Plastics Industry Status Report FY25

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Established in 1987, PLASTINDIA FOUNDATION is the apex body of major associations, organisations, and institutions connected with plastics, focused on promoting the development of the plastics industry and to assist the growth of plastics and related materials. The Foundation is committed towards the nation's growth with the development of plastics sector.

The aim of this organisation is to facilitate the export-led growth of the Indian plastics industry and help boost export growth, both in volume and revenues. It is focused on making India the number one destination for the preferred sourcing base of plastic products in the world.

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Message - President, Plastindia Foundation

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It gives me immense pleasure to present the updated edition of the **Indian Plastics Industry Status Report FY25**, brought out by **Plastindia Foundation** as part of its continued efforts to strengthen knowledge sharing and industry development.

This report provides comprehensive and statistically supported insights across the plastics value chain, covering **polymers, machinery, processing, and finished goods**, while also placing the Indian plastics industry in the context of the evolving global plastics landscape.

As the Indian plastics industry prepares for **PLASTINDIA 2026**, this publication assumes added significance. The updated report includes **new sections on emerging trends, sustainability and recycling initiatives, technological advancements, and policy developments**, reflecting the industry's transition towards innovation, responsible growth and global competitiveness.

I am confident that this report will serve as a valuable reference for **industry stakeholders, policymakers, investors, and participants of PLASTINDIA 2026**, by providing first-hand information backed by facts and figures. It is our endeavour through Plastindia Foundation to empower the industry with credible data that supports informed decision-making and sustainable growth.

I sincerely thank all contributors, stakeholders & Committee Members who have supported the preparation of this report and trust that readers will find it insightful and relevant.

With warm regards,

Ravish Kamath
President
Plastindia Foundation

Message - Chairman, National Executive Council

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I am pleased to present the Plastics Industry Status Report FY25, an updated and comprehensive publication that reflects the evolving dynamics of the Indian plastics industry in a rapidly changing global environment.

This edition of the report has been further strengthened with new sections and deeper analysis across key segments of the industry. It captures the progress made in polymers, processing, machinery, recycling, and end-use applications, while also highlighting India's inherent strengths, policy support, and government initiatives that are shaping the future growth of the polymer and plastics sector.

As we move towards PLASTINDIA 2026, this report assumes greater relevance. PLASTINDIA 2026 is being envisioned as a first-of-its-kind Zero Waste Exhibition, reinforcing the industry's commitment towards sustainability, circular economy, and responsible manufacturing. The insights and data presented in this report align with this vision and will assist stakeholders across the value chain-from raw material suppliers and machinery manufacturers to processors, recyclers, and consumers-in planning their growth strategies.

I compliment the team for their dedicated efforts in compiling this report and thank all contributors for their valuable inputs. Constructive suggestions for further enhancement of future editions of the Plastic Industry Status Report are most welcome, as we continue to improve this publication as a reliable knowledge resource for the industry.

With best wishes,

Alok Tibrewala
Chairman - NEC
Plastindia Foundation

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Bharat Next

Shaping The Future Of Plastics

Bharat Next - Shaping the Future of Plastics

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- **Bharat Next** symbolizes the fusion of India's 7,000+ years civilizational heritage with its transformation into a globally competitive, innovation-driven manufacturing economy. India has emerged as the fastest-growing major economy, driven by strong demographic fundamentals, including a population of **1.45+ billion**, a **young median age of ~28.4 years, rapid urbanisation, and rising incomes**. Together, these factors are generating sustained demand across both consumer and industrial sectors.

- Government-led initiatives such as Make in India, Production Linked Incentive (PLI) schemes, Plastic Parks, Skill India, the digital economy, startup ecosystem development, and infrastructure-led growth are accelerating capacity expansion, technology upgrades, and export competitiveness. Together, these efforts are positioning India as the world's **5th largest manufacturer**, the **5th largest economy by nominal GDP**, and the **3rd largest by PPP**, while deepening integration into global value chains.

- India's strong economic growth among major economies is driving rapid expansion of the plastics industry, strengthening domestic manufacturing capabilities while supporting sustainable development objectives. The sector plays a critical role across packaging, automotive, agriculture, healthcare, and renewable energy, enabling value-chain integration, material efficiency, recycling, and the transition toward a more circular and globally competitive manufacturing ecosystem.

- **The Plastics Industry Status Report FY25** recognises India's plastics industry as an emerging global powerhouse, driven by policy-led emphasis on waste management, recycling, and sustainability through EPR, circular economy initiatives, and **increased adoption of recyclable and biodegradable materials**.

- This Report outlines **Bharat Next's** journey toward a **resilient, future-ready plastics ecosystem**, driven by scale, innovation, policy initiatives, and a strong sustainability focus - positioning India as a global plastics epicentre that would shape the future of Plastics Industry.

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Shaping The Future Of Plastics

Global GDP

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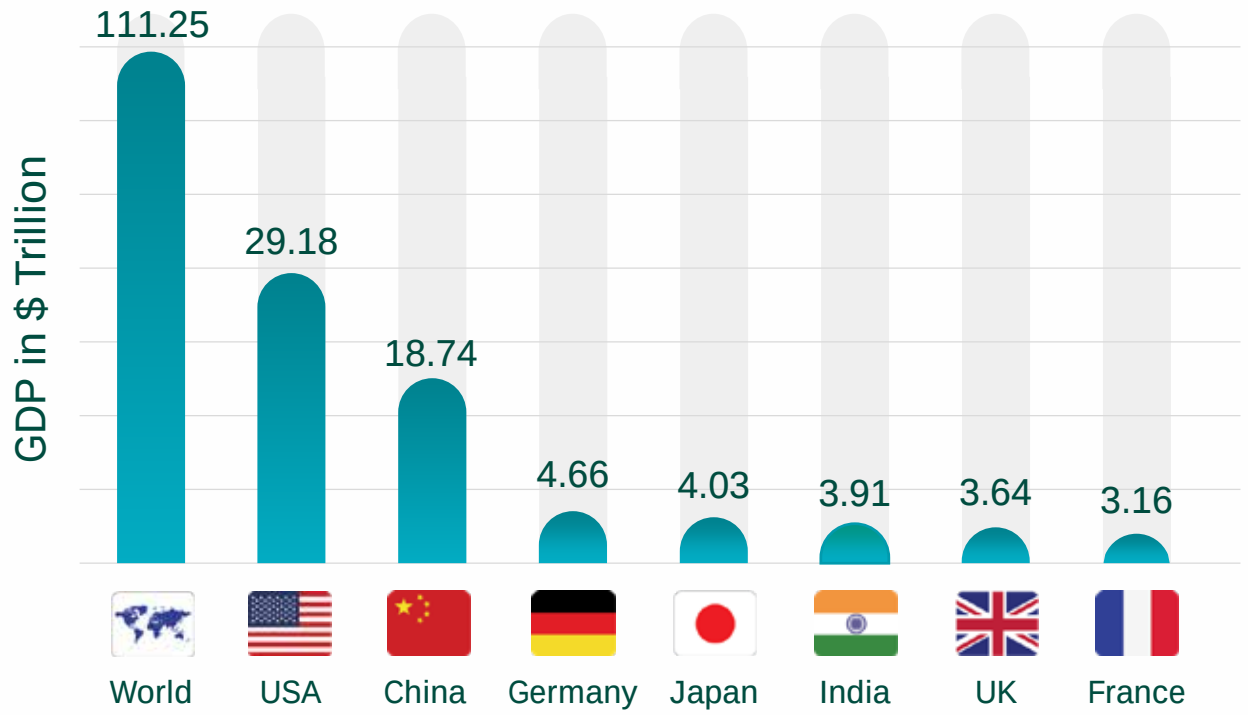
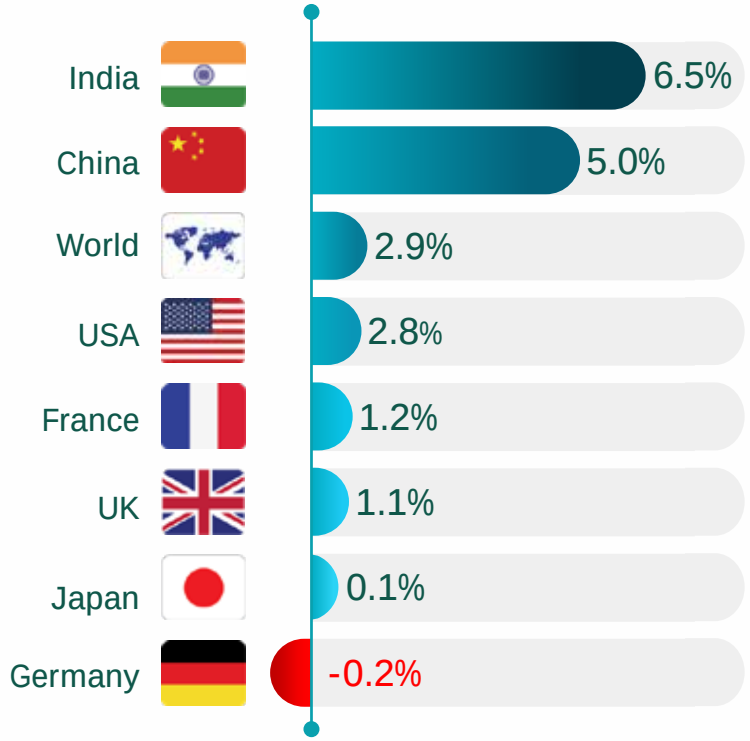
GDP 2024



2024 GDP Growth Rate



India Fastest Growing among Major Economies

Source: World Bank

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Global & BRICS GDP

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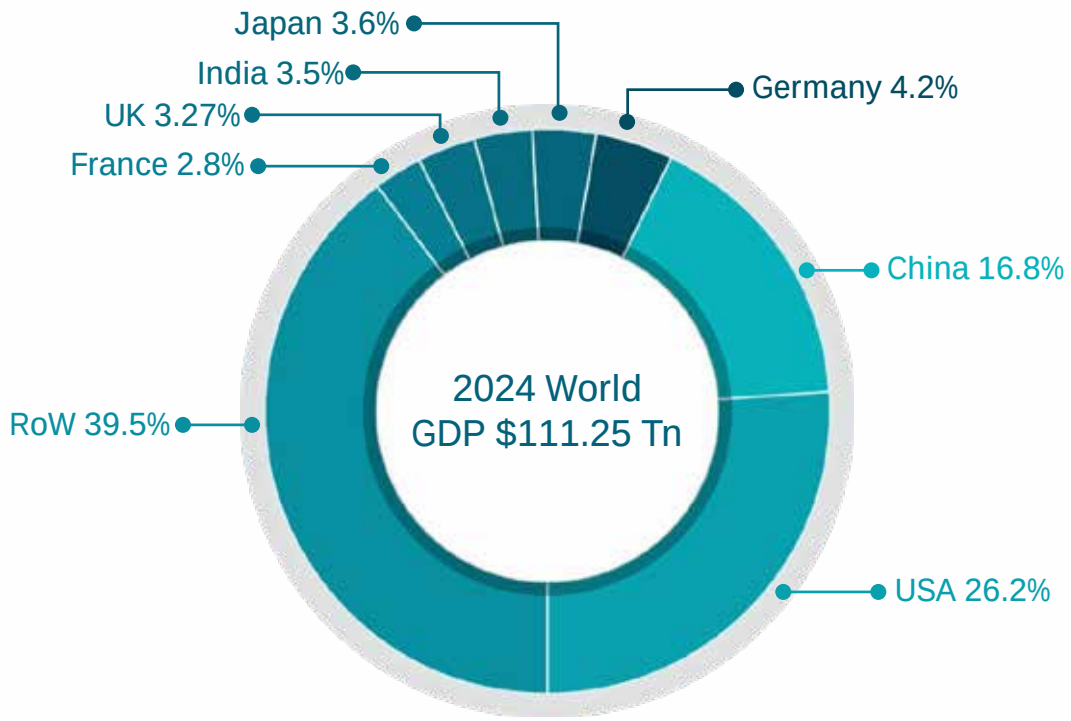
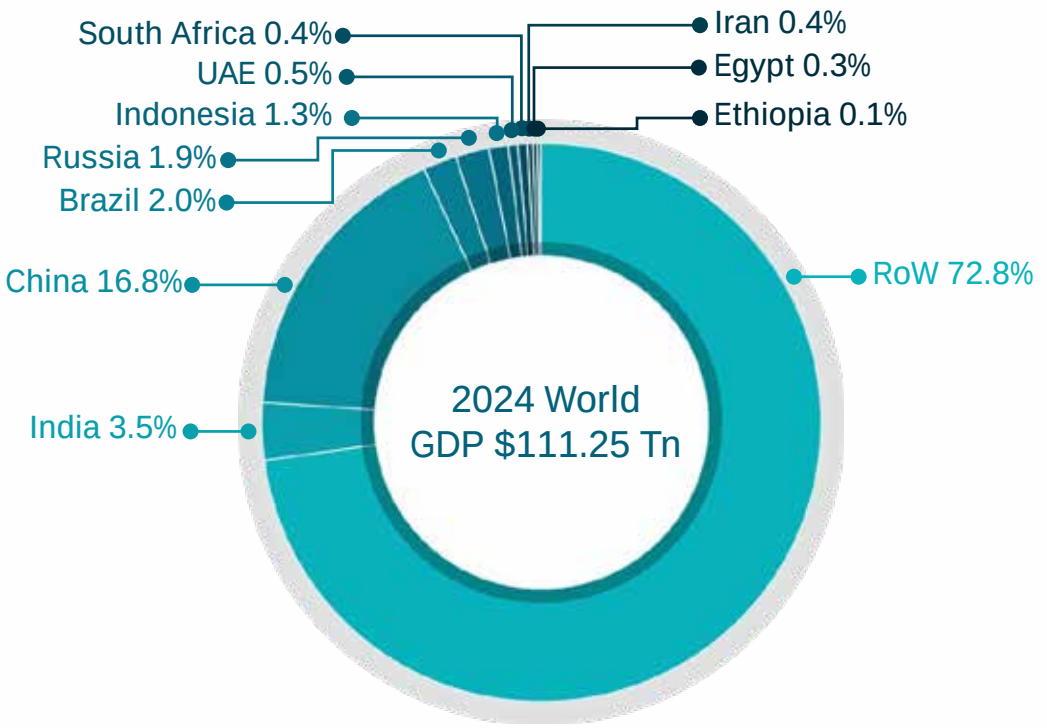
2024 GDP Major Economies



2024 GDP BRICS



Global GDP - Top 7 Economies accounts for 60.5%, BRICS 27.2%

Source: World Bank

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Global GDP & Population

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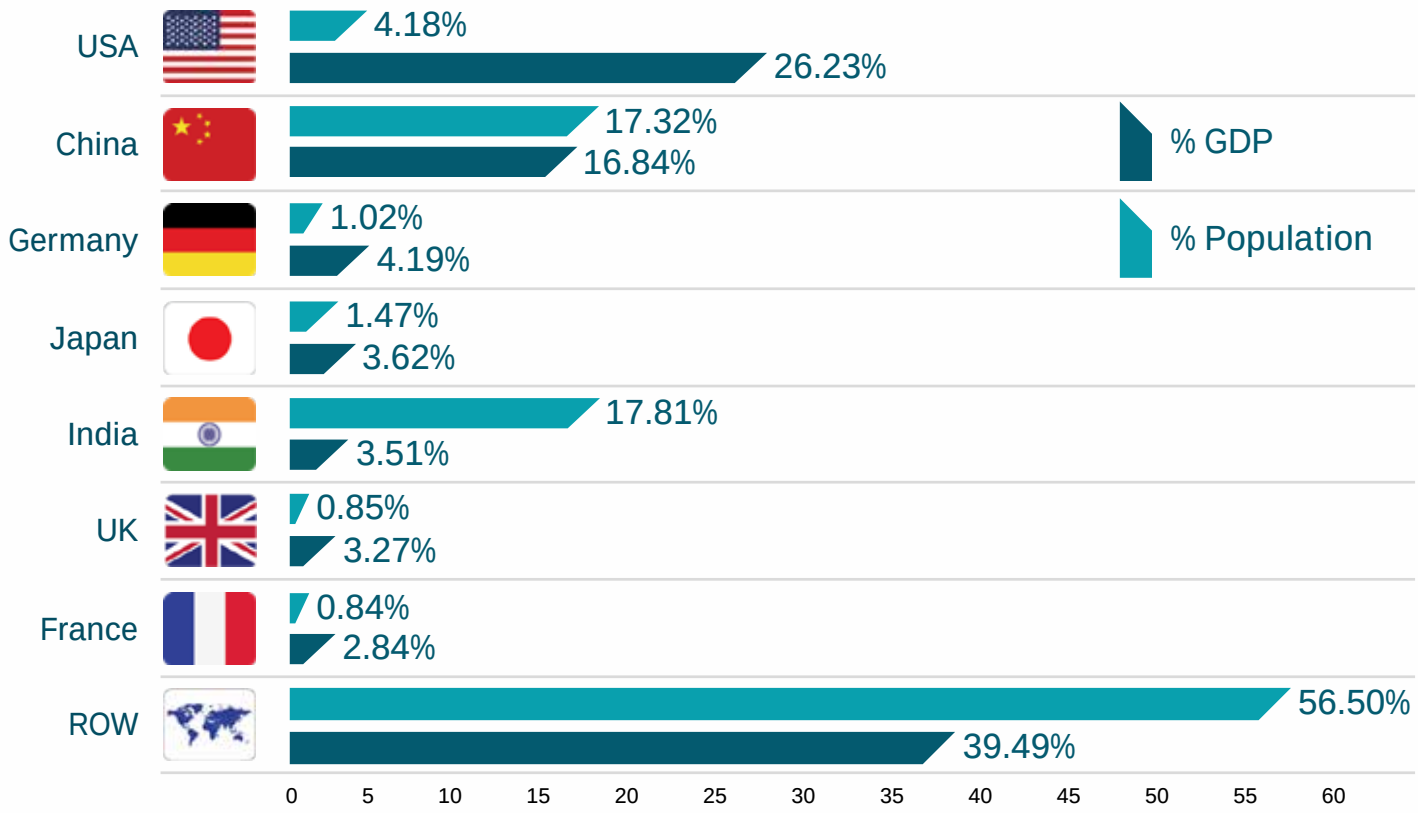
Major Economies GDP & Population



Among Major Economies, India has the least GDP to Population Ratio

Source: World Bank

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GDP Composition - Major Economies

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2024 GDP Composition (%)

India's Economic Leapfrogs: Navigating from Agriculture to Services Economy

Source: World Bank, IMF, Industry Analysis

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Global GDP - 2030 (Forecast)

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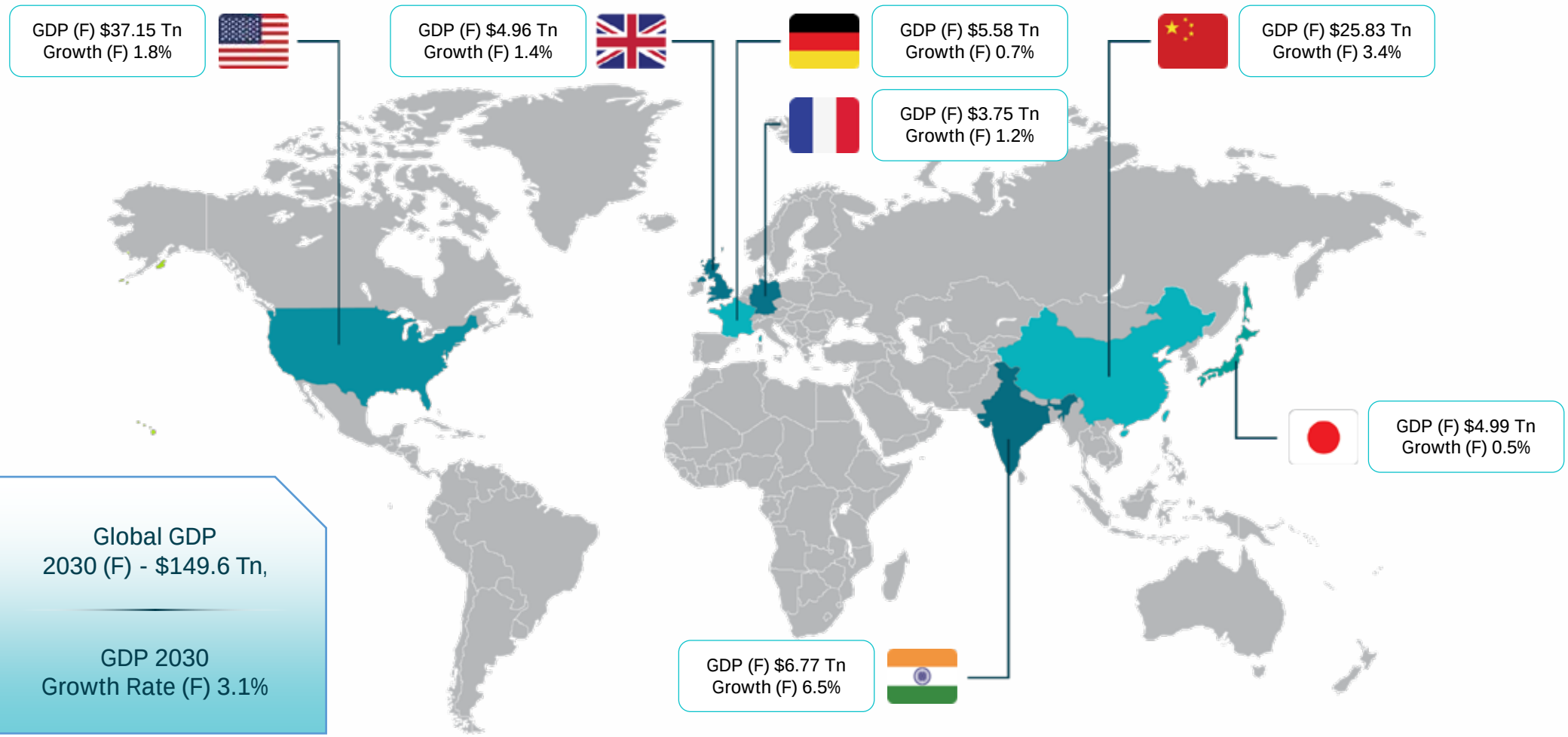

Global GDP
2030 (F) - $149.6 Tn,

GDP 2030
Growth Rate (F) 3.1%

India GDP Forecast $6.77 Tn by 2030

Source: IMF

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Advantage India

Advantage India

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Population 1.45+ Bn
World's Most
Populous Country

World's Largest
Democracy

Life Expectancy
72 years (2023)

Annual GDP Growth 6.5%
(2024) - Highest among
Major Economies

Per Capita Income
₹ 227000

Prospects to become
a 7 Trillion Dollar
Economy by 2031

Advantage India: Talent, Technology and Transformation

Source: World Bank, IMF, PIB, Industry Analysis

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India GDP

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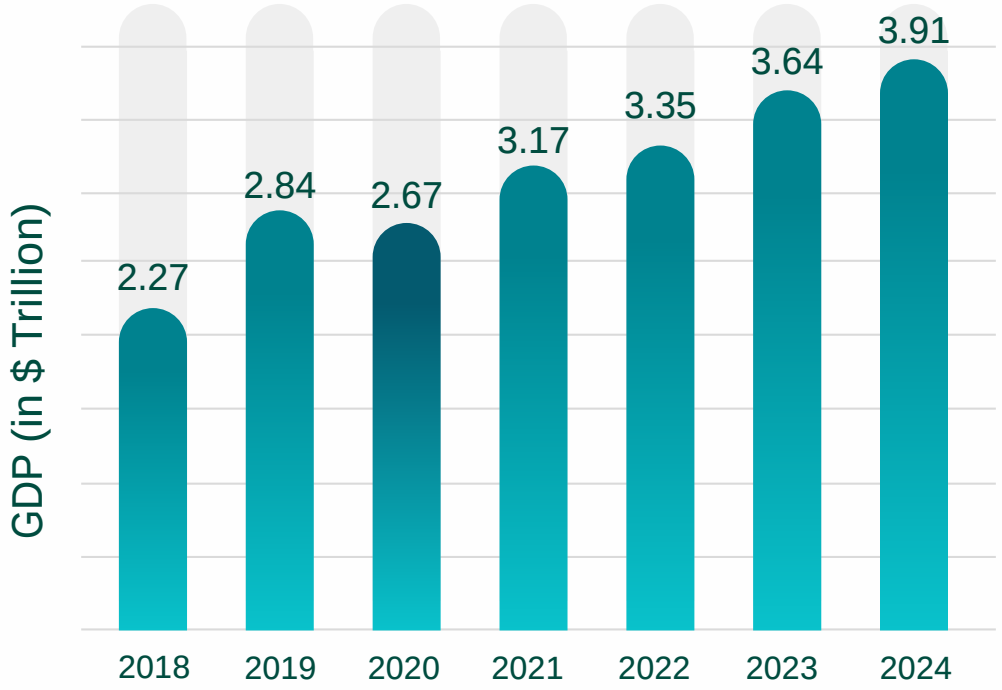
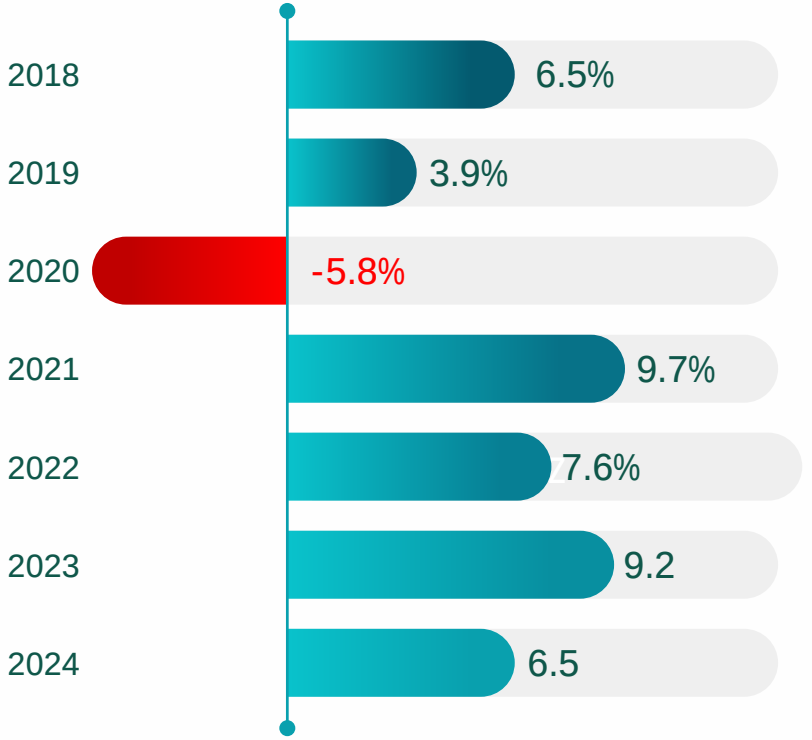
GDP (2018 -2024)



GDP Growth Rate



India GDP Growing at a Faster rate than the World Average

Source: World Bank

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India’s GDP Composition

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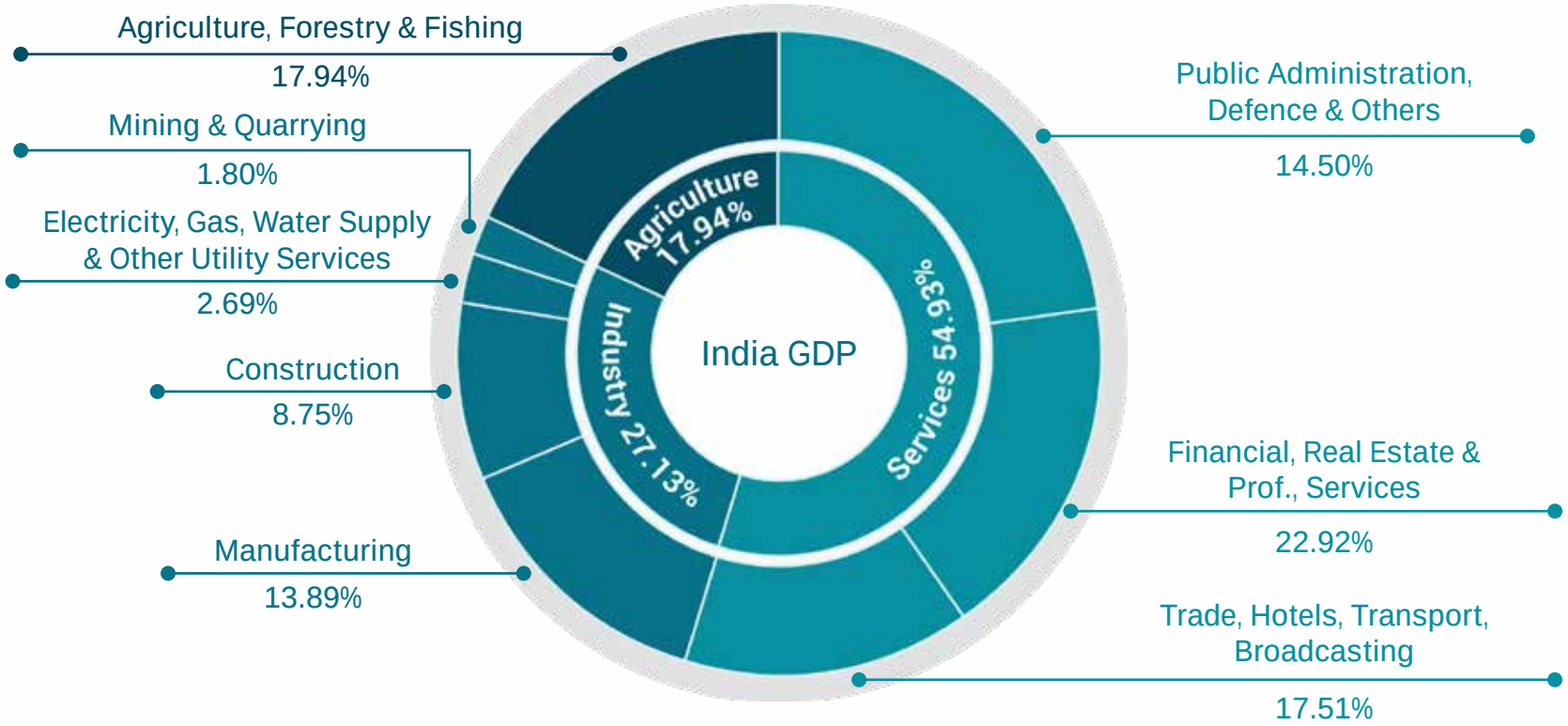
India’s Sector-wise GDP Composition FY25



India’s Economic Strength: A Harmony of Three Sectors

Source: PIB PN 2132688

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India - Key Economic Indicators

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Indicators	Parameters	FY24	FY25
GDP Key Sectors (% Growth)	Agriculture, Livestock, Forestry, Fishing	2.6	4.6
	Manufacturing	12.3	4.5
	Services	8.8	8.9
Inflation	WPI Average (%)	0.53	2.05
Exchange Rate (Average)	Rs/USD	82.79	84.55
Fiscal Deficit	as % of GDP	5.6	4.8
Monetary Indicator %	Base Rate	6.5	6.46

A Resilient India: Strong Economic Indicators

Source: PIB PN 2132688, IMF, World Bank, Investindia, MoSPI

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India Growth Story

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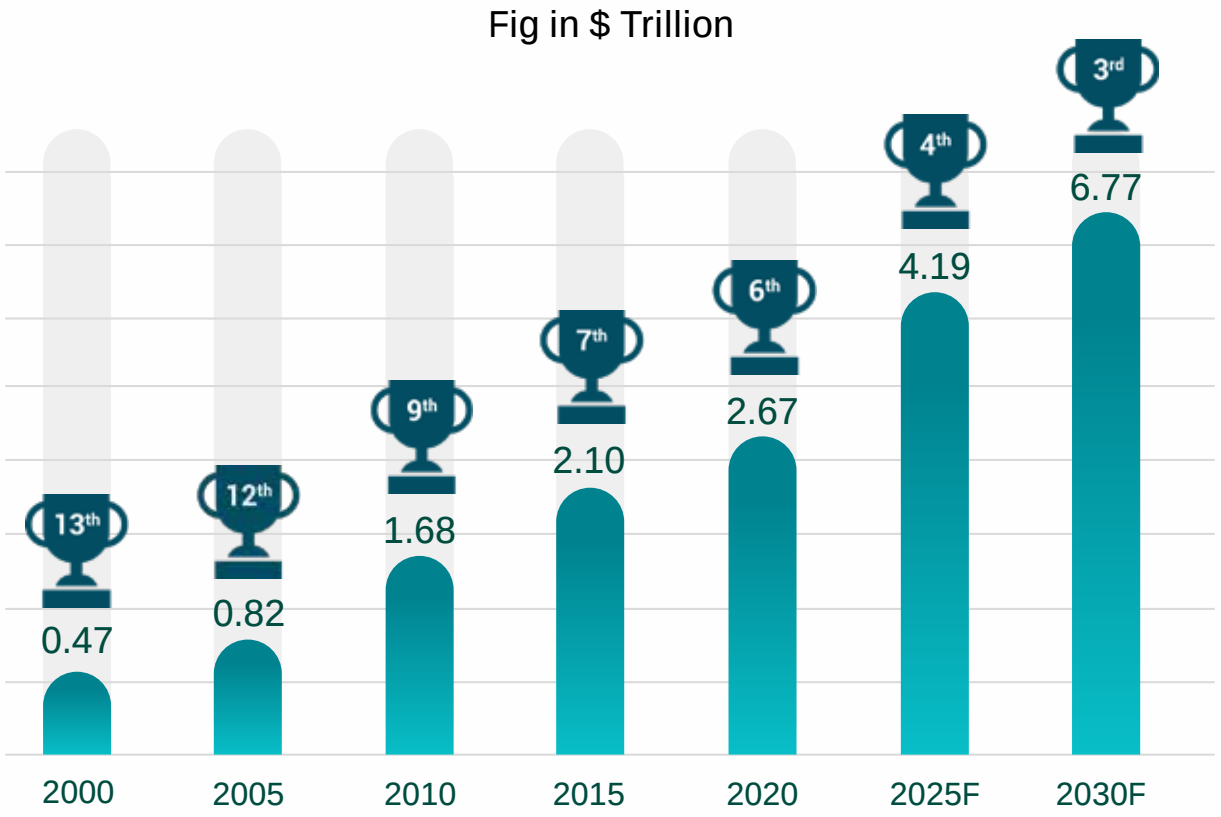
India GDP & Ranking



India Story

Services Sector: India became a service-led economy without first developing a large manufacturing base, unlike other major economies

Industrial Sector: Major Destination for FDI in Manufacturing & Infrastructure. Established Global Leadership in areas like Automotive Components and becoming 'Pharmacy of the World'

Agriculture Sector: Achieved Food Security and self-sufficiency in most food grains, a net exporter of certain crops and the India largest exporter of Rice

India to be the 3rd Largest Economy by 2028

Source: IMF

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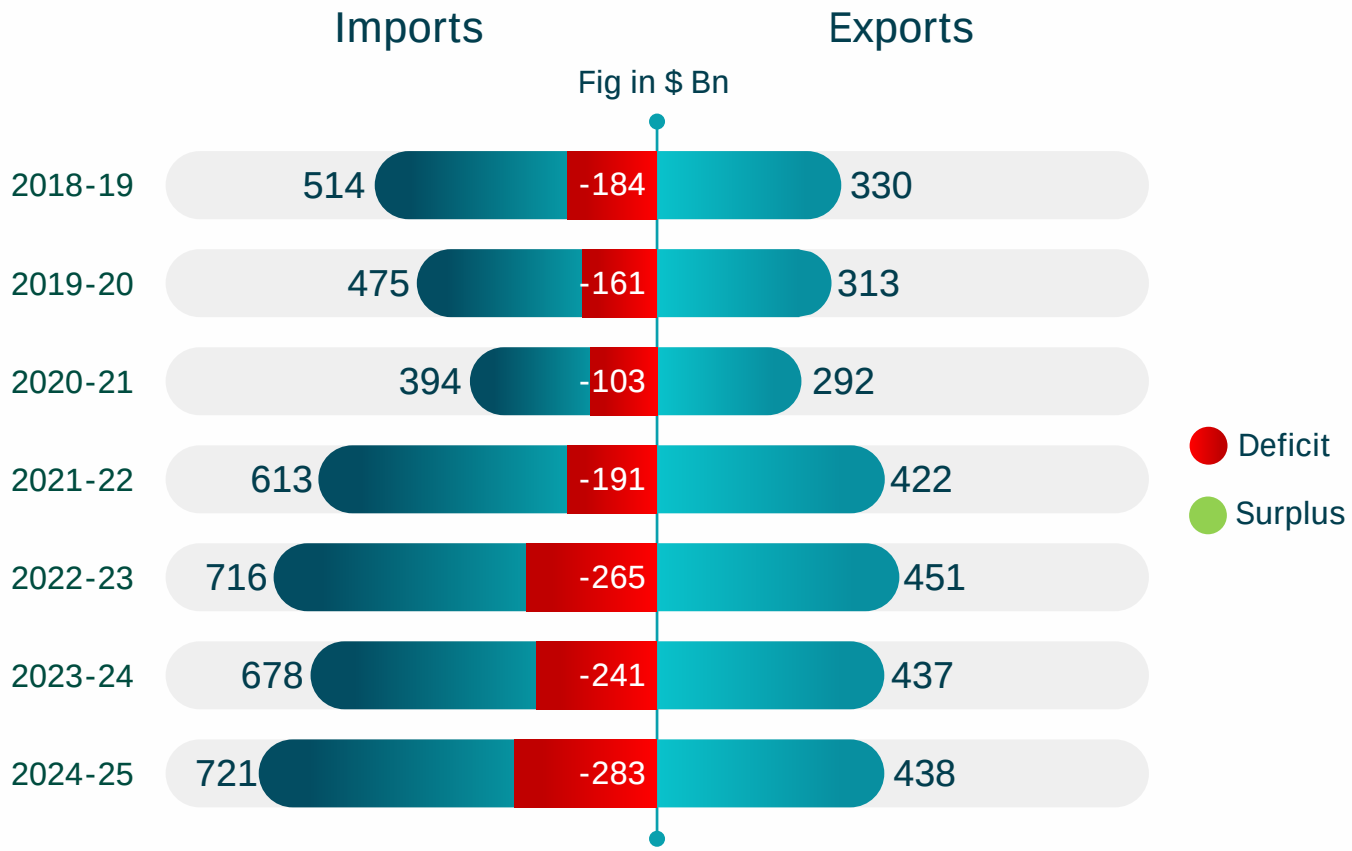
Trade Balance Analysis



India's Trade increased after 2021

Source: Ministry of Commerce and Industry

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India's Merchandised Trade - Country-wise

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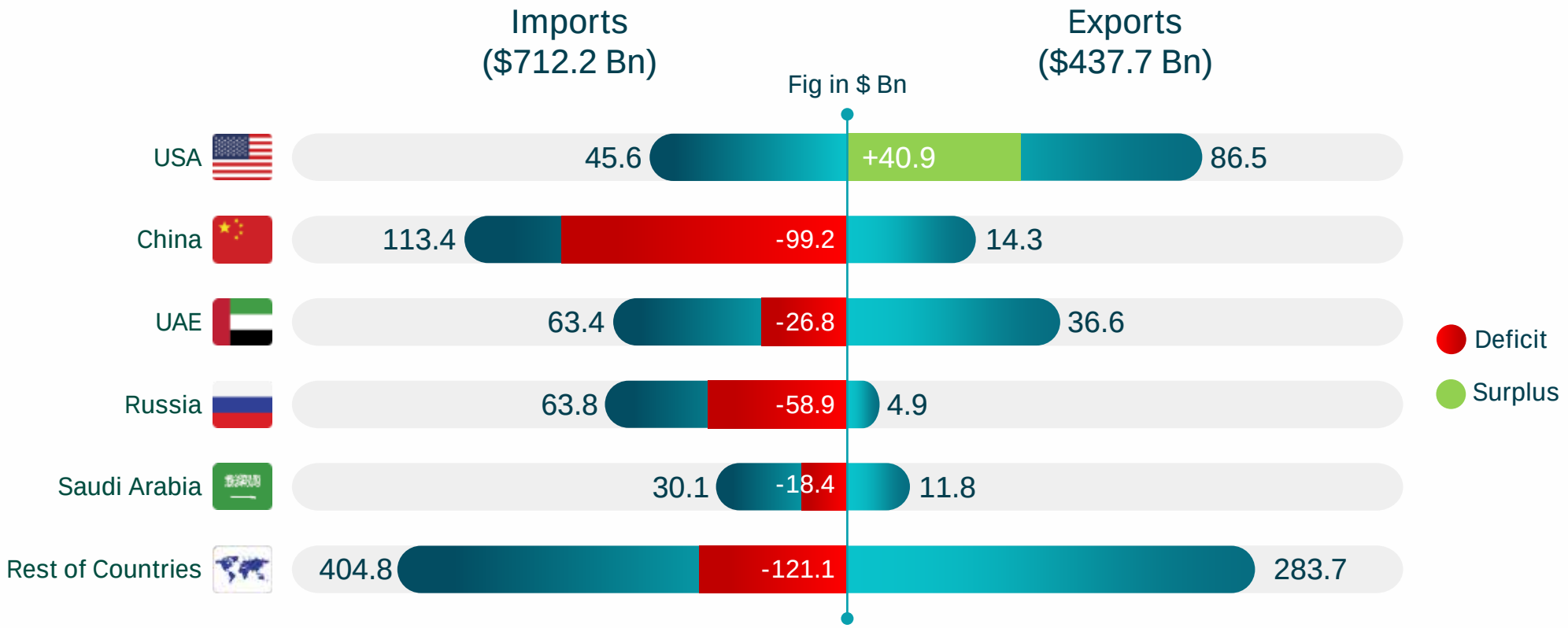
Merchandised Trade Analysis FY25



China accounts for ~34% of India's Trade Deficit

Source: Ministry of Commerce and Industry

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India's Merchandised Trade - Top 5 Chapters

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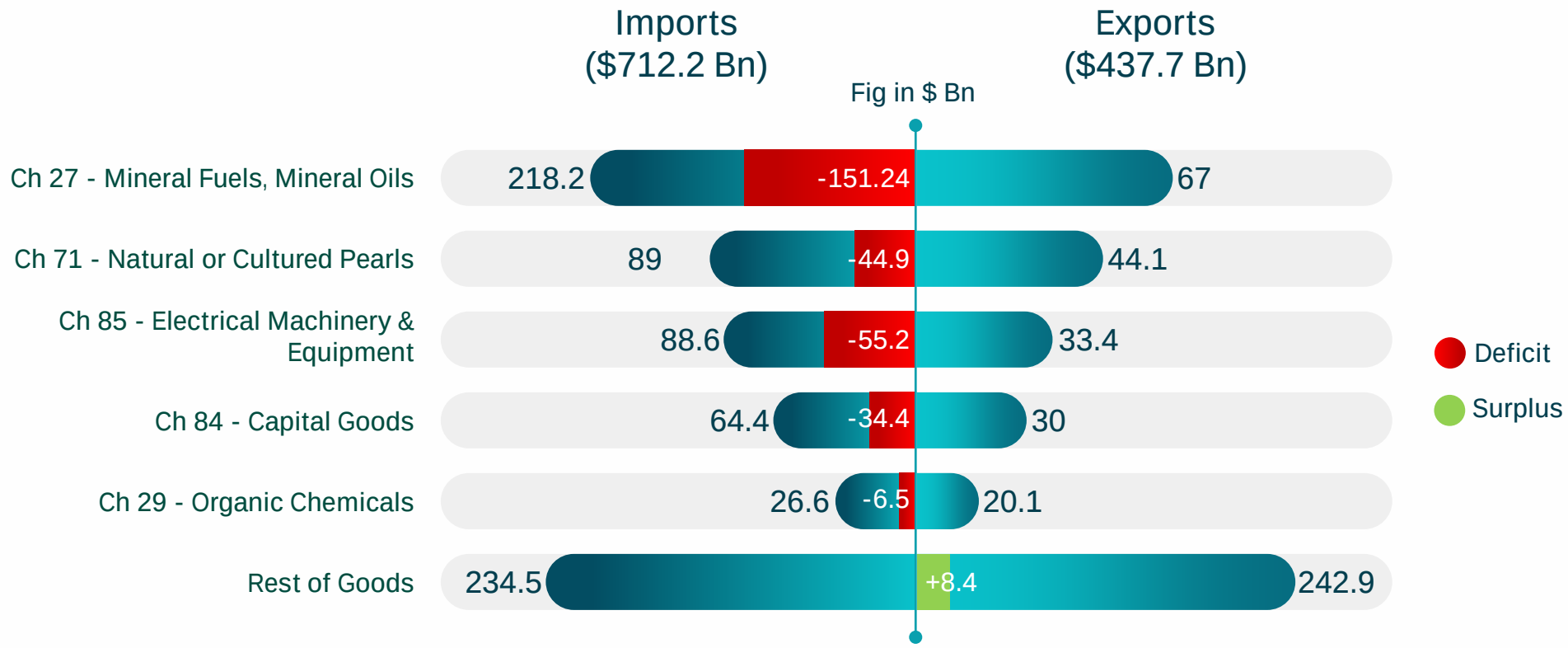
Trade Balance Analysis FY25



Energy Import accounts for 53.4% of India's Trade Deficit

Source: Ministry of Commerce and Industry

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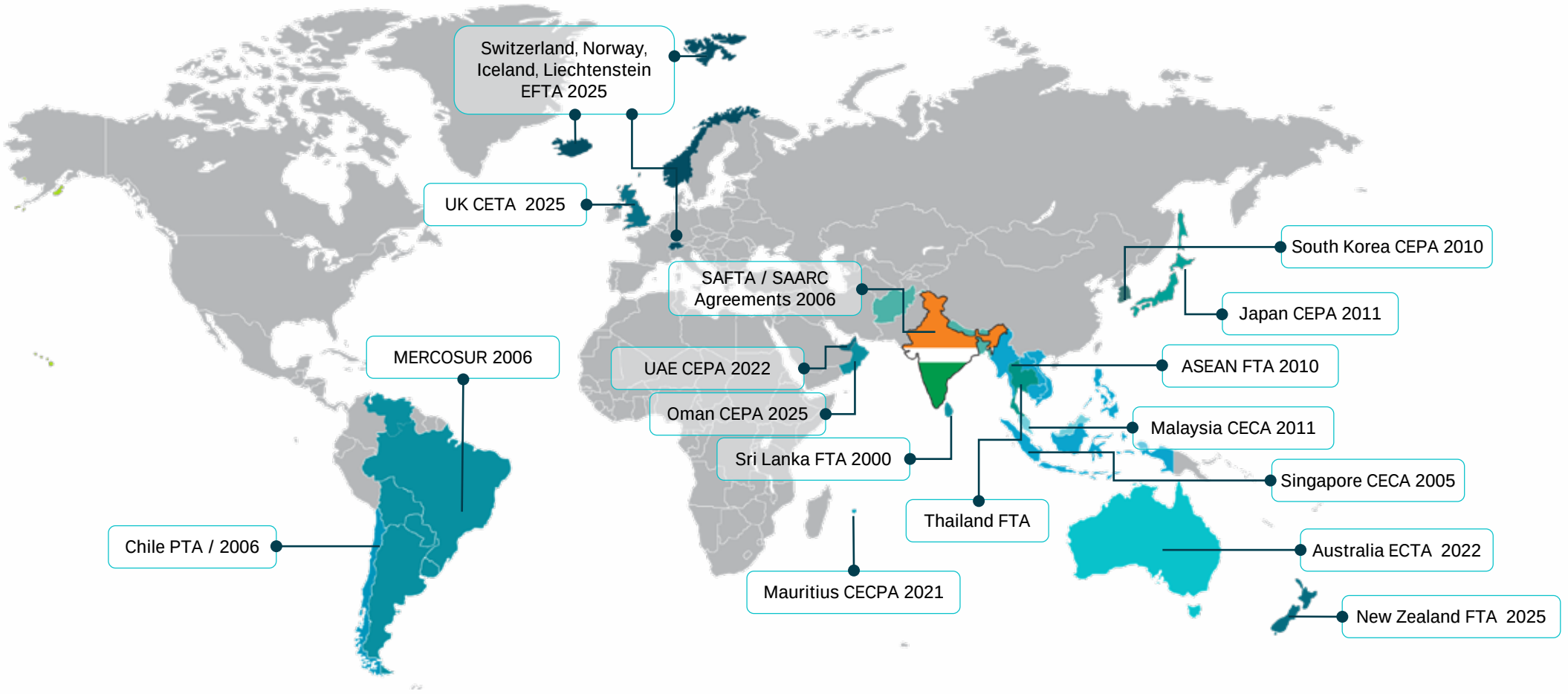
Major Trade Agreements by India



Source: Ministry of Commerce and Industry

India - Global Industry Rankings

World's Largest Generic Drug and Vaccine Manufacturer

Highest UPI Transaction in the World - 189 Bn in FY25

World's Largest 2W & 3W Manufacturer

Largest Tractor & 2nd Largest Bus Manufacturer

2nd Largest Food Producer

World's Largest Rice Exporter

World's 2nd Largest Military Force

World's 2nd Largest Cement Manufacturer

2nd Largest Steel Manufacturer with 205 MMT Capacity

2nd Largest Smartphone Manufacturer

3rd Largest Aviation Industry - 174 Mn travelled in 2024

4th Largest Railway Network

4th Largest Renewable Energy Capacity

4th Largest Producer of Agrochemicals in the world

Commands 50% share of the Global IT & BPO Sourcing Market

India's Surge: From Regional to Global Economic Powerhouse

Source: https://www.investindia.gov.in/

Advantage India

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Demographic

Youthful Profile - 28.4 years Median age in India as against USA's 39.1 years and China's 39.6 years and Global 31 years in 2024

68.2% of Indian population are in age 15-64 range in 2024

18% Global working population by 2030 against 13% for China and 4% for USA

Infrastructure

GoI Initiatives of Infrastructure buildup with plan to invest $1.45 Tn in the next 5 years

99.5% Population have access to electricity (2023)

58% internet-penetration rate as of 2024

Economic

3rd Largest Economy in terms of GDP (PPP) - $16.19 Tn.

Fastest Growing G20 Economy

Increase in per Capita income from ₹ 86,879 in FY15 to ₹ 2,27,000 in FY25

Investment

87% - Highest Fintech adoption rate globally against global average of 64%

3rd Largest Startup Nation in the World 1.8Lakh+ registered Startup as of July 2025.

