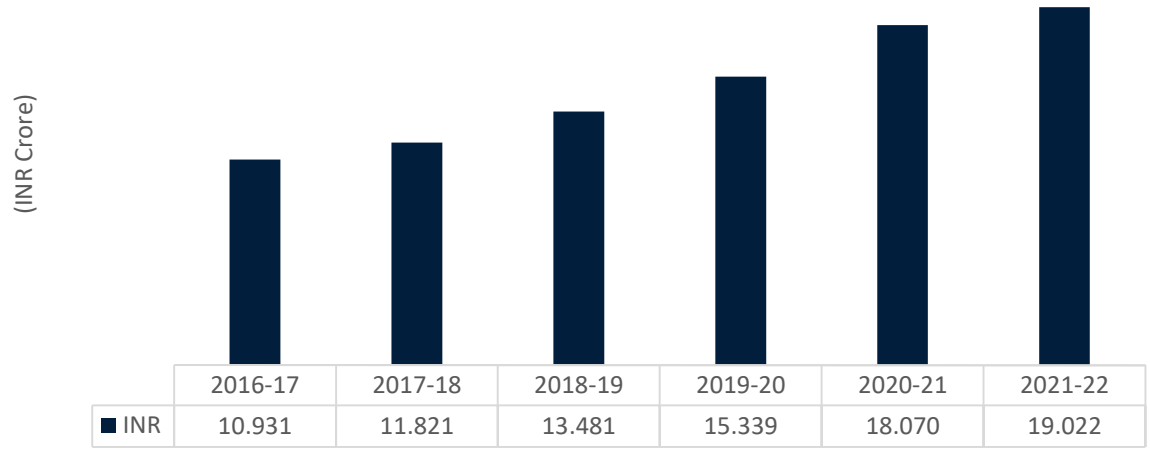


Source: Invest India

India exported 62.7 MMT of petroleum products in FY22. These petroleum products and crude oil were valued at INR 3,41,000 Lakhs. 4.24 MBPD worth of crude oil was imported in FY22, totaling INR 9,30,000 Lakhs. In addition, the IEA (India Energy Outlook 2021) projects that India's main energy consumption would almost double to 1,1230 lakh tons of oil equivalent by 2021 as the country's gross domestic product (GDP). India is

anticipated to provide one of the biggest worldwide contributions to the increase in non-OECD petroleum consumption. India used 204.23 MMT of petroleum products in FY22. In FY22, High-Speed Diesel accounted for 38.84% of all petroleum product consumption in India, making it the most popular oil product. The need for mild steel barrels for storage, dispensing, and other uses has increased as a result of the rise in consumption.

FIGURE 52 INDIA'S DRUG AND PHARMACEUTICAL EXPORT TREND (INR CRORE)



Source: Press Information Bureau, India

According to IBEF, In the global pharmaceuticals sector, India is a significant and rising player. India is the world's largest supplier of generic medications, accounting for 20% of the worldwide supply by volume and supplying about 60% of the global vaccination demand. The Indian pharmaceutical sector is worth INR 5,681.34 Lakhs worldwide. In August 2021, the Indian pharmaceutical market increased at 17.7% annually, up from 13.7% in July 2020. According to India Ratings & Research, the Indian pharmaceutical market revenue is expected to be over 12% Y-o-Y in FY22.

Mild steel barrels are used by the medical sector to transport and store drugs and medical equipment in a secure manner. Since mild steel drums may be used to carry in bulk the essential chemicals, liquids, and materials needed to create medical goods, the pharmaceutical sector is one of the largest consumers of mild steel drums. 5.92% of the worldwide market for medicines and medications are sold in India. Formulations and biologics accounted for the majority of India's exports (73.31%), followed by drug intermediates and bulk medicines. In 2021-22, the country exported pharmaceutical items a 2% increase over the previous year. Exports increased by 18% year on year in 2020-21. Despite worldwide supply chain interruptions, lockdowns, and decreased manufacturing, this strong result was accomplished.

11.7 INDUSTRY SWOT ANALYSIS

11.7.1 MARKET STRENGTH ANALYSIS

According to the Economic Complexity Index (ECI) India's economy ranked sixth in the world in terms of GDP, 18th in terms of total exports, 12th in terms of total imports, 150th in terms of GDP per capita, and 40th in terms of economic complexity in 2020. Mild steel barrels are among the prominent packaging solutions opted for these imports and exports. As, these barrels are made of steel, which makes them extremely durable and virtually leak-proof. They are excellent for toxic and hazardous substance storage, transportation, and containment. Due to their strength, they won't readily bend, split, or rip during transport, providing the highest level of protection. In addition to being unlikely to rip or leak, they also offer a defense against fire damage. The inside materials of a storage facility will be well-insulated if a fire breaks out there. Steel barrels are a good choice if acquiring a smaller storage place and need to maximize the space available because they are also simple to stack on top of one another. Barrels also have the advantage of being easily recyclable once they have served their purpose. As a result, they are a wise choice for anybody looking for a storage drum that is durable and won't harm the environment.

The increase in export volume shown below strongly implies that mild steel barrels will be in great demand for storing and carrying items for export. The top five exports from India are refined petroleum (INR 1,95,500 Lakhs), packaged medicines (INR 1,37,500 Lakhs), diamonds (INR 1,23,000 Lakhs), rice (INR 634.3 Lakhs), and jewelry (INR 584.9 Lakhs). These goods are primarily sent to the United States, China, the United Arab Emirates, Hong Kong, and Germany. Additionally, in May 2022, India's top exports included petroleum products (INR 662.2 Lakhs), pearls, precious stones, semiprecious stones, iron, and steel, drug formulations, biologicals (INR 122.1 Lakhs), and gold and other precious metal jewelry.

