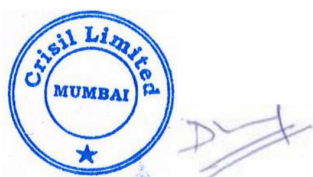


Assessment of prefabricated building, pre-engineered steel building, construction and expanded polystyrene markets in India

August 2025



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1 Macroeconomic assessment of India

1.1 GDP outlook

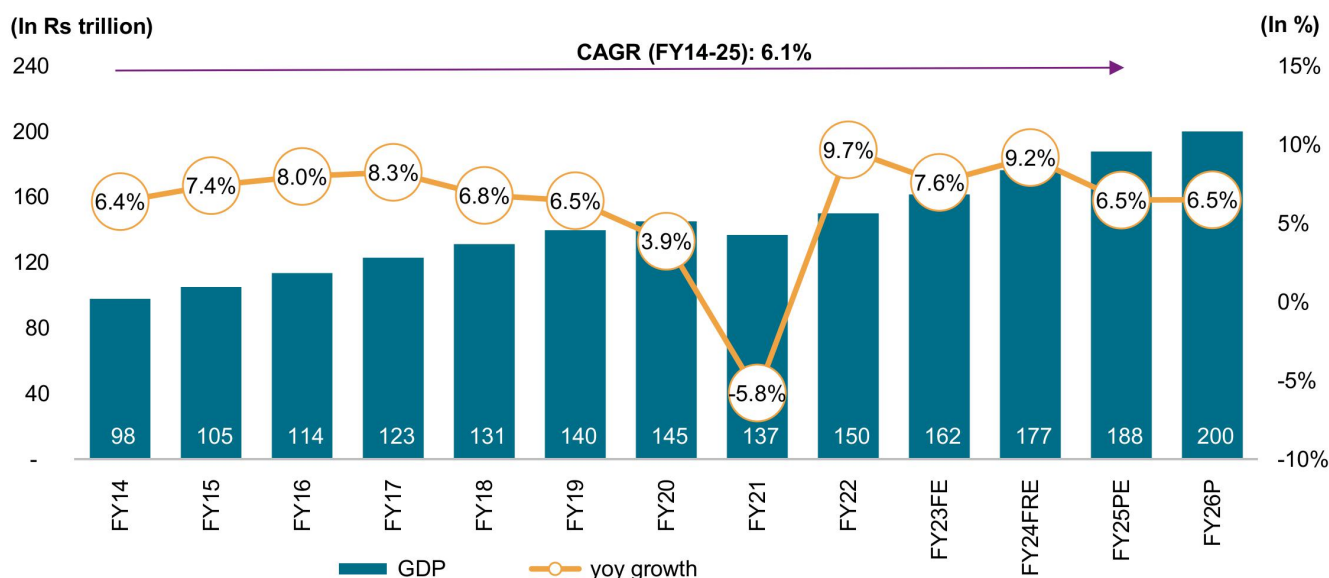
India's GDP estimated at Rs 188 billion in FY25

India's GDP clocked a 6.1% compound annual growth rate (CAGR) to Rs 188 trillion in FY25 from Rs 98 trillion in FY14, driven by expansion of the non-agricultural economy. A key contributor to GDP growth during this period was the rise in private final consumption expenditure (PFCE), which constitutes the largest share of GDP. This was complemented by improvements in exports and an increase in government final consumption expenditure (GFCE).

Additionally, according to the provisional estimates (PE) for FY25, India's GDP is projected to have grown at 6.5% in FY25, a moderation from the 9.2% growth recorded in FY24. Despite this deacceleration, growth remains close to the pre-pandemic decadal average of 6.6 % between FY11 and FY20, enabling India to retain its position as the fastest growing major economy.

Moving forward, Crisil projects that GDP growth will remain steady at 6.5% in FY26, despite potential headwinds arising from geopolitical developments and global trade uncertainties, including tariff actions by the US. The factors expected to support growth include easing food inflation, personal tax incentives announced in the Union Budget 2025-2026 and lower borrowing cost, all of which are expected to boost discretionary consumption. In the medium term (FY25-31), Crisil expects India's GDP to grow 6.7% per year, with capital investments playing a dominant role and a bigger push from efficiency gains.

India's real GDP growth at constant prices (new series)



Note: FE: Final Estimates, FRE: First Revised Estimates, PE: Provisional Estimates, P: Projected

These values are reported by the government under various stages of estimates

Only actuals and estimates of GDP are provided in the bar graph

India's FY26 projection as per Crisil's forecast

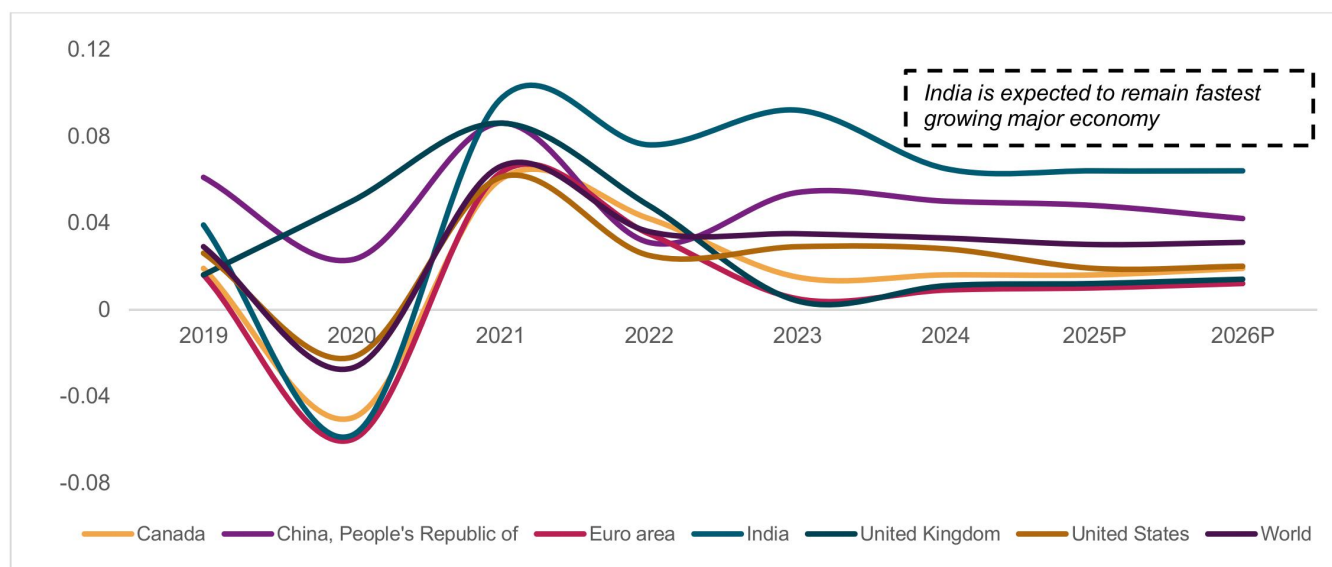
Source: Ministry of Statistics and Program Implementation (MoSPI), Crisil Intelligence

India's economy to grow 6.5% in fiscal 2026

Crisil expects India's GDP to grow at 6.5% this fiscal, same as estimated for fiscal 2025, driven by a relatively balanced set of domestic drivers. However, the ongoing & trade-related uncertainties pose some downside risks the forecast. India's economic growth rate is normalising towards its medium-term trend and, in fiscal 2026, will be supported by factors such as lower food inflation, lower borrowing costs & higher disposable income of the middle class.

India among the fastest-growing major economies

India has become the fourth-largest economy in the world in 2025 and has grown faster compared with major economies.



Source: IMF economic database, Crisil Intelligence

For advanced economies:

1. **US:** In the United States, with tariff rates settling at lower levels than those announced on April 2, easier financial conditions, offset from private demand cooling faster than expected and weaker immigration, the economy is projected to expand at a rate of 1.9% in 2025. Growth is projected to pick up slightly to 2.0% in 2026, with a near-term boost from the One Big Beautiful Bill Act (OBBBA) kicking in primarily through tax incentives for corporate investment.
2. **Euro area:** In the euro area, growth is expected to accelerate to 1.0% in 2025, largely driven by the strong GDP outturn in Ireland in the first quarter of the year, although Ireland represents less than 5% of euro area GDP. The forecast for 2026 stands at 1.2%.
3. **In other advanced economies:** Growth is projected to decelerate to 1.6% in 2025 and pick up to 2.1% in 2026.

Emerging market and developing economies:

1. **China:** For China, CY2025 GDP growth forecast stands at 4.8%, reflecting a stronger-than-expected activity in the first half of 2025 and the significant reduction in US-China tariffs. The GDP outturn in the first quarter of 2025 alone implies a mechanical upgrade to the growth rate. Growth in 2026 is also revised upward to 4.2%, reflecting the lower effective tariff rates.

2. **India:** In India, growth is projected to be 6.4% in 2025 and 2026, with both numbers revised slightly upward, reflecting a more benign external environment. India is also expected to continue to benefit from increasing private consumption, growing capex, and sustained infrastructure investments.

Real GDP growth of India compared with advanced and emerging economies

Real GDP growth (Annual percent change)	GDP, current prices (Billions of U.S. dollars)	2019	2020	2021	2022	2023	2024	2025P	2026P
Advanced economies	64,715	1.9	-4.0	6.0	2.9	1.8	1.8	1.5	1.6
Canada	2,241	1.9	-5.0	6.0	4.2	1.5	1.6	1.6	1.9
China, People's Republic of	18,748	6.1	2.3	8.6	3.1	5.4	5.0	4.8	4.2
Emerging market and developing economies	45,835	3.7	-1.7	7.0	4.1	4.7	4.3	4.1	4.0
Euro area	16,396	1.6	-6.0	6.3	3.5	0.5	0.9	1.0	1.2
India	3,909	3.9	-5.8	9.7	7.6	9.2	6.5	6.4	6.4
United Kingdom	3,645	1.6	-10.3	8.6	4.8	0.4	1.1	1.2	1.4
United States	29,185	2.6	-2.2	6.1	2.5	2.9	2.8	1.9	2.0
World	110,549	2.9	-2.7	6.6	3.6	3.5	3.3	3.0	3.1

Notes: P- projected

* Numbers for India are for the financial year from April to March (2020 is FY21 and so on).

The top three fastest growing economies for each year have been highlighted in green

India's FY26 projection (Crisil forecast) is 6.5%

Source: IMF economic database, Crisil Intelligence

Southern India was the highest contributor to India's GDP and construction GVA in FY24

In FY24, southern states had the highest combined Gross State Domestic Product (GSDP) of Rs 52.7 trillion (share of 30%), followed by western states, which had the combined GSDP of Rs 50.7 trillion (share of 28.9%).

In case of construction GVA also, southern India was leading with combined construction GVA of Rs 4,426.1 billion (share of 31.0%), followed by Northern states at Rs 4,114.8 billion (share of 28.9%).

Regional GSDP and Construction GVA (at constant prices)

Region	States	GSDP (FY24)		Construction GVA (FY24)	
		Rs trillion	Share	Rs billion	Share
 North	Chandigarh, Delhi, Haryana, Himachal Pradesh, Jammu and Kashmir, Punjab, Rajasthan, Uttar Pradesh, Uttarakhand	45.6	26.0%	4,114.8	28.9%
 South	Andaman and Nicobar Islands, Andhra Pradesh, Karnataka, Kerala, Puducherry, Tamil Nadu, Telangana	52.7	30.0%	4,426.1	31.0%
 East	Bihar, Jharkhand, Odisha, West Bengal	21.6	12.3%	1,920.1	13.5%
 West	Chhattisgarh, Goa, Gujarat, Madhya Pradesh, Maharashtra	50.7	28.9%	3,286.5	23.0%
 Northeast	Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tripura	5.0	2.9%	513.4	3.6%

Note: FY24 is considered to ensure consistency as GSDP and construction GVA FY25 data of a few states is not available from the respective sources.

*Contribution: (Summation of GSDP of all the states/ union territories in the particular region)/ (Summation of GSDP of all the states/ union territories)

*Contribution: (Summation of construction GVA of all the states/ union territories in the particular region)/ (Summation of construction GVA of all the states/ union territories)

Source: NITI Aayog, Crisil Intelligence

In northern region, Uttar Pradesh and Rajasthan had the highest GSDP and construction GVA, whereas in southern states, Tamil Nadu, and Karnataka held top two positions in FY24.

Additionally, state governments are also focusing on the industrial and infrastructure development of their respective states, which is expected to positively impact the construction GVA. For instance, Tamil Nadu Small Industries Development Corporation Limited (TANSIDCO) promotes the development of Private industrial Parks providing 75% of

the project cost of up to Rs.150 million as a government grant for the shifting of existing urban/city-based Industrial Units to the outskirts for basic infrastructure facilities like Road, Water Supply, Electricity etc. Furthermore, government undertakes 50% of the project cost of up to Rs.100 million for the formation of new private industrial estates in the outskirts of urban areas. Two new private industrial estate at Coimbatore and Namakkal were established and four more to come at Coimbatore, Virudhunagar and Madurai districts.

Similarly, Government of Karnataka comes out with industrial policies at regular intervals of five years to ensure a well-balanced, sustainable and inclusive industrial development throughout the State. The focus of the New Industrial Policy 2020-25 is to build on the strengths of Karnataka's industry and to enable it to fulfil its role as the engine of growth and to shoulder responsibility of adding more hi-tech value and employment. Some of the major objectives of the scheme includes attracting investments worth Rs 5 trillion and to provide an ecosystem for technology adoption and innovation.

State/ UT wise GSDP and construction GVA (at constant prices)

Region	States/ UT	State GSDP (Rs trillion)		Construction GVA (Rs billion)	
		FY24	CAGR (FY20-24)	FY24	CAGR (FY20-24)
North	Chandigarh	0.4	3.1%	31.1	14.4%
	Delhi	6.7	3.4%	343.1	11.6%
	Haryana	6.3	3.7%	532.1	9.4%
	Himachal Pradesh	1.4	3.2%	108.4	5.1%
	Jammu and Kashmir	1.4	4.4%	94.8	2.4%
	Punjab	5.0	4.6%	324.1	6.9%
	Rajasthan	8.4	5.5%	648.4	5.3%
	Uttar Pradesh	14.1	5.5%	1,795.6	9.7%
	Uttarakhand	2.0	1.9%	237.4	15.0%
South	Andaman and Nicobar Islands	0.1	2.8%	10.6	3.1%
	Andhra Pradesh	8.0	5.3%	691.9	13.6%
	Karnataka	14.6	6.2%	818.7	6.9%
	Kerala	6.3	3.2%	806.6	4.0%
	Puducherry	0.3	0.9%	41.4	4.6%
	Tamil Nadu	15.7	6.0%	1,691.3	7.0%
	Telangana	7.6	4.5%	365.6	7.3%
West	Chhattisgarh	3.1	5.1%	227.6	-0.7%
	Goa	0.6	4.0%	26.0	9.8%
	Gujarat	16.0	6.0%	998.1	13.1%
	Madhya Pradesh	6.7	4.3%	590.5	7.7%
	Maharashtra	24.4	4.4%	1,444.4	9.9%
East	Bihar	4.7	4.0%	520.2	10.4%
	Jharkhand	2.9	5.3%	241.5	7.1%
	Odisha	5.3	7.3%	387.4	10.5%
	West Bengal	8.8	3.7%	771.0	4.2%

Region	States/ UT	State GSDP (Rs trillion)		Construction GVA (Rs billion)	
		FY24	CAGR (FY20-24)	FY24	CAGR (FY20-24)
Northeast	Arunachal Pradesh	0.2	1.7%	20.7	5.8%
	Assam	3.1	6.8%	391.6	17.5%
	Manipur	0.2	6.2%	15.7	5.2%
	Meghalaya	0.3	3.3%	14.3	5.6%
	Mizoram	0.2	5.6%	18.7	7.0%
	Nagaland	0.2	3.7%	14.5	4.5%
	Sikkim	0.2	6.3%	11.4	8.8%
	Tripura	0.5	4.9%	26.5	7.2%

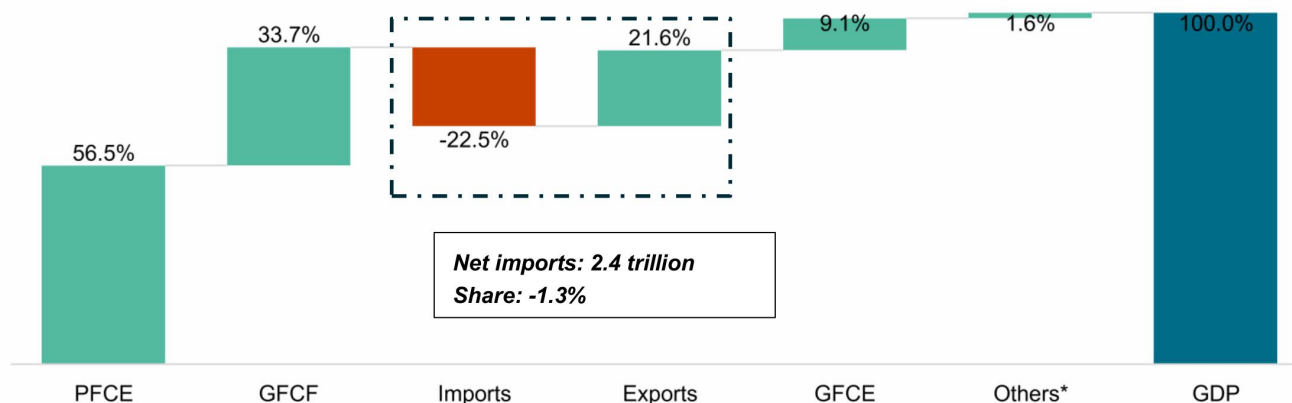
Note: FY24 is considered to ensure consistency as GSDP and construction GVA FY25 data of a few states is not available from the respective sources.

Source: NITI Aayog, Crisil Intelligence

PFCE maintains leading share in India's GDP, reflects sustained domestic demand

PFCE continues to be the largest component of India's GDP with 56.5% share in FY25. It recorded a CAGR of 6.1% between FY14-25, thereby mirroring the overall GDP growth rate during the same period and was estimated at Rs 106.6 trillion in FY25 compared with Rs 55.6 trillion in FY14.

Breakup of India's GDP (FY25)



Note:

PFCE: Private Final Consumption Expenditure

GFCE: Government Final Consumption Expenditure

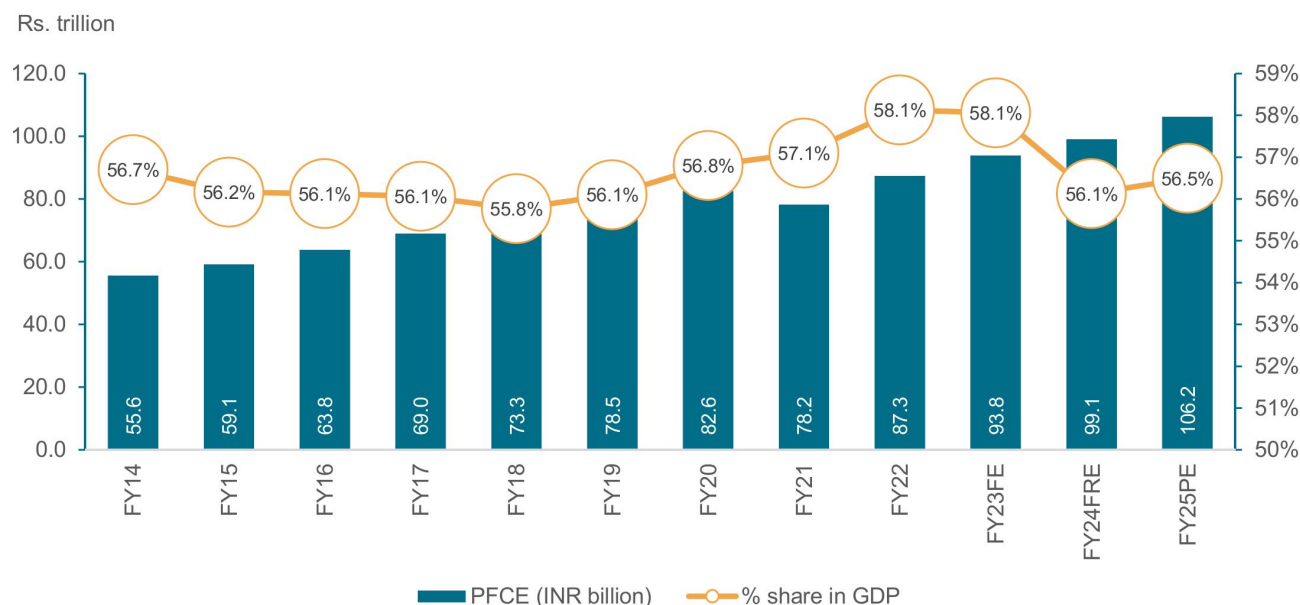
GFCF: Gross Fixed Capital Formation

Others include change in stocks (CIS), valuables and discrepancies

Source: MoSPI, Crisil Intelligence

The growth of PFCE in India was led by a healthy monsoon, wage revisions due to the implementation of the Seventh Central Pay Commission's (CPC) recommendations (effective from 1 July 2017), benign interest rates, growing middle-age population and low inflation. Furthermore, the tax benefits announced in the Union Budget 2025-2026 are also expected to positively boost the PFCE. Overall, PFCE has consistently led India's GDP growth from the demand side, underscoring sustained domestic consumption.

PFCE at constant prices



Note: FE: Final Estimates; FRE: First Revised Estimates; PE: Provisional Estimates;

Source: Provisional Estimates of GDP for 2024-25, MoSPI, Crisil Intelligence

Share of industrial GVA stood at 31.0% in FY25

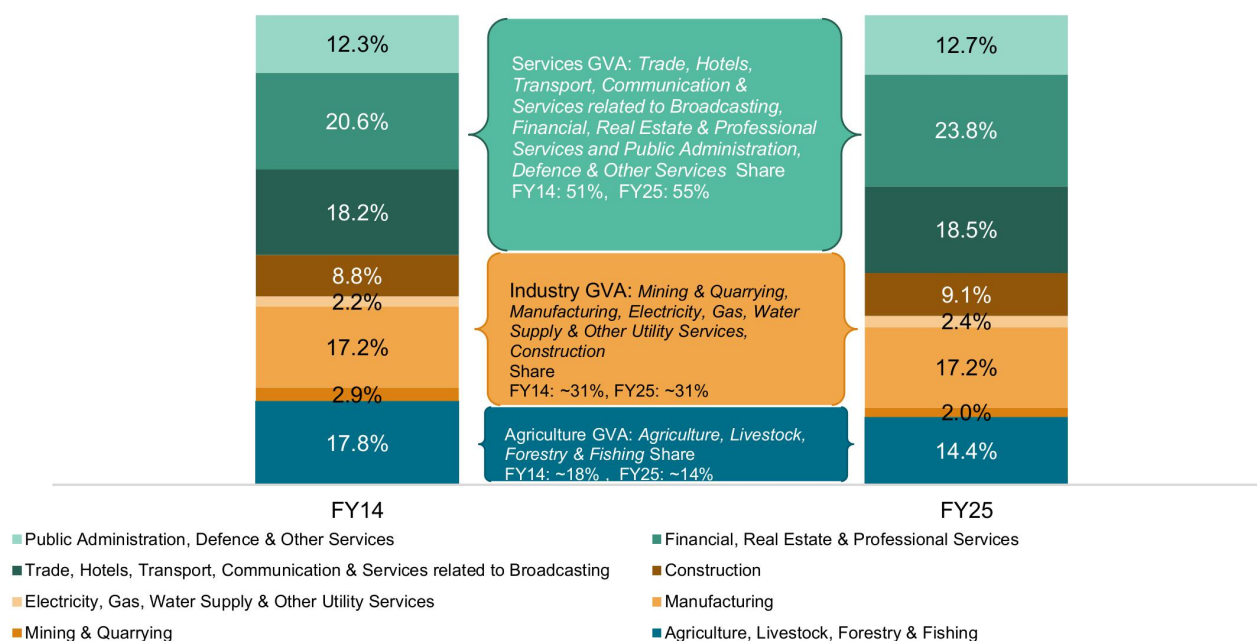
As of fiscal 2025, GVA has reached to INR 171.9 trillion (at constant prices), up from INR 90.6 trillion in fiscal 2014, registering a CAGR of ~6.1% between fiscals 2014-24.

Share of agricultural economy, which includes Agriculture, Livestock, Forestry & Fishing, declined from ~18% in FY14 to ~14% in FY25.

Within the overall GVA, the services sector continues to be a significant contributor to India's growth, having clocked 6.7% CAGR between fiscals 2014 and 2025. During this period, the service sector's contribution to gross value added (GVA) expanded to 55% in fiscal 2025 from 51% in fiscal 2014, underscoring its growing significance. In absolute terms, the service sector GVA stood at Rs 94.4 trillion in fiscal 2025, compared with Rs 46.3 trillion in fiscal 2014.

Services is followed by the industry sector, which had an ~31% share in fiscal 2025. The share of the agricultural economy, which includes agriculture, livestock, forestry and fishing, declined to ~14% in fiscal 2025 from ~18% in fiscal 2014.

GVA Breakup (FY14 and FY25)



Note: Service sector includes trade, hotels, transport, communication and services related to broadcasting, financial, real estate and professional services and public administration, defence and other services

Industry sector includes mining and quarrying, manufacturing, electricity, gas, water supply and other utility services

Source: MoSPI, Crisil Intelligence

1.2 Demographic factors support India's growth

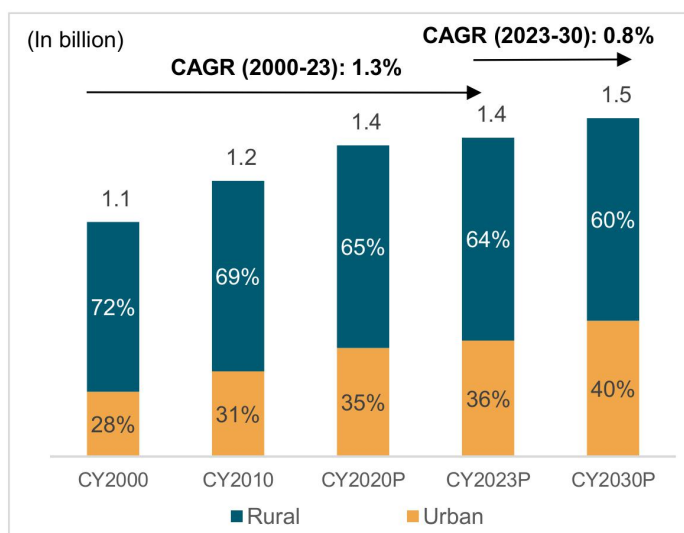
India is the largest economy in terms of population

India's population is estimated to have grown to ~1.4 billion in CY2023, according to World Population Prospects 2024, compared with 1.1 billion in CY2000, clocking an ~1.3% CAGR.

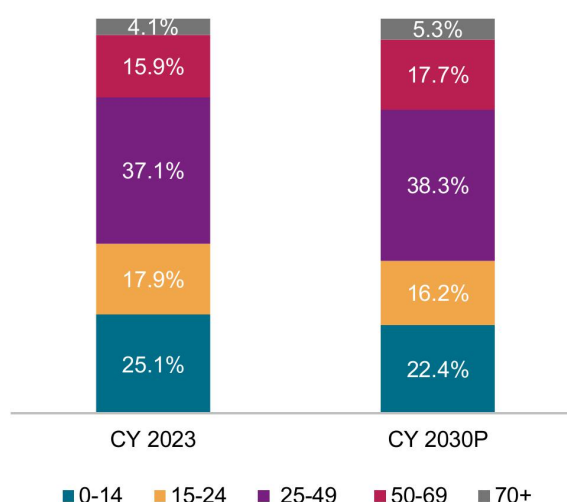
India's urban population has also been increasing over the years. The trend is expected to continue as economic growth increases. The country's urban population is projected to reach nearly 40% of the total population by CY2030 from ~36% in CY2023, according to a UN report on urbanisation, as people from rural areas move to cities for better job opportunities, education and quality of life.

Furthermore, the proportion of population aged 25-49 years as a percentage of total population stood at ~37% in CY2023 and is projected to increase to ~38% in CY2030, indicating a potential for increased consumer expenditure through better earning potential, stability and disposable incomes.

India's population trajectory



Indian population by age group



Note: P: Projected

Source: World Urbanization Prospects: The 2018 Revision United Nations Department of Economic and Social Affairs, World Population Prospects 2024, Crisil Intelligence

Per capita net national income of India improved further in FY25

India's per capita income, a broad indicator of living standards, rose from Rs 68,572 in FY14 to Rs 114,710 in FY25. Growth was led by better job opportunities, propped up by overall GDP growth. Moreover, population growth remained stable at ~1% CAGR.

Per capita income (Rs) India

	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23FE	FY24FRE	FY25PE
Per capita NNI (Rs)	68,572	72,805	77,659	83,003	87,586	92,133	94,420	86,034	94,054	100,163	108,786	114,710
Y-o-y growth (%)	4.6%	6.2%	6.7%	6.9%	5.5%	5.2%	2.5%	-8.9%	9.3%	6.5%	8.6%	5.4%

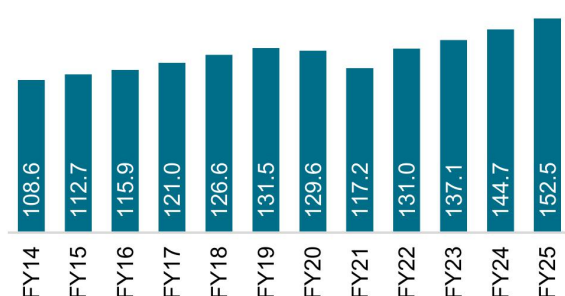
Note: FE: Final Estimates; FRE: First Revised Estimates; PE: Provisional Estimates;

Source: MoSPI, Crisil Intelligence

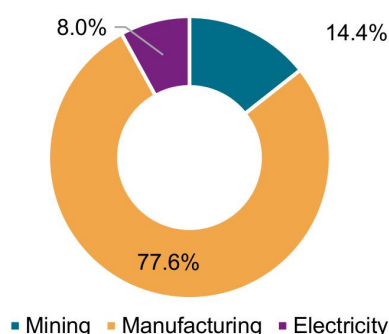
Manufacturing IIP increased to 152.5 in FY25

The Index of Industrial Production (IIP) for manufacturing rose to 152.5 in FY25 from 108.6 in FY14. The manufacturing sector is a significant contributor to the country's overall industrial growth, with 78% weightage in the overall IIP as of FY25. Even though manufacturing IIP declined in FY20 to 129.6 and to 117.2 in FY21 owing to the pandemic, it recovered to 131.0 in FY22 on the back of the easing of Covid-19 related restrictions, government stimulus measures, rising consumer demand and efforts to revitalise the manufacturing sector. Consequently, in FY25, manufacturing IIP stood at 152.5.