3rd Highest number of Unicorns Globally

Powered by People, Driven by Progress

Source: IMF, World Bank, Investindia, MoSPI

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Global Polymer Industry

Global - Polymer Production

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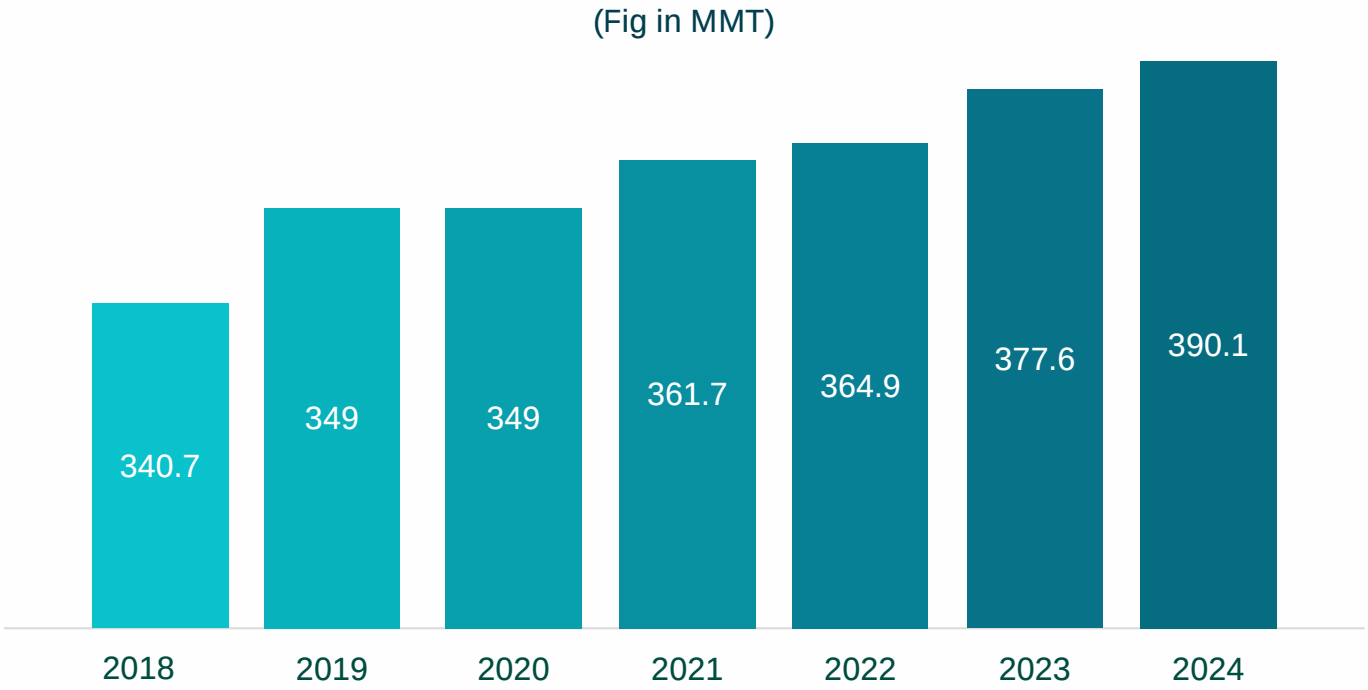
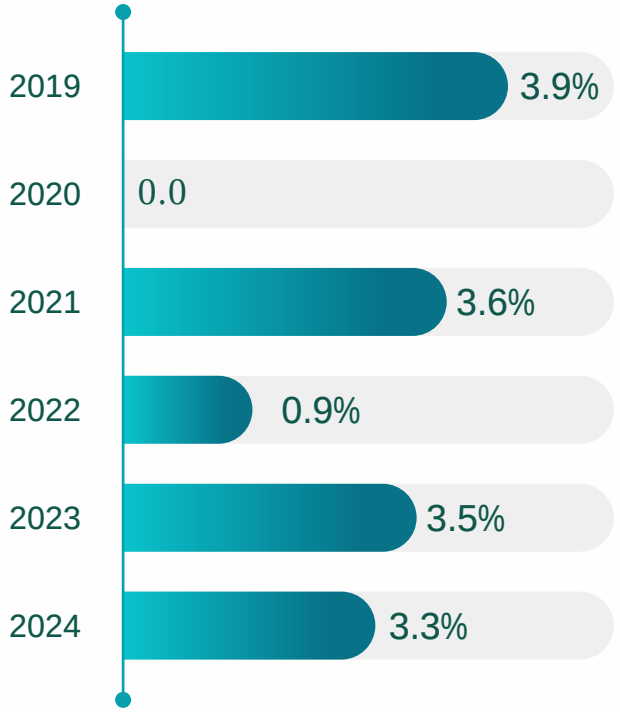
World Plastics Production*



GDP Growth Rate



*Includes Fossil based, Biobased, Chemically recycled Plastics, elastomers, thermosets, PP Fibres
Excludes : Mechanically Recycled Plastics, PA, PET-, PBT, or acrylic polyesters Fibres

Global Polymer Production growing at over 3%

Source: Plastics Europe

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Global Capacity & Demand - Polyethylene

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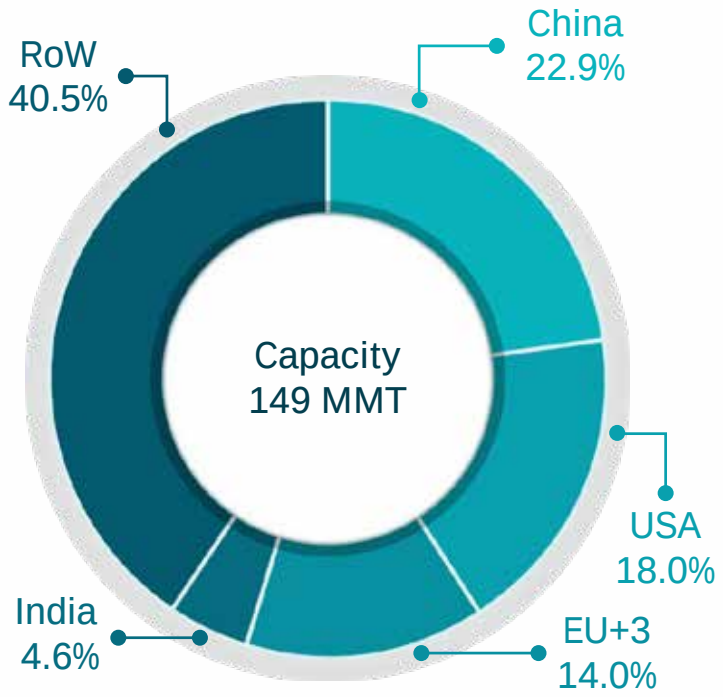
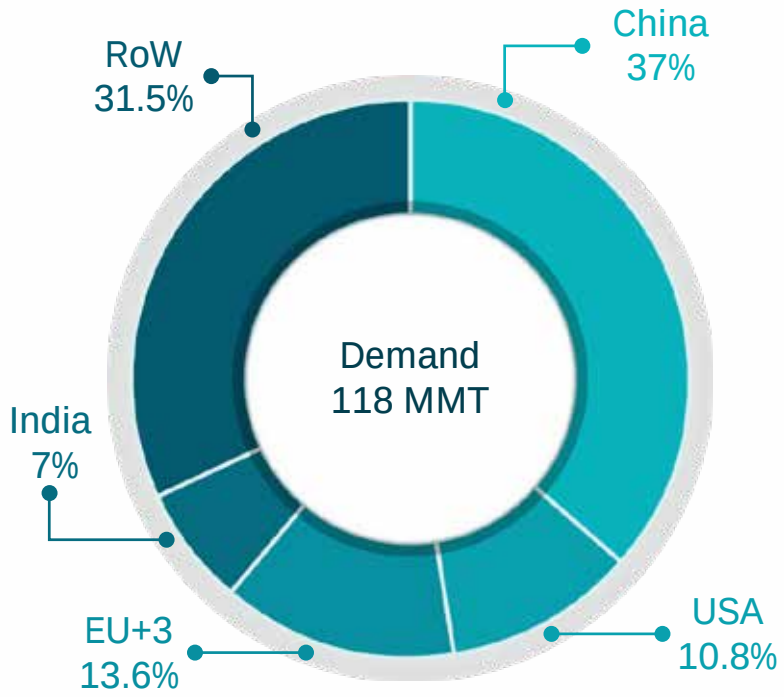
2024 Global PE Capacity & Demand*

Installed Capacity



Demand



2024 Global PE Insights

India Capacity 6.9 MMT
Demand 8.2 MMT

China PE Capacity (E) 34 MMT
Demand (E) 43.6 MMT
Highest in the world

China PE Film & Sheet Sector Demand is ~25 MMT, 6X India Demand

Globally PE Demand is expected to Grow by 3% CAGR 2030

Globally PE New Capacity Planned ~43 MMT by 2030 with CAGR of 4.4%
India likely to add 5% share, China 61%

* Industry estimates

Film & Sheet is the Largest Segment ~54.5% Share, India ~48.8%

Source: Industry Analysis

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Global Capacity & Demand - EVA

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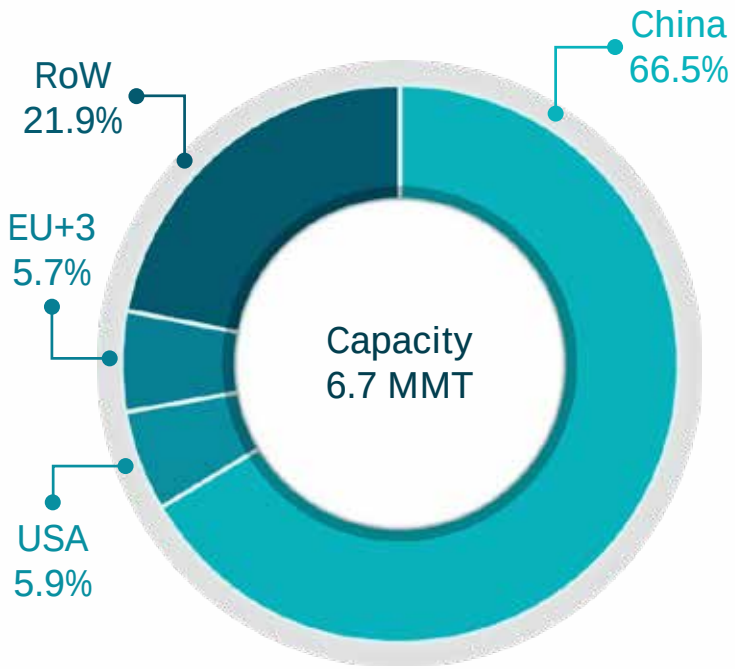
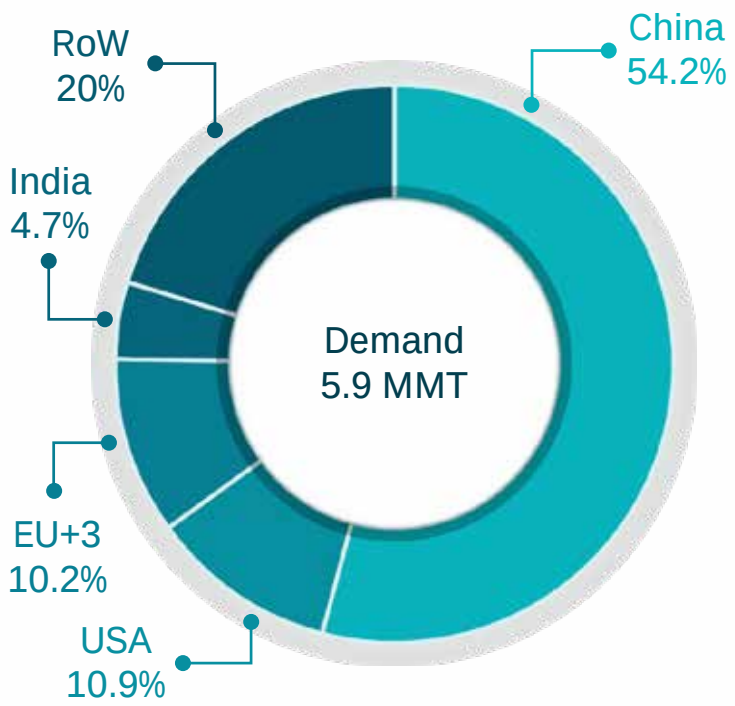
2024 Global EVA Capacity & Demand*

Installed Capacity



Demand



2024 Global EVA Insights

India EVA Demand ~0.27 MMT
India import Dependent

China World's Largest
EVA Capacity (E) 2.6 MMT
Demand (E) 3.2 MMT

USA is the 2nd Largest, both in the Capacity and Demand

Global EVA Capacity likely to be doubled by 2030

China's EVA Installed Capacity likely to cross 8.7MMT by 2030

* Industry estimates

Film & Sheet is the Largest Segment ~63% led by Solar Films

Source: Industry Analysis

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Global Capacity & Demand - Polypropylene

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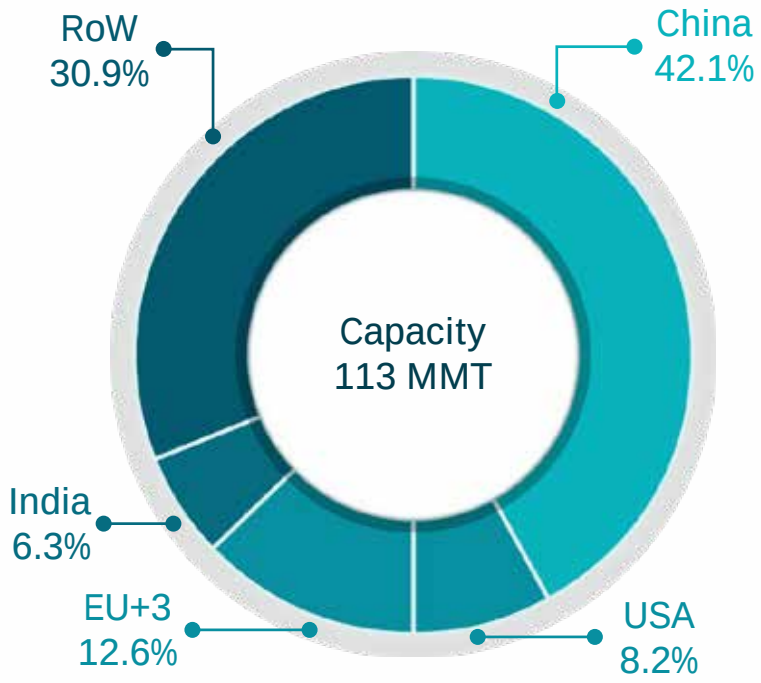
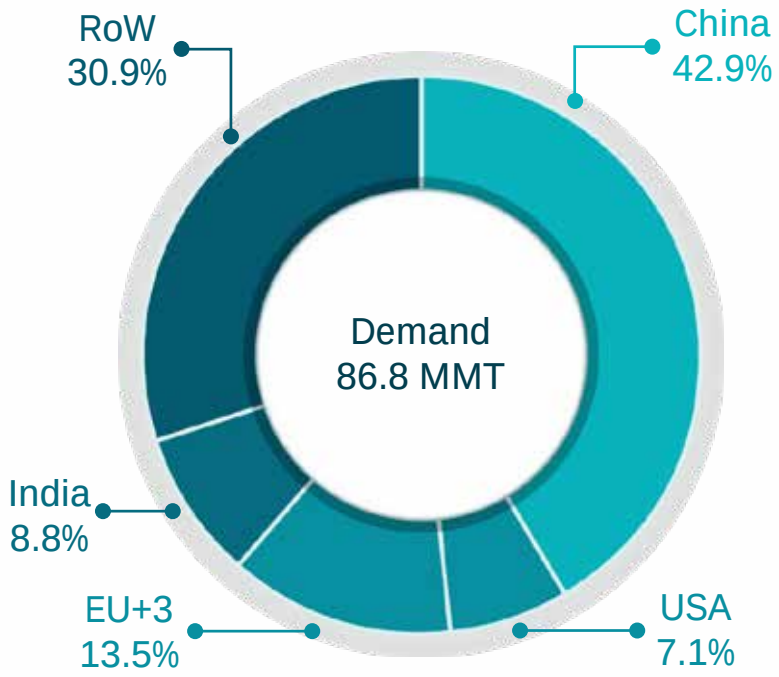
2024 Global PP Capacity & Demand*

Installed Capacity



Demand



2024 Global PP Capacity

India PP Capacity 7.1 MMT
Demand 7.6 MMT

China PP Capacity (E) 47.6 MMT
Demand (E) 37.3 MMT
Highest in the World

Raffia Largest Segment in India & China

China Raffia Demand (E) 10 MMT
4X India Demand

Globally PP Demand is expected to grow by 3.8% CAGR 2030

Globally PP New Capacity Planned ~29 MMT by 2030, 3.9% CAGR, India likely to add 15% share, China ~68%

* Industry estimates

Injection Moulding is the Largest Segment ~34.5% Share

Source: Industry Analysis

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Global Capacity & Demand - Polyvinyl Chloride

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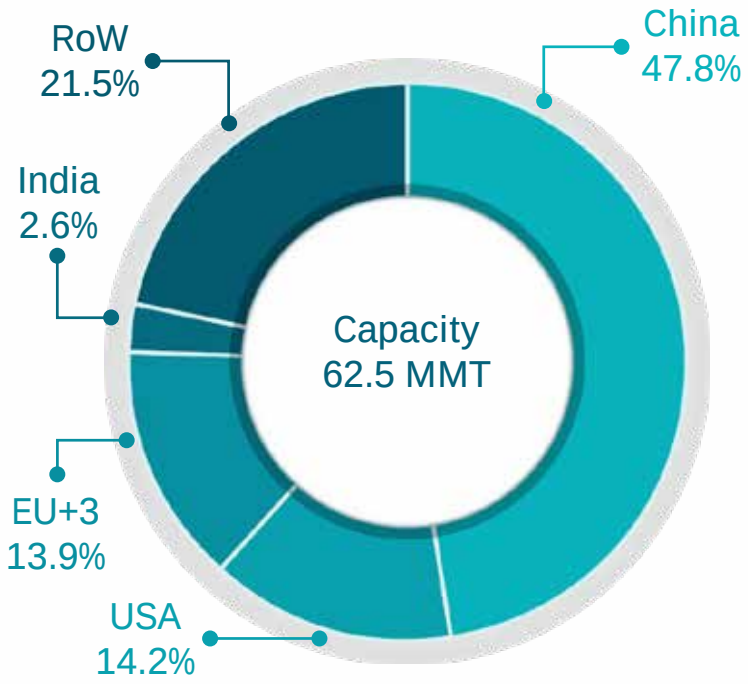
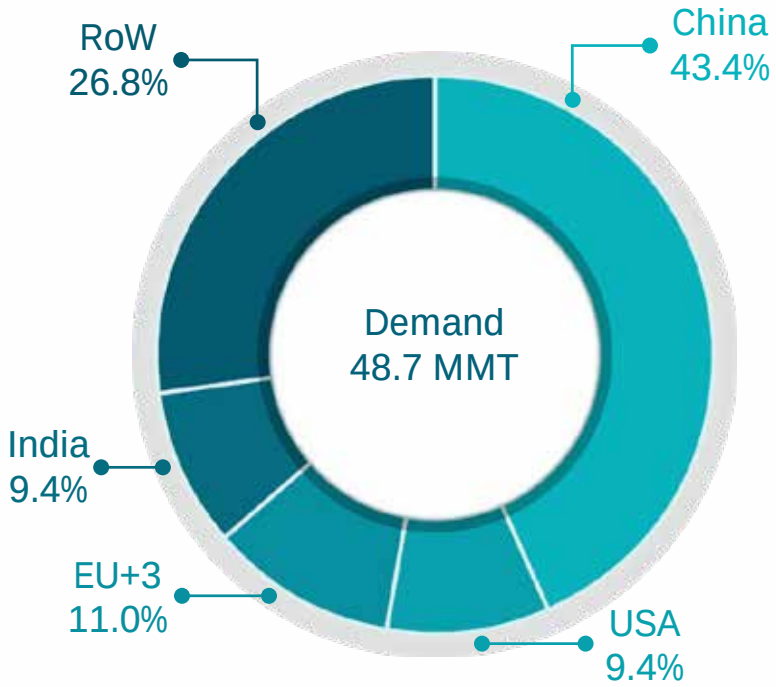
2024 Global PVC Capacity & Demand*

Installed Capacity



Demand



2024 Global PVC Insights

India Capacity 1.6 MMT
Demand 4.56 MMT

China PVC Capacity (E) 30MMT
Demand (E) 21.1 MMT
Highest in the World

Globally PVC Demand is expected to Grow by 2.9% CAGR 2030

Globally new Capacity likely to add ~6 MMT by 2030 with CAGR of 1.5%

India likely to add ~42% of new capacity, China 34%

* Industry estimates

Pipes & Fittings is the Largest Segment ~45.8% Share

Source: Industry Analysis

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Global Capacity & Demand - PET

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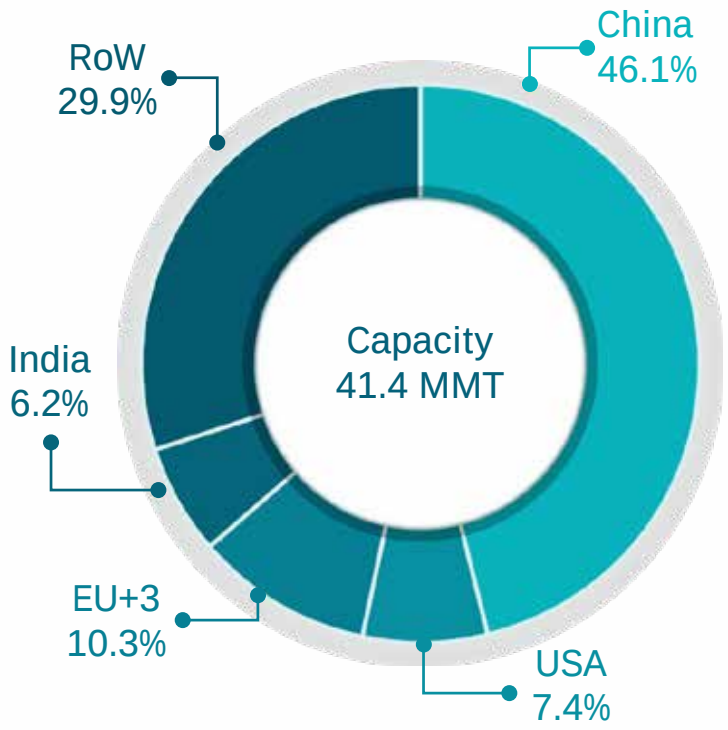
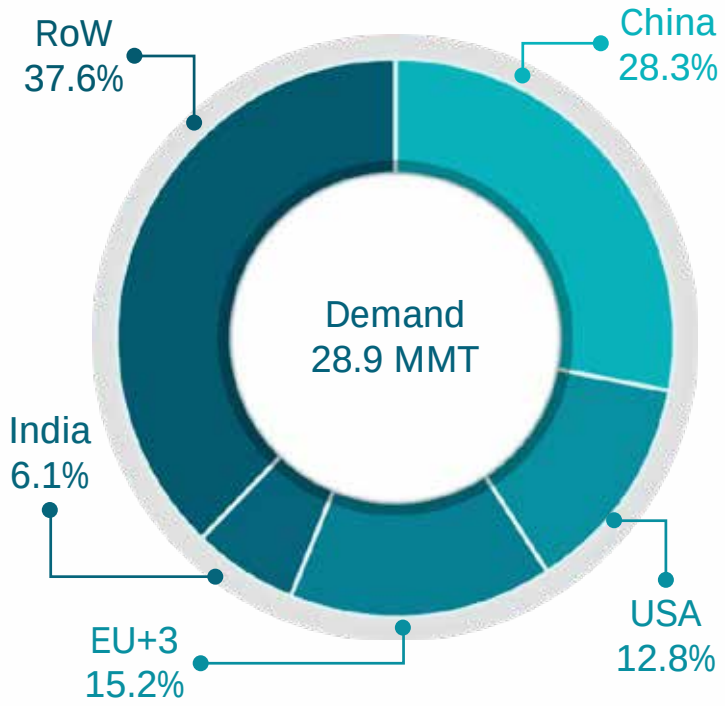
2024 Global PET Capacity & Demand*

Installed Capacity



Demand



* Industry estimates

2024 Global PET Insights

India PET Installed Capacity
2.6 MMT

China World's Largest in PET
PET Capacity (E) 19.1 MMT
Demand (E) 4.8 MMT

EU+3 is 2nd Largest, both
in the Capacity and Demand

USA is the 3rd Largest, both
in the Capacity and Demand

China Capacity likely to grow by
5.5% while Demand likely grow
by 5% CAGR 2030

Globally China has 46.1% of Capacity and 28.3% of Demand

Source: Industry Analysis

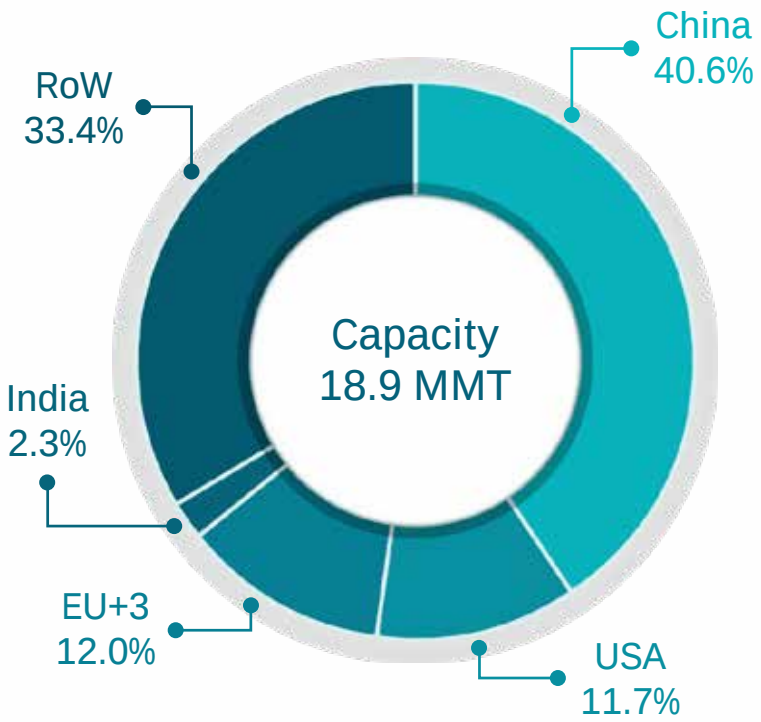
Bharat Next
Shaping The Future Of Plastics

Global Capacity & Demand - PS

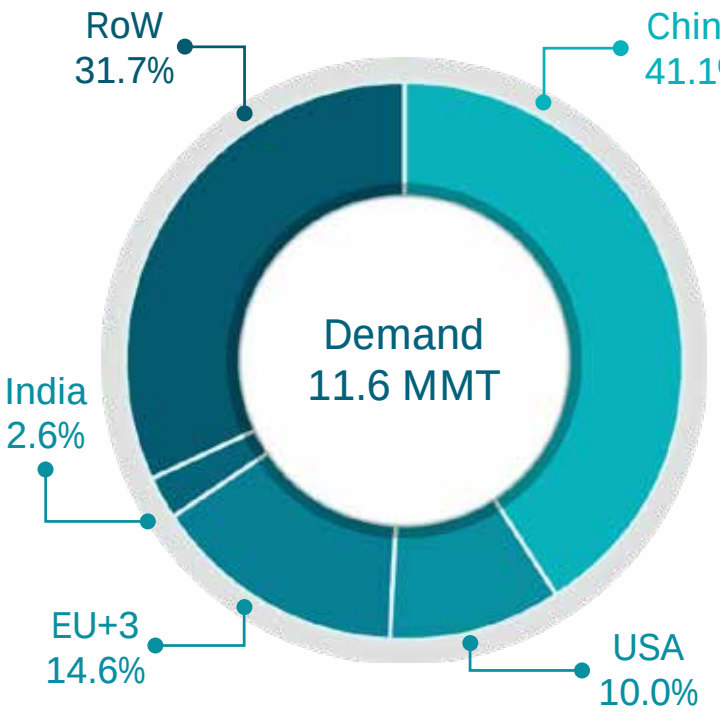
PLASTINDIA FOUNDATION®
ISO 9001-2015 certified

2024 Global PS Capacity & Demand*

Installed Capacity



Demand



* Industry estimates

2024 Global PS Insights

India PS Capacity 0.43 MMT

China World's Largest Market
Estimated PS Capacity 7.6 MMT,
Estimated Demand 4.8 MMT

EU+3 is second largest, both
in the Capacity and Demand

China's PS Installed Capacity
likely to cross 10 MMT by 2030

India's Demand Growth likely to be
4% CAGR 2030, fastest among large
Economies due to lower base

Packaging and Consumer Goods constitute 65% of the Demand

Source: Industry Analysis

Bharat Next
Shaping The Future Of Plastics

Global Capacity & Demand - EPS

PLASTINDIA FOUNDATION®
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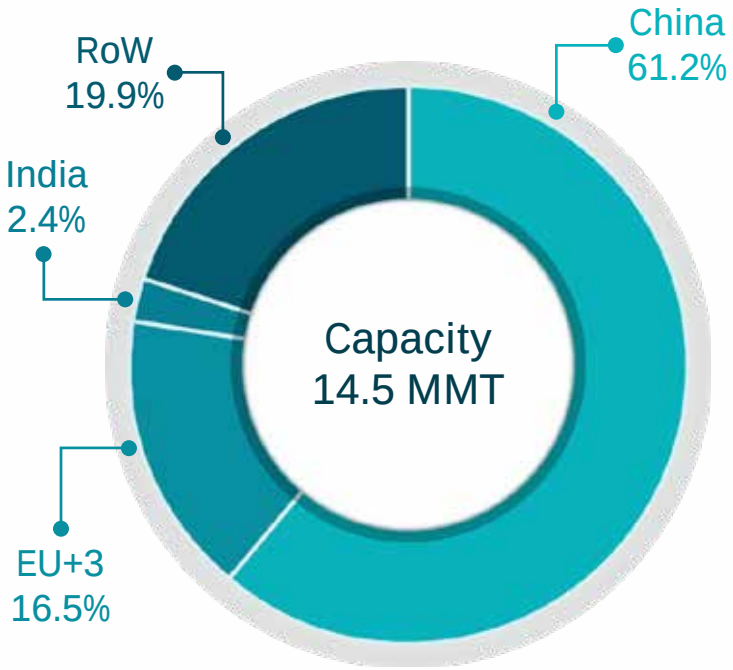
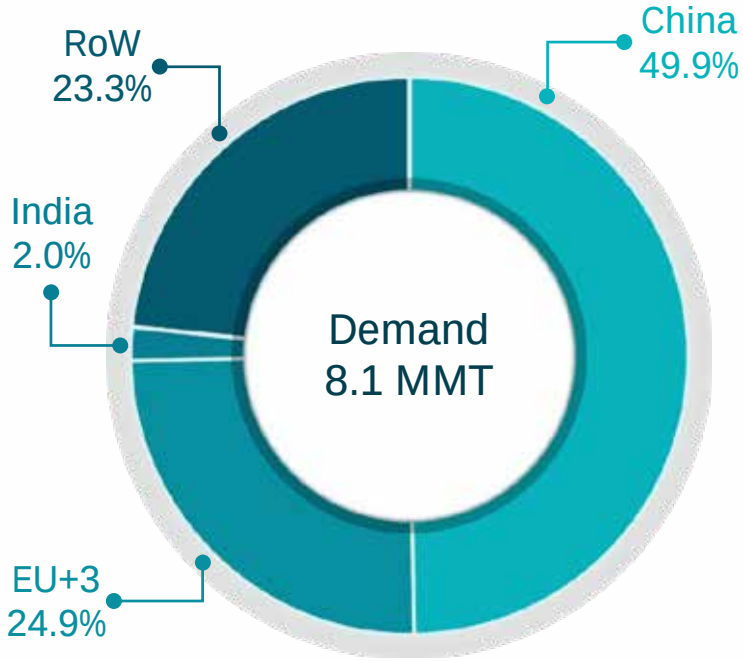
2024 Global EPS Capacity & Demand*

Installed Capacity



Demand



2024 Global EPS Insights

India's EPS Demand ~0.16 MMT

China World's Largest Market
EPS Capacity (E) 8.9 MMT
Demand (E) 4 MMT

EU+3 is 2nd Largest, both in the Capacity and Demand

China's EPS Installed Capacity likely to cross 10 MMT by 2030

India's Demand Growth likely to be 5% CAGR 2030, Fastest among Large Economies due to lower base

* Industry estimates

Packaging, Building & Construction constitute 90% of the Demand

Source: Industry Analysis

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Shaping The Future Of Plastics

Global Commodity Polymers - Capacity & Demand

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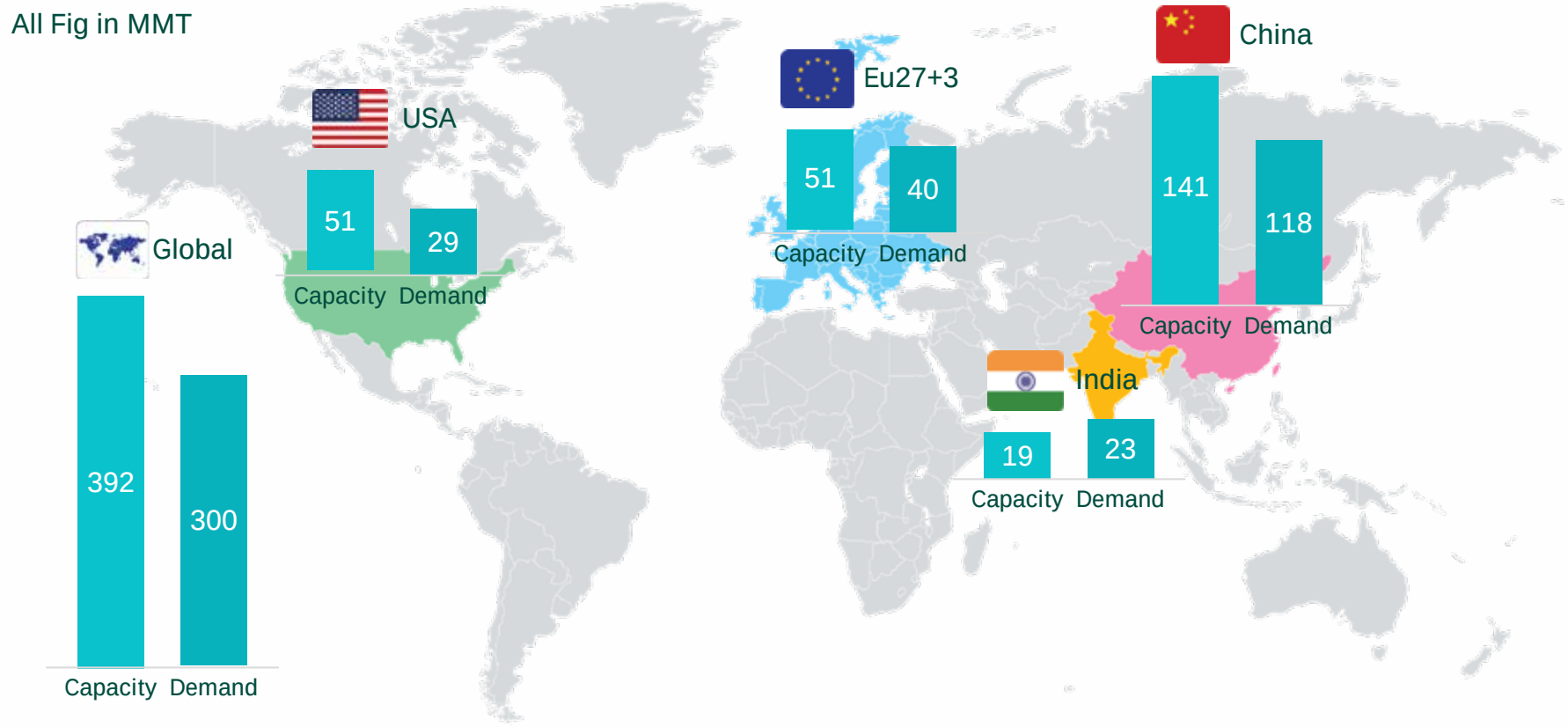
2024 Global Major Commodity Polymer Capacity & Demand*



* Industry Estimate, includes PE, EVA, PP, PVC, PET, PS

India's Share: ~4.8% of Global Capacity & ~7.6% of Global Demand

Source: Industry Analysis

Bharat Next
Shaping The Future Of Plastics

India Polymer Industry

India's 1st Commercial Plants - Time Lines

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India's 1st Major Polymer Plants

1959, LDPE Plant (bio based)
Alkali & Chemical Corporation of India (ACCI), (ICI Subsidiary) West Bengal from alcohol as feedstock

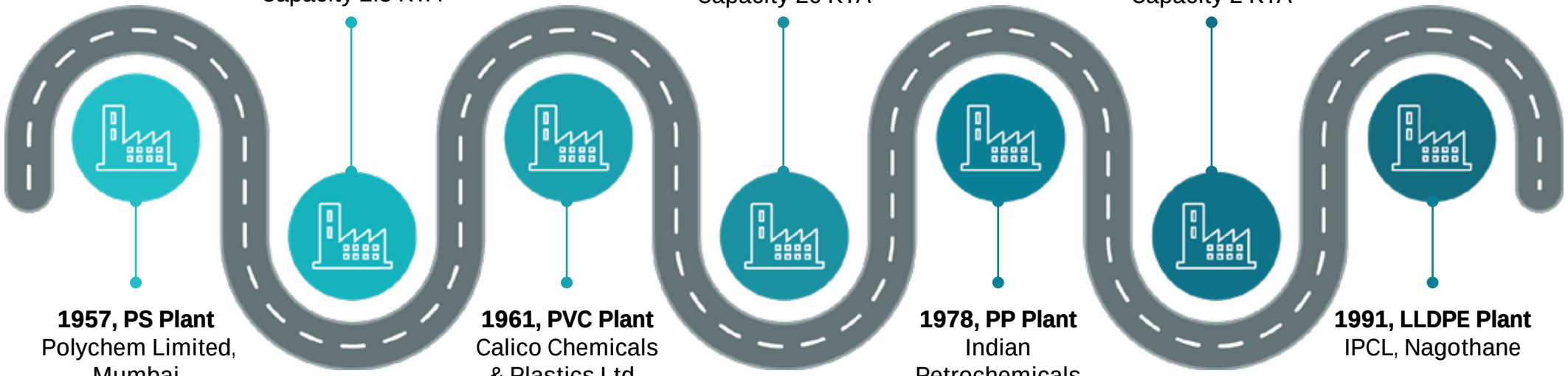
Capacity 2.5 KTA

1968, HDPE Plant
Polyolefins Industries Ltd. (PIL), Mumbai

Capacity 20 KTA

1978, ABS Plant
ABS Plastics Ltd, Vadodara

Capacity 2 KTA



1957, PS Plant
Polychem Limited, Mumbai

Capacity 5 KTA

1961, PVC Plant
Calico Chemicals & Plastics Ltd., Mumbai

Capacity 6 KTA

1978, PP Plant
Indian Petrochemicals Corp. Ltd. (IPCL), Vadodara

Capacity 30 KTA

1991, LLDPE Plant
IPCL, Nagothane

Capacity 135 KTA

Source: Industry Analysis

Bharat Next
Shaping The Future Of Plastics

Polyethylene - Installed Capacity FY25

Company	LDPE Capacity (KT)	HD/LL Swing Capacity (KT)	HD Dedicated Capacity (KT)	Total PE Capacity (KT)
Reliance Industries Ltd. (RIL)	650	1430	160	2240
HPCL Mittal Energy Ltd. (HMEL)		800	450	1250
ONGC Petro Additions Ltd. (OPAL)		720	350	1070
GAIL (India)		610	200	810
Haldia Petrochemicals Ltd. (HPL)		350	350	700
Indian Oil Corp Ltd. (IOCL)		350	300	650
Brahmaputra Cracker & Polymer Ltd. (BCPL)		220		220
Total	650	4480	1810	6940

India's PE Capacity ~4.6% of Global Installed Capacity

Source: Industry Analysis

Polypropylene - Installed Capacity FY25

Company	Capacity (KT)
Reliance Industries Ltd.	3165
Indian Oil Corporation Ltd.	1280
HPCL Mittal Energy Ltd.	1000
Nayara Energy	450
Mangalore Refinery & Petrochemical Ltd.	440
Haldia Petrochemicals Ltd.	390
ONGC Petro Additions Ltd.	340
Brahmaputra Cracker & Polymer Ltd. (BCPL)	60
Total	7125

India's PP Capacity ~6.3% of Global Installed Capacity

Source: Industry Analysis

Polymer Capacity - PVC & CPVC

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PVC - Installed Capacity FY25

Category	Capacity (KT)
Reliance Industries Ltd.	750
Chemplast Sanmar Limited	331
Finolex Industries Ltd.	252
DCW	100
DCM Shriram	77
Total	1510

Emulsion PVC - Installed Capacity FY25

Category	Capacity (KT)
Chemplast	107
Finolex	20
Total	127

CPVC - Installed Capacity FY25

Category	Capacity (KT)
Epigral	75
DCW	20
Total	95

India's PVC Capacity ~2.6% of Global Installed Capacity

Source: Industry Analysis

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Shaping The Future Of Plastics

Polymer Capacity - PET

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PET Installed Capacity FY25

Company	Capacity (KT)
Reliance Industries Ltd.	1008
IVL Dhunseri	972
JBF	183
Chiripal Poly Films	144
Sumilon Industries Ltd.	110
Jindal Polymer	90
Uflex Ltd.	72
Total PET	2579
BOPET	1370
Total PET+ BOPET	3949

India's PET Capacity ~6.2% of Global Installed Capacity

Source: Industry Analysis

Bharat Next
Shaping The Future Of Plastics

Polymer Capacity - PS & EPS

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PS Installed Capacity FY25

Category	Capacity (KT)
Supreme Petrochem Ltd.	300
Styrenix Performance Material	100
Alliance Petroplast	30
Total	430

EPS Installed Capacity FY25

Category	Capacity (KT)
Supreme Petrochem Ltd.	118
Styric Chem Pvt Ltd. + Narendra	60
E Pack Petrochem Ltd.	60
RQS Eng Pvt. Ltd.	24
Rattan Polychem Pvt. Ltd.	54
Alliance (RQS+Styric Chem)	36
Total EPS	352

India's PS Capacity ~2.3% of Global Installed Capacity, EPS Capacity ~2.4%

Source: Industry Analysis

Bharat Next
Shaping The Future Of Plastics

Polymer Capacity - ABS & SAN

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ABS Installed Capacity FY25

Manufacturer	Capacity (KT)
Styrenix Performance Material	100
Bhansali Engineering Polymers Ltd.	100
Total	200

SAN Installed Capacity FY25

Manufacturer	Capacity (KT)
Styrenix Performance Material	100
Bhansali Engineering Polymers Ltd.	50
Total	150

India's ABS Capacity ~1.2% of Global Installed Capacity, SAN Capacity ~7.2%

Source: Industry Analysis

Other Engineering Plastics Installed Capacity FY25

Manufacturer	Plastics	Capacity (KT)
Styrenix & BEPL	ASA	2.5
GSFC, Gujarat	Nylon 6	25
GFL& SRF, Gujarat	Fluoro Polymers	30
Covestro, Tamil Nadu	TPU	6
Grand Total		63.5

Building Engineering Plastics Manufacturing Capacity

Source: Industry Analysis

Polymer Capacity - High Performance Plastics

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High Performance Plastics Installed Capacity FY25

Manufacturer	Polymer	Capacity (TPA)
Syensqo (Panoli, Gujarat)	Polyether Sulfone (PES)	3000
Rallis (Ankleshwar, Gujarat)	Polyether Ketone Ketone (PEKK)	110
Gharda Chemicals (Ankleshwar, Gujarat)	Polyether Ketone (PEK)	120
	Polyether Ketone Ketone (PEKK)	100
	Polyether Imide (PEI)	600
Total Capacity 3930 TPA		

Performance Plastics: Powering India's Next-Gen Manufacturing

Source: Industry Analysis, Prismane Consulting

Bharat Next
Shaping The Future Of Plastics

Planned Petrochemical Projects - PE & PP

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Planned/Proposed Polyethylene Plants

Company	HRRL-HPCL	BPCL	IOCL
Location	Barmer	Bina	Paradip
Plastics	HD/LL Swing	HD/LL Swing	HD/LL Swing
Capacity (KT)	1000	1800	1500
Timeline	2026	2028	2030

Planned/Proposed Polypropylene Plants

Company	GAIL	HRRL-HPCL	IOCL	GAIL	IOCL	IOCL	BPCL	NRL	IOCL	Petronet LNG
Location	Pata	Barmer	Panipat	Usar	Barauni	Baroda	Kochi	Golaghat	Bina	Dahej
Plastics	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP
Capacity (KT)	60	1000	450	500	200	450	400	360	550	500
Timeline	2025	2026	2026	2026	2027	2027	2028	2028	2029	2030

Source: Plastindia Foundation, Industry Analysis

Bharat Next
Shaping The Future Of Plastics

Planned Petrochemical Projects - PVC & CPVC

PLASTINDIA FOUNDATION®
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Planned/Proposed PVC Plants

Company	RIL	Adani
Location	Nagothane	Mundra
Plastics	PVC	PVC
Capacity (KT)	1000	1000
Timeline	2027	2027

Planned/Proposed CPVC Plants

Company	RIL	DCW Ltd.	Grasim Lubrizol	Epigral Ltd.	RIL	Astral	RIL	Grasim Lubrizol
Location	Dahej, Gujarat	Tamil Nadu	Vilayat, Gujarat	Dahej, Gujarat	Dahej, Gujarat	Gujarat	Dahej, Gujarat	Vilayat, Gujarat
Plastics	CPVC	CPVC	CPVC	CPVC	CPVC	CPVC	CPVC	CPVC
Capacity (KT)	55	30	55	75	110	40	110	50
Timeline	2026	2026	2026	2027	2027	2028	2028	Planned

Source: Industry Analysis

Bharat Next
Shaping The Future Of Plastics

Planned Petrochemical Projects - PET, PS & EPS

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Planned /Proposed PET Plants

Company	Uflex	Sparsh
Location	Haryana	Uttar Pradesh
Polymer	PET	PET
Capacity (KT)	72	72
Total	2026	2027

Planned /Proposed PS Plants

Company	Sytrenix
Location	Gujarat
Polymer	PS
Capacity (KT)	50
Timeline	2026

Planned /Proposed EPS Plants

Company	Datta Hydochem
Location	Maharashtra
Polymer	EPS
Capacity (KT)	30
Timeline	2026

Source: Industry Analysis

Bharat Next
Shaping The Future Of Plastics

Planned Petrochemical Projects - Engg. Polymers

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Planned /Proposed ABS Plants

Company	Supreme Petro	Styrenix	Supreme Petro	Styrenix
Location	Nagothane	Gujarat	Nagothane	Gujarat
Polymer	ABS	ABS	ABS	ABS
Capacity (KT)	70	45	70	50
Timeline	2025	2026	2027	2028

Planned /Proposed PC Plants

Company	Deepak Chem Tech Ltd.
Location	Dahej, GJ
Polymer	PC
Capacity (KT)	165
Timeline	2028

First Polycarbonate Plant planned in Gujarat

Source: Industry Analysis

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Shaping The Future Of Plastics

India Polymer Demand

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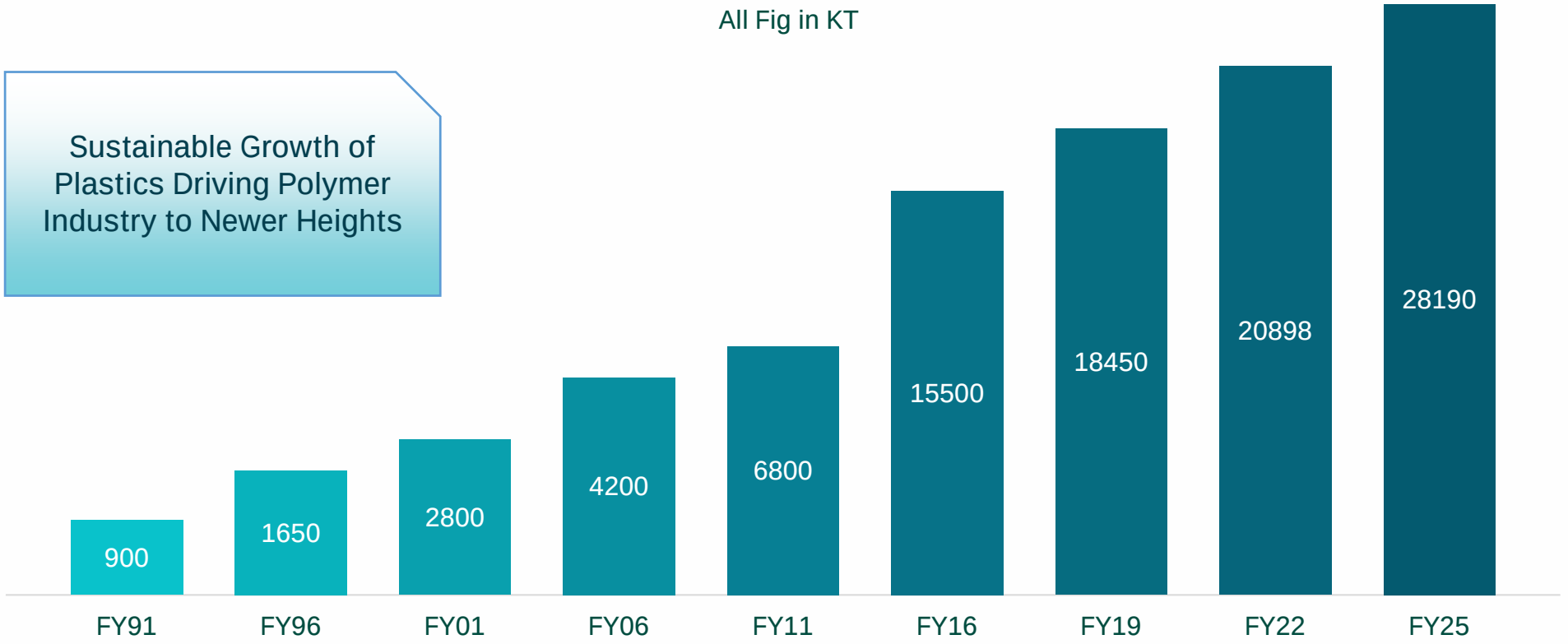
India Polymer Demand 1990's Onwards

All Fig in KT

Sustainable Growth of Plastics Driving Polymer Industry to Newer Heights



Rising Polymer Demand Driven by India's Industrial Growth

Source: Industry Analysis

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Shaping The Future Of Plastics

India Polymer Demand

PLASTINDIA FOUNDATION®
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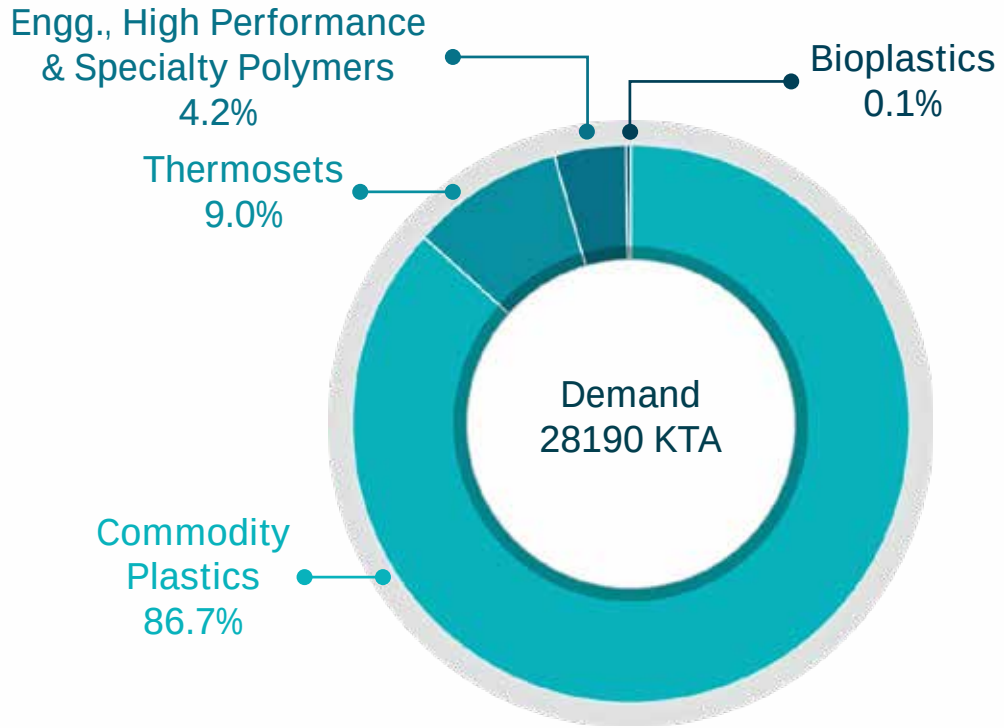
Polymer Demand FY25

Demand

Polymers	Demand (KT)
Commodity Plastics	24443
Engg., High Performance & Specialty Polymers	1177
Bioplastics	40
Total Thermoplastics	25660
Thermosets	2530
Total Demand	28190

Demand % Share



Powering India's Growth

Source: Industry Analysis

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Shaping The Future Of Plastics

India Polymer Demand

PLASTINDIA FOUNDATION®
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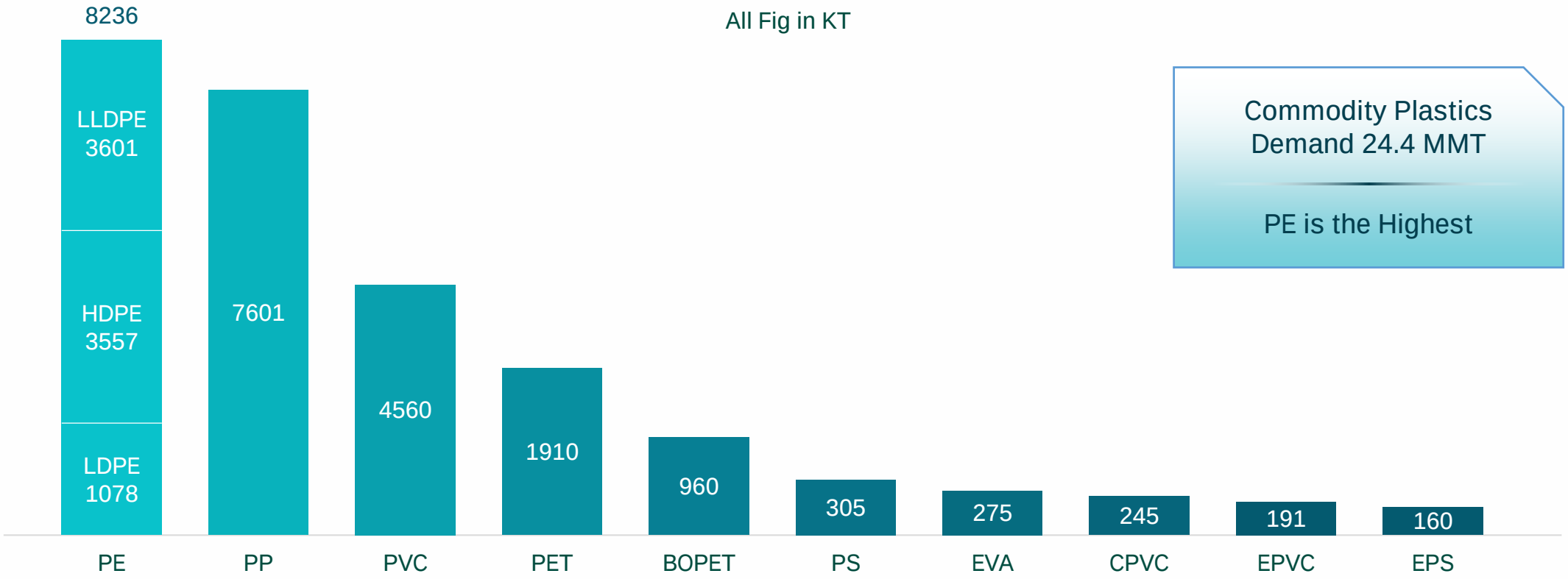
Commodity Plastics Demand FY25

All Fig in KT



Commodity Plastics Demand 24.4 MMT

PE is the Highest

Commodity Plastics: The Backbone of India's Manufacturing Growth

Source: Industry Analysis

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Shaping The Future Of Plastics

India Polymer Demand

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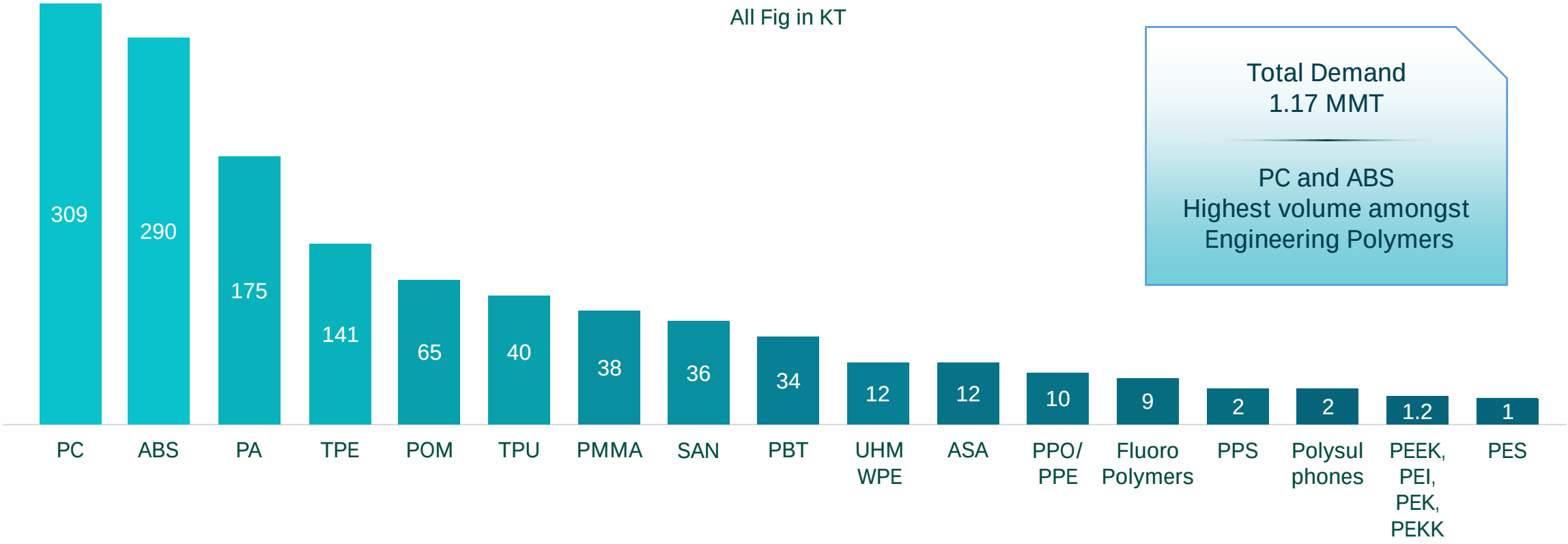
Engineering, High-Performance & Specialty Plastics Demand FY25