11.7.2 MARKET WEAKNESS ANALYSIS

The absence of global players in the nation is a significant disadvantage. Companies are taking advantage of possibilities to extend outside local borders since globalization has been a prominent trend in the early twenty-first century. Despite problems such as transportation and logistics, supplier prices, fluctuating marketing techniques, and cultural instability, multinational firms offer substantial benefits over local organizations. More diversified and cost-effective income streams, resources, suppliers, and labor are among them. Although it might be challenging, multinational corporations have access to a far larger talent pool. Many organizations build up global work teams so that employees in marketing or human resources may communicate digitally with coworkers throughout the whole organization. Another benefit is having varied staff who get along with different groups of people and business partners. Another HR perk is the opportunity to shift individuals around to different places and jobs. A worldwide corporation may save a lot of money by diversifying its workforce. Many developed-world businesses have found it beneficial to outsource portions of their industrial activities to developing nations with lower labor costs. For the same reason, a lot of services—including telephone helplines for technical support—have gone abroad. These reasons make the presence of global players important.

11.7.3 MARKET OPPORTUNITY ANALYSIS

The government is dedicated to boosting Indian exports in overseas markets, and appropriate interventions are made on a regular basis. To facilitate the duty-free import of raw materials and capital goods for export manufacturing, schemes such as the Advance Authorization Scheme and the Export Promotion Capital Goods (EPCG) Scheme are being implemented. The country has seen a surge in worldwide demand for Indian commodities. Factors such as the government's substantial fiscal stimulus and a more permissive posture by global central banks all helped to India's export development. There were also serious externalities, such as covid's second wave in India, deteriorating supply chain disruptions, the Russia-Ukraine crisis, which resulted in sanctions against Russia, and the current comeback of covid in China. All of this has resulted in significant volatility in commodity prices for crude oil and agricultural products, among other commodities traded by India.

Petroleum products, which increased 157% year on year from April 21 to February 22, were a substantial contributor to the export milestone. However, the 68% Y-o-Y average price increase affected this more than the 53% quantity growth throughout the time. Because India imports more than 80% of the crude oil necessary to make petroleum products for the global market, a rise in input prices (73% increase in crude futures prices) raised the expenses and hence the values of petroleum products. Similarly, with a 9% proportion in Indian exports, gems and jewelry had a 57% year-on-year increase in value but a small increase in exports. As a result, the increase in value may be entirely attributable to the growth in the prices of precious metals and jewels. However, there are a few commodities with exceptional quantity-based increases in FY22. By focusing on and promoting these goods, India may steadily increase its worldwide market share while maintaining a fair yearly growth rate in exports. The fiscal stimulus will increase India's share of global commerce. However, consistent volume-based export development over the next few years would be required for the country to establish itself as a top provider of quality goods globally. Ms-barrel players to achieve higher targets, need to design a detailed strategy and identify sectors that can serve as potential export-growth drivers, create efficient client relations, target specific countries for particular exports, and make necessary innovation and development.

11.7.4 MARKET THREAT ANALYSIS

Many governments impose import restrictions in order to protect domestic markets from international competition. This is referred to as protectionism. Countries do this primarily to meet domestic political needs. There are several kinds of trade obstacles. Protective tariffs, import quotas, trade embargoes, and voluntary export limits are the four basic forms. The protective tariff, which is a levy on imported products, is the most frequent sort of trade barrier. Tariffs are used by countries to earn revenue and protect home sectors from competition from cheaper imported goods. Tariffs are among the simplest levies to implement since they elicit minimal political opposition and may be imposed on commodities before they reach the nation. Protective tariffs may assist certain domestic manufacturers, but they do not benefit consumers. Tariffs raise the cost of imported products. Instead of needing to decrease their pricing to compete with inexpensive imports, domestic companies may raise their prices to match the imports' inflated costs. Tariffs raise the price of all items for customers. These tariffs may pose restrictions to import capacity and may reduce the demand for barrels to some extent.

11.8 COMPETITIVE LANDSCAPE

FIGURE 53 MS DRUMS MARKET: COMPANY SNAPSHOT, 2022

Competition Landscape – India MS Barrels Market					
Company Profile	**Greif, Inc.**	**Balmer Lawrie & Co. Ltd.**	**Gujarat Containers Ltd.**	**Sicagen India Ltd.**	**Stavig Industries, LLC**
Headquarter	**Ohio, United States**	**West Bengal, India**	**Gujarat, India**	**Maharashtra, India**	**Oregon, United States**
Revenue (INR)	**INR 49,509.80 Crore**	**INR 2,092.46 Crore**	**INR 149.78 Crore**	**INR 836.41 Crore**	**-**
Product	• Agitator Steel Drum • Bitumen Steel Drum • Conical Steel Drum • Drum 360 • Large Steel Drum • Light Steel Drum	• MS Barrel	• M.S. Plain Barrels • Galvanized Barrels	• MS Drums	• Steel Drums • 7A Type A Steel Drums
Market Presence	▪ United States ▪ Europe, MEA ▪ Asia Pacific, and other America	▪ India ▪ United States ▪ Netherland ▪ Germany ▪ Belgium ▪ Singapore	▪ India	▪ India ▪ Rest of the World	▪ Germany
Market Strategy					M

Agreements & Partnerships P **New Product Development** N **Investment & Expansion** I **Mergers & Acquisition** M

Source: Company Annual report, Reports and Data, Primary Interview

Key participants in the MS drums market are Bombay Chemicals Pvt. Ltd., Gujarat Containers Ltd., PraClaD Containers LLP., Balmer Lawrie & Co. Ltd., Sicagen India Ltd., Yashraj Containeurs Ltd, Greif Inc, Stavig Industries, LLC, Skolnik Industries, Inc., and The Cary Company.