Manufacturing IIP (FY14 to FY25)



Weight of manufacturing in IIP (FY25)



Source: MoSPI, Crisil Intelligence

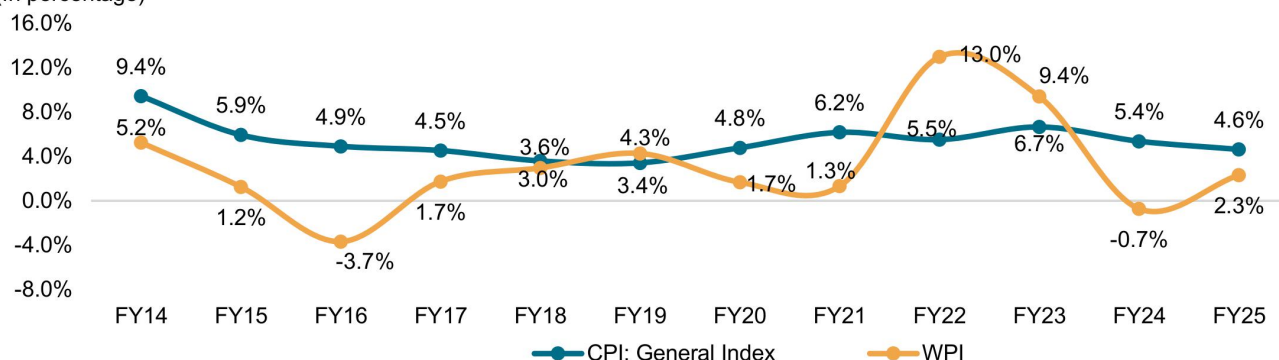
CPI inflation further eased in FY25, WPI inflation stood at 2.3% in FY25

Consumer price index (CPI)-based inflation stood at 4.6% in FY25, compared with 5.4% in FY24, which was within the Reserve Bank of India's (RBI) upper tolerance limit of 6%. For FY25, CPI food inflation stood at 7.3%, above the core CPI index (excludes food, fuel and light) of ~3.5%. Crisil estimates that CPI inflation will further moderate to 4.3% in FY26. Crisil also expects non-food inflation to remain comfortable, supported by softness in consumer demand, a pass-through of the previous year's oil price decline to domestic fuel (petrol and liquefied petroleum gas) consumers and benign crude prices in the base case.

India's wholesale price index (WPI), stood at 2.3% in FY25 compared to -0.7% in FY24, on account of high food related inflation.

Inflation (year-on-year %)

(In percentage)



Note: WPI data is as per the 2011-12 base

Source: Ministry of Commerce and Industry, Crisil Intelligence

1.3 Steel consumption in India

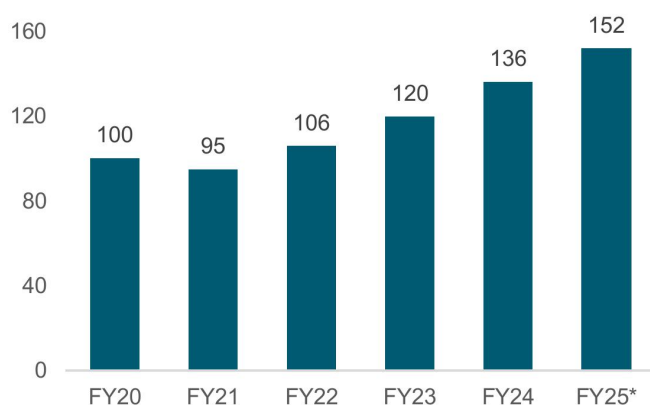
Finished steel consumption grew from 91 million tonne (MT) in fiscal 2018 to 152 MT in fiscal 2025 owing to robust demand from allied sectors and the government's capital spending drive. However, demand had declined in fiscal 2021 to 95 MT from 100 MT in fiscal 2020 following the onset of the pandemic.

The government's initiatives, such as Make in India, Smart Cities Mission, Production Linked Incentive (PLI) and Pradhan Mantri Awas Yojana, have supported steel demand during the period. Additionally, apparent steel use/ capita of India also improved between CY2019-2023 to 103 kg per capita in 2024 compared to 74 kg per capita in 2019.

Finished steel (alloy/stainless + non-alloy) consumption in India

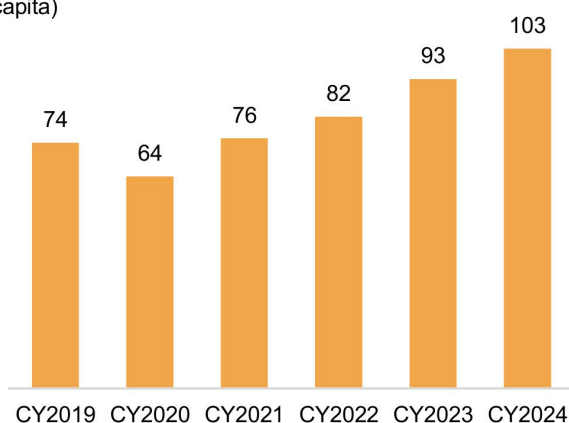
Finished steel (alloy/stainless + non-alloy) consumption

(mn tonne)



Apparent steel use/ capita (kg, finished steel products)

(kg per capita)

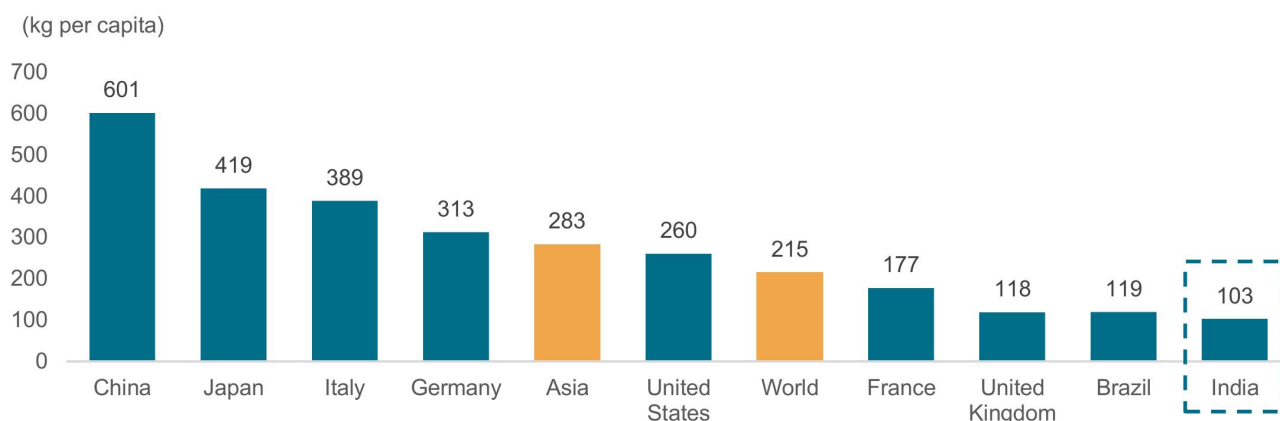


Note :P Provisional*

Source: Ministry of Steel annual report, Joint Plant Committee (JPC), World Steel Association (WSA), Crisil Intelligence

However, India has considerable scope to enhance steel usage across various sectors. As of 2024, the country's annual per capita apparent steel consumption was 103 kg per annum vs. the world's average of 215 kg.

Apparent steel use (kg) per capita in 2024

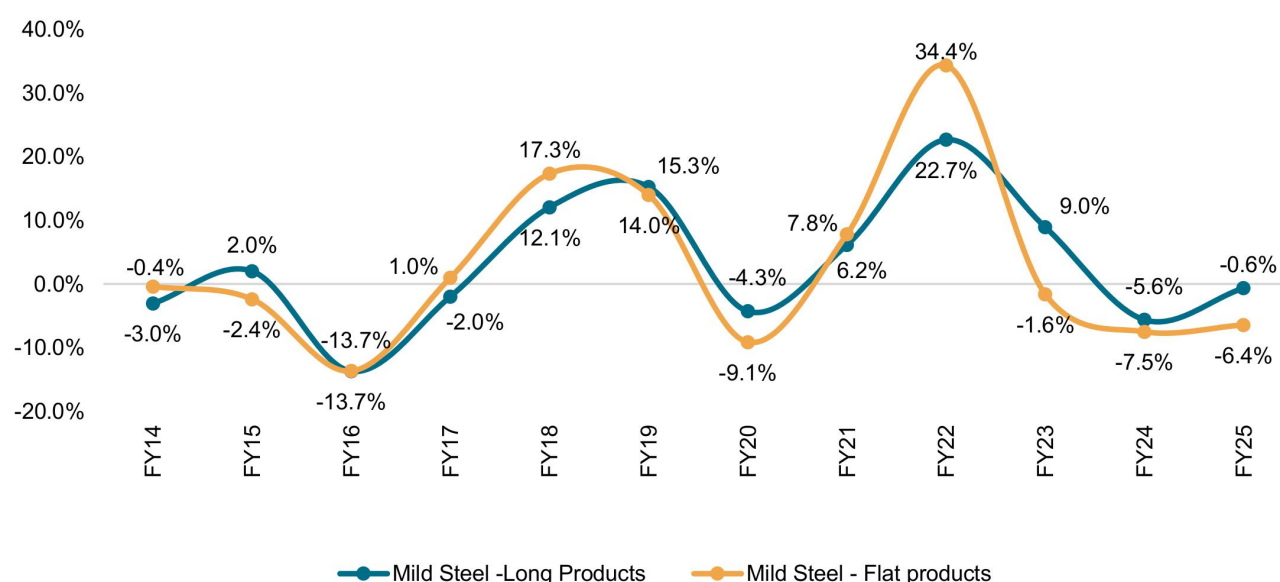


Source: World Steel Association, Crisil Intelligence

Steel inflation cooled down further in fiscal 2025

Factors like muted global demand, geopolitical issues, cheaper imports and better realisations in the domestic market helped in further price correction in Financial Years 2025. This price correction in steel had been a favourable development for suppliers in the pre-engineered building (PEB) sector, given that steel constitutes a significant input cost for PEB construction.

Trend in mild steel prices –long and flat products



Note: Data is as per the 2011-12 base

Source: Office of Economic Advisor, Crisil Intelligence

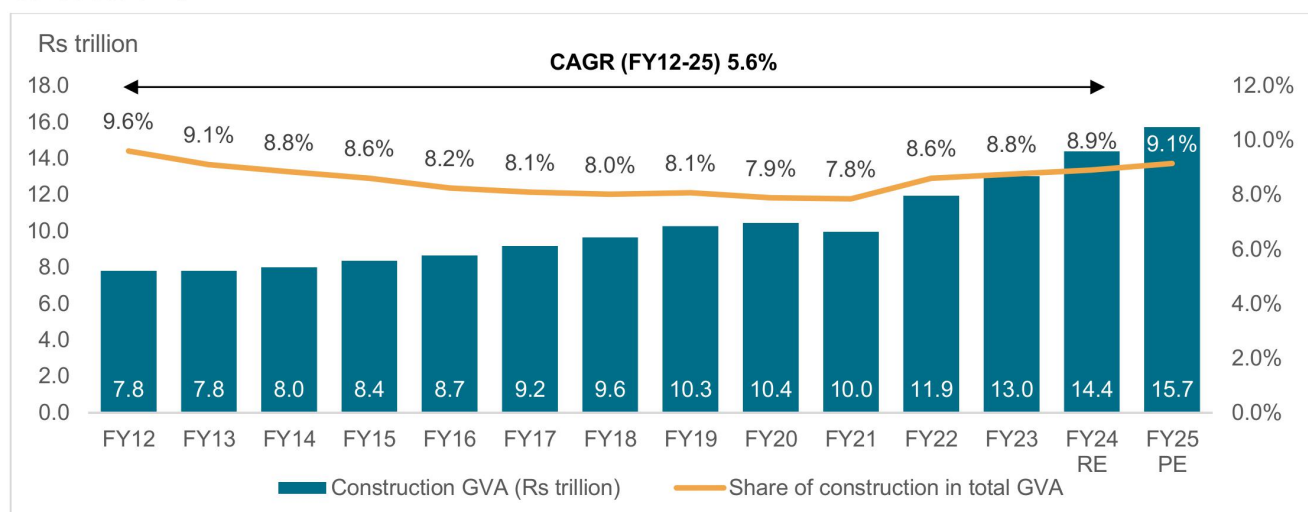
2 Assessment of construction capex in India

2.1 Construction sector in India

Construction GVA is a critical indicator of economic activity since it represents the value generated by the construction sector, which includes activities related to building infrastructure, real estate and other construction projects.

In India, construction GVA increased to Rs 15.7 trillion in fiscal 2025PE from Rs 7.8 trillion in fiscal 2012, which was 5.6% CAGR. Several factors contributed to the growth, including economic expansion, the government's commitment to infrastructure development, particularly roads, railways and energy projects, and increase in foreign direct investment, which boosted private sector investment. Furthermore, increasing demand for affordable housing, driven by rising urbanisation and an expanding middle-class population, has also played a significant role in elevating construction GVA. However, in fiscal 2021, the country's GVA was under pressure amid challenges heaped by the pandemic. In fiscal 2022, though, the share of construction GVA in the overall GVA rebounded to 8.6%, increasing further to 8.8% in fiscal 2023. As per the revised estimates for fiscal 2024, construction GVA was Rs 14.4 trillion, thereby contributing to 8.9% in overall GVA.

Construction GVA



RE – revised estimate, PE – provisional estimates

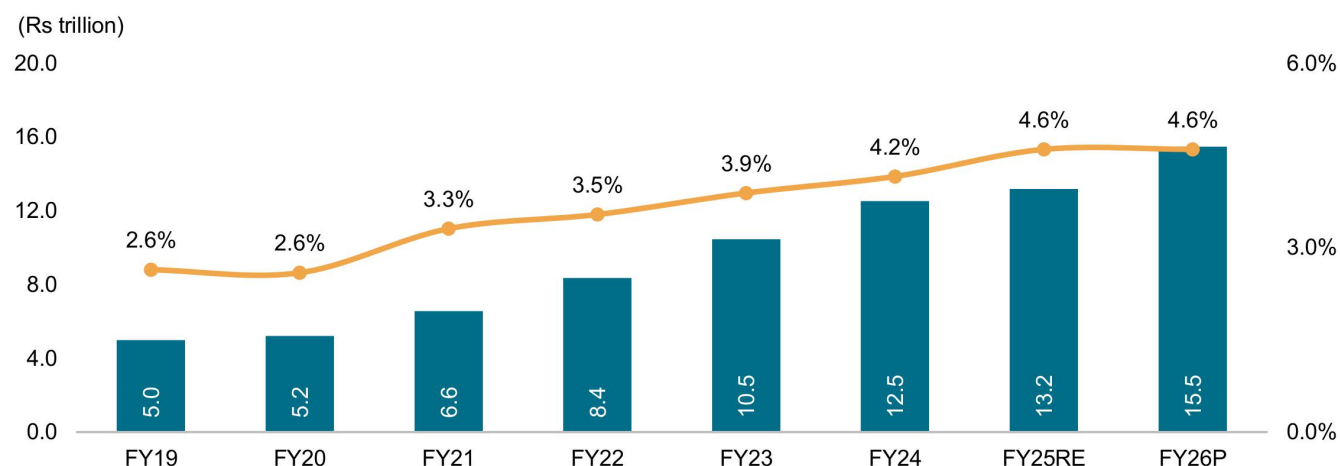
Source: MoSPI, Crisil Intelligence

Effective government capex to GDP ratio improved to 4.6% in FY25

Capex for FY26 is budgeted at Rs 11.2 trillion, up 10% from Rs 10.2 trillion in fiscal 2025RE, i.e. the government has maintained its capex support at 3.1 % of the GDP, same as FY25. At the same time, grants-in aid (GIA) for creation of capital assets are budgeted to increase to Rs 4.3 trillion from Rs 3.9 trillion in fiscal 2025RE, i.e. 42.4%. This means the effective capital expenditure through the budget rises to Rs 15.5 trillion from Rs 13.2 trillion, i.e. 17.4%.

Hence, the central government has continued to maintain its focus on capital expenditure, whose share in the total expenditure mix is budgeted to rise further this fiscal.

Effective capex as a percentage to GDP



Note:

RE: Revised estimates, PA: Provisional estimates, BE: Budgeted estimates

For FY21 Grants for creations of capital assets also includes allocations under Demand driven/entitlement-based scheme MGNREGS, which would vary based on demand.

FY26 numbers based on budgeted estimates and Crisil GDP forecast of 6.5%

Source: Budget documents, MoSPI, Crisil Intelligence

India's gross fixed capital formation as % of GDP to have further improved in FY25

Gross fixed capital formation (GFCF) the indicator for fixed investments done by both government and private sector, has seen a rise from Rs 31.9 trillion in FY14 to Rs 63.3 trillion in FY25 (as per provisional estimates) growing at a CAGR of 6.4%.

In FY25, GFCF as % of India's GDP increased to 33.7% compared to 33.5% of GDP in FY24 due to factors such as the government's focus on infrastructure development, private investments, etc.

Overview of GFCF and share in GDP – at constant prices

	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23FE	FY24FRE	FY25PE	CAGR FY14-FY24
GFCF (Rs trillion)	31.9	32.8	34.9	37.9	40.8	45.4	45.9	42.7	50.1	54.4	59.2	63.3	6.4%
Share of GFCF in GDP	32.6%	31.1%	30.7%	30.8%	31.1%	32.4%	31.6%	31.2%	33.4%	33.6%	33.5%	33.7%	-

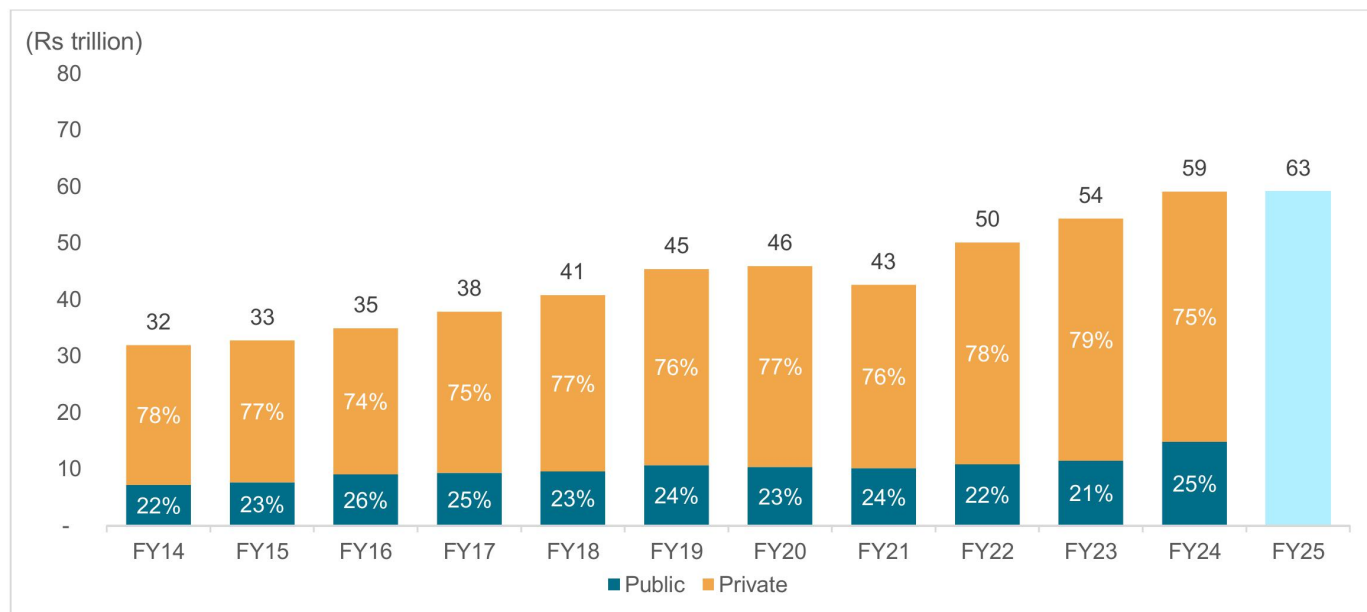
RE: Revised estimates, PE: Provisional estimates

Source: MoSPI, Crisil Intelligence

Private sector is a major contributor to GFCF, share of government contribution improved in FY24

The distribution of GFCF between the private and public sectors has been relatively constant in India, with the private sector consistently the predominant contributor. In FY24, the private sector accounted for 75% of total GFCF.

Share of public and private sectors in GFCF



RE – revised estimate, PE – provisional estimate

Note: Private fixed capital formation includes household sector

Source: MoSPI, Crisil Intelligence

Inflation of key construction materials cooled down in FY25

In FY25, inflation of key construction materials including manufacturing of cements, lime and plasters, refractory products, paints, varnish, etc moderated with manufacturing of mild steels (long and flat products), cement, lime and plaster; paints and varnishes, registering negative WPI inflation,

WPI index of key construction raw materials

Key construction raw materials	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25
Manufacture of cement, lime and plaster	-1.3%	4.2%	-0.9%	0.6%	2.9%	0.4%	4.5%	1.2%	4.5%	8.5%	0.1%	-5.0%
Manufacture of refractory products	3.1%	2.9%	3.8%	-2.8%	-2.6%	-1.9%	-2.2%	0.7%	5.6%	2.9%	0.6%	1.6%
Manufacture of paints	3.6%	2.2%	-1.7%	-1.1%	-0.3%	3.5%	1.3%	0.3%	14.1%	11.9%	0.0%	-3.7%
Manufacture of varnishes (all types)	5.8%	5.0%	5.6%	1.1%	-0.6%	5.8%	1.7%	-2.6%	7.5%	10.2%	-2.8%	-1.6%
Porcelain sanitary ware	4.3%	6.5%	-14.9%	-8.0%	-0.3%	4.3%	4.9%	6.3%	9.1%	13.4%	-8.4%	0.4%
Electric insulating material	-1.9%	4.9%	1.8%	1.0%	0.4%	-0.1%	1.1%	-4.8%	1.6%	3.4%	2.0%	1.1%
Mild steel- long and flat products	-1.7%	-0.2%	-13.7%	-0.5%	14.8%	14.6%	-6.8%	7.0%	28.7%	3.3%	-6.6%	-3.5%
Overall WPI inflation	5.2%	1.2%	-3.7%	1.7%	3.0%	4.3%	1.7%	1.3%	13.0%	9.4%	-0.7%	2.3%

Note: Inflation below zero is highlighted in green

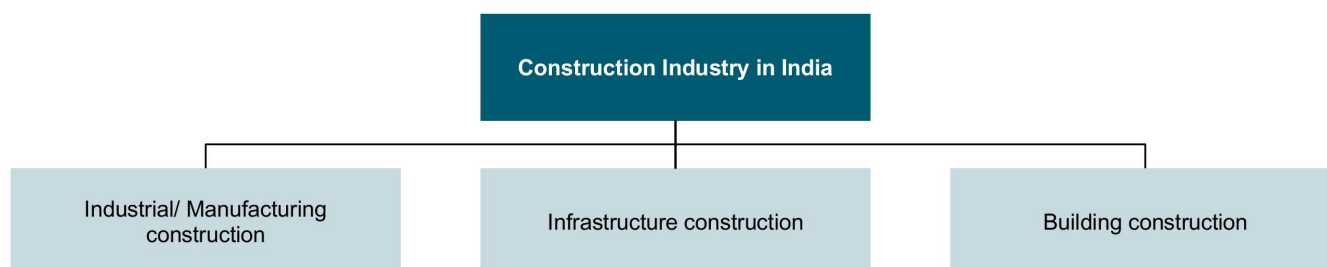
Source: Office of Economic Advisor, Crisil Intelligence

2.2 Overview of investments in construction sector

The construction sector in India can be broadly classified into Building Construction, Industrial/ Manufacturing construction, and Infrastructure construction.

Industrial/manufacturing construction includes manufacturing plants, factories, power plants, and other highly specialised facilities. Infrastructure construction includes warehouses, bridges, dams, roads, airports, canals, etc. and building construction includes constructing buildings for residential uses such as houses, residential towers, etc. as well as non-commercial buildings like hospitals, educational institutions as well as buildings for commercial use such as offices, retail malls, etc.

The further classification of these verticals into conventional and unconventional construction methods has been discussed in the latter section of the report.



Source: Crisil Intelligence

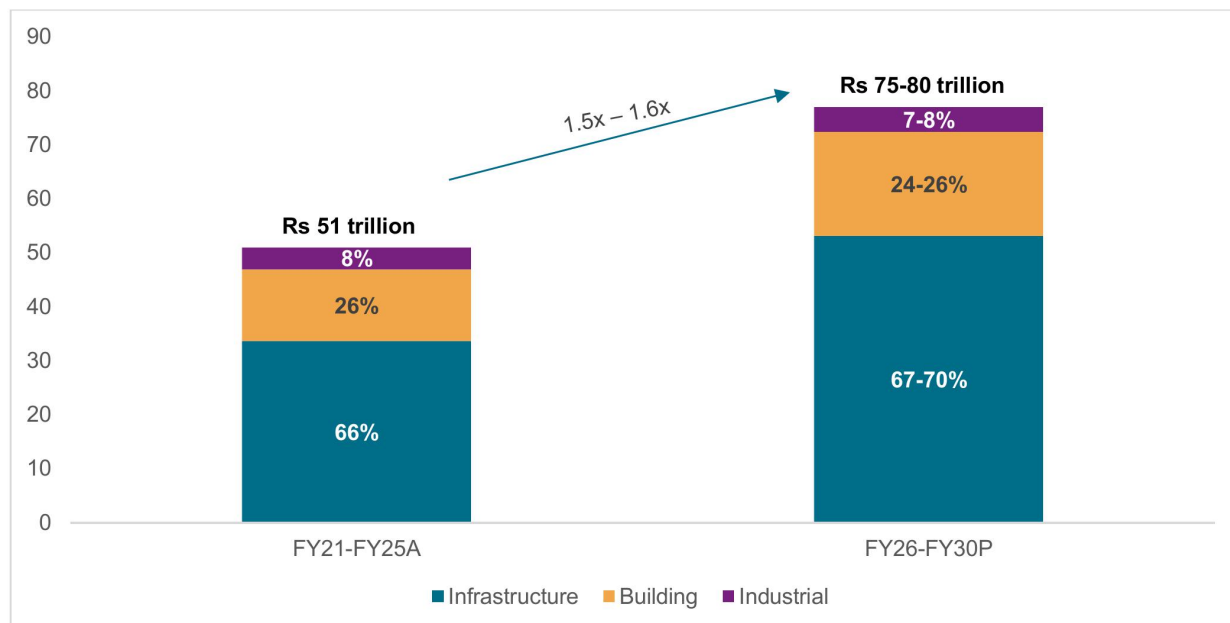
Investments in construction sector

Capital expenditure in construction rose 7% on-year to Rs 12.7 trillion in fiscal 2025, led by the infrastructure segment. This rise is in keeping with the government's focus on infrastructure, which led to higher capex allocations in the central and state budgets to create the infrastructure outlined in the NIP.

The construction sector is projected to grow at 6-8% in fiscal 2026 and the infrastructure segment is set to have a major contribution to this rise, given the increase in investments by central and state governments, and the pace of roll-out of initiatives such as the NIP, NMP and Gati Shakti. This push from the infrastructure segment is likely to be stay over the medium to long term. Private investments are expected to play a crucial role in sustaining the growth trajectory.

Overall, Crisil estimates cumulative construction investments of ~Rs 51 trillion over fiscals 2021-25 and this is expected to increase to Rs ~75-80 trillion over fiscals 2026-30.

Break-up of the domestic construction sector



Note: A - Actual, P – Projected

The numbers represent cumulative investments for the specific period

Source: Crisil Intelligence

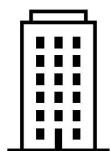
Share of infrastructure segment is estimated to increase further



FY21-25: **Rs 34 trillion**
Projected growth: **1.5x-1.7x**
FY26-30P: **50-55 trillion**

Infrastructure

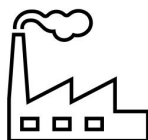
- Infrastructure investments are seen growing faster than the other two sectors due to the government's push through the NIP, NMP and the Gati Shakti initiatives. Construction investments in this sector are expected to be ~Rs 50-55 trillion between fiscals 2026 and 2030, up from Rs 34 trillion between fiscals 2021 and 2025.
- The share of infrastructure projects is expected to stabilise in the ~67-70% range in five years (fiscals 2025-30). The central government's focus on roads, urban infrastructure and railways will boost infrastructure investments. Roads, railways, irrigation and power sectors will continue to drive the bulk of these investments.



FY21-25: **Rs 13 trillion**
Projected growth: **1.4x-1.5x**
FY26-30P: **18-19 trillion**

Building

- Crisil Intelligence estimates the building and construction sector to grow at 4-6% in fiscal 2025. The real estate segment is likely to see a demand slowdown, along with a rise in inventory in key cities. The increase in execution of deferred projects and government schemes such as the PMAY is expected to provide strong support to the sector.
- Over fiscals 2026-30, the sector is expected to rise to Rs 18-19 trillion from Rs 13 trillion in the period between fiscals 2021 and 2025.



FY21-25: Rs **4 trillion**
Projected growth: **1.0x-1.2x**
FY26-30P: **4.0-5.0 trillion**

Industrial

- Construction spends in fiscal 2026 likely to rise 3-4% with help from oil and gas, and metals. Fiscal 2025 had a high base anyway because of deferred investments from fiscals 2021 and 2022, and a rise in capex investments from the PLI scheme.
- Based on an analysis of eight key sectors, Crisil Intelligence estimates construction investment in the industrial sector at Rs 4-5 trillion over fiscals 2026-30, compared with Rs 4 trillion spends in fiscals 2021-25. The rise in investment is projected due to the inclusion of the PLI scheme in the capex investments of the industrial sector. Crisil have only considered 3 capex-intensive sectors in case of PLI scheme, viz., auto and auto components, textiles and specialty steel for inclusion in our estimates.

Note: A - Actual, P – Projected

Infrastructure vertical includes warehouse

Building construction includes residential, commercial and non-commercial verticals

Source: Crisil Intelligence

Warehouses

Warehouses refer to storage facilities where the goods are stored until they are dispatched to the customers/end-user. The time lag between production and consumption of goods necessitates to have warehouses for temporary storage of goods. For instance, certain goods are produced only during a particular season but consumed throughout the year. Similarly, certain goods are produced throughout the year but demanded only during a particular season. Thus, warehouses play an important role in maintaining the quality of the product and minimize wide fluctuations in the price of goods.