All Fig in KT



Total Demand
1.17 MMT

PC and ABS
Highest volume amongst
Engineering Polymers

High Performance Polymers driving India's mobility

Source: Industry Analysis, Prismane Consultings

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Shaping The Future Of Plastics

India Polymer Demand

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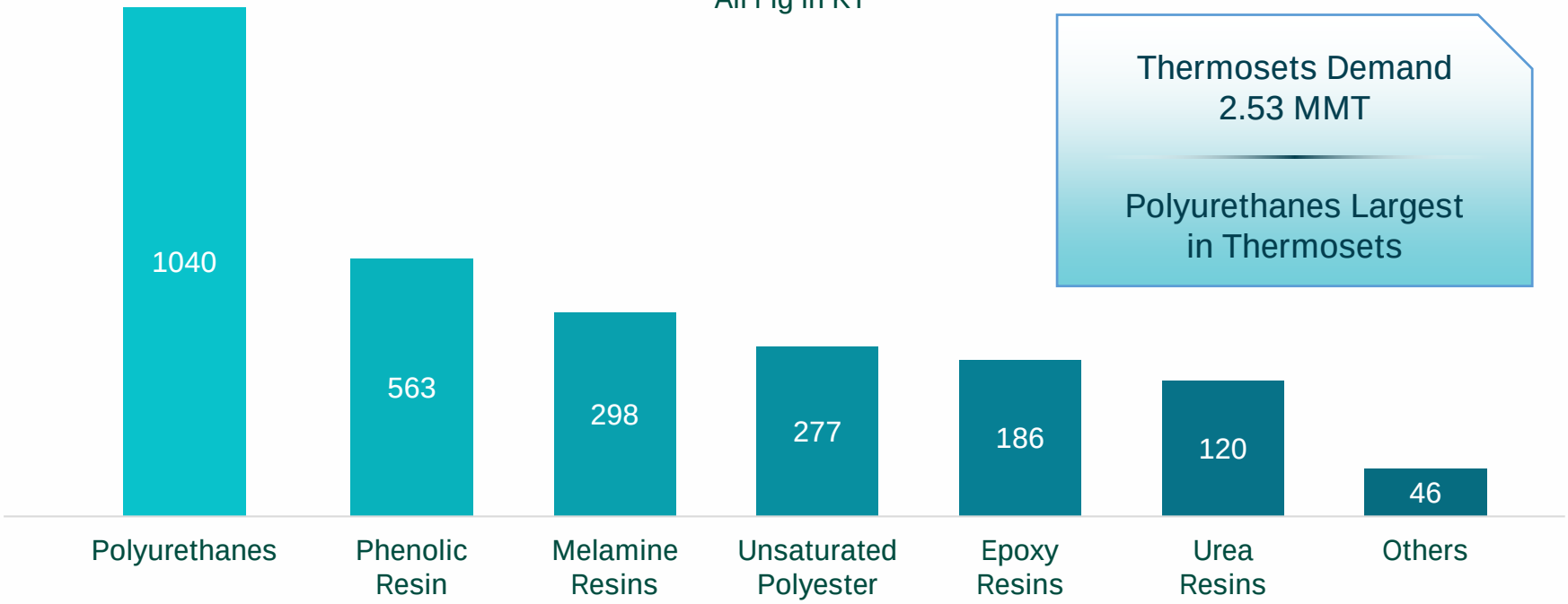
Thermosets Demand FY25

All Fig in KT



Thermosets Demand
2.53 MMT

Polyurethanes Largest in Thermosets

Thermosets Powering India's Industrial & Defence Growth

Source: Industry Analysis

Bharat Next
Shaping The Future Of Plastics

Sector-wise Demand - Commodity Plastics

Sector-wise Demand - PE

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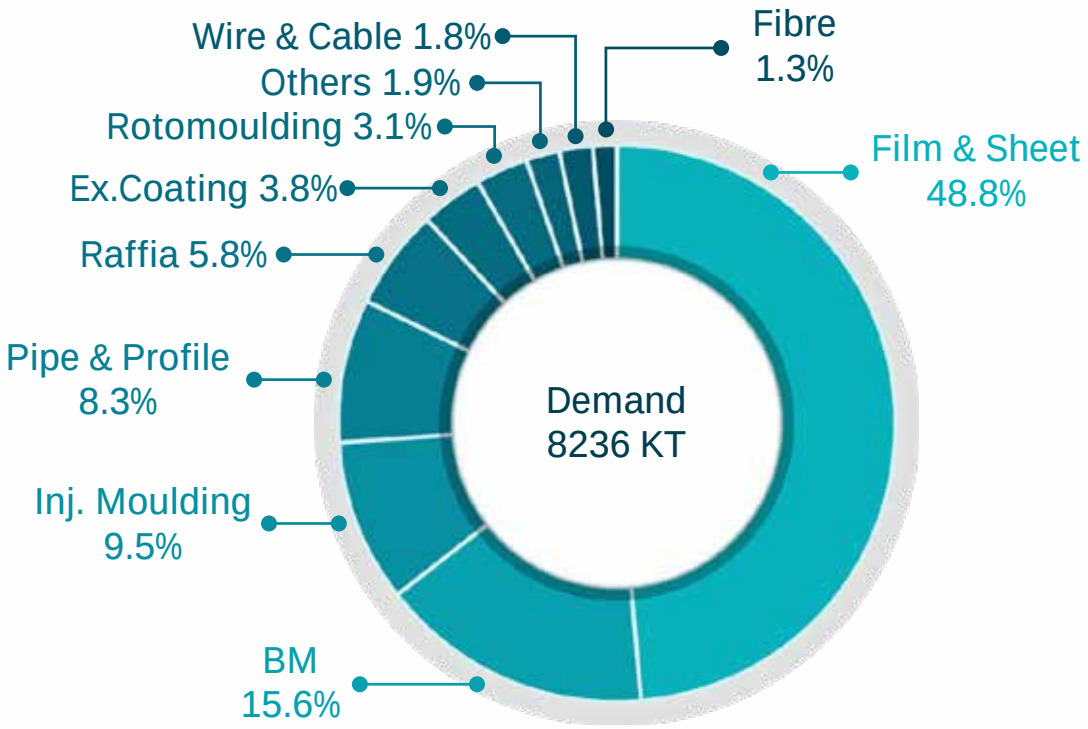
PE Demand Analysis FY25

Sector-wise Demand

Sector	Demand (KT)	YoY Growth
Film & Sheet	4020	-2.6%
Blow Moulding	1284	-0.2%
Injection Moulding	784	6.2%
Pipe & Profile	685	-20.3%
Raffia	480	0.8%
Extrusion Coating	312	1.3%
Rotomoulding	253	7.7%
Wire & Cable	156	13.9%
Others	152	-5.0%
Fibre	110	0.0%
Total	8236	-2.4%

Sector-wise % Share



India's Demand ~8.8% of the Global Demand, W&C Fastest Growth Sector

Source: Industry Analysis

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Shaping The Future Of Plastics

Sector-wise Demand - EVA

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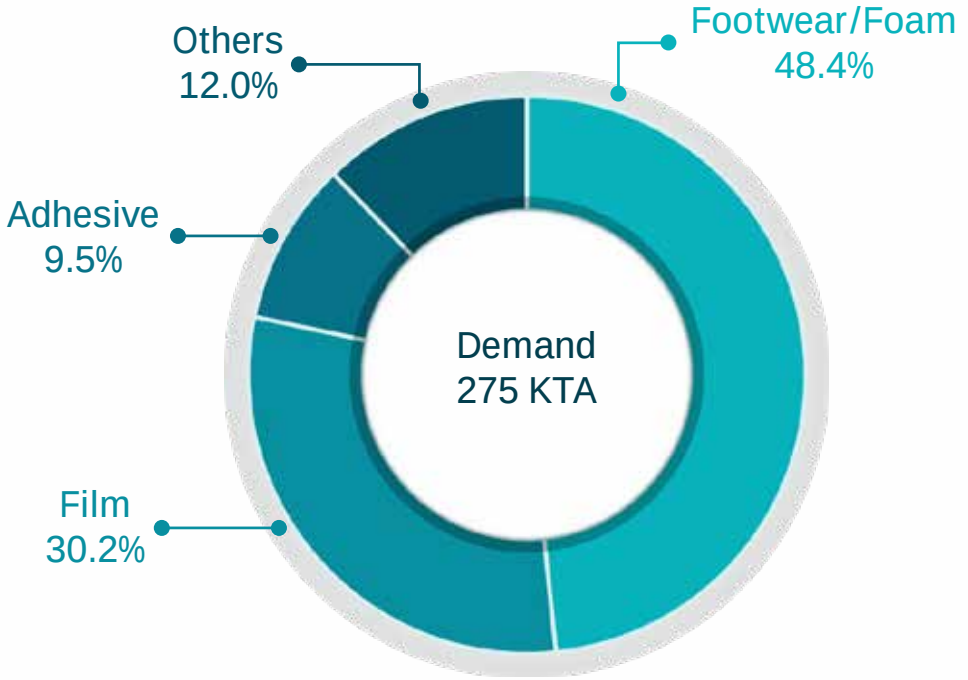
EVA Demand Analysis FY25

Sector-wise Demand

Sector	Demand (KT)	YoY Growth
Footwear /Foam	133	8.1%
Film	83	27.7%
Adhesive	26	18.2%
Others	33	22.2%
Total	275	16.0%

Sector-wise % Share



India's EVA Demand 4.7% of the Global Demand, Solar films Driving the Growth

Source: Industry Analysis

Bharat Next
Shaping The Future Of Plastics

Sector-wise Demand - PP

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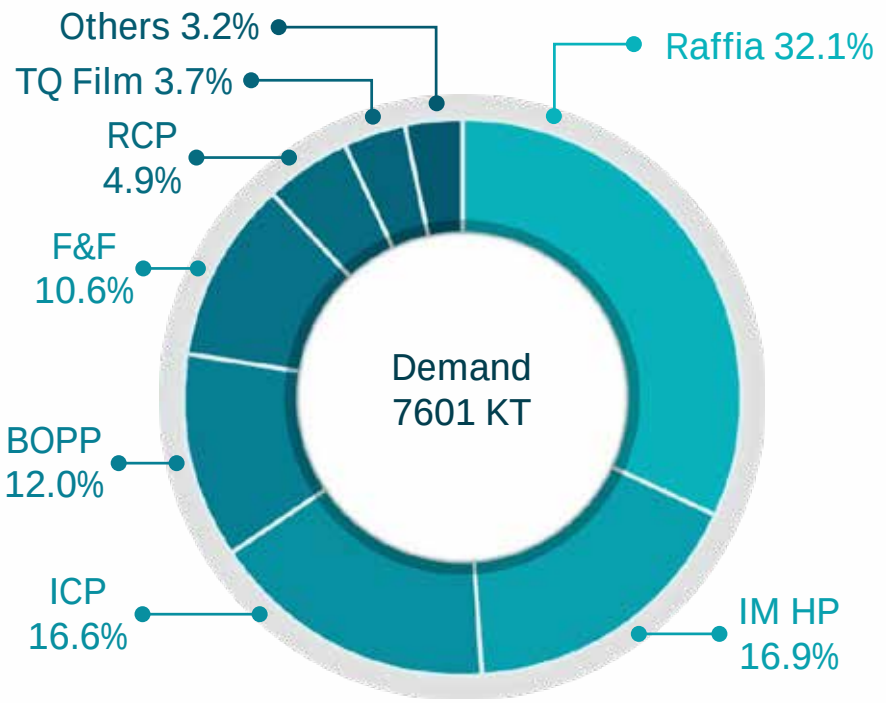
PP Demand Analysis FY25

Sector-wise Demand

Sector	FY25 Demand (KT)	YoY Growth
Raffia	2436	8.1%
IM HP	1288	3.8%
ICP	1262	13.1%
BOPP	911	12.7%
Fibre & Filament	808	11.1%
RCP	370	7.6%
TQ Film	284	2.9%
Others	242	-7.0%
Total	7601	8.2%

Sector-wise % Share



India's Demand ~8.8% of the Global Demand, High Growth in Raffia & IM

Source: Industry Analysis

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Shaping The Future Of Plastics

Sector-wise Demand - PVC

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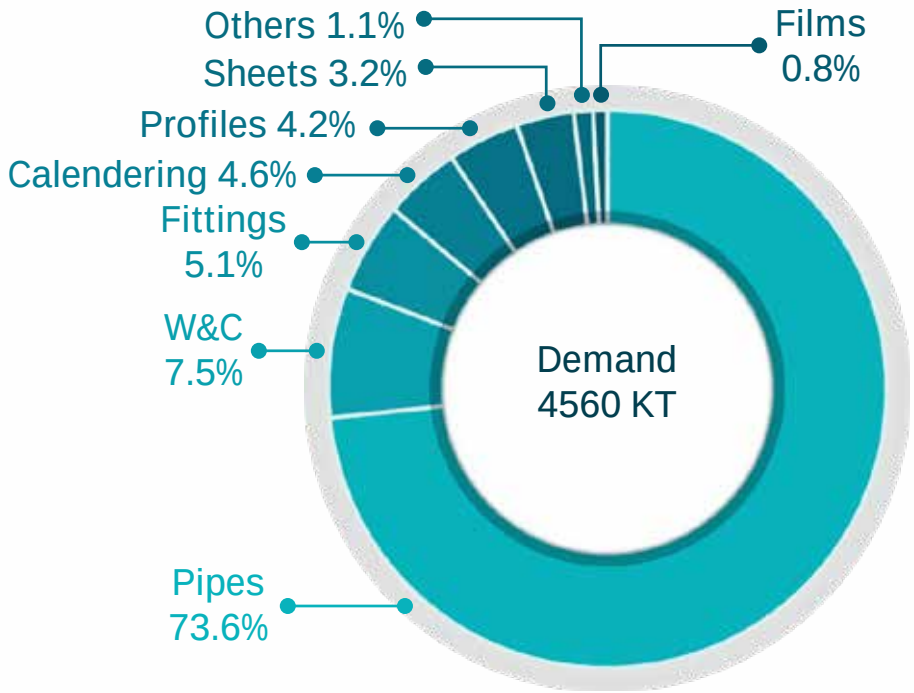
PVC Demand Analysis FY25

Sector-wise Demand

Sector	Demand (KT)	YoY Growth
Pipes	3339	8.3%
Fittings	229	11.4%
Calendering	208	-7.2%
Wire & Cable	339	23.3%
Films	34	-67.6%
Profiles	217	23.5%
Sheets	144	70.1%
Others	50	-2.0%
Total	4560	10.9%

Sector-wise % Share



India's Demand ~9.4% of the Global Demand, W&C Fastest Growing

Source: Industry Analysis

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Shaping The Future Of Plastics

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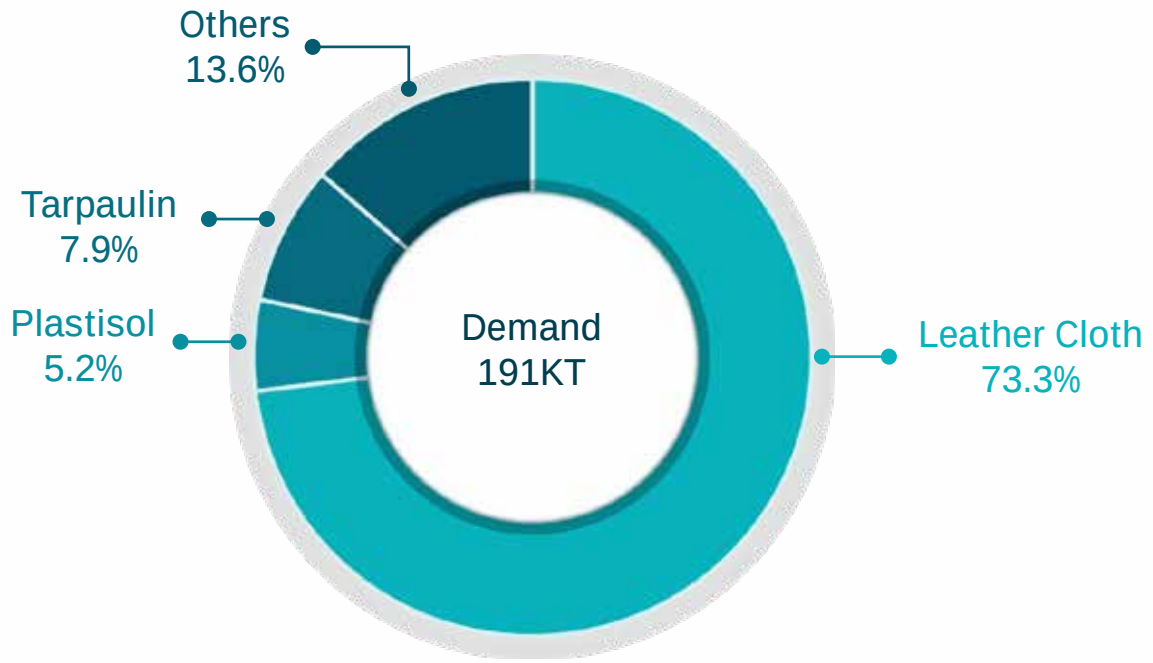
E-PVC Demand Analysis FY25

Sector-wise Demand

Segment	Demand (KTA)
Leather Cloth	140
Plastisol	10
Tarpaulin	15
Others	26
Total	191

Sector-wise % Share



Leather Cloth is Largest Market Segment for E-PVC

Source: Industry Analysis

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Shaping The Future Of Plastics

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CPVC Demand Analysis FY25

Sector-wise Demand

Segment	Demand (KT)	Market Share
Plumbing Pipes	242	98.8%
Fire Fighting, Industrial & Others	3	1.2%
Total	245	100%

India - World's Largest Market for CPVC

Source: Industry Analysis, Prismane Consulting

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Shaping The Future Of Plastics

Sector-wise Demand - PET

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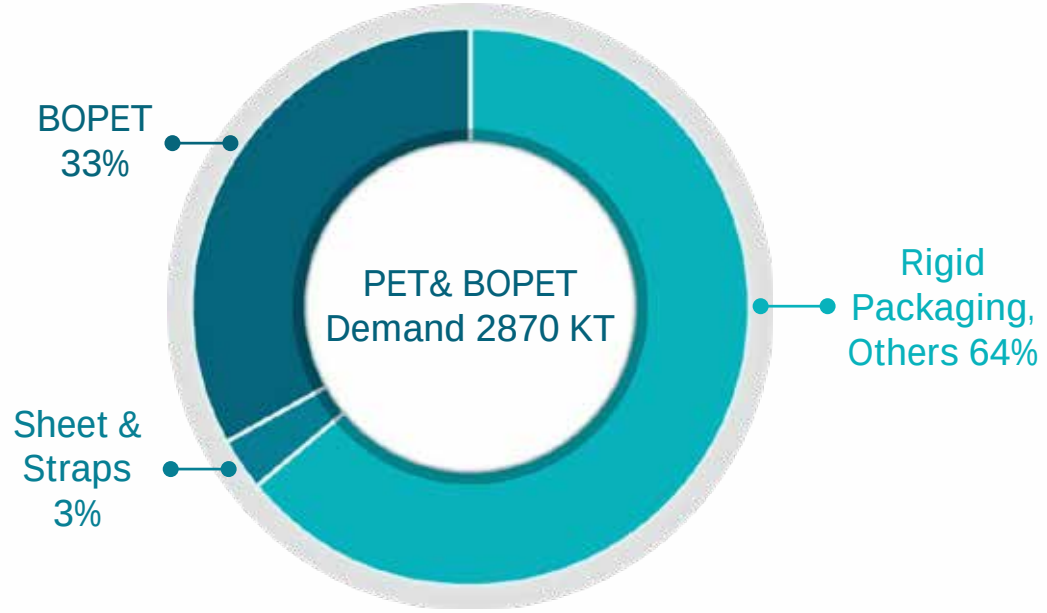
PET Demand Analysis FY25

Sector-wise Demand

Sector	Demand (KT)	YoY Growth
Rigid Packaging, Others	1834	10.8%
Sheet & Straps	76	-12.3%
Total PET	1910	9.6%
BOPET	960	6.7%
Total PET+BOPET	2870	8.6%

Sector-wise % Share



India's PET Demand ~6.1% of the Global Demand

Source: Industry Analysis

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Shaping The Future Of Plastics

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PET Demand Analysis FY25

PET Rigid Packaging Segment-wise % Demand

Segment	% Demand
CSD/Fruit Drinks	41%
Bottled water	19%
Liquor	10%
Pharmaceuticals	8%
Edible oil	5%
Personal care	6%
Wide Mouth Jar	4%
Home Care	3%
Agro Chemicals	2%
Dairy	2%

CSD & Fruit Drinks are Major Segments for PET

Source: Industry Analysis

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Shaping The Future Of Plastics

Sector-wise Demand - PS

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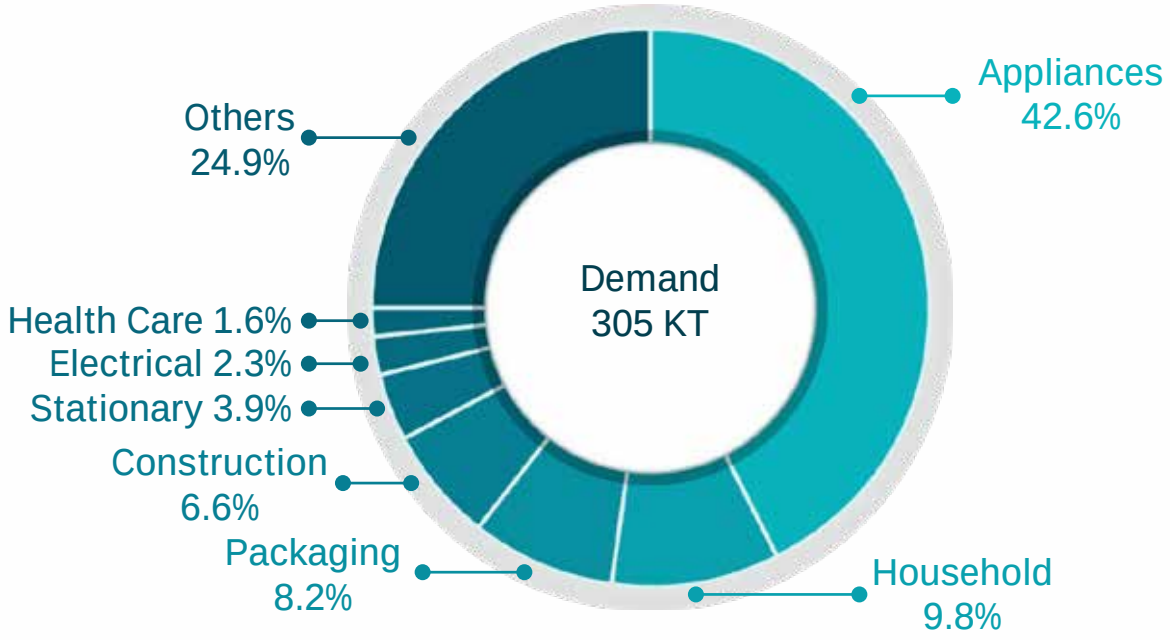
PS Demand Analysis FY25

Sector-wise Demand

Sector	Demand (KT)
Appliances	130
Household	30
Packaging	25
Construction	20
Stationary	12
Electrical	7
Health Care	5
Others	76
Total	305

Sector-wise % Share



India's Demand ~2.6% of Global, Appliance is the Biggest Segment

Source: Industry Analysis, Prismane Consulting

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Shaping The Future Of Plastics

Sector-wise Demand - EPS

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EPS Demand Analysis FY25

Sector-wise Demand

Sectors	Demand (KT)	Market Share
Appliances/Other Packaging	80	50%
Packaging Boxes for Grapes/Fish etc	50	31%
Construction & Others	30	19%
Total	160	100%

India's Demand ~2% of Global Demand, White Goods Packaging is the Largest

Source: Industry Analysis

Bharat Next
Shaping The Future Of Plastics

Sector-wise Demand

Engineering, High Performance and Specialty Plastics

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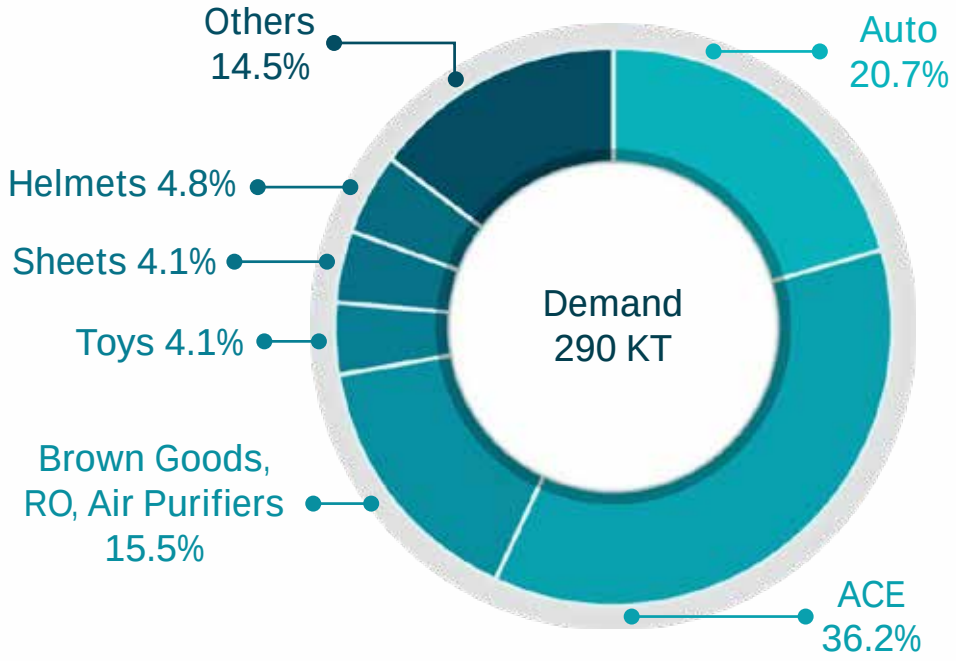
ABS Demand Analysis FY25

Sector-wise Demand

Sector	Demand (KT)
Appliances & Consumer Electronics	105
Auto	60
Brown Goods, RO, Air Purifiers	45
Helmets	14
Toys	12
Sheets	12
Others	42
Total	290

Sector-wise % Share



India's Demand ~2.8% of the Global Demand, Appliances is the Largest

Source: Industry Analysis

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Sector-wise Demand - SAN

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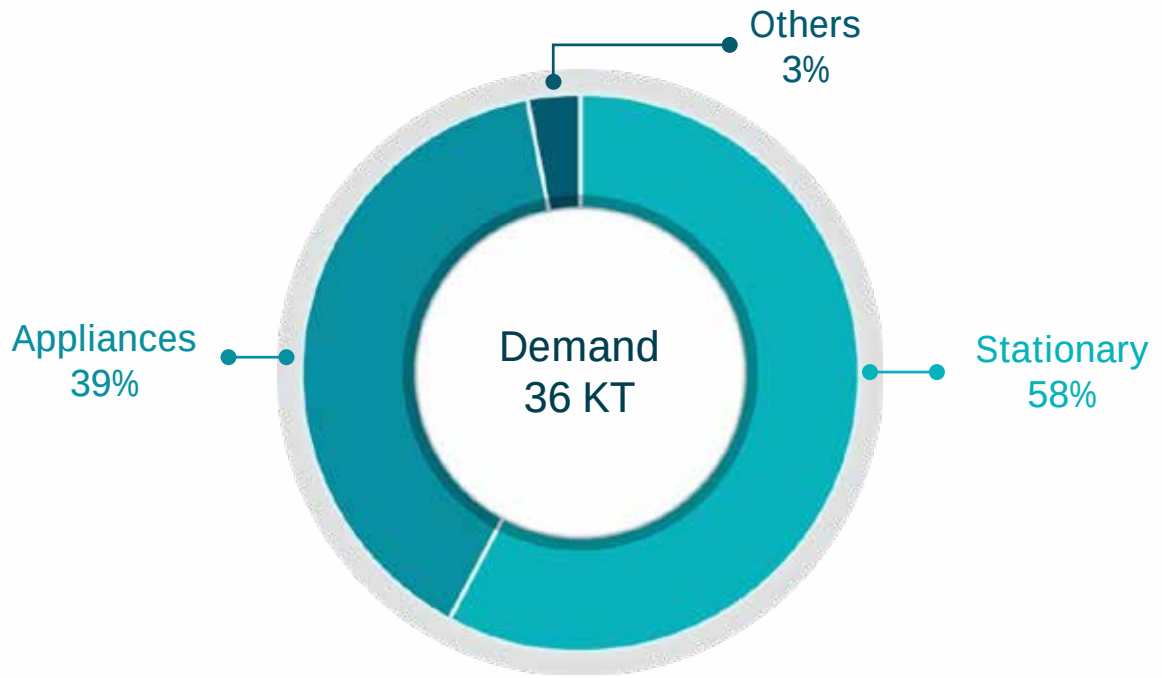
SAN Demand Analysis FY25

Sector-wise Demand

Sector	Demand (KT)
Stationary	21
Appliances	14
Others	1
Total	36

Sector-wise % Share



Stationary & Appliances are Major Sectors

Source: Industry Analysis, Prismane Consulting

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Sector-wise Demand - Polycarbonate (PC)

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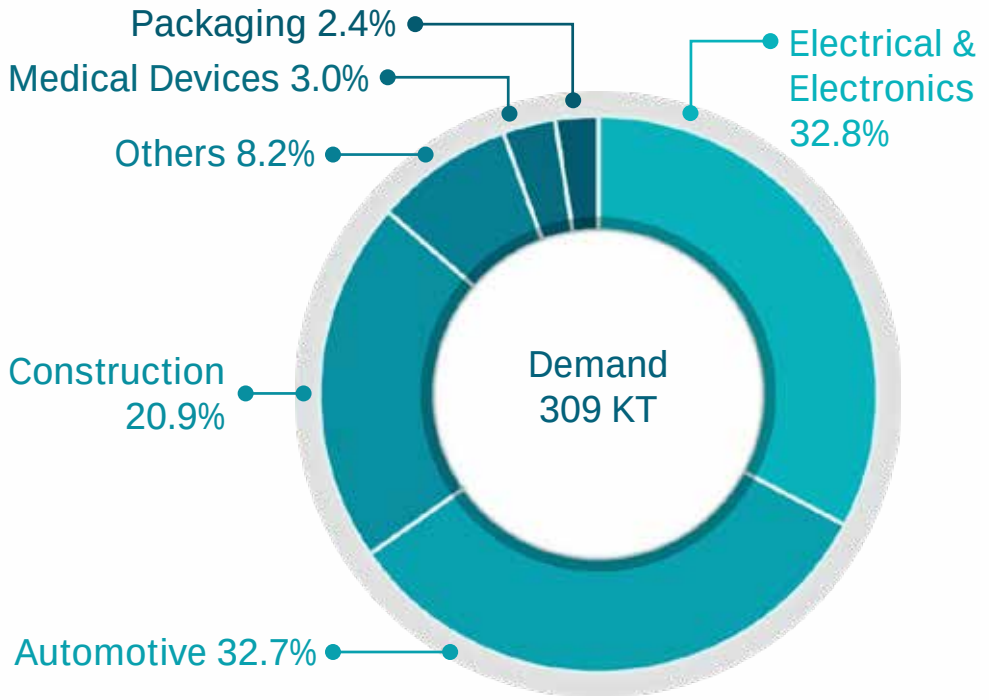
PC Demand Analysis FY25

Sector-wise Demand

Sector	Demand (KT)	YoY Growth
Electrical & Electronics	101	16.8%
Automotive	101	14.5%
Construction	65	10.8%
Others	25	13.8%
Medical Devices	9	6.9%
Packaging	7	11.8%
Total	309	14.2%

Sector-wise % Share



Electronic Industry & Automotive are Major Sectors

Source: Industry Analysis, Prismane Consulting

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Sector-wise Demand - Polyamide (PA)

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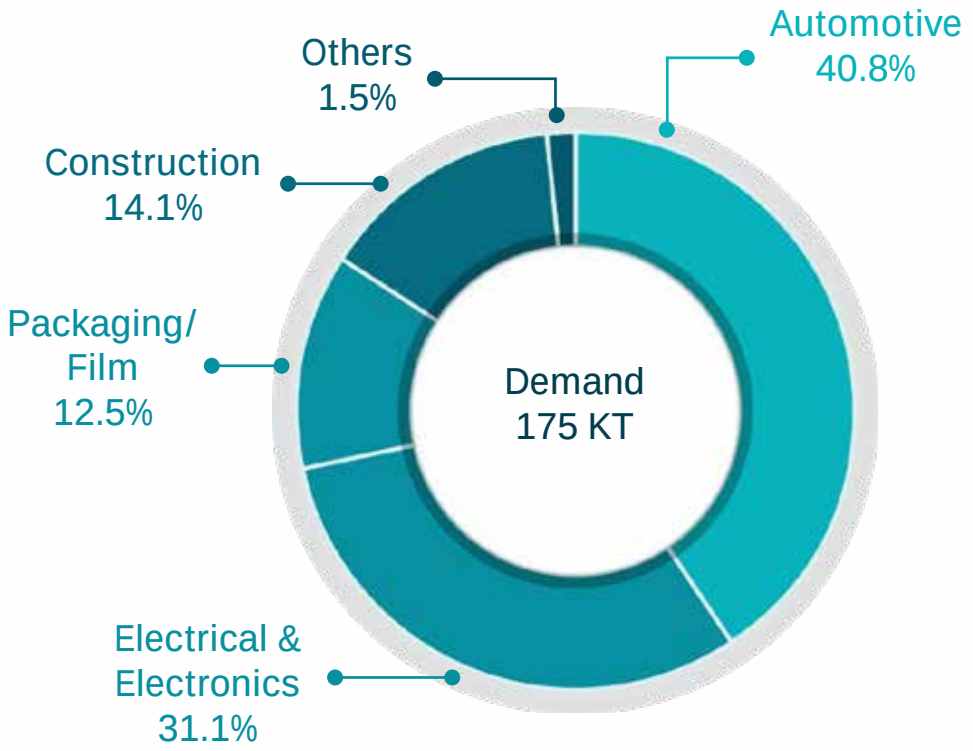
PA Demand Analysis FY25

Sector-wise Demand

Sector	Demand (KT)	YoY Growth
Automotive	72	6.0%
Electrical & Electronics	54	6.8%
Packaging/Film	22	5.2%
Construction	25	3.6%
Others	3	4.8%
Total	175	5.9%

Sector-wise % Share



Automotive is the Major Sector

Source: Industry Analysis, Prismane Consulting

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Sector-wise Demand - Polyacetal (POM)

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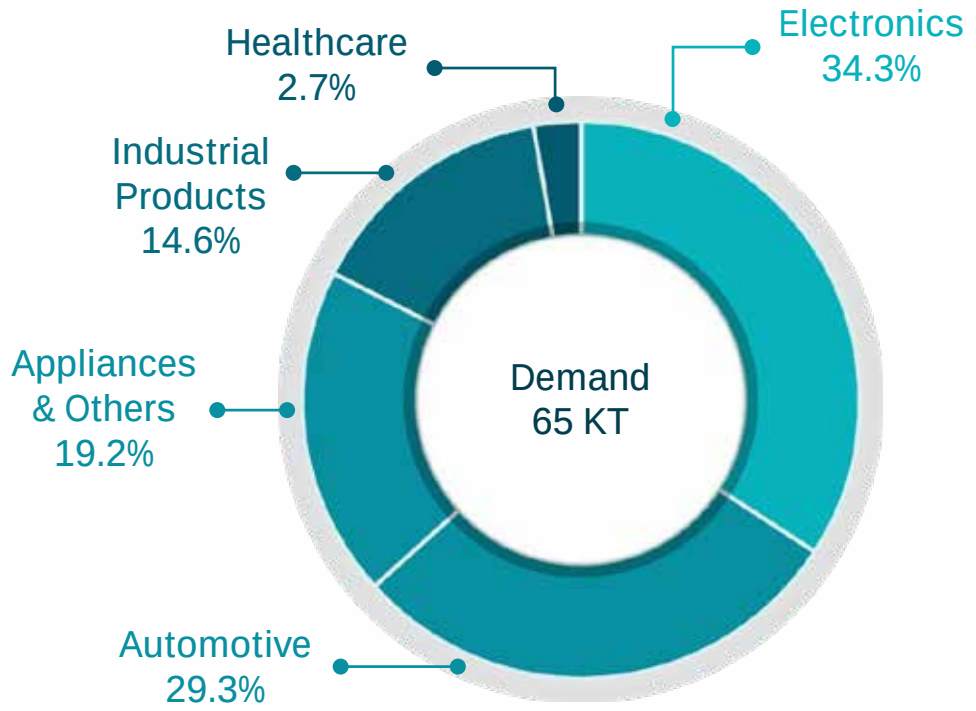
POM Demand Analysis FY25

Sector-wise Demand

Sector	Demand (KT)	YoY Growth
Electronics	22	5.2%
Automotive	19	5.1%
Appliances & Others	12	4.0%
Industrial Products	9	3.6%
Healthcare	2	6.4%
Total	65	4.8%

Sector-wise % Share



Electronic Industry is the Leading Segment

Source: Industry Analysis, Prismane Consulting

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Sector-wise Demand - PEKK, PEK, PEEK

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PEKK, PEK, PEEK Demand Analysis FY25

PEKK Sector-wise Demand

Sector	Demand (in Tons)
Aerospace	100
Semicon	100
Defence	50
Medical	50
Total	300

PEK Sector-wise Demand

Sector	Demand (in Tons)
Aerospace	100
Oil and Gas	50
Industrial, E&E	50
Defence	20
Total	220

PEEK Sector-wise Demand

Sector	Demand (in Tons)
Industrial, E&E	50
Auto and Others	30
Oil and gas	25
Medical	10
Total	115

Aerospace & Defence - Key Sectors for High Performance Polymers

Source: Industry Analysis

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PES, PEI Demand Analysis FY25

PES Sector-wise Demand

Sector	Demand (in Tons)
Plumbing	400
Auto and others	300
Membrane	200
Medical	50
Total	950

PEI Sector-wise Demand

Sector	Demand (in Tons)
Automotive	300
Aerospace	150
Medical	100
E&E, Others	50
Total	600

Automotive - Key Segment for PES and PEI Polymers

Source: Industry Analysis

Specialty Polymers - TPU Demand

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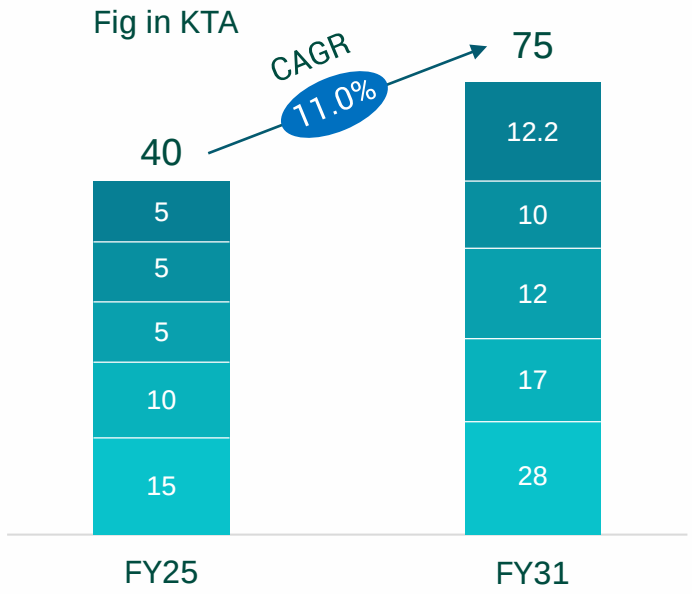
TPU - FY24 Demand & FY31 Forecast



Application	CAGR % FY25-FY31
Adhesives	8.1%
Others	12.2%
Mobile Covers	15.7%
Luggage, Others	9.2%
Footwear Sole	11.0%

TPU Indian Market Trends

TPU Demand likely to grow by CAGR 11% by FY31

Footwear is the Largest Segment for TPU, likely to Grow by 11% CAGR by FY31

Mobile Cover Segment likely to Grow by 15.7% CAGR by FY31. Highest growth Segment

Footwear Sole is the Largest Segment for TPU

Source: Industry Analysis

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Sector-wise Demand - Thermosets

Thermoset - PU Resin Global Demand

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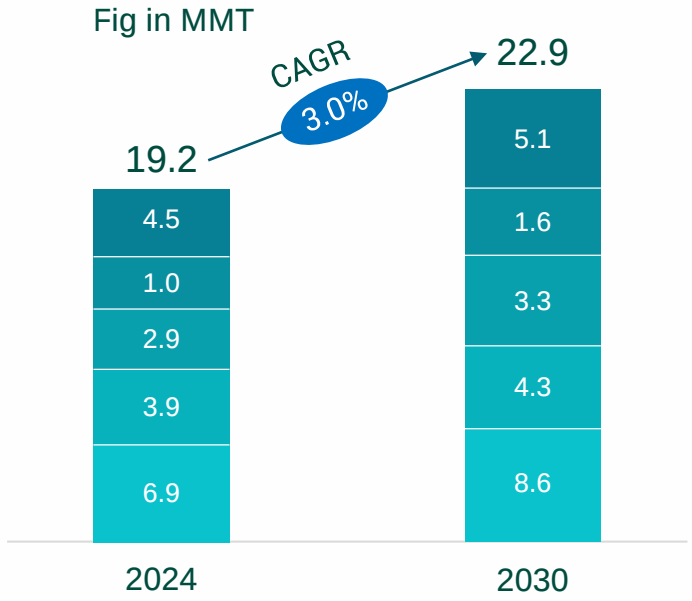
PU Global Demand 2024 & Forecast 2030



Country/Region	CAGR % 2024-2030
Rest of the World	2.1%
India	7.6%
North America	1.9%
Europe	1.9%
China	3.8%

Global PU Industry Trend

Global PU industry is expected grow by 3% CAGR 2030

China 2024 Demand 6.9 MMT with 36% share

India's Demand Growth is expected to be the Highest among Major Economies, due to its low base

Europe & North American Market Growth Lower than Global Average

China Demand 36% & India 5.4% of Global Demand

Source: Industry Analysis, Indian Polyurethane Association

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Thermoset - PU Resin India Demand

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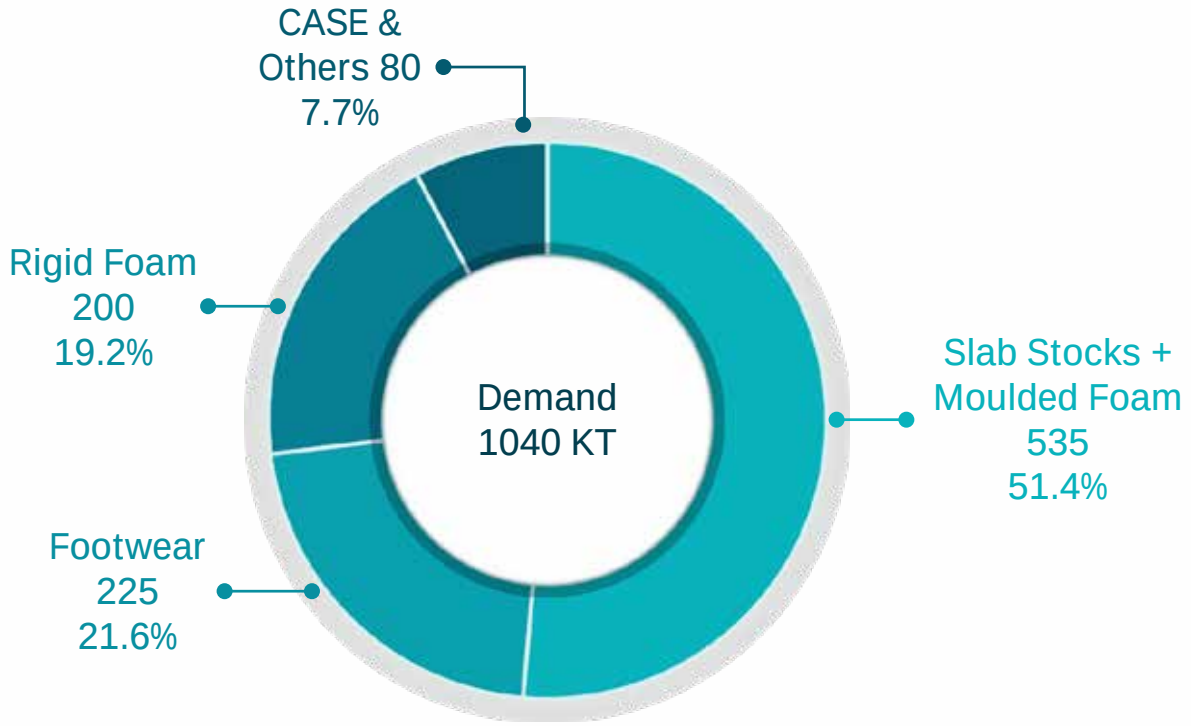
PU Product-wise Demand FY25



Indian PU Industry

Slab Stock & Moulded Foam is the Largest Segment likely to Grow by CARG 8.1% FY31

Rigid Foam in Thermoware & Appliances is likely to Grow by CARG 7% FY31

Coatings, Adhesives, Sealants, Elastomers & others is likely to Grow by CARG 7.9% FY31

India PU Demand Crosses 1 Million Ton Mark in FY25

Source: Industry Analysis, Indian Polyurethane Association

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Thermoset - PU Resin India Demand

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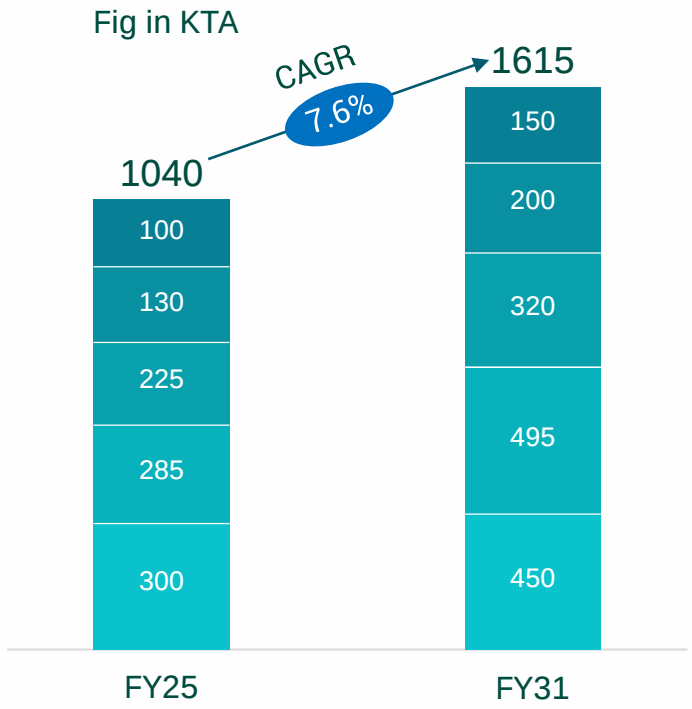
PU Industry-wise Demand Forecast FY31



Segment	CAGR % FY25-FY31
Auto Foam - Flexible	7.0%
Appliances	7.4%
Footwear	6.0%
CASE, TPU & Others	9.6%
Furniture & Bedding	7.0%

Indian PU Industry

CASE, TPU Industry likely to Grow by 9.6% CAGR FY31

Footwear Key segment is likely to Grow by 6% CAGR

Demand in Auto Segment is likely to Grow by 7% CAGR

PU Demand is likely to Grow by 7.6% CAGR by FY31

India Demand likely to Grow the Fastest Among Large Economies

Source: Industry Analysis, Indian Polyurethane Association

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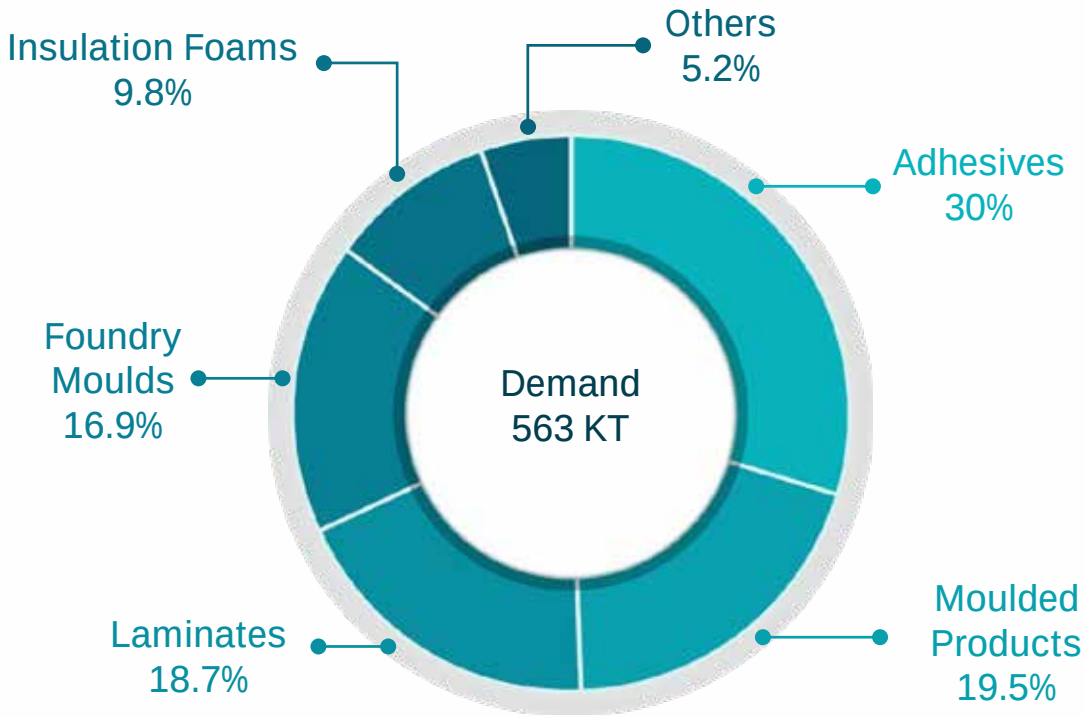
Phenolic Resins Demand Analysis FY25

Sector-wise Demand

Sector	Demand (KT)
Wood Adhesives	169
Molding	110
Laminates	105
Foundry	95
Insulation	55
Others	29
Total	563

Sector-wise % Share



India - Growing Market for Phenolic Resins

Source: Industry Analysis

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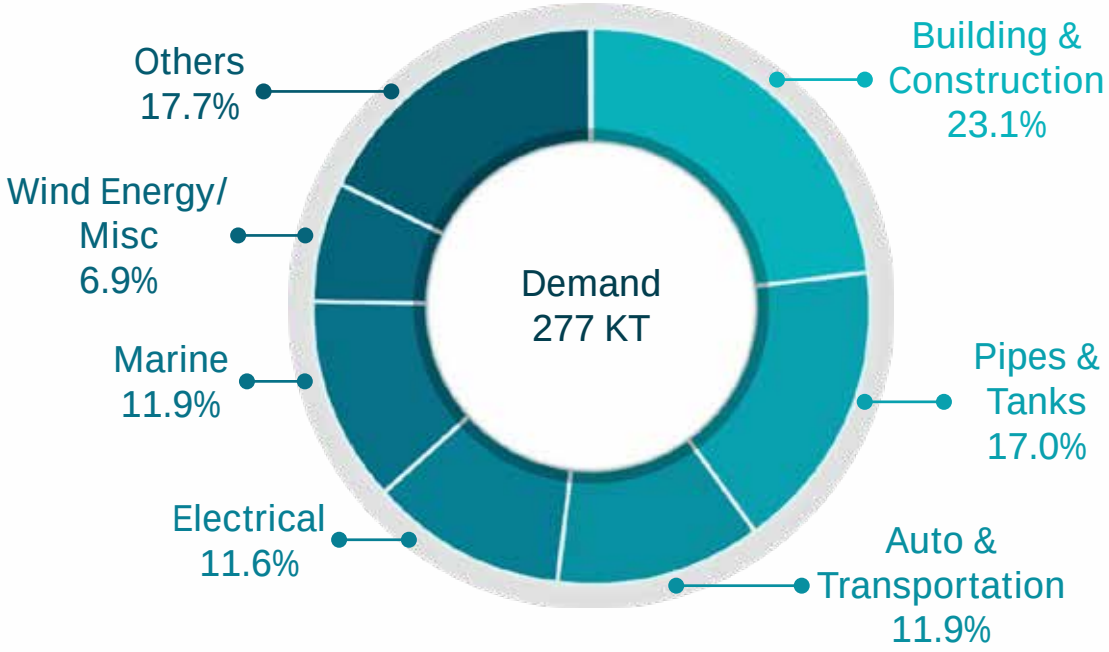
Unsaturated Polyester Resin (UPR) Demand FY25

Sector-wise Demand

Sector	Demand (KT)
Building & Construction	64
Pipes & Tanks	47
Auto & Transportation	33
Marine	33
Electrical	32
Wind Energy/Miscellaneous	19
Others	49
Total	277

Sector-wise % Share



UPR: Powering Manufacturing and Infrastructure

Source: Industry Analysis

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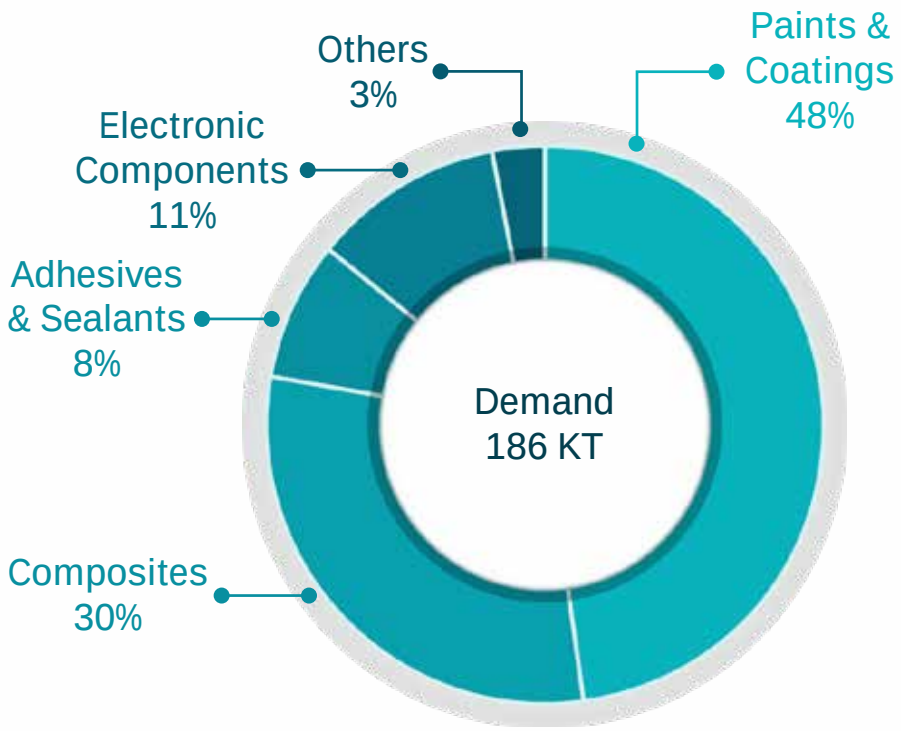
Epoxy Resin Demand Analysis FY25

Sector-wise Demand

Sector	Demand (KT)	YoY Growth
Paints & Coatings	90	7.1%
Composites	56	6%
Electronic Components	20	5.4%
Adhesives & Sealants	15	5.7%
Others	5	4%
Total	186	6.2%

Sector-wise % Share



Paints & Coatings is the Largest Segment for Epoxy

Source: Industry Analysis

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Key End Use Sector Insights

Sector Insights - Packaging Films

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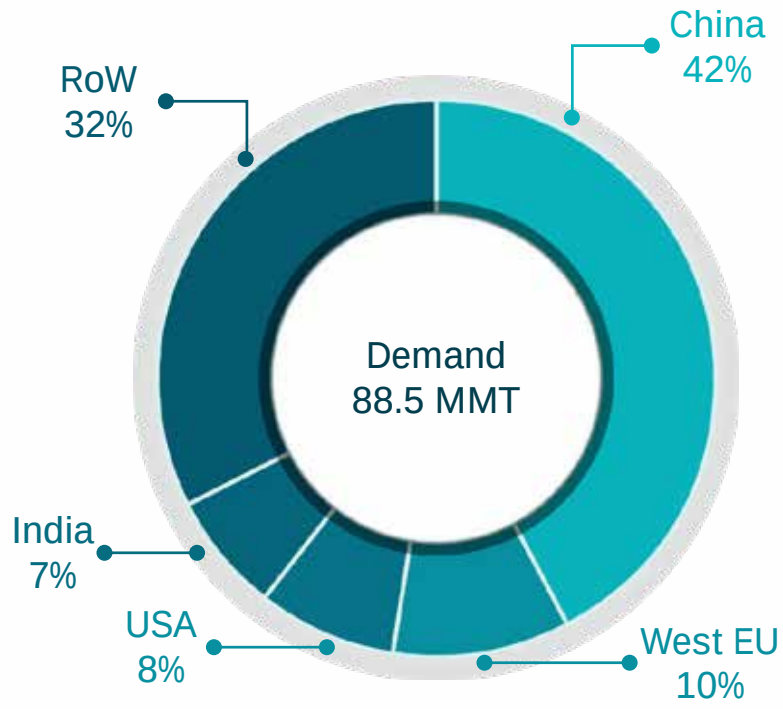
Global Packaging Films Insights

- Global Packaging Films demand is **88.5 MMT** in PP, HD, LL, LD & BOPET with Healthy 5% CAGR till 2030.
- Plastics are key substrates in Films & Laminates structures. PE Volume contributes **72%** (LL-39%, LD-18% & HD-15%), PP-23% & BOPET-5% Globally.
- **China is the Largest Films** market with **37.5 MMT**, followed by West EU at 8.7 MMT, USA at 7.3 MMT, while **India demand is 6.5 MMT**. Growth from emerging Asia is driven by lifestyle changes, economics & faster adoption of new converting technologies.
- Substrates like BOPP and mPE are growing at 6-8% CAGR while BOPET & LDPE are growing at 4-6% CAGR due to inter polymer shift.
- Packaging Films scope covers Films for Food & Non-Food Packaging, retail, trash bags, shrink & film wrap, extrusion coated & laminates polymers. Substrates like Foil, laminating adhesive and Paper are not part of the assessment.