The market is currently witnessing increasing efforts by players in terms of expansions as companies try to gain a competitive edge over the market by sharing ideas and resources with their counterparts. Market players are also resorting to strategies like merger & acquisition wherein they are strategically forming alliances with crucial end-users or organizations in both the public and private sectors. This is helping them to gain a competitive advantage in terms of sales.

11.8.1 STRATEGY BENCHMARKING

Players in the MS drums market employed various strategies like merger & acquisition over the study period of 2019-2023, in order to increase their market, share by reaching out to a newer portion of potential consumer base as well as holding the current consumer base through various tactics. The players in the market also heavily ramped up their efforts for research and development in order to develop a new product and thus make a unique offering in the market.

Of all the strategies employed during the review period, merger & acquisition was one of the leading strategies. Besides, since the market is dynamically growing, players in the market are making attempts to acquire the companies in regions across the globe to expand their geographical footprint in the market. Some of the notable strategies were adopted by The Cary Company. In Oct, 2021, the company has acquired Containers Unlimited in order to place a leading provider of drums, IBCs and industrial packaging and expands the geographical presence in the Intermountain and West Coast regions.

TABLE 44 MERGER & ACQUISITION IN THE MS DRUMS MARKET, 2019-2023

DATE	COMPANY NAME	DESCRIPTION
Oct-21	The Cary Company	The company has acquired Containers Unlimited in order to place a leading provider of drums, IBCs and industrial packaging and expands the geographical presence in the Intermountain and West Coast regions.
Aug-22	Stavig Industries, LLC	Stavig Industries East LLC has announced to acquire Chicago Steel Container of Chicago, Illinois

Source: Company Annual report, Reports and Data, Primary Interview

11.9 BOMBAY CHEMICAL PVT. LTD.

Bombay Chemical Pvt. Ltd.	**Type:** Private
	Industry: Manufacturing
	Founded: 1942
	Headquarters : Maharashtra, India

11.9.1 COMPANY SUMMARY

Bombay Chemical Pvt. Ltd., formed in 1942, is one of the largest manufacturers of public health natural pyrethrum products & pest control products in India. The company involved in manufacturing metal and HM HDPE barrels, tortoise brand mosquito coils and other household products. The company distribute its barrel products in domestic as well as in export markets. The company offers various types of metal barrels such as epoxy coated, food grade, poly lined, galvanized, open mouth, closed mouth with one, two or three bungs. The company's HM-HDPE barrels are also available in different capacities, weights and colors.

11.9.2 PRODUCTS OFFERED

PRODUCT	DESCRIPTION	APPLICATION
Industrial Galvanised Barrels	• Electroplated with zinc from inside and outside. • Available in various sizes to meet the specific requirements, and are used for different industrial purposes • Fully leak-proof, galvanized barrels are used for storing the hazardous and aromatic material	• Industrial purposes

Source: Company Website, News & Press Releases

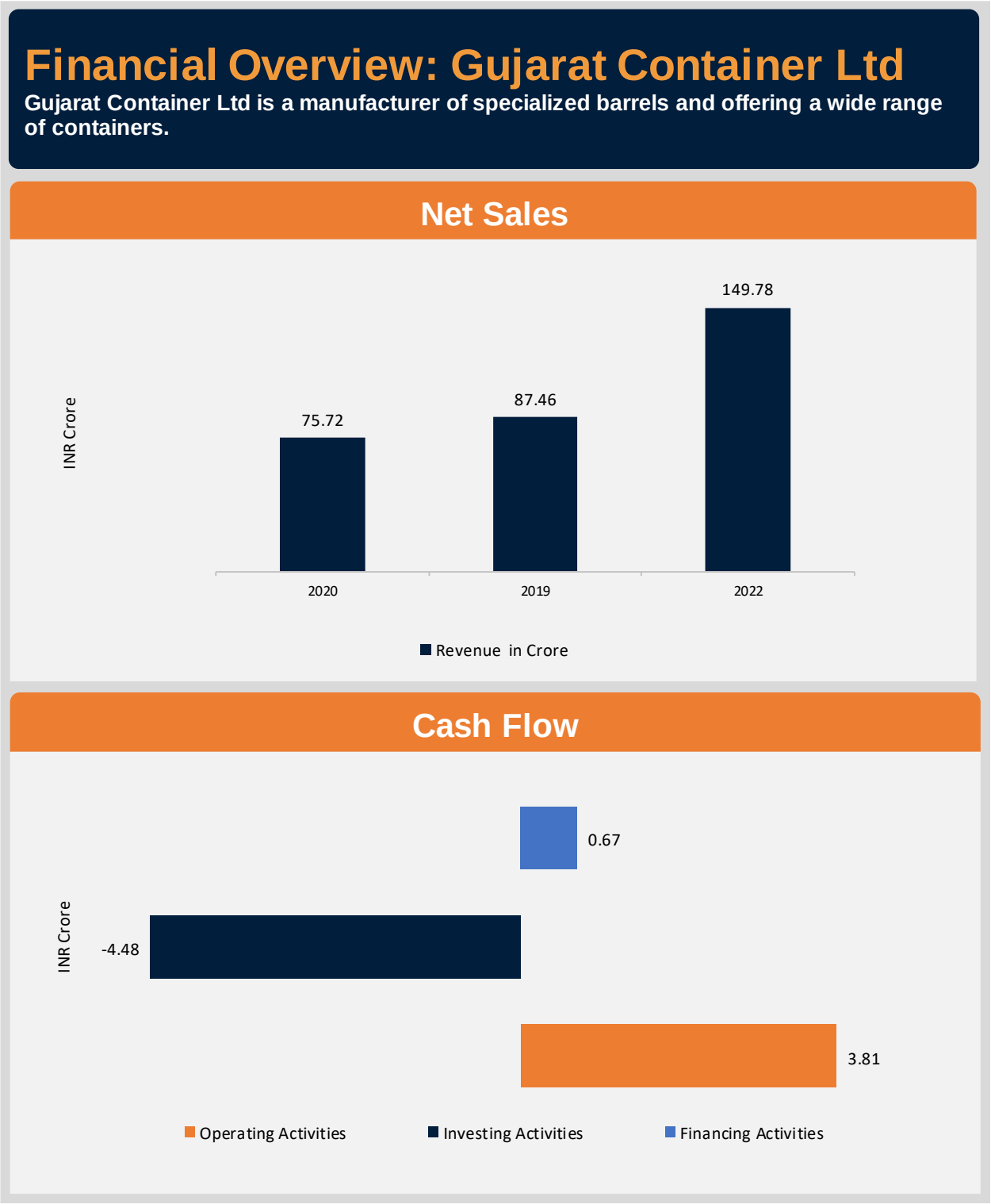
11.10 GUJARAT CONTAINERS LTD.