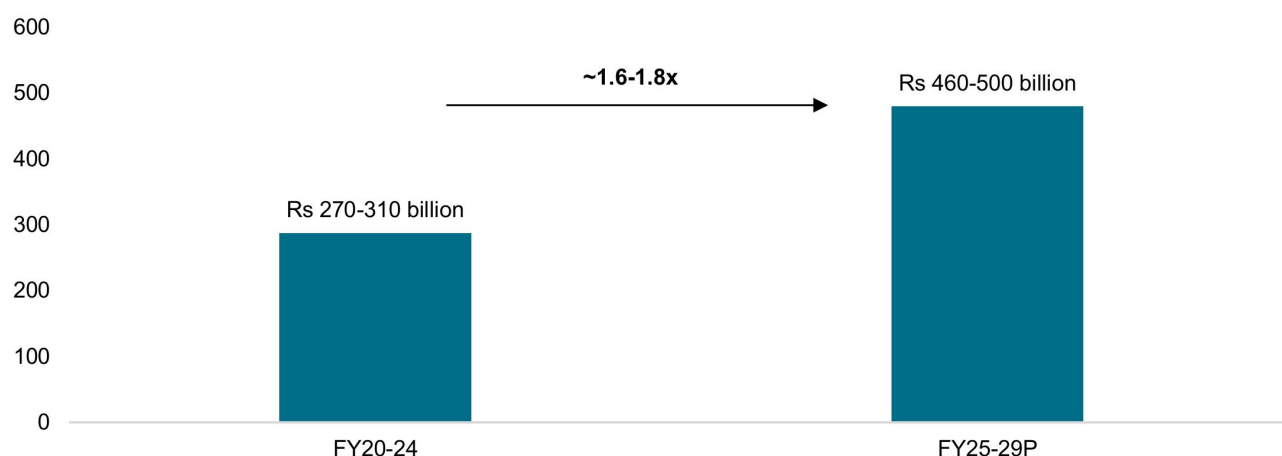
Additionally, value-added activities such as packaging, sorting, grading, kitting, bar coding, reverse logistics etc. can be carried out at the warehouse. Modern warehouses equipped with latest IT systems can also track inventory, order management, product data management, storage management etc.

Construction spends in warehouse segment to increase between FY25-29

Crisil projects construction investments in the warehousing (agricultural and industrial) and cold-storage (single- and multi-commodity) sectors to rise to Rs 460-500 billion over the FY25-29 on expectations of increased demand. Industrial warehousing is likely to account for 85-90% of total investments. Investments in the sector of multipurpose cold storages are expected to rise due to their faster return on investment compared to single-commodity storages. The multipurpose facilities offer the advantage of accommodating various types of perishable goods simultaneously, ensuring a better capacity utilization, thereby making it a more economically viable option.

Over the medium- long term, the annual demand for Grade A & Grade B warehouses in top 8 Indian cities is expected to grow at a CAGR of 10-15% between fiscals 2026 and 2029.

Construction investments warehousing and cold storage



Note: The numbers in the above chart represents cumulative investments for the specific period

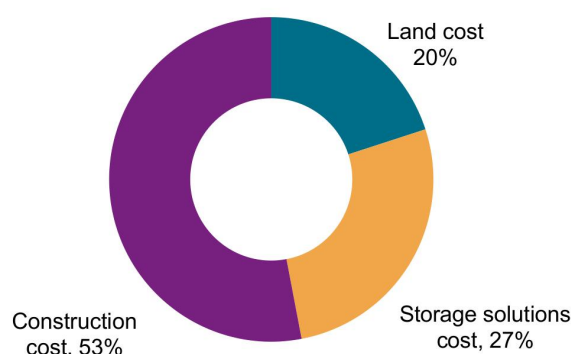
Source: Crisil Intelligence

Overall, pursuant to the change of the indirect tax regime, there is a huge demand for warehouses. Additionally, the entry of several retail giants in India and increased penetration of e-commerce players is expected to lead the demand for Grade A warehousing infrastructure and upgradation of old-style warehousing into Grade A modern warehousing in India, which would contribute to the demand of pre-engineered steel structures.

Furthermore, Crisil Intelligence also expects the warehousing industry to evolve structurally over the long term – led by automation and investment in technology and reduced dependence on labour. Most end-user industries are also expected to automate their supply chains and warehouse management services.

Warehousing project cost

Warehouse cost breakup



The warehousing project cost comprises of land, construction, and storage solution costs. Land cost, which comprises the share of 27% in the overall cost, differs significantly from one location to another on account of the demand-supply scenario, infrastructure quality and connectivity via different modes of transport in a particular location.

Whereas, construction cost, which accounts for the highest share of more than 50%, is relatively similar across locations.

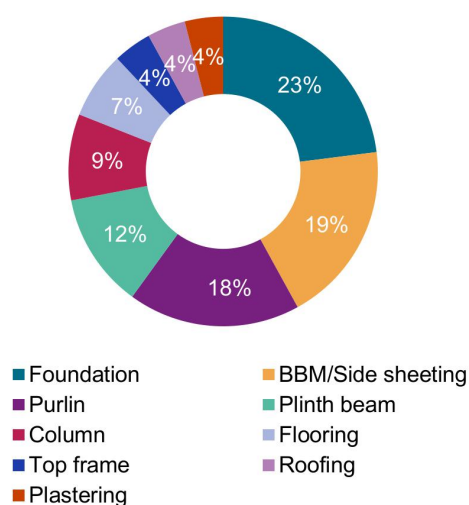
Source: Industry interaction, Crisil Intelligence

Within construction costs, the cost of setting up a warehouse depends largely on the type of warehouse, i.e., pre-engineered building (PEB) or reinforced cement concrete (RCC) structure. The primary difference is the construction of roof which includes roofing and top frame cost. In RCC, cement as well as steel rods are used in conventional buildings,

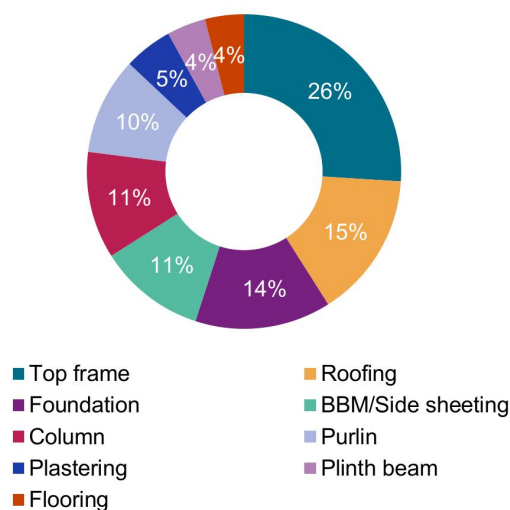
whereas steel structures are used in PEB, which gives them higher clear height, larger clear span and faster construction timelines. Considering the complete life cycle of a warehouse, PEB is more economical than an RCC building largely on account of extensive usage of steel which requires less maintenance and has scrap value. Also, the longevity of steel roofs is high, and they are not prone to leakages, while RCC roofs require significant labour and time for execution.

Construction cost components breakup

PEB cost breakup



RCC cost breakup



Source: Industry interaction, Crisil Intelligence

3PL segment to be the largest driver of industrial warehousing demand in FY25

Robust demand is anticipated from third-party logistics (3PL) providers, particularly in sectors such as electronics, white goods, retail, and fast-moving consumer goods (FMCG). These sectors are leveraging 3PL services to optimise inventory management and reduce costs. Overall, the annual demand in warehousing, driven by e-commerce, and 3PL end-use sectors, is expected to contribute significantly, accounting for 55-60% of the overall demand.

PEB warehouses along with hub and spoke model gained prominence post GST implementation

The warehousing industry in India is fragmented with unorganised players occupying a majority share in volume terms. They have smaller reinforced cement concrete (RCC) warehouses with small shelves, build small warehouses and have an asset heavy strategy. Typically, they do not provide value-added services such as packaging, labelling, inventory management, etc.

In the pre-GST scenario, players used to prefer setting up warehouses in every state to save on inter-state taxes.

But in the past 4-5 years, the industry has started gaining traction due to implementation of GST; many large players have started investing in huge, modernised warehouses which are PEB structures. This was on account of end-user industries moving towards a hub-and-spoke model as the need to establish warehouses in each states diminished. Larger PEB warehouses of 100,000-200,000 sq. ft are being set up as hub warehouses and smaller warehouses of 20,000-30,000 sq. ft. which would serve as the key 'spoke' warehouses.

Realignment towards the hub-and-spoke model is expected to result in major business opportunities for organised 3PL players operating large-sized warehouses in key geographies. These players not only provide huge modernised PEB storage but also warehouses equipped with racking and storage solutions, forklifts and reach trucks, and value-added services. The 3PL players also have an asset light model. They take warehouses on lease from warehousing developers which, in turn, acquire the land and construct.

Other smaller hubs are emerging largely due to e-commerce led demand



Source: Crisil Intelligence

Multiple smaller hubs are emerging largely due to increased demand from end use segments like ecommerce. Additionally, increased consumption from non-metro cities, demand for same day delivery, as well as lower land and operational costs in non-metro cities are serving as major growth drivers for the smaller hubs.

2.3 Major government initiatives to boost the construction industry

Key Government of India's initiatives, such as, 'AatmaNirbhar Bharat', PLI scheme, Bharatmala Pariyojana, Sagarmala, Make in India, PMAY-G and PMAY-U are expected to drive growth of the construction industry in India.

PLI scheme

The PLI scheme was introduced by the Indian government to boost domestic manufacturing, attract investments, and enhance exports by offering incentives. With an outlay of Rs 1.97 trillion (over US\$24 billion), the PLI Schemes focus on 14 critical sectors to enhance the country's manufacturing prowess, foster technological advancements, and elevate India's position in global markets. These sectors are aligned with the government's goal of strengthening domestic production and expanding exports, contributing to the broader vision of Atmanirbhar Bharat.

The purpose of the PLI Schemes is to attract investments in key sectors and cutting-edge technology; ensure efficiency and bring economies of size and scale in the manufacturing sector and make Indian companies and manufacturers globally competitive. These schemes have the potential of significantly boosting production, increase manufacturing activities and contribute to economic growth over the next five years or so. The scheme has witnessed investments worth

Rs 1.8 trillion, which has generated production/sales of over Rs 16.5 trillion and employment of over 1.2 million till March 2025. Cumulative incentive amount of Rs 215.3 billion has been disbursed under PLI Schemes.

PM Gati Shakti

The PM Gati Shakti National Master Plan (NMP), launched in 2021, is designed to bring together various Ministries, including Railways and Roadways, to ensure integrated planning and coordinated execution of infrastructure projects. The initiative aims to provide seamless and efficient connectivity for the movement of people, goods, and services across various modes of transport, thereby enhancing last-mile connectivity and reducing travel time. This project has onboarded 44 Central Ministries and 36 States/UTs and a total of 1,614 data layers have also been integrated, by October 2024. A milestone of assessing 208 big-ticket infrastructure projects worth Rs. 15.4 trillion, of various Ministries adhering to PM Gati Shakti principles has been achieved.

Bharatmala Pariyojana

Launched in 2017, the Bharatmala Pariyojana envisages development of about 26,000 km length of Economic Corridors, which along with Golden Quadrilateral (GQ) and North-South and East-West (NS-EW) Corridors are expected to carry majority of the freight traffic on roads. It also envisages development of ring roads / bypasses and elevated corridors to decongest the traffic passing through cities and enhance logistic efficiency. A total of 18,926 km of roads have been completed under project by November 2024.

Further network of 35 Multimodal Logistics Parks is planned to be developed as part of Bharatmala Pariyojana, with a total investment of about Rs. 460 billion, which once operational, shall be able to handle around 700 million metric tonnes of cargo.

Pradhan Mantri Gram Sadak Yojana

The Pradhan Mantri Gram Sadak Yojana (PMGSY) was launched by the Government of India, in 2000, to provide connectivity to unconnected habitations as part of a poverty reduction strategy.

A total of 69,666.09 km of road length has been constructed under various ongoing interventions/verticals of Pradhan Mantri Gram Sadak Yojana (PMGSY) across the country from 2022 to February 2025. The Government has approved phase IV of PMGSY on 11th September 2024 to provide all-weather road connectivity to 25,000 unconnected habitations of population size 500+ in plains, 250+ in NE & Hill States/UTs, special category areas (Tribal Schedule V, Aspirational Districts/Blocks, Desert areas) and 100+ in LWE affected areas (notified by MHA in 9 States), as per Census 2011. A total of 62,500 km of road length is proposed to be constructed at a cost of Rs 701 billion during the period from 2024-25 to 2028-29.

Under PMGSY-IV, States/UTs are identifying eligible habitations as per the programme guidelines. The Central Government is working closely with the States to facilitate submission of proposals under the programme.

Atmanirbhar Bharat Abhiyan

The Atmanirbhar Bharat Abhiyan, launched by Prime Minister Narendra Modi on May 12, 2020, aims to make the country self-reliant through five pillars: economy, infrastructure, system, vibrant demography, and demand. With a strong emphasis on infrastructure development, including roads, highways, bridges, airports, and urban projects, as well as local manufacturing and production, this initiative is expected to drive demand for infrastructure construction, such as roads and highways, and facilitate growth of allied industries like cement and metals. In alignment with this mission, the Union Budget 2025-26 has introduced measures to further boost infrastructure development, including categorizing hotels at 50 tourist destinations as infrastructure projects to enhance tourism and create jobs in the hospitality sector. Additionally, the

budget has granted infrastructure status to the shipbuilding sector, promoting the growth of domestic large ship construction, thereby fostering the overall growth of the country's infrastructure and allied industries.

Urban infra projects: WSS and Metro projects

Government schemes focused on urban infra such as AMRUT, Smart Cities Mission and the implementation of Metro projects are set to drive significant growth in the construction sector.

In May 2015, the Jawaharlal Nehru National Urban Renewal Mission (JNNURM) was succeeded by the Atal Mission for Rejuvenation and Urban Transformation (AMRUT) to prioritise essential infrastructure services, including water supply, sewerage (sewage system), stormwater drains, transportation, and the development of green spaces and parks in urban areas.

Under AMRUT, the Centre is assisting states based on project cost and population of the cities and towns. The financial aid is released in three instalments in the 20:40:40 ratio, based on achievement of milestones indicated in the State Annual Action Plan.

The scheme also covers JNNURM projects sanctioned between 2005 and 2012 and those that have achieved 50% physical progress (102 projects) or have availed of 50% central government funding up to the initiation of project (296 projects). The budgetary outlay for AMRUT in FY24 is Rs 80 billion while revised estimates for FY23 is Rs. 73 billion.

Additionally, the government's emphasis on urban infrastructure projects, including the Smart Cities Mission and Metro projects should fuel substantial growth in the construction sector. According to Crisil estimates, Metro projects are the second-highest contributors to urban infrastructure investments at approximately Rs 1.6 trillion in upcoming fiscals. Furthermore, Smart Cities Mission will also boost the construction sector as construction-intensive verticals such as housing, roads, non-residential development, and sewage systems will constitute a considerable portion of total investments.

Sagarmala

Sagarmala is the Central Sector Scheme of the Ministry of Ports, Shipping and Waterways to promote port-led development in the country through harnessing India's 7,500 km long coastline, and 14,500 km of potentially navigable waterways. Under the Sagarmala Scheme, the Ministry provides financial assistance to State/UT Governments for Port infrastructure projects, Coastal berth projects, Road & Rail projects, fish harbours, skill development projects, Coastal community development, cruise terminal and projects such as Ro-Pax ferry services etc.

As per Ministry of Ports, Shipping and Waterways, the Ministry is executing 839 projects worth Rs. 5.8 trillion under the Sagarmala Programme. These include projects being implemented through various funding arrangements including Equity, Internal Resources, Grant in Aid, PPP mode etc. Out of which, 272 projects worth ~Rs. 1.4 trillion have been completed and remaining projects are under various stages of implementation and development.

Further, the government is planning to implement Sagarmala 2.0 with focus on bridging critical infrastructure gaps with fresh investments, driving coastal economic growth, and positioning India as a global maritime leader in line with the Hon'ble Prime Minister Modi's vision for a Viksit and Atmanirbhar Bharat by 2047. Sagarmala 2.0 is an upgrade with a new focus on shipbuilding, repair, breaking, and recycling. Backed by Rs. 0.4 trillion in budgetary support, it aims to catalyse investments worth Rs. 12 trillion over the next decade.

Pradhan Mantri Awas Yojana - Urban (PMAY-U)

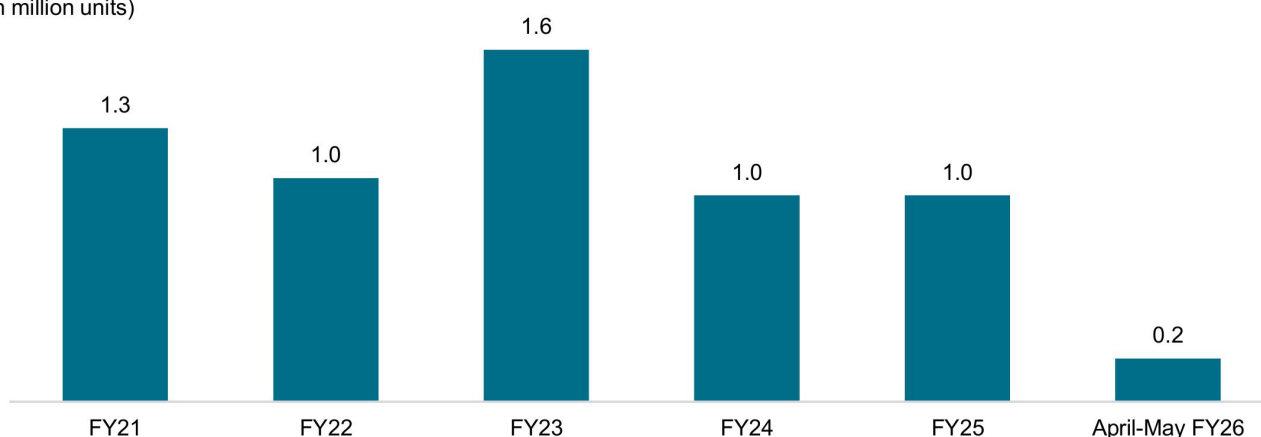
The Pradhan Mantri Awas Yojana-Urban (PMAY-U) is an affordable housing scheme being implemented from 2015 to 2022. It seeks to achieve the 'Housing for All' target by 2022. However, the scheme had been extended further. In FY24,

construction pace moderated with ~1.0 million units built after witnessing the fast-paced execution of ~1.6 million units in FY23.

After moderate pace of execution in fiscal 2024, the pace of construction remained steady in fiscal 2025. As of May 2025, ~9.3 million houses have been constructed, while ~2 million houses are under various stages of construction (completion rate of ~78% of the sanctioned units). The sanctioning under the scheme has remained muted in past few quarters, with around 11.7 million houses sanctioned as of May 2025. However, with under-construction units of ~2 million houses as of March 2025, execution is expected to pick up pace in fiscal 2026, while funding pace remains monitorable. Furthermore, increase in the budgeted capex allocation for the scheme by ~45% in fiscal 2026BE over fiscal 2025RE as well as announcement of construction of ~10 million additional houses to also aid execution.

Trend in PMAY-U construction

(In million units)



Note: PMAY-G data is as of dated May 2025

Source: MoHUA, Crisil Intelligence

Pradhan Mantri Awas Yojana – Gramin (PMAY-G)

To achieve the 'Housing for All by 2022' mission, the government launched a restructured rural housing scheme, namely Pradhan Mantri Awas Yojana-Gramin (PMAY-G), in November 2016, with the target of constructing 29.5 million houses with basic amenities, which has been extended up to 2024. As of August 2025, a total of ~38.5 million units have been sanctioned, of which, 28.3 million have been completed (~74% completion rate). As many as ~10.2 million units are under construction. Additionally, increase in the PMAY-G target by 20 million houses from the previous target of ~30 million houses to contribute to the growth in the coming years.

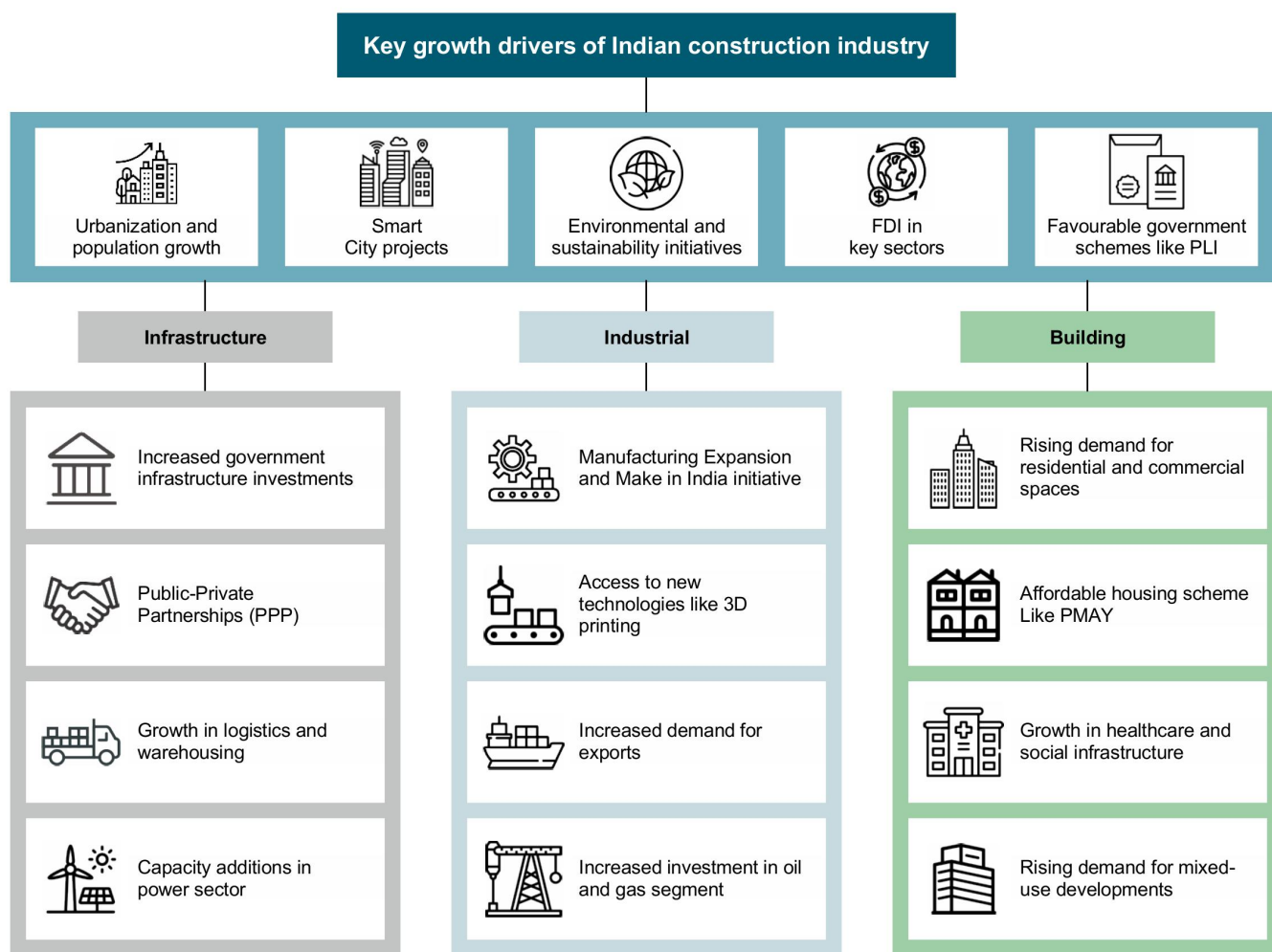
The Union Cabinet approved the proposal of the Department of Rural Development for “Implementation of the Pradhan Mantri Awaas Yojana – Gramin (PMAY-G) during FY 2024-25 to 2028-29” wherein financial assistance is to be provided for the construction of twenty million more houses at existing unit assistance.

Important announcements made during budget FY26 related to construction industry

- The total of the central government's budget is Rs 19.8 trillion for fiscal 2026BE, comprising: (i) Total expenditure through budget (gross budgetary support – GBS), (ii) Resources of public enterprises (internal and extra budgetary resources – IEBR) and (iii) Grants in aid of creation of capital assets (grants in aid – GIA). There is an uptick of 16.4% in the central government's total budget from fiscal 2025RE.

- The budgetary capital expenditure for infrastructure ministries is Rs 10.6 trillion, up 11.6% from fiscal 2025RE.
- The total GBS to infrastructure ministries for fiscal 2026BE has increased a mere 0.9% over fiscal 2025RE.
- The budgeted expenditure by major infrastructure ministries# which receive over 50% of infrastructure allocation, remains similar to fiscal 2025RE.
- Each infrastructure-related ministry will come up with a three-year project pipeline that can be implemented through the public-private partnership (PPP) mode. States are also encouraged to do so.
- To support states in infrastructure development, an outlay of Rs 1.5 trillion is proposed for 50-year interest free loans as capital expenditure and incentives for reforms.
- In the second phase of the asset monetisation plan, the government aims to generate Rs 10 trillion with a pipeline of assets to be monetised between fiscals 2025 and 2030.

2.4 Key growth drivers in Indian construction industry



Source: Crisil Intelligence

2.5 Key challenges in Indian construction industry

Key Challenges	Description
 Time contingency	Cost saving and time performance are usually essential to all parties - owner, contractor, and subcontractor, etc- involved in a construction project. The project may get stalled on account of numerous reasons such as unavailability of land, lack of funds, and proper clearances not in place. Depending on the risk allotment, the burden of increased costs could fall on either the owner or the contractor
 Price risk	Capital investments, especially in the industrial segment, depend on the successful offtake of the planned product in the increased capacity. However, that depends largely on the owner's product-pricing ability. Investments in commodity segments depend on the international commodity prices. For past two years, the prices of oil in the international market have remained subdued. Thus, investments in oil exploration, which used to form a major chunk of investments in the oil and gas sector, have fallen.
 Risks involved in dealing with government agencies	Many of the segments in construction, especially in the infrastructure side, have various government authorities as the counterparty. These could be central, or state government authorities or special purpose vehicles floated by the governments to cater to some needs. Thus, for sectors such as irrigation, where most of the payments come from the state governments, the players must face elongated working capital cycles on account of delays in payments. Additionally, a difference of opinion between the central and state governments, may hold up required clearances, thus stalling the project.
 Regulatory risk	This risk relates to matters such as increased taxes and royalties, revocations or changes to the concession, exchange controls on proceeds, forced government participation in shares, and refusal of import licenses for essential equipment. For example, on account of political instability surrounding the separation of Andhra Pradesh and Telangana, contractors were affected as there were delays in payments and the investments from the state governments floundered.
 Input related risk	Construction industry have exposure to multiple input related risks. For example, the cost of input materials such as bitumen depends upon the international oil market. As bitumen is a major raw material, any change in oil prices affects the overall project cost. The international scenario for other commodities such as steel and cement also affect the industry. Additionally, land is one of the most important inputs for the infrastructure segment. There are various stages involved in land acquisition and the overall process is time consuming. Thus, the status of land acquisition during awarding of the project and within a time period after the project has been awarded is crucial.
 Fragmented industry	The construction industry is highly fragmented as low fixed capital requirement for construction contracts remove entry barriers. Capital expenditure is only required for procuring necessary equipment, unlike a manufacturing business, which requires heavy capex requirements such plants and machinery for production. These low entry barriers lead to a competitive environment where numerous players bid for same projects.
 Possibility of payment delays	Construction projects are mainly funded and managed by the owner. Apart from the initial advance, contractors receive payments after each project milestone is completed. However, timely payments also depend on the owner's credit profile and the nature of the project. Most projects, especially infrastructure, have a gestation period of 2-3 years. Any delay in payment can push up receivables. Such a scenario makes the construction industry working capital intensive.

Source: Crisil Intelligence

3 Assessment of the pre-engineered steel construction industry

3.1 Prefabricated buildings

Overview of prefabricated buildings

Prefabricated structures, commonly referred to as prefab buildings, involves the use of pre-manufactured elements in the overall construction. These elements are designed in a controlled factory environment, ensuring high quality and precision, before being transported to the construction site where they are assembled to form a complete and functional structure. This unconventional method of building is gaining acceptance due to its numerous benefits and versatility across various sectors.

The process of prefabrication begins with the design and engineering of individual components, which can include walls, floors, roofs, and even entire modules. These components are produced in a factory setting, where conditions can be optimized for efficiency and quality control, which in turn minimizes the chance of delays due to external reasons. Once all the components/ module/ structure are ready, it is shipped to the designated site, where skilled workers assemble it into the final structure.

Prefab buildings are getting utilized across a wide range of sectors, including residential, commercial, and industrial segments. These homes can be customized to meet individual preferences and are often built in lesser time frame than traditional homes. Prefab buildings are being used for offices, retail spaces, hospitals and educational facilities, providing businesses with flexible and cost-effective solutions that can be rapidly deployed. The industrial sector also benefits from prefabrication, with structures such as warehouses and manufacturing facilities being constructed more efficiently.

Key offerings under prefabricated construction

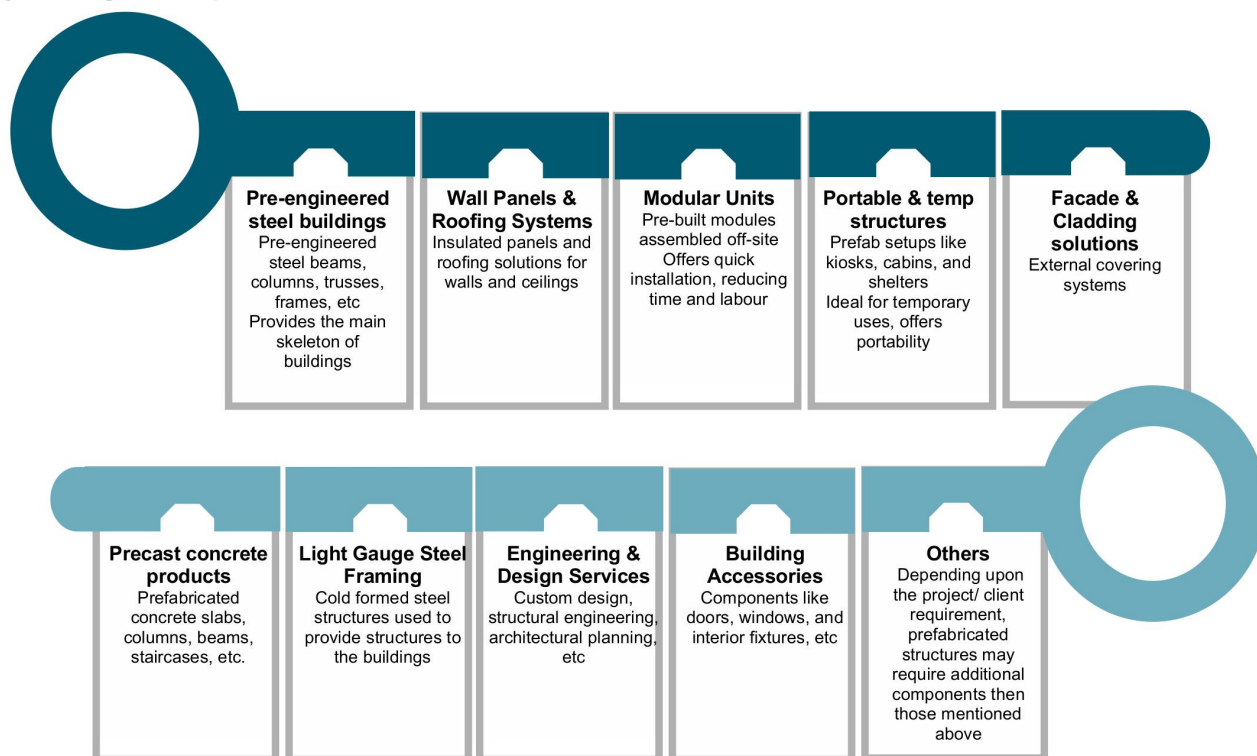
The prefabricated building sector has witnessed expansion in recent years, driven by a confluence of factors that underscore the growing demand for swift, economical, and environmentally friendly construction methods. Prefabricated building industry encompasses a diverse range of products and techniques, including modular constructions, steel frameworks, and pre-assembled elements, all of which contribute to a transformative approach to building.