Global Packaging Films Demand* Region-wise



* Industry Estimates

PE is the preferred substrate for Packaging Films

Source: Industry Analysis

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Sector Insights - Packaging Films

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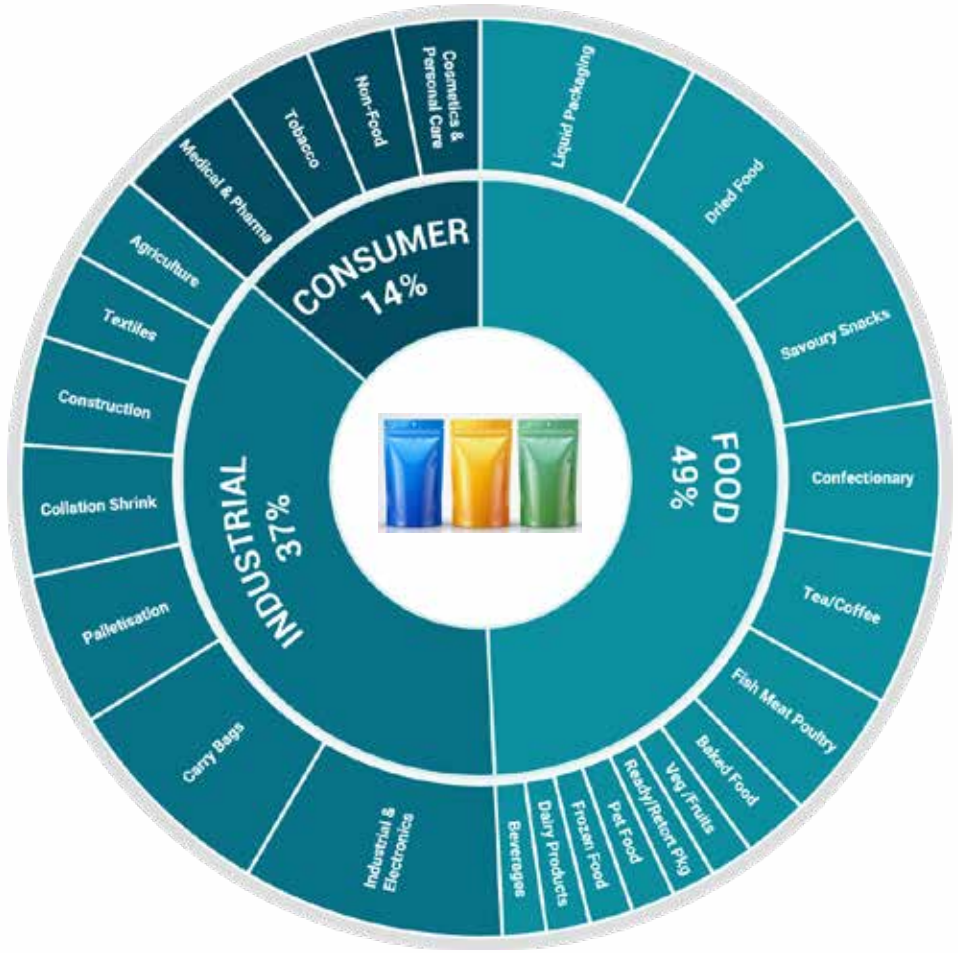
India Packaging Films Insights

- India's retail market was US$1,088 Bn in FY25, at 9% CAGR over past 6 years & expected to reach US$1597 Bn by FY29 at 10% CAGR. General Trade expanded 7%, Modern trade 21% while E-commerce grew 25% CAGR over last 6 years.
- India's Food processing Industry is US$355 billion in FY25 & expected to reach US$700 Bn by FY31. The Packaged Food market grew from US$76 Bn in FY19 to US$127 Bn in FY25 at CAGR 11% and expected to grow US$216 Bn by FY29.
- The Indian Packaging Film sector is in midst of this dynamic landscape as fast-growing segment with **6.5 MMT** volume in FY25 & **7-8% CAGR** till FY31 albeit enormous cost pressure from highly fragmented value-chain.
- PE dominates the substrates with **66% share** while BOPP/CPP has 23% share and BOPET 11% share.
- Food Packaging is a large constituent ~50% of the Packaging Film in India with Dried food, snacks, confectionary showing healthy 8-10% growth followed by beverages, Pet food & Cosmetics
- Industrial Packaging is driven by sustainable packaging options of Shrink & palletized format to replace heavier cartons/crates that increases Carbon footprint



India Packaging Films Growth driven by Food & Retail Sector

Source: Industry Analysis, Technopack

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Market Drivers & Trends

Socio-Economic Trends

- With urbanization, e-commerce, higher disposable incomes and busy lifestyles, Consumers are seeking convenience like microwaveable packaging, easy serve packs, carry-away, resealable, and easy-open packs
- The gig economy/growing working women with high spending power are inclined to eat away from home/ takeaways
- Consumer concerns on food wastage is leading to shelf-life increase with high barrier pkg. BOPET, BOPP, BOPE and EVOH with different oxygen/moisture barrier are meeting these needs
- Health, wellness, less preservatives are becoming key drivers of conscious population while balancing Minimal packaging to meet sustainability targets
- Cross-industry collaboration is becoming key to make tectonic shifts & address interdependent expectations of the value chain

Materials & Machinery Advancements

- Improving film performance, stiffness/toughness balance, structure optimization, MDO/BOPE laminates & compatibilisers to blend PA/ EVOH in PE are emerging materials solutions
- Gradual shift to recyclable mono-materials (all-PE/PP). Foil is replaced by high-barrier PP/PE to enable circularity. 7-9 layer MDO Film with better elongation resistance is a good fit. Barrier optimization with high performance PE by increasing puncture resistance & enabling recyclability
- New Converting Equipment with High-efficiency drive and extruder, Better melt & die, Optimized heating, cut waste, shorten setup time, Higher production output are enhancing standards
- Automation & AI on the Packaging Line is new mantra, AI-driven quality inspection, Predictive material waste reduction is saving costs & wastages
- Digital Printing Lines with UV Flexo, inline presses are enabling short runs & hence expanding Industry base

Disruptive Innovations in Films Packaging is bringing Newer Opportunities

Source: Industry Analysis

Market Drivers & Trends

Brand Owner Approach

- Brand Owners are increasingly focusing on packaging innovation as a central element of their differentiation strategy while making conscious design decisions to avoid hard-to-recycle substrate
- Brand Owners are working on multiple fronts like Carbon footprint, PPWR, EPR and LCA fact-checking to position Sustainable materials
- Growing emphasis on promoting designs that enable reuse and refill packaging. With Strong focus on sustainability, Brands are mooting for chemically recycled resins
- Smart packaging is now interactive with QR codes replacing labels to enhance consumer engagement & build anti-counterfeiting measures and traceability
- With the rising logistics costs, focus is now on creating right-sized pack and utilizing lightweight materials to optimize costs

Environmental & Regulatory Push

- Availability of Non-food Film PCR is improving due to innovations like AI based sorting thereby easy to position in secondary packaging. Food grade film PCR is evolving
- rPET usage is getting traction in laminate that helps meet EPR obligation & becoming viable option to scaleup
- Design for recycling, upgrading recycle stream & increasing recycle content is helping meet sustainability goals
- Chemical recycling/EOL options like Pyrolysis are gaining ground to address hard-to-recycle MLP
- Certified PCR Suppliers for Food & Non-food applications are enabling compliance for the Brand Owners
- Compostable & Biodegradable solutions are now on design table to target Food service ware & flexible packaging

Brand Owners & Converters are embracing Sustainability as New Normal

Source: Industry Analysis

Sector Insights - Lamitubes

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The Lamitubes Industry involves the production of multilayer laminated tubes for packaging various products, including oral care, cosmetics, pharmaceuticals, and food. These tubes are made from plastic with a barrier layer (Aluminum or Plastic) and are valued for their excellent barrier properties, which protect contents from air, moisture, and odor, thereby increasing shelf life

FY25 Lami Tube Market Insights	
No of Manufacturers	60+
Manufacturing Capacity (in billion Tubes)	~ 10 Billion
Aluminum Barrier Laminate (ABL) Tube Capacity	~ 7 Billion
Plastic Barrier Laminate (PBL) Tube Capacity	~ 3 Billion
Expected Demand Growth CAGR FY31	6-7%

Lamitube Segments

- Cosmetics & Personal Care
- Pharmaceuticals
- Food and Beverages
- Industrial
- Others

ABL Type Tube Usage

- 100% (Pharma)
- 55% (Oral Care)
- 10% (Food)

PBL Type Tube Usage

- 100% (Cosmetics)
- 90% (Food)
- 45% (Oral care)

Trend towards Sustainable PBL Tubes, Gaining Market Share

Source: Industry Analysis

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Sector Insights - Lamitubes

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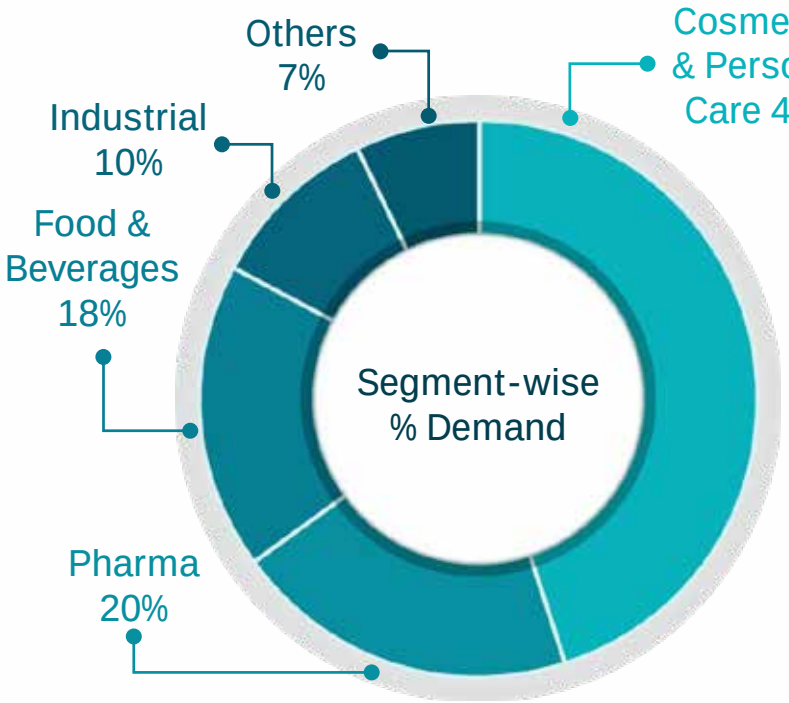
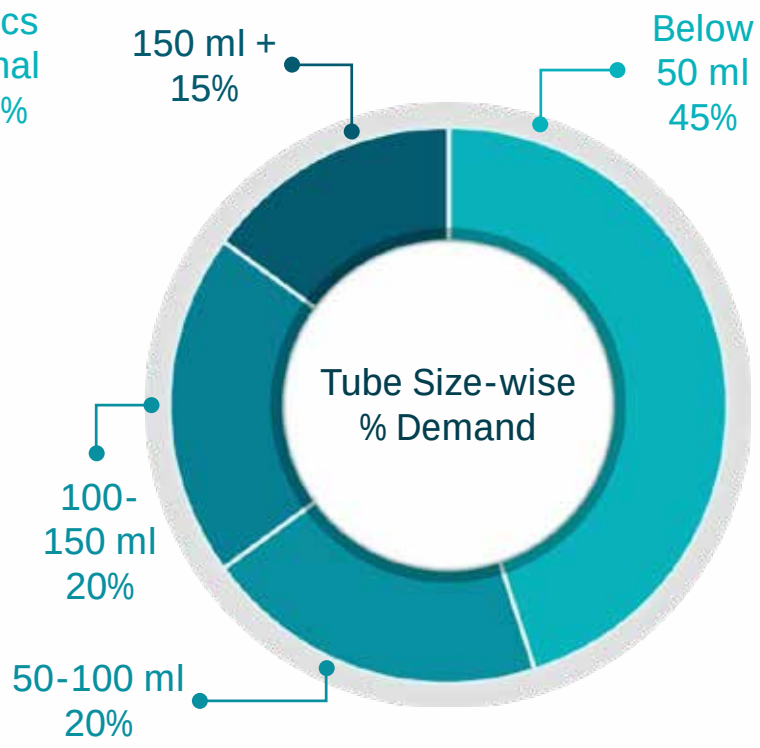
India Lamitubes Market Insights

Segment-wise Demand



Sector-wise % Share



Market Insights

Closures in Lamitubes Sector

- Flip Top Cap (Predominately Used)
- Screw Type Cap
- Snap on Cap

Segment Insights

Pharma Industry is growing by ~8% YOY

India's Beauty and Personal Care Market is growing at a CAGR of ~9%

E commerce is playing big roll in Cosmetic Market Growth

Oral Care is the biggest Segment for Lamitubes

Source: Industry Analysis

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Sector Insights - Lamitubes

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Design for Recycling

Earlier Trends
Composite Tube Structures

PP Caps →
HDPE Shoulder →
Al Barrier Laminate →

Current Trends
Recycling Structures (5% Barrier Layer)

← HDPE Caps
← HDPE Shoulder
← HDPE Based Laminate

Market Trends

Drive toward Fully Recyclable Product

Recyclable PBL laminate Structures in Tube Laminates

Oral Care Tubes are converting to PBL laminate with EVOH barrier

For Oral Care Laminate thicknesses getting reduce by ~15%

Shoulder & Cap Weight getting reduced by 10 to 40% depends on Tube diameter

Sustainability Drivers

- Focus on Tube Lifecycle and Reduce the Product Carbon Footprint
- Tube Design for Easy Recycling and PCR Usage
- Enable usage of Recycled Resins without impacting Product Quality
- Trend toward sustainable HDPE based Barrier Lamitube

Market Shifting from Linear to Circular Economy with Mono-Material Design

Source: Industry Analysis

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Indian Raffia Industry Insights

India's Raffia Industry is a major segment within the plastics and packaging sector, catering to applications such as woven sacks, FIBCs, tarpaulins, and other industrial packaging solutions.

Cost-competitive manufacturing, an integrated supply chain, and a skilled workforce position India as one of the leading global suppliers of raffia-based finished products.

Demand for raffia products is primarily driven by end-use sectors like Cement, Fertilisers, Food Grains, Agricultural Produce, and a wide range of Industrial Products including Polymer Packaging Bags.

FY25 Indian Raffia Industry Insights	
No of Machines	2200+
Installed Capacity (MMT)	6.6+
HD/PP Resin Demand (MMT)	2.9
Resin Demand YoY Growth	6.8%
PP/ HD Demand ratio	84:16

Raffia Industry Trends

Global Raffia Resin Demand estimated to be ~20.6 MMT in 2024

China is the World's Largest Raffia Market
Demand (E) ~11 MMT
53.5% Share of Global Demand

India Second Largest in the World
FY25 Demand 2.9 MMT

US is the Largest Importer of Raffia Finished Goods

One of the Largest Employment Generating Sector in Plastic Industry

Source: Industry Analysis

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India - Raffia Market Trends

- Cement is the biggest Market Segment
- Shift in Cement Packaging Trends from Pillow Bags to Block Bottom Bags
- Fertilizer is the 2nd largest Market Segment

Sustainability Trends

- PCR Usage in raffia gaining momentum
- PCR Block Bottom Cement bag with closed loop recycling getting evolved
- FIBC /Jumbo bags with rPP content
- rPET based Fabrics & FIBCs
- PLA based Woven Bags as a Biodegradable Solution
- Adoption of Solar Energy by Raffia Processors to reduce their carbon footprint

Raffia Market Insights

High Tenacity Bags - High strength to weight ratio

Low Shrinkage Tapes for Carpet Backing

Shopping Bags/Small Woven Bags

Specialty Fabrics like Roof Underlayment, Silt Fence, Woven Geotextile, Ground Cover, Pond Liners

India is the largest exporter of FIBCs and one of the major exporter of Raffia Finished Goods

Sustainability Trends Shaping India's Raffia Market

Source: Industry Analysis

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Raffia Finished Goods Exports FY25

The Indian raffia industry has a strong export orientation, supplying woven sacks, FIBCs, tarpaulins, and technical raffia products to international markets. India is the world's largest exporter of FIBCs, reinforcing its leadership position in the global raffia value chain.

Competitive manufacturing costs, strong compliance with international quality standards, and a well-established supply chain have enabled Indian raffia manufacturers to serve key export destinations across the Americas, Europe, the Middle East, Africa, and other Asian markets. In addition, markets such as Japan and South Korea present emerging Growth Opportunities for the Indian Raffia Industry.

Raffia Finished Goods Exports FY25	Quantity ~1.17MMT
	Value ~$2.32 billion (₹19,506 Cr)

Raffia FG Exports FY25

One of the Largest Export Segment in Plastic Finished Goods

Source: Industry Analysis

Raffia Machinery Trends

- Extrusion Lines Capable of Processing Higher Recyclate Content Recipes
- Wide Width Circular Looms for Weaving Fabric up to 5.9 meters (SFL) to replace high cost imported Flat Looms
- High Speed 6 shuttle Loom (1100 to 1200 picks per minutes)
- High Speed Extrusion Coating Lines
- Wide Width Printing Machines for specialized applications like Lumber Wrap, Roof Underlayment etc.
- High Speed Block Bottom Bag Conversion Machine
- High Speed Liner Insertion and Bag Making Machine
- AI based Inspection System & Predictive Maintenance
- Trends towards Energy Efficient Extrusion lines & Converting Machines

Energy Efficiency improved by 10-15% compared to past decade

Source: Industry Analysis

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PVC/CPVC/PE/PP Resin Demand in Pipes & Fittings FY25

Segment	Demand (KT)	YoY Growth (%)
PVC Pipes & Fittings	3568	10.9%
**HDPE Water Distribution + Industrial Pipe	610	-20.1%
*MD/HDPE Gas Distribution Network	29	6.4%
HDPE Optical Fibre Duct	100	-4.8%
Sprinkler (HDPE)	90	0.1%
CPVC Pipes & Fittings	245	6.5%
HDPE Corrugated Pipe (Sewage + Cable Duct)	65	11.1%
LLDPE Drip Irrigation	205	5.3%
Plumbing Pipe PPB / PPR	24	13.6%
Total Market	4936	4.9%

* compounded ** partly compounded

Demand Drivers

Government Initiatives

National Infrastructure Development

Jal Jeevan Mission

City Gas Distribution (CGD)

Smart Cities

AMRUT 2.0

Agricultural Sector

Precision & Sustainable Agriculture initiatives like Pradhan Mantri Krishi Sinchayee Yojana (PMKSY)

PVC accounts for 72% of Plastic Pipes & Fittings Resin Demand

Source: Industry Analysis

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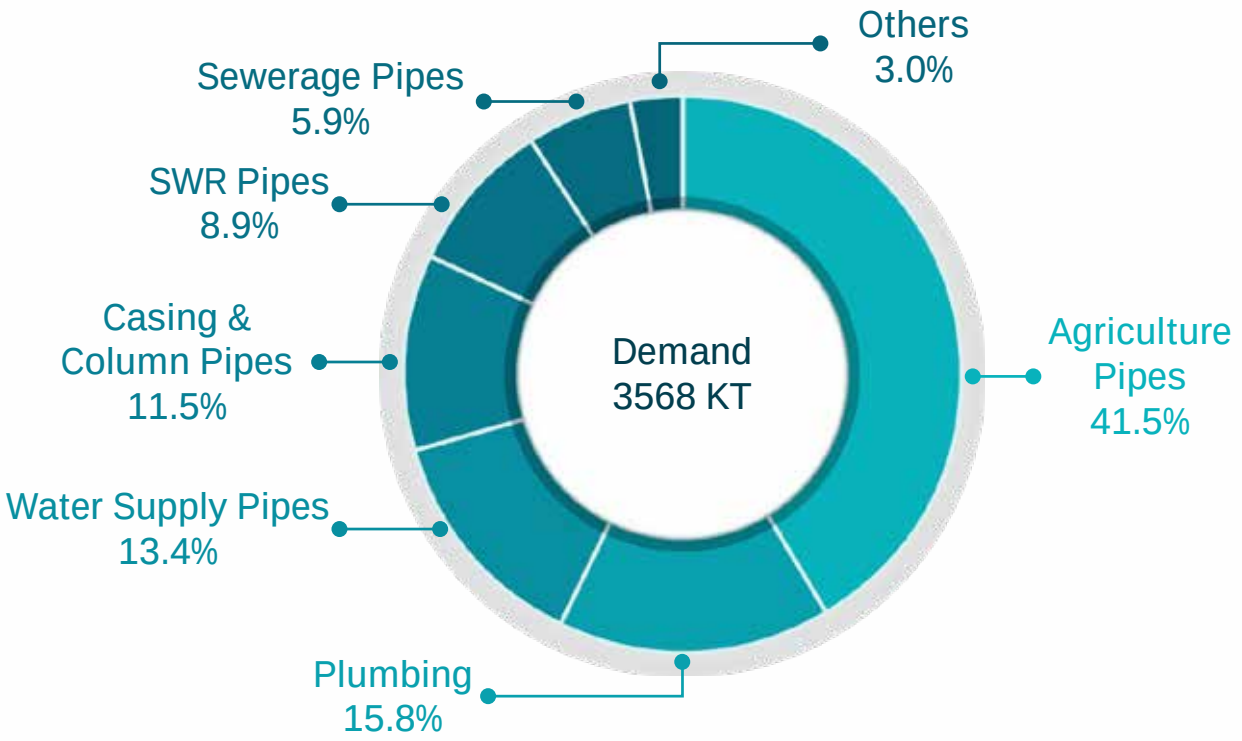
PVC Resin Demand in Pipes & Fittings FY25

Application-wise % Share



Agriculture Pipes is the Largest Segment

Source: Industry Analysis

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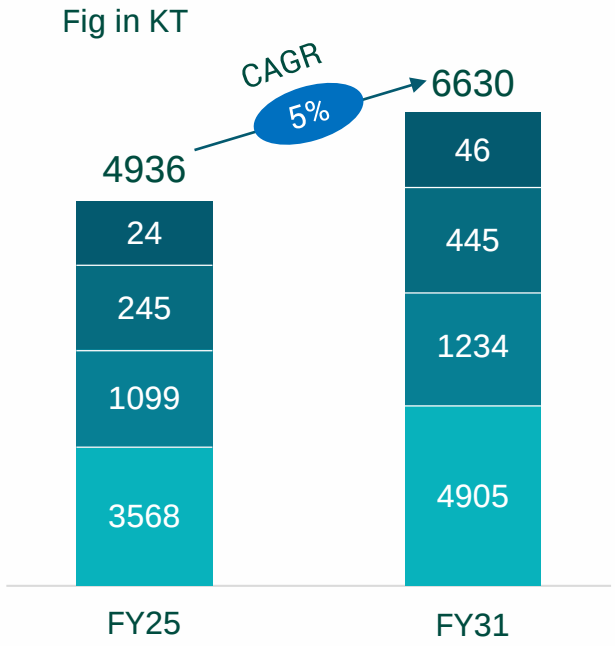
Resin Demand FY25 & Forecast FY31



Type	% CAGR FY25 - FY31
PP	11.9%
CPVC	10.5%
PE	1.9%
PVC	5.4%

Plumbing Segment likely to be Highest Growth Segment

Source: Industry Analysis

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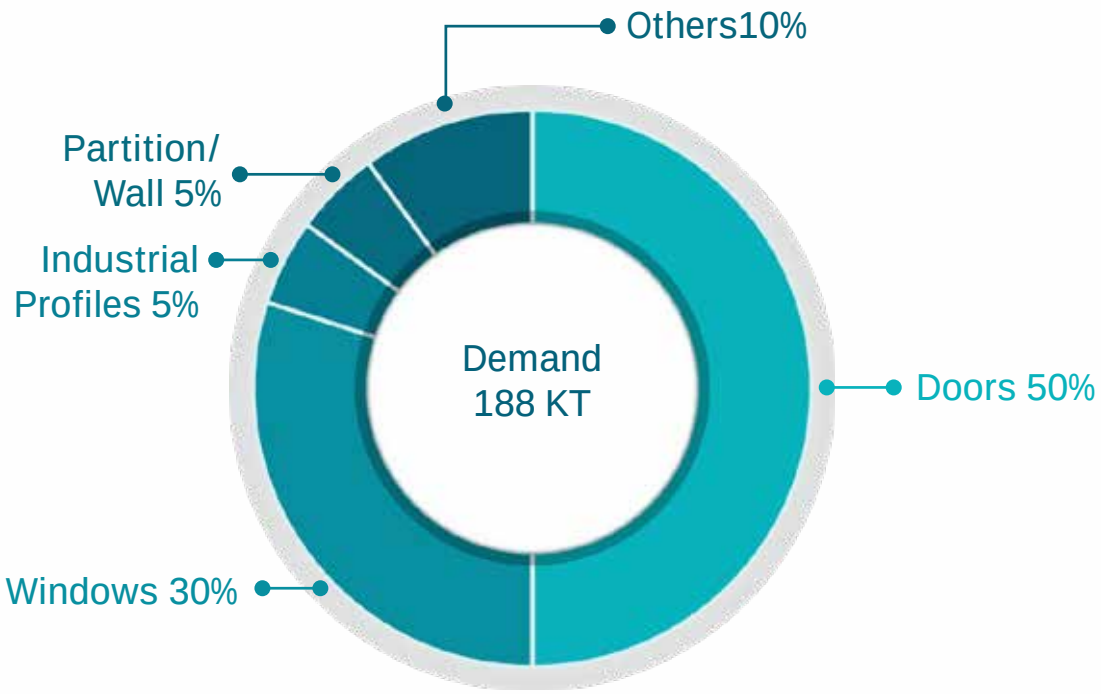
PVC Profile Sector Insights FY25

PVC Profile Sector Insights	
No of Manufacturers	140+
PVC Resin Demand (KT)	188
Capacity Utilization %	60%
YoY Growth FY25	15%
Growth FY26 (Estimated)	10%
Market Size	₹ 7,200 Cr

Application-wise % share



Door & Window Segment catching up with Global Trends

Source: Plastindia Foundation, Industry Analysis

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Sector Insights - Wire & Cable

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W&C Sector Insights FY25

W&C Type	Segment	Demand (KT)	YoY Growth (%)
PE	L T Cables(1.1KV TO 11KV) SIOPLAS XLPE	107	7.5
	Medium Voltage Cables (11 to 66 KV) - Peroxide XLPE + Semicon	60	10
	High & Extra High Voltage Cables (110KV to 400KV) - Peroxide XLPE + Semicon	10	9
	Optical Fibre Cables (HDPE Jacketing)	49	7
	Power Cable PE Jacketing	5	9
	Solar Cables + Flame Retardant Specialty Cables	7	15
	Data Cables, RF Cables & other Specialty Cables	6	6.5
PVC	PVC Wire & Cable (Sheathing & Insulation of Low & Medium voltage Cables and White Goods Cables)	339	23.3%
Total		583	14.5%

Demand Drivers

GOI focus on Renewable Energy and EV infrastructure

Advancement in Digital Infrastructure and Data Centre

Urbanisation, cluster and Smart City Developments

Expansion of Regional grids for easy transmission of Power

W&C - High Growth Segment

Source: Industry Analysis

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Sector Insights - Wire & Cable

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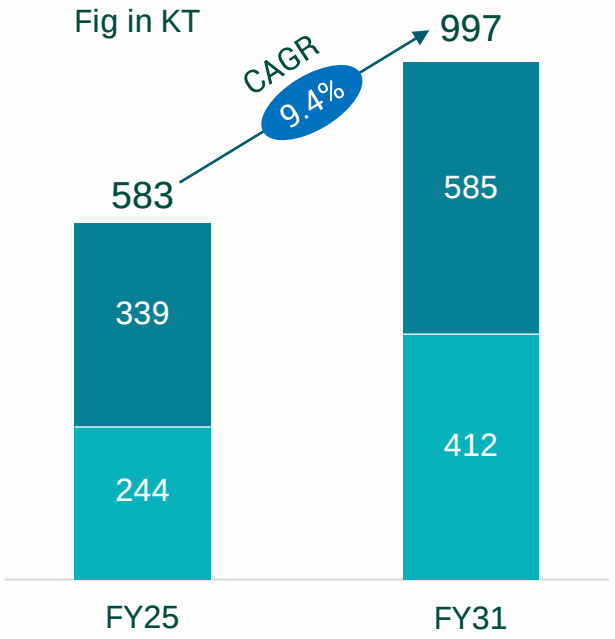
W&C Sector Forecast FY31



Segment	% CAGR FY25 - FY31
PVC W&C	9.5%
PE W&C	9.1%

PE W&C Growing in HV & Extra HV Segment

Source: Industry Analysis

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Rotomouding Sector Insights FY25

India's rotomoulding industry is a significant segment of the plastics sector, catering to a wide range of applications including water storage tanks, agriculture, material handling, automotive components, and sanitation products. The industry is growing at ~ 8% CAGR, driven by increasing demand from industrial and customised rotomoulded segments.

Toys and recreational products are emerging as key drivers of innovation within the rotomoulding industry. Additionally, government initiatives and rural development programmes are creating new market opportunities, particularly in water storage and sanitation applications. The renewable energy sector also offers substantial growth potential for rotomoulded products.

Industry Insights	
Biaxial Rotomoulding Machines (Nos)	1450+
Installed Capacity (KT)	545+
Key Polymers	PE, XLPE, PVC Plastisol, Nylon, PP, EVA
Material Demand (KT)	380+
Major End Use Segments	Water Tanks, Portable Sanitation Products, Custom Made, Industrial & Automotive Products, Toys

Indian Roto Industry is the 3rd Largest in the World by Volume

Source: Industry Analysis, Roto Mitra Forum (RMF)

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Rotomoulding Industry Sustainability Trends

The Indian rotomoulding industry is increasingly focusing on sustainability and reducing its carbon footprint. Rotomoulded products are inherently stress-free, durable and long-lasting, resulting in lower energy and resource consumption over their entire lifecycle when compared with alternatives. Product development Cycle is short and low cost compared to other Plastics processing.

Key Trends

- Industry is focusing on material optimisation to reduce overall carbon footprint
- Adoption of energy-efficient ovens to reduce specific gas consumption
- Hybrid Rotomoulding Machine for energy efficiency
- All Electric Rotomoulding Machine reduce dependence on fossil-based fuels
- Make In India - World's Largest Rotomoulding Machine (Production Capacity 15T/Day) and Largest All Electric Rotomoulding Machine exported from India
- Increasing adoption of Solar Energy by Rotomoulders - transition towards Renewable Resources and Green Manufacturing

Carbon Footprint Reduction & Sustainability driving Indian Rotomoulding Industry

Source: Industry Analysis, Roto Mitra Forum (RMF), Reinhardt Teknik, StAR

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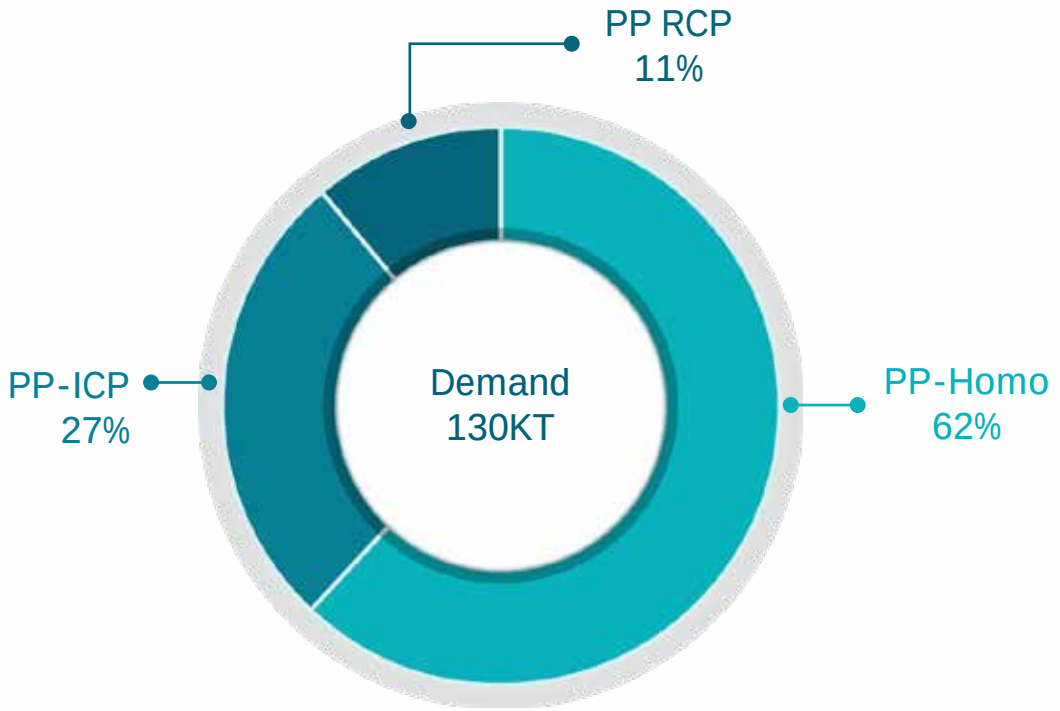
Thin-wall Injection Moulding Consumer Sector Insights FY25

Market Insights	
Major Manufacturers	80+
Estimated Installed Capacity (KT)	160+
FY25 Polymer Demand (KT)	130
YoY Growth FY25	15%
FY26 Polymer Demand Forecast (KT)	150
YoY Growth in FY26 (E)	15.3%
FY31 Polymer Demand Forecast (KT)	225
CAGR FY25 - FY31	12.1%

PP Type Demand % Share



TWIM - Enhancing Brand Value through Convenience

Source: Industry Analysis

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Thin-wall Injection Moulding Consumer Sector Insights FY25

Market Segments

- HoReCa
- Dairy
- Ice Creams/ Frozen foods
- Beverages, Soup, & Juices
- Bakery, Confectionery, Sweet & Dry fruits Packaging
- Detergents & Household Containers

Growth Drivers

- Brand Enhancement
- Smart Packaging
- Convenience Food & Takeaway Trends

Trends

Material: High MFR PP resin

Additives Advance Nucleation, Aesthetic Enhancers for superior clarity

Machinery/Mold Innovation: High Output machines with IML, Robotics

Functional : Product Consistency, Low Temperature Processing

Innovation: Light Weighting with Lower Carbon Footprint, Trends towards thickness uniformity

Sustainability: Design for Recycling

TWIM Consumer Sector - One of the Fastest Growing Segment

Source: Industry Analysis

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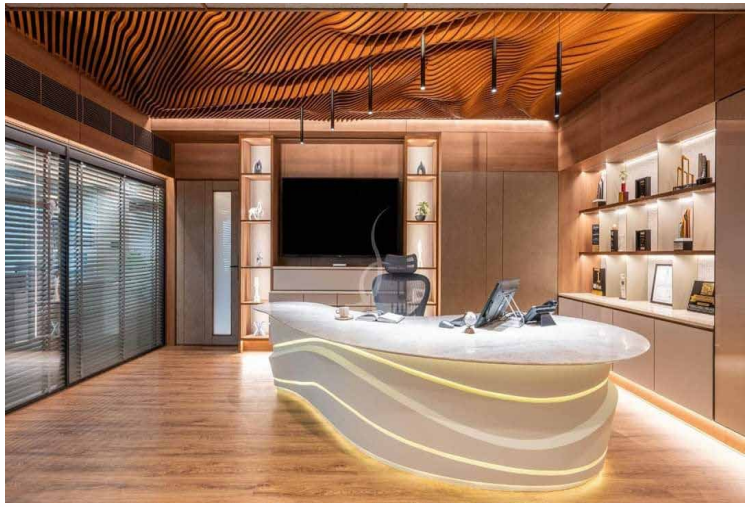
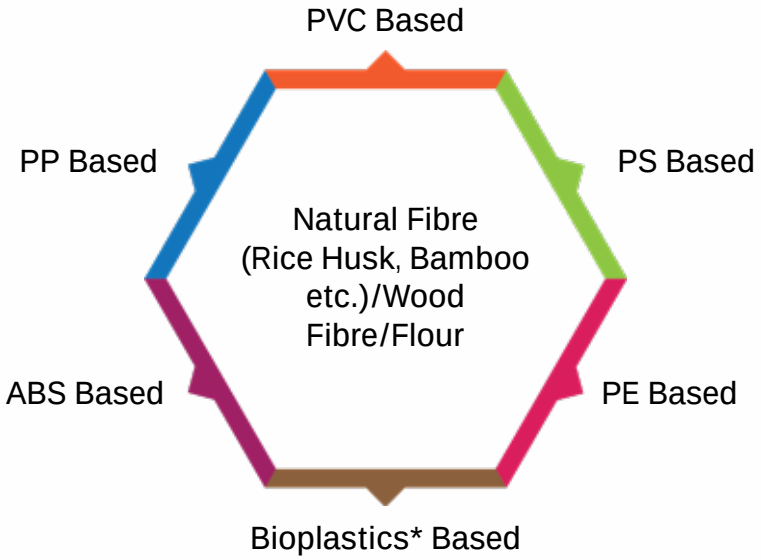
Natural Fibre Plastic Composites (NFC) Sector Insights

Natural Fibre Plastic Composites (NFC) are manufactured from natural Fibres and thermoplastic polymers. NFC provides strength and aesthetic of natural Fibre while providing durability and low maintenance of plastics



Classification of NFC



* PLA , PHA, Bio PE, Bio PP, Starch based

NFC Features

- Waterproof & Long-Lasting
- Termite & Pest Resistant
- VOC-Emission Free
- Aesthetic Versatility
- Mouldable
- Low Maintenance
- Low Carbon Footprint
- Recyclable

Natural Fibre Plastic Composites - Ecofriendly & Sustainable

Source: Industry Analysis

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Natural Fibre Plastic Composites (NFC) Sector Insights

NFC Market Insights	
No of Manufacturers	135+
Installed Capacity (KT)	300+
Operational Capacity (KT)	180+
FY25 Demand (KT)	270+
YoY Growth FY25	8%
Market Size FY25	Rs. 2700+ Cr
FY26 Demand Forecast (KT)	290+
FY31 Demand Forecast (KT)	430+
CAGR FY25 - FY31	8.1%

NFC Type	Typical Application Spectrum
PVC Based	Furniture Boards, Doors & Frames, Partitions
PE Based	Outdoor Decking, Fencing, Exterior Cladding
PP Based	Automotive Panels, Load-bearing Parts
ABS based	Decorative Panels, Premium Interiors
PS Based	Temporary Panels, Displays, Signage
Bioplastic Based	Niche Green Products

Natural Fibre Plastic Composites - Versatile & Material of the Future

Source: Industry Analysis

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2024 Thermoset Composite Industry Insights

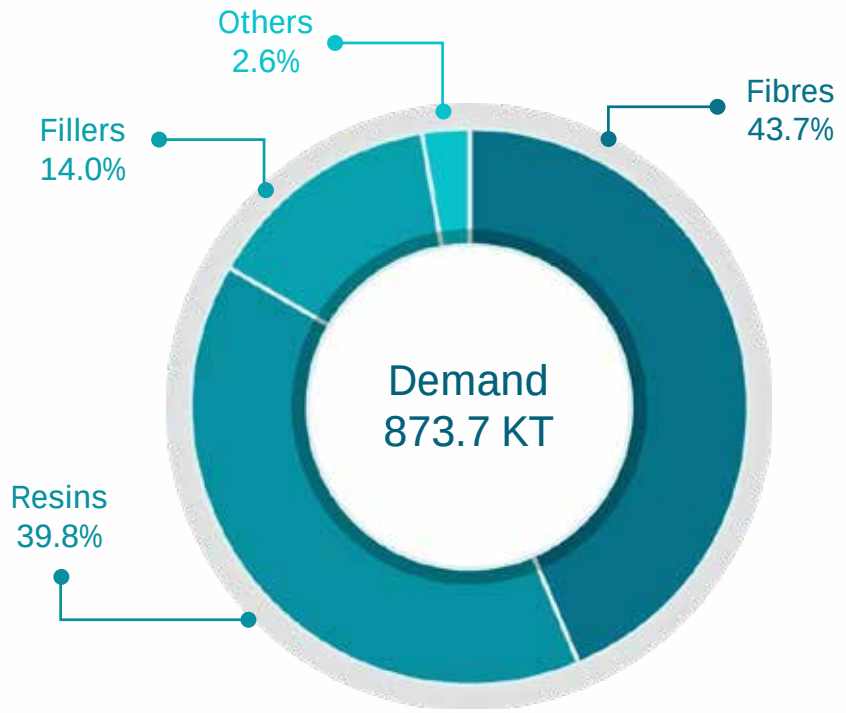
Fibre Reinforced Plastics (FRP) in India is witnessing steady growth, driven by superior strength-to-weight ratio, corrosion resistance, and versatility. The Indian FRP market has crossed 873.7 KT in 2024, in which Resin and Fibre accounts of 83.4% share. Indian FRP Industry crosses $1.78 billion in Market Size

Key Demand Drivers

- Infrastructure & Construction
- Transportation
- Aerospace and Defence
- Electrical & Electronics
- Renewable Energy
- Industrial Applications

FRP per capita consumption in India is ~ 0.55 kg compared to USA 11.5 kg, Germany 7.7 kg

Material Type - % Share



India is having Lowest per capita Consumption among Major Economies

Source: Industry Analysis, FRP Institute, Stratview Research

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Sector Insights - Thermoset Composites

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2024 Fibre-wise Demand

Fibre Type	Demand (KT)	YoY Growth
Glass Fibre	372.4	7.9%
Aramid Fibre	7.4	25.4%
Carbon Fibre	2.0	11.1%
Total	381.8	8.3%

Market Trends

Glass Fibre has predominant share of 97.6% in 2024

In all Cost-sensitive Segments like Construction, Wind Energy, and Transportation, Glass Fibres are used

India's Carbon Fibre Market is taking off, with Pressure Vessels and Wind Energy poised for Strong Growth

Glass Fibre has Predominant Share in Composite Sector

Source: Industry Analysis, FRP Institute, Stratview Research

Sector Insights - Thermoset Composites

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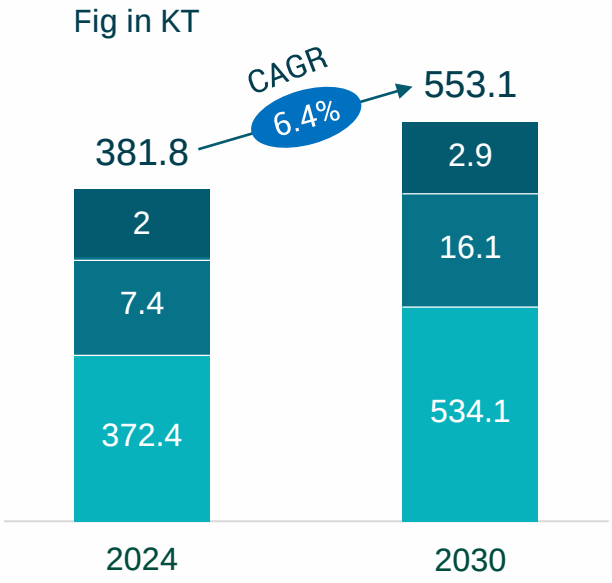
Fibre-wise Demand Forecast 2030



Fibre Type	CAGR % 2024-30
Carbon Fibre (CF)	6.4%
Aramid Fibre (AF)	7%
Glass Fibre (GF)	6.2%

Market Trends

Glass Fibre is anticipated to maintain its market lead in the years to come

Cabron Fibre is forecasted to grow by 6.4% CAGR led by Aerospace and Defence

Fibre demand in Composite industry is likely to grow by 6.4%

Fibre demand in Composite Industry forecasted to reach 553 KT by 2030

High Performance Fibres Forecasted to Show Good Growth

Source: Industry Analysis, FRP Institute, Stratview Research

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Sector Insights - Thermoset Composites

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2024 Resin-wise Demand

Resin Type	Demand (KT)	YoY Growth
Unsaturated Polyester	245.1	7.2%
Epoxy	56.4	9.9%
Vinyl Esters	11.5	7.5%
Others	34.4	8.2%
Total	347.4	7.7%

Market Trends

Polyester is the most preferred resin system with 70.6% share

Epoxy is the second-most dominant resin system with 16.2% share in 2024

Polyester is the most preferred resin system with Glass Giber to serve the Cost-sensitive Markets

Unsaturated Polyester Resin most preferred for Composites

Source: Industry Analysis, FRP Institute, Stratview Research

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Sector Insights - Thermoset Composites

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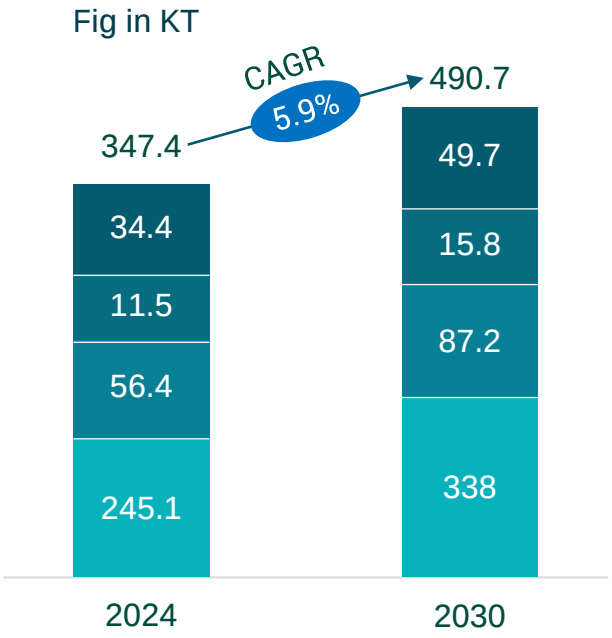
Resin-wise Demand Forecast 2030



Resin Type	CAGR % 2024-30
Others	6.3%
Vinyl Esters	5.4%
Epoxy	7.5%
Unsaturated Polyester	5.5%

Market Trends

Polyester is forecasted to remain the key Resin Category, maintaining its 70% Market Share

Epoxy to witness the Highest Growth in years to come, driven by the A&D and Wind Energy Segments

Low use of thermoplastics as compared to other key global markets

Epoxy Resins projected to exhibit the Strongest Growth

Source: Industry Analysis, FRP Institute, Stratview Research

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2024 FRP Demand by Manufacturing Process

Process	Demand (in KT)	%Share
Hand Lay up	324.4	37.1%
Compression Moulding	187.7	21.5%
Pultrusion	113.9	13.0%
Resin Infusion	104.5	12.0%
Injection Moulding	87	10.0%
Filament Winding	22.4	2.6%
Prepreg Layup	2.3	0.3%
Others	31.3	3.6%
Total	873.7	100.0%

Process Trends

Hand and Spray Layup is the most common process with 37% share

Compression and Injection Moulding gaining traction in Automotive and Electrical & Electronics Industries

Pultrusion is predominately used in Structural Profiles, Ladders, Grating, and Cable Trays

Resin infusion is preferred in Wind Turbine blade construction

Flament Winding in Tubular Sections, such as Pipe and Tanks

Hand Lay up - Major Process in Composite Industry

Source: Industry Analysis, FRP Institute, Stratview Research

Sector Insights - Thermoset Composites

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2024 Application-wise Demand

Application	Demand (KT)	YoY Growth
Construction & Infrastructure	259.9	8.6%
Transportation	209.7	7.4%
Electrical & Electronics	136.9	6.4%
Renewable Energy	102	13.8%
Pipes & Tanks	47.1	6.1%
Telecom	40.9	3.5%
Aerospace & Defence	0.19	7.8%
Others	77.11	6.6%
Total	873.7	8.0%

Market Trends

Construction & Infrastructure, Transportation account for about 54% of India's composite materials market by Volume

India's end-use industry pattern mirrors the Global composite market

Glass Fibre Composites have made progress though overall penetration remains relatively low, leaving room for significant growth

Infrastructure and Transportation are Major Segments

Source: Industry Analysis, FRP Institute, Stratview Research

Sector Insights - Thermoset Composites

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Application-wise Forecast 2030

Application Type	CAGR % 2024-2030
Aerospace & Defence	17.1%
Others	5.4%
Telecom	3.8%
Pipes & Tanks	4.6%
Renewable Energy	9.0%
Electrical & Electronics	5.2%
Transportation	5.6%
Construction & Infrastructure	6.7%

Market Trends

Indian FRP market is forecasted to grow by 6.1% vs 3.1% Global growth, in terms of volume

Demand likely to reach 1250 KT in 2030 with CAGR of 6.1%

Indian FRP market likely to reach $2.8 billion by 2030 with CAGR of 7.8%

Indian Market to grow 2X Global Average in next 6 years

Source: Industry Analysis, FRP Institute, Stratview Research

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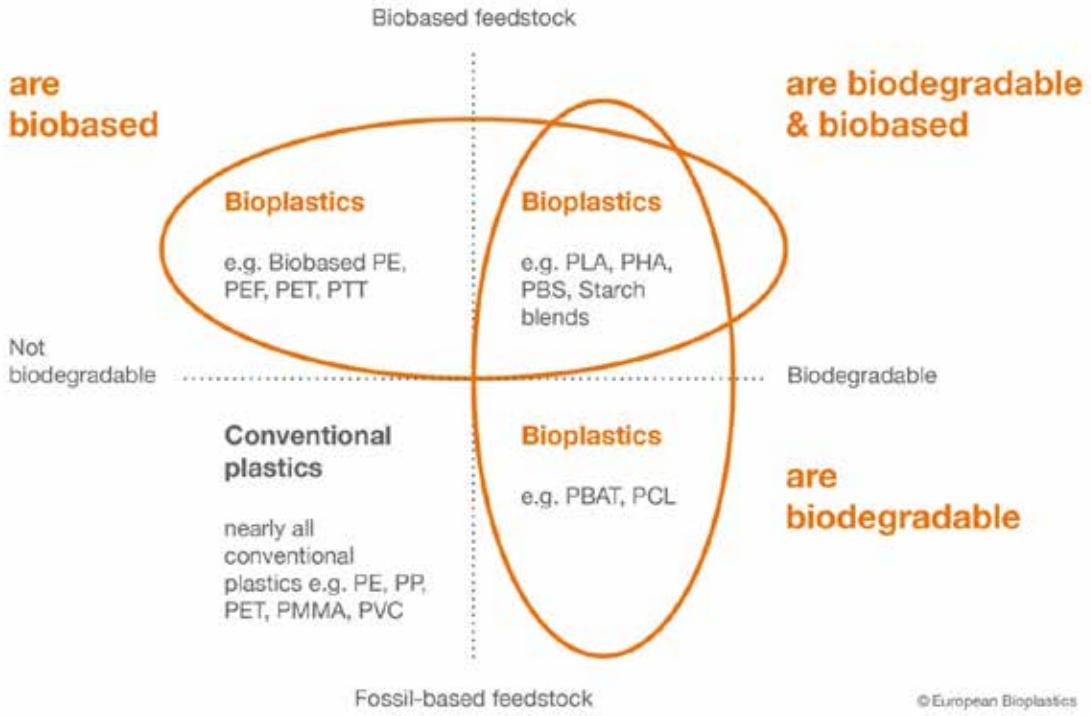
Shaping The Future Of Plastics