Gujarat Containers Ltd.	**Type:** Public
	Industry: Manufacturing
	Founded: 1992
	Headquarters : Gujarat, India
	Website: www.gujaratcontainers.com

11.10.1 COMPANY SUMMARY

Gujarat Containers Ltd. was founded in 1992 and is headquartered in Gujarat, India. The company has only one reportable business segment of manufacturing of steels barrels as the primary reportable business segment. The company is a manufacturer of specialized barrels and offering a wide range of containers. The company offer a choice of configurations, linings and covers to transit materials. The company offers wide range of barrels such as galvanized barrels, epoxy barrels. composite barrels, all side welded barrels, open top barrels, M.S. Plain barrels, NRV barrels, carboys & liners, GP sheet barrels, HM-HDPE barrels & jerry cans. Its products are served to different industries including plethora of chemicals, agro chemicals (pesticides, insecticides, etc.), aromatic products, paints, coatings and dyestuff, food products, petroleum products & their by-products, lubricating oils, pharmaceutical, hazardous chemicals, and resins.

11.10.2 FINANCIAL INSIGHTS



Source: Company Website, Annual Report, News & Press Releases

11.10.3 PRODUCTS OFFERED

PRODUCT	DESCRIPTION	APPLICATION
M.S. Plain Barrels	• M.S. Plain barrels are manufactured from 16 gauges to 22 gauges from fresh CRCA Sheet / Coil. • The top will be provided with two screw type Trisure Bungs having 20 mm and 50 mm diameter each. • The cap of the bung is provided with a gasket of PP / Rubber / HDPE as per customer requirement	• -
Galvanized Barrels	• Galvanized barrels are zinc electroplated on insides and outsides with zinc coating ranging from 10 to 40 microns as per requirements. • Galvanized drums are used for the storage of extremely hazardous chemicals, strong solvents, fragrance, etc.	• Chemicals, • Strong solvents, • Fragrance, etc.

Source: Company Website, News & Press Releases

11.11 PRACLAD CONTAINERS LLP.

PraClaD Containers LLP.	**Type:** Private
	Industry: Manufacturing
	Founded: 2015
	Headquarters : Gujarat, India
	Website: www.pracladcontainers.com

11.11.1 COMPANY SUMMARY

PraClaD Containers LLP., was founded in 2015 and is headquartered in Gujarat, India. The company is engaged in manufacturing and supplying of an exhaustive range of barrels, containers & drums. It has a wide range of products including MS plain barrels, composite barrels, epoxy coated barrels, open top epoxy coated barrels, open top barrels, welded barrels, and GP sheet barrels and can be available in special size with storage capacity of 50 Liters up to 250 Liters. The company serves its products to demanding markets including packaging chemicals, pesticide, food, oils, bulk drugs, pharmaceuticals and other high value products. Further, the company operate its production facility at Ahmedabad, India.

11.11.2 PRODUCTS OFFERED

PRODUCT	DESCRIPTION
M. S. Plain Barrels	• M.S. Plain Barrels are manufactured from 16 gauges 22 gauges from fresh CRCA sheet coil. • The top will be provided with two screw type Trisure Bungs having 20mm and 50mm diameters each. • The cap of bung is provided with Gasket of PP/Rubber/HDPE as per customer requirement • It is painted with high quality paint with advance painting techniques.

Source: Company Website, News & Press Releases port, Primary Interviews, Reports and Data

11.12 BALMER LAWRIE & CO. LTD.

Balmer Lawrie & Co. Ltd.	**Type:** Public
	Industry: Oil & Gas
	Founded: 1867
	Headquarters : West Bengal, India
	Website: www.balmerlawrie.com

11.12.1 COMPANY SUMMARY

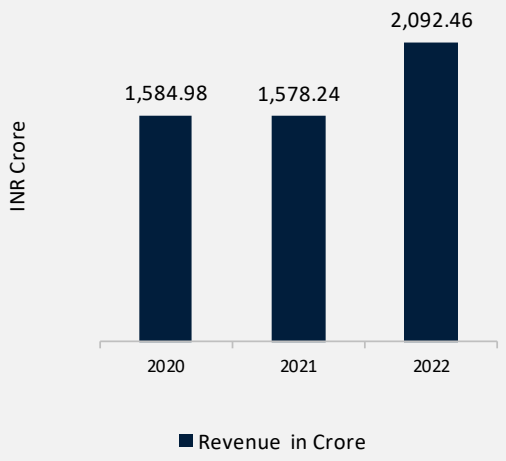
Balmer Lawrie is one among India's leading manufacturer of MS drums. The company produces drum in a range of various thickness configurations to suit different type of products (solid and liquid), type of filling (cold and hot), stack ability (conical and cylindrical) etc. The company's product range in the Industrial packing segment consists of plain steel drums (tight head & open head), lacquer lined drums (tight head & open head), composite drums, galvanized drums, ASEPTON drums, and conical drums. Additionally, the company also operate in the Semi Bulk packaging industry and offer products such as the 200/210-liter capacity MS drums for packaging of lubricating oils & greases, additives, transformer oil, chemicals & agro chemicals, food & fruit products, bitumen, and bitumen emulsion. The company has a distributed manufacturing base with factories in Taloja - Navi Mumbai, Asaoti, Kolkata, Chennai, Chittoor, and Silvassa.