Additionally, various type of raw materials is utilized for these prefabricated constructions including metals, concrete, glass, wood, etc. depending on the overall structural requirements and the aesthetics considerations of the project.

For example, prefabricated modular constructions are usually made of metal, concrete, etc and involve the off-site fabrication of building sections. These structures are gaining popularity for their ability to streamline the construction process. These structures can be designed to meet various architectural styles and functional requirements, allowing for customization while still benefiting from the efficiencies of prefabrication. The use of modular units not only reduces the time required for construction but also minimizes disruptions to the surrounding environment, making it an attractive option for urban development. Similarly, in the realm of infrastructure and industrial constructions, metals like steel are gaining acceptance due to their structural properties and recycle nature.

Additionally, the environmental benefits of prefabricated construction are also driving their adoption. The reduction in waste generated during the construction process, coupled with the potential for using sustainable materials like steel, aligns with the growing emphasis on green building practices.

Key offerings under prefabricated structures



Source: Crisil Intelligence

Key applications of prefabricated buildings

Prefabricated industry offers multiple offerings for residential, infrastructure and industrial segments. Some of the structural key products include modular homes, portable cabins, pre-engineered steel buildings, precast, light gauge steel framing (LGSF), insulation materials (sandwich insulated panels), and modular buildings.

Whereas products like modular homes and portable cabins finds use cases in residential and commercial building, products like PEBs, LGSF and sandwich insulated panels are generally used in industrial and infrastructure settings. Besides these primary offerings, prefabricated industry also offers multiple offerings in accessories front, like modular walls doors, windows, Façade & Cladding solutions, etc. More details about key application areas of prefabricated buildings are provided in the below table.

Overview of key application areas



Key application area	Key benefits	Prominent areas of usability
1) Residential Buildings	- Faster construction timeline - Sustainable materials	Affordable housing, urban development, disaster relief
2) Commercial buildings	- Scalability - Reduced on-site labour - Customization options	Office spaces, retail stores, showrooms
3) Educational Institutions	- Speedy setup - More control on quality	Modular school buildings, student hostels, libraries
4) Healthcare Facilities	- Faster construction timelines - Reduced onsite labour - More control over quality and safety - Mobile structures allow reusability - Reduced operational interference	Modular clinics, rural health centres, temporary testing labs
5) Hospitality and Tourism	- Accelerated speed to market - Scalability - More eco-friendly options - Adaptability (easier expansion in case of increased demand)	Resorts, modular hotels, eco-friendly cabins
6) Factories and warehouses	- High strength - Durability - Large open spaces (wide spans) - Faster commencement of operations	Manufacturing plants, logistics hubs, distribution centres
7) Event and Exhibition Spaces	- Quick setup - Portability - Mobility/ reusability	Exhibition halls, concert stages, trade show pavilions
8) Infrastructure Projects	- Reduced lead times - Standardized quality - More durable	Airports, railway stations, and metro stations.
9) Data Centres and Technical Hubs	- Faster construction times - Quicker berthing - Easier expansion/ upgradation - More convenient for remote setup	Data storage hubs
10) Public Sector Buildings	Faster construction timelines	Rural post offices, government office annexes, municipal buildings

Key application area	Key benefits	Prominent areas of usability
	- Minimize disruption to daily operations/ traffic - Reduced onsite labour - More control over quality and safety	
11) Others (like rural infrastructure, agriculture, etc)	- Faster construction timelines - Reduced risks/ disturbance related to onsite construction, etc	Grain storage facilities, animal barns, cold storage for produce, etc

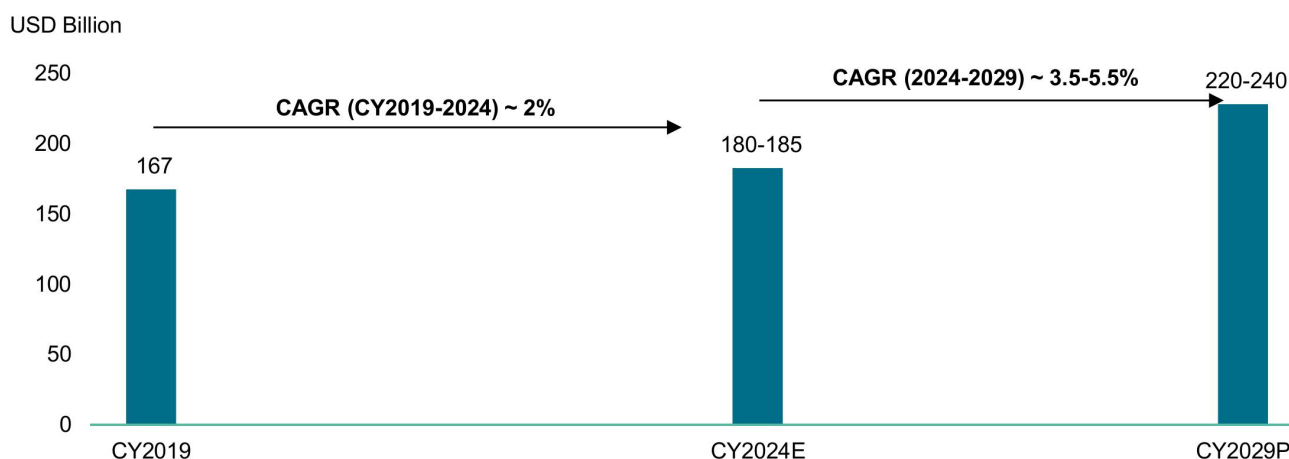
Note: The above table represents an indication list of key application areas and prominent areas of usability and not an exhaustive list
Source: Crisil Intelligence

Global prefabricated building market expected to grow at a CAGR of ~3.5-5.5% between CY2024-2028

The global prefabricated construction industry experienced moderate growth between CY2019-2024, increasing from \$167 billion in CY2019 to \$180-185 billion in CY2024, thereby registering a CAGR of ~2%. This modest performance was primarily attributable to Covid 19 pandemic and its consequent disruptions on the overall economic activities and capex cycle. These factors collectively impacted the overall construction industry, including prefabricated industry.

However, moving forward, global prefabricated industry is estimated register a CAGR of 3.5-5.5% between CY2024-2029 to reach \$220-240 billion by CY2029. This growth is expected to be driven by the growing awareness of prefabricated buildings and rising demand for sustainable, and cost-effective building solutions. Additionally, increasing global population coupled with improving urbanisation is also estimated to positively boost the demand for prefabricated construction technologies.

Global prefabrication market by value



Source: Allied Market Research, Crisil Intelligence

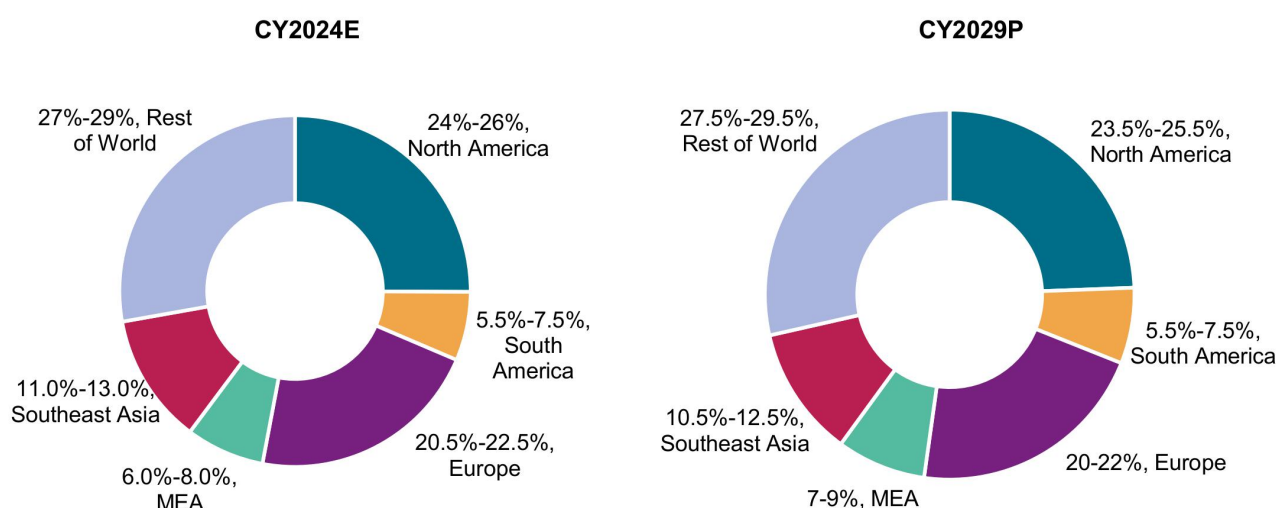
North America and Europe hold dominant positions in the global prefabricated market

The global market share was distributed across major markets like North America and Europe, which is estimated to hold 24-26% and 20.5-22.5% respectively of the global prefabricated market in CY2024.

Additionally, in rest of world markets, countries like China, India, etc are major contributors to the regional prefabricated markets.

The regional market shares in the overall prefabricated markets are estimated to remain largely constant in CY2029, whereas the overall market will be driven by government infrastructure initiatives and swift urbanization. Additionally, as these economies grow, the demand for scalable, sustainable, and cost-efficient construction solutions is expected to increase. This, coupled with growing awareness of prefabricated structures is expected to provide impetus to the overall prefabricated industry.

Global market share by Geography



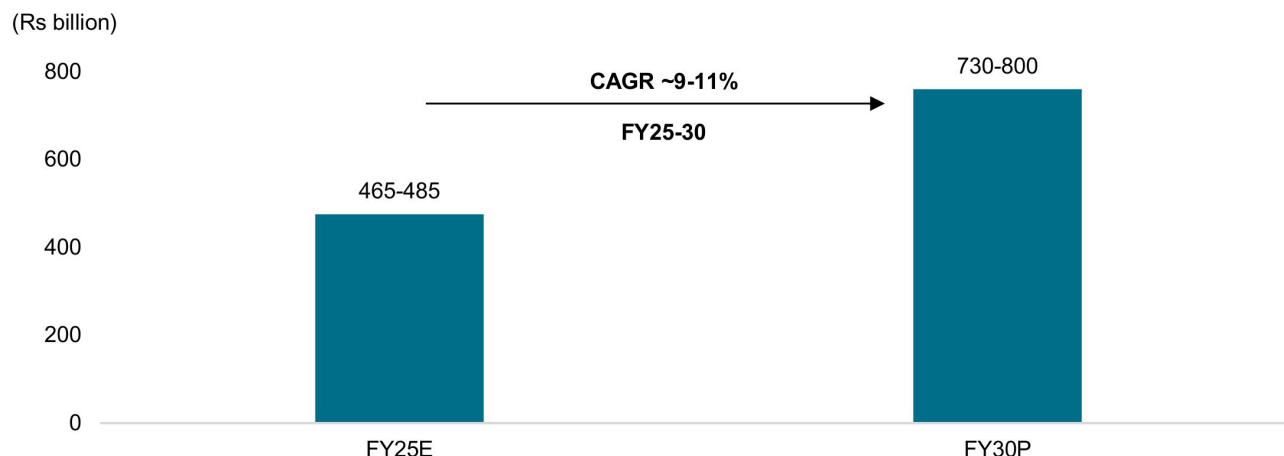
Source: Allied Market Research, Crisil Intelligence

Indian prefabricated market is estimated to register a CAGR of 9-11% between FY25-30

As of FY25, the Indian prefabricated market was estimated around Rs 465-485 billion. Key growth drivers of the industry include increase investments in the overall construction, favourable government policies, growing urbanisation and increasing population.

Moving forward, the industry is projected to register a CAGR of 9-11% between FY25-30 and value around Rs 730-800 billion by FY30. This growth will be driven by continued construction investments, favourable government policies, growing acceptance of prefabricated construction, and expanding end use segments like pharmaceuticals, infrastructure, etc.

Indian prefabricated market in value terms



E: Estimated, P: Projected

Source: Crisil Intelligence

Key growth drivers for prefabricated buildings industry in India



Urbanization

Govt Policies

Technology

Sustainability

Efficiency

Emerging sector

Source: Crisil Intelligence

Rapid Urbanization and Infrastructure Development

The rapid pace of urbanization phase in India serves as a significant catalyst for the prefabricated building sector as the need for quick and affordable housing becomes prominent. Share of urban population in India is estimated to increase to 40% by 2030, compared to just 18% in 1960s.

This increasing urban population in India necessitate enhanced infrastructure in areas such as housing, healthcare, education and overall infrastructure development. Hence, prefabricated structures provide a swift and effective means to address the increasing demand for both residential and commercial properties in densely populated urban areas given the constraints on construction timelines.

Government Initiatives and Policies

The Indian government's initiatives in housing, urban development, and infrastructure is expected to benefit the prefabricated construction industry. Initiatives like Light House Projects, PMAY-G etc are designed to deliver affordable housing options throughout both urban and rural areas of India, thereby creating a substantial demand for economical and swiftly deployable housing solutions. Additionally, the government's focus on infrastructure projects, which include hospitals, educational institutions, and other public facilities, further drives the demand for prefabricated buildings, owing to their speed, cost efficiency, and adaptability in design.

Key government initiatives

Scheme/Initiatives	Budgeted Outlay	Description
Global Housing Technology Challenge (Light House Projects)	N.A.	Ministry of Housing and Urban Affairs initiated a Global Housing Technology Challenge to identify and mainstream the best available construction technologies from across the globe. Out of the identified 54 technologies, six Light House Projects using six distinct technologies were finalised to showcase use of these technologies for further mainstreaming in the country.
Pradhan Mantri Awas Yojana-Urban 2.0	Investment- Rs 10 trillion Government subsidy- Rs 2.30 trillion	PMAY-U 2.0 is designed to extend financial assistance to urban poor and middle-class families for constructing, purchasing, or renting houses at affordable costs in urban areas. This scheme aims to construct 10 million houses for urban poor and middle-class families over the next five years.
Pradhan Mantri Awaas Yojana – Gramin (PMAY-G)	Total outlay- ~Rs.3 trillion for FY 2024-25 to 2028-29 <i>(Including Central Share of ~Rs 2 trillion and State matching Share of ~ Rs.1 trillion)</i>	The Union Cabinet approved the proposal of the Department of Rural Development for “Implementation of the Pradhan Mantri Awaas Yojana – Gramin (PMAY-G) during FY25-29” wherein financial assistance is to be provided for the construction of 20 million more houses at existing unit assistance.
Smart Cities Mission	Total outlay of Central assistance- Rs 480 billion	Smart Cities Mission (SCM) was launched by the Hon' Prime Minister on 25 June 2015. The main objective of the Mission is to promote cities that provide core infrastructure, clean and sustainable environment and give a decent quality of life to their citizens through the application of 'smart solutions'. On the financial front, the total outlay of Central assistance for the SCM was Rs 480 billion. As per PIB article dated September 2024, the Central Government has already released Rs 467.9 billion to 100 Smart Cities under the SCM, of which over 90% has been utilized.

Source: PIB, Government ministry websites, Crisil Intelligence

Technological advancements

Advancements in construction technology and design, including Building Information Modeling (BIM), automation, 3D Printing and cutting-edge materials, are transforming the prefabricated building sector. For example, BIM facilitates accurate design, minimizes errors, and streamlines project management, while automation in prefabrication enhances both the speed and uniformity of production. As smart technologies and data-driven construction methodologies become increasingly accessible, the prefabricated industry is expected to benefit from it.

Sustainability and green building demand

The growing emphasis on environmental sustainability and the advocacy for eco-friendly construction methods are pivotal factors influencing the prefabricated building sector. Prefabricated construction techniques minimize waste generated on-site, utilize recyclable materials like steel and specific types of panel insulation, and result in lower emissions. These characteristics are in harmony with green building standards and align with India's environmental initiatives aimed at decreasing the carbon footprint.

Cost and time efficiency

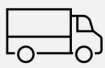
In contrast to traditional construction methods, prefabrication lowers on site labour costs and facilitates quicker assembly on-site, which is essential in an environment where labour shortages and construction delays frequently occur. Additionally, the factory-controlled manufacturing process of prefabrication diminishes dependence on on-site labour and lessens delays attributed to weather and other site-related issues. Consequently, this leads to a more efficient

construction process that enables companies/ contractors to adhere to stringent timelines. These improvements in efficiency are especially appealing for large-scale commercial initiatives and infrastructure projects which have long construction timelines and have high associated overrun costs.

Rising demand in emerging sectors

The prefabricated building sector is witnessing increased demand from emerging industries such as logistics, cold storage, and healthcare. The surge in e-commerce in India has created a need for the swift construction of warehouses and distribution centres, where prefabricated structures are particularly advantageous due to their scalability, and rapid installation. Additionally, the expansion of healthcare infrastructure, particularly in the wake of the COVID-19 pandemic, has heightened the demand for both temporary and permanent medical facilities. Prefabricated solutions facilitate quick establishment of essential facilities that adhere to regulatory requirements. Furthermore, the cold storage sector, which necessitates high levels of insulation, also reaps the benefits of prefabricated structures, as they efficiently maintain temperature-controlled environments, which is crucial for India's agricultural and food processing sectors.

Key challenges in prefabricated buildings industry in India

Key Challenges	Description
 Market awareness	There is a limited understanding of the advantages among both customers and contractors regarding prefabrication buildings. Additionally, there are apprehensions regarding the durability and safety of alternative methods, leading to a preference for traditional construction practices. Additionally, cultural inclination towards conventional building methods is influencing the rates of adoption due to perceptions regarding restricted options of customization in prefabricated structures
 Logistics issues	Prefabricated buildings are required to be transported on the construction site for final assembly/ delivery. Complex nature of prefabricated buildings due to their large and heavy size increases the complexity of transferring the components/ structure to the final site. Hence, manufacturers of prefabricated buildings have to rely on competent third-party logistics providers for the final delivery to ensure timely delivery without any damage to the products.
 Skill Gaps and Labor Issues	There is a shortage of skilled labour experienced in prefabrication techniques due to novelty of the field. Unlike traditional construction methods, prefabricated construction requires knowledge and experience of more advanced technologies and precision. Additionally, training workers regarding prefabricated techniques requires dedicated time and cost commitments by the companies, which further increases their cost.
 Supply chain issues	The prefabricated industry in India is faces supply chain challenges due to limited numbers of high quality and reliable raw material providers. This scarcity makes this industry susceptible to supply chain issues, as manufacturers have limited alternative sourcing options. Consequently, it also increases the bargaining power of suppliers, which in turn negatively impact the prefabricated buildings manufacturers.
 Large unorganized sector	Presence of large unorganized sector presents significant challenges to the industry. Unorganized players generally compete on price, which in turn creates pricing pressures for the players in the organized industry. Furthermore, small players in the unorganized segment may also procure substandard raw materials/ products, which can lead to structural issues during final assembly of the product and pose safety risks.

Source: Crisil Intelligence

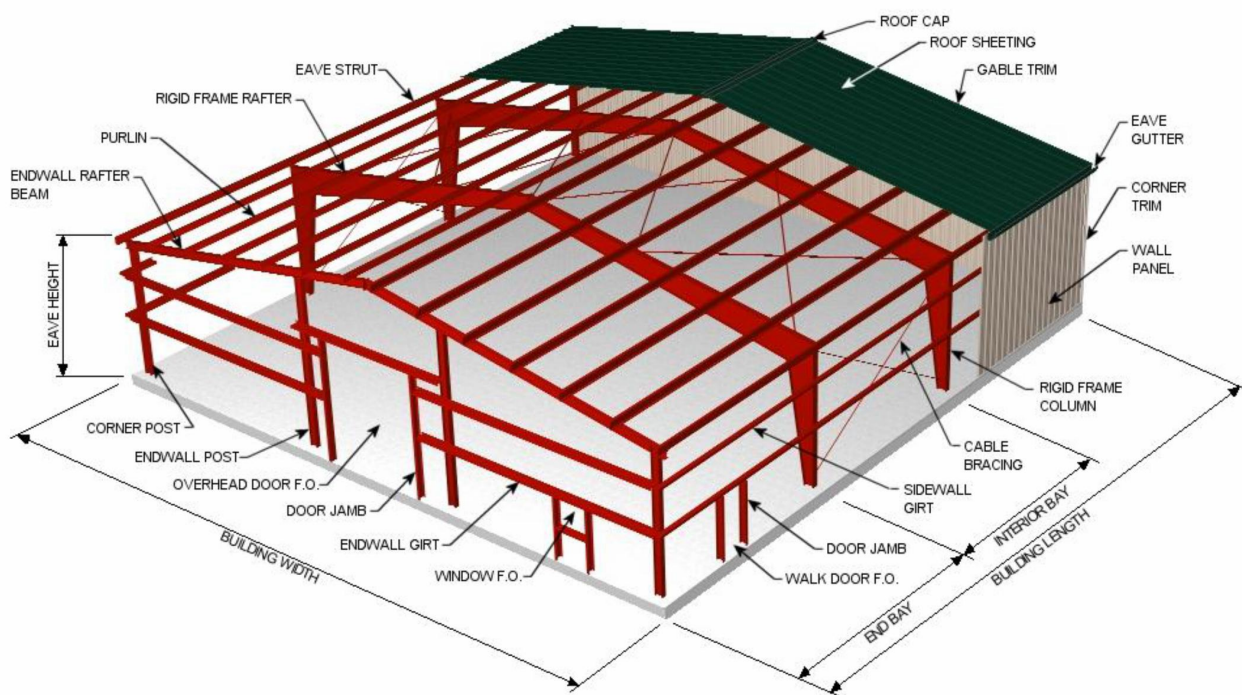
3.2 Pre-engineered steel construction

Pre-engineered steel construction is a sub segment of the overall prefabricated building and has emerged as an innovative building method due to rapid growth of automation in the construction industry. However, whereas prefabricated construction can be built through different raw materials like concrete, metal, etc, steel pre-engineered buildings have steel as its major raw material component. Furthermore, these PEB structures are fabricated in the factories in a controlled environment and then transported to the construction site where the final assembly takes place, whereas prefabricated buildings can in knockdown, semi- knockdown or as completely built in units.

Pre-engineered steel structures/units are more eco-friendly than traditionally constructed ones and provide benefits such as reduced material wastage, enhanced quality control, and improved onsite safety. The controlled manufacturing process minimises material wastage, promoting sustainable building practices, while rigorous quality control ensures consistent and durable structures.

Furthermore, within conventional construction, RCC and steel buildings are prominent methods of construction. Steel players like Tata Steel, Nippon Steel, ArcelorMittal Nippon Steel India, Steel Authority of India Limited, Jindal Steel & Power Ltd., Jindal Steel, etc. provide structural steel long products for construction of steel buildings, which is further used by EPC players, PEB players as well as directly by steel players themselves to provide steel buildings.

Overview of pre-engineered steel building



Source: Crisil Intelligence

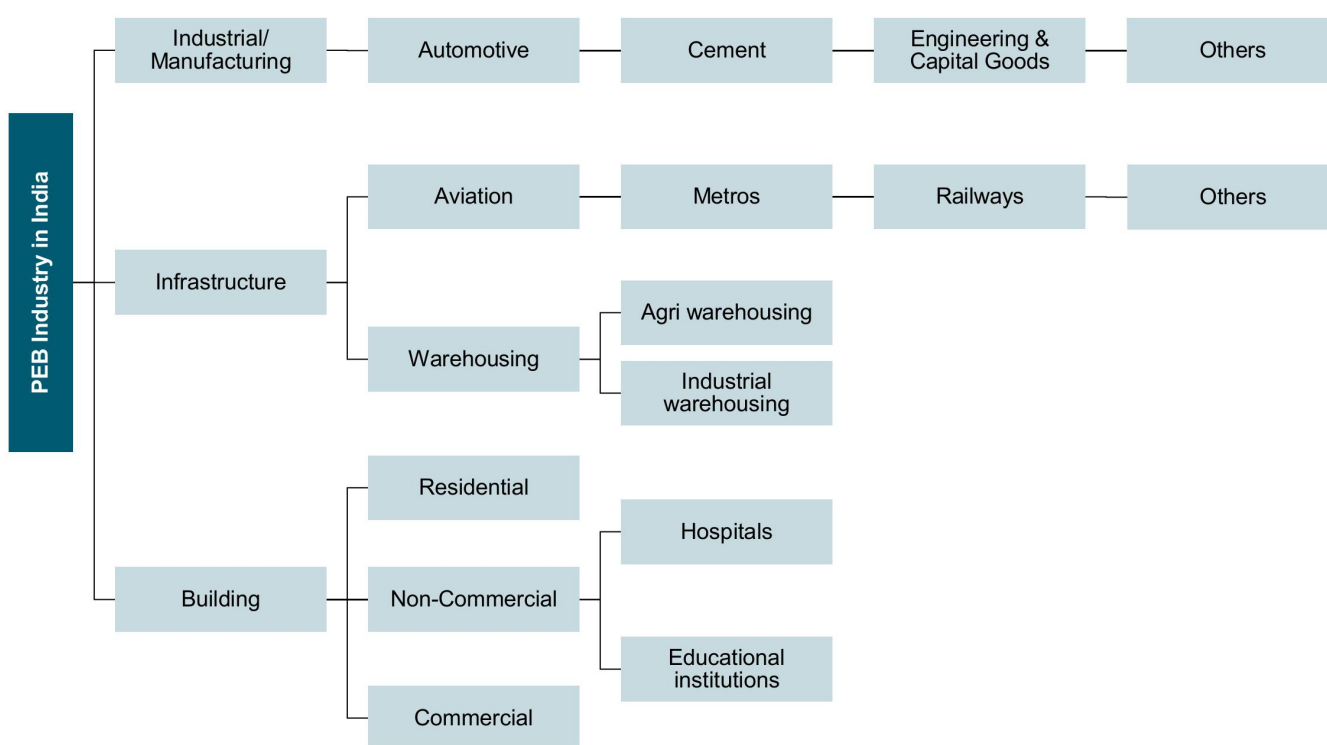
Key components/sub-structures of pre-engineered steel buildings:

- **Main frame or primary structure:** This frame is the main load-carrying and support structure of a pre-engineered steel building made of rigid steel frames. The primary structure consists of columns, rafters, and other supporting

structures. The shape and size of these structures differ based on their application and requirements. The frame is constructed by bolting the end plates of connecting sections together.

- **Secondary structure:** It consists of purlins, grits, and eave struts used to support the wall and roof panels. Purlins are employed on the roof, grits on walls, and eave struts at the intersection of the sidewall and roof.
- **Roof, wall panels, and insulation:** These components are used for sheeting and generally made of ribbed steel sheets. They are used as roof and wall sheeting, roof and wall liners, partition, and soft sheeting. Colour coated steel sheets are generally produced from steel coils. The metal roofing generally comprises roofing made of aluminium, galvalume steel and copper, among others. Usage of high-quality material, such as pre-painted galvalume (PPGL) aids in avoiding corrosion and leaks, increasing the longevity of the roofing system.

Pre-engineered steel construction industry segmentation by end user



Source: Crisil Intelligence

Pre-engineered steel construction is gaining popularity in the commercial, infrastructure, and industrial landscape, such as in the automobile industry, cement industry, paper industry, offices, aircraft hangers, warehouses and logistics, and data centres. Use of pre-engineered steel constructed units enable companies to accelerate the construction process in a cost-effective manner without compromising on quality. In fact, the absence of external uncontrollable factors such as adverse weather in pre-engineered steel construction ensures better quality control through standardised operations and streamlined processes.

Steel pre-engineering is reshaping the realm of building construction by decreasing the overall construction duration for commercial complexes, hospitals, office buildings, high-rise buildings, and so on, without compromising on construction quality. Pre-engineered steel structures are also used extensively in the institutional and recreational field to construct schools, exhibition halls, hospitals, theatres, auditoriums, gymnasiums, and indoor sports facilities.

Difference between RCC and pre-engineered steel construction

Parameter	Traditional RCC construction	Pre-engineered steel construction
Major component	Concrete and reinforced steel bars	Steel and metal accessories
Raw materials used	Cement, steel, sand, bricks, etc	Steel, anchors, channels, etc The primary structure of PEBs consists of columns, rafters, and other supporting structures, whereas the secondary structure consists of purlins, girts, eave struts, etc. Additionally, wall panels, roofs, etc are also used for sheeting and insulation purpose.
Construction location	Completely onsite	The entire structure is manufactured in controlled environments such as factories, only assembling of structures happens onsite. The foundation in pre-engineered steel buildings is similar to RCC construction but its requirements may vary depending on the weight of pre-engineered steel structures
Construction time	It depends largely on the type (industrial, residential, etc), height and area of construction. However, RCC construction usually takes a longer time than pre-engineered steel building construction	In pre-engineered steel building construction, a majority of components are manufactured in a controlled environment and only assembling of parts takes place onsite. According to industry sources, construction of pre-engineered steel buildings takes 40-50% less time than RCC construction
Manpower	Demands a substantial workforce since the entire construction process, including moulding and shaping concrete, occurs onsite	Requires less manpower as only assembling of the final structure happens onsite. According to industry sources, manpower required for construction of pre-engineered steel buildings is approximately 25% lower than the conventional method
Applications	Residential as well as industrial; even infrastructural	Largely industrial and warehouse or shed requirements at infrastructure setup
Effect on environment	RCC construction has a more adverse environmental impact owing to the generation of significant waste and landfill mass during onsite construction activities	Owing to the streamlined nature of construction in a controlled environment, the environmental footprint is reduced by minimising wastage. Additionally, pre-engineered steel building components can be recycled, which optimises the use of raw materials and minimises construction waste. This optimized use of raw materials combined with faster construction timelines also helps in decreasing the carbon footprint while construction.
Modifications and relocations	Once concrete hardens, making alterations becomes complex and costly in RCC structures	Pre-engineered steel construction offers superior flexibility as modifications involve changing the assembly of prefabricated components, adjusting to make it more manageable and cost-effective
Cost efficiency	Construction of RCC structures is highly labour-intensive in an uncontrolled environment. Overall, cost depends on the size and type of the structure, the span, etc, and varies from project to project	Pre-engineered steel structures are lighter and require less material, a shorter construction time, and comparatively less labour onsite, leading to lower costs compared with RCC structures. But the cost depends on the size and type of the structure, the span, etc, and varies from project to project

Source: Crisil Intelligence

Overview of construction costs of pre-engineered steel structures

As per primary research, the cost of a pre-engineered steel building is estimated to be at times 15-35% lower than conventional structures for sheds, warehouses, and depots or at times 20-25% more expensive than a traditionally constructed building depending on the building's design and usage requirements. However, the higher upfront cost of pre-engineered steel buildings is offset by faster construction time, flexibility to expand these buildings, lower maintenance costs, better durability and higher salvage value, among others, which ultimately result in cost savings over the entire lifespan of the building. Further, pre-engineered steel buildings not only accelerate the overall construction process, but also save labour costs and enable quicker occupancy/commencement of operations, leading to potential revenue generation at an earlier stage.