Bioplastics

Bioplastics

Bioplastics consist of polymeric resins that range from bio-based biodegradable plastics to bio-based non-biodegradable plastics

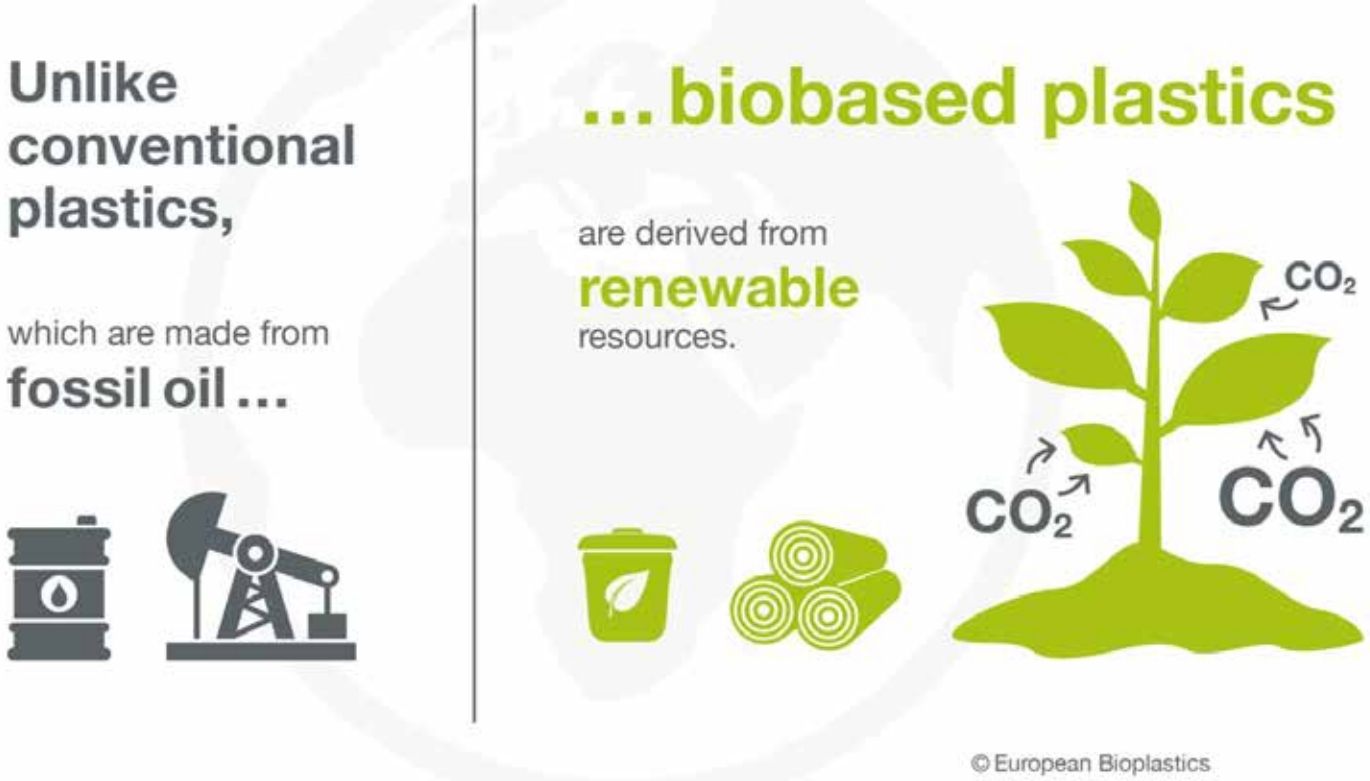
Type	Bioplastics	
Bio-based Biodegradable Plastics	Poly (lactic acid)	PLA
	Starch Containing Polymer Compounds	SCPC
	Poly(Butylene Adipate-co-terephthalate)	PBAT
	Polyhydroxalkanoates	PHA
	Cellulose Regenerates	CR
	Polybutylene Succinate	PBS
Bio-based Non-Biodegradable Plastics	Casein Polymers	CP
	Polytrimethylene Terephtalate	PTT
	Polyethylene	PE
	Polyethylene Terephthalate	PET
	Polyethylene Furanoate	PEF
	Alphatic Polycarbonates	APC



Consumer Awareness & Regulation Driving Demand for Sustainable Plastics

Source: Industry Analysis, European Bioplastics

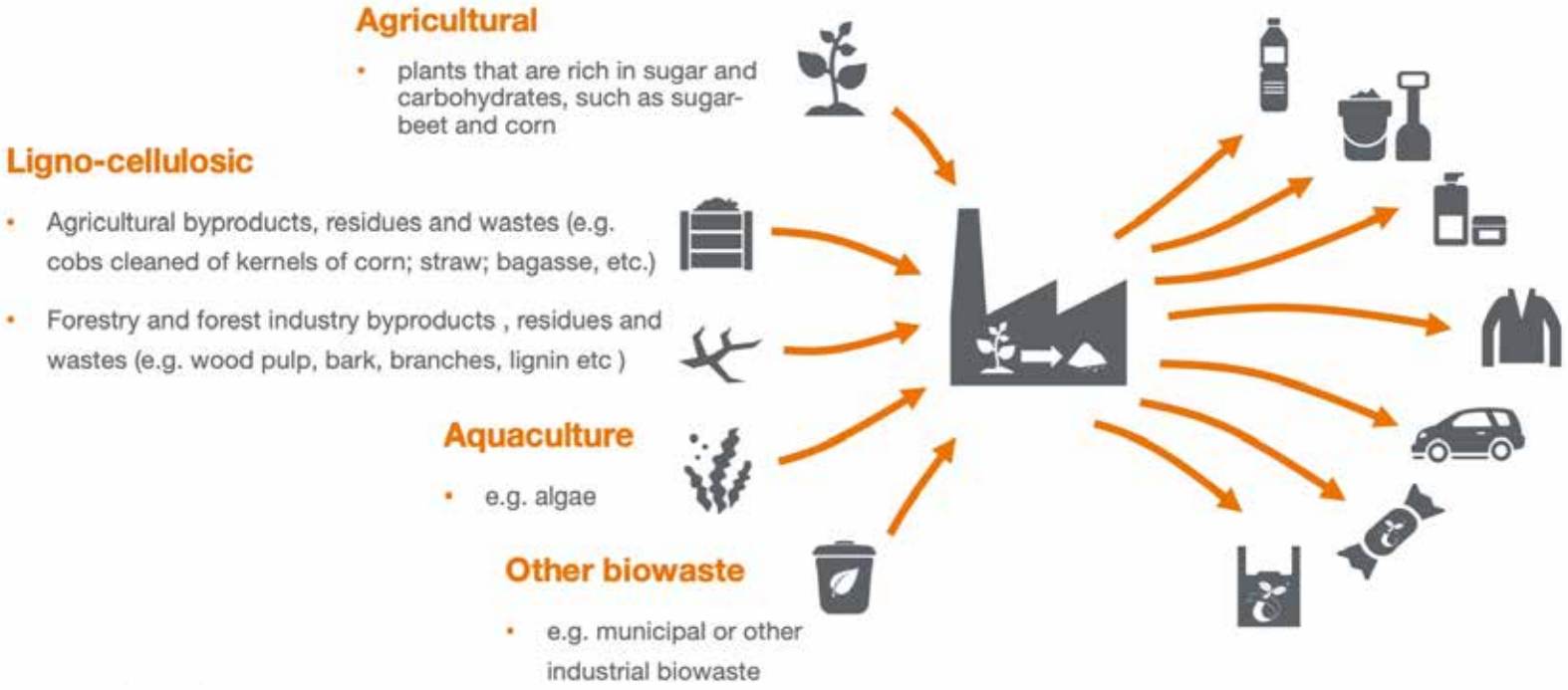
Bioplastics



Bioplastics lowers Carbon Footprint significantly

Source: Industry Analysis, European Bioplastics

Biobased plastics can be made from a wide range of renewable biobased feedstocks



Biopolymers are derived from Wide range of renewable resources

Source: Industry Analysis, European Bioplastics

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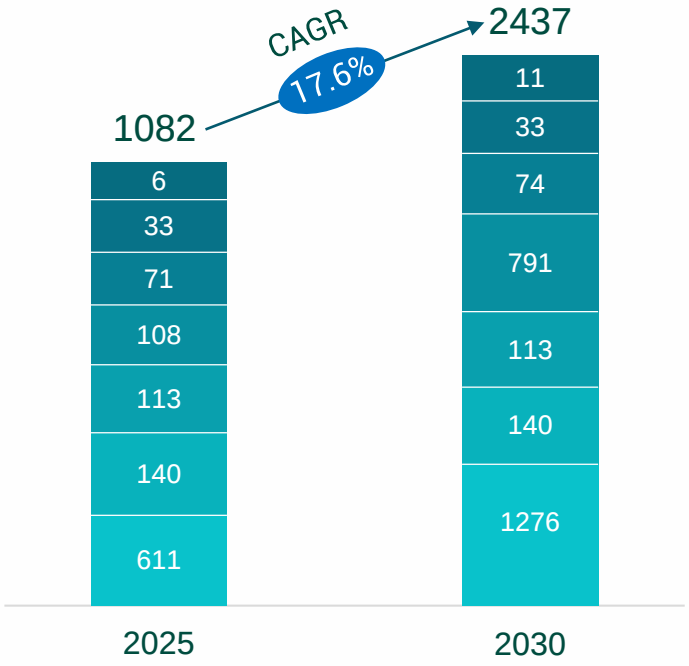
Global Bioplastics - 2025 Capacity & Forecast 2030

Biobased Biodegradable Plastics



Type	CAGR % 2024-2030
CP	12.9%
PBS	0.0%
CR	0.8%
PHA	48.9%
PBAT	0.0%
SCPC	0.0%
PLA	15.6%

PLA holds the Largest Capacity Share with PHA catching up

Source: Industry Analysis, European Bioplastics

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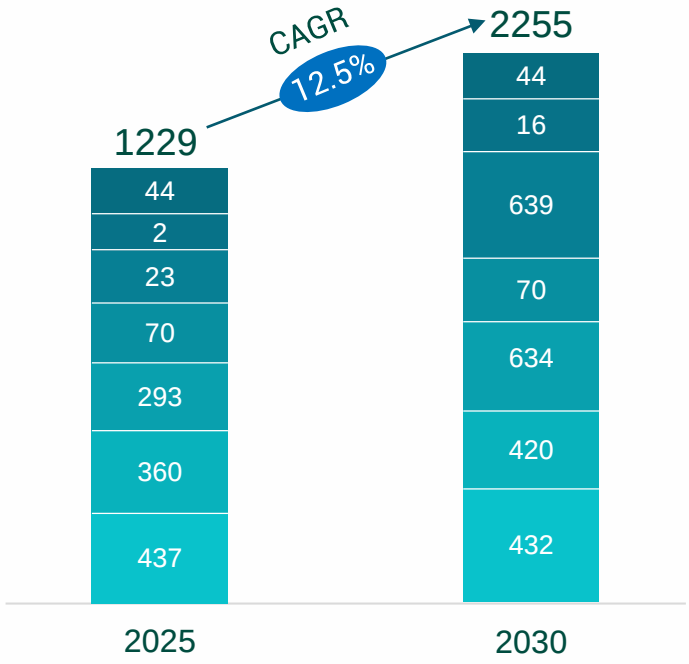
Global Bioplastics - 2025 Capacity & Forecast 2030

Biobased Non-biodegradable Plastics



Type	CAGR % 2025-2030
APC	0.0%
PEF	51.6%
PP	94.4%
PET	0.0%
PE	16.7%
PTT	3.1%
PA	-0.2%

Made from Renewable Feedstock based PP - Contact Lens Blister Pack

Biobased Non-Biodegradable Polyolefins are gaining traction

Source: Industry Analysis, European Bioplastics

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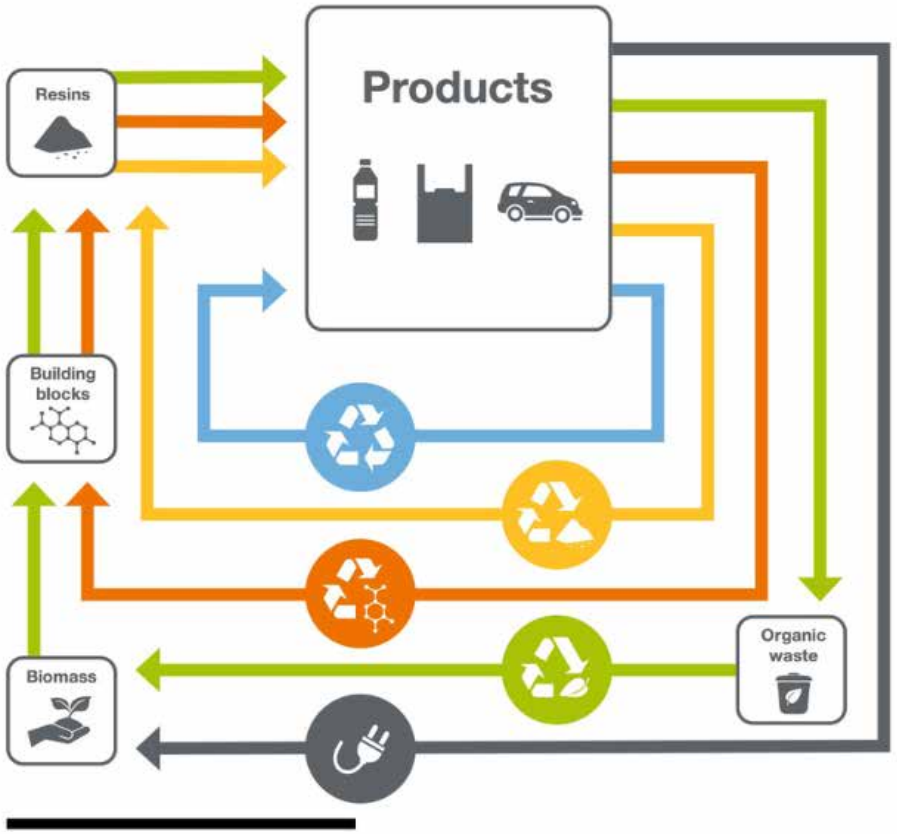
Bioplastics

are already part of
our **everyday life.**

Biobased Non-Biodegradable Polyolefins are gaining traction

Source: Industry Analysis, European Bioplastics

Bioplastics - Recycling Models



Material flow model with focus on different end-of-life solutions. Some material loss occurs at all product life cycle stages and should be replenished with renewable resources.

Bioplastics - End of Life Solutions

REUSER

MECHANICAL RECYCLING

ADVANCED RECYCLING

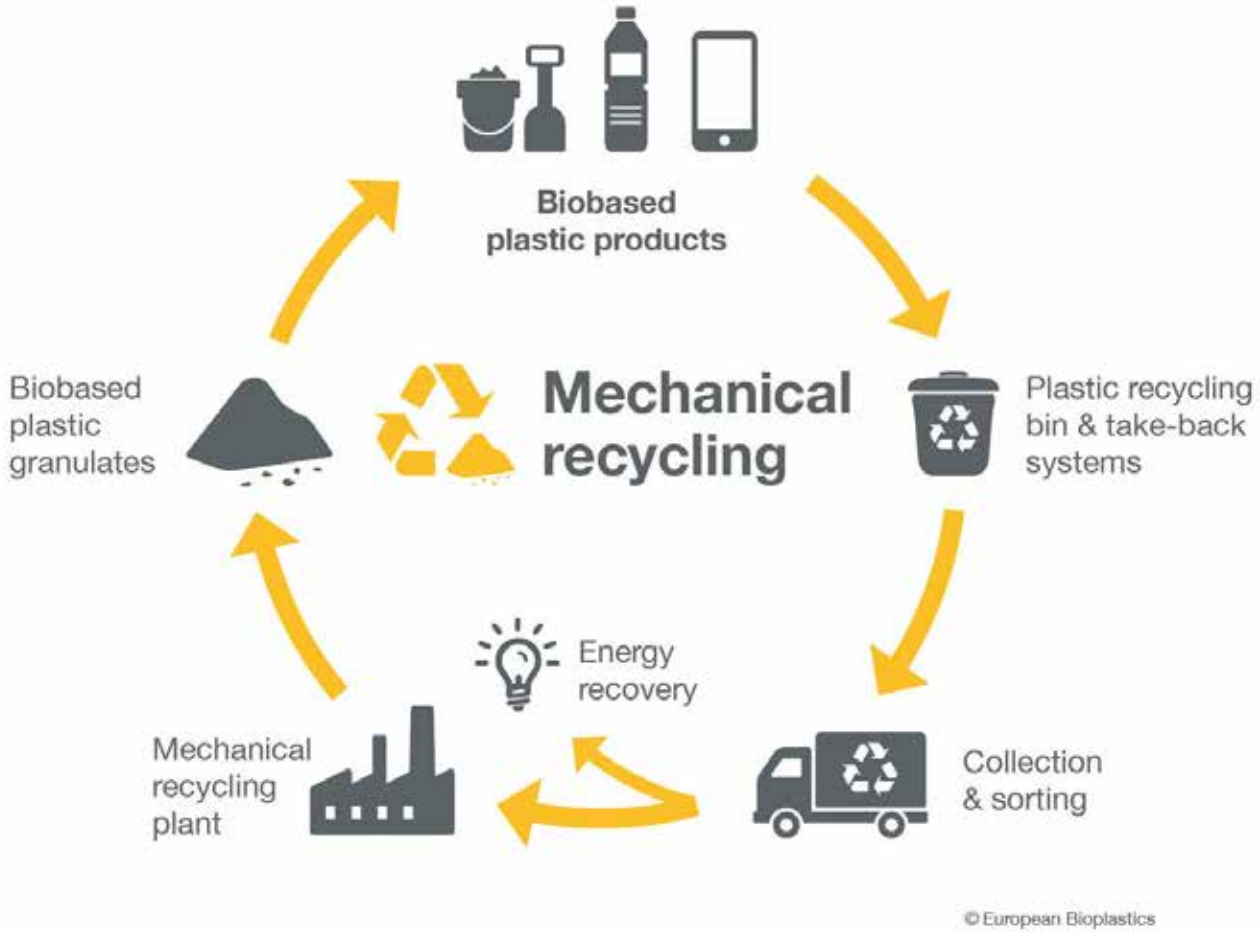
ORGANIC RECYCLING

ENERGY RECOVERY.

REUSER ranks higher than recycling in the waste hierarchy and should be considered first. Biobased plastics offer numerous opportunities for creating reusable products.

Source: Industry Analysis, European Bioplastics

Bioplastics - Mechanical Recycling

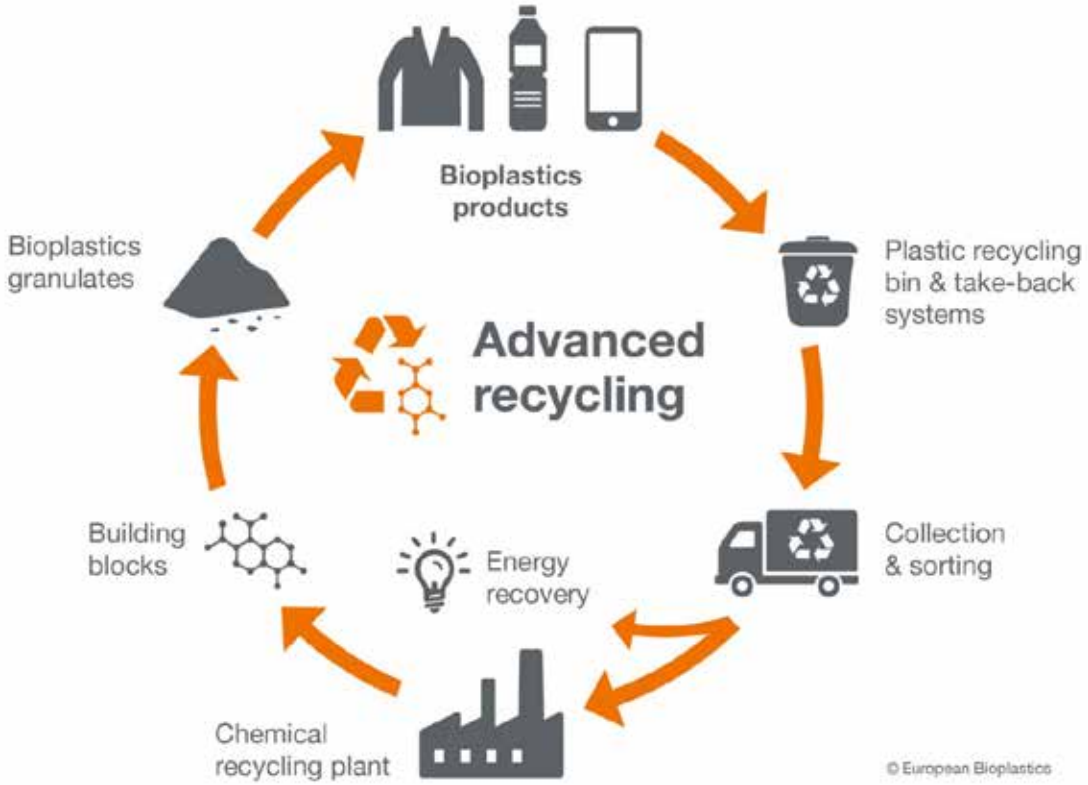


MECHANICAL RECYCLING recovers biobased plastic waste through **mechanical** processes to **recreate** resins without changing the chemical structure . It's an end-of-life option for the majority of biobased plastics.

ENERGY RECOVERY is an **additional end-of-life option for biobased and/or biodegradable plastic** materials where an alternative waste management infrastructure does not exist. In the case of biobased plastics, renewable energy can be obtained from the **biogenic carbon** - a significant advantage compared to fossil-based plastics.

Source: Industry Analysis, European Bioplastics

Bioplastics - Chemical Recycling



ADVANCED RECYCLING comprises different varying technologies that convert biobased plastic waste into an **upstream feedstock** resulting in **secondary raw materials** that have the **same quality as virgin materials.**

ENERGY RECOVERY is an **additional end-of-life option for biobased and/or biodegradable plastic** materials where an alternative waste management infrastructure does not exist. In the case of biobased plastics, renewable energy can be obtained from the **biogenic carbon** - a significant advantage compared to fossil-based plastics.

Source: Industry Analysis, European Bioplastics

Bioplastics - Organic Recycling

* Industrial Composting or Anaerobic Digestion (AD) with Composting Step
** Only in case of AD

ORGANIC RECYCLING includes **industrial composting** and **anaerobic digestion.** Compostable plastics save valuable organic waste from landfill and incineration and help turning waste into **beneficial high-quality compost.**

Source: Industry Analysis, European Bioplastics

Benefits of Bioplastics

Certified compostable plastic bags & packaging

help to **collect more biowaste,** which can be turned into **valuable compost** or into **biogas.**

© European Bioplastics

Compostable Bioplastics for Planet-Friendly Living

Source: Industry Analysis, European Bioplastics

Bioplastics - India Market

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- Bioplastics in India are witnessing strong momentum, driven by regulatory push, innovation, and rising sustainability demand. Key biopolymers such as PBAT, PLA, and Starch-Based Compounds are gaining significant adoption, especially in Agriculture and Packaging, . Other applications are Compostable Carry Bags, Disposable Cutlery, Thermoformed Cups/Plates, Multilayer Flexible Packaging, Bottles.
- PLA is currently the fastest-growing biopolymer, supported by new domestic capacity and technology tie-ups.
- India's bioplastics sector is at an inflection point, supported by Policy Initiatives, Technology, and Market pull driven by Sustainability. With rapid investments and broader application adoption, bioplastics are set to become a major pillar of sustainable materials in the coming decade.
- Market Size : The Indian Compostable Plastics Market is expected to grow from ₹550 crore to ₹2100 crore by 2030, at a CAGR of 25% (2024-2030)

Demand of Compostable/Biodegradable Bioplastics (by Type)

Year	PBAT (KT)	PLA & PLA Compounds (KT)	Starch based Compounds (KT)	Others (KT)	Total (KT)
2024	28	4	6	2	40
2030	73	90	9	3	175
CAGR (2024 - 30)	17.3%	66.7%	6.5%	7%	27.8%

Industry Insights

India's first biodegradable plastic developed by IIT Guwahati using indigenous Technology

Praj Industries has indigenously developed Lactic Acid technology under 'Make in India' Initiative; It's a precursor for PLA and a foundational building block of India's bioplastics value chain

Balrampur Chini Mills is building 80 KTA Capacity PLA Plant **India's First Industrial-Scale Bioplastics Plant likely to be commissioned in 2026**

Transforming India's Sustainability Landscape with Bioplastics Investments

Source: Industry Analysis, ICPA

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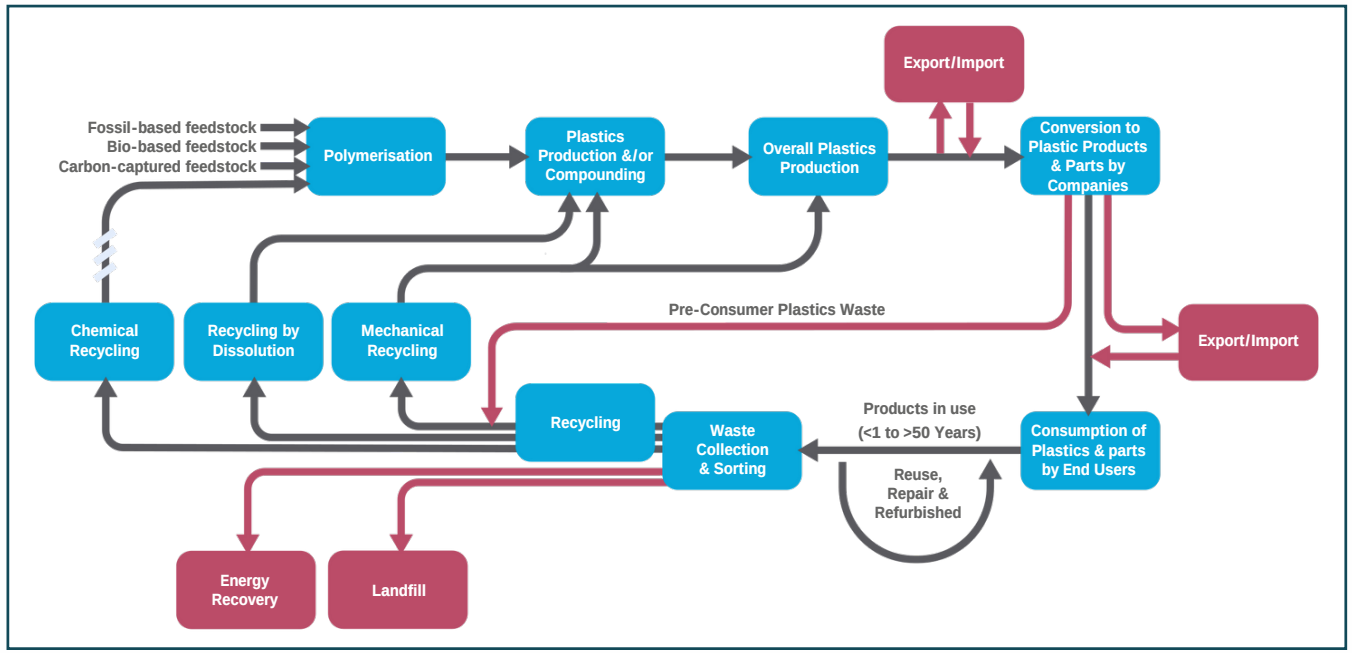
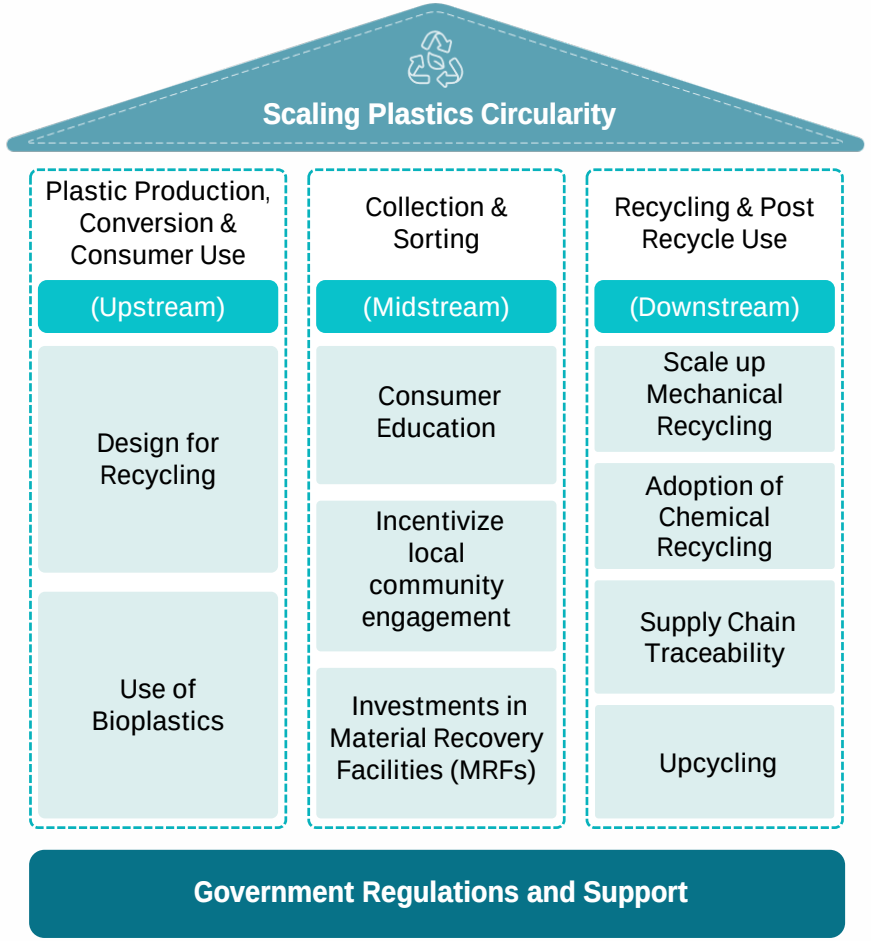
Sustainability & Circularity

Sustainability & Circularity





ROADMAP TO LEAD CIRCULARITY

Prioritize Inputs: Sustainable Products designing by Brands, Circular Sourcing Mandates, Use of Bioplastics

Maximise Product Usage: Usage optimization, Reuse & Redistribute, Prolong Product Life

Product Recovery: Refurbish, Recycling options like PIR, PCR & Upcycling, EOL

Govt Regulation & Community Support: Standards, Framework, Educate & Incentivize Community

Blueprint for Accelerating Circular Transition

Source: Industry Analysis, Plastics Europe, Kearney

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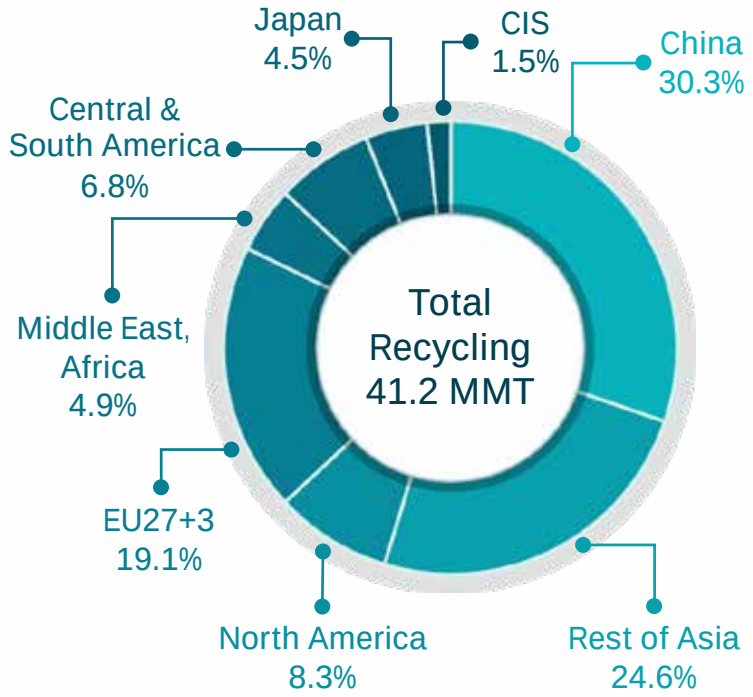
Global Plastic Recycling

Global Plastic Recycling

All Fig in MMT

Segment	2019	2020	2021	2022	2023	2024
Mechanical Recycling (PCR)	30.8	31.8	32.5	35.5	36.2	40.8
Chemical Recycling	0.1	0.2	0.2	0.2	0.3	0.4
Total	30.9	32	32.7	35.7	36.5	41.2

2024 Region-wise Recycling



Asia leads Global Plastic Recycling

Source: Plastics Europe

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India - Solid Waste Composition

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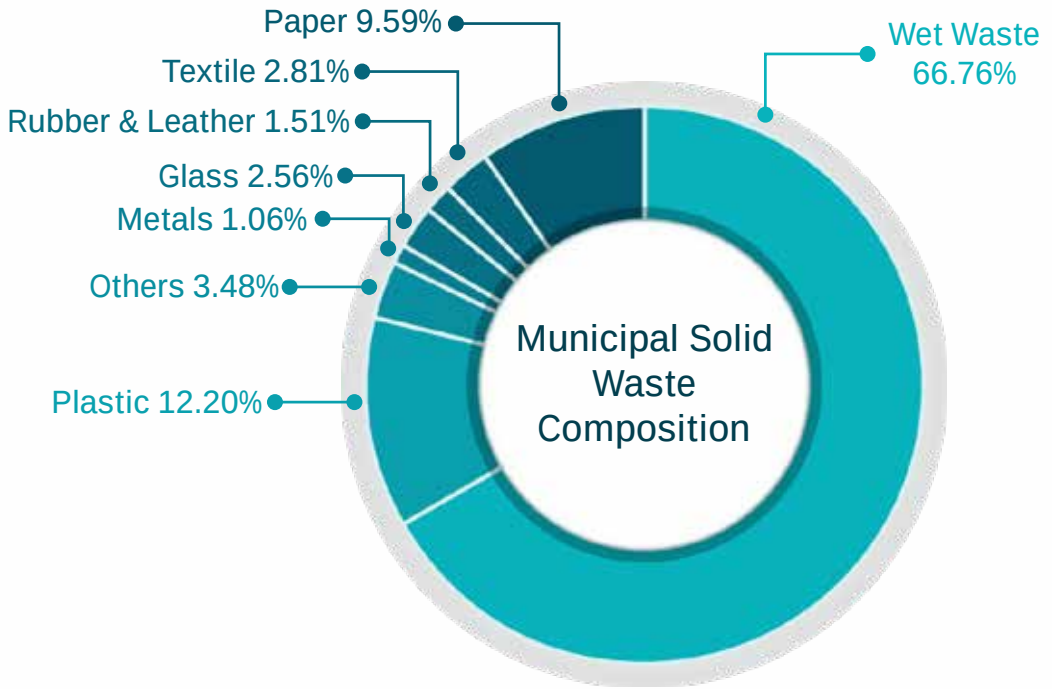
Municipal Solid Waste Composition

- India generates about 170,339 MT/day of municipal solid waste, according to data compiled by Central Pollution Control Board (CPCB)
- Of that, about 156,449 MT/day (~92%) is reportedly collected
- From the collected waste, about 91,511 MT/day (~54%) undergo some form of treatment (recycling, composting, etc.)
- About 41,455 MT/day (~24 %) goes to Landfills
- 37,373 MT/day (22%) of total waste remains unaccounted

Average Municipal Waste Composition



Plastics are 12.2% of MSW and offer Opportunity for Circularity

Source:CPCB Report 2021-22 updated Oct 2024

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Plastic Waste Recycling Value Chain - India

1. Waste Generation

- Households, Commercial Establishments, Industries

2. Segregation at Source

- Dry/Wet Segregation, Informal Picking

3. Collection System

- Municipal collection (ULBs)
- Informal sector (Ragpickers, Kabadiwalas)

4. Aggregation & Sorting

- DWCCs, MRFs, Scrap Dealers

5. Recycling Processes

- Mechanical, Secondary, Chemical, Energy Recovery

6. Manufacturing Using Recycled Plastics

- rPlastics Products

7. Distribution & End Use

- Packaging, Textiles, Automotive, Industrial Products etc

Completing the Circularity - From Waste Collection to Finished Products

Source: Industry Analysis

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Segregation - Material Recovery Facility (MRF)

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Dry Waste from Households, Commercial Establishments, Municipalities

↓

Material Recovery Facility (MRF)

- "Jhatka Machine" for removing dust etc
- Conveyour
- Manual - Semi Auto Separation
- Baling

↓

Segregated Waste

- Recycler
- Traders
- Coprocessing
- To Municipal and other dump

Possibly Largest MRF in India with Capacity 100 MTD Dry Waste

Over 700 MRFs Feeding Segregated Plastic Waste to Recyclers

Source: Industry Analysis

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Recycling Processes

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1. MECHANICAL RECYCLING

By grinding, washing, separating, drying, re-granulating, and compounding, plastics are mechanically transformed into new materials without changing their chemical structures

2. CHEMICAL RECYCLING - 3 categories

2.1. PYROLYSIS

The first Chemical Recycling process is pyrolysis. Pyrolysis is a process in which polymers are heated in the absence of oxygen. During this process, polymers break down in smaller parts and behave like a type of oil like naphtha

2.2. GASIFICATION

It involves heating polymers up, but in this case, in presence of oxygen and water. The end product is a mixture of gases referred to as syngas that can be used as a chemical feedstock in the chemical industry

2.3. DEPOLYMERISATION

Depolymerisation is possible only for certain types of plastic. This process cuts down the polymers into monomers, so the output is a starting material to produce new plastic

3. ENERGY RECYCLING

It consists of converting plastic waste into both thermal and electric energy through incineration, the heat released by these materials in the form of fuel

Recycling saves Fossil Fuel and Carbon Footprint

Source: Industry Analysis

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Waste to Value

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Recycling in Action: Waste Reimagined

Source: Industry Analysis

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Plastics Waste Recycling - Challenges

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Issues		Challenges
Segregation at Source		• It is the first step in the recycling process, but often the most neglected • All kinds of waste is collected and merged together without any Segregation based on type
Widespread Littering		• No one follows or enforces Littering rules in general
Landfill Management		• Very few cities in India actually have scientifically designed Landfills • Cities often Dumps Solid Waste in dump yards which are not designed well enough to keep containments inside without causing environmental pollution
Waste Burning		• Waste burning is a perennial issue and causes environmental pollution

Mixed Waste Collection Limits Recycling and Safe Disposal Outcomes

Source: Industry Analysis

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CPCB EPR Policy

Extended Producer Responsibility (EPR)

Under EPR regulations, manufacturers, brands, and importers are responsible for collecting and recycling the plastic they introduce into the market. Companies are required to:

- Establish collection and recycling partnerships to ensure proper waste management
- Submit detailed recycling progress reports to regulatory authorities
- Incorporate recycled content in packaging to promote circularity

Many Indian and multinational corporations have partnered with local recyclers to ensure compliance with EPR guidelines. Such collaborations have facilitated the growth of India's formal recycling sector, ensuring higher efficiency and traceability.

Requirement	Description
Collection Targets	Producers must collect a percentage of the plastic they introduce into the market
Recycling & Processing	Companies need to ensure proper recycling through certified recyclers
Reporting & Compliance	Periodic reporting to regulatory authorities is mandatory.
Incentives for Sustainable Packaging	Encouragement to include recycled content in new products

A well developed Policy framework helps in Systematic Recycling

Source: MoEFCC

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CPCB EPR Norms

Plastic Waste Management Rules, 2016 (Amended 2022)

The Plastic Waste Management (PWM) Rules mandate several measures to ensure effective waste management. These rules include banning single-use plastics, promoting source segregation of waste, and implementing Extended Producer Responsibility (EPR). These initiatives have led to an increase in the collection and processing of plastic waste while encouraging industry participation in recycling efforts

Targets for Extended Producer Responsibility and Obligations

Q 1 (in MT) = (A + B) - C

'A' average weight of plastic packaging material (category-wise and state wise) sold in the last two financial years

'B' average quantity of pre-consumer plastic packaging waste in the last two financial year

'C' the annual quantity supplied to the Large Brand owners in the previous financial year.

Year	Recycling Obligation Excluding EOL				Recycled Content		
	Cat. I	Cat. II	Cat. III	Cat. IV	Cat. I	Cat. II	Cat. III
2024-25	50	30	30	50			
2025-26	60	40	40	60	30	10	05
2026-27	70	50	50	70	40	10	05
2027-28	80	60	60	80	50	20	10
2028-29 Onwards	80	60	60	80	60	20	10

Category I - Rigid Plastic, Category II - Flexible Plastic, Category III - Multi-Material Plastic, Category IV-Compostable Plastic, Category V- Biodegradable Plastic

CPCB EPR Framework: Ensuring Compliance, Circularity, and Traceability

Source: MoEFCC

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CPCB EPR Dashboard

Registration Status of PIBOs & Plastic-Waste Processors in India

Producers, Importers & Brand Owners (PIBOs)

- Producers (P): 5,414 registered
- Importers (I): 48,601 registered
- Brand Owners (BO): 3,537 registered

Plastic Waste Processors (PWPs)

- Recyclers & Converters: 2956 registered nationwide

Key Highlights

- CPCB's EPR portal continues to see rapid growth in registrations
- Brand Owners make up the largest share of all PIBO registrations
- Registration is mandatory for EPR compliance and annual reporting
- PWPs play a central role in issuing recycling certificates used for EPR credit fulfilment

Source: CPCB Portal as of 24th Dec 2025


Additives, Masterbatches & Compounds

Plastic Industry Major Additives Demand Analysis FY25

Additive Type	FY25 Demand (KT)	CAGR FY25 - FY31
Plasticizers (Primary, Secondary. Epoxy & others)	424	4.2%
Lubricants (Slip, Antiblock, Release agents)	135	4.4%
Heat Stabilizers	99	6.0%
PU Additives (For Slab stocks, TPUs, Rigids etc)	40	8.4%
Antioxidants (Phenolic, Phosphites, Thioesters etc)	27	6.0%
Other Thermosets Additives (UPR, Epoxy, MF, PF etc)	21	7.0%
Modifiers for PVC & other polymers	20	5.0%
Light Stabilizers (HALS, UV, Quenchers)	15	5.2%
Processing Aids	11	5.0%
Other Additives*	45	7.4%
Fillers	950	8.5%
Total	1787	6.9%

*Includes, Nucleating Agents, Clarifying Agents, Foaming Agents, Antistatic Agents, Flame retardants & Others

Enabling India's Plastic Manufacturing Growth

Source: Industry Analysis

Sector Insights - Masterbatches

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Masterbatch Sector FY25

Sector	Demand (KT)
Black/Colour/Additive Masterbatches	730
Filler Masterbatches	1,263
Total	1,993

Sector Trends

- Shifting from basic coloring to advanced functional additives, driven by sustainability, automation, and high-performance needs
- Biodegradable/compostable, nano-additives for superior properties, enhanced functionalities like antimicrobial, UV resistance, and anti-fogging, supporting 'Make in India'
- Filler & Bio-filler usage are trending as a reinforcing agents for enhanced performance

Providing Color to our lives and Functionality to Polymers

Source: Industry Analysis, Prismane Consulting

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Sector Insights - PE Compounds

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PE Ready to Use Compounds FY25

Sector	Demand (KT)
Rotomoulding	355
Wire & Cable	244
Pipe & Fittings	181
Pipe Coating & Others	40
Total	820

Sector Trends

In W&C Segment MV and HVDC Cables will Drive the Growth

PE Gas Pipe Demand is on the rise as GoI Plans to expand the gas distribution across the Country

Renewable Energy Sector presents Strong Growth Potential for Rotomoulding Products

Cross Country Oil, Gas and Water Pipeline Infrastructure will drive the demand in Pipe Coating Segment

Ready-to-use compounds significantly contribute to infrastructure sustainability

Source: Industry Analysis

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Sector Insights - PP Compounds

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PP Compounds Sector FY25

Sector	Demand (KT)
Automotive	379
Furniture	78
Consumer Durables	63
Industrial & Piping	57
Others	56
Total	633

Sector Trends

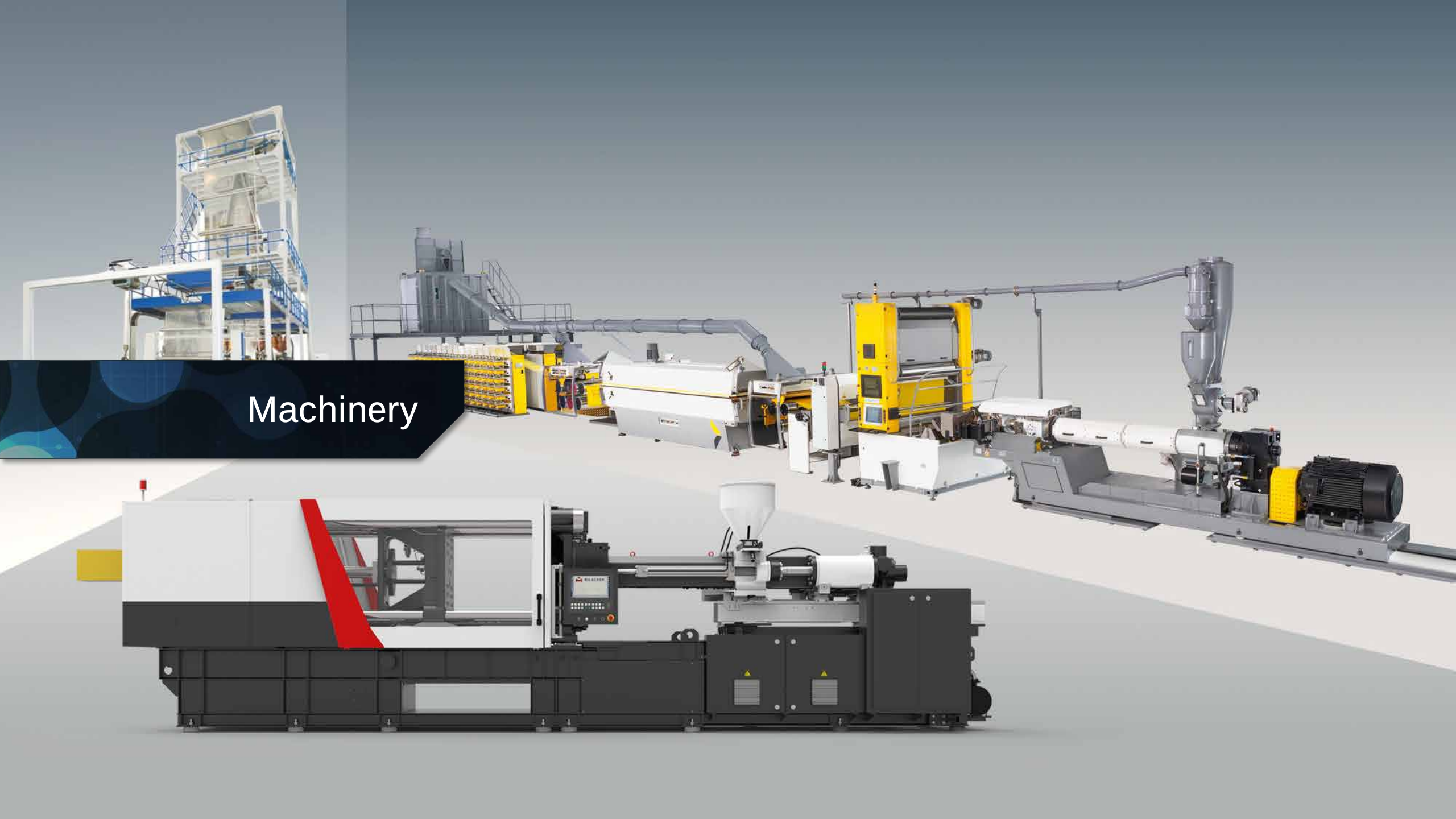
The substitution of metal with PP compounds facilitates vehicle lightweighting and contributes to meeting mandated emission limit & significantly reduce carbon footprint

With EV adoption being driven by all OEMs, PP compounds are becoming a preferred choice due to their thermal management, flame-retardant compliance, and heat resistance

PP Compounds support customization in OEMs' efforts toward improved finish, color, and aesthetics, while also creating new opportunities in the telecom industry

Automotive Major Sector for PP Compounds

Source: Industry Analysis


Machinery

India - Processing Machinery (FY19 - FY25)

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Segment	Machines (Nos)							CAGR % FY19- FY25
	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	
Injection Moulding	9,650	8,350	8,600	10,050	10,780	12,140	12,600	7.4%
Extrusion	2,950	3,100	3,200	3,700	4,730	4,990	5,330	10.4%
Blow Moulding	775	700	900	950	1150	1260	1400	10.4%
Total	13,375	12,150	12,700	14,700	16,660	18,390	19,330	6.3%

Segment	Investment (Rs Cr)							CAGR % FY19- FY25
	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	
Injection Moulding	3,450	2,950	2,500	3,625	4,250	4,800	5,100	6.7%
Extrusion	2,850	3,625	3745	5,690	5,070	4,740	6,880	15.8%
Blow Moulding	500	490	630	640	610	710	790	7.9%
Total	6,800	7,065	6875	9,955	9,930	10,250	12,770	11.1%

Machinery Investments 11.1% CAGR past 6 Years

Source: Industry Analysis, PMMAI

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India - Processing Machinery (FY19 - FY25)

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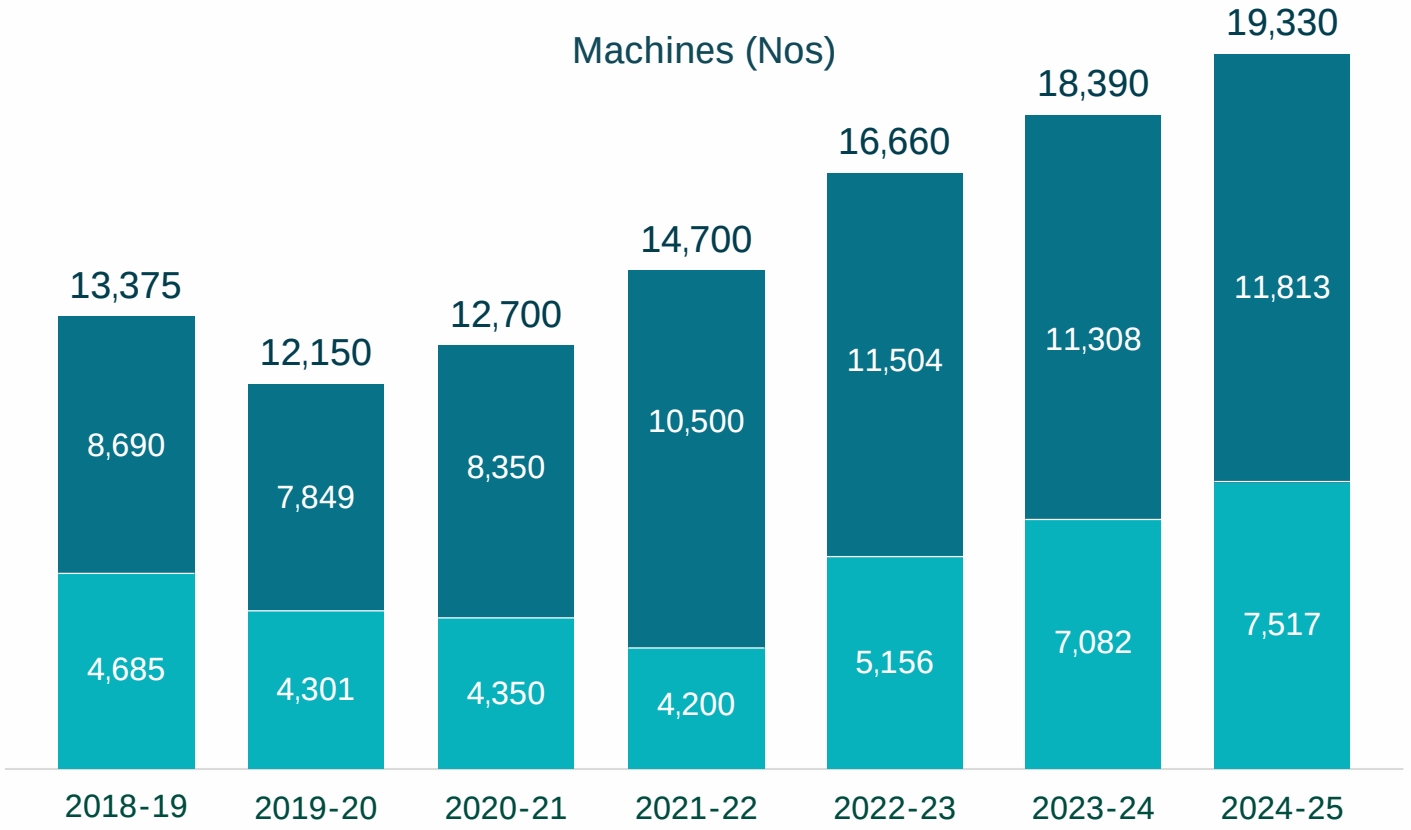
Processing Machinery - Domestic & Imports



Segment	CAGR % FY19- FY25
Domestic	5.3%
Imports	8.2%
Total	6.3%

Growth of Machinery Imports Higher than Domestic Supplies

Source: Industry Analysis, PMMAI

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India - Processing Machinery Forecast FY31

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Segment	Machines (Nos)							CAGR % FY24- FY31
	2024-25	2025-26 (E)	2026-27 (E)	2027-28 (E)	2028-29 (E)	2029-30 (E)	2030-31 (E)	
Injection Moulding	12,600	13,150	13,750	14,450	15,175	16,000	16,900	5.0%
Extrusion	5,330	5,610	5,920	6,285	6,660	7,090	7,550	6.0%
Blow Moulding	1,400	1,470	1,550	1,640	1,740	1,860	2,000	6.1%
Total	19,330	20,230	21,220	22,375	23,575	24,950	26,450	5.4%

Segment	Investment (Rs Cr)							CAGR % FY24- FY31
	2024-25	2025-26 (E)	2026-27 (E)	2027-28 (E)	2028-29 (E)	2029-30 (E)	2030-31 (E)	
Injection Moulding	5,100	5,410	5,750	6,120	6,520	6,960	7,450	6.5%
Extrusion	6,880	6,050	6,460	6,930	7,460	9,040	9,810	6.1%
Blow Moulding	790	840	890	950	1,020	1,100	1,190	7.1%
Total	12,770	12,300	13,100	14,000	15,000	17,100	18,450	6.3%

India Expanding Manufacturing base driving Machinery Growth Momentum

Source: Industry Analysis, PMMAI

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India - Processing Machinery Forecast FY31

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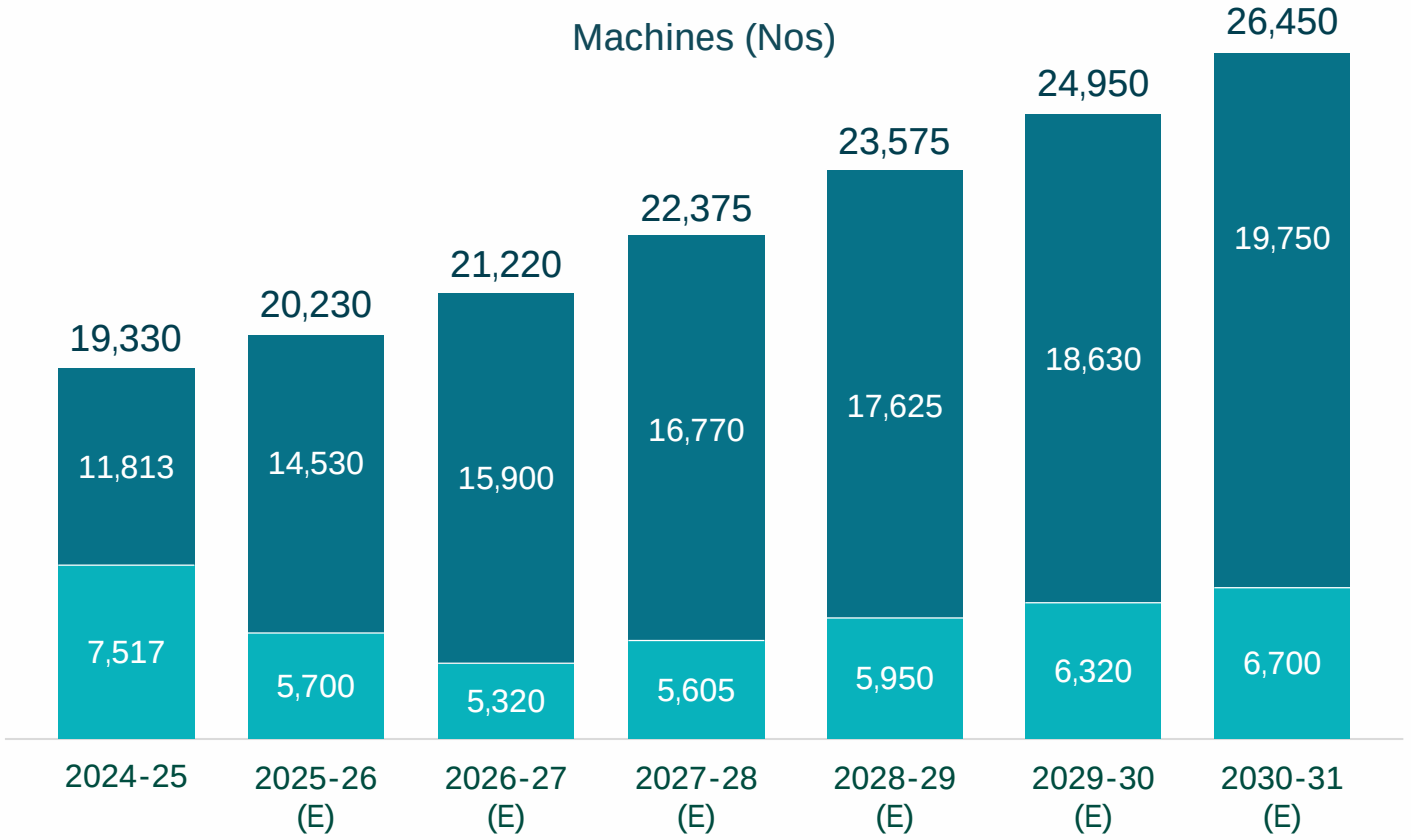
Processing Machinery - Forecast



Segment	CAGR % FY25 - FY31
Domestic	8.9%
Imports	-1.9%
Total	5.4%

Domestic Manufacturing Gaining Market Share

Source: Industry Analysis, PMMAI

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Injection Moulding Tonnage-wise Forecast FY31

Tonnage Range	2024-25	2025-26 (E)	2026-27 (E)	2027-28 (E)	2028-29 (E)	2029-30 (E)	2030-31 (E)
Up to 110 T	2,750	2,850	2,940	3,075	3,200	3,350	3,500
120-275 T	6,250	6,500	6,815	7,135	7,500	7,925	8,370
300 -450 T	2,300	2,440	2,575	2,735	2,885	3,040	3,225
500-950 T	1,050	1,100	1,150	1,225	1,300	1,375	1,475
> 1000 T	250	260	270	280	290	310	330
Total	12,600	13,150	13,750	14,450	15,175	16,000	16,900

IM Segment Growth Forecast 5% CAGR FY31

Source: Industry Analysis, PMMAI

Plastic Machinery Exports FY19 - FY25

Segment	Machines (Nos)						
	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25
Injection Moulding	550	500	490	640	515	510	500
Extrusion	765	760	830	1055	890	890	850
Blow Moulding	530	535	645	670	475	480	555
Rotomoulding	60	60	75	70	65	60	85
Total	1905	1855	2040	2435	1945	1940	1990

Steady Machinery Exports

Source: Industry Analysis, PMMAI

Plastic Machinery Exports (by Revenue) FY19 - FY25

Segment	Revenue in USD (million)						
	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25
Injection Moulding	40	43	35	48	41	38	36
Extrusion	72	74	70	89	96	89	109
Blow Moulding	48	51	58	55	42	46	54
Rotomoulding	6	5	5	6	5	6	6
Total	165	173	168	199	184	179	205

Highest Ever Machinery Export Revenue in FY25

Source: Industry Analysis/PMMAI

Plastic Processing Machinery Advancements

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Indian Plastic Processing Machinery industry plays a vital role in the country's manufacturing ecosystem, timely supply of Processing & Printing machines, Converting lines and Auxiliary Systems.