11.12.2 FINANCIAL INSIGHTS

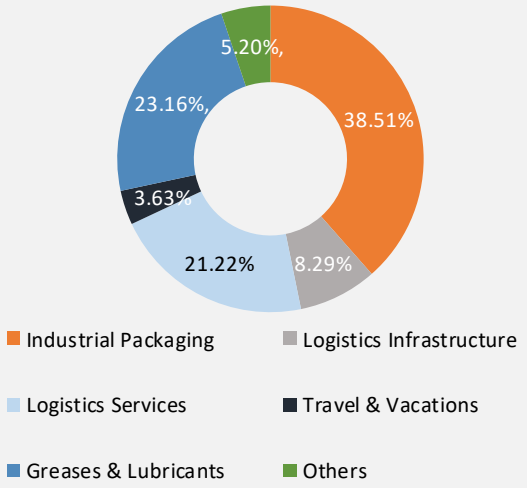
Financial Overview: Balmer Lawrie & Co. Ltd.

Balmer Lawrie is India's leading manufacturer of MS drums. The company produces drum in a range of various thickness configurations to suit different type of products (solid and liquid), type of filling (cold and hot), etc. .

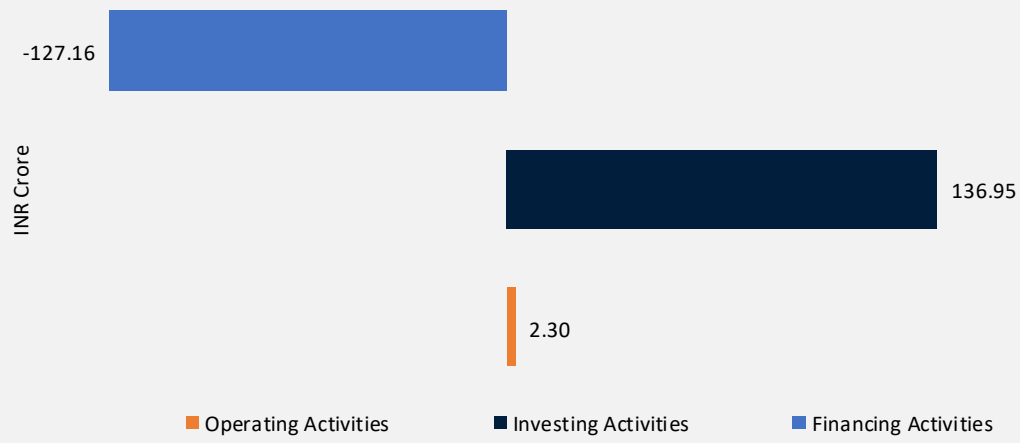
Net Sales



Business Mix



Cash Flow



Source: Company Website, Annual Report, News & Press Releases

11.12.3 PRODUCTS OFFERED

PRODUCT	DESCRIPTION	APPLICATION
MS Barrel	• The company manufacture drums in a range of various thickness configurations to suit different type of products (solid and liquid), type of filling (cold and hot), stack ability (conical and cylindrical) • Offer products such as the 200/210 liter capacity MS drums for packaging of lubricating oil & grease, additives and others	• Lubricating Oils & Greases • Additives • Transformer Oil • Chemicals & Agro Chemicals • Food & Fruit Products • Bitumen • Bitumen emulsion.

Source: Company Website, News & Press Releases port, Primary Interviews, Reports and Data