Additionally, due to the flexibility to shift these structures to other locations, pre-engineered steel structures help to reduce potential capex costs, enabling organisations to adapt to changing operational needs without the financial burden of constructing new buildings.

Pre-engineered steel buildings more cost-effective for smaller structures

According to research published in the International Research Journal of Engineering and Technology (Comparative Study of Pre-Engineered Building And Conventional Steel Structures), cost-saving advantages of PEB increases as the span of the structure increases till an inflection point, after which cost savings diminish.

For instance, in the case of 10m clear span structures (span denotes the distance between the two intermediate support structures), PEB provides a commendable ~40% cost savings compared to conventional steel structures (CSB). PEB provides similar cost savings in case of clear span of 20m and 30m structures, where use of PEB helps in cost savings of approximately ~50% and ~42%, respectively. However, this trend experiences a significant inflection point at 50m span, where the cost-saving benefit of PEB diminishes considerably, offering only marginal savings of approximately 2.8% compared to CSB.

The accompanying table delineates the cost per square metre for both pre-engineered and conventional steel structures.

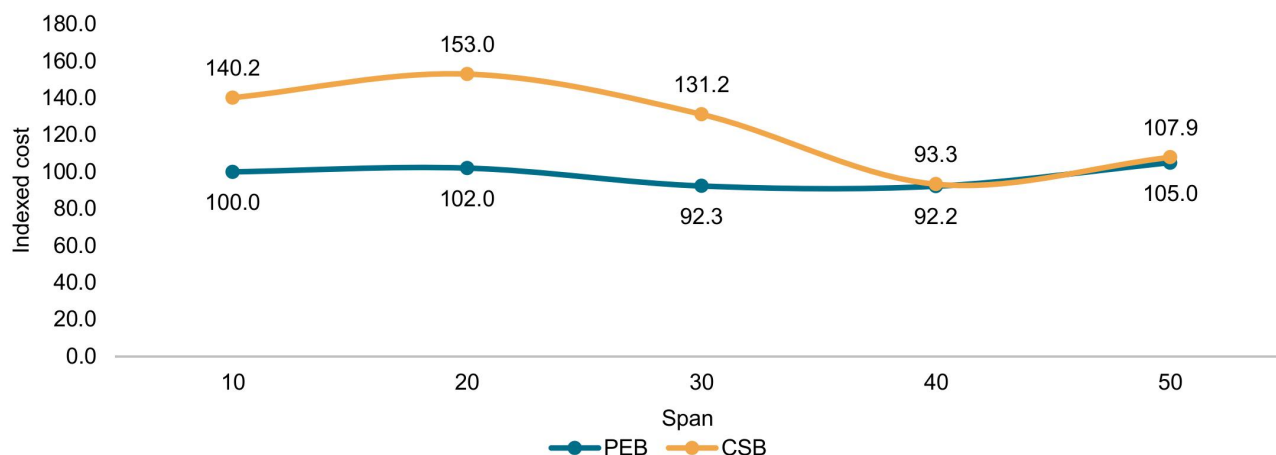
Cost of per square metre of pre-engineered building and conventional steel structure

Clear span (m)	PEB	CSB	Cost saving (%)
10	100.0	140.2	40.2%
20	102.0	153.0	50.0%
30	92.3	131.2	42.1%
40	92.2	93.3	1.2%
50	105.0	107.9	2.8%

Note: Cost is indexed with cost per square foot for PEB (Span 10) as base

Source: Comparative Study Of Pre-Engineered Building And Conventional Steel Structures, International Research Journal of Engineering and Technology, Crisil Intelligence

Cost of per square metre of pre-engineered building and conventional steel structure



Note: Costs are indexed; with cost of 10 span PEB considered as base (100)

Source: Comparative Study Of Pre-Engineered Building And Conventional Steel Structures, International Research Journal of Engineering and Technology, Crisil Intelligence

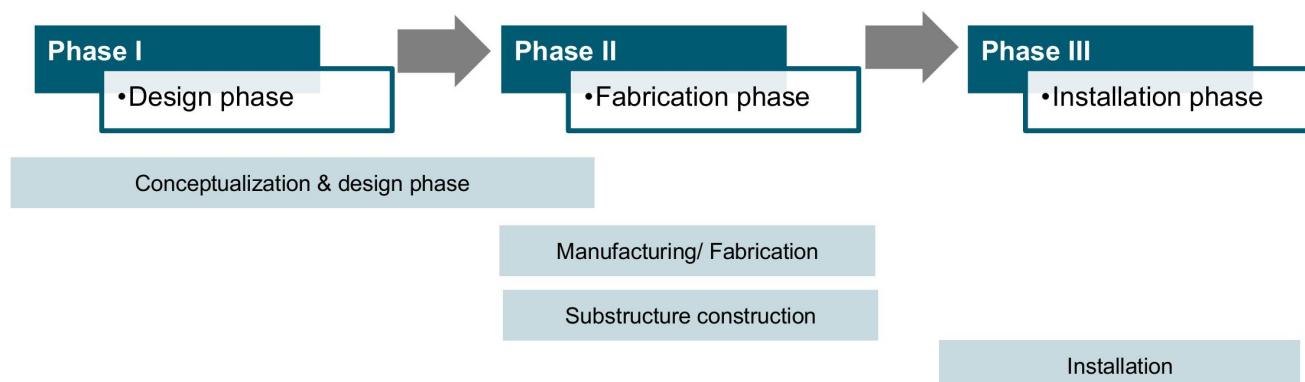
Construction plan for pre-engineered steel buildings

Similar to the construction plan for RCC structures, the pre-engineered steel building construction plan is also structured into three primary phases, though the activities scheduled in each of the three phases—design, fabrication, and installation—differ. The initial design phase encompasses critical tasks such as site preparation, finalising the design specifications, and obtaining the requisite approvals.

The design phase is the first phase of overall PEB construction and is extremely critical to the overall outcome of the PEB building. Companies may utilise specialised design software in addition to the experience of their design team to ensure optimal steel usage, which directly impacts the overall cost of the building.

Design phase is followed by the fabrication phase, which focuses on manufacturing of pre-engineered steel structures as well as construction of substructures that not only enhance cost efficiency but also accelerate project timelines significantly. Hence, this simultaneous approach contributes to substantial savings in terms of both time and resources. Finally, the concluding phase of pre-engineered steel building construction involves the transport of individual building components to the designated construction site, where the final structure is installed with precision.

Design plan of pre-engineered steel construction



Source: Crisil Intelligence

Advantages of PEBs over traditional construction

Better quality control

Traditional construction methods rely heavily on skilled workers for onsite assembly and intricate tasks, the current shortage of such labour poses challenges to timely and efficient project completion.

Hence, pre-engineered steel construction offers a viable solution as a majority of the construction is done in controlled factory environments, reducing the need for onsite labour. Moreover, companies can achieve economies of scale through improved manufacturing processes, further boosting growth of the pre-engineered steel construction industry, enabling faster component production, and ensuring greater accuracy and consistency in final structures.

More sustainable

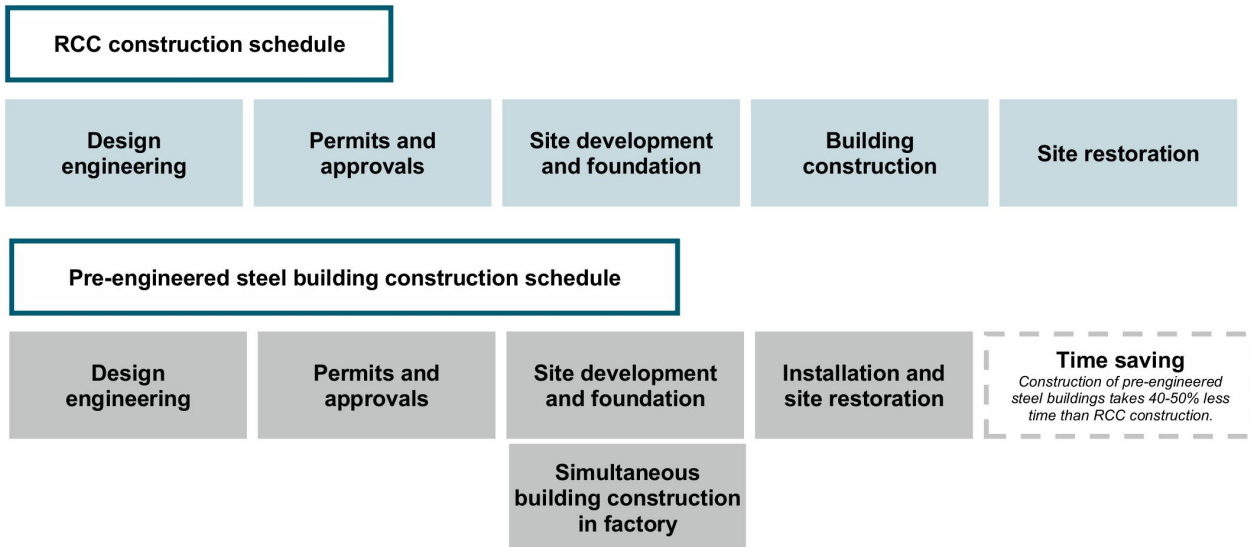
As considerable parts of the structures are built offsite in the case of pre-engineered steel construction, it causes less disturbance to the construction site's surroundings. Furthermore, factories and manufacturing plants enable standardisation of processes and streamlining of procedures, which help reduce wastage and the carbon footprint that directly impact the environment. Additionally, pre-engineered steel building components can be recycled, as steel is the major raw material of PEB. This allows optimized use of raw materials and minimises construction waste.

This optimized use of raw materials helps in decreasing the overall carbon footprint compared to traditional conventional construction methods.

Faster construction timelines

Pre-engineered steel construction accelerates project timelines without compromising on deliverable quality. As it involves components being first manufactured in factories/manufacturing plants, this method enables simultaneous preparation of the foundation at the construction site, which helps in accelerating project timelines. According to industry sources, construction of pre-engineered steel buildings takes 40-50% less time than RCC construction.

Construction schedule: RCC vs pre-engineered steel buildings



Source: Crisil Intelligence

Cost optimisation

Use of PEBs in construction enables cost optimisation by decreasing overhead site costs, including labour costs. Furthermore, as pre-engineered steel structures are manufactured within factories/manufacturing plants, they enable standardisation of processes, which ensures good quality of structures. Additionally, they also prevent project delays stemming from external factors such as adverse weather.

As per primary research, the cost of a pre-engineered steel building is estimated to be at times 15-35% lower than conventional structures for sheds, warehouses, and depots or at times 20-25% more expensive than a traditionally constructed building depending on the building's design and usage requirements.

Key selection criteria for pre-engineered steel building suppliers

Brand	Design capability	Prior experience	Pricing	Manufacturing capacity	Project management expertise	Pan India presence
						

Source: Crisil Intelligence

Brand

Having a reputed brand name is a success factor for pre-engineered steel building suppliers as companies prefer brands for ensuring reliability and quality of raw materials. Furthermore, established brands are also known to adhere to industry standards and codes, ensuring that product quality remains consistent.

Additionally, choosing a reputed brand instils confidence in the project's key stakeholders and reduces the risks associated with dealing with lesser-known suppliers in the unorganised sector. Furthermore, established players invest in research and development and modern technology, resulting in better product quality due to more efficient processes. This, in turn, guarantees that clients receive a high level of quality in their pre-engineered steel projects. Therefore, opting for a well-known brand name is not just a preference but a practical necessity to ensure the success and quality of pre-engineered steel projects.

Design capability

Companies prefer pre-engineered steel building suppliers who have established structural design capabilities as these factors influence optimal use of structural steel, the functionality and the aesthetics of the building.

Suppliers with expertise in structural design can optimise the building's steel quantity estimation, ensuring efficient building cost and seamless integration of various components.

Additionally, the importance of an experienced design team becomes more pronounced in pre-engineered steel building projects compared to traditional construction projects such as RCC as these projects demand greater coordination among various stakeholders and precise planning and execution from the start to ensure seamless integration of pre-engineered steel components. Hence, the emphasis on design capability remains a crucial factor in the decision-making process for companies engaged in pre-engineered steel projects.

Prior experience

Even though adoption of pre-engineered steel buildings is increasing due to inherent benefits such as cost savings and a lower environmental impact, the market is still in a nascent stage in India. Hence, companies prefer pre-engineered steel building suppliers with a proven track record to ensure their projects are completed on time. Furthermore, having prior experience also helps in gaining confidence of key project stakeholders as more experience translates into better knowledge of building codes, industry regulations and terrain requirements. Additionally, experienced suppliers often have well-established networks with other stakeholders such as erectors to ensure smooth coordination during the project lifecycle.

Pricing

The fragmented structure of the pre-engineered steel building industry grants customers significant bargaining power. Hence, competitive pricing is imperative for success. However, pre-engineered steel building suppliers must ensure a balance between affordability and quality, along with a transparent cost structure.

Manufacturing capacity

A robust manufacturing capability ensures timely production and delivery of building components, as the construction industry is frequently dogged by missed project deadlines and cost overruns.

Furthermore, it also enables pre-engineered steel building suppliers to streamline their processes, optimise their operations and handle multiple projects simultaneously. Additionally, the ability to handle larger volumes of pre- steel buildings provide them more bargaining power with suppliers of raw materials, thereby optimising costs.

Project management expertise

It is a pivotal factor in the evaluation of pre-engineered steel building suppliers as the construction industry is usually riddled by long project timelines. Hence, project management expertise becomes extremely important to ensure timely completion and avoid costs overrun as it helps in the adherence to timelines, managing budget constraints, and maintaining high-quality standards.

Pan India presence

A pan India presence helps in enhancing credibility for PEB suppliers. PEB suppliers with pan India presence usually have extensive logistics network which contributes to efficiently reducing transport costs and time. Moreover, the presence of regional offices allows for prompt, on-site support, ensuring the swift resolution of any issues or bottlenecks. Thereby, facilitating successful completion of projects

Critical factors in the pre-engineered steel building industry

Success factor	Description
 Quality material	- The use of quality raw materials ensures structural integrity, compliance with relevant codes and standards, proper safety of pre-engineered steel buildings and a higher life span of buildings - Furthermore, it positively influences reputation and helps gain the confidence of potential clients
 Research and development	- Specialised design expertise plays a pivotal role in ensuring both functionality and aesthetics of pre-engineered steel buildings. - Investing in research and development enables pre-engineered steel building suppliers to provide better quality products to their clients and gain competitive advantage.
 Standardisation	- Establishing standardised processes and specifications is a critical factor for the industry as it ensures consistency and quality across pre-engineered steel building structures. Having standardised products also decreases the chances of structural failures and collapse of these structures during erection - Overall, standardisation streamlines the manufacturing process, reduces the chances of mishaps during the erection process, thereby enabling suppliers to deliver reliable, cost-effective and high-quality solutions consistently

Success factor	Description
 Technology	- Pre-engineered steel building suppliers can leverage technology through use of proper design software and new construction technologies such as 3D printing to optimise their design process as well as accelerate their manufacturing process. Utilising the latest technological innovations related to construction not only helps pre-engineered steel building players in saving costs and time, but also helps them gain competitive advantage - As technology continues to advance, access and knowledge of the latest technologies/software will emerge as a key differentiator in the PEB industry, companies equipped with cutting-edge technologies such as advanced robotics, artificial intelligence, and digital fabrication techniques will gain a competitive edge in terms of efficiency, quality, and time - For example, integration of technologies such as CNC machines, robotic welding, and 3D modelling software could increase the precision and pace of the fabrication process without compromising on quality. Consequently, investment in training and development to enhance technological capabilities will be crucial for firms seeking to maintain their market leadership and meet the growing demands for sophisticated PEB solutions
 Location of Manufacturing plants	- As individual components of PEBs are manufactured in factories and then transported to the construction site, location of manufacturing plants plays an important role in ensuring optimised transportation costs. - Additionally, presence of manufacturing plants at diverse strategic locations also enables economic and efficient delivery of PEB components to the construction sites. Furthermore, as these components are typically heavy and large in size, the proximity of manufacturing plants to the client side minimizes the risk of damage and reduces the likelihood of delays.
 Experience of handling complex projects	Prior experience of handling complex projects is paramount for success in the pre-engineered steel building industry as it provides invaluable insights on streamlining operations and optimising resource allocation, thereby facilitating smooth project execution. Additionally, having prior experience of handling complex projects for high ticket clients also provides credibility to pre-engineered steel building players
 Project management and global safety practices	- Efficient project management, along with compliance to safety measures, is a prerequisite for success of the pre-engineered steel building industry. While effective project management ensures efficient planning, budget control, and quality assurance, adherence to safety measures includes strict compliance to codes, training programmes for workers, provision of safety equipment, regular audit of work practices at sites as well as promoting awareness on security norms among all key stakeholders - Hence, the synergy between efficient project management and stringent safety compliance is a critical factor for the pre-engineered steel building industry
 Qualified sales and marketing team	- Qualified sales and marketing team is essential for success in the PEB industry due to the technical nature of the industry. Deep technical knowledge and industry experience of sales and marketing team ensures effective communication of PEB benefits and its alignment with the clients' overall construction requirement. - Additionally, effective marketing strategies and brand positioning also helps companies in educating potential clients and capturing market share.
 Peak manufacturing capacity	- A high peak production capacity enables PEB manufacturers/ suppliers to ensure timely production and delivery of building components. This becomes particularly crucial in time sensitive projects which are required to get completed in short timeline. - Furthermore, having high peak capacity also facilitates in efficiently completing large projects (high value projects), which in turn positively impact business credibility and boost client confidence.

Source: Crisil Intelligence

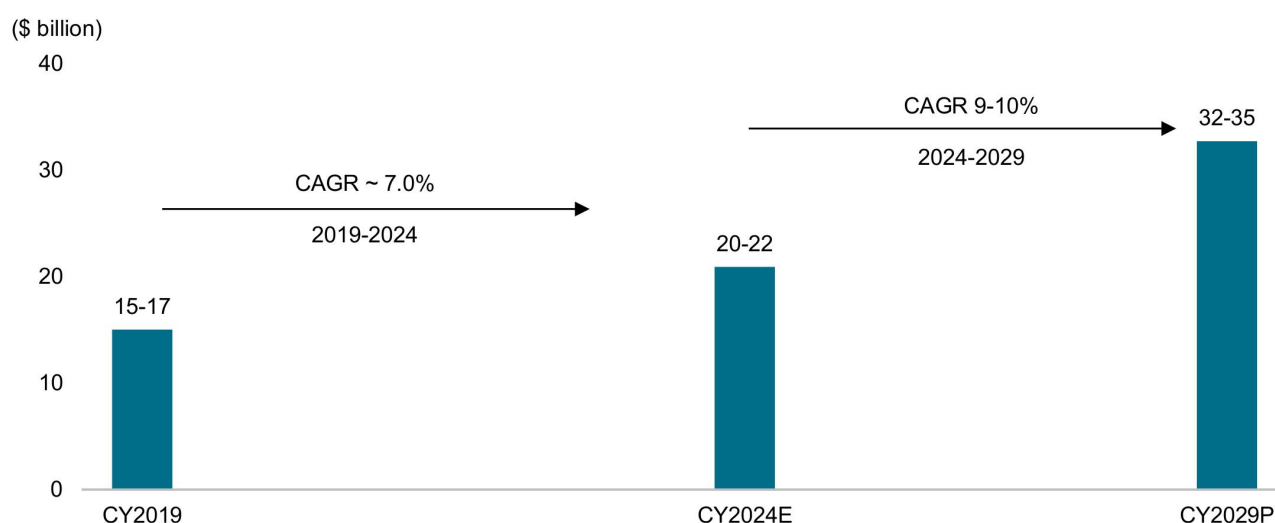
Overview of global pre-engineered buildings industry

Global PEB market to reach \$32-35 billion by 2029

The global pre-engineered buildings market was valued at \$20-22 billion in CY2024, compared with \$15-17 billion in 2019, thereby registering a CAGR of ~7%.

The market is expected to clock a CAGR of 9-10% over the medium term and is projected to be valued at \$32-35 billion by CY2029. This growth could be attributed to rising construction spends, increasing awareness about modern off-site construction techniques, as well as rising demand for green buildings globally.

Global pre-engineered buildings market



Note:

E: Estimated, P: Projected

Source: Allied Market Research, Crisil Intelligence

Infrastructure segment to continue to hold prominent share

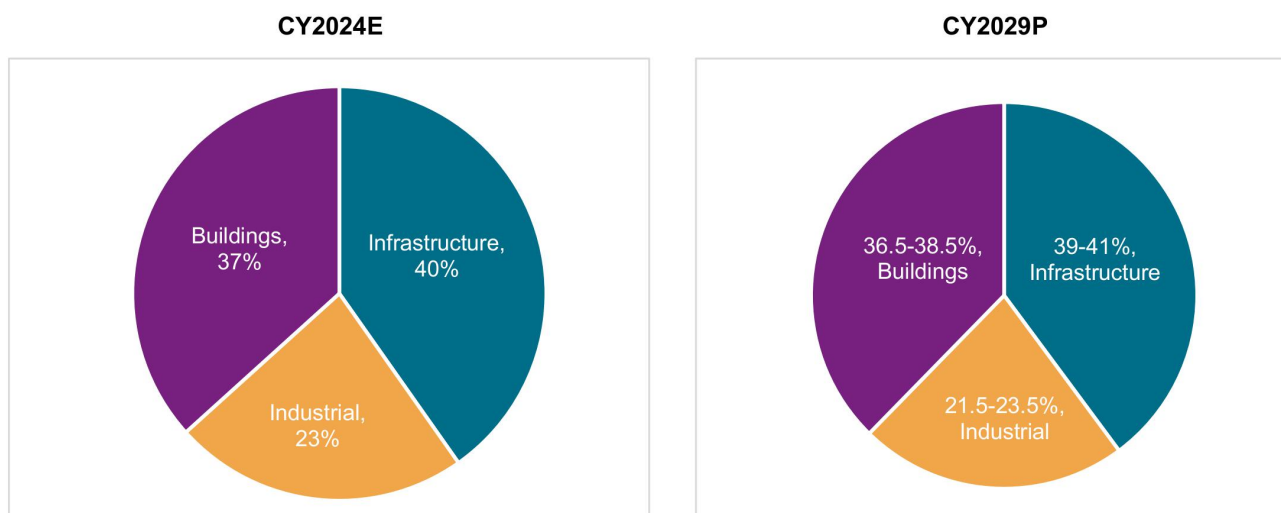
In 2024, the infrastructure segment accounted for the largest share of the global pre-engineered buildings market (40%), followed by buildings (37%) and industrial (23%). Increasing investments in public infrastructure, growing urbanisation and rising awareness of benefits of pre-engineered construction vis-à-vis the traditional onsite model have contributed to this high share of the infrastructure segment.

The infrastructure segment, mainstay of the global pre-engineered buildings market, is expected to drive demand for pre-engineered buildings. Within the segment, railways and warehouses form a major share, whereas in the industrial segment, manufacturing plants drive the majority of spend. The growing adoption of PEBs in these sectors is driven by their advantages, such as larger clean span spaces, the durable nature of PEBs, faster construction timelines and cost optimisation.

In the buildings segment, institutional buildings such as hospitals, schools and college campuses drive the major demand. PEB penetration in this sector is driven by faster construction timelines, the durable nature of PEBs and optimised cost savings.

Going forward, the infrastructure segment is expected to continue holding the major share of the overall PEB industry (39-41%), followed by buildings (36.5-38.5%) and industrial (21.5-23.5%) in 2029. Overall, increasing awareness of the benefits of PEB construction, combined with the growing emphasis on infrastructure development, is expected to drive demand for PEBs going forward.

PEB market by end-use industry



Notes:

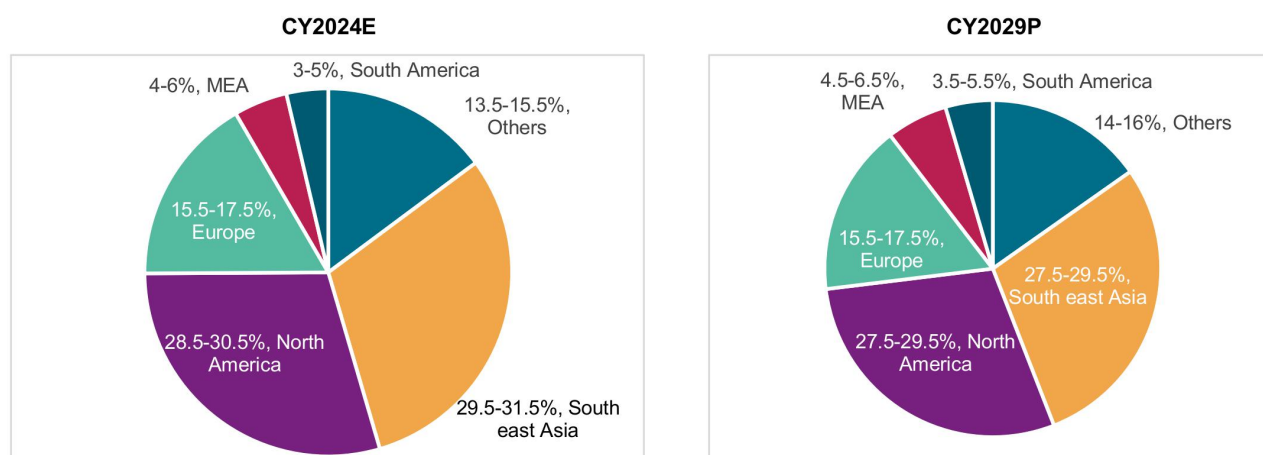
1. Infrastructure segment includes warehouses, railways and other related infrastructure
2. Buildings segment includes institutional infrastructure, and residential and commercial buildings, including sports and recreation
3. Industrial segment includes manufacturing plants and other related structures

E: Estimated, P: Projected

Source: Allied Market Research, Crisil Intelligence

Southeast Asia held largest market share in 2024 in global PEB industry

Share of key geographies in global PEB market



Notes:

E: Estimated, P: Projected

Source: Allied Market Research, Crisil Intelligence

In 2024, Southeast Asia accounted for the largest share of the pre-engineered buildings market (29.5-31.5%), closely followed by North America (28.5-30.5%) and Europe (15.5-17.5%). Key factors contributing to the growth of PEBs in Southeast Asia are rapid industrialisation and urbanisation and increasing adoption of advanced construction practices. Additionally, the tourism and e-commerce sectors are expected to boost demand for commercial and industrial structures such as warehouses, restaurants and hotels, which will facilitate the growth of pre-engineered buildings in the region. Major factors contributing to the growth of the pre-engineered buildings market in North America and Europe are the booming e-commerce and construction sectors and increasing awareness of non-conventional construction methods such as PEB.

Furthermore, growing demand from the infrastructure and industrial sectors, coupled with the rising adoption of construction technologies such as PEB, is expected to facilitate the growth of the pre-engineered buildings market in the Middle East and Africa (MEA) and South America. The share of MEA and South America in the overall PEB industry is estimated to increase to 4.5-6.5% and 3.5-5.5%, respectively, by 2029.

Overall, growing investments in infrastructure construction by governments, coupled with increasing awareness of PEB and its benefits in construction, are expected to positively impact the global PEB market.

For instance, the Indian government has launched initiatives such as Smart Cities and PM Gati Shakti to develop urban infrastructure. Similarly, the Vietnamese government has launched policies aimed at enhancing infrastructure development to improve overall logistics. These government initiatives are expected to boost demand for PEB structures, facilitating further market growth.

Share of key geographies in global PEB market

Regions	CY2024	CY2029P	CAGR (CY2024-2029)
Europe	15.5-17.5%	15.5-17.5%	8.5-10.5%
MEA	4-6%	4.5-6.5%	10.5-12.5%
North America	28.5-30.5%	27.5-29.5%	7.5-9.5%
South America	3-5%	3.5-5.5%	11-13%
South east Asia	29.5-31.5%	27.5-29.5%	7-9%
Rest of the world	13.5-15.5%	14-16%	9-11%
India*	~11.5%		9.5-10.5%

Note: India numbers are on fiscal year basis and CAGR (CY2024-2029) represents CAGR (FY25-30)

Source: Crisil Intelligence

A few global PEB players

Company	Overview	Capacity
ATAD Steel Structure Corp.	Established in 2004, ATAD has implemented more than 4,000 steel buildings across 60 countries and territories with a network of 9 companies and representative offices in Vietnam, Thailand, Singapore, Philippines, Indonesia, Cambodia, Sri Lanka, Bangladesh and Uganda.	180,000 MT of steel structure p.a. ¹
BlueScope Steel	BlueScope Steel Ltd has global presence and provides engineered steel building solutions. In 2004, it acquired Butler Manufacturing Company and in 2008, it acquired Varco Pruden Buildings.	N.A.
Cornerstone Building Brands Inc. (Shelter Solutions)	Cornerstone Building Brands, Inc. is a holding company incorporated in Delaware. The company is the manufacturer of exterior building products and serve residential and commercial customers. Under its Shelter Solutions business, the company offers a portfolio of metal roof and wall systems and complete pre-engineered building systems.	N.A.
Kirby International	Established in 1976, Kirby has executed projects across more than 70 countries. The company is a 100% subsidiary of Kuwait-based multinational business conglomerate Alghanim Industries.	515,000+ MT p.a.
Nucor Buildings Group	Nucor Buildings Group is one of North America's manufacturers of metal building systems. Nucor Buildings Group is represented by four independent building brands: American Buildings, CBC Steel Buildings, Kirby Building Systems and Nucor Building Systems.	~500,000 tons p.a.
Rigid Global Building	Rigid Global Buildings has experience of more than 30 years in production of pre-engineered metal buildings. The company offerings include metal buildings for industries' including commercial, government, schools, self-storage, etc.	N.A.
Whirlwind Steel Buildings, Inc.	Whirlwind Steel, Buildings and Components was founded in Houston, Texas, in 1955 by the Sturdivant family. By 1961, Whirlwind had expanded into the manufacture and sale of metal building components, including panels, secondary structural framing, and trim.	150,000,000+ pounds of steel products p.a.
Zamil Steel	Established in 1977 in Dammam, Saudi Arabia, Zamil Steel provides multiple offerings including design, manufacture, and supply of pre-engineered steel buildings.	500,000 MT of fabricated steel p.a.