GoI Initiatives like Make in India, PLI Schemes are boosting domestic manufacturing and attracting FDI in Plastic Processing Machinery Manufacturing.

Key Trends

- Energy-efficient drive systems and motors reduce power consumption & lower the overall carbon footprint of processing operations
- Feed Screw Design - Polymer-specific screw profiles with longer L/D ratios, enables improved Melt homogeneity, lower processing temperatures, and higher productivity
- Industry 4.0 integration streamlines production, reduce downtime and material waste, enhance operational efficiency, and enable predictive maintenance
- Machines designed to process higher post-consumer recycled (PCR) content support sustainability targets and circular economy goals
- Compact machine designs are improving space utilization and overall shop-floor efficiency
- Integration of Renewable Energy Solutions is driving sustainable manufacturing practices across machinery production and operations.

Enabling Manufacturing Excellence

Source: Industry Analysis, PMMAI

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Injection Moulding Machine Development Trends

- Feed Screw Designs ensures uniform melt quality and higher productivity at lower temperatures, resulting in products free from defects and warpage
- High-speed machines for uniform thin-section molding
- Improved machine agility and low machine downtime
- Enhanced mould safety systems, extending mould life and reducing downtime
- Mono Sandwich IM Technology allows use of Recycled materials (PCR) in core and virgin material in the inner & outer layers
- Faster cycle times and lower energy consumption - reduced carbon footprint

Advanced Injection Moulding Machines reducing Carbon Footprints

Source: Industry Analysis, PMMAI

Advances in Extrusion Lines - Trends

New-generation extrusion lines for blown and cast films offer improved energy efficiency, increased throughput, lower operating costs, and enhanced integration of recyclates.

Parameter	Earlier Generation Lines kWh/kg	Modern High-Efficiency Lines kWh/kg	Energy Savings % Reduction
Specific Energy Consumption	~ 0.6 - 0.8	~ 0.3 - 0.6	~25 - 50%

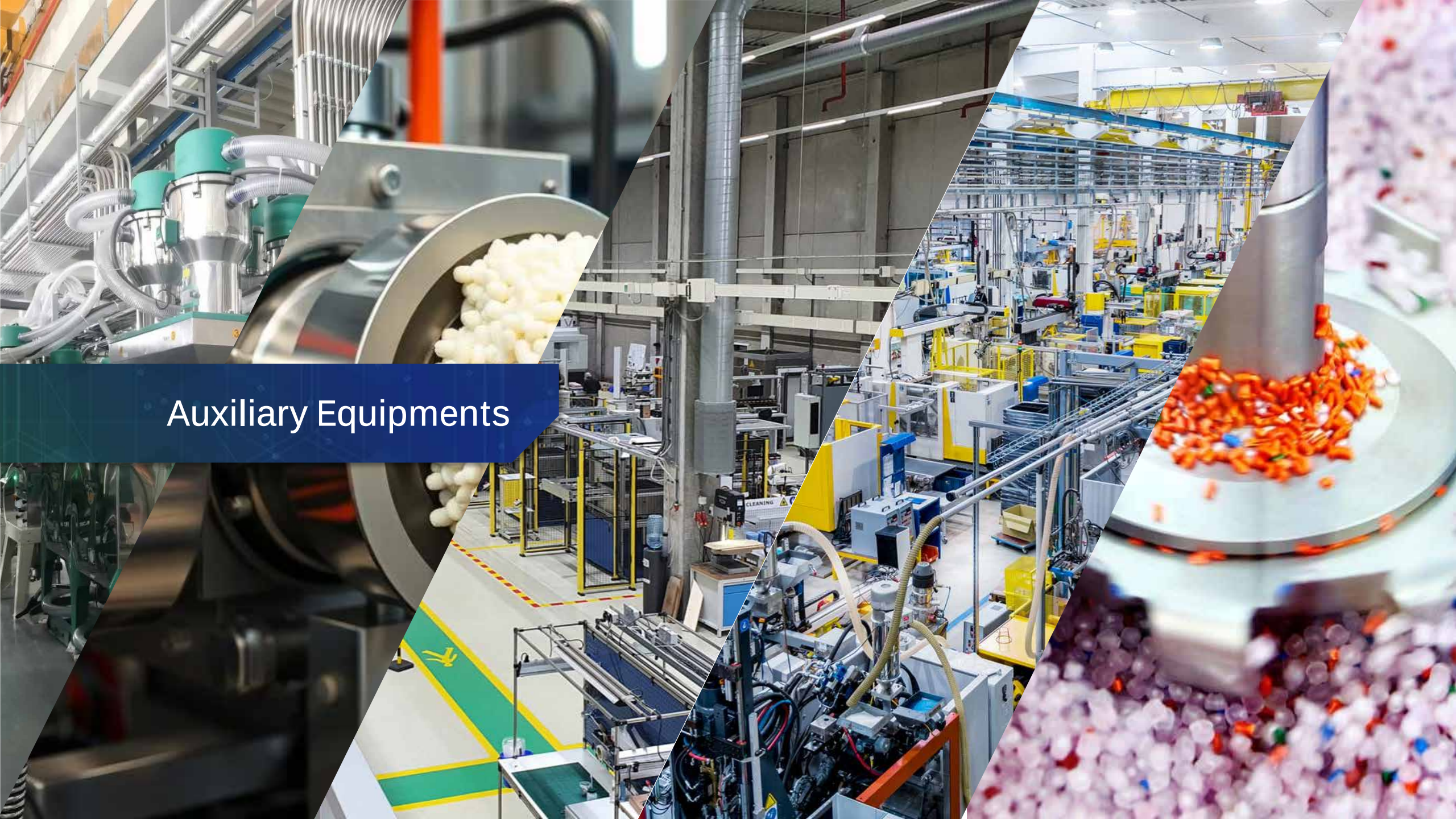
New Generation Blown & Cast line designs supports sustainable and cost-efficient production, with actual energy use varying by line type and configuration.

Extrusion Film Lines Trends

- High-efficiency Drive and Extruder Systems
- Better Melt & Die Engineering
- Optimized Heating/Cooling and Automation
- Digital Tools that cut waste, increase stability, and shorten setup time
- Higher Production Yield

Trends towards Energy Efficiency, Higher Yield and Sustainability

Source: Industry Analysis



Auxiliary Equipments

Auxiliary Equipment - Industry Insights

- Plastic Processing Industry is expanding rapidly, driven by Packaging, Automotive, Consumer Goods, Electronics, and Infrastructure Sectors.
- Rising need for Automation and supporting systems is increasing demand for Auxiliary Equipment across the value chain.
- With increasing emphasis on regulations, quality, and energy efficiency, many MSME processors are now prioritising investments in Auxiliary Systems. This is broadening the demand beyond mid and large-scale processors.
- Overall Auxiliary Equipment demand in India is strong, with high growth expected in new installations and retrofits over the next 5 - 6 years.

Product Demand

Major Growth Segments - Material Handling, Mixers, Granulators, Feeders: Gravimetric Dosing Systems for Precise Material Feeding

Robotics & Automation fastest Growing Segment

Key Industries: Plastic Processors in Packaging, Automotive, Construction, Consumer Goods

Fastest Growing Market in Asia Pacific

Source: Industry Analysis

Auxiliary Equipment - Industry Insights

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Auxiliary Segments			
Product	Units	Product	Units
Chilling Plant	14170	Volumetric/Gravimetric Blending System	2000
Mould Temperature Controller	2360	Conveyor Belt with Counting System	1530
Drying System		Granulator	7080
- Hopper Dryer	270+	Robot	2800
- Dehumidified Air Dryer	1890	Hot Runners	1890
Raw Material Conveying System		Pulverisers	1200
- Hopper Loader	18900	PVC Powder Conveying system	3300
- Central Conveying System	410	Polymer loss in Weight Feeders System	1420
Mixers including Hot & Cold Mixers	1000	Polymer Compounding Re-filling System	15950

Market Trends

Market Size in 2024: ₹ 4300 Cr

Material handling is the largest segment with about 25% share

Industry is projected to cross ₹ 6200 Cr by 2030

Auxiliary Equipment Market is anticipated to grow @ 6.3% CAGR (2025 -2030)

India's Share: 6.9% of Global Plastic Auxiliary Equipment Market

Source: Industry Analysis

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Tooling Industry

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India - Tooling Industry Insights

- India's Tooling industry serves as a critical backbone of the manufacturing ecosystem, supporting key sectors such as automotive, plastics, electronics, packaging, and consumer goods
- India has emerging as a cost-competitive hub for moulds, dies, jigs, fixtures, and precision tooling, driven by skilled manpower, improving technology adoption, and strong engineering capabilities
- Rising domestic manufacturing, increasing export demand, and government initiatives such as Make in India and PLI schemes are further strengthening India's tooling ecosystem
- The tooling industry is segmented into Plastics, which is the largest segment, followed by Sheet Metal, Die casting-dies and Jigs, Fixtures & Gauges
- Total Indian tooling market (FY23): ~₹23,600 Cr. Split by source: CTRs ~₹10,500 Cr (44%), Captive ~₹5,100 Cr (22%), Imports ~₹8,000 Cr (34%)
- Exports ~₹1,900 Cr , USA is the top destination
- Estimated CAGR ~7-8% CAGR - ₹40,500 Cr by FY 2031

Plastic Tooling Industry Insights

Tool Room Segmentation

- Commercial Tool Room (CTR)
- In House (Captive) Tool Room

Estimated Commercial Tool Room (CTR) for Plastics ~1000

Inhouse Tool Rooms are mainly for Automotive Sector and Tier 1 Suppliers

Plastic Tooling is the Largest Segment in the Tooling Industry

Make in India Tooling Solutions for Modern Manufacturing

Source: Industry Analysis, TAGMA

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India - Plastic Tooling Industry Insights

- Industry dominated by MSME. Commercial Tool Rooms, supported by Captive Tool Rooms of Large OEMs and Tier1 Suppliers
- Over 60% of Plastic Tooling Demand is driven by automotive (PV, 2W, EVs), followed by Consumer Durables, Packaging, Electrical & Electronics, Houseware Sectors
- Plastics Moulds account for ~39% of total tooling demand, 35-45% of CTRs are predominantly plastics-focused
- High-precision and complex plastic moulds still see significant Import dependence
- Plastics tooling demand expected to grow faster than the overall tooling market, supported by localisation initiatives

Plastic Moulds & Dies

Plastic Tooling Segmentation

- Injection Moulds
- Blow Moulds - EBM, IBM ISBM, SBM
- Extrusion Dies - Mono & Multilayer Films, Sheets, Pipes, Profiles, W&C
- Rotational Moulding Moulds
- Thermoforming Moulds
- Thermoset Industry

Plastics Tooling Anchors India's Tooling Industry

Source: Industry Analysis, TAGMA

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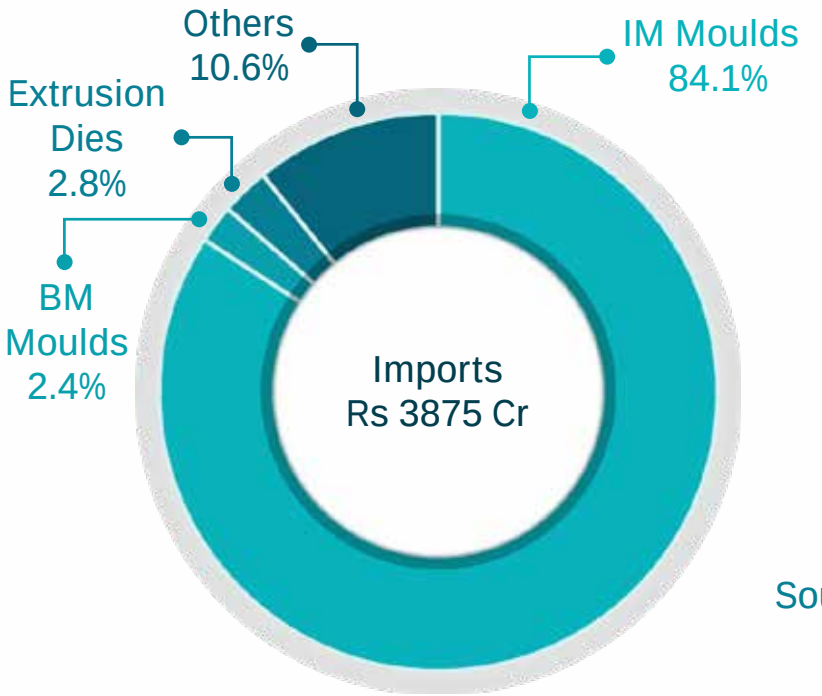
Tooling Industry - Moulds & Dies for Plastics

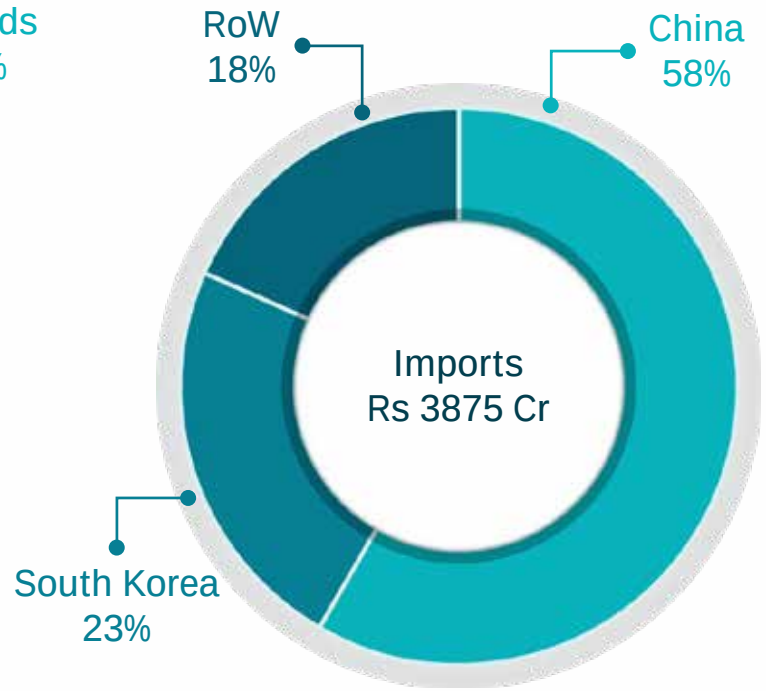
PLASTINDIA FOUNDATION
ISO 9001-2015 certified

Moulds & Dies Imports* FY25

Tooling Type



Region-wise % Share



* Industry Estimates

Plastic Moulds & Dies

Plastic Tooling Industry FY25

Tooling Demand ~₹ 10,700 Cr
Domestic Industry ~₹ 6825 Cr
Imports ~₹ 3875 Cr

Moulds & Dies Imports FY25

IM Moulds
~24,000 Nos

Extrusion Dies
~ 2075 Nos

Blow Moulding Moulds
~1370 Nos

Strong Demand Story - Awaiting Domestic Capacity

Source: Industry Analysis, TAGMA

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Plastics Tooling Industry - Trends & Outlook

EV Market

- More Plastic Content, higher demand for Plastics Moulds

Faster Model Refreshes

- Shorter product life, more facelifts/new introductions, higher tooling frequency

New Precision Sectors - Aerospace & Defence, Medical

- Demand is growing but still import-reliant due to capability/validation gap opportunity if local CTRs invest in high-precision, metrology, and QA

Tech on the Shop-floor

- Gradual adoption of 3D Printing/Rapid Prototyping, Industry 4.0 / Digitisation,
- Advanced Coatings & Heat-treatment to cut lead time and rework
- With steady 7-8% growth and ongoing localisation, Plastics Tooling could reach ~₹16-18k Cr by FY2031, with further upside if EV penetration/local content accelerate.

Plastics Tooling enters a High-Growth phase driven by localization and EVs

Source: Industry Analysis, TAGMA

Trade - Imports & Exports

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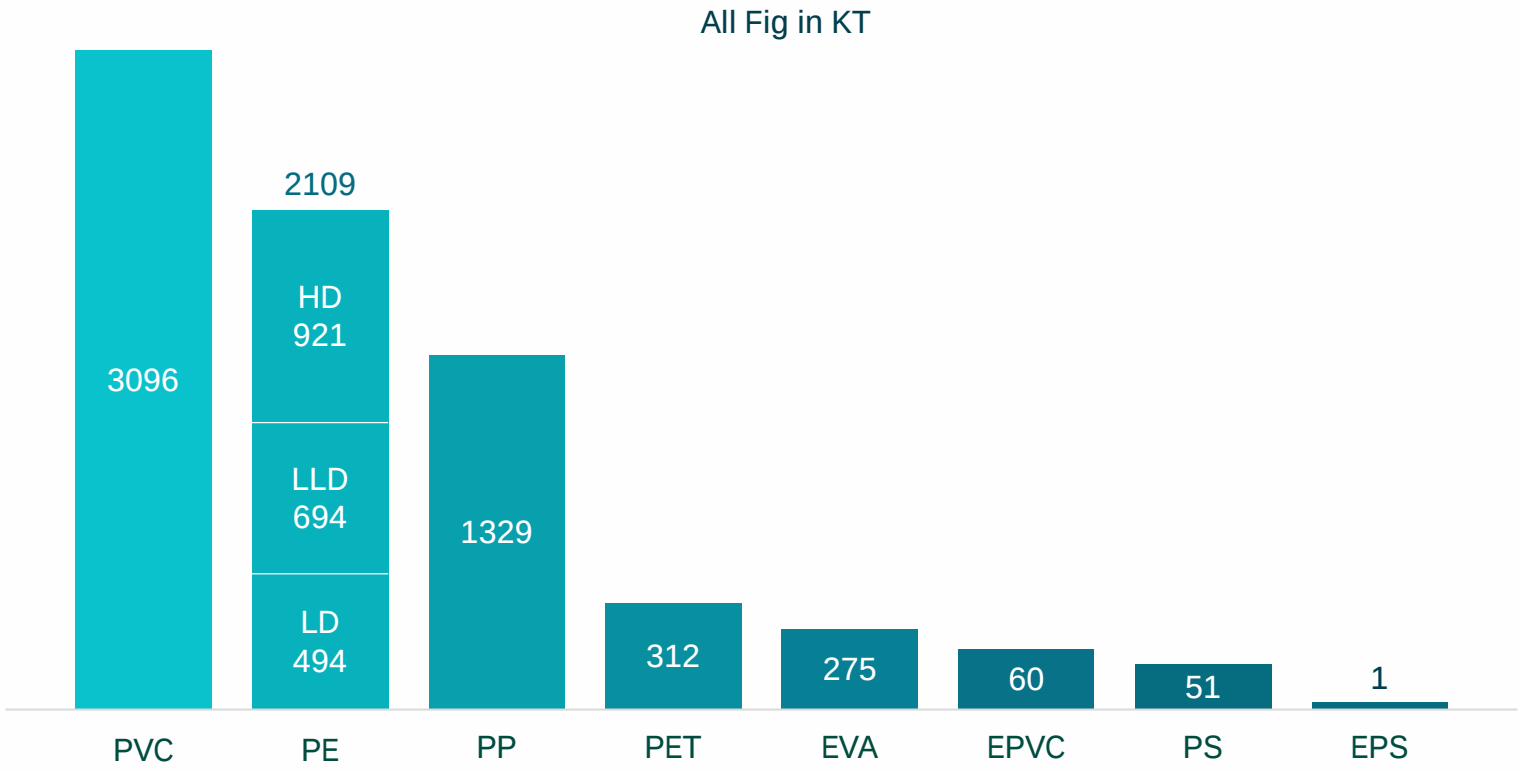
Major Commodity Plastics Imports FY25



FY25 Import Trends

7.23 MMT Major Commodity polymer Imports with YoY decline by 7.9%

PVC imports crossed 3 MMT, grew by 15% YoY

PE Imports 2109 KT with 29% YoY decline

PP imports 1329 KT with 10% YoY decline

PVC leads imports across all Polymer categories

Source: Industry Analysis, CPMA

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Ch39 Imports - Top 10 Country-wise FY25

Fig in USD Million

Country	2023-24	2024-25	YoY Growth
China	5661	6335	10.6%
South Korea	2244	2291	2.1%
USA	1630	1531	-6.5%
Singapore	1337	1530	12.6%
UAE	1663	1329	-25.1%
Thailand	1292	1328	2.7%
Japan	1167	1148	-1.7%
Saudi Arabia	1103	1045	-5.6%
Taiwan	864	895	3.5%
Germany	613	657	6.6%
Total Top 10 Countries Imports	17575	18089	2.8%
Total Overall Imports	21809	22116	1.4%

Country-wise Import Trends

China accounts for the Highest Imports - mainly PVC

South Korea is the second largest source of imports, with 10.4% share

Imports from USA and Singapore account for 6% share

The top 10 Countries account for 81.8% of Total Imports

Ch39 - Imports from China Highest with 28.6% Share

Source: Industry Analysis, DGCIS, Plexconcil

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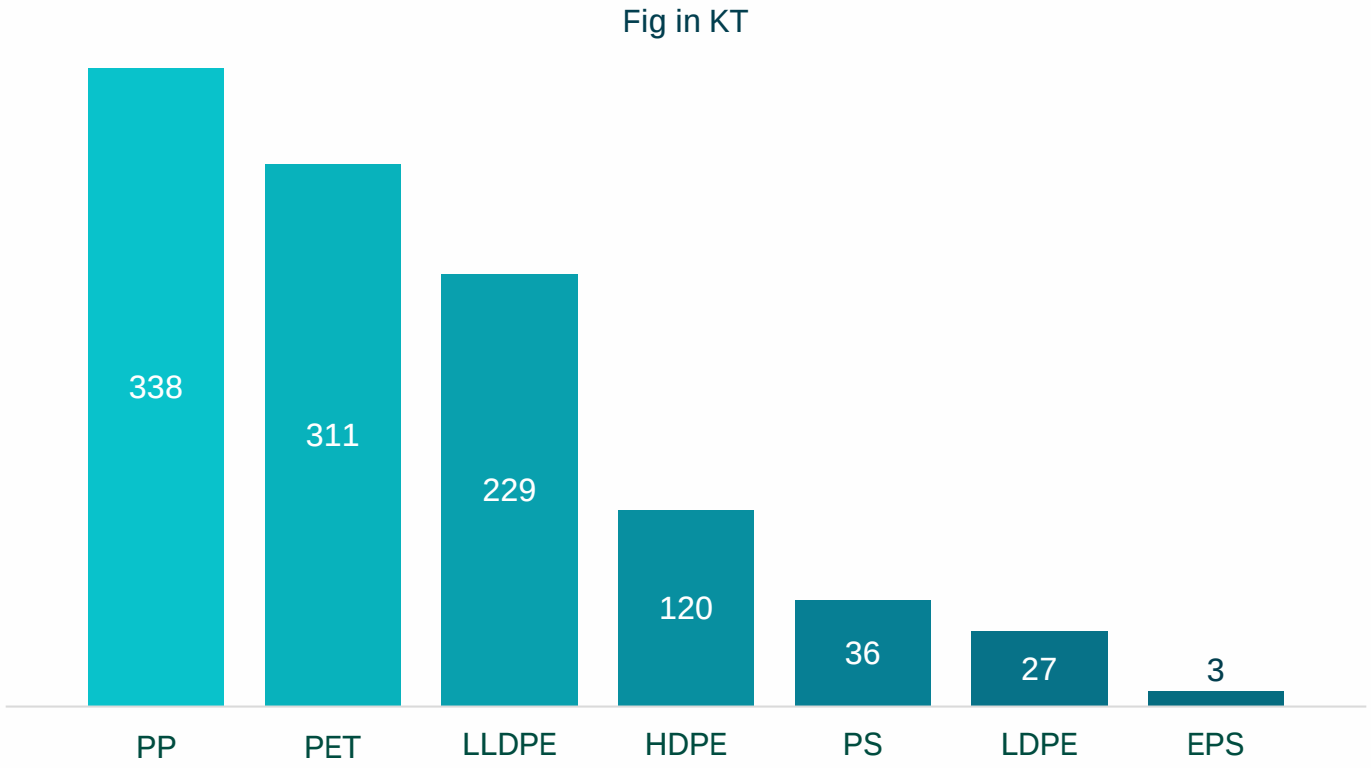
Major Commodity Resin Exports FY25



FY25 Export Trends

Major Commodity Plastic Resin Exports 1.08 MMT
YoY Growth 7.9%

PE Resin Exports 376 KT
YoY Growth 21.4%

PP Resin Exports 338 KT
YoY Growth 10.8%

PET Resin Exports 11KT
Decline by 5.2%

PE accounts for the Highest Share of Commodity Plastic Exports

Source: Industry Analysis, CPMA

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Ch39 Exports - Top 10 Country-wise FY25

Fig in USD Million

Country	2023-24	2024-25	YoY Growth
USA	1445	1673	13.6%
UAE	467	456	-2.5%
Nepal	257	285	9.7%
China	292	276	-5.6%
UK	240	274	12.6%
Bangladesh	203	263	22.8%
Germany	213	239	11.2%
Saudi Arabia	174	218	20.0%
Vietnam	131	181	27.9%
Italy	168	164	-2.3%
Total Top 10 Countries	3591	4030	10.9%
Total Overall Exports	7374	8158	9.6%

Ch 39 Export Trends

India's Exports to the U.S. is the Highest, accounting for 20.5% share dominantly finished goods

Export to UAE is 2nd Highest and account 5.6% share

UK and Germany are Key European Countries for Exports

Top 10 countries account 49.4% share of Total Exports

Ch39 - USA Top Country for Exports

Source: Industry Analysis, DGCIS, Plexconcil

Trade Analysis - Chapter 39

PLASTINDIA FOUNDATION
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Ch39 Trade Value Analysis FY25

Segment	Imports $ Bn	Exports $ Bn	Net Trade $ Bn
Plastic Raw Materials	16.6	3.2	-13.3
Plastic Finished Goods	5.6	4.9	-0.6
Total Ch39 Trade	22.1	8.2	-14.0

Major Plastic Goods Exports

- Raffia Products
- Plastic Film and Sheets including Packaging
- Consumer and Houseware Products
- Plastic Raw Material & Compounds

FY25 Trade Value Analysis Trends

Polymer Resin Imports $16.6 Billon in FY25

Raw Material Segment Trade recorded $13.3 Billion Deficit

Ch39 Finished Goods Trade recorded 0.6 Billion deficit

Overall Trade Deficit of $14 Bn in FY25

Import of Resins on Rise, Trade Deficit $14 billion

Source: Industry Analysis, DGCIS, Plexconcil

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Trade Analysis Chapter 39 - Trade Value

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Ch39 County-wise Trade Value Analysis FY25

Country	Import $ Bn	Export $ Bn	Net Trade $ Bn
China	6.33	0.28	-6.06
USA	1.53	1.67	+0.14
South Korea	2.29	0.05	-2.24
Singapore	1.53	0.12	-1.41
UAE	1.33	0.46	-0.87
Top 5 Countries	13.01	2.57	-10.44
Total Ch39 Trade	22.12	8.16	-13.96

Ch39 Trade Value Analysis Trends

China accounts for the Highest Deficit in Chapter 39, with a 43.4% share of the total deficit

USA 2nd in Total Trade with marginal Trade Surplus of 1%

South Korea account for 16% of Trade Deficit

Top 5 Countries account for 59% of Imports, 32% of exports and 75% of Trade Deficit

Trade Deficit with China is the Highest

Source: Industry Analysis, DGCIS, Plexconcil

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Trade Analysis - Plastic Related Goods

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Plastic Resins & FGs Trade Value Analysis FY25

Segment	Imports $ Bn	Exports $ Bn	Net Trade $ Bn
Plastic Raw Materials	16.6	3.2	-13.4
Plastic Finished Goods	7.8	8.5	+0.7
Total	24.3	11.7	-12.6

Trade Value Analysis Trends

India's Polymer Resin export $3.2 Bn in FY25

Finished Goods exports higher than Imports in FY25

Finished Goods exports $8.5 Bn in FY25

Overall Trade Deficit $12.6 Bn in FY25

India's Export of Plastic Finished Goods is higher than Imports

Source: Industry Analysis, DGCIS, Plexconcil

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Trade Analysis - Machinery & Moulds

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Machinery & Moulds Trade Value Analysis* FY25

(Fig in Million $)

Sectors	Imports	Exports	Trade Value
Injection Moulding Machines**	310	36	-274
Blow Moulding Machines	34	54	+20
Extrusion Lines	507	109	-398
Rotomoulding Machines	0.4	6	+5.6
Moulds & Dies	455	134	-321
Total	1306.4	339	-967

FY25 Trade Value Trends

India Imports record Processing Machines & Moulds $1.3 billion

IM Machines
Trade Deficit $274 million

BM Machine $20 million Trade Surplus mainly due to ISBM & EBM Machines Exports

Extrusion Segment Highest Trade Deficit of 398 million

Rotomoulding Segment registered Positive Trade Surplus of 5.6 million

Moulds and Dies Imports highest in FY25

* Industry Estimates **Excludes SKUs

Record Imports of Processing Machines & Moulds in FY25

Source: Industry Analysis

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Indian Plastics Industry - Estimated Value

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Dashboard - Thermoplastic Industry FY25

Parameters	Estimates
Thermoplastics Demand FY25	25,660 KT
Primary Processing Machines Installed in FY25	19,300+ Units
Investment in Primary Processing Machinery in FY25	~₹ 12,770 Cr
Investments in Machinery, Moulds & Converting Lines FY20- FY25 (E)	~₹ 1.2 Lakh Cr
Primary Processing Machinery in Units (FY19 - FY25)	+6.3% CAGR
Cumulative Primary Processing Machines as of March 2025 (Units)	2,56,000+
Total Processing Capacity* as of March 2025	~81,000 KT
Processing Capacity Addition in KT (FY19 - FY25)	+8.4% CAGR
Likely Investments in Machinery, Moulds & Converting Lines (FY26 -FY31)	~₹ 1.9 Lakh Cr

*Capacity includes Polymer Processing, Compounding & Recycling

Workhorse of India's Growing Economy

Source: Industry Analysis

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Indian Plastics Industry - Estimated Value

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Estimated Value of Indian Plastic Industry Sectors FY25

Description	Estimated Value (Rs Lakh Crore)
Plastics Finished Goods, including recycled	6.24
Plastics Finished Goods (Imports)	0.66
Total Plastic Finished Goods	6.9
Plastics Raw Material (Exports)	0.27
Total Plastic Resin and Finished Goods	7.17
Cumulative Value of Machinery, Moulds & Dies	1.86
Total Value (Rs)	9.03
Total Value (USD in Billion)	107

Note: Values are indicative estimates for FY25; figures include Finished Goods, Recyclates, and Capital Goods, Currency conversion Avg Ex Rate: Rs 84.55/USD

A Growing Market, Powering India's Industrial Growth

Source: Industry Analysis, PMMAI, DGCIS, Plexconcil Research

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Standardisation - Bureau of Indian Standards

Standardisation - Bureau of Indian Standards

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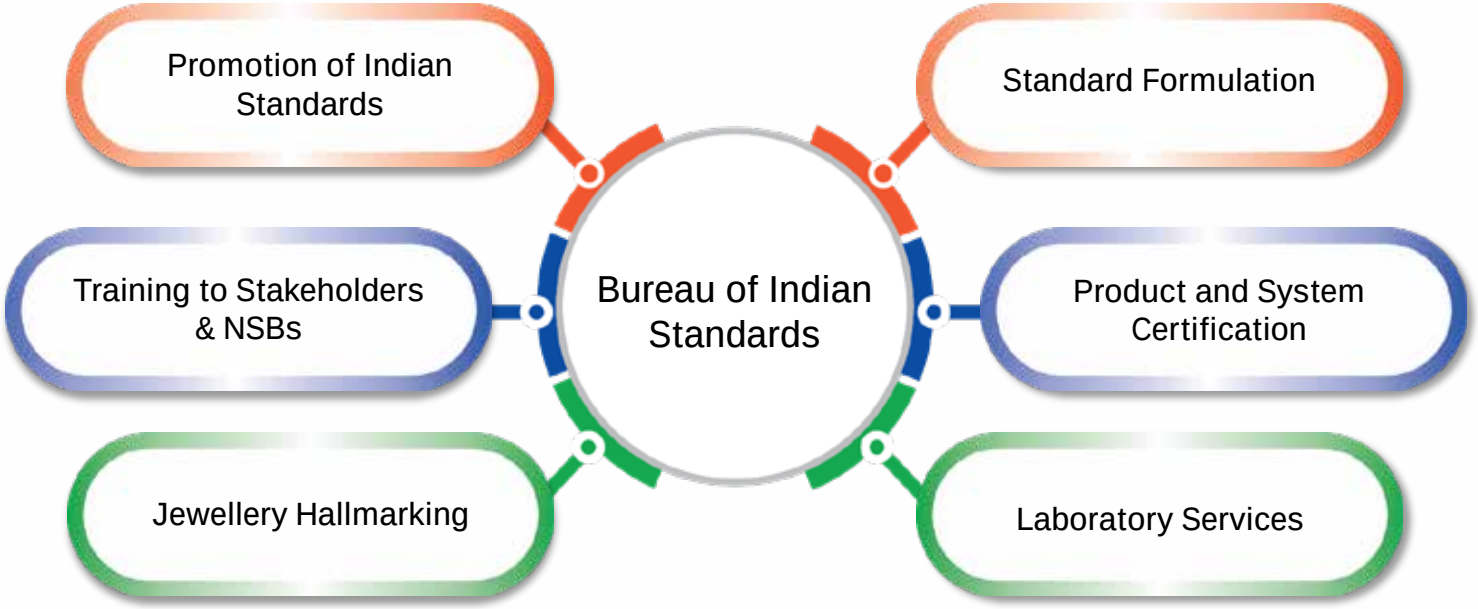
India's National Standards body, the Bureau of Indian Standards (BIS), plays a crucial role in developing and promoting standards across various sectors to support the India's economic and technological growth.

Main Activities of BIS



History and Legal Framework of BIS

1947

Establishment of the Indian Standards Institution (ISI), the predecessor to the Bureau of Indian Standards (BIS).

1986

The BIS Act of 1986 positions BIS as the National Standards Body for India.

2016

The BIS Act of 2016 further strengthens BIS's role and responsibilities as the National Standards Body.

Source: Bureau of Indian Standards

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Shaping The Future Of Plastics

Major Sectional Committees related to Plastics

Sr. No.	Divisional Council	Sectional Committees	Approx No. of Standards published related to Plastics
1	Textiles (TXD)	Textile Materials made from Polyolefin (TXD 23)	18
		Geosynthetics (TXD 30)	55
		Technical Textiles for Build tech Applications (TXD 33)	4
		Technical Textiles for Agrotech Applications (TXD 35)	25
		Technical Textiles for Medtech Applications (TXD 36)	21
		Cordages (TXD 09)	12
		Textile Materials for Marine/Fishing Purposes (TXD 18)	25
2	Civil Engineering (CED)	Plastic Piping System (CED 50)	58
		Sanitary Appliances & Water Fittings (CED 03)	15
		Doors, Windows and Shuttles (CED 11)	4
3	Electrotechnical (ETD)	Solid Electrical Insulating Materials And Insulation Systems (ETD 2)	3
		Power Cables (ETD9)	22

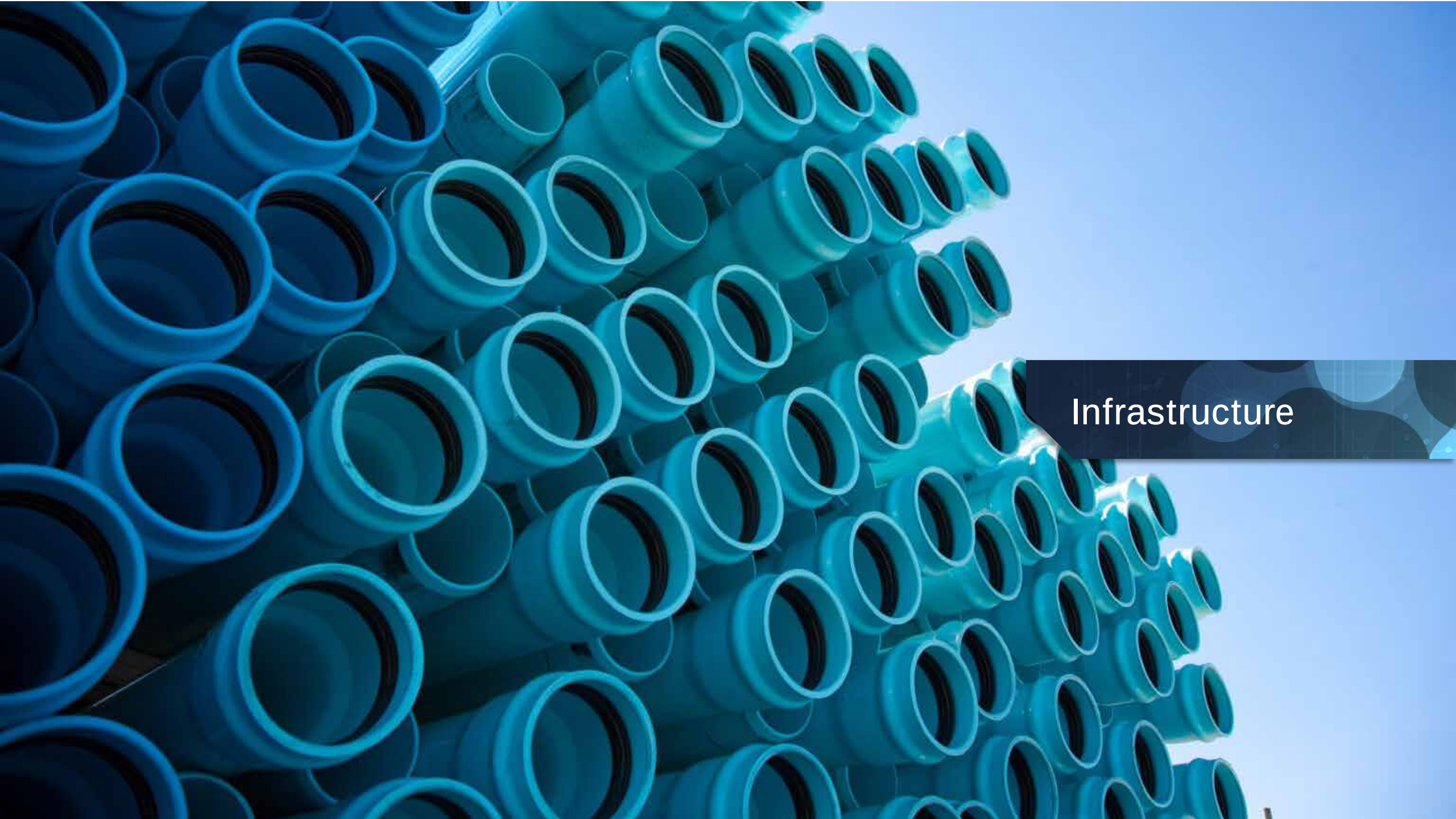
Source: Bureau of Indian Standards

Major Sectional Committees related to Plastics

Sr. No.	Divisional Council	Sectional Committees	Approx No. of Standards published related to Plastics
4	Petroleum, Coal and Related Products (PCD)	Plastics (PCD 12)	167
		Plastic Packaging (PCD 21)	46
		Method of Sampling and Test for Plastics (PCD 27)	176
		Toys and Related Test Methods (PCD 30)	11
5	Electronics and Information Technology (LITD)	Electromechanical Components and Mechanical Structures for Electronic equipment (LITD 3)	23
		Wires, Cables, Waveguides and Accessories (LITD 6)	32
		Fibre Optics, Fibres, Cables and Devices (LITD 11)	12
6	Mechanical Engineering (MED)	Utensils, Cutlery and Domestic Hardware (MED33)	16
Total	6 Divisional Councils	20 Sectional Committees	745+ Indian Standards

Source: Bureau of Indian Standards

Growth & Opportunities



Infrastructure

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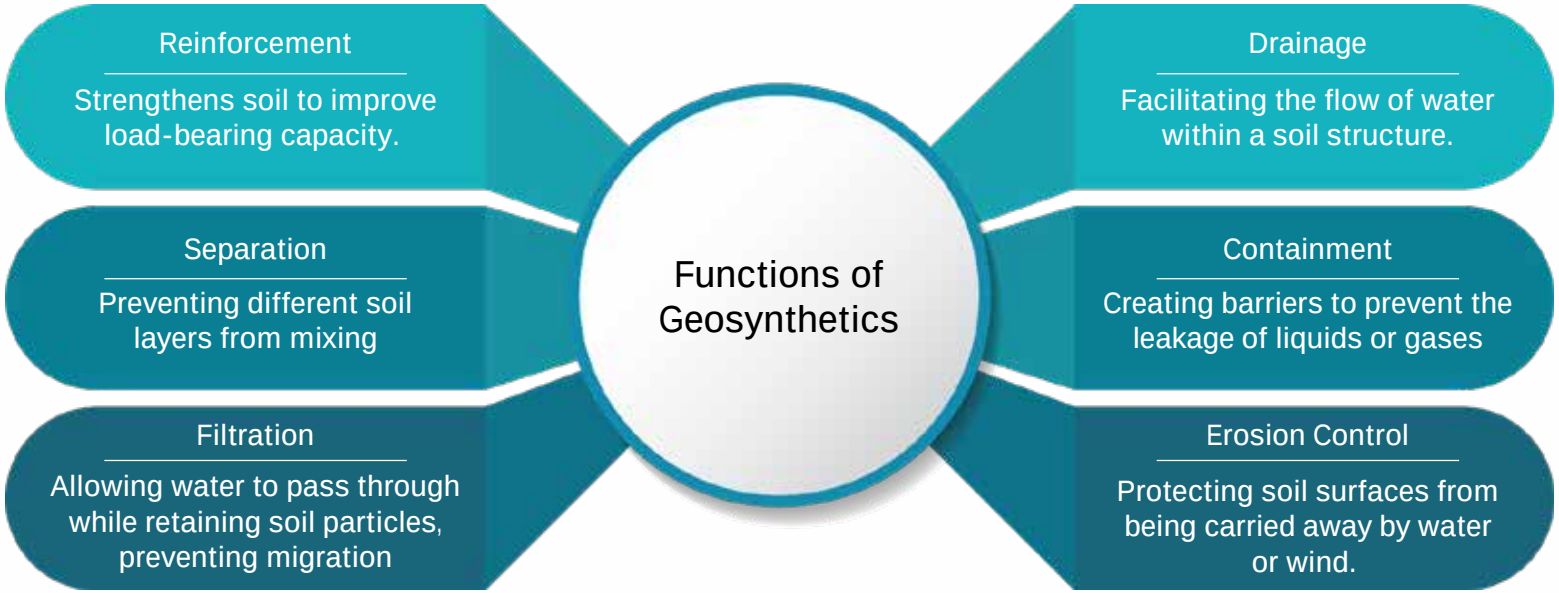
Geosynthetics Sector Insights

Geosynthetics are planar polymeric materials used in contact with soil, rock, earth or any other geotechnical engineering related material as an integral part of a man made project or a system to perform a single or multiple functions



Geosynthetics Insights

Market Segmentation

Geotextiles
Geogrids
Geomembranes
Geocell
Geostraps
Geonets
Geocomposites

Application Spectrum

Roads and Railways
Embankments and Retaining Walls
Landfills and Waste Containment
Reservoirs and Water Management
Erosion Control
Coastal and River Protection

Key Polymers PE, PP, PVC, Polyester

Geosynthetics - Strengthening India's Infrastructure

Source: Industry Analysis

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Geosynthetics in Landfill Projects

Geosynthetics play a crucial role in modern landfill design. They enable effective waste containment, structural reinforcement, and environmental protection

- Geomembranes act as impermeable liners to prevent leachate leakage
- Geotextiles offer filtration and separation
- Geonets or drainage layers manage fluid flow, reducing the risk of contamination

Geosynthetics enhances landfill safety, extends service life, and ensures compliance with environmental regulations. These solutions support sustainable and responsible waste management practices.

Geosythetics & Plastics Products In Landfill Applications

- Geosynthetic Clay Liner
- HDPE Geomembrane
- Nonwoven & Woven Geotextiles
- Geonet
- Geocomposite Drainage Net
- Erosion Control Mattress
- HDPE Piping Network
- Grass Turfing and a well laid out Piping System

Landfill Site after Capping

Strengthening Landfills, Protecting the Environment

Source: Industry Analysis, Photo Credit: Garware Technical Fibres Ltd.

Geosynthetics in Tunnel Lining

Geosynthetics are increasingly used in tunnel lining systems to improve structural stability, control water ingress and enhance overall tunnel durability.

- Geotextiles, Geomembranes, and Geogrids provide drainage, filtration, waterproofing, and soil reinforcement.
- Usage of geosynthetics in tunnel linings reduces settlement risks and effectively manages groundwater pressures, extends the service life of tunnels, improves safety, and lowers maintenance costs

Geosythetics & Plastics Products In Tunnel Lining

- PVC Geo Membranes
- Geotextile
- Geogrids
- Water Stoppers & Piping Systems

Geosynthetics: Ensuring Stronger, Safer Tunnels

Source: Industry Analysis, Photo Credit: Garware Technical Fibres Ltd.

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Geosynthetics in Coastal Protection

Geosynthetics such as Geotextiles, Geotubes, Flexible Rope Gabions are widely used in coastal engineering applications.

- These materials help reinforce shorelines and control coastal erosion
- They provide structural support, filtration, and effective drainage for seawalls and embankments
- Geosynthetics enhance the durability and stability of coastal defence structures
- Their use reduces maintenance requirements and supports sustainable shoreline management

Geosythetics & Plastics Products In Coastal Protections

- Geotextiles
- Geotubes
- Geobags
- Flexible Rope Gabions

Geosynthetics: Safeguarding Coasts, Securing Futures

Source: Industry Analysis, Photo Credit: Garware Technical Fibres Ltd.