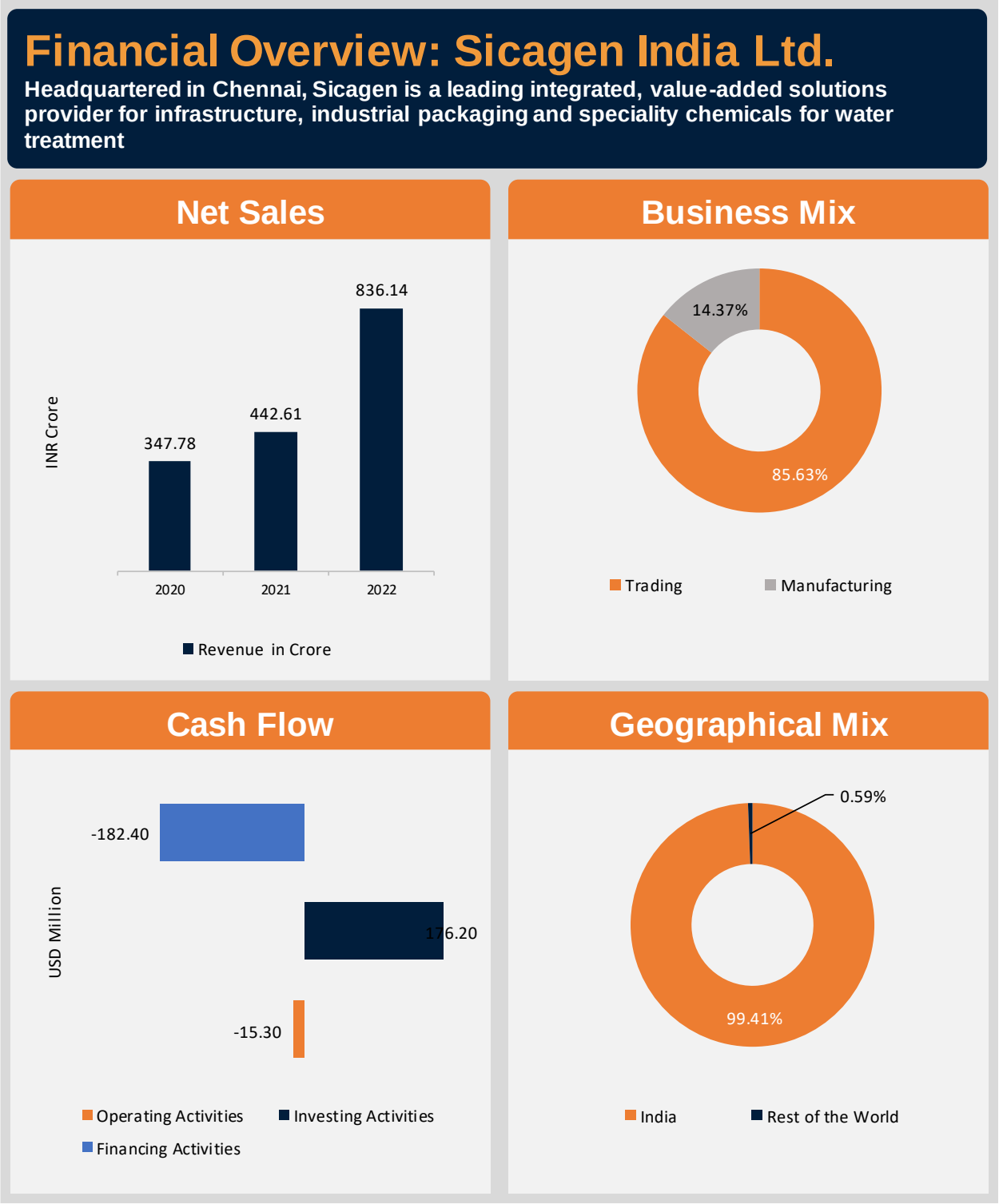
11.13 SICAGEN INDIA LTD.

Sicagen India Ltd.	**Type:** Public
	Industry: Construction
	Founded: 2004
	Headquarters : Maharashtra, India
	Website: www.sicagen.com

11.13.1 COMPANY SUMMARY

Headquartered in Chennai, Sicagen is one of the leading integrated, value-added solutions provider for infrastructure, industrial packaging and specialty chemicals for water treatment. The company offers specialized packaging solutions that help industrial product manufacturers and secure transportation from shipment to shelves. The company businesses consist of building materials, power & control systems, specialty chemicals, industrial packaging, boat building, precision fabrication, and power cables. In industrial packaging division, the company provides two types of drums namely, MS drums and cable reel drums. It has six manufacturing plants, with a presence across India and South East Asia. and with team of 400 plus employees.

11.13.2 FINANCIAL INSIGHTS



Source: Company Website, Annual Report, News & Press Releases

11.13.3 PRODUCTS OFFERED

PRODUCT	DESCRIPTION	APPLICATION
MS Drums	• Made out of Cold Rolled Closed Annealed sheet • Manufactured with or without epoxy inner coating • Packaging options for closed top and open top barrels of 210 litre capacity • PU coating option for MS drums available – increases life span and enhances the aesthetics • Capable of withstanding extremes of temperature, without affecting the strength of the basic structure or its water tightness	• Specialized packaging

Source: Company Website, News & Press Releases port, Primary Interviews, Reports and Data

11.14 YASHRAJ CONTAINEURS LTD

Yashraj Containeurs Ltd	**Type:** Private
	Industry: Industrial Machinery Manufacturing
	Founded: 1993
	Headquarters : Maharastra, India
	Website: www.barrelpeople.com

11.14.1 COMPANY SUMMARY

Yashraj Containeurs Ltd., established in the year 1993, is one of the manufacturer of industrial packaging solutions in India consisting of an extensive assortment of standard and speciality steel barrels. The companies key products segments include Barrel & Drums consist of open top drums, composite drums, epoxy coated/ lacquer lined and close top drums. Open top drums having completely removable top for more access, mainly used to store solids and semi solids. Further, composite drums are consisting of MS drum line with High density polyethylene drum having thickness 1.00 mm / 1.5 mm. Likewise, company has wide range of sizes and thickness with a choice of internal as well as external coatings and configurations. The company has a headquartered in Mumba, India and has a manufacturing sites in Bhimpore, Daman.

11.14.2 PRODUCTS OFFERED

PRODUCT	DESCRIPTION	APPLICATION
Composite drums	• Composite drums are consisting of MS drum line with High density polyethylene drum having thickness 1.00 mm / 1.5 mm. • HDPE liner are of food grade. • Rigid and durable packaging solution	• Suitable for chemicals that are incompatible with steel.

Source: Company Website, News & Press Releases port, Primary Interviews, Reports and Data