Note: The above list of players is only indicative and not exhaustive

¹Design capacity

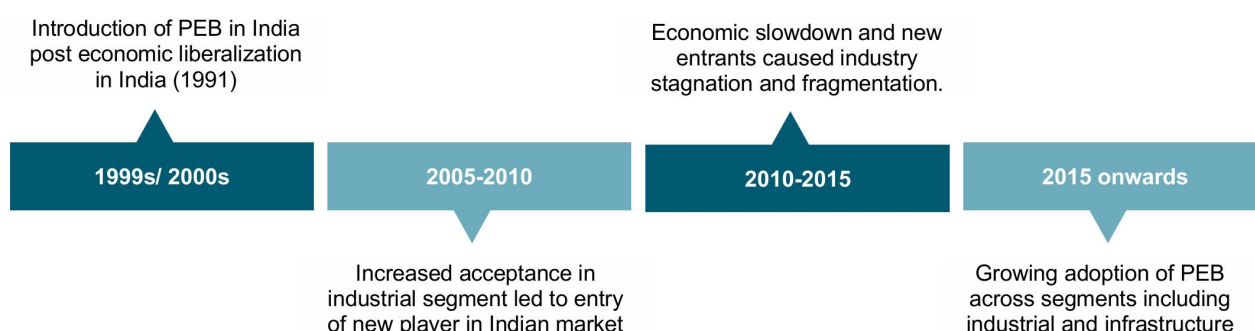
Source: Crisil Intelligence

Overview of pre-engineered steel buildings market in India

Evolution of pre-engineered steel structure market in India

Pre-engineered steel buildings were introduced in India during the late-1990s/2000s with the onset of India's economic growth post liberalisation in 1991. However, the acceptance among consumer verticals began in early-2000 with good growth during 2005-2010. Pre-engineered steel buildings started gaining prominence following a strong fixed capital formation in India and increased adoption by customers. This period of high growth saw new players enter the fray. With the slowdown of India's economic growth, the Indian pre-engineered steel buildings industry stagnated between 2010 and 2015. Post that, the industry saw good adoption but suffered some slowdown as capex declined during the pandemic, leading to a drop in revenue in FY21.

Evolution of PEB in India



Source: Crisil Intelligence

Overview of construction costs of pre-engineered steel structures

As per primary research, the cost of a pre-engineered steel building is estimated to be at times 15-35% lower than conventional structures for sheds, warehouses and depots, or at times 20-25% higher than a traditionally constructed building, depending on the building's design and usage requirements. However, the higher upfront cost of pre-engineered steel buildings is offset by faster construction times, flexibility to expand these buildings, lower maintenance costs, better durability and higher salvage value, among others, which ultimately results in cost savings over the entire lifespan of the building. Further, pre-engineered steel buildings not only accelerate the overall construction process but also save labour costs and enable quicker occupancy/commencement of operations, leading to potential revenue generation at an earlier stage.

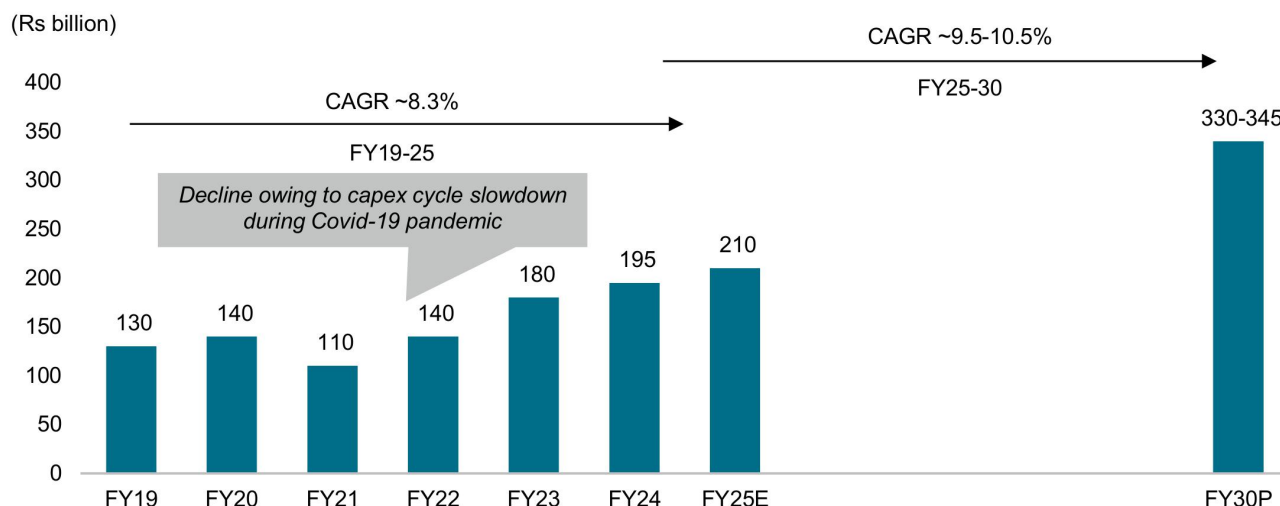
Additionally, due to the flexibility to shift these structures to other locations, pre-engineered steel structures help reduce potential capex costs, enabling organisations to adapt to changing operational needs without the financial burden of constructing new buildings.

PEB market in India to log 9.5-10.5% CAGR between fiscals 2025 and 2030

The industry expanded at a CAGR of ~8.3% over fiscals 2019 and 2025, growing from Rs 130 billion in 2019 to Rs 210 billion in fiscal 2025, driven by increased construction investments and growing awareness of PEB and its advantages.

The medium-term outlook is optimistic, with the industry expected to clock a CAGR of 9.5-10.5% between fiscals 2025 and 2030 to Rs 330-345 billion, supported by investments in the industrial and infrastructure sectors, such as warehouses and logistics as well as expressways (wayside amenities and toll plazas).

Pre-engineered steel buildings market in India



E: Estimated; P: Projected

Source: Crisil Intelligence

Large, organised players grow at faster clip than overall pre-engineered steel building industry

Within the overall industry, top seven players have grown at a faster growth rate as compared to the rest of the industry. This higher growth of the top players can be attributed to higher reliability and capability, high quality raw materials used, good track record for execution and capability to provide innovative and effective solutions to customers.

Industry players	Estimated revenue FY20 (Rs billion)	Estimated revenue FY24 (Rs billion)	CAGR FY20-FY24 (%)
Top seven players	70	100	9.3%

Note: Top seven players considered for the above table are as follows (not in any particular sequence): Kirby Building Systems & Structures India Pvt Ltd, Interarch Building Solutions Ltd (formerly Interarch Building Products Ltd), M&B Engineering Ltd, EPack Prefab Technologies Limited, Everest Industries Ltd, Pennar Industries Ltd, and Zamil Steel Buildings India Pvt Ltd

For estimated CAGR calculation of top players, Kirby Building Systems & Structures India Pvt Ltd CY2019 revenue is considered for revenue calculations of FY20, and Kirby Building Systems & Structures India Pvt Ltd CY2023 revenue is considered for revenue calculations of FY24

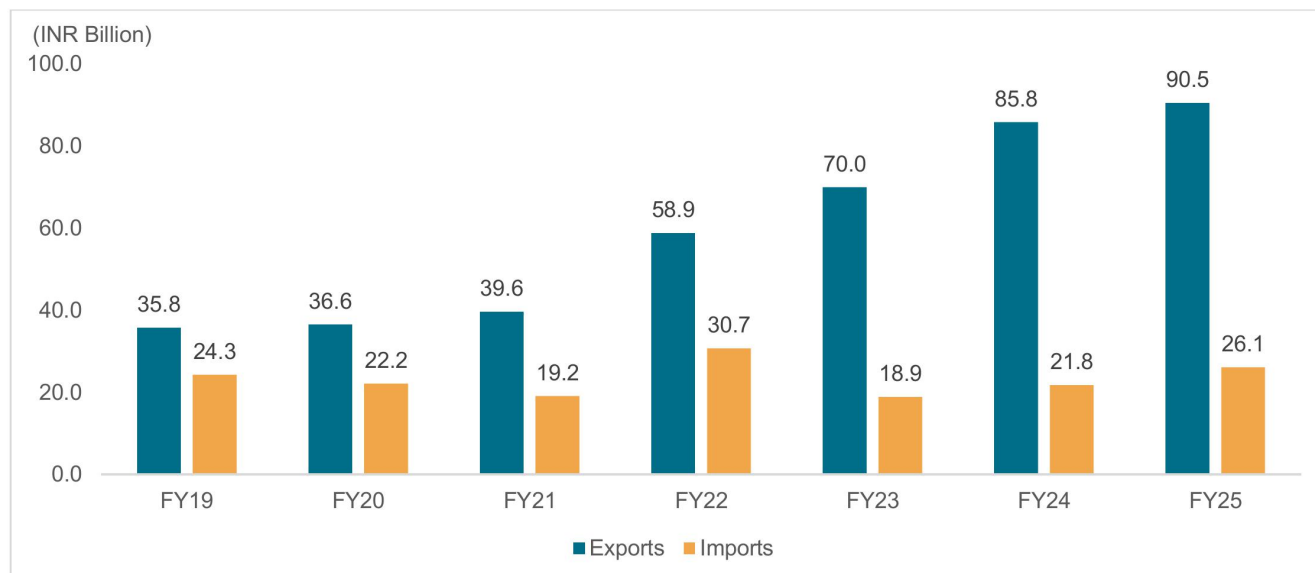
Kindly note that overall revenue from operations of these players is considered which may include revenue from non-PEB segments as well

Source: Annual reports, Crisil Intelligence

PEB exports registered a CAGR of ~17% between fiscals 2019-2025

Exports of PEB increased to INR 90.5 billion in fiscal 2025 from INR 35.8 billion in fiscal 2019, implying a CAGR of ~17% between fiscals 2019-25. Compared to exports, imports registered a CAGR of ~1% during the period. This growing difference between the imports and exports of PEB from India indicates increasing domestic manufacturing/production of PEBs and global demand for PEBs from India, thereby leading to a positive trade balance.

PEB imports and exports — India



Notes: Following HSN codes are considered for the purpose of the chart above: 94069090, 73089090 and 73089010

Source: Ministry of Commerce and Industry, Crisil Intelligence

USA, UAE, and Saudi Arab were the major export location of PEB in fiscal 2025

In fiscal 2025, USA was the top export location of PEB from India with export value of INR 50.4 billion, making it the largest export market of PEB from India. USA was followed by UAE and Saudi Arab, with the export value of INR 3.5 billion and INR 2.5 billion respectively. Collectively, these countries (top three) contributed to ~62% of the total PEB exports from India in fiscal 2025.

Major export destination of PEB products from India- top 10 countries (fiscal 2025- in INR billion)

Region	Export value (INR billion)
USA	50.4
UAE	3.5
Saudi Arab	2.5
U.K.	2.4
Australia	1.7
Tanzania Rep	1.5
Nepal	1.4
Bhutan	1.3
Qatar	1.2
Spain	1.0

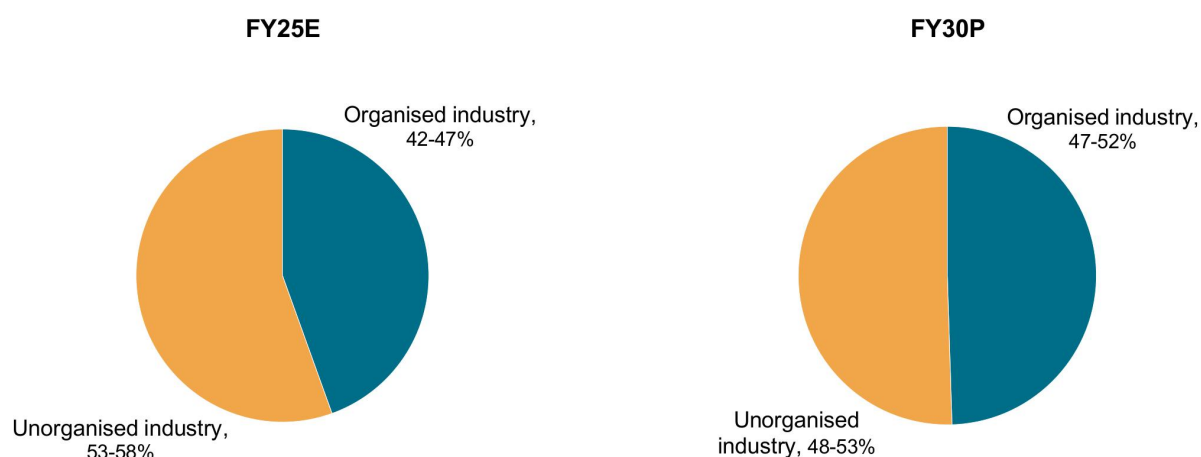
Notes: Following HSN codes are considered for the purpose of the chart above: 94069090, 73089090 and 73089010. The above chart only represents top 10 countries where PEB products from India are exported, share of other countries stood at ~26% (~INR 24 billion)

Source: Ministry of Commerce and Industry, Crisil Intelligence

Pre-engineered buildings market remains competitive with large unorganised vertical; organised sector remains superior to unorganised one

As of fiscal 2025, the organised industry held a 42-47% revenue share in the overall industry. The remainder is the fragmented unorganised industry, which accounts for 53-58% of the overall market, as high capital investment is not required for entering the market. However, the organised sector has an edge over the unorganised sector in terms of a reliable track record, maximised supply chain capabilities, and quality engineering services and products, due to which there has been a growing shift towards the organised sector. This shift is also expected to augment the revenue of players in the organised market. Hence, moving forward, the share of the organised industry is expected to improve to 47-52%, with the unorganised industry forming the remainder 48-53%.

Share of organised and unorganised sectors in PEB



Notes:

E: Estimated, P: Projected

Source: Crisil Intelligence

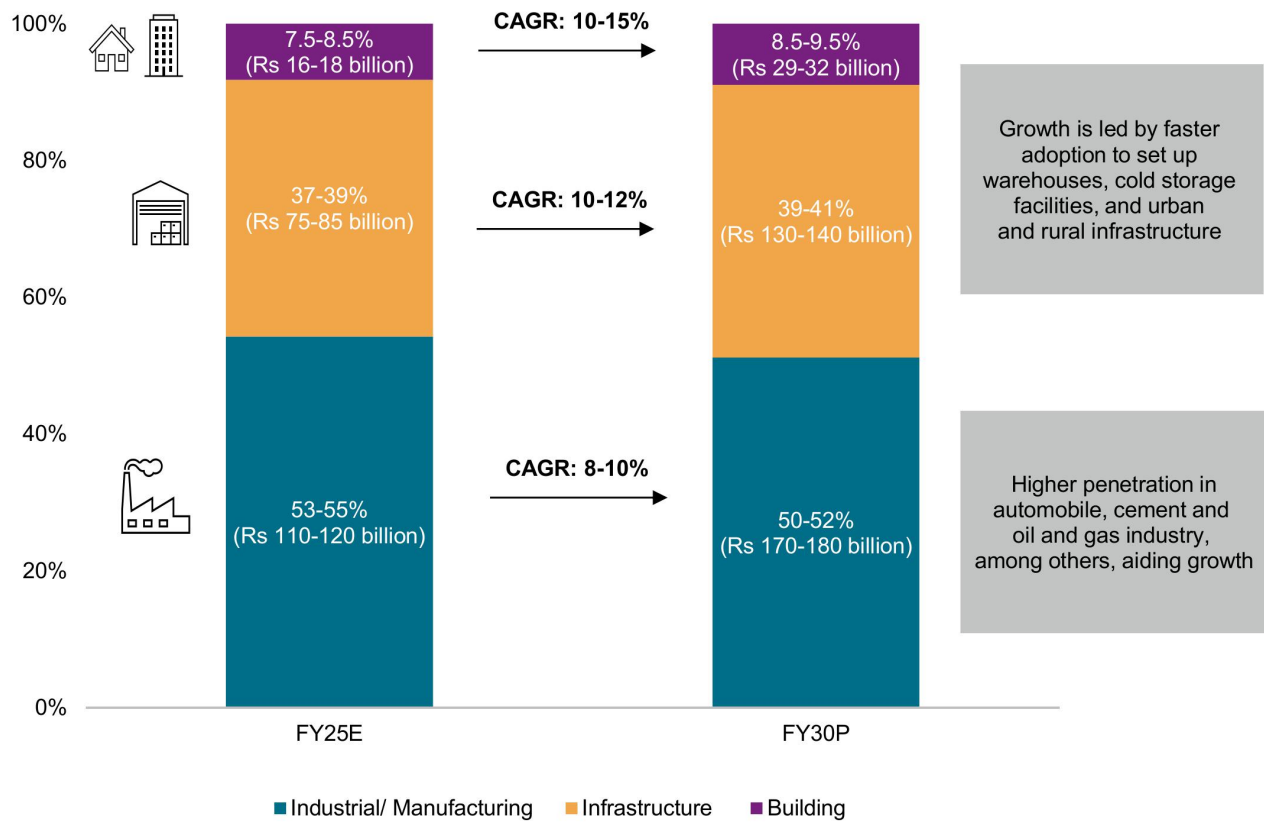
Share of infrastructure in the pre-engineered steel building market to increase

The pre-engineered steel building market in India can be divided into three broad end-use sectors: industrial/manufacturing, infrastructure, and building (residential, commercial and non-commercial). The industrial sector, which is estimated to hold the largest market share of 53-55% in FY25, is expected to account for 50-52% of the market by FY30. The high industrial sector's share in the pre-engineered steel buildings market is led by higher penetration in the automobile, cement, and oil and gas markets, among others.

The infrastructure sector is estimated to increase its share to 39-41% by FY30 from an estimated 37-39% in FY25. Pre-engineered steel buildings in the sector include warehouses, cold storage facilities, data centres, power plants, aircraft hangers and railway yards. PEB warehouses are also gaining prominence post GST implementation.

The buildings sector share in the pre-engineered steel buildings market, which was low at 7.5-8.5% in FY25 is estimated to remain range-bound at 8.5-9.5% in FY30.

Market segmentation by end-use sectors



Note:
E: Estimated; P: Projected
Source: Crisil Intelligence

SWOT (Strengths, Weaknesses, Opportunities, Threats) Analysis

Strengths	Weaknesses
- Growing acceptance of PEBs in the construction sector due to faster construction times and reduced dependence on onsite labour - Availability of improved and advanced machinery and technologies - Increasing access to international markets - Rise in government-led innovative construction projects like Light house projects under the ambit of PMAY-U - Launch of policies like Domestically Manufactured Iron & Steel Products (DMI&SP) and PLI scheme for specialty steel, which is expected to positively impact the availability and quality of steel as a raw material, supporting the PEB industry	- As Steel is the major raw material for PEB construction and a good conductor of heat, it reduces the thermal comfort of the building and the overall fire resistance of the building - Steel being one of the major raw materials for PEB construction, can make entire PEB structure susceptible to corrosion if not properly maintained - High presence of unorganized segment combined with lack of differentiated offering may result in price pressure. - Limited suppliers of high-grade steel, makes the industry susceptible to supply chain issues - Future expansions of PEB become difficult if such expansions are not properly thought out from the start of the project
Opportunities	Threats
- As of fiscal 2025, the share of PEB in the building, industrial and infrastructure sector was estimated at 0-1%, 13-15% and at 6-8% respectively. Overall share of PEB in construction was only around 3-5% as of fiscal 2025. This low share of pre-engineered construction in overall construction indicates high growth potential - Growing popularity of sustainable buildings may help the sector- PEB is a more sustainable alternative to conventional RCC buildings - Shift from RCC to PEB construction combined with low share of PEB in overall construction - Rising construction spends, especially in infrastructure segment, to boost the demand of PEBs - Low penetration of PEBs in building segments combined with increasing urbanisation to improve demand of PEBs in building segments - Growing demand from warehouses and cold storage due to increase in the penetration of ecommerce in India expected to help the domestic PEB industry	- Traditional RCC construction holds the dominant market share (95-97%), posing strong competition - Failure to gain widespread acceptance due to limited awareness, knowledge gap, and misconceptions can limit the growth - Lack of skilled labours including fabricators and designers may result in knowledge and experience gap, which may lead to operational inefficiencies - Increasing geopolitical uncertainties may adversely affect steel prices, which is the prominent raw material of PEB - Standardisation of PEB components often results in modular sizes and shapes, limiting the freedom to create highly unique or unconventional designs - Some parts of PEB structures may require significant replacement or maintenance from time to time, especially during the later stage of the lifespan of PEB structures

Source: Crisil Intelligence

Porter's five forces analysis

Porter's five forces	Description
 Threat of new entrants: High	- The threat of new entrants in the pre-engineered steel construction industry is high due to its moderate capital-intensive nature, as it does not require substantial investments in terms of manufacturing facilities/factories, specialised equipment and skilled labour. - However, high-value clients prefer credible manufacturers of pre-engineered steel structures with a proven track record, which further makes it difficult for new entrants to capture the market. That said, lack of stringent regulatory policies makes the industry more attractive to new entrants.
 Power of customers: High	- The industry's fragmented nature, coupled with lack of undifferentiated products and services, provides high bargaining power to customers. In the case of large projects, the presence of a limited number of big-ticket suppliers, provide high bargaining power to the potential clients, which increases competition for PEB suppliers. Tier 1 service providers compete on quality and pricing. - Overall, the highly fragmented nature of the pre-engineered steel structure industry, coupled with inability to provide product differentiation, provides high negotiation power to customers/ clients, thereby negatively impacting revenue of players in the pre-engineered steel buildings market.
 Power of suppliers: High	Supplier power is high as there are few large and credible suppliers of raw materials and components, allowing them to influence the industry. SAIL, Tata Steel and JSW hold 40-45% of the steel production market. Large pre-engineering companies that have established long-term relationships with these suppliers have an advantage in negotiations, leading to a more balanced power dynamic.
 Competitive rivalry: High	The industry exhibits high competitiveness, driven by fragmentation (55-60% share held by unorganised players) and a limited number of big-ticket clients. Furthermore, due to the increasing demand for standardised pre-engineered steel structures, the scope of product differentiation becomes limited, which puts additional price pressure.
 Threat of substitutes: Low	The threat of substitutes is low. One of its major alternatives is traditional on-site built construction. However, the advantages of pre-fabrication, such as cost savings, faster construction times and more eco-friendly nature, are positively impacting its demand. Traditional construction still holds a major share in overall construction.

Source: Crisil Intelligence

Policy and regulatory framework

There is no existing regulatory or policy framework particularly for pre-engineered steel buildings in India. However, there are various codes, which are discussed below, for the use of steel in construction. The pre-engineered construction industry in India adheres to guidelines and quality standards set by authorities such as the International Organization for Standardization (ISO), Bureau of Indian Standards (BIS), Building Materials and Technology Promotion Council (BMTPC), and Ministry of Housing and Urban Affairs (MoHUA).

The National Building Code (NBC) is designed by BIS, which is responsible for setting guidelines for construction activities, including the use of prefabricated/ pre-engineered components. Civil Engineering Division (CED) Committee number 2 to CED Committee number 59 of BIS are related to construction. Furthermore, CEDs such as CED 32, CED 51 and CED 46 are related to prefabricated/ pre-engineered construction. Other standards include IS-800 (Indian Standard - General Construction in Steel - Code of Practice), IS-875-PART- I to V (Loads and Combinations), and IS-1893 Criteria for Earthquake Resistant Design of Structure (R-5). Model Building Bye-Laws, 2016, published by Town and Country Planning Organisation, MoHUA, plays a vital role in formulating policies and regulations for the construction industry, offering guidance and support for adopting new technologies. For instance, Sections 6.1.1 and 6.4 of the provisions for structural safety provide specific details for pre-engineered systems. Moreover, depending on the nature of the project,

specialised agencies may be involved in regulating specific aspects of pre-engineered construction for infrastructure projects. For instance, during the pandemic, the Ministry of Health and Family Welfare consulted experts from institutions such as IITs of Delhi, Roorkee and Madras, as well as MIT Pune, regarding suitable options available for pre-engineered structures (panels) in the case of healthcare infrastructure.

ISO 9001:2015, ISO 14001:2015, OHSAS 18001:2017, ISO 14001:2004 and OHSAS 18001:2007 (Southeast Asia) are a few quality standards and guidelines adhered to by the PEB industry in India. These standards cover the design, fabrication and supply of pre-engineered buildings and structural steel works. Other international standards include the Metal Building Manufacturers Association (MBMA), American Institute of Steel Construction (AISC) and American Welding Society (AWS).

Some applicable codes and standards as per Indian standards for PEBs/ steel construction/ prefabricated structures

Code	Description
IS:875-I	Code of practice for design dead loads for buildings and structures
IS:875-II	Code of practice for design imposed loads for buildings and structures
IS:875-III	Code of practice for design loads (other than earthquake) for buildings and structures
IS:1893	Criteria for earthquake resistant design of structures
IS:4326	Code of practice for earthquake resistant design and construction of buildings
IS:800	Code of practice for use of structural steel in general building construction
IS:801	Code of practice for use of cold-formed light gauge steel structure members
IS:811	Specification for cold-formed light gauge structural steel sections
IS:4923-III	Hollow steel sections for structural use – specification
IS:8629	Code of practice for protection of iron and steel structures from atmospheric corrosion
IS:4000	High strength bolts in steel structures
IS:14142	Code of practice for design and construction of floors and roofs with prefabricated brick panel
IS:11447	Code of practice for construction with large panel prefabricates
IS:15917	Building design and erection using mixed / composite construction – code of practice
IS:15916	Building design and erection using prefabricated concrete
IS:14213	Code of practice for construction of walls using precast concrete stone masonry blocks

Note: The above list is an indicative and not exhaustive representation of quality standards for PEBs in India

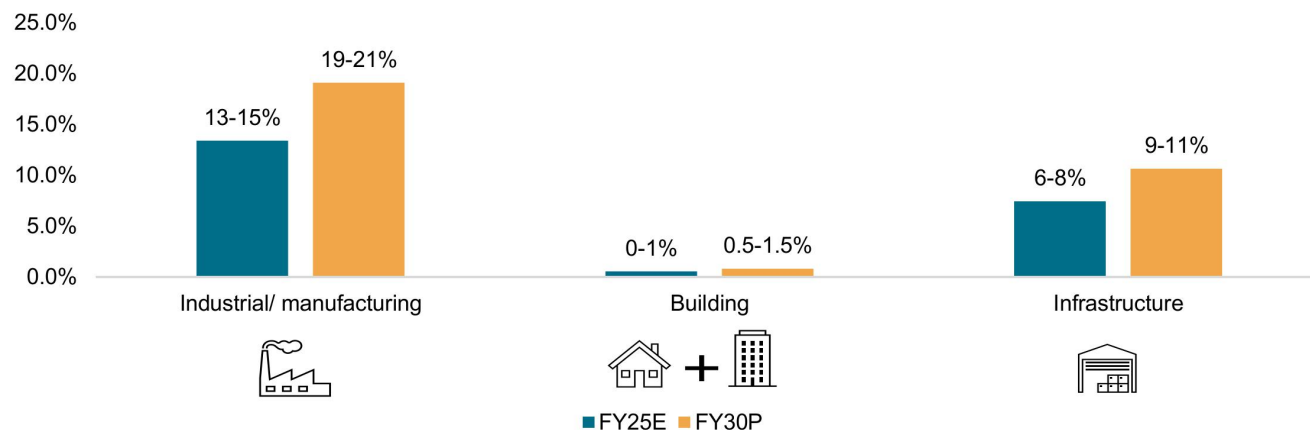
Source: Crisil Intelligence

Key growth drivers

Low penetration of PEB in the building sector

In fiscal 2025, the share of PEB in the building sector was estimated at 0-1%, considerably lower than the penetration of PEB in the industrial sector (13-15%) and infrastructure sector (6-8%). However, growing awareness of benefits of PEB over traditional construction methods, combined with low penetration of PEB in the building sector, provides room for further growth in this sector. Furthermore, growing urbanisation coupled with space and time constraints have fuelled the shift towards vertical construction from horizontal construction. This shift is also expected to increase the demand of PEB in buildings segment, especially in high-rise buildings.

Share of pre-engineered construction in various sectors



Notes:

Infrastructure includes warehouse. Building includes residential, commercial and non-commercial verticals

E: Estimated; P: Projected

Source: Crisil Intelligence

Shift from RCC to PEB

Growing awareness of PEB structures along with their benefits over traditional RCC construction has led to an increase in PEB projects. Use of PEB not only helps in expediting the project timelines but also is more sustainable due to less wastage. As a result, pre-engineered steel construction structures are garnering greater acceptance over traditional onsite construction practices of erecting entire structures onsite. This positioning is expected to serve as a catalyst for growth of pre-engineered steel structures in the construction industry.

Increasing popularity of green and sustainable buildings

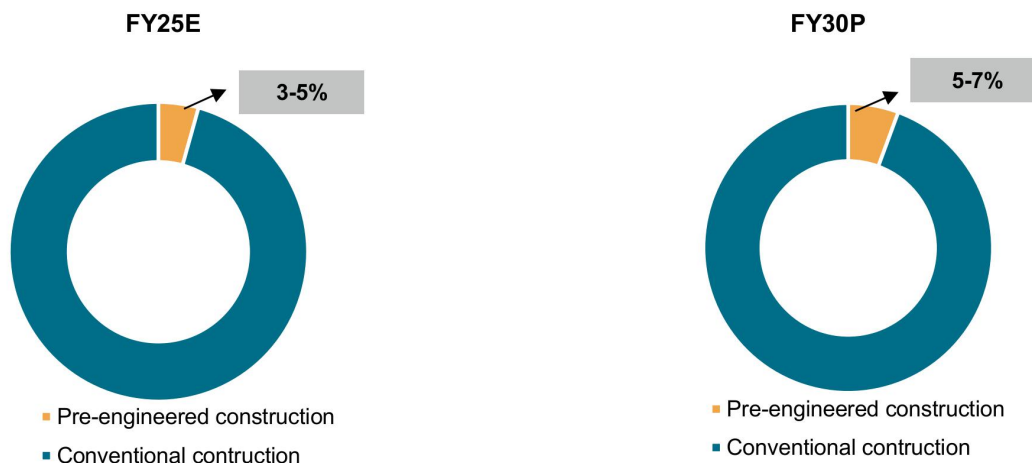
The increasing popularity of green and sustainable buildings among large corporations as well as logistics players is also driving growth of pre-engineered steel buildings, as streamlined processes minimise material waste and make these buildings more sustainable than traditional buildings. Additionally, steel, which is highly recyclable, is a major component in pre-engineered steel building construction.