Infrastructure - PVC-O Pipes

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PVC-O Pipes are made by molecular orientation process which enhances physical and mechanical properties of PVC Pipes. PVC-O pipes due to its orientation have very high tensile strength and fatigue resistance, higher ductility and better resistance to impact than normal PVC Pipes. PVC-O have high Pressure Rating (often Class 500 or PN 16-25)

PVC-O Pipe Sector FY25 Insights	
Manufacturers	34
No of PVC-O Lines	48
Installed Capacity (KT)	144
Installed Capacity Growth (YoY)	90%
Resin Demand FY25 (KT)	60
Resin Demand (F) CAGR FY31	17%

PVC-O Pipes making inroads in the Metallic Pipe Market

Source: Industry Analysis

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PVC-O Pipes - Performance Characteristics

- Easy to Join - Push-fit, leak-proof joints, Saves time and Installation costs
- Low energy consumption across the entire manufacturing-to-installation cycle helps reduce the overall carbon footprint.
- Resistance to wide range of chemicals including pH 3 to 12
- No microcracks develop when exposed to higher chlorine level
- Seismological shock absorption better than traditional material
- Lower Water Hammer Effect - No Line Failure
- Energy savings to end user as bigger ID and smooth Inner Surface
- Good resistance to UV Radiation
- PVC-O BIS Standard -16647:2017
- 100+ years life of Pipeline once Installed properly
- ROHS Compliance - No heavy metals including Zinc - Totally Green Pipe

Smart Piping System for Sustainable Future

Source: Industry Analysis

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PVC-O Pipes Applications and Demand Drivers

Water Supply Mains/Raising Mains

- Lift irrigation
- High Pressure Drain/Storm Water Lines
- Industrial park water Pipeline
- Power Plant Water Pipelines -intake
- Desalination Plants
- Infrastructure Water Pipelines e.g. Airports
- New Townships and Smart cities - Water and Sewage Pipelines

Demand Drivers - GoI Initiatives

- Rural Development and Agriculture
- Urban Infrastructure and Building & Construction (Smart Cities & AMRUT Projects)
- 24x7 Water Supply Projects
- Replacement & Rehabilitation of old Water & Sewerage networks
- Building up Stormwater Drainage Networks
- Investments in Infrastructure projects
- Expressways & National Highways : Utility Manifolds/ Corridors for OFC, Water, Sewerage, Drainage, Drip Irrigation
- Industrial Expansion under Make in India

PVC-O Pipes: Engineered for Long Life and Efficiency

Source: Industry Analysis

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Automotive

Automotive - Global Insights

PLASTINDIA FOUNDATION
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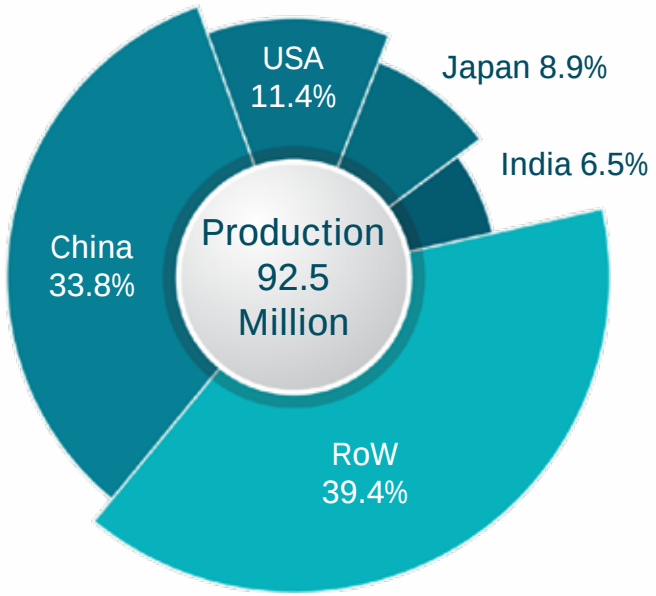
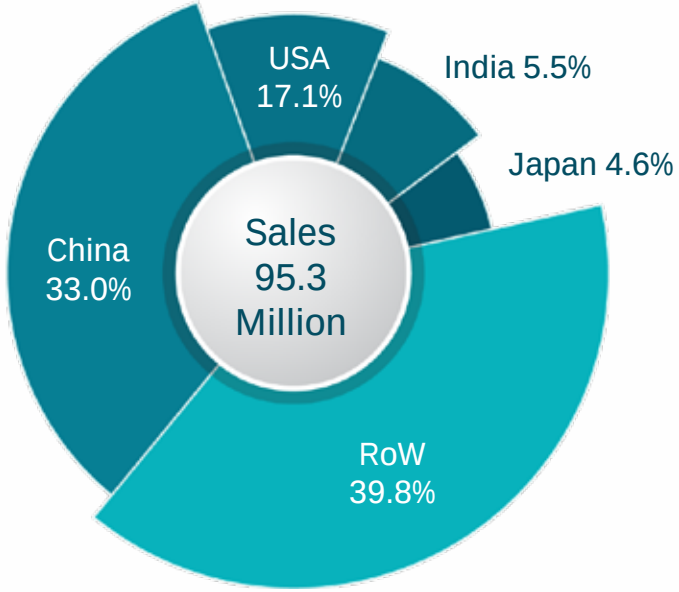
Country-wise Production and Sales

2024 Production



2024 Sales



Market Trends

92.5 million Motor vehicles production

95.3 million Motor Vehicle Sales

2.7% YoY sales growth

China Largest Manufacturer & Market for Motor Vehicle

India 3rd Largest Motor Vehicle Market

India 4th Largest Motor Vehicle Manufacturer

India is World's 3rd Largest in Motor Vehicle Market

Source: OICA

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Automotive - Global Insights

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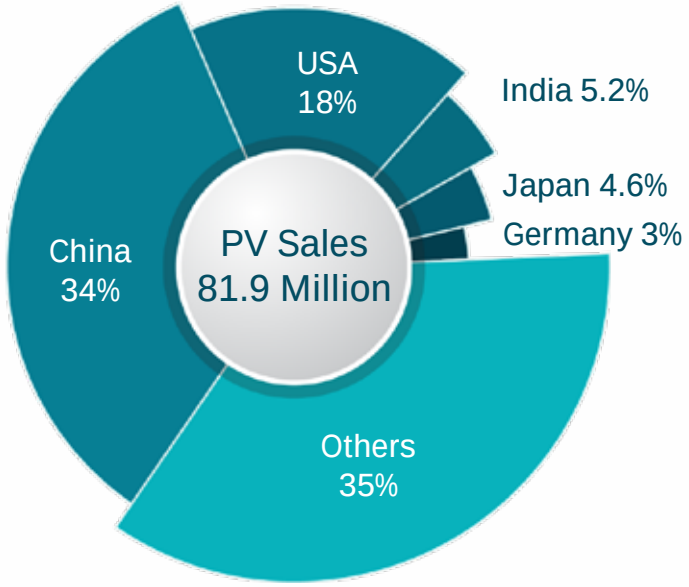
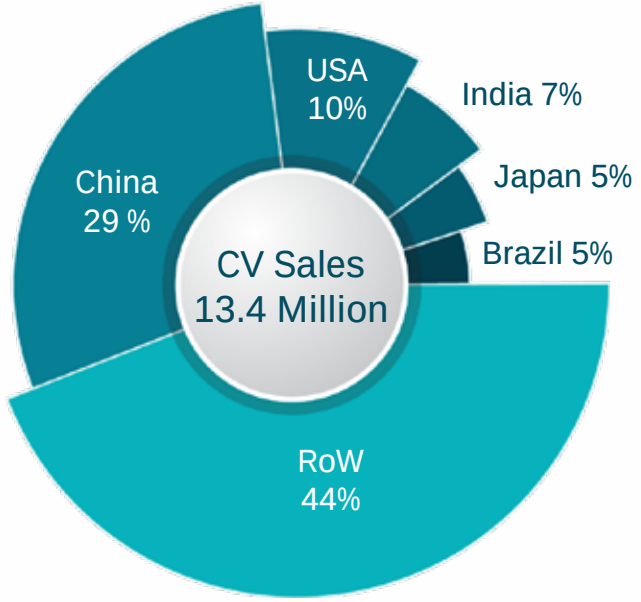
Global Motor Vehicle Market

2024 PV Sales



2024 Commercial Vehicle Sales



Global Market Trends

81.9 million Global PV Sales in 2024

China Largest Manufacturer and Market

India 3rd Largest Market

13.4 million Global CV Sales in 2024

China Largest CV Market

India 3rd Largest CV Market

India is World's 3rd Largest in Commercial Vehicle Market

Source: OICA.SIAM, Industry Analysis

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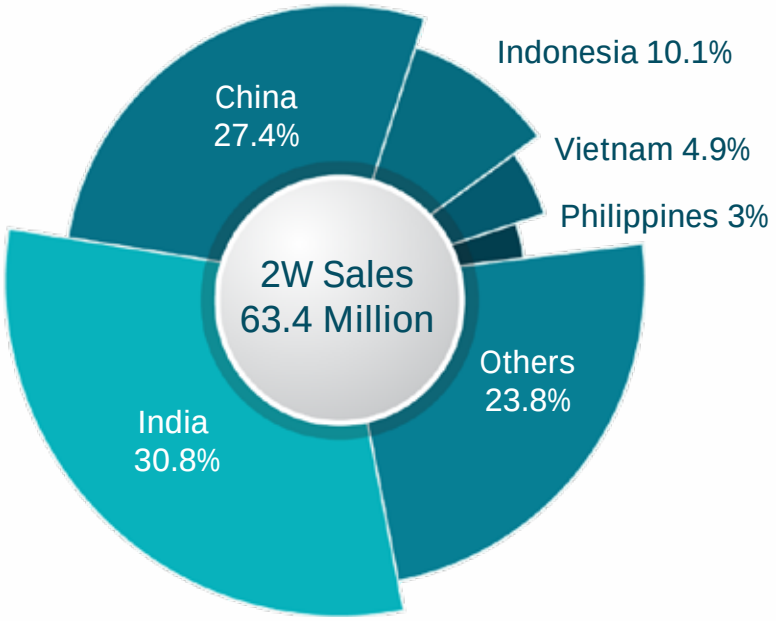
Global Two-wheeler Analysis

2024 Sales



Market Trends

63.4 million Global 2W Sales

India Largest 2W Market

China 2nd Largest 2W Market

Indonesia 3rd Largest 2W Market

India is the World's Largest Two-wheeler Market

Source: SIAM, Industry Analysis

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Automotive - India Insights

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Indian Auto Industry Highlights FY25

All Fig in Million Units

Category	Production	Domestic Sales	Exports
Passenger Vehicle	5.1	4.3	0.8
Commercial Vehicle	1.0	1.0	0.1
Three Wheelers	1.1	0.7	0.3
Two Wheelers	23.9	19.6	4.2
Total	31.0	25.6	5.4

Market Trends

31.03 million vehicle manufactured

Record Sales of 25.6 million vehicle with 2% YoY growth

Record Export of 5.36 million Vehicles with 14.6% growth

The Three-Wheeler industry achieved highest ever domestic sales of 0.74 million units,

Indian Auto Industry contributes $230+ Bn to the economy

4th Largest Passenger Vehicle Maker in the World

Source: SIAM, Industry Analysis

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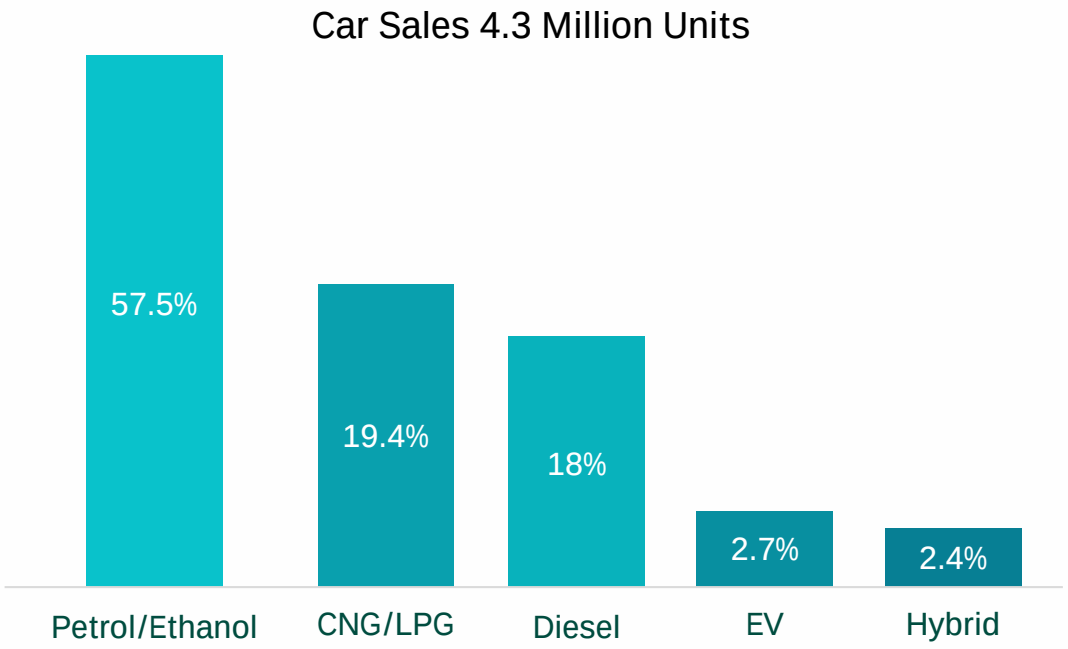
Passenger Car Powertrain Analysis FY25



Motor Vehicle Powertrain Trends

Petrol continues to dominate powertrain in car segment with 57.5% Share

All Petrol Vehicles manufactured since April 1, 2025, are fully compliant with E20 fuel

India has emerged as the world's largest market for gas-based buses and three-wheelers

Initiation of work on Hydrogen fuel-based vehicle solutions under the Government of India's Green Hydrogen Mission

From Petrol to Green Fuels: A Phased Powertrain Shift

Source: FADA, Industry Analysis

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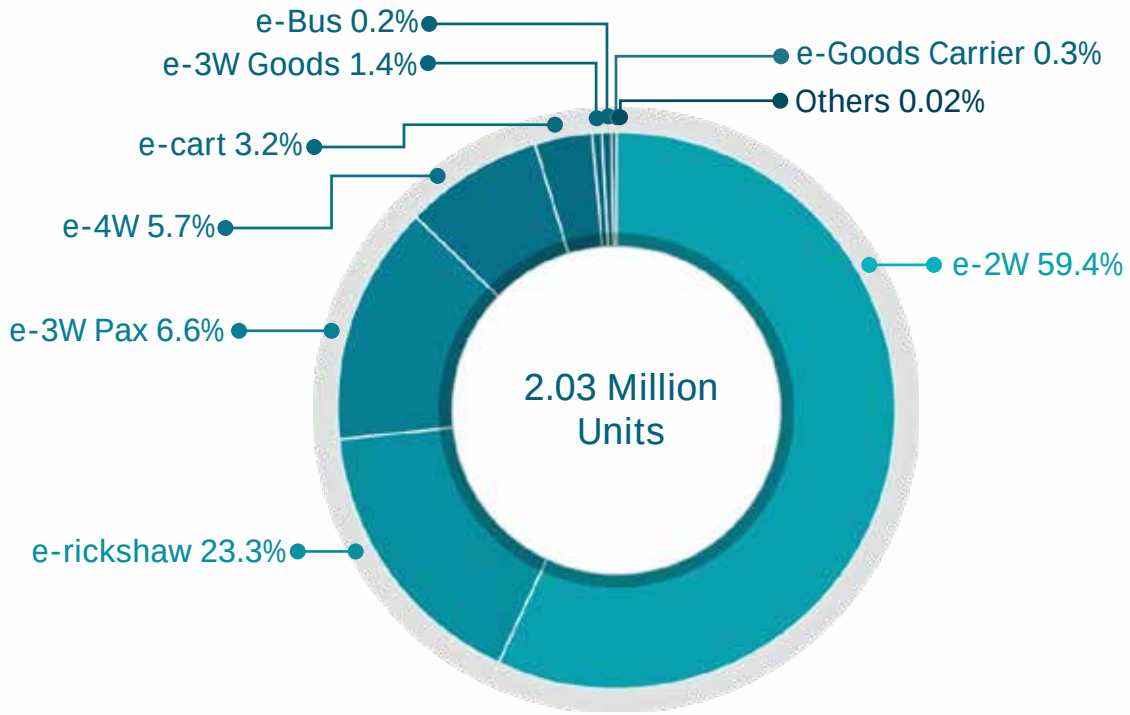
Indian EV Market Insights FY25

EV Sales



EV Market Trends

e-2W continues to have Lion's share in e-vehicle sales

e-2W grew by 19.1% YoY

e-4W grew by 14.6% YoY

e-3W Pax grew by 89.7% YoY

Overall e-Vehicles grew by 15.7%

Carbon Footprint reduction for e-4W over petrol cars typically range from 20-50%

Source: EVreporter https://evreporter.com

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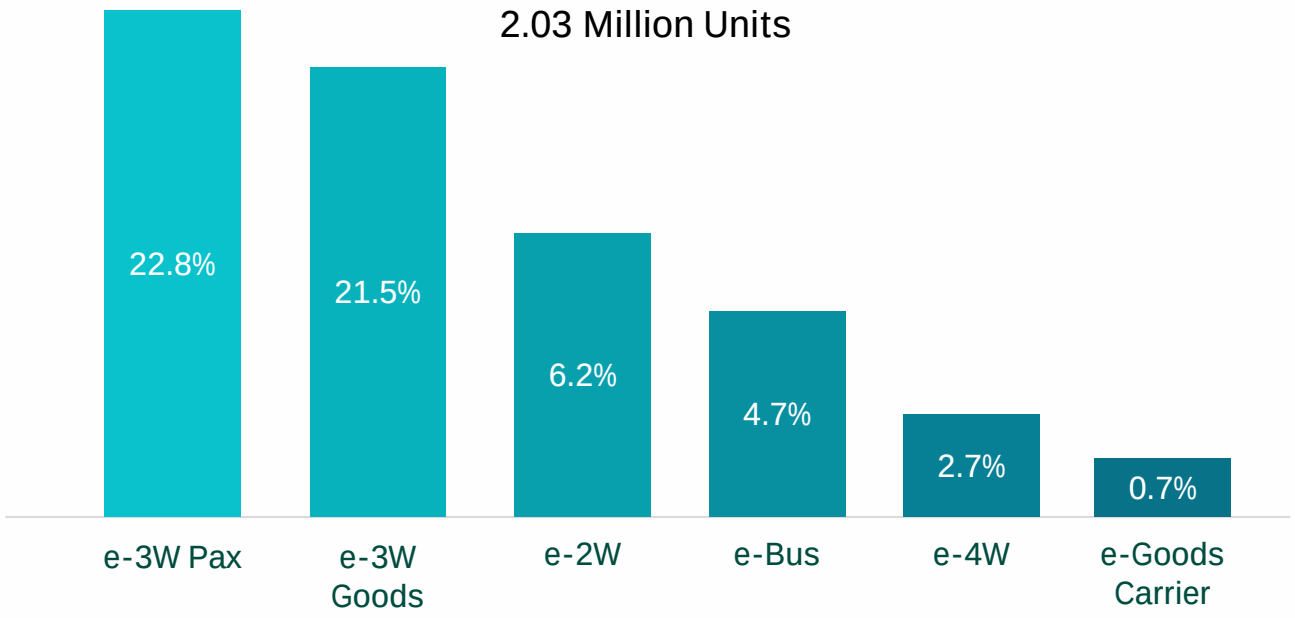
EV Market Insights

EV Market Penetration FY25



EV Market Trends

e-3W Pax (category L5) reached an impressive 22.8% penetration

e-3W CAGR 21.5% penetration

e-2W segment 6.2% penetration

e-bus segment 4.7% penetration

e-4W segment 2.7% penetration

e-3W Market Gaining Traction

Source:: EVreporter https://evreporter.com

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Automotive - India Insights

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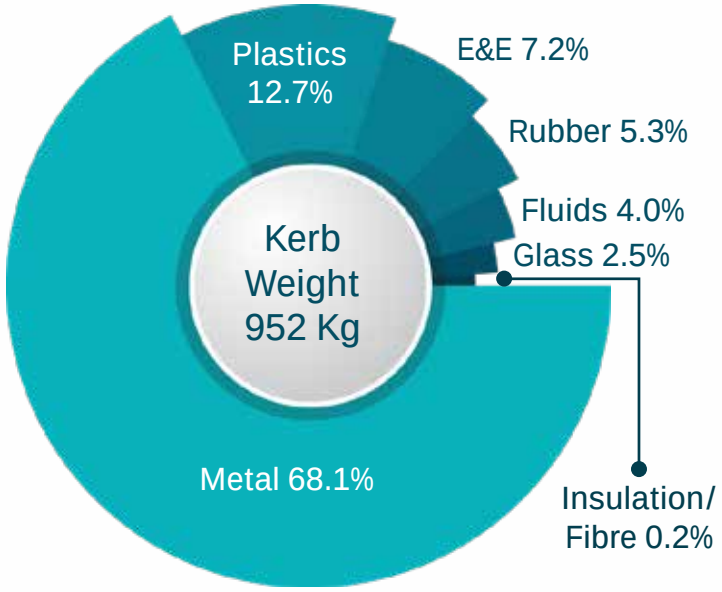
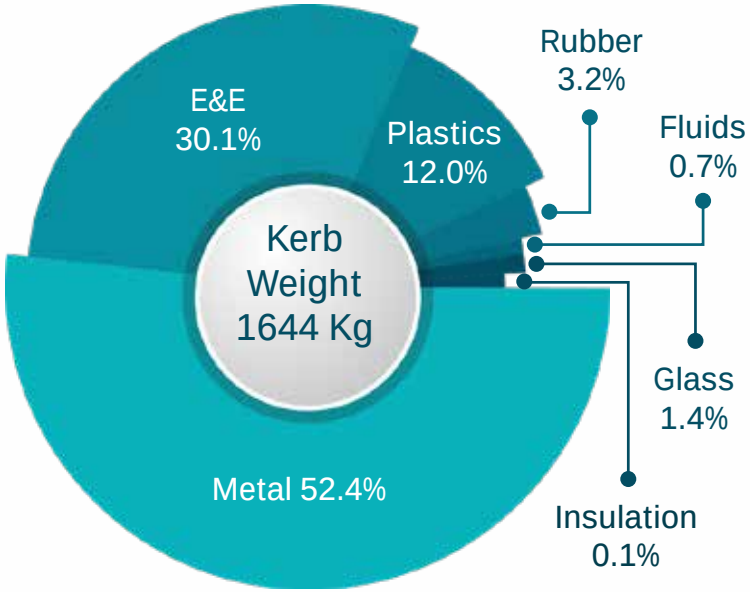
Material-wise Analysis in Passenger Car

ICE (Petrol 1200cc)



EV - 60kWh 5 Seater



Material Trends

Plastics constitutes 2nd Largest material after Metal in ICE Car

Plastics Constitutes 3rd Largest material component in e-4W

60 kWh EV overall weight higher by 73% than ICE Car

India 3rd Largest Motor Vehicle Market

Higher weight in EV mainly contributed by Heavy Battery Pack System

Plastics Constitutes ~12% by weight of the car

Source: Industry Analysis

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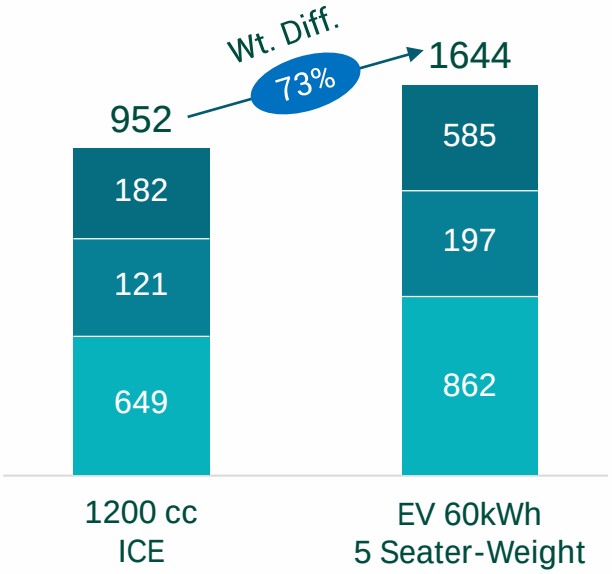
Material-wise Analysis in EV & ICE Passenger Car

Material-wise % Share

All Fig in Kg



Material Type	% Weight Difference
Other Materials	221%
Plastics	63%
Metal	33%

Demand For Plastics Higher for EV compared to Fossil Fuel Cars

Source: Industry Analysis

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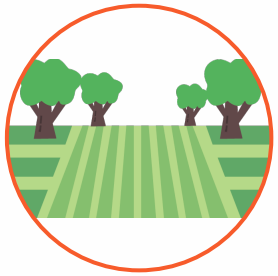
Agriculture

Agriculture



World's Largest Arable Land

World's Largest Producer of Millets, Pulses, Milk, Cashew, Jute, Ginger, Okra

World's Largest Producer of Spices, Bananas, Papayas, Mangoes, Guavas

World's Largest Livestock Population

World's 2nd Largest Producer of Rice, Wheat, Potatoes, Onions, Tomato

World's 2nd Largest Producer of Brinjal, Cabbage, Cauliflowers

World's 2nd Largest Producer of Eggplant, Peanut, Pumpkins, Sugarcane

World's 2nd Largest Producer of Tea, Cotton, Silk

Agriculture, Fishery & Forestry Contributes 17.94% of GDP

Source: IBEF, Investindia, MoA & FW

Agriculture - Foodgrain Production

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Foodgrain Production FY25

Foodgrain Type	Production (MMT)	% Share
Rice	150.2	42.0%
Wheat	117.9	33.0%
Maize	43.4	12.1%
Other Cereals	20.5	5.7%
Total Cereals	332	92.8%
Pulses	25.7	7.2%
Foodgrain Production FY25	357.7	100%

Record Production of Foodgrains in FY25, YoY 8% growth

Source: DA&FW, PIB PN 2192315

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Agriculture - Plasticulture Application Spectrum

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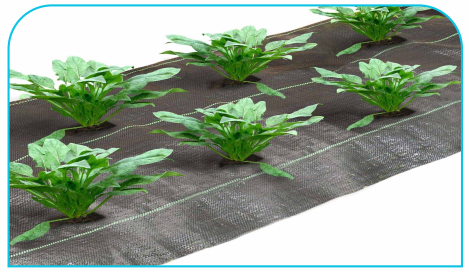
Green House
PE Film, PC Sheets,
PP trays, PE drip lateral,
Plastics Pipes

Mulch Film
PE Film
Area covered under Plastic
Mulch - 2,50,000 Ha



Weed Mat
PP Woven

Crop Tunnel
PP Nonwoven

Shade Nets
PE Shade Nets

Soil Solarization
PE Film

Pond Lining membranes -
PE Sheet & Cross Laminated
Film, Raffia, PVC Sheet

Hydroponics

Source: Industry Analysis

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Benefits of Plasticulture

- Conserves Water - More Corp per Drop
- Improves Water Use Efficiency (WUE)
- Saves Fertilizer
- Improves Yield and Quality of Produce
- Reduces in Post Harvest Losses
- Farm Ponds helps to Grow Crops even in Summers
- Soil Solarization

Application Segment	Water Saving (%)	Water Use Efficiency (%)	Fertilizer Use Efficiency (%)
Drip Irrigation System	40-70	30-70	20-40
Sprinkler irrigation system	30-50	35-60	30-40
Plastic Mulching	40-60	15-20	20-25
Green House	60-85	20-25	30-35
Shade Nets	30-40	30-50	Not Applicable
Plastic Tunnel	40-50	20-30	Not Applicable

Plasticulture for Sustainable Agriculture & Water Saving

Source: Industry Analysis

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Plasticulture - Applications

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Product	Drip	Sprinkler	Mulch	Shade net	Greenhouse films	Pond lining	Fruit & Crop Cover	Bale Silage	Leno Bags
Typically Used Crops	Orchard Plants, Cotton, Flowers, Vegetables	Cereal Crops, Oilseed, Pulses	Orchard Plants, Cotton, Flowers, Vegetables	Flowers and Vegetables	Flowers and Vegetables, Nursery plantation	Farm ponds, Fishery ponds	Fruits & Vegetables	Fodder	Fruits & Vegetables
Yield Improvement	20 to 40%		10 to 20%	up to 50% in majority crops	3 to 4 times in majority crops	-	Up to 10%	-	-
Plastic Type	PE	PE	PE	PE	PE	PE	PP Nonwoven	PE	PP
Approx. Consumption (in KTA)	205	95	105	40	10	100	10	25	75
Life of the Product	5-7 Years		6-12 Months	3-5 Years	Minimum 3 Years	Minimum 5 Years	1 Year		
End of Life	Recycled								

Source: Industry Analysis

Agriculture - GoI Schemes for Farmers

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Product	Drip & Sprinklers	Farm Pond Lining	Poly-house	Shade Net House	Plastic Mulch	Fruit/ Bunch Covers	Weed Mats	Hydro-ponics & Aero-ponics	Plastic/ nonwoven Cloth Tunnels	Anti Bird/Anti Hail nets	Walk in Tunnels
Scheme	RKVY-PDMC	RKVY-PDMC	NHB & MIDH	NHB & MIDH	MIDH	MIDH	MIDH	MIDH	MIDH	MIDH	MIDH
Indicative Cost Norm	55% for small & marginal farmers and 45% for others	50% of Cost *	50%	50%	50%	50%	50%	50%	50%	50%	50% of cost norms for a maximum of 3 units per Beneficiary
Area Norms	Maximum area of 5 Ha	-	Max 2500 sq m	Max 2500 sq m	Max 2 Ha	Max 2 Ha	Max 4000 sq m	Max 1000 sq m	Max 2500 sq m	Max 10000 sq m	Each unit not exceeding 800 sqm

* Construction cost Rs 125/-, max Rs 75000 for plain/Rs 150/-, for hilly areas max Rs 90000/- for hills
PDMC - Per Drop More Crop
RKVY - Rashtriya Krishi Vikas Yojana
NHB - National Horticulture Board
MIDH - Mission for Integrated Development in Horticulture

Source: Industry Analysis


Healthcare

Healthcare

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Indian Healthcare Sector remains one of largest sectors in terms of revenue and employment. The sector is growing at a brisk pace due to its strengthening coverage, services, and increasing expenditure by public as well as private players.

- Indian healthcare Sector Growth expected to remain strong and expected to reach $638 Billion by 2025
- Medical Plastics Market is valued at $230 million in 2025, projected to reach $467 million by 2032 growing @ CAGR of 15.2%.
- India's vaccination delivered through the Universal Immunization Programme (UIP), is one of the world's Largest public Health Initiatives.

Healthcare Schemes

Ayushman Bharat

Pradhan Mantri Jan Arogya Yojana (PM-JAY)

World's largest Government-funded Public Health Insurance Scheme

Health & Wellness Centres (HWCs)

Strengthening Primary Health Care (Screenings, Maternal Care, NCD Management)

The National Digital Health Mission (NDHM) :

Digital Health Ecosystem that promises efficient Service Delivery and better Connectivity among stakeholders

Healthy India, Prosperous India

Source: Industry Analysis

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Healthcare Market Trends

- Demographic Shifts - Large population & increasing prevalence of Lifestyle Diseases
- Trend in Shifting Point of Care - Remote patient monitoring and procedures, Homecare
- Medical Tourism - India is a sought after location for normal to high end procedures like organ transplant, Neuro-surgery
- Shift in Materials - The preference for plastics over glass and metal due to Hygiene, affordability, improved drug delivery and medication management
- Supply Chain Shift - Plastics helped in quick capacity ramp up for medical devices and PPE kits. Pandemic highlighted supply chain vulnerabilities, emphasis on domestic production of essential equipments

Plastics for Modern Healthcare

Source: Industry Analysis

Healthcare Market Trends

Production-Linked Incentive Scheme for Medical Devices

19 Greenfield Projects have been commissioned for 44 products including high end medical devices such as Linear Accelerator, MRI Machines, CT-Scans, Mammograms, C-Arms, Ultrasound Machines with cumulative sales realization of Rs 8,039 Cr

Promotion of Medical Device Parks Scheme

Development of common infrastructure facilities to reduce production costs and foster collaboration among companies. 4 Medical Device Parks Operational in states of AP, TN, KL and TS. 5 Medical Device Parks are under development in UP, RJ, HR, MP and HP

Shaping Medical Devices Industry

Source: Industry Analysis

Healthcare - Benefits of Plastics

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Polymers	Major Medical Products	Benefits of Plastics
PP	Syringes, IV Connectors, Non-woven Fabrics (Masks, Gowns)	PP has been a workhorse in medical disposables and medical products
LDPE, HDPE	IV bags, Tubing, Vial Caps, Squeezable Bottles	Lightweight, flexible, unbreakable - ideal choice for supply chain
UHMWPE	Acetabular (hip socket) liners and components in total knee and hip replacements	Frictionless and Abrasion resistant - Material of choice for ortho implants
PVC	Blood bags, IV tubing, Catheters, gloves, fluid containers	Oxygen barrier and curating of properties by formulation makes PVC dominant in medical devices.
PET	Tubes, Blood and Urinary Catheters, Sutures, surgical meshes, heart valves, vascular grafts	Transparency and Strength makes PET suited for usage in Disposables, Grafts, Implantable
PS	Petri dishes, test tubes, lab consumables, diagnostic trays	High stiffness and glass like transparency makes PS ideal for Diagnostics & Labwares
PC	Medical device housings, oxygenators, syringes, dialysis components	Very mechanical strength and clarity makes PC ideal choice for equipment housing and components
ABS	Enclosures for diagnostic instruments, Ventilators, monitors	Excellent mechanicals and surface finish makes ABS a choice for non-contact components & diagnostic equipment casings
PMMA	Intraocular lenses, bone cement, prosthetics	Transparency, inertness and UV stability - ideal for Ophthalmic & Dental sectors
PEEK	Spinal implants, trauma fixation devices	Unmatched properties makes PEEK for high-end Implant material in med-tech Industry
Nylon	Sutures, surgical meshes, catheter components	High flexibility and toughness makes Nylon ideal choice in Sutures and Surgical Applications

Array of Plastics serving diverse applications requirement

Source: Industry Analysis

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Renewable Energy

Industry Insights - Renewable Energy

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Renewable Energy Insights FY25

Capacity	Hydro Power	Wind Power	Bio Power	Solar Power	Total RE
Installed Capacity (GW)	52.8	50.03	11.6	105.6	220.1
FY25 Net Addition (GW)	0.1	4.1	0.7	23.8	28.7
YoY Growth (%)	0.1	9.0	6.0	29.1	15.0
Total Renewable Capacity (% Share)	24.0%	22.7%	5.3%	48.0%	100%

FY25 Sectoral Insights

India World's 4th Largest in Renewable Energy Installed Capacity

India's Total Renewable Installed Capacity crossed 220 GW in FY25

Renewable Capacity Growth
15% YoY n FY 25

New Solar Capacity Addition
23.GW with 29.1% growth

Wind Power Capacity Addition
4.1 GW with 9% growth

Harvest the Sun, Harness the Wind, Ride the Wave

Source: Industry Analysis, MNRE

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Solar Energy Sector Insights

India's Solar Manufacturing Sector includes key components like Solar Modules, Solar PV Cells, Ingots and Wafers

- Solar Module manufacturing capacity nearly doubled from 38 GW in March 2024 to 74 GW in March 2025
- Solar PV Cell Manufacturing rose from 9 GW to 25 GW
- India's First ingot-wafer manufacturing facility (2 GW), further strengthening the entire Solar Supply Chain

This rapid growth in domestic capacity is strongly supported by government policies. To promote Indian-made solar products, the government has made it mandatory for projects under schemes like the Rooftop Solar Programme, PM-KUSUM (Solar in Agriculture), and CPSU Scheme Phase II to use Panels and Cells made in India

600MW Capacity Omkareshwar Floating Solar Park in Madhya Pradesh is one of the Largest Floating Solar Projects in Asia

India 3rd Largest Solar Energy Producer

Source: Industry Analysis, PIB PN 155063

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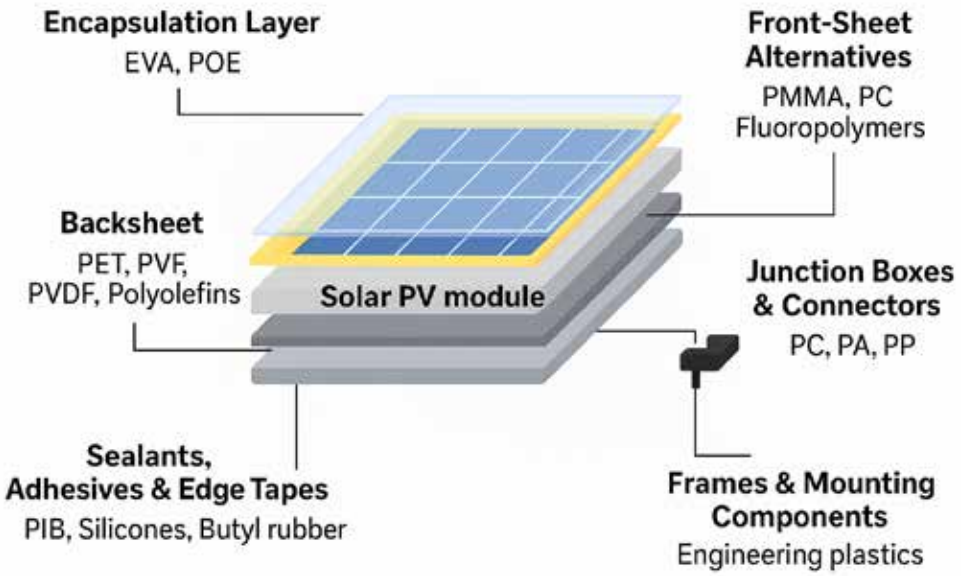
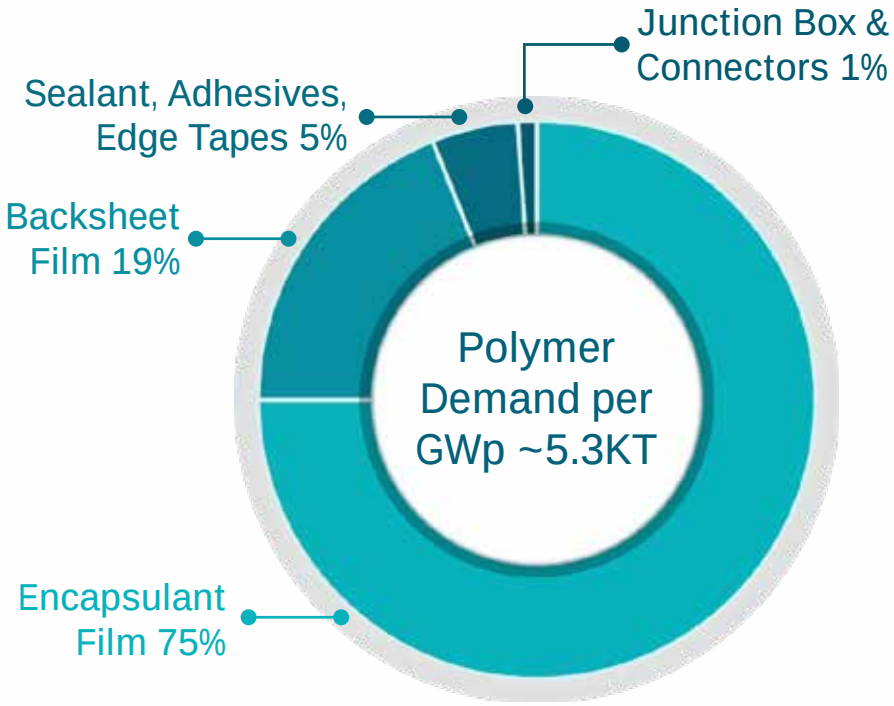
Solar Energy Sector Insights

Solar PV Module



% Plastics in Solar Module



FY25 - 40 POE/EVA Encapsulating lines, Installed Capacity 125 KTA

Source: Industry Analysis

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Industry Insights - Renewable Energy Sector

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Wind Energy Sector Insights

- Wind is an intermittent and site-specific Energy Resources
- As per NIWE, India's Wind Power Potential 302 GW at 100m, 695 GW at 120m, 1164 GW at 150m Hub Height
- In India, 50 GW Windmill installed as of FY25
- 4.3% share in Global Installed Capacity
- Tamil Nadu, Gujarat, Karnataka, Maharashtra, Andra Pradesh are top 5 States in Wind Energy Capacity, accounting for 83% shares
- Currently India has 18GW Wind-Mill Manufacturing Capacity
- India planning to add 32GW in next 2-3 years
- As of 2024, Wind Energy constitute 10% of total Power produced which thermal energy being the largest at 59% in India

Wind Energy Insights

2024 Global Wind Energy Installed Capacity 1174 GW

India 4th Largest in Wind Energy Installed Capacity

Plastics in Wind Energy

Rotor blades (composites of Fibreglass + epoxy/polyester resins), Gearbox bearings, Cabling Insulation, Nacelle covers, Nose cones, Minor housing/Structural parts

Approx Composite Usage ~8 KT/GW of Installed Capacity

Turning Wind into a Greener Tomorrow

Source: Industry Analysis, MNRE, RNEA, PIB PN 155063

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India Renewable Energy Sector Insights

India is located in the tropical zone, with the Tropic of Cancer running through several of its states, which gives the country strong potential for generating solar energy. Gujarat, Tamil Nadu, Karnataka, Maharashtra, Andra Pradesh have huge potential for Wind Energy Generation. With economic growth, and GOI Initiatives, India is well positioned to add significant capacity in the renewable energy sector, particularly in solar and wind power.

India - Solar and Wind Energy Installed Capacity Forecast 2047

Installed Capacity (GW)	FY25	2030 (F)	2035 (F)	2047 (F)
Solar Energy	106	300	455	1200
Wind Energy	50	100	160	400
Total Capacity	156	400	615	1600

Powering a Greener Tomorrow, for a Net Zero Future

Source: Industry Analysis


Plastic Toys

Industry Insights - Toys

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Indian Toy Industry Insights

- The Indian Toy Market consists of 4000+ Toy Manufacturing Units out of this the organized Sector accounts for about 10%.
- Govt of India, by involving 15 ministries has prepared a National Toy Action Plan to make Indian Toy industry globally Competitive
- PS ICDP (Integrated Cooperative Development Project) aims to build Toy Clusters in dedicated SEZs catering to export markets. GoI has approved 8 Toy manufacturing Clusters with an outlay of Rs 2300 Cr - 3 Clusters in Madhya Pradesh, 2 in Rajasthan, one each in Karnataka, Uttar Pradesh and Tamil Nadu. Koppal in Karnataka is India's 1st Toy manufacturing Cluster
- Most of Plastic Toys are categorized under HS Code 9503. All types of Toys are categorized under Chapter 95
- India's Toys Market, valued at Rs 16,000 Cr in 2024, is forecast to expand to Rs 40,000 by 2033, driven by a strong CAGR of 10.04% (2025-2030)

Toy Segmentation

- Action Figures
- Arts & crafts
- Battling Toys
- Building & Construction
- Collectible Trading Cards & Toys
- Dolls, Educational
- Games & Puzzles,
- Infant Toys

Toy Sector: Strengthening India's Make-in-India Story

Source: Industry Analysis

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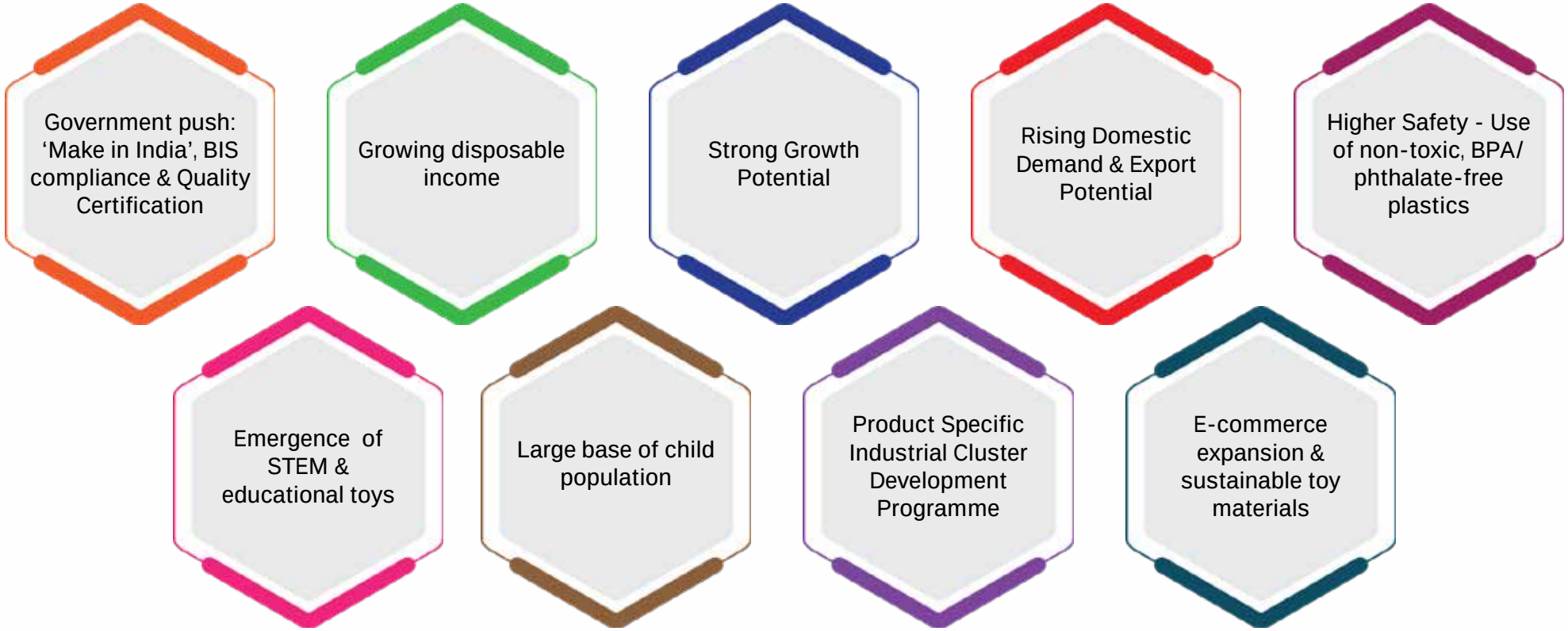
Indian Toy Industry - Key Growth Drivers



Aims to reach Global quality and manufacturing standards

Source: Industry Analysis

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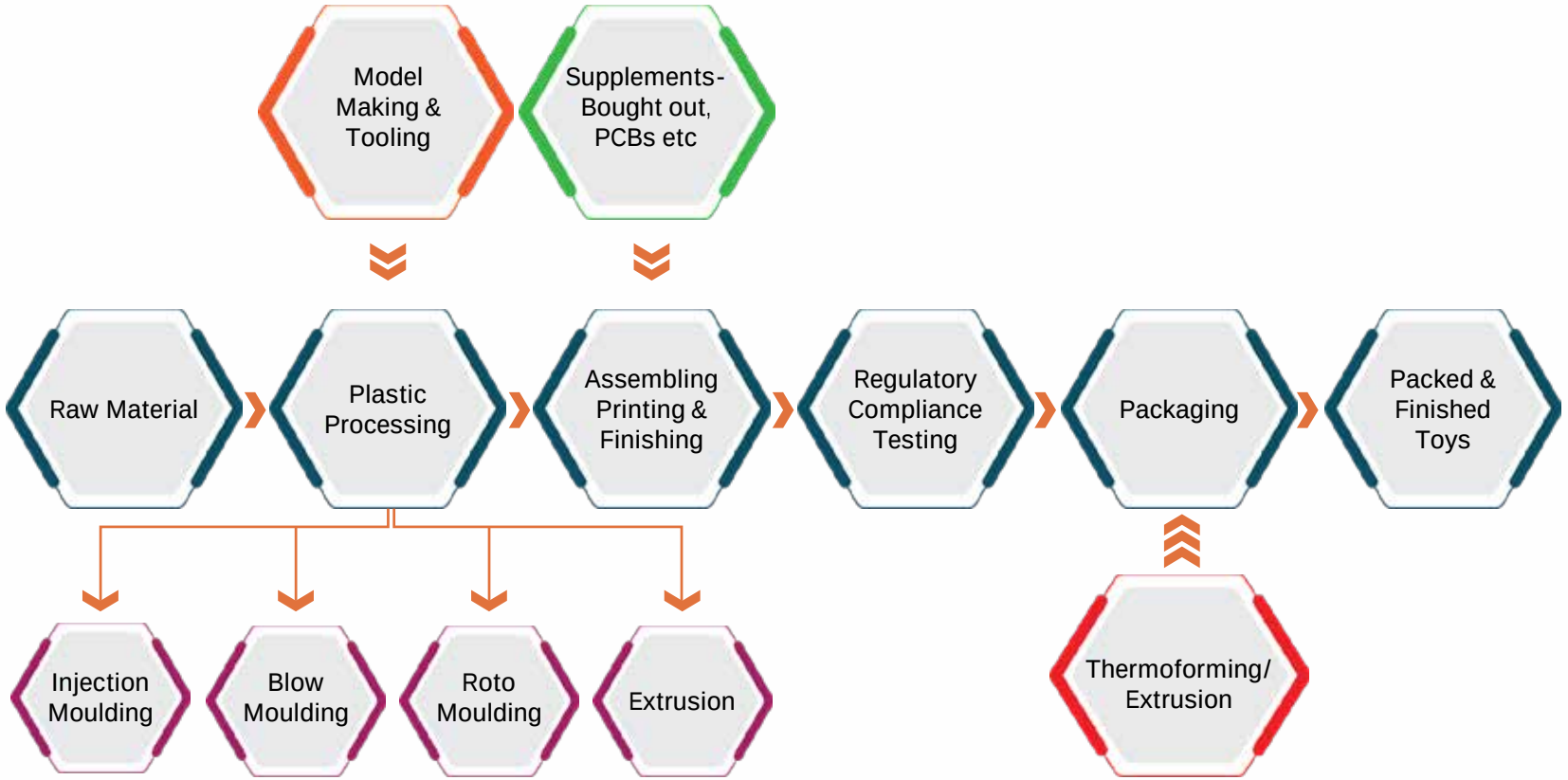
Plastic Toys Process Overview



Toy Industry Insights

Plastic Toys are Manufactured by Injection moulding, Blow Moulding, Rotomoulding, Extrusion Processes

Thermoformed Sheets & Extruded films are commonly used for Toy Packaging

Plastics In Toys - PE, PP, ABS, PVC, Engg. Polymers, Bioplastics

Color Masterbatches and Performance Additives

Learning Begins with Toys

Source: Industry Analysis

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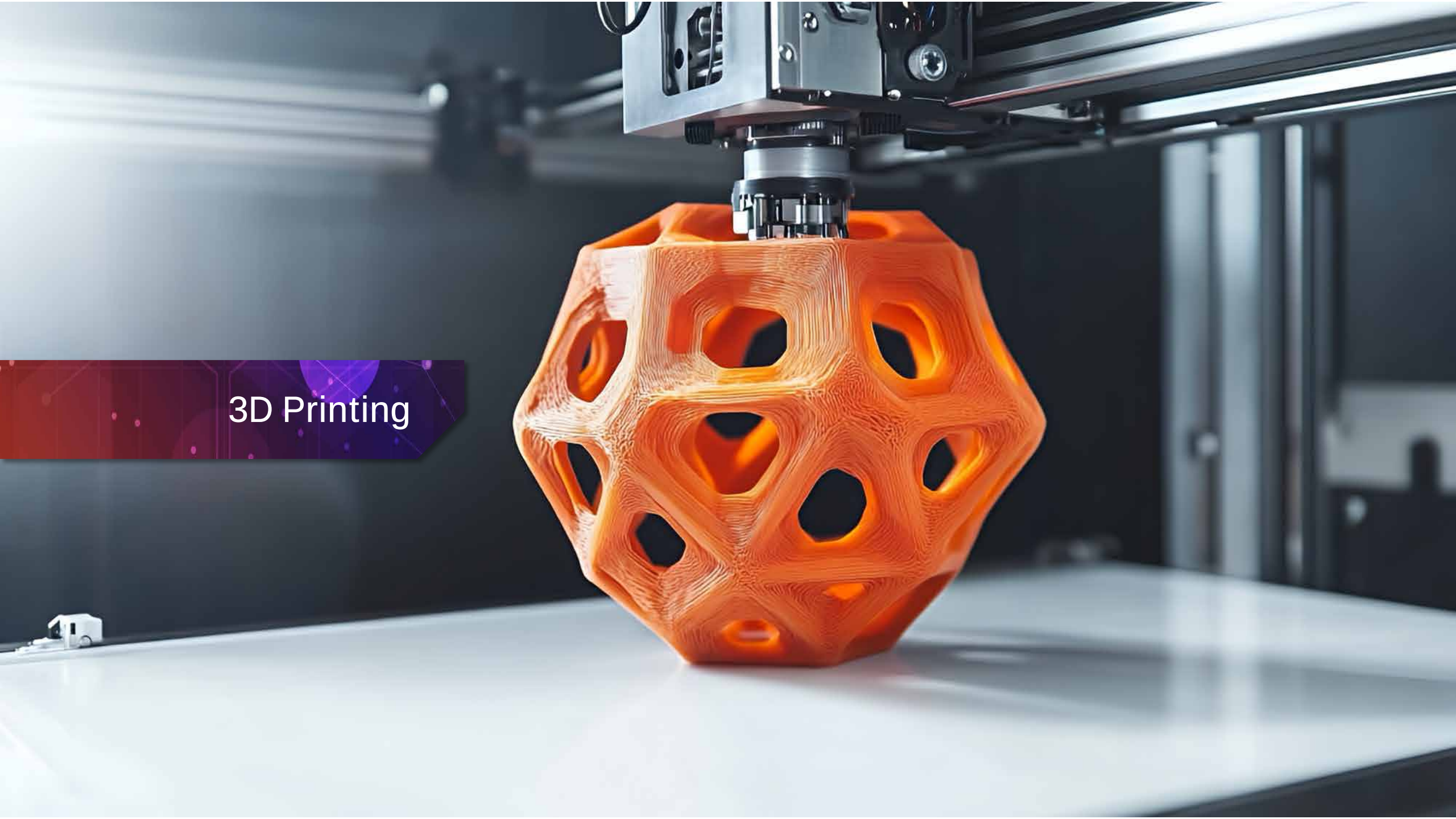
Bioplastics in Toy Industry

Bioplastics	Toy Application Trends
PLA	Rigid Molded Toy Parts & Blocks
Bio PE	Durable Housings, Outdoor Toys
Bio PP	Durable & Snap fit Parts
PHA (PHB/PHBV)	Premium Sustainable Toys
Starch Blends	Low stress Toys

Increase in R&D on Bio Materials (PLA, rPET) for Toy Applications

Source: Industry Analysis, Photo Credit: : European Bioplastics


3D Printing

3D Printing in Plastic Industry

3D Printing is manufacturing process that builds an object by depositing material in precise layers based on a digital blueprint.