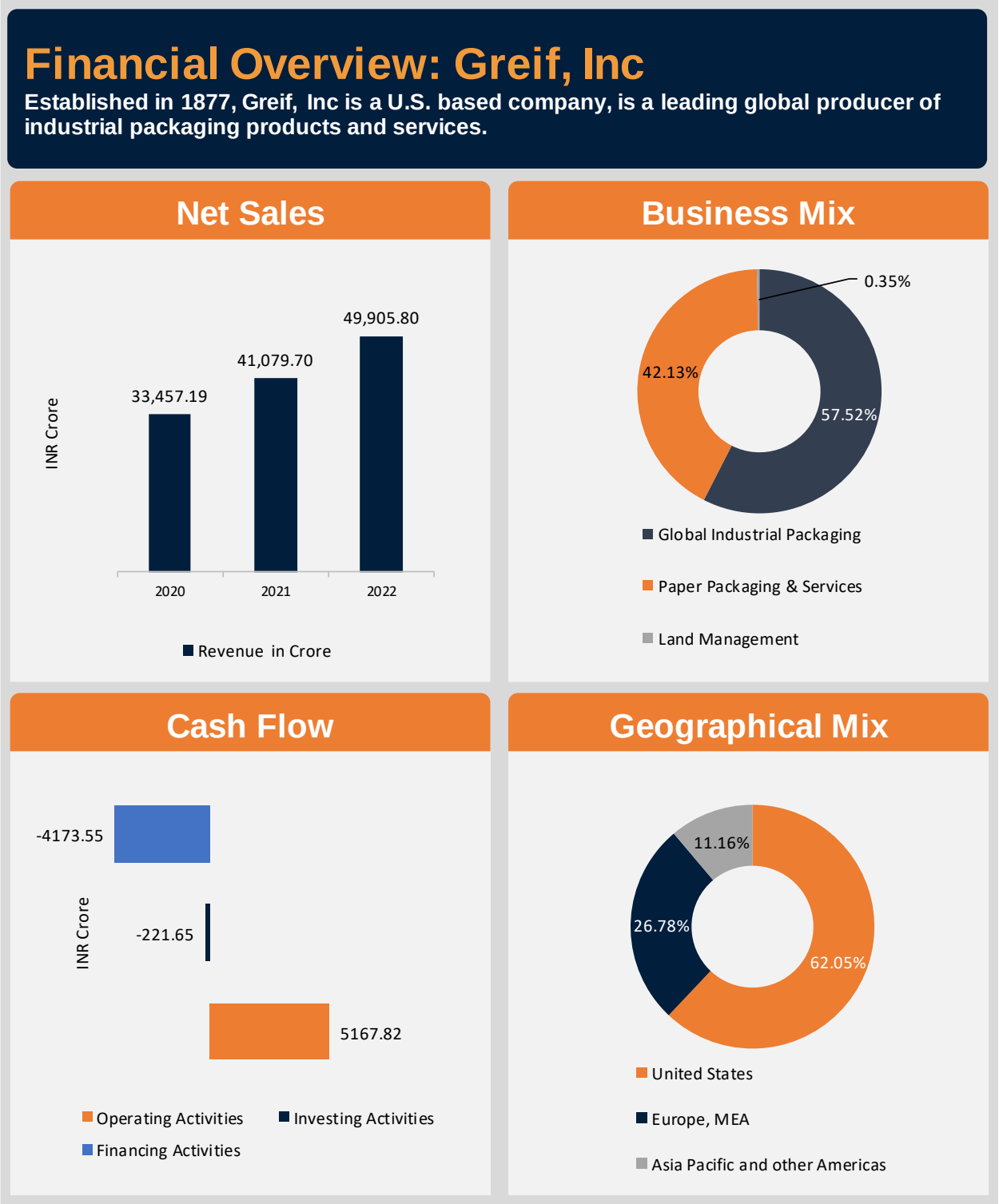
11.15 GREIF, INC.

Greif, Inc.	**Type:** Public
	Industry: Packaging
	Founded: 1877
	Headquarters : Ohio, United States
	Website: www.greif.com

11.15.1 COMPANY SUMMARY

Established in 1877, Greif, Inc is a U.S. based company, is one among leading global producer of industrial packaging products and services and offers a comprehensive line of rigid industrial packaging products, such as steel, fibre and polymer drums, rigid intermediate bulk containers, closure systems for industrial packaging products, transit protection products, water bottles and remanufactured and reconditioned industrial containers, and services, such as container life cycle management, filling, logistics, warehousing and other packaging services. Further, the company produce and sell containerboard, corrugated sheets, corrugated containers and other corrugated products to customers in North America in industries such as packaging, automotive, food and building products. The company also produce and sell coated recycled paperboard and uncoated recycled paperboard, some of which used to produce and sell industrial products (tubes and cores, construction products, protective packaging and adhesives). In addition, company also purchase and sell recycled fiber. The company is among the leading global producer of flexible intermediate bulk containers and related services and has operations in over 40 countries.

11.15.2 FINANCIAL INSIGHTS



Source: Company Website, Annual Report, News & Press Releases

Note: Exchange rate for 2021, 1 USD = INR73.346, for 2020 1 USD = INR 74.102, for 2019 1 USD = INR 70.394

11.15.3 PRODUCTS OFFERED

PRODUCT	DESCRIPTION	APPLICATION
Agitator Steel Drum	• Tight or open head • Blade rides close to the bottom of the drum, enabling full blending of settled pigments • Screen printing available • 210 liters (55 gallon) capacity • Offers precision in cross-mixing	• Industrial applications
Bitumen Steel Drum	• Lightweight drum optimized for easy filling and low-cost upfront delivery. • Available in large and intermediate sizes • Wide opening for quick and easy filling and emptying • Light gauge steel and ISO dimensions for easy, low-cost upfront delivery and reduced CO2 impact	• -
Conical Steel Drum	• Aseptic bags offered for conditioning tomato and fruit paste • Plastic bags are used for frozen citrus juice • Various lid materials are offered by the company • Covers are provided in steel or plastic	• Packaging for the tomato, fruit and vegetable industry
Drum 360	• Drum 360 is an innovative full-print industrial drum product offered • Custom printing on the industrial packaging can differentiate the product	• Food & beverages
Large Steel Drum	• Triple-seam construction with a vertical seam electrically welded • Superior vacuum resistance • Open head available with triple seam safety factor with locking-band alternatives • Can be reconditioned and recycled	• Chemical • Health & beauty • Paints coatings and ink
Light Steel Drum	• Materials and components are in compliance with relevant food contact requirements • Optional screen printing decoration on body • Automatic drum de-stacking machine available	• Lubricants & petrochemical