Moreover, use of pre-engineered steel building structures supports deconstruction and reconstruction, enabling the building components to be reused or recycled at the end of their life cycle. This approach significantly reduces the amount of construction-related waste sent to landfills, leading to a more sustainable construction industry. Overall, the growing shift of logistics players towards green logistics is expected to support the pre-engineered steel building sector.

Low percentage share of pre-engineered construction in overall construction indicates high growth potential

The pre-engineered construction industry in India, even though gaining acceptance, is still in its infancy. As of FY25, penetration of pre-engineered construction in the overall construction sector is estimated to be around 3-5%. This low share of pre-engineered buildings in India combined with the increasing awareness of benefits of pre-engineered buildings over RCC, provides a substantial growth potential of pre-engineered buildings in India. This will help in increasing the share of pre-engineered construction in overall construction to 5-7% by FY30.

Share of pre-engineered construction in overall construction



P: Projected; E: Estimated

Source: Crisil Intelligence

Low steel consumption in India

As of calendar year 2024, the country's annual per capita steel consumption stood at 103 kg per annum, compared with the global average of 215 kg. Favourable government policies such as the National Steel Policy aim to increase India's per capita steel consumption and create a technologically advanced and globally competitive steel industry in the country to promote self-sufficiency in steel production as well as economic growth. The National Steel Policy focuses on the following three main aspects:

- Increase consumption of steel through major sectors (segments) of infrastructure, automobile and housing
- Achieve 300 MT of steelmaking capacity by 2030
- Increase per capita steel consumption from around 60 kg in 2017 to 160 kg by 2030

This is expected to aid the pre-engineered building industry by positively impacting the quality of steel available, which is the dominant raw material required for pre-engineered buildings. Additionally, increasing penetration of pre-engineered buildings in infrastructure projects, coupled with the National Steel Policy's aim to boost steel consumption in the infrastructure sector, is expected to positively impact pre-engineered buildings.

Furthermore, the government has implemented the Domestically Manufactured Iron & Steel Products (DMI&SP) policy for promoting 'Made in India' steel for government procurement. Additionally, in 2021, the government approved the Production Linked Incentive (PLI) scheme for speciality steel. The duration of the scheme is five years, from fiscal 2024 to fiscal 2028. With a budgetary outlay of INR 63.2 billion, the scheme is expected to bring in investment of approximately INR 400.0 billion and capacity addition of 25 MT for speciality steel. These steps will positively impact the availability and quality of steel as a raw material, supporting the PEB industry.

Increased industrial capex and planned capacity expansion to boost PEB sector

Industrial capex averaged Rs 4.3 trillion per annum in fiscal 2021-2025E. Investment are expected to reach – Rs 7.1 trillion by fiscal 2030, marking an average annual increase of 1.6x, driven by higher capacity utilisation, string corporate balance sheets and the PLI scheme targeting multiple sectors. Over fiscals 2026-2030, the PLI scheme and emerging

sector are set to account for a quarter of the country's capex from 12% in fiscal 2021-2025, emphasising the growing importance of these sectors in India's industrial landscape.

Increased capex in these industries is anticipated to indirectly boost demand for pre-engineered steel structures, especially in large and complex industrial construction projects. Pre-engineered steel construction may be preferred for large and complex industrial projects, depending on the size, structure and construction span of the building, due to its shorter construction spans, engineering efficiency, sustainability and quality advantages.

Increased focus on renewable energy capacity addition

India's installed generation capacity, which stood at 356 GW at the end of fiscal 2019 reached 475 GW in fiscal 2025 on the back of healthy renewable capacity additions (including solar, wind, hybrid, and other renewable sources). In fiscal 2026, renewables are expected to account for 35-40% of the installed capacity, up from 22% in fiscal 2019, whereas coal-based capacity is expected to have tapered to 40-45% over the same period from 55% in fiscal 2019. Moving forward, renewable capacity is expected to surpass the 360 GW mark in fiscal 2030 on the back of strong renewable capacity additions over fiscals 2026-30. By fiscal 2030, RE capacity is expected to account for 45-50% of the installed capacity of 745-755 GW. These capacity additions will require substantial capex in development of needed infrastructure.

Additionally, the launch of National Green Hydrogen Mission on 4th January 2023 with an outlay of Rs. 197 billion up to FY 2029-30 will also positively impact the sector. This mission aims to accelerate the deployment of Green Hydrogen as a clean energy source, will support the development of supply chains that can efficiently transport and distribute hydrogen. This includes the use of pipelines, tankers, intermediate storage facilities, and last leg distribution networks for export as well as domestic consumption. It aims to contribute to India's goal to become self-reliant through clean energy.

Infrastructure development and investments to support demand for PEB

Infrastructure investments are seen growing faster than the other two sectors due to the government's push through the NIP, NMP and the Gati Shakti initiatives. Construction investments in this sector are expected to be ~Rs 50-55 trillion between fiscals 2026 and 2030, up from Rs 34 trillion between fiscals 2021 and 2025.

This increased government spending on infrastructure, along with growing awareness of benefits of pre-engineered steel buildings over traditional construction, is expected to boost demand for pre-engineered steel buildings in India.

Warehouse and cold storage expansion to be major contributors to PEB demand

Due to increasing e-commerce penetration and changing customer preferences, companies are also investing in warehousing and cold storage facilities. Additionally, due to rapid urbanisation and economic growth in developing countries, various companies are seeking faster and more cost-effective ways to construct their warehouses. Pre-engineered buildings are preferred for their cost-effectiveness and speedy construction compared with RCC buildings. They require less manpower and construction time, leading to cost savings. Increased adoption of pre-engineered buildings in warehouse construction will boost overall pre-engineered market growth. Overall, Crisil projects construction investments in the warehousing (agricultural and industrial) and cold storage (single- and multi-commodity) sectors to rise to reach Rs 460-500 billion over the next five years on expectations of increased demand. This increasing construction spends in warehouse segment coupled with growing penetration of PEB in warehousing, is expected to provide a fillip to the overall pre-engineered steel building industry.

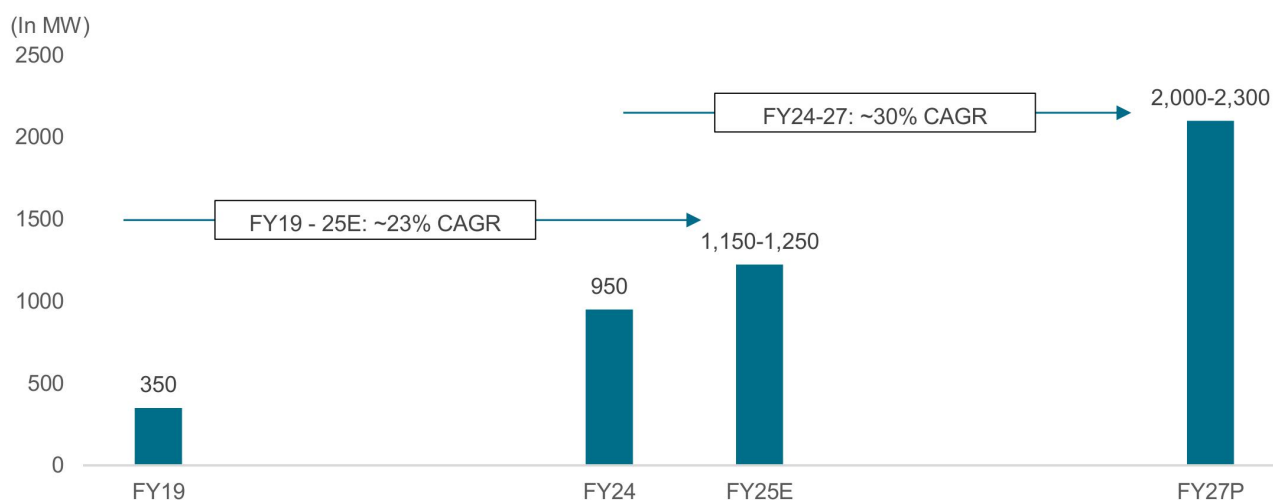
Increasing demand of data centres in India

From fiscal 2019 to fiscal 2025, the Indian data centre industry is estimated to have grown at a CAGR of ~23% in terms of capacity. This growth can be attributed to factors such as growth in internet accessibility, surge in e-commerce adoption, rise in digital adoption, remote working, rise in OTT (over-the-top) consumption, etc.

Additionally, as per the draft Data Centre Policy 2020, data centres to be declared as an Essential Service under The Essential Services Maintenance Act, 1968 (as amended). Furthermore, Data Centre Economic Zones will also be set up for the long-term growth of data centres in India.

These policies combined with the RBI mandate advising all payment system providers to store entire data related to payment systems operated by them in a system only in India is expected to provide impetus to data centre in India, which in turn is expected to boast the demand of pre-engineered steel buildings.

Data centre industry in India (installed capacity)



Note: P: Projected,

"Capacity" refers to the data centre load that is consumed or is dedicated to IT equipment such as servers, storage equipment, communications switches, routers. Power for lighting or cooling the data centre is excluded from IT power. Further, the capacity mentioned in the above chart pertains to third party data centre only.

Source: Industry, company reports, Crisil Intelligence

Rise in government-led innovative construction projects

Policy and regulatory factors play a crucial role in shaping demand, growth and adoption of prefabrication and pre-engineering in the construction sector. For example, government schemes such as PMAY have been instrumental in driving demand and growth of the prefabrication and pre-engineering industry, especially in the housing sector. Light house projects under the ambit of Pradhan Mantri Awas Yojana-Urban (PMAY-U) use distinct technologies to offer affordable and quality housing in an accelerated timeframe.

The increased focus of both central and state governments on providing low-cost housing in the country is expected to boost demand for cold form structures in the future. Additionally, government initiatives such as the light house project are expected to encourage wider adoption of such technologies across India, thereby driving demand for prefabricated and pre-engineered construction structures.

Summary of growth drivers

Sector	Growth drivers
Overall	Low per capita steel consumption in India along with government schemes like National Steel Policy, which aims to boost domestic steel production is expected to help the PEB industry which is highly dependent on few steel suppliers.

Sector	Growth drivers
	Approval of specialty steel under Production Linked Incentive (PLI) Scheme with a budgetary outlay of Rs 63.2 billion and capacity addition of 25 MT will positively impact the availability as well as quality of steel as a raw material.
Industrial/ Manufacturing	- Industrial capex averaged INR 4.3 trillion per annum in fiscal 2021-2025E. Investment are expected to reach – INR 7.1 trillion by fiscal 2030, marking an average annual increase of 1.6x, driven by higher capacity utilisation, strong corporate balance sheets and the PLI scheme targeting multiple sectors. - Over fiscals 2026-2030, the PLI scheme and emerging sector are set to account for a quarter of the country's capex from 12% in fiscal 2021-2025, emphasising the growing importance of these sectors in India's industrial landscape. - Based on an analysis of eight key sectors, Crisil Intelligence estimates construction investment in the industrial sector at INR 4-5 trillion over fiscals 2026-30, compared with INR 4 trillion spends in fiscals 2021-25. - Construction spends across industrial investments in fiscal 2026 are seen rising 3-4% driven by expansion in oil and gas and metals segment. This growth is on a high base of FY25 where the sector grew due to deferred investments from FY21 and FY22 and capex investments from PLI scheme picking up. - Increasing popularity of green and sustainable buildings, along with the benefits of faster construction time and reduced material wastage is expected to increase adoption of PEB. - Growing penetration of EV vehicles in India led by favourable government initiatives like FAME, reduction of GST will require robust EV infrastructure.
Infrastructure	- Growing demand from warehouses and cold storage due to increase in the penetration of ecommerce in India. Additionally, post implementation of GST as well as shift to hub and spoke models, large PLI players have started investing in PEB warehouses. - Construction investments in this sector are expected to be ~INR 50-55 trillion between fiscals 2026 and 2030, up from INR 34 trillion between fiscals 2021 and 2025. - Increase in the demand of data centres India along with RBI mandate to store payment data locally in India, will boost the demand of pre-engineered steel buildings in India owing to increasing penetration of PEBs in data centres. - Growing focus on renewable energy capacity additions will require substantial capex in this field.
Building	- Low share of pre-engineered steel construction in building construction (~0-1% as of FY25), along with increasing awareness of PEB in India will positively impact the demand of PEB. - Over fiscals 2026-30, the construction spends in this sector is expected to rise to Rs 18-19 trillion from Rs 13 trillion in the period between fiscals 2021 and 2025. - Rise in government-led innovative construction projects like Light house project under the ambit of PMAY- U will provide more awareness of non-conventional construction methods like PEB in India.

Source: Crisil Intelligence

Key challenges

Vulnerability to fluctuations in raw material prices

Prices of raw materials, mainly steel, could affect project costs, profitability and project timelines. According to industry sources, the pre-engineered steel building industry relies heavily on a limited number of high-quality steel suppliers, including Tata Steel, Nippon Steel, ArcelorMittal Nippon Steel India, Steel Authority of India Ltd, Jindal Steel & Power Ltd, etc, for raw materials such as hot-rolled (HR) coils and high-grade S345 MP. The limited base gives these suppliers significant negotiating power, and the dependence on a small pool of suppliers makes the industry susceptible to supply-chain issues. Additionally, steel prices are also susceptible to global geopolitical events, which further emphasises the need for strategic resource planning.

Transportation challenges

As pre-engineered steel structures are manufactured offsite, transportation of these structures to the construction site involves logistics expenses, which are a function of the distance and the complexity of the transportation process and can significantly impact the overall project cost. Furthermore, these components are susceptible to damage during transportation and handling and may require rework or replacement, which, in turn, could lead to additional costs and project delays. Hence, increasing distance between the installation site and the manufacturing plant may impact price competitiveness.

Additional safeguards to withstand natural disasters

Pre-engineered steel structures should be designed after due consideration and study of the seismic classification and history of the construction site. However, this can complicate their design and manufacturing process and may involve incorporating additional engineering measures and special materials to enhance the structural durability of such prefabricated structures. Furthermore, even in the event of a fire, certain components of pre-engineered steel buildings, such as flange braces, sag rods and cross bracing rods, are susceptible to damage. The use of fire-retardant intumescent paint, while highly effective, is often limited due to its prohibitive cost. Consequently, its application is reserved for specialised cases, highlighting the need for alternative methods and materials to safeguard pre-engineered steel structures against fire-related risks.

Medium capital outlay and fragmented industry

The steel pre-engineering industry does not require significant upfront capital investments in terms of manufacturing facilities and suitable technology, leading to fragmentation with multiple manufacturers, suppliers and contractors operating independently. Hence, intense competition is impacting margins of players. Moreover, players in the unorganised industry may compromise on quality standards to ensure price competitiveness, which may weaken the structural security of the building.

Design limitations

Standardisation of pre-engineered steel components often results in modular sizes and shapes, limiting the freedom to create highly unique or unconventional designs that require non-standard dimensions. Structural constraints must be carefully considered in manufacturing pre-engineered steel structures to ensure the stability and safety of the structure. This imposes limitations on architects/designers in terms of design that can be structurally feasible. Furthermore, the integration of pre-engineered steel structures with traditional onsite construction can introduce additional challenges, which can exacerbate in difficult terrains.

Limited knowledge and lack of skilled manpower

The pre-engineered steel construction industry in India is in its infancy, because of which there is a shortage of skilled personnel with adequate technical knowledge of these structures. Designers play a crucial role in creating designs for the successful implementation and integration of pre-engineered steel buildings, but not all designers may possess adequate knowledge and experience in modular construction techniques. Despite the growing awareness about pre-engineered steel structures, traditional construction methods often dominate architectural education and practice. This results in a knowledge gap in understanding the specific requirements of pre-engineering.

3.3 Sandwich insulated Panels and Light Gauge Steel Framing (LGSF)

Sandwich insulated Panels

Sandwich insulated panels are building materials made of two durable outer layers and a lightweight internal core, usually composed of substances like polyurethane, polystyrene, mineral wool, glass wool, etc for insulation purposes. Furthermore, there are majorly two types of manufacturing technologies related to sandwich insulated panels- discontinuous lines and continuous lines. In continuous line, materials for the sandwich insulated panels are processed rapidly and Polyurethane foam is continuously sprayed onto the upper and lower surface materials, which are formed at a consistent speed. This results in polymerization, producing different variations of Sandwich Insulated Panels. Once the panels are fully formed, they are cut to the desired length without interrupting the production line, ensuring high efficiency and output. Additionally, continuous lines offer better productivity, larger production volume, and enhanced automation compared to discontinuous line processing, where materials are processed separately. Furthermore, as majority of process are automated in continuous line, the labour cost associated with production is also decreased.

However, discontinuous lines are better suited for products with special/customized shapes or for businesses that do not have the production volume to justify the investment in continuous equipment. In this process, the materials are processed in separate stages, i.e. after the surface material is formed, it is cut to the required dimensions and then assembled together in the laminator. The foam is injected between the surface materials, solidifying the structure into the pre-determined shape of the sandwich insulated panel. This process offers greater flexibility for custom-shaped products but requires more manual intervention and generally longer cycle times compared to the continuous method.

Sandwich insulated panels are designed in a manner that enhances thermal insulation or acoustic insulation depending upon the insulation material used. Additionally, depending upon the core material, it also provides resistance to water, fire, etc. Due to these insulation and resistance capabilities, sandwich insulated panels are finding use case in multiple industries where temperature control is required. More details about the end-use segments of sandwich insulated panels are provided in the following table.

Major end use segments for sandwich insulated panels

End use segments	Description	Demand drivers
Cold Storage and Refrigerated Facilities	- Sandwich insulated panels are used in cold storage and refrigeration units due to their thermal insulation. - These panels reduce energy costs by maintaining consistent internal temperatures, which is essential for perishable goods.	- Growth in the food supply chain, especially for frozen and processed food sectors, etc. - Need for cold storage facilities close to urban centres are key drivers.
Industrial and Warehousing Facilities	- Warehousing and industrial units utilize sandwich insulated panels for walls, roofing, and facades due to their ease of installation, and insulation properties. - In industrial settings, like electronics and electrical goods industries, semiconductor industry, etc sandwich insulated panels are utilised to maintain optimal temperature required for storage and operational purposes	- Rise of e-commerce and logistics has spurred demand for warehousing solutions. - Growth of major end use industries like electrical goods, semiconductors, etc is also expected to provide impetus to sandwich insulated panels industry
Modular and Prefabricated Buildings	- Prefabricated buildings, which are assembled off-site and transported, use sandwich insulated panels to streamline construction processes. - In addition to providing insulation, sandwich insulated panels help achieve consistent quality in modular structures.	- Increasing urbanization, need for affordable housing, and demand for portable, temporary structures. - Growing awareness of non-conventional construction technologies

End use segments	Description	Demand drivers
Commercial and Residential Buildings	- Sandwich insulated panels are gaining popularity for cladding, roofing, and internal partitioning in both residential and commercial buildings due to their acoustic insulation and thermal capabilities. - Sandwich insulated panels are finding use case in facades and elevations as well due to their insulating capabilities and aesthetics	Increasing construction spends in buildings segment (both residential and commercial)
Clean rooms	- Cleanroom is an essential requirement for industries like healthcare, pharmaceuticals, etc. - Sandwich insulated panels are used in cleanroom due to insulation properties like thermal insulation, etc which mentions optimal temperature requirements	Growth in major end use segments like pharmaceuticals and healthcare is expected to increase the demand of clean rooms

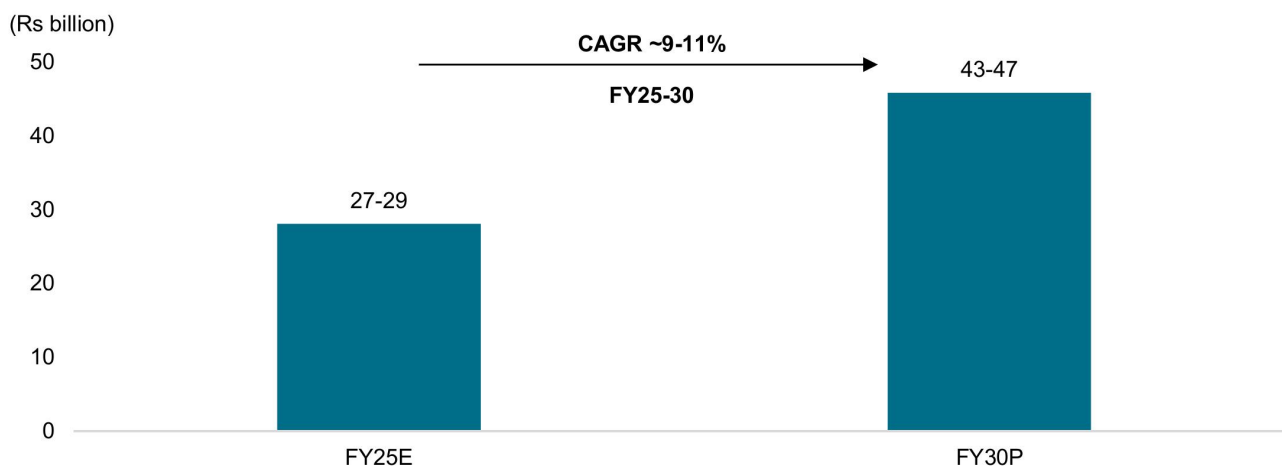
Source: Crisil Intelligence

Indian sandwich insulated panel market is estimated to register a CAGR of 9-11% between FY25-30

As of FY25, the Indian sandwich insulated panel market is estimated around Rs 27-29 billion. Key growth drivers of the industry include increase investments in end use segments like cleanrooms, cold storage, and warehouses. Some of the players present in domestic sandwich insulated panel industry are EPack Prefab Technologies Limited, Kingspan Jindal Private Limited, Metecno (India) Private Limited, Lloyd Insulations (India) Limited, Rinac India Limited, etc.

Moving forward, the industry is estimated to register a CAGR of 9-11% between FY25-30 and value around Rs 43-47 billion by FY30. This growth will be driven by continued construction investments, favourable government policies like Lighthouse project, and expanding end use segments like pharmaceuticals, etc.

Indian sandwich insulated panel market in value terms



E: Estimated, P: Projected

Source: Crisil Intelligence

Light Gauge Steel Framing (LGSF)

Light Gauge Steel Framed Structures (LGSF) is based on factory made galvanized light gauge steel components, designed as per codal requirements, produced by cold forming method and assembled as panels at site forming structural steel framework of a building of varying sizes of wall and floor. The basic building elements of light gauge steel framing

are cold formed sections which can be prefabricated on site using various methods of connection. The assembly is done using special types of screws and bolts.

LGSF is typically ideal for one to three storey high buildings, especially in residential homes, apartments and commercial buildings. Compared to traditional construction, it provides faster construction timelines, mobility and is more environment friendly. As urbanization accelerates and the demand for housing and commercial spaces increases, LGSF offers a viable solution that meets the needs of modern construction.

Major End Use Segments for LGSF

Facilities	Insights	Demand drivers
Commercial and Office Buildings	LGSF is utilized in commercial and office buildings, especially where a high strength-to-weight ratio is beneficial, such as in urban settings where construction speed and space efficiency are priorities.	Demand for cost-effective commercial spaces, especially in high-density areas, and flexibility in design for interior configurations
Prefabricated Structures	LGSF is also widely used in prefabricated construction, where components are prefabricated and assembled on-site.	The need for flexible, fast-to-assemble structures that can be transported and installed with minimal disruption.
Infrastructure and Public Buildings	Public buildings, including schools, healthcare facilities, and government offices, can utilize LGSF for fast construction.	Population growth, expansion of public services, and budget constraints drive demand for efficient building solutions in the public sector.

Source: Crisil Intelligence

Major risk and challenges for Sandwich insulated panels and LGSF

Risk	Impact
Raw material price volatility	- Sandwich insulated panels and LGSF rely heavily on materials like steel, aluminium, and insulation cores (e.g., polyurethane, polystyrene). Fluctuations in steel and metal prices due to global supply-demand dynamics, tariffs, and geopolitical issues directly impact manufacturing costs. - Price increases can compress margins or require price adjustments, which may reduce demand if customers seek lower-cost alternatives.
Supply Chain Disruptions	- The industry relies on a stable supply chain for metals, insulation materials, and finishing elements. Disruptions, such as those caused by geopolitical conflicts, pandemics, or natural disasters, can delay production and lead to cost increases. - Extended delays may result in project backlogs, strained client relationships, and potential loss of contracts.
Environmental Regulations and Standards	- There is increasing pressure to meet environmental standards, which an increase costs for raw material processing and production, thereby impacting pricing. - Non-compliance could lead to penalties, increased production costs, or limitations on market access, especially in regions with stringent environmental laws
Technological Advancements and Competition	- Companies may need to invest in research and development and employee training programs to stay informed and adapt to advances in construction technologies (e.g., 3D printing, alternative materials), which allows competitive pricing. - Failing to innovate can lead to loss of market share to firms with more advanced products or those that can offer other benefits in terms of faster, more cost-effective solutions, etc.
Skilled Labor Shortages	- Sandwich insulated panel and LGSF require skilled labour. Labor shortages may result in higher installation costs and longer project timelines, affecting both profitability and client satisfaction. - Additionally, companies may be required to train man force about new technologies, methods to ensure quality work, which may further increase operational costs for companies
Construction Industry Cyclicity	The industry is cyclically influenced by seasonality, funding availability, and economic cycles. In downturns, construction projects may be delayed or cancelled, decreasing demand.

Risk	Impact
	During low cycles, companies may face cash flow issues, requiring strong financial planning and contingency strategies
Higher share of the unorganized market	- This industry is largely characterized by having larger share of unorganized market that often lack standardization and can lead to structural issues and safety concerns in construction. - Furthermore, unorganized market players usually play on price, which further increases pricing pressures on the organized market players.

Source: Crisil Intelligence

3.4 Prefabricated Modular Structure

Overview of prefabricated modular structures

Modular prefabricated construction is a sub section of the overall prefabricated industry and involves the off-site production of construction elements such as portable cabins, guard rooms, semi-permanent buildings, etc within a controlled and regulated factory environment. These components are then transported to the construction site usually in an already assembled form, though some installation might be required based on the specific projects and structures. This method not only streamlines the construction process but also enhances efficiency and quality control, as the production takes place in a setting that is less susceptible to the unpredictable variables often encountered on-site.

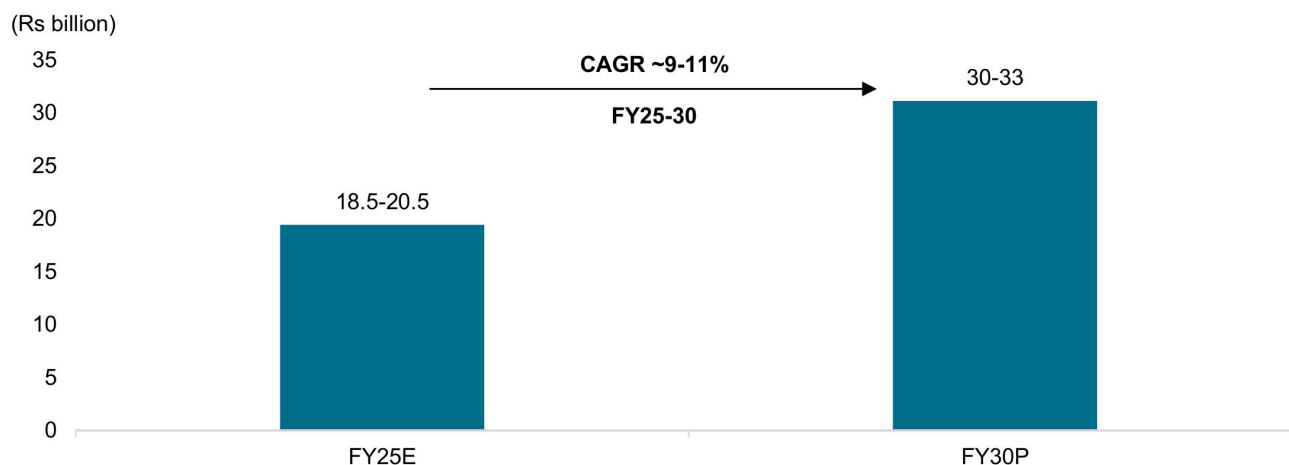
By utilizing prefabricated modular construction, projects can be completed more swiftly, as much of the work is done simultaneously in the factory while site preparation occurs. This parallel processing reduces the overall construction time and helps meet tight deadlines.

Indian modular prefabricated structure market is estimated to register a CAGR of 9-11% between FY25-30

As of FY25, the Indian prefabricated market was estimated around Rs 18.5-20.5 billion. Key growth drivers of the industry include increase investments in end use segments like warehouses, growing ecommerce segments and increasing preference for sustainable and quick construction.

Moving forward, the industry is projected to register a CAGR of 9-11% between FY25-30 and value around Rs 30-33 billion by FY30. This growth will be driven by continued growing end use segments like ecommerce, increased demand from end use industries like defence and construction, growing need of sustainable and scalable infrastructure.

Indian modular prefabricated structure market in value terms



E: Estimated, P: Projected
Source: Crisil Intelligence

Key growth drivers of Indian modular prefabricated structure market

Drivers	Description
Rising demand of modular structures from industry like defence	Prefabricated modular structures are witnessing demand from industries like defence, roadside construction, etc due to flexible nature and quick installation. Defence forces are utilizing modular structures for temporary housing/ base camps, etc whereas construction companies are utilising it for temporary roadside offices.
Adoption in education and healthcare Sectors	Prefabricated modular structures are used for educational and healthcare facilities, especially in remote areas where traditional construction faces challenges. Their efficiency and quality make them ideal for quickly establishing structures like schools, colleges, hospitals, and clinics, etc.
Integration of advanced construction technologies	Prefabricated modular construction is expected to benefit from innovative technologies like robotics, 3D printing, and IoT solutions. Automation in prefabrication, robotic assembly, and IoT sensors for energy management are improving the efficiency and performance of modular structures, driving their adoption across industries.
Growing infrastructure and industrial construction	Prefab modular units like portable cabins, guard rooms, etc are being utilised as onsite infrastructure due to their easy assembly and portable nature. Hence, increasing infrastructure and industrial construction activities will provide an impetus to the modular prefabricated market

Source: Crisil Intelligence

Key challenges and threats in Indian modular prefabricated structure market

Challenges and threats	Description
Lack of awareness	Even though awareness about non-conventional construction methodologies like prefabricated modular construction is improving, misconceptions about the overall design and quality of these structures still exist, which hinder the overall acceptance and demand of these structures.
Fragmented supply chain and quality control issues	India's construction supply chain exhibits significant fragmentation, with the prefab modular sector frequently relying on various suppliers for essential materials such as concrete, insulation, and interior fittings. This reliance can complicate quality control, as variations in material quality or delays within the supply chain may adversely affect the overall quality of the final structure, leading to extended project timelines and increased costs
Limited expertise	Being a relatively new technology compared to traditional constructions, modular prefabricated construction also faces manpower issues. The industry faces challenges in terms of skilled manpower, who are experienced in prefabrication techniques and can deliver high quality structures. This, in turn require additional resources from the companies, which may increase operating costs for them.
Freight challenges	Prefabricated modular structures are usually bulky and requires due care will transportation. This requires proper expertise during its transit and final assembly. Additionally, any damage or delay due to transit can further increase the final cost to the company and harm its reputation. Furthermore, in case of unavailability of proper road infrastructure, it can further increase challenges for the company.
Competition from substitute products	Even though prefab modular structures are finding increasing use cases in the construction space, it still faces competition from traditional construction methods like RCC due to limited awareness.