- FDM / FFF (Fused Deposition Modeling)
  Most common consumer technology, Melts plastic filament and lays it down layer by layer Materials: PLA, ABS, PETG, TPU

- SLA / MSLA (Stereo lithography)
  Uses UV light to cure liquid resin. Extremely high detail
  Great for miniatures, dental models, jewelry

- SLS (Selective Laser Sintering)

Industrial method using lasers to fuse powdered Nylon. Strong, functional parts without support

Very Fast Turnaround from Concept to Creation

Source: Industry Analysis

3D Printing - Indian Market Trends

- Government Initiatives: In 2024, government allocated Rs 17,000 Cr for promoting 3D printing technologies under initiatives like Make in India
- Start-up Ecosystem: An influx of startups embracing 3D printing, particularly in sectors like healthcare, automotive, and manufacturing.
- Demand for Customization: Indian consumers and businesses are increasingly seeking customized products, from medical devices to automotive parts, which 3D printing can easily fulfill.
- The Indian Market saw Rs 6800Cr in Investments in 2024, a 50% Increase from the Previous Year

Sectoral Outlook

Strong Growth in filament/FDM and SLA sectors; expansion by Local Filament Manufacturers

Broader Industrial adoption of Engineering Plastics; improved Photopolymers; scaling of service bureaus

Partial displacement of traditional manufacturing in niches; Growth in Recyclable/Bio-based Filaments and localized production networks

Where Creativity Takes Shape

Source: Industry Analysis, MeitY

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3D Printing in Plastic Industry

Key Materials	Printing Methods	Typical Uses	Product Features
PLA (Polylactic Acid)	Fused Deposition Modelling (FDM)/ Fusion Filament Fabrication (FFF)	Prototyping, Hobbyist, Education	Biodegradable, Easy to Print, Low Warping, Good Surface Finish
ABS	FDM	Functional Prototypes, Durable Parts	Strong, Impact Resistant, Higher Temp tolerance
PET / PETG	FDM	Mechanical Parts, Household Items	Good toughness, Chemical Resistance, Low Warping
Nylon	FDM, SLS (Selective Laser Sintering)	Gears, Industrial parts	Tough, Abrasion Resistant, Flexible
Polycarbonate (PC)	FDM	Engineering/end-use parts	Very High Strength, Heat Resistance, Roughness
Flexible filaments (TPU/TPE)	FDM	Gaskets, Wearables, Protective cases	Flexible, Impact-absorbing
Photopolymer resins (SLA/DLP)	SLA (Selective laser melting) / DLP (Digital Light Processing)	Dental, Jewellery, Precision Prototypes	High Detail, Smooth Finish
PEEK, PEI	Fused Deposition Modelling (FDM)/ Fusion Filament Fabrication (FFF)	Aerospace, Medical Implants, Industrial Parts	Very High Temp & Chemical Resistance; Structural Strength

Advanced Plastic Manufacturing, Powered by 3D Printing

Source: Industry Analysis

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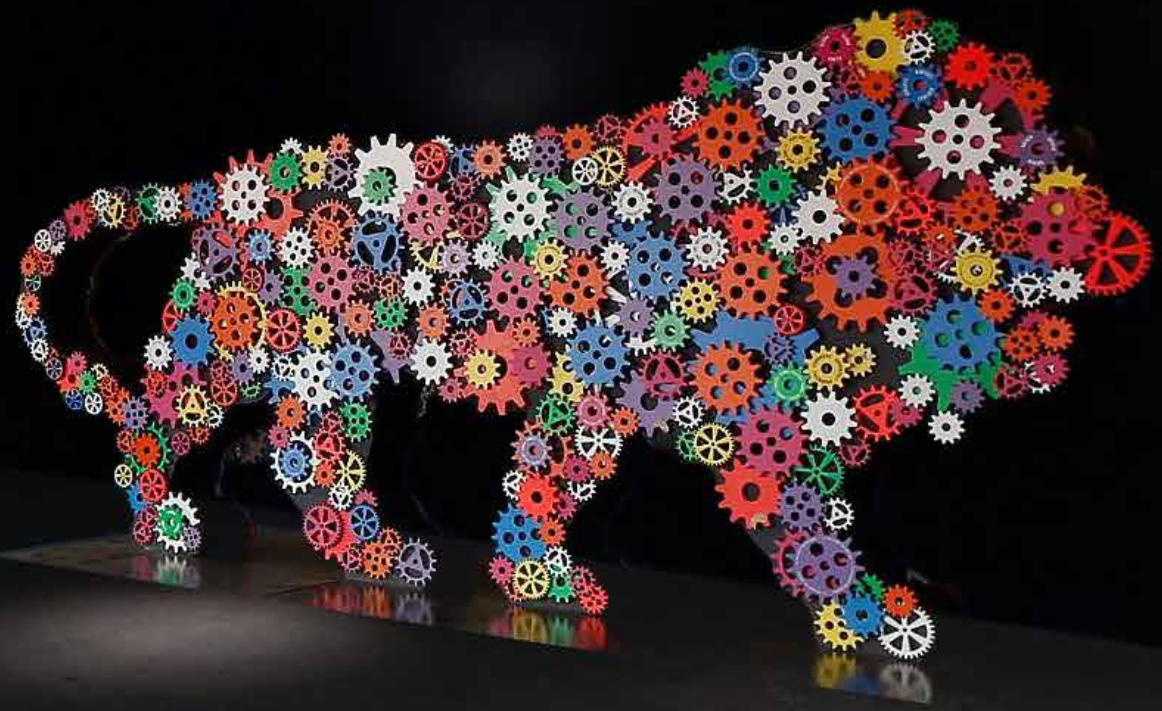
Government Initiatives



GoI Initiatives - PLI Scheme

Performance Linked Incentive Scheme are designed to boost domestic manufacturing and attract investments in 14 key sectors on incremental production and sales. PLI Schemes to enhance country's manufacturing prowess, foster technological advancements, elevate India's position in global markets and generate employment.

Performance Linked Incentive Scheme

Boost Domestic Manufacturing	Enhance Exports	Create Employment	Attract Investment	Foster Innovation & Efficiency	From Incentives to Impact
To Increase production of Goods within India and strengthen its manufacturing capabilities	To promote India as a Global Manufacturing Hub & increase the Country's export Share	To generate significant job opportunities across the Economy	To draw both Domestic and Global Investments into the Indian manufacturing value chain	To Encourage Companies to adopt cutting-edge Technologies and Achieve Economies of Scale	Manufacturing Expansion → Technology Adoption → Exports → Jobs → GDP Growth

PLI - Powering India's Industrial Renaissance

GoI Initiatives - PLI Scheme

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Ministry of Heavy Industries

Advanced Chemistry Cell (ACC) Battery Storage, Automobiles & Auto Components

Key Polymers

- PE, PP, PVC, ABS, PC, PBT, EPDM, PU, Nylon (PA6, PA66)

End Products

- Battery casings, Separators, Wire coatings, Fuse boxes
- Car bumpers, Dashboards, Interior trims, Fuel tanks, Headlamp housings, Under-hood parts
- Seals, Gaskets, Foam Insulation

Key Process

- IM, BM, Extrusion & Roto

Department of Pharmaceuticals

Critical Key Drug & Active Pharmaceutical Ingredients Manufacturing of Medical Devices

Key Polymers

- PE, PP, PVC, PET, PS, ABS, PC, TPU, Silicone, PTFE, PEEK

End Products

- Syringes, IV bags, Tubing, Catheters, Blister packs
- Medical vials, Bottles, Pill strips, Diagnostic test housings
- Surgical and Implant Components (PEEK, PP/PE)

Wearables

- IM, BM. Extrusion, Thermoforming

Ministry of Electronics and Information Technology (MeitY)

Electronics & IT Hardware Manufacturing

Key Polymers

- ABS, HIPS, PC, PC/ABS blends, PBT, PMMA, PET, LCP

End Products

- Laptop and Mobile housings, Keyboard keys, TV frames, Monitor bezels
- Connectors, Switches, Circuit board Encapsulates
- Optical Components and Display Panels

Key Process

- IM, Extrusion

Powering India's Participation in Global Value Chains

Source: Industry Analysis

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Shaping The Future Of Plastics

GoI Initiatives - PLI Scheme

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Department of Telecommunications (DoT)

Telecom & Networking Products

Key Polymers

- PE, PVC, PBT, PC, ABS, PTFE, FR-grade polymers

End Products

- Optical Fibre jackets, Conduits, Cable sheathing
- Connectors, Housings for routers/switches
- Antenna radomes and Protective casings

Key Process

- IM, Extrusion

Department for Promotion of Industry and Internal Trade (DPIIT)

White Goods (ACs and LED)

Key Polymers

- HIPS, ABS, PP, PS, PC, PMMA, Nylon, PVC, PU foam

End Products

- AC outer bodies, Fan blades, Air filters, Remote housings
- LED bulb housings, Diffusers, TV frames, Refrigerator interiors
- Insulation foams, Gaskets, Flexible cords

Key Process

- IM, Extrusion

Project Management Agencies (PMAs), such as SIDBI and SECI, are appointed to manage the implementation and support for specific schemes

Enhancing India's Manufacturing Capabilities & Exports - Atmanirbhar Bharat

Source: Industry Analysis

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Shaping The Future Of Plastics

GoI Initiatives - PLI Scheme

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Ministry of Civil Aviation

Drones and Drone Components

Key Polymers

- Carbon-fibre reinforced polymers (CFRP), Glass-fibre Composites, ABS, PC, Nylon, PEEK, Epoxy resins

End Products

- Drone airframes, Propellers, Enclosures
- Interior cabin panels, lightweight structural parts
- Fuel tanks, insulation panels

Key Process

- IM, Pultrusion, 3D Printing, CNC Machining, Vacuum Forming

Ministry of New and Renewable Energy (MNRE)

High-Efficiency Solar PV Modules

Key Polymers

- PE, PP, PET, EVA, PVDF, Polyolefin Elastomers (POE), Silicones, Polyamides

End Products

- Encapsulant Sheets (EVA, POE)
- Back Sheets (PET/PVDF)
- Junction Box Housings, Sealants, Insulation layers

Key Process

- IM, BM, Extrusion, Roto

Reinforcing India's Emergence as a Global Manufacturing Powerhouse

Source: Industry Analysis

Bharat Next
Shaping The Future Of Plastics

GoI Initiatives - Digital India

Digital India
Power To Empower

Vision to transform India into a digitally empowered society and knowledge economy. Digital India has been improving the lives of all citizens through the digital delivery of services, expanding the digital economy and employment opportunities.

Digital Infrastructure as a Utility

- High speed internet as a core utility
- Easy access to a Common Service Centre
- Cradle to grave digital identity
- Shareable private space on a public cloud
- Safe and Secure Cyber Space

Government & Services on Demand

- Seamlessly Intergraded Across Departments of Jurisdictions
- Digitally Transformed Services for Enhanced Ease of Doing Business
- Real Time Service Availability on Online & Mobile Platforms
- Electronic & Cashless Financial Transactions
- Loud Accessibility for All Citizen Entitlements
- Utilizing GIS Decision Support & Development

Digital Empowerment of Citizen

Universal Digital Literacy

Digital Resources and Services Available in Indian Languages

Universally Accessible Digital Resources

Collaborative Digital Platforms for Participative Governance

Cloud Accessibility for All Documents and Certificates

Portability of All Entitlements through the cloud

Embracing Technology Enabling People

Source: Industry Analysis, Digitalindia

GoI Initiatives - Digital India

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Impact FY25

- Over 90% digital payment adoption in urban India
- BharatNet connected over 2 lakh Gram Panchayats
- UPI Transactions exceed 14 billion per month
- Over 5 billion documents issued via DigiLocker
- Boost in digital literacy and e-Governance efficiency

Digital India & Polymers

- Optical-fibre cable (OFC) jackets & sheathing laid under BharatNet / National Broadband
- Customer Premise & Access equipment - FTTH ONTs, home routers, Wi-Fi Hotspot Enclosures.
- Common Service Centres (CSCs) equipment - PCs/laptops/printers, kiosks, POS devices, Plastics Furniture
- Public Wi-Fi Hotspots and Small network Cabinets / Enclosures (Plastic Housings)
- Miscellaneous - Packaging, Small Spares, Cable accessories, Plastic Conduits, Installation Consumables
- Key Polymers : LLDPE for Cables, HDPE for PLV Ducts, Engineering Plastics for Components, FRP poles / Radomes

Polymers Enabling Digital Infrastructure

Source: Industry Analysis

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Shaping The Future Of Plastics

Plastic Pipes - Data Centre HVAC Systems

Data Centres hosts large numbers of computers and related equipments to store, process, and manage digital data, supporting services like websites, cloud computing, online searches and streaming. Data centres consume large amounts of energy and generate significant heat, which must be removed by HVAC systems that require substantial quantities of fresh or desalinated water for cooling. Typically a data centre require 1-5 ltr/kWh of cooling water.

India's data centre industry is expanding quickly with heavy investment, rising capacity, and new large facilities being planned. It's becoming a key part of the country's digital infrastructure to support cloud and AI adoption, though sustainability and resource management is paramount.

As per AECOM's estimate, India's investment will reach from 5 Bn USD in 2024 to 12.9 Bn in 2033. According to Macquarie, India's data centre capacity will be 2X by 2027, 5X by 2030. For Data centre HVAC system piping, PPR Pipes are the most preferred.

Key Advantages

- Low Carbon Footprint in material production, conversion to pipes
- 100% Recyclable
- Leakproof fusion Welded Joints
- No Corrosion and Encrustation, minimum Pumping Cost Over lifetime
- >50 years design life, Chemically inert
- Easy to carry out Hot Tapping

Other than PPR Pipes, Large diameter Plastics Pipes will be required for captive desalination plants for Data Centers in coastal regions. Plastics Storage Tanks will also have a good potential.

Plastics Pipes will play a Critical role in the Digital Infrastructure Building

Source: Industry Analysis, Photo Credit: KPT Pipes

GoI Initiatives - Swachh Bharat Mission

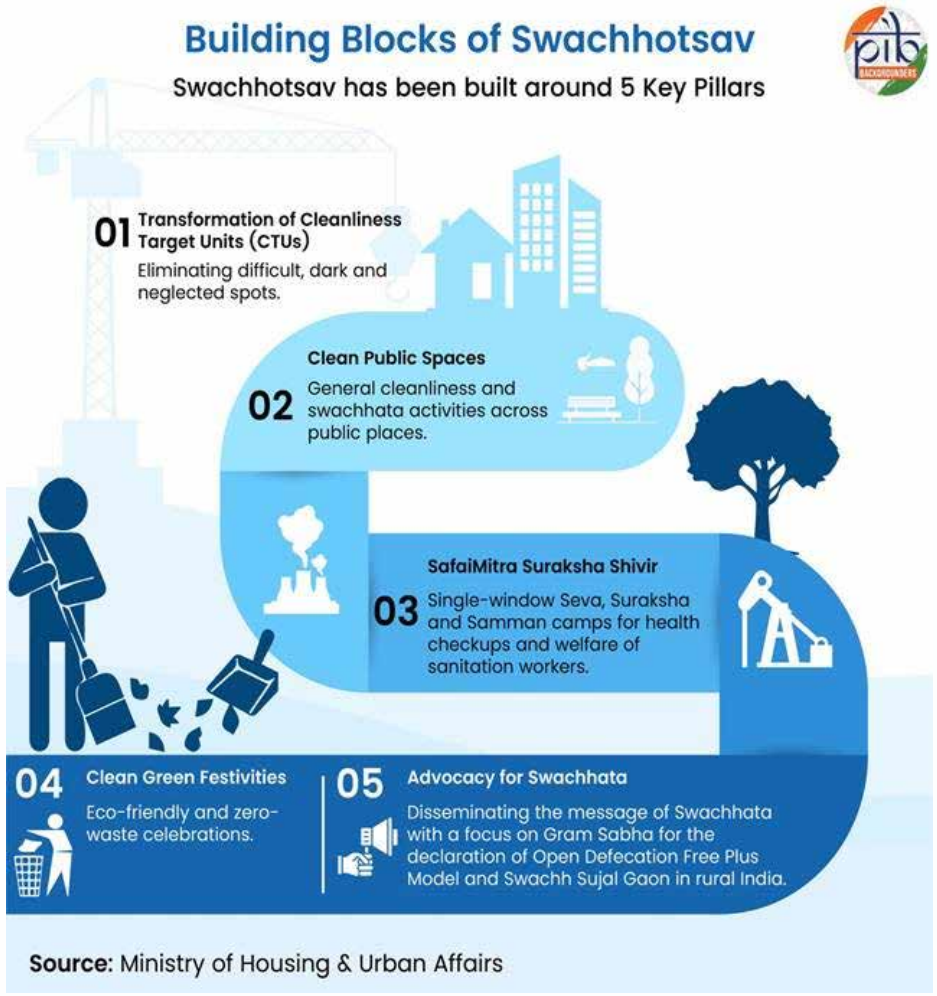
Swachh Bharat Mission launched to achieve a Clean and Sanitized India, Improving Solid Waste & Waste Water Management and to promote a nationwide behavioral change towards Hygiene and Cleanliness.

- 120+ million toilets constructed in rural areas, based on Swachh Survekshan Grameen 2022, survey covering 17,559 villages in 709 districts in 33 States/UTs across India
- 4,800+ cities, Over 600 districts declared Open Defecation Free (ODF)
- ~94,000+ wards (98%) with 100% door-to-door waste collection
- Out of 2,476 dump sites identified nationwide under SBM-Urban, 1,041 have been remediated (1,437 Lakh Tonnes ~ 58% Waste Qty), reclaimed over 7,646 acres of land
- Urban India now processes 1,29,206 ton per day (TPD) (81% of total Waste Generated)

Antyodaya se Sarvodaya

Source: Industry Analysis, PIB PN 2170998

GoI Initiatives - Swachh Bharat Mission



Outlook

- Strengthen Waste Processing Infrastructure and Recycling Ecosystem
- Promote behavioral change for Long-Term Cleanliness Sustainability
- Expand integration with EPR (Extended Producer Responsibility)
- Leverage Digital Tools and Citizen Participation
  Align with Mission LiFE and Net Zero Goals by 2070

Potential Polymer Demand 200 KTA in next 5 years

Source: Industry Analysis, PIB PN 2170998

GoI Initiatives - Smart City Mission

Launched in 2015 by Ministry of Housing & Urban Affairs (MoHUA) with an objective to Transform Urban Ecosystems through Technology, Governance, and Sustainable Infrastructure.

Core Features of Smart Cities

- 24x7 Water and Power Supply
- Solid Waste Management & sanitation
- Smart Mobility
- Affordable Housing & Inclusivity
- Digital Governance (ICT, e-services)
- Citizen Safety & Surveillance
- Area-based & Pan-city Smart Solutions
- Green Spaces & Sustainability

Policy & Strategic Integration

- Aligned with: NIP, Digital India, Net Zero Mission
- Urban Data Exchange (IUDX) expanding to 500+ cities
- SPV transformation to Urban Services entities
- Integration with Climate & Energy Goals

Progress FY25

- Cities Covered: 100
- Total Projects: 8,062
- Completed Projects: 7,504 (93%)
- Pending Projects: 559 (7%) worth ₹14,260 Cr
- Total Value Tendered: ₹1.64 Lakh Cr
- Completed Value: ₹1.50 Lakh Cr
- ICCCs Operational: 100 Cities
- Sustainability Lens: Renewable energy & smart mobility

Mission Towards Smart Utilities in India

Source: Industry Analysis, PIB PN 154736

GoI Initiatives - Smart City Mission

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Smart City
MISSION TRANSFORM-NATION

Outlook

- The Smart Cities Mission marks a foundational shift in India's urban governance.
- Focus now transitions from infrastructure delivery to operational excellence, data intelligence, and sustainability.
- Future roadmap envisions replicable smart urban ecosystems across India's 500+ cities..
- Focus on sustainable, inclusive outcomes

Potential Plastics Demand

Urban Infra: 1.0 MMTA

Mobility: 0.35 MMTA

Water & Waste Management: 0.40 MMTA

ICT: 0.15 MMTA

Renewable Energy 0.25 MMTA

Total Potential 2.15+ MMTA

Plastics redefining India's Sustainable Smart City Ecosystem

Source: Industry Analysis

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Shaping The Future Of Plastics

GoI Initiatives - National Mission for Clean Ganga

National Mission for Clean Ganga objective is to ensure effective abatement of pollution and rejuvenation of the river Ganga by adopting a river basin approach to promote inter-sectoral co-ordination for comprehensive planning and management and maintain minimum ecological flows in the river Ganga with the aim of ensuring water quality and environmentally sustainable development

Progress

424 Projects Sanctioned under NMCG (worth ₹38,000 Cr approx.)

Over 1,200 MLD of sewage treatment capacity created

112 Riverfront Ghats developed and 58 crematoria modernized

50+ trash skimmers deployed across major river cities

Afforestation achieved over 33,000 hectares

Public awareness & Swachh Bharat linkages strengthened through outreach programs

Integration of AI-based Trash Detection & real-time Monitoring at Major Ghats

Source: Industry Analysis, PIB PN 2170998

Plastic Waste Collection & Recycling

- Annual Plastic Waste Collected from riverine and associated settlements: ~0.10 - 0.12 million tons
- Recovered and Processed through MRFs (Material Recovery Facilities): ~68%
- Recycled Portion: ~45% Converted into Secondary Materials
- NMCG promotes decentralized Plastic Waste Management models with local ULBs
- Partnerships with CPCB, SPCBs, and Recyclers for extended producer responsibility (EPR) compliance

Outlook

Expansion of Waste-to-energy and Waste-to-road polymer reuse projects

Implementation of Circular Economy frameworks in Ganga Basin States

Target: Achieve 90% collection and 60% recycling of plastic waste by 2030

Integration of Smart River Monitoring Systems under Digital Ganga Platform

Encourage Private Investment and CSR partnerships for Green River Economy

Towards Green River Economy

Source: Industry Analysis, PIB PN 2170998

GoI Initiatives - AMRUT 2.0

Launched in 2015, AMRUT is to improve basic Urban Infrastructure in Indian cities, focusing on Water Supply, Sewerage, Storm Water Drainage, Green Spaces, and Non-motorized Transport

AMRUT 2.0, was launched in 2021, expanded goals to make cities "water secure" by promoting a circular economy for water, including reuse of treated sewage, and achieving Universal Tap Connections for Water Supply and Sewerage

PPP & Governance Framework

- Encouraging private participation in Infrastructure O&M
- Performance-linked Fund Disbursement
- Capacity Development of ULB and State Mission Teams
- Private Investment and Green Bonds for Scaling Projects

Progress & Outlook

Water Supply Coverage: 92%

Sewerage Coverage: 68% with 1,200+ STPs commissioned

30% treated wastewater reuse achieved

1.5 lakh km pipelines laid/replaced

Universal Coverage by 2026

Shift to Net-Zero Water Cities & Green Infrastructure

Water Sustainability through Plastic Piping System

Source: Industry Analysis, PIB PN 2078409

Pradhan Mantri Awaas Yojana (PMAY Urban & Rural)

Scheme provides affordable housing to Urban & Rural poor and middle-income families, through four key approaches: credit-linked subsidy, in-situ slum redevelopment, affordable housing in partnership, and beneficiary-led construction

PMAY-Urban: Ministry of Housing & Urban Affairs

- In-situ Slum Redevelopment (ISSR)
- Credit Linked Subsidy Scheme (CLSS)
- Affordable Housing in Partnership (AHP)
- Beneficiary Led Construction (BLC)

PMAY-Gramin: Ministry of Rural Development

- Replace kutcha houses with pucca structures
- Financial assistance ₹1.2-1.3 lakh per unit.
- Centre-State share: 60:40 (90:10 for NE/Hilly States)

FY25 PMAY

PMAY-Urban

- 1.19 crore Houses Sanctioned
- 93.8 lakh Completed
- ₹ 2.01 lakh crore central assistance
- ₹ 8.2 lakh crore Investment mobilized

PMAY-Gramin

- 2.95 crore Houses target
- 2.66 crore completed
- ₹ 2.3 lakh crore funds released

Housing for All

Source: MoHUA, MORD, Industry Analysis

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Pradhan Mantri Awaas Yojana (PMAY Urban & Rural)

Technology & Sustainability

- Global Housing Technology Challenge (GHTC)
- Light House Projects (LHPs) with Advanced Materials
- IGBC/GRIHA Green Norms
- Digital PMAY Dashboard for Real-Time Monitoring

Outlook

- PMAY 2.0 for Green & Smart Housing
- Integration with Smart Cities Mission.

Product Demand

Water Tanks & Piping - (LLDPE, PVC)

Doors/Windows/Roofing - (uPVC, FRP)

Sanitation - (FRP, HDPE)

Wire & Cable - PVC

Electrical Fittings & Switches - Engg. Polymers

Paints & Insulation - (PU, Epoxy)

Drainage - (HDPE, PVC)

Plastic Infrastructural Products Core to Affordable & Smart Housing

Source: MoHUA,MORD, Industry Analysis

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Shaping The Future Of Plastics

GoI Initiatives - Jal Jeevan Mission (JJM)

Har Ghar Jal
Jal Jeevan Mission

Objective of the scheme is to provide tap water access to every rural household, Safe and adequate water to Improve Health and Living Standards. The scheme focuses on quality infrastructure build up for rural piped water supply thru community participation and source sustainability.

- Since the launch of the scheme 72.42% of households have been provided with the connection taking the total households tap water connections to 81% as on Oct 2025.
- Gujarat, Haryana, Telangana, Punjab, Goa, Himachal Pradesh, Arunachal Pradesh, Mizoram, Puducherry, A&N Islands, D&NH and D&D have achieved 100% tap water supply.
- To achieve 100% coverage across the country, Government has extended JJM till 2028. In the Budget 2025-26, about ₹67,000 crore has been allocated for JJM
- Over 1 million tons of Plastic Pipes has already been used in the scheme.
- ~175 KT of virgin polymers were supplied for pipes in FY24-25 (~114 KT HDPE, 44 KT PVC, 18 KT others).

Jal Jeevan Mission - A Step Towards Swachh and Swasth Bharat

Source: Jaljeevanmission, PIB PN 2182568

GoI Initiatives - Green Hydrogen Mission

India's National Green Hydrogen Mission, launched by the Ministry of New and Renewable Energy (MNRE), aims to establish India as a global hub for green hydrogen production with significant renewable energy integration and incentives for electrolyser manufacturing (SIGHT program).

Key Objectives

- Production Capacity : ~5 MMTA of Green Hydrogen
- Electrolyser Capacity : 60-100 GW
- Renewable Energy : 125 GW of Renewable Energy for Green Hydrogen Production
- Investments : Over ₹ 8 lakh Cr
- Job Creation : Over 6+ lakh Green Jobs
- Fossil Fuel Savings : Reduce fossil fuel imports by ₹1 lakh Crore
- Emission Reduction : Avert ~50 MMT/year of CO_2 emissions

Major Application Areas

- Fertiliser, Petroleum Refining and Steel, Mobility and Transport - Road, Railways & Shipping

Field Study by PE100+ Association

- HDPE is perfectly compatible with hydrogen and does not react with it.
- Study indicates no deterioration of HDPE pipes in contact with hydrogen, in long-term tests carried out for >10 years in Denmark in existing gas network as well as new pipes.
- 10% addition of H2 completed successfully and is already part of some gas supplies.

In India, 3 CGD companies have started pilot scale blending of 3-5% Hydrogen in Piped Natural Gas (PNG for last couple of years). This may be scaled up with time which will be augment PNG availability for City Gas Distribution network.

Green Hydrogen to drive the shift towards a Low-Carbon & Self-reliant Economy

Source: MNRE, PIB PN 155990, Industry Analysis, PE100+

GoI Initiatives - City Gas Distribution (CGD)

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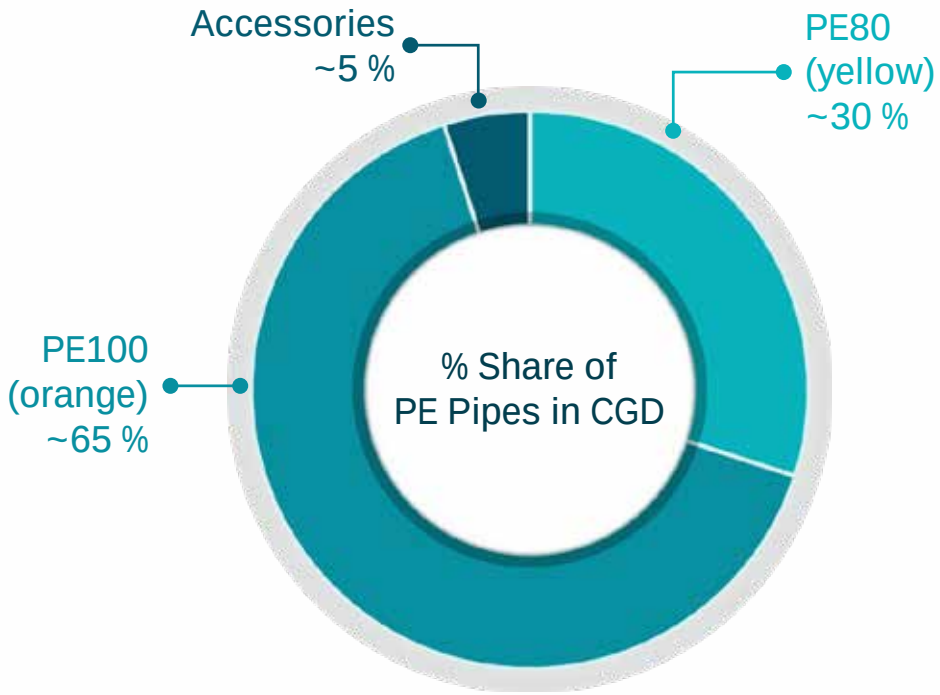
- City Gas Distribution (CGD) networks are an interconnected system of underground Natural Gas Pipelines for supplying Piped Natural Gas (PNG) and Compressed Natural Gas (CNG) to Domestic, Commercial and Industrial customers aimed to reduce import of crude oil and reduction of Carbon Footprint
- CGD networks are also used to supply Natural Gas to retail outlets situated in a specified city or district, where it is further compressed before filling into vehicles as Compressed Natural Gas (CNG)
- As of March 2025, Domestic PNG connection were 15 million, 45,373 commercial and 20,461 industrial connections, 8,067 CNG Gas Outlets
- More than 200,000 Km of PE pipes have been used in the CGD projects.
- Cumulative PE Pipe Supply (FY 2018-19 to FY 2024-25) estimated to be over 200 KT



Plastic Pipes for Efficient & Sustainable Energy Transition

Source: pngrb.gov.in

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GoI Initiatives - City Gas Distribution (CGD)

- The Government Policy is to increase contribution of natural gas in India's Energy basket from current 6.2% to 15% by 2030
- CGD to account for more than 1/3rd of India's natural gas demand by year 2030. The current demand for CGD is 36.9 MMSCMD and is expected to more than double to 87 MMSCMD by 2030
- By 2030-31 the plan is to achieve ambitious target of 123.3 million piped natural gas (PNG) domestic connections and 17,700 CNG stations.
- Whole of India except A & N Islands have been allocated for laying of CGD network
- Blending of Compressed Bio Gas and Hydrogen has started in PNG network

Biding Round	Time Period	Estimated PE Requirement (KT)	Remarks
11th Round	2025 - 2027	105	Tendering, Expansion, Network Densification, Highest Pipeline Activity
12th Round	2028 - 2030	120	Secondary Networks, CNG linkage, PNG Coverage
Total		225	

Gas se Gati, Bharat ki Pragati

Source: pngrb.gov.in

GoI Initiatives - Defence

Historically, India has been one of the largest importer of Defence Systems. The National Policy now aims to transform India into a Design-led, Self-reliant hub. Anchored in Atmanirbhar Bharat & Make in India, is driven by MoD, DDP, DRDO, and Industry Partnerships. Government's Atmanirbhar Bharat initiative has focused on India's Defence Sector, which aims to promote indigenous production and reduce the country's dependence on imports.

Key Objectives

- Self-Reliance - Localize Design, Development & Production
- Industry Development - Engage Private Sector, MSMEs & Startups
- Technology & Innovation - Accelerate Dual-use Tech Adoption
- Exports & Competitiveness - Position India as a Global supplier

Transformative Policies

- Defence Acquisition Procedure (DAP 2020) - prioritizes indigenous procurement
- Positive Indigenization Lists - import bans on 3,000+ items
- Defence Corridors (UP, TN) - 250+ MoUs worth ₹53,000 cr
- FDI & Licensing Reforms - 74% FDI Automatic Route
- Export Facilitation - Single-Window Export Portal

Highlights FY25

- Defence Production: ₹ 1.54 lakh crore (+18%)
- Defence Exports: ₹ 23,622 crore (+12%)
- Export Authorizations: 1,762 (+17%)
- Private Sector Share: ₹ 15,233 crore (+6%)

Defence Production and Export Promotion Policy identified 4 Strategic Focus Areas: Aerospace, Defence Components Manufacturing, Defence R&D and Defence Exports

Make in India Transforming Defence Production

Source: Industry Analysis, MOD, PIB PN 2191937

National Policy For Defence Applications

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Sector / End-Use	Typical Components	Key Features	Key Polymer Types
Aerospace & Avionics	Radomes, Housings, Wiring Insulation, Composites, Cockpit Interiors	Lightweight & Flame-retardant Materials replacing metal parts	PEEK, P+EI (Ultem), PPS, PTFE, Polyimides, Epoxy Resins
Armoured Vehicles & Mobility Systems	Interior trims, Fuel tanks, Dashboards, Ballistic Panels	High Stiffness & Temperature Performance	PA6, PA66, ABS, PC/ABS, PP Compounds, Epoxy composites
Defence Electronics & Radars	PCB substrates, Insulators, Connectors, Radar Domes	Driven by Semiconductor & Electronics Indigenization	Epoxy, Polyimide, FR-4, PTFE, Silicone
Missiles, UAVs, Drones	Fuselage, Propeller Blades, Casings, Connectors	Rapid growth in UAV segment under iDEX & MSME participation	Carbon Fibre - Epoxy Composites, PPS, PEEK, PEKK
Naval & Marine Systems	Hull Panels, Piping, Buoyancy Modules	Submarine & Coastal Patrol Vessel Programs	FRP, GRP, Vinyl ester, HDPE, PVC
Protective Gear / Ballistics	Helmets, Shields, Armour inserts, Visors	Expanding due to Personal Protection and Tactical gear exports	UHMWPE, Aramid - Polymer Composites, PC, PU
Infrastructure & Maintenance	Pipelines, Cabling, Shelters, Air ducts, Coatings	Defence Estate, Airbase & Coastal Infrastructure Programmes	PVC, HDPE, CPVC, PU Foams, Silicones

Plastics reshaping Defence Applications

Source: Industry Analysis

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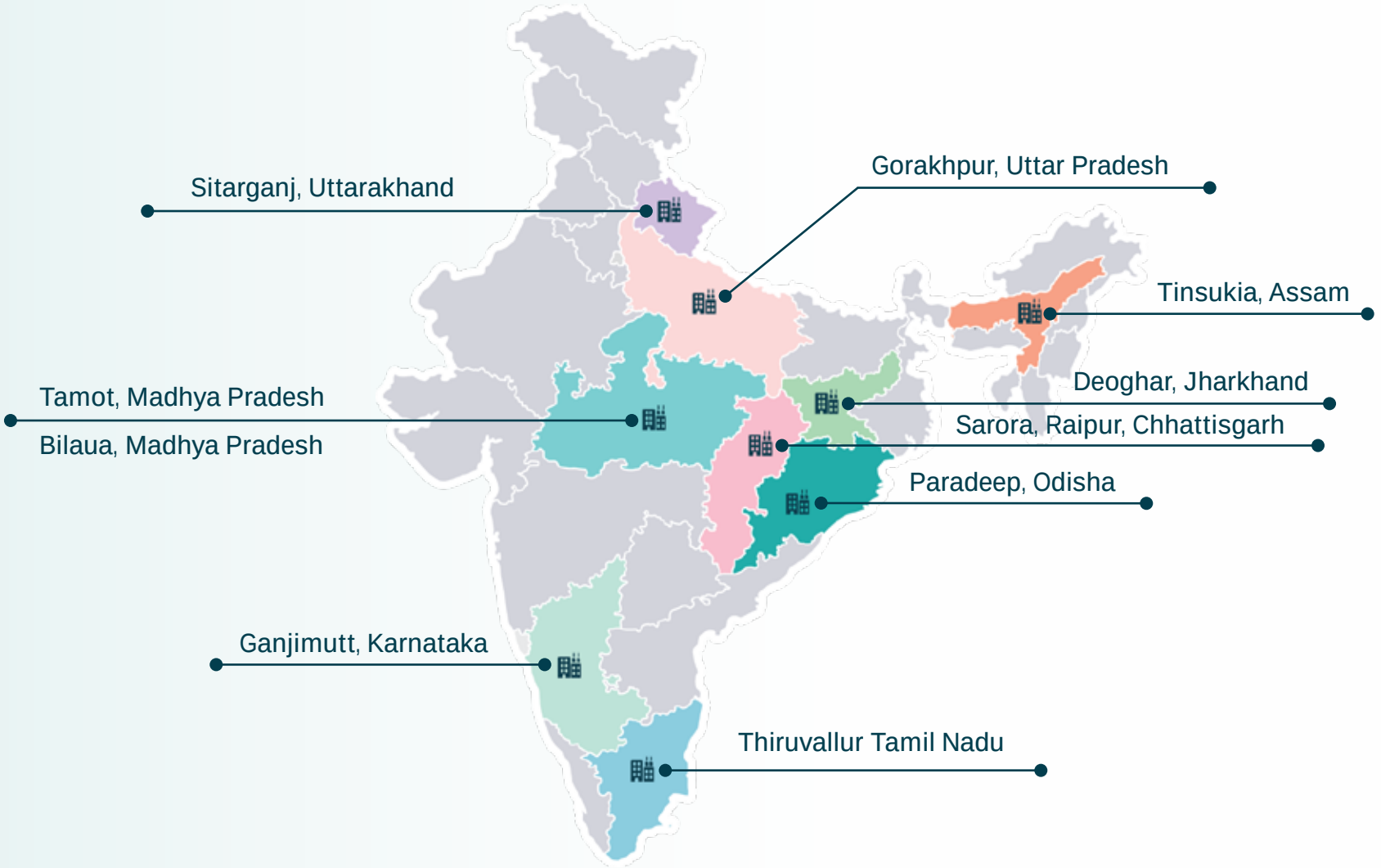
GoI Initiatives - Plastic Park Schemes



Source: DCPC

Skill Development and Manpower

Skill Development - RCPSDC

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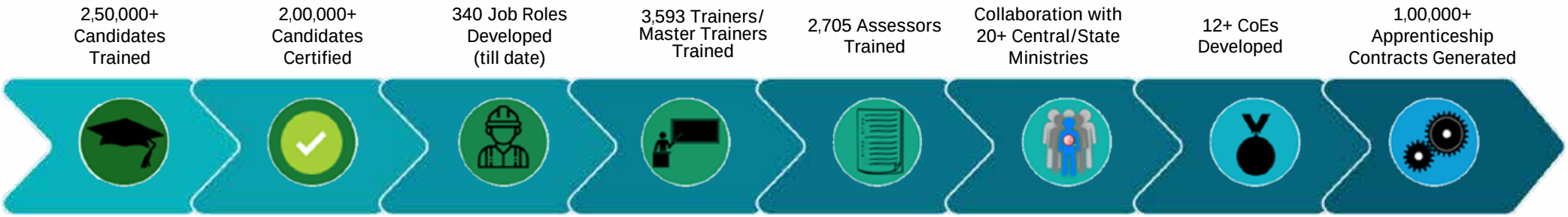

Developed Job Roles	Level
CAD/CAM Designer - Plastic Product	5
Jr. Designer Plastic Products	5
Jr. Designer - Die and Mould for Plastics	5
Machine Operator - Injection Moulding Plastic	4
Operator - Plastic Products Making (Plastic Toy/ Ball Pen)	4
Technician - TQC for Plastic Materials & Products	4
Machine Operator - CNC Turning of Plastic (Lathe)	4
Machine Operator - CNC Milling of Plastic	4
Operator - Plastic 3D Printing	4
Assistant Operator - Printing and Packaging	3
Assistant Operator - Plastic 3D printing	3
Plastic Waste Segregator	2
Plastics Processing - Assistant	2
Testing & Quality Control for Plastic Materials & Products - Assistant	2

Job roles - Under Development	Level
Quality Control Assistant (BIS Standards)	4.5
Specialist - 3D Manufacturing Documentation	4.5
QA Technician - Composites	4.5
Technician - Composite Product Manufacturing	4.5
Polymer Synthesis Catalyst Technician	4.5
Advanced Extrusion Technician	4.5
Monomer Recovery Technician	4.5
Microbiological Plastic Recycler	4
3D Printing Materials Technician - Additive Manufacturing	4
3D Parts Assembling & Finishing Technician	4
Recyclable Materials Trader - Paryavaran Mitra	2.5

Source: Rubber, Chemical & Polymer Skill Development Council (RCPSDC)

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Skill Development - RCPSDC

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Future Trends in Polymer Sector

- CO_2 Utilization (Polycarbonates, Polyurethanes)
- Smart Manufacturing Integration
- Advanced CAD and Simulation
- Digital Twin Engineering
- Mechanical Recycling
- Chemical Recycling
- Monomer Recycling

Proposed Qualifications as per Future Trends

Job Role	NSQF Level
Digital Twin Engineer (Plastic Products)	5.5
Consultant - Event Waste Management	5
Tool Design & Simulation Specialist	5
Carbon Capture Polymer Technician	4.5
Quality Control Assistant (BIS Standards)	4.5
Automation Technician - Plastic Machinery	4
Mechanical Plastic Recycling Operator	3
Technician Sustainability (Polymer)	5

- Co-develop with Industry & Academia
- Trainer and Master Trainer Identification (ToT/ ToMT)
- Mobilization of Candidates
- Training, Assessment & Certification
- Placement of candidates

Industry	Current Workforce	Approx. Workforce Requirement in 2025	Approx. Workforce Requirement by 2030
Polymers / Plastic	40,00,000+	2,96,000	10,00,000

Workforce Growth Rate @6~7%

1+ million Workforce Demand in next 5 years

Source: Rubber, Chemical & Polymer Skill Development Council (RCPSDC)

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Skill Development - Plastindia International University

PLASTINDIA FOUNDATION®
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Bridging Academia & Industry

Industry-integrated curriculum focusing on Polymer Science, Material, Processing, Sustainability, and Recycling.

Collaboration with UMass Lowell, USA, a global pioneer in Plastics education and research.

Supported by leading industry players, ensuring industry-aligned education and research.

Access to cutting-edge Industry 4.0, Automation, and Sustainable Plastics Technologies.

PLASTINDIA INTERNATIONAL UNIVERSITY
Building Our Future Together

INDIA'S FIRST UNIVERSITY
DEDICATED TO POLYMER & SUSTAINABILITY

University of Massachusetts Lowell
UMASS

PIU Campus -
Vapi, Gujarat, India

B. Tech in Plastics and Polymer Engineering (Regular and Lateral Entry)

The flagship programme is under the School of Engineering and is focused on material processing & design, recycling and Sustainability. Intake Capacity: 60 seats for the B. Tech Programme.

B. Tech in Computer Science and Engineering (Regular Entry)

This programme is under the School of Engineering and is focused on Design, Manufacturing/Industry 4.0, Automation, and Robotics, with a specialized alignment to the plastics industry. Intake Capacity: 60 seats for the B. Tech Programme.

PIU - Founded by Plastic Industry For Plastic Industry

Source: Plastindia University

Bharat Next
Shaping The Future Of Plastics

Skill Development - Plastindia International University

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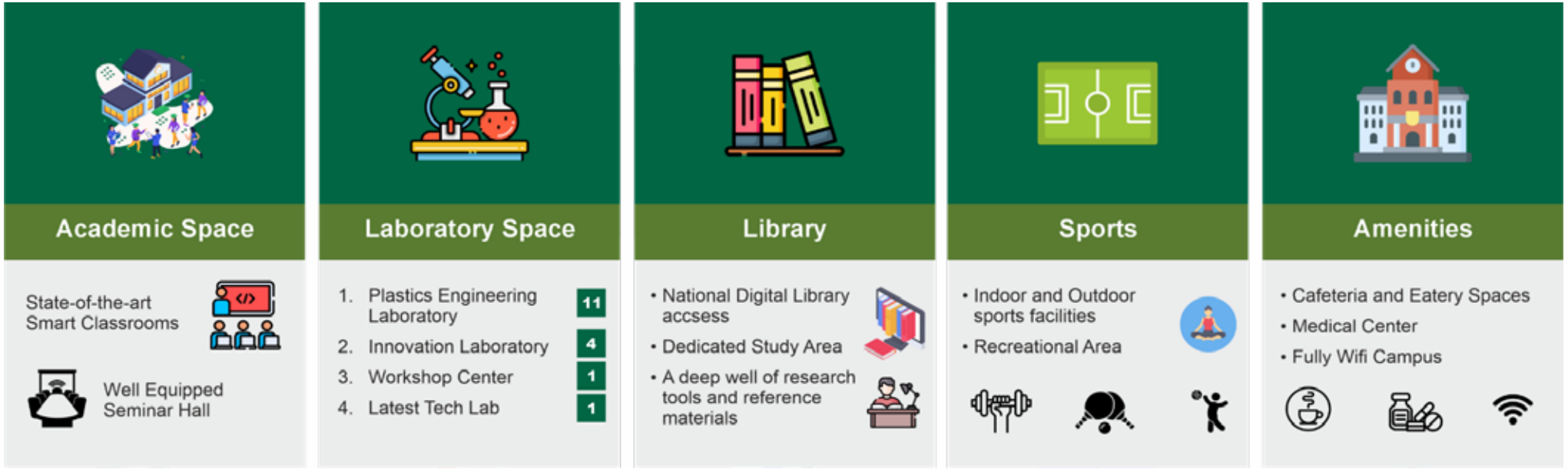

Going Forward

Degree	Non-Degree
Doctoral (PhD)	Under Graduate (Diploma)
Post Graduate (M.Tech)	Certificate
Under Graduate (B.Tech) - Chemical and Mechanical Engineering	Executive Education

PIU - Shaping the Future of Polymer Education

Source: Plastindia University

Bharat Next
Shaping The Future Of Plastics

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Major Institutes for Polymer Courses and Skill Development

IIT Delhi (Polymer Science & Engineering)
IIT Madras (Polymer Science & Engineering)
IIT Guwahati (Polymer Science & Engineering)
IIT Roorkee (Polymer Engineering)
IIT Kanpur (Polymer Science & Engineering):
CIPET (Central Institute of Petrochemicals Engineering & Technology)
- Institute of Petrochemicals Technology (IPT) - 10 Centres
- Centre for Skilling and Technical Support (CSTS) - 28 Centres
- School for Advanced Research in Polymers (SARP) - 3 Centres
- Plastics Product Evaluation Centre (PPEC) - Paradip
- Advanced Plastics Product Simulation & Evaluation Centre (APPSEC), MP
Institute of Chemical Technology, Mumbai
Cochin University of Science & Technology, Kochi
Calcutta University, Plastics and Rubber Technology Dept, Kolkata
Harcourt Butler Technical University (HBTU), Kanpur
Plastindia International University, Vapi
Anna University of Technology, Chennai
Crescent Institute, BSACIST, Chennai
Biju Patnaik University of Technology (BPUT), Bhubaneshwar
College of Engineering & Technology (COET), Akola
Delhi College of Engineering (DTU), Delhi
Dr. Babasaheb Ambedkar Technological University, Lonere
Dr. S. S. Bhatnagar UICET, Chandigarh

JNCASR, Bangalore
JSS Academy of Technical Education, Noida
JSS Science and Technology University (formerly SJCE), Mysuru
Laxminarayan Institute of Technology (LIT), Nagpur
LD College of Engineering, Ahmedabad
Madras Institute of Technology (MIT), Chennai
Maharaja Sayajirao University, Vadodara
MIT Aurangabad
SLIET, Longowal, Punjab
Shri Bhagubhai Mafatlal Polytechnic & College of Engineering, Mumbai
SRICT, Ankleshwar
Tripura University, Agartala
University College of Engineering, Thodupuzha
University Institute of Chemical Technology (UICT), Jalgaon
Uttarakhand Technical University, Dehradun
SIES School of Packaging / Packaging Technology Centre, Vashi
The Indian Institute of Packaging (IIP)
Rubber, Chemical & Petrochemical Skill Development Council (RCPSDC)
Indian Plastics Institute (IPI)
AMTEC (Arvind Mehta Technology & Entrepreneurship Centre), Mumbai
Lohia Technical Training & Research Centre, Malau
UWDMA (uPVC Window & Door Manufacturers Association), New Delhi


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BENEFITS OF PLASTICS

ENERGY SAVING

LCA STUDY

For 1 Lakh MT of ATTA (Flour) PACKAGING:

81% Energy Savings achieved across the value chain, from raw material manufacturing to packaging and transportation of atta

Energy recovery potential of ~35 GJ (≈ 278 kWh) from plastic waste generated by the packaging

THE COMPARISON HOLDS GOOD FOR PLASTICS vs JUTE CARRY BAGS

Source: ICPE & IIT, Delhi

BENEFITS OF PLASTICS

ENERGY SAVING

LCA STUDY

FOR 1 LAC LTR OF MILK PACKAGING:

From Raw Material to Packaging & Transportation of Milk - Plastic packaging saves **~86% energy** compared to alternative packaging materials

Energy Recovery from the Plastic Waste Generated by the Plastics Packaging is – **20GJ**

Plastic packaging achieves **up to 99% weight reduction**

Glass Bottle weighs 650 gms
Plastic Pouch weighs 5 gms

Source: ICPE & IIT, Delhi

Source: ICPE

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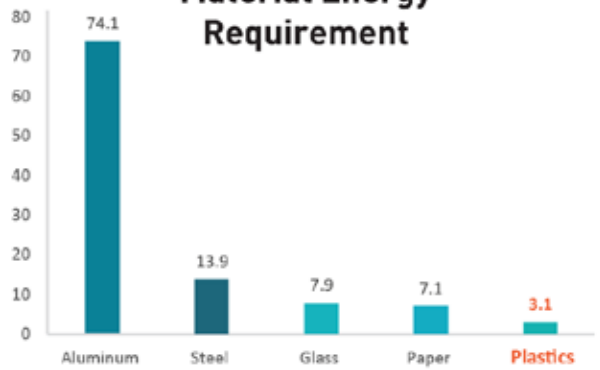
BENEFITS OF PLASTICS

ENERGY SAVING

PLASTICS CONSUME LEAST ENERGY

Material Energy Requirement



Source: Scott, G and Gilead, D., Editors, Degradable Polymers, Principles and Application, Chapman & Hall, London, 1995

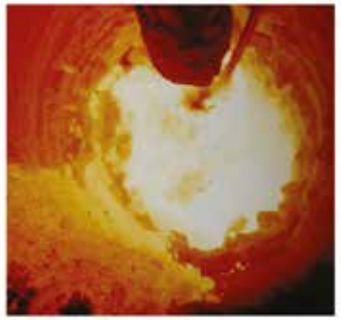
Plastics consume **the least energy over their lifecycle** compared to aluminium, steel, glass and paper

Plastics generate lower greenhouse gas (GHG) emissions than alternative materials

Plastic products result in **lower global warming impact** compared to competing material options

ENERGY RECOVERY

Co-processing In Cement Kiln



Calorific Values (MJ/Kg)

PE :	**46**
PP :	**44**
PA (Nylons) :	**32**
PET :	**22**
Coal :	**29**

Cement kilns enable **co-processing of mixed plastic waste** as an alternative fuel

Plastics possess **high calorific values**, enabling substitution of **more than 50% of coal** in cement kilns

Key Message: *Plastics are a valuable source of energy when responsibly co-processed in cement kilns.*

Source: ICPE, ACC Ltd., Madhya Pradesh Pollution Control Board

Source: ICPE

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Outlook

India’s Plastics Industry - Outlook

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- Government initiatives and support for advanced engineering sectors will fuel growth in various sectors like Aerospace, Defence, Medical Devices, Automotive, Consumer Durables. As India moves towards a USD 7 trillion economy by FY31, such policies will provide the plastics industry a strong momentum for high demand growth.

- As a key pillar of India’s manufacturing ecosystem, the plastics industry is expected to have high growth in coming years, with domestic demand projected to increase from 28+ MMT in FY25 to 42+ MMT by FY31, supported by sustained investments in polymer manufacturing and downstream value chains.

- The industry is increasingly adopting design-for-recycling principles and investing in energy-efficient machinery and processing lines, reflecting a strong commitment to sustainability and circularity. This transition is reinforced by growing investments in bioplastics & Bio based Plastics manufacturing, expected to stimulate demand and signal India’s emergence as a key player in the global bioplastics ecosystem.

- EPR, recycling infrastructure, PLI Schemes and circular economy policies will boost downstream growth, while solar and renewable energy adoption will support Green manufacturing in India’s plastics industry.

- With strong economic fundamentals, supportive policies, and a focus on sustainability, India’s plastics industry is poised to become a globally competitive, Circular economy oriented and value-added manufacturing hub.

Annexures

Acronyms

PLASTINDIA FOUNDATION®
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ABS	Acrylonitrile Butadiene-Styrene
ASA	Acrylonitrile Styrene Acrylate
BOPET	Biaxially Oriented Polyethylene Terephthalate
BOPP	Biaxially Oriented Polypropylene
EPS	Expanded Polystyrene
EVA	Ethylene Vinyl Acetate
EVOH	Ethylene Vinyl Alcohol
FIBC	Flexible Intermediate Bulk Container
FRP	Fibre Reinforced Plastics
GRP	Glassfibre Reinforced Plastics
HDPE	High Density Polyethylene
LDPE	Low Density Polyethylene
LLDPE	Linear Low Density Polyethylene
MF	Melamine Formaldehyde
PA	Polyamide
PBT	Polybutylene Terepthalate
PC	Polycarbonate
PE	Polyethylene
PEEK	Poly Ether Ether Ketone
PEI	Polyether Imide
PEK	Polyether Ketone
PEKK	Polyether Ketone Ketone
PES	Polyether Sulfone
PET	Polyethylene Terephthalate
PF	Phenol Formaldehyde
POM	Poly Oxy Methylene (Polyacetal)
PP	Polypropylene
PPO	Polyphenylene Oxide
PPS	Polyphenylene sulphide
PS	Polystyrene
PSU	Polysulfone
PTFE	Polytetrafluoroethylene
PUR	Poly Urethanes
PVC	Poly Vinyl Chloride
PMMA	Poly Methyl Methacrylate
SAN	Styrene Acrylonitrile
TPE	Thermoplastics Elastomer
TPU	Thermoplastics Polyurethane
UF	Urea Formaldehyde
UPR	Unsaturated Polyester Resin

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Haldia Petrochemicals Ltd.
HMEL
Husky Injection Moulding Systems (India) Pvt. Ltd.
ICPE
IIP
Indian PU Association
INEOS Styrolution APAC Pte. Ltd.
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Organizations of Plastics Processors of India

Indian Plastics Institute

Indian Plastics Federation

Gujarat State Plastic Manufacturers' Association

The Plastics Export Promotion Council

CIPET सि पे ट
probe - perform - practice - Plastics

Chemicals & Petrochemicals Manufacturers' Association, India

PMMAI
We Shape Plastics...

Acknowledging all Founder Members & Constituent Members in bringing out this report

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