Source: Company Website, News & Press Releases port, Primary Interviews, Reports and Data

11.16 STAVIG INDUSTRIES, LLC

Stavig Industries, LLC	**Type:** Private
	Industry: Packaging and Containers Manufacturing
	Founded: 1917
	Headquarters : Oregon, United States
	Website: www.staviggroup.com

11.16.1 COMPANY SUMMARY

Stavig Group is one of the largest manufacturer and recycler of rigid packaging solutions in the United States. The company has done various acquisition including Myers Container (Portland, OR and City of Industry, CA), Container Management Services (Hayward, CA), General Steel Drum (Charlotte, NC), North Coast Container (Cleveland, OH) and Chicago Steel Container (Chicago, IL), however each operate independently under its own name and entity. The company has operation in multiple facilities in Oregon, California, North Carolina, Ohio, and Illinois, servicing the new steel drum, reconditioned drum, and IBC needs of their customers. The company is involved in manufacturing steel drums. The company manufacture a line of new steel drums based on customer requirement. Recycling services include industrial plastics, environmentally safe disposal, secure and cost-effective service, and more.

11.16.2 PRODUCTS OFFERED

PRODUCT	DESCRIPTION	
Steel Drums	• The company manufactures a complete line of new cold-rolled steel drums in 10-85 gallon capacities • It has a tight-head or open-head • It is offered in 10, 16, 20, 30, 55 and 85 gallon capacities • Their interior is coated with materials including epoxy or epoxy phenolic • Optional silk-screening, stenciling, and palletization	• -
7A Type A Steel Drums	• Made of carbon steel • The drums are available in 10, 16, 30, 55 and 85 gallon capacities	• Shipping and storage containers

Source: Company Website, News & Press Releases port, Primary Interviews, Reports and Data

11.16.3 STRATEGIC INITIATIVES

DATE	TYPE	DESCRIPTION
Aug-22	Merger & Acquisition	Stavig Industries East LLC has announced to acquire Chicago Steel Container of Chicago, Illinois.

Source: Company Website, News & Press Releases

11.17 SKOLNIK INDUSTRIES, INC.

Skolnik Industries, Inc.	**Type:** Private
	Industry: Packaging and Containers Manufacturing
	Founded: 1985
	Headquarters : Illinois, United States
	Website: www.skolnik.com

11.17.1 COMPANY SUMMARY

Skolnik Industries Inc. is the U.S. based company that produces the carbon steel drums and stainless steel drums for businesses and government agencies with demanding containment requirements. The companies provide products such as salvage drums, stainless steel drums, carbon steel drums, type 7A drums, replacement drums and others. Further. The company offers various steel container options including the popular 55-gallon steel drum, 85-gallon steel drum, and 110-gallon steel drum. In addition to standard and customized stainless steel drums and barrels, the company also manufacturers steel over pack drum, type a radioactive packaging, stainless steel wine barrels, and seamless stainless steel drums. Skolnik Industries products are served in diverse applications and industries - from chemicals to pharmaceuticals, environmental remediation to radioactive waste disposal, transportation to food processing and winemaking.

11.17.2 PRODUCTS OFFERED

PRODUCT	DESCRIPTION	APPLICATION
Carbon Steel Drums	• Durable and heavy-duty package for storage and transportation. • Suitable for packaging a variety of contents, including hazardous materials • Available in open and tight head configurations, in sizes from 5-110 gallons, including the workhorse 55 Gallon Drum. • All carbon steel drums are manufactured of ASTM grade carbon steel.	• Storage and transportation.
7A Type A Steel Drums	• Made of carbon or stainless steel • Drums are available in five to 110 gallon capacities. • The product can manufacture based on custom designs in both carbon and 304, 316 and 409 stainless steel.	• -

Source: Company Website, News & Press Releases port, Primary Interviews, Reports and Data

11.18 THE CARY COMPANY

The Cary Company	**Type:** Private
	Industry: Packaging and Containers Manufacturing
	Founded: 1895
	Headquarters : Illinois, United States
	Website: www.thecarycompany.com

11.18.1 COMPANY SUMMARY

Founded in 1895, the Cary Company is one of the leading supplier for packaging & containers, pail, drums & IBC totes, filtration products, temperature control products and spill control & containment and others. The company offers a wide selection of packaging and containers from plastic, glass and metal containers to drums, IBCs and paint cans. In addition to bottles and jars, the company carry a variety of caps, sprayers, pumps, shrink bands and more. It also offers design and labeling services to customize the container. In addition to these products, it also specializes in logistics and design services, including specialty shipping of chemicals and other sensitive items. Furthermore, the company serve its products to myriad industries such as paint and coatings, apiary, asphalt, automotive, brewery, building, chemical, electronics, food, foundries, graphic arts, oil and grease, paper, plastics, personal care, pharmaceuticals, putty, caulks, sealants, rubber, detergents and wallpaper.

11.18.2 PRODUCTS OFFERED

PRODUCT	DESCRIPTION	APPLICATION
Carbon Steel Drums	• Steel Drums are offered in 5 to 30 gallons and even available in the sought after 55-gallon size. • Reconditioned and new Steel Drums are available. • Steel Drums are available in open head (removable top) or tight head (sealed top with fittings). • Stock Drum linings include epoxy phenolic or unlined	• Shipping, • Packaging, • Storage

Source: Company Website, News & Press Releases port, Primary Interviews, Reports and Data

11.18.3 STRATEGIC INITIATIVES

DATE	TYPE	DESCRIPTION
Oct-21	Merger & Acquisition	The company has acquired Containers Unlimited in order to place a leading provider of drums, IBCs and industrial packaging and expands the geographical presence in the Intermountain and West Coast regions.

Source: Company Website, News & Press Releases

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