Source: Crisil Intelligence

4 Assessment of competitive landscape of pre-engineered steel buildings industry in India

In this section, Crisil has analysed some key players operating in the integrated pre-engineered steel buildings industry in India. Integrated PEB players are considered to be providing complete end-to-end PEB solutions, including, design, engineering, fabrication of the structure, and onsite delivery and installation. Major steel players such as Steel Authority of India Limited (SAIL), Rashtriya Ispat Nigam (RINL), Tata Steel Limited Group (TSL), ArcelorMittal and Nippon Steel (AM/NS), Jindal South West Group (JSWL) & Jindal Steel & Power Limited (JSPL), are not considered in this section. Major business of these steel players come from manufacturing of steel and steel products including structural steel products. These steel players are suppliers to the integrated PEB players.

Note: The list of competitive landscape peers considered in this section is not exhaustive but an indicative list. Only players which provide integrated pre-engineered steel building offerings within a comparable revenue range are considered in this section.

Data has been obtained from publicly available sources, including annual reports available in the public domain/ filed with the RoC, investor presentations of listed players, regulatory filings, rating rationales, and/or company websites and social media pages.

Overview of key players in PEB industry

Company name	Year of incorporation	Business overview ¹
Epack Prefab Technologies Limited	1999	Epack Prefab Technologies Limited is a group company of EPack and has over 24 years of experience. The company offers multiple products/ services including pre-engineered buildings, prefabricated modular buildings, sandwich insulated panels, light gauge steel frames, roofing and cladding solutions, porta cabins and its accessories, etc.
Everest Industries Limited	1934	Everest Industries Ltd provides multiple solutions in building space, including roofing solutions, ceiling solutions, walls solutions, flooring solutions, cladding solutions, pre-engineered steel buildings, etc.
Interarch Building Solutions Ltd (formerly Interarch Building Products Ltd)	1983	Interarch Building Solutions Ltd (formerly Interarch Building Products Ltd) is promoted by Mr. Gautam Suri and Mr. Arvind Nanda based at Noida, Uttar Pradesh. The company started operations by manufacturing PEBs, metal ceilings, roofing, and claddings.
Kirby Building Systems & Structures India Private Limited	2005	Kirby Building Systems & Structures India Pvt Ltd is a part of Kuwait-based Alghanim Industries, which has experience of more than 40 years in PEB industry
M & B Engineering Limited	1981	M & B Engineering Ltd is a parent company of Phenix Construction Technologies and Proflex Roofing Solutions, and a part of M&B Group. The company deals in pre-engineered buildings, structure steels, steel roofing and components thereof.
Pennar Industries Limited	1975	Pennar Industries has experience of over 48 years in offering multiple products/ services including Cold Rolled Steel Strips, Railway wagons / Coaches, Precision Tubes, pre-engineered buildings, etc.
Smith Structures (India) Private Limited	2011	Smith Structures (India) is engaged in design, fabrication and erection of pre-engineered buildings. The company is managed by the Panchal family.

Company name	Year of incorporation	Business overview ¹
Zamil Steel Buildings India Private Limited	2003	Zamil Steel Buildings India is the subsidiary of Zamil Steel Pre-Engineered Buildings Co. Ltd, which was established in 1977 in Dammam, Saudi Arabia.

¹ Details about sector presence of companies are taken from their respective websites and are not exhaustive.

Note: This list is indicative only and non-exhaustive

Source: Company websites, annual reports available in the public domain/ filed with the RoC, Crisil Intelligence

Operational parameters

Key services and offerings

Company name	PEB	Sandwich insulated panels	LGSF	Metal doors	Aluminium windows	Overall product offering description
EPack Prefab Technologies Ltd	✓	✓	✓	✓	✓	Pre-engineered steel buildings, Prefabricated Structures, Porta Cabin, EPC turnkey projects, panels, light gauge steel frames, roofing and cladding solutions, porta cabins and its accessories, etc.
Everest Industries Ltd	✓		✓			Pre-engineered steel building solutions, Roofing solutions, Wall solutions, Ceiling solutions, Cladding solutions, Flooring solutions
Interarch Building Solutions Ltd (formerly Interarch Building Products Ltd)	✓		✓			Pre- engineered steel construction products, metal roofing & cladding system, metal false ceiling and light gauge framing system
Kirby Building Systems & Structures India Pvt Ltd	✓			✓	✓	Pre-engineered steel buildings, Structural steel, Storage solutions
M & B Engineering Ltd	✓			✓		Pre-Engineered steel buildings, Self-Supported Roofing, Structural Steel Components
Pennar Industries Ltd	✓					Pre-Engineered steel buildings, Solar structures, Engineered component businesses,
Smith Structures (India) Pvt Ltd	✓					Pre-Engineered steel buildings solution, Roofing and wall panels, Mezzanine systems
Zamil Steel Buildings India Pvt Ltd	✓			✓		Pre-engineered steel buildings, Roof and wall panels, construction, structural steel buildings

Note: The above list is indicative and not exhaustive representation of the offerings of the company

Source: Company's websites, annual reports available in the public domain/ filed with the RoC, Crisil Intelligence

PEB related manufacturing plants, capacity and order book

Company name	Manufacturing plants	Installed capacity (MT/ annum)	Order book (Rs million)
EPack Prefab Technologies Ltd ¹	3	133,922	9,170
Everest Industries Ltd ²	2	72,000	N.A.
Interarch Building Solutions Ltd (formerly Interarch Building Products Ltd) ³	5	161,000	16,460
Kirby Building Systems & Structures India Pvt Ltd ⁴	3	300,000	N.A.

Company name	Manufacturing plants	Installed capacity (MT/ annum)	Order book (Rs million)
M&B Engineering Ltd ⁵	2	103,800	6,130
Pennar Industries Ltd ⁶	2	90,000	7,800
Smith Structures (India) Pvt Ltd ⁷	1	72,000	6,383
Zamil Steel Buildings India Pvt Ltd ⁸	1	100,000	N.A.

N.A.: Not available

¹The pre-engineered building capacity comprises of three manufacturing facilities having an annual installed capacity of 133,922 MT per annum as of June 2025. Total order book pending for Pre-fab business as of March 31, 2025 is mentioned in the above table; total order book stood at Rs 12,092 million for FY25.

²According to Everest Industries Ltd FY24 annual report, it has capacity of 72,000 MT related to PEB. Everest has two manufacturing facilities related to PEB in Gujarat and Uttarakhand as per its website accessed in August 2025. Everest Industries Ltd had eight plants as per FY24 annual report.

³As per Interarch Building Solutions Ltd (formerly Interarch Building Products Ltd) Q4FY25 investor presentation, it has aggregate installed capacity of 161,000 MTPA and 5 manufacturing facilities in Uttarakhand, Andhra Pradesh & Tamil Nadu. Total Order book as on April 30, 2025, is Rs 16,460 million as per the company Q4FY25 presentation.

⁴Kirby Building Systems network produces ~515,000+ MT per annum across all plants globally as per its website accessed in August 2025, the above data pertains to Indian manufacturing capacity.

⁵As per M&B Engineering Ltd RHP filings, it has two manufacturing facilities at Sanand, Gujarat and Cheyyar, Tamil Nadu for the manufacturing of PEBs and complex structural steel components with a combined installed capacity of 103,800 MTPA as of March 31, 2025, for manufacturing PEBs. As of March 31, 2025, the company had an order book of Rs 8,028.71 million, the order book number mentioned in the above table is of Phenix division (as of March 31, 2025).

⁶Pennar Industries has 13 manufacturing plants and 2 related to PEBs as per Q4 FY25 investor presentation. Pennar Industries has manufacturing facility near Hyderabad with a production capacity of 90,000 MT per annum for steel buildings as per its website accessed in August 2025. Additionally, as per the company's' Q4FY25 presentation, order book of PEB India is Rs. 7,800 million and the order book of PEB US is USD 53 Mn.

⁷According to company's website accessed in August 2025, Smith Structures (India) manufacturing facility located in Ahmedabad, Gujarat, and has an annual production capacity of 72,000 MT. The company has outstanding order book of Rs.6,383.4 million as on May 31, 2024, with orders generally ranging from 3 to 8 months as per the rating rationale dated August 2024.

⁸Zamil Steel operates 12 manufacturing facilities around the world as per its website accessed in August 2025. Global fabricated steel manufacturing capacity of Zamil Steel is more than 500,000 MT as per its website accessed in August 2025. Figure in the table represents capacity of the Ranjangaon, Pune manufacturing plant of the company (Pre-engineered buildings capacity of 80,000 MT per annum + Structural Steel fabrication capacity of 20,000 MT per annum)

Source: Company filings, annual reports available in the public domain/ filed with the RoC, company websites, Crisil Intelligence

- EPack Prefab Technologies Limited has the third largest production capacity in the industry amongst the above considered players in India.

PEB related Manufacturing plants and capacity (fiscal year basis)

Company name	FY22		FY23		FY24		FY25	
	Manufacturing plants	Installed capacity (MT/ annum)	Manufacturing plants	Installed capacity (MT/ annum)	Manufacturing plants	Installed capacity (MT/ annum)	Manufacturing plants	Installed capacity (MT/ annum)
EPack Prefab Technologies Ltd	1	38,262	2	65,812	3	81,528	3	133,922
Everest Industries Ltd ¹	N.A.	N.A.	N.A.	N.A.	N.A.	72,000	N.A.	N.A.
Interarch Building Solutions Ltd (formerly	4	132,000	4	141,000	4	141,000	5	161,000

Company name	FY22		FY23		FY24		FY25	
	Manufacturing plants	Installed capacity (MT/ annum)	Manufacturing plants	Installed capacity (MT/ annum)	Manufacturing plants	Installed capacity (MT/ annum)	Manufacturing plants	Installed capacity (MT/ annum)
Interarch Building Products Ltd) ²								
M&B Engineering Ltd ³	1	72,000	1	72,000	1	72,000	2	103,800
Pennar Industries Ltd ⁴	2	90,000	2	N.A.	2	N.A.	2	N.A.

Note:

¹Everest Industries Ltd had seven manufacturing plants as per FY22 annual report and eight plants as per FY23 and FY24 annual report respectively

²As per Interarch Building Solutions Ltd (formerly Interarch Building Products Ltd) Q4FY25 investor presentation, it has aggregate installed capacity of 161,000 and 5 manufacturing facilities in Uttarakhand, Andhra Pradesh & Tamil Nadu. FY22, FY23 and FY24 numbers as per the company's RHP.

³Annual installed capacity of 72,000 MTA for Sanand Facility and 31,800 MTA for Cheyyar Facility of Pre-engineered buildings

⁴As per Pennar Industry Ltd, Q4FY22 investor presentation, company has two plants related to PEB in Velchal, Telangana and Sadashivpet, Telangana and seven manufacturing plants. As per Pennar Industries Ltd FY22 annual report, the company had 12 plants across the world. PEB related manufacturing capacity mentioned in the above table is of manufacturing facility near Hyderabad (total production capacity of 90,000 MTPA). As per Pennar Industry Ltd FY23 investor presentation, company had two plants related to PEB in Velchal, Telangana and Sadashivpet, Telangana and 11 manufacturing plants. As per Pennar Industries Ltd FY23 annual report, the company had 13 plants across the world. As per Pennar Industry Ltd FY24 investor presentation, company has two plants related to PEB in Velchal, Telangana and Sadashivpet, Telangana and 13 manufacturing plants. As per Pennar Industries Ltd FY24 annual report, the company had 13 plants (national) and 2 plants (international). As per the company's Q4FY25 investor presentation, the company had 13 manufacturing plants, including two plants related to PEB.

Manufacturing plants and capacities related to PEB not available on fiscal year basis for rest of the peers (Kirby Building Systems & Structures India Pvt Ltd, Smith Structures (India) Pvt Ltd, Zamil Steel Buildings India Pvt Ltd)

Source: Company public documents, annual reports available in the public domain/ filed with the RoC, Crisil Intelligence

PEB related order book (fiscal year basis)

Company name (in million)	FY22	FY23	FY24	FY25
EPack Prefab Technologies Ltd ¹	1,782	4,485	6,302	9,170
Everest Industries Ltd	N.A.	N.A.	N.A.	N.A.
Interarch Building Solutions Ltd (formerly Interarch Building Products Ltd) ²	8,410	10,303	11,533	16,460
M&B Engineering Ltd ³	3,564	3,206	4,379	6,130
Pennar Industries Ltd ³	4,408	7,500	7,500	7,800

Note:

¹For EPack Prefab Technologies Ltd, the numbers in the above table represents pre-fab business order book pending

²For Interarch Building Solutions Ltd (formerly Interarch Building Products Ltd), FY22, FY23, FY24 and FY25 numbers represent total order book in hand as on the specified date (order book as at a particular date is calculated based on the aggregate contract value of the ongoing projects as of such date reduced by the value of work invoiced by us until such date.) FY25 number in the above table represents total order book as on 30th April 2025.

³ For M&B Engineering Ltd, the numbers in the above table represents order book contribution of Phenix Division (Division supplying and erecting pre engineered band steel structurals) in total order book value (Phenix division + Proflex division)

⁴As per Penner Industries Ltd FY22 annual report, order book as on 31st March 2022 was Rs. 4407.6 million related to PEB. As per Pennar Industries Ltd FY23 investor presentation, the order book of PEB stood at Rs 7,500 million in India. As per the company's FY24 investor presentation, the order book of PEB India was Rs. 7,500 million and Ascent was USD 44 Mn. As per the company's Q4FY25 presentation, order book of PEB India is Rs. 7,800 million and the order book of PEB US is USD 53 Mn.

PEB related order book not available on fiscal year basis for rest of the peers (Kirby Building Systems & Structures India Pvt Ltd, Smith Structures (India) Pvt Ltd, Zamil Steel Buildings India Pvt Ltd)

Source: Company public documents, annual reports available in the public domain/ filed with the RoC, Crisil Intelligence

Financial parameters

Vertical overview

Company	Vertical Information	Revenue contribution** FY25
EPack Prefab Technologies Ltd ¹	1. Pre-engineered and Prefabricated Building Solutions	84%
	2. EPS (Expanded Polystyrene) Packaging	16%
Everest Industries Ltd	1. Building Products (includes manufacturing and trading of roofing products, boards and panels, other building products and accessories)	65%
	2. Steel Buildings (consist of manufacture and erection of pre-engineered and smart steel buildings and its accessories)	35%
Interarch Building Solutions Ltd (formerly Interarch Building Products Ltd)	1. Manufacturing, supply, erection and installation of pre-engineered buildings, metal roofing & cladding system and metal false ceilings	100%
Kirby Building Systems & Structures India Pvt Ltd [#]	1. Manufacture and construction of Pre-Engineered Buildings/ Steel Structural / Industrial Racking and components of iron and steel. It also provides designing, drafting, and engineering services for construction of Pre-Engineered Buildings/ Steel Structural/ Industrial Racking and components of iron and steel.	100%
M & B Engineering Ltd ³	1. Phenix division (product portfolio for the Phenix Division consists of pre-engineered buildings and structural steel. Offerings under PEBs includes main frames, secondary structural components, accessories, etc. Structural steel offerings including H-Type Beams, I-Type Beams, etc.	77%
	1. Proflex division (manufacture and install self-supported steel roofings)	23%
Pennar Industries Ltd	1. Diversified Engineering (railways-wagons, steel, solar module mounting solutions, industrial boilers & heaters, chemicals & fuel additives, solar panels, precision tubes, BIW, hydraulics and auto components.)	52%
	2. Custom designed building solutions & auxiliaries (Pre-engineered Buildings, construction equipments and Engineering Services) ³	48%
Smith Structures (India) Pvt Ltd ^{\$3}	1. Design and Engineering Services	100%
Zamil Steel Buildings India Pvt Ltd. ^{\$}	1. The Company's activities involve predominantly one business segment i.e. manufacturing of steel structural materials and parts thereof which are considered as single business segment.	100%

Note:

^{\$} As of fiscal 2024

** Revenue contribution is considered as disclosed in the respective company's annual report and have not been reclassified by Crisil

Financials for Kirby Building Systems & Structures India are on a calendar year basis (e.g., in the above table, fiscal 2024 is calendar year 2023, etc)

1 Following formula has been used for calculating revenue contribution: Revenue from external customers of the required segment/ Total revenue

2 Pennar industries' custom designed building solutions & auxiliaries vertical includes revenue from pre-engineered buildings, construction equipment and engineering services

3 For Smith Structures (India) Pvt Ltd, vertical represent types of principal product or services as disclosed in the company's annual report. Furthermore, as per disclosure of principal product or services the company has 100% of revenue contribution from design and Engineering Services

Source: Company annual reports available in the public domain/ filed with the RoC, Crisil Intelligence

Revenue from operations

Company name (Rs million)	FY22	FY23	FY24	FY25	CAGR (FY22-24)
EPack Prefab Technologies Ltd*	4,501.06	6,567.61	9,049.02	11,339.17	41.79%
Everest Industries Ltd*	13,647.06	16,476.34	15,754.52	17,228.17	7.44%
Interarch Building Solutions Ltd (formerly Interarch Building Products Ltd)	8,349.43	11,239.26	12,933.02	14,538.25	24.46%
Kirby Building Systems & Structures India Pvt Ltd*	17,248.11	23,123.80	23,956.95	N.A.	17.85%
M & B Engineering Ltd*	6,882.25	8,804.70	7,950.60	9,885.54	7.48%
Pennar Industries Ltd*	22,657.50	28,946.20	31,305.70	32,265.80	17.55%
Smith Structures (India) Pvt Ltd	3,769.57	4,554.87	6,437.42	N.A.	30.68%
Zamil Steel Buildings India Pvt Ltd	5,307.26	6,227.92	7,617.52	N.A.	19.80%

Note:

* On consolidated basis

Financials for Kirby Building Systems & Structures India are on a calendar year basis (e.g., in the above table, FY24 is calendar year 2023, etc)

Source: Company annual reports available in the public domain/ filed with the RoC, Crisil Intelligence

- Among the players considered, EPack Prefab Technologies Ltd is the fastest growing in terms of revenue from operations, registering a CAGR of 41.79% between FY22-24. EPack Prefab Technologies Ltd revenue from Pre-engineered and prefabricated building solutions had registered a CAGR of 55.48% between FY22-24.
- EPack Prefab Technologies Ltd had a market share of ~2%, as of FY25 within the Indian Prefabricated Industry

Operating profit before depreciation, interest and taxes (OPBDIT)

Company name (Rs million)	FY22	FY23	FY24	FY25	CAGR (FY22-24)
EPack Prefab Technologies Ltd*	355.40	515.30	869.93	1,177.93	56.45%
Everest Industries Ltd*	689.51	675.19	409.61	299.05	-22.92%
Interarch Building Solutions Ltd (formerly Interarch Building Products Ltd)	328.89	1,063.80	1,130.15	1,362.41	85.37%
Kirby Building Systems & Structures India Pvt Ltd*	1,727.21	2,086.45	2,594.23	N.A.	22.56%
M & B Engineering Ltd*	418.34	664.30	796.22	1,263.77	37.96%
Pennar Industries Ltd*	1,713.60	2,211.90	2,729.70	3,107.50	26.21%
Smith Structures (India) Pvt Ltd	197.81	303.74	554.05	N.A.	67.36%
Zamil Steel Buildings India Pvt Ltd	(96.64)	82.19	262.10	N.A.	n.m.

Note:

N.A. Not available

n.m. not meaningful

* On consolidated basis

Financials for Kirby Building Systems & Structures India are on a calendar year basis (e.g., in the above table, Financial Year 2024 is calendar year 2023, etc)

Formula used for OPBDIT calculation is as follows:

OPBDIT= Revenue from operations- total expenses+ finance cost+ Depreciation and amortisation expense

Source: Company annual reports available in the public domain/ filed with the RoC, Crisil Intelligence

- EPack Prefab Technologies Ltd registered the second highest CAGR in OPBDIT between FY22-24 at 56.45% among the considered players

Profit after tax (PAT)

Company name (Rs million)	FY22	FY23	FY24	FY25	CAGR (FY22-24)
EPack Prefab Technologies Ltd*	195.23	239.72	429.59	593.22	48.34%
Everest Industries Ltd*	440.85	423.60	179.98	(36.04)	-36.10%
Interarch Building Solutions Ltd (formerly Interarch Building Products Ltd)	171.33	814.63	862.62	1,078.29	124.38%
Kirby Building Systems & Structures India Pvt Ltd*	1,069.08	1,334.92	1,649.93	N.A.	24.23%
M & B Engineering Ltd*	163.13	328.92	456.34	770.47	67.25%
Pennar Industries Ltd*	419.10	754.30	983.50	532.70	53.19%
Smith Structures (India) Pvt Ltd	77.63	67.25%	67.25%	N.A.	113.28%
Zamil Steel Buildings India Pvt Ltd	(204.37)	(66.16)	98.92	N.A.	n.m.

Note:

N.A. Not available

n.m. not meaningful

* On consolidated basis

Financials for Kirby Building Systems & Structures India are on a calendar year basis (e.g., in the above table, Financial Year 2024 is calendar year 2023, etc)

Source: Company annual reports available in the public domain/ filed with the RoC, Crisil Intelligence

Key financial Ratios (FY24)

Company name	OPBDIT%	PAT%	RoE@	RoE	RoCE (with other income)	RoCE (without other income)	Current ratio
EPack Prefab Technologies Ltd*	9.61%	4.74%	29.93%	29.12%	28.16%	27.21%	1.12
Everest Industries Ltd*	2.60%	1.13%	3.07%	3.05%	4.12%	1.34%	1.33
Interarch Building Solutions Ltd (formerly Interarch Building Products Ltd)	8.74%	6.60%	20.45%	20.44%	27.29%	24.27%	1.71
Kirby Building Systems & Structures India Pvt Ltd*	10.83%	6.80%	46.55%	46.38%	66.47%	58.29%	1.16
M & B Engineering Ltd*	10.01%	5.65%	22.31%	22.07%	22.01%	18.44%	1.36
Pennar Industries Ltd*	8.72%	3.10%	12.02%	11.87%	16.50%	13.71%	1.04
Smith Structures (India) Pvt Ltd	8.61%	5.47%	60.76%	60.57%	55.94%	53.20%	1.32
Zamil Steel Buildings India Pvt Ltd	3.44%	1.30%	9.50%	9.37%	13.55%	12.96%	1.12

Note:

* On consolidated basis

Financials for Kirby Building Systems & Structures India are on a calendar year basis (e.g., in the above table, Financial Year 2024 is calendar year 2023, etc)

Formulae used for the above table are as follows:

OPBDIT%= OPBDIT/ Revenue from operations

PAT%= PAT/ Total income

RoE@%= PAT/ Average of tangible equity; Tangible equity= Total equity- intangible assets

RoE= PAT/ Average of total equity

EBITDA= (Revenue from operation +other income)- Total expenses+ Depreciation and amortization cost+ Finance cost

RoCE% (including other income) = (EBITDA- Depreciation and amortization cost)/ Average of (Total debt+ total tangible equity)

RoCE% (excluding other income) = (EBITDA- Depreciation and amortization cost- other income)/ Average of (Total debt+ total equity)

Current ratio= Current assets/ Current liabilities

Interest coverage ratio= (Finance cost+ PBT+ Depreciation and amortization cost)/ Finance cost

Source: Company annual reports available in the public domain/ filed with the RoC, Crisil Intelligence

- EPack Prefab Technologies Ltd registered the third highest RoE (based on average total equity) of 29.12% in FY24 among the considered players
- EPack Prefab Technologies Ltd registered the third highest RoCE of 27.21% in FY24 among the considered players

Key financial Ratios (FY24)

Company name	Interest coverage ratio	Net debt (Rs million)	Net debt/ OPBDIT	Net Debt/ Equity	Net fixed asset turnover ratio	Working capital days
EPack Prefab Technologies Ltd*	5.12	1,296.20	1.49	0.77	4.70	4
Everest Industries Ltd*	5.20	(186.28)	(0.45)	(0.03)	3.56	47
Interarch Building Solutions Ltd (formerly Interarch Building Products Ltd)	58.27	(1,274.99)	(1.13)	(0.29)	7.77	34
Kirby Building Systems & Structures India Pvt Ltd*	7.49	(4,826.34)	(1.86)	(1.11)	11.63	73
M & B Engineering Ltd*	4.03	1,056.10	1.33	0.45	7.24	104
Pennar Industries Ltd*	2.72	5,916.10	2.17	0.67	3.83	14
Smith Structures (India) Pvt Ltd	21.54	(58.31)	(0.11)	(0.08)	20.72	19
Zamil Steel Buildings India Pvt Ltd	2.75	621.75	2.37	0.56	11.16	43

Note:

* On consolidated basis

Financials for Kirby Building Systems & Structures India are on a calendar year basis (e.g., in the above table, Financial Year 2024 is calendar year 2023, etc)

Kindly note that for Smith Structures (India) Pvt Ltd and Zamil Steel Buildings India Pvt Ltd total tangible fixed assets are considered for calculation of net fixed asset turnover ratio

Ratios used for the above table are as follows:

Interest coverage ratio= (Finance cost+ PBT+ Depreciation and amortization cost)/ Finance cost

Net debt= Total debt- Cash and cash equivalents- Bank balances other than cash and cash equivalents

Net fixed asset turnover ratio = Revenue from operations for the year/ Average of (Net Property, plant and equipment, Capital work-in-progress and Right-to-use assets)

Working capital days= Inventory days+ Receivable days- Payable days

Inventory Days= Inventories/ COS*365

Receivable Days= Receivables/ Revenue from Operations*365

Payable Days= Trade Payables/ COGS*365

Source: Company annual reports available in the public domain/ filed with the RoC, Crisil Intelligence

Key financial Ratios (FY25)

Company name	OPBDIT%	PAT%	RoE@	RoE	RoCE (with other income)	RoCE (without other income)	Current ratio
EPack Prefab Technologies Ltd*	10.39%	5.20%	23.06%	22.69%	24.61%	22.88%	1.42
Everest Industries Ltd*	1.74%	-0.21%	-0.61%	-0.60%	0.80%	-1.29%	1.38
Interarch Building Solutions Ltd (formerly Interarch Building Products Ltd)	9.37%	7.31%	18.04%	18.03%	23.74%	20.35%	2.16
Kirby Building Systems & Structures India Pvt Ltd*	N.A.	N.A.	N.A.	N. A	N.A.	N.A.	N.A.
M & B Engineering Ltd*	12.78%	7.73%	28.75%	28.56%	26.36%	24.47%	1.38
Pennar Industries Ltd*	9.63%	3.66%	12.85%	12.73%	16.54%	14.29%	1.14
Smith Structures (India) Pvt Ltd	N.A.	N.A.	N.A.	N. A	N.A.	N.A.	N.A.
Zamil Steel Buildings India Pvt Ltd	N.A.	N.A.	N.A.	N. A	N.A.	N.A.	N.A.

Note:

* On consolidated basis

Financials for Kirby Building Systems & Structures India are on a calendar year basis (e.g., in the above table, Financial Year 2024 is calendar year 2023, etc)

Formulae used for the above table are as follows:

OPBDIT% = OPBDIT/ Revenue from operations

PAT% = PAT/ Total income

RoE@% = PAT/ Average of tangible equity; Tangible equity = Total equity- intangible assets

RoE = PAT/ Average of total equity

EBITDA = (Revenue from operation + other income) - Total expenses + Depreciation and amortization cost + Finance cost

RoCE% (including other income) = (EBITDA - Depreciation and amortization cost)/ Average of (Total debt + total tangible equity)

RoCE% (excluding other income) = (EBITDA - Depreciation and amortization cost - other income)/ Average of (Total debt + total equity)

Current ratio = Current assets/ Current liabilities

Source: Company annual reports available in the public domain/ filed with the RoC, Crisil Intelligence

Key financial Ratios (FY25)

Company name	Interest coverage ratio	Net debt (Rs million)	Net debt/ OPBDIT	Net Debt/ Equity	Net fixed asset turnover ratio	Working capital days
EPack Prefab Technologies Ltd*	5.05	538.95	0.46	0.15	4.22	16
Everest Industries Ltd*	2.38	1,531.57	5.12	0.26	3.28	68
Interarch Building Solutions Ltd (formerly Interarch Building Products Ltd)	64.73	(1,815.75)	(1.33)	(0.24)	7.20	49
Kirby Building Systems & Structures India Pvt Ltd*	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
M & B Engineering Ltd*	6.75	1,013.18	0.80	0.33	6.22	85
Pennar Industries Ltd*	2.90	5,855.80	1.88	0.59	3.44	16
Smith Structures (India) Pvt Ltd	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Zamil Steel Buildings India Pvt Ltd	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

Note:

* On consolidated basis

Financials for Kirby Building Systems & Structures India are on a calendar year basis (e.g., in the above table, Financial Year 2024 is calendar year 2023, etc)

Ratios used for the above table are as follows:

Interest coverage ratio= (Finance cost+ PBT+ Depreciation and amortization cost)/ Finance cost

Net debt= Total debt- Cash and cash equivalents- Bank balances other than cash and cash equivalents

Net fixed asset turnover ratio = Revenue from operations for the year/ Average of (Net Property, plant and equipment, Capital work-in-progress and Right-to-use assets)

Working capital days= Inventory days+ Receivable days- Payable days

Inventory Days= Inventories/ COS*365

Receivable Days= Receivables/ Revenue from Operations*365

Payable Days= Trade Payables/ COGS*365

Source: Company annual reports available in the public domain/ filed with the RoC, Crisil Intelligence

Credit Rating

Company name (Rs million)	Issuer	Date	Rating
Epac Prefab Technologies Ltd (Epac Polymers Pvt Ltd)	ICRA Limited	August 2025	A
Everest Industries Ltd	ICRA Limited	May 2025	A-
Interarch Building Solutions Ltd (formerly Interarch Building Products Ltd)	Crisil Ratings Limited	April 2025	A
Kirby Building Systems & Structures India Pvt Ltd	ICRA Limited	June 2025	AA-
M & B Engineering Ltd	Crisil Ratings Limited	July 2025	A-
Pennar Industries Ltd*	CARE Ratings Limited	October 2024	A
Smith Structures (India) Pvt Ltd	CARE Ratings Limited	August 2024	BBB-
Zamil Steel Buildings India Pvt Ltd	N.A.		

Source: Quantix, Crisil Intelligence

5 Assessment of Expanded Polystyrene Market in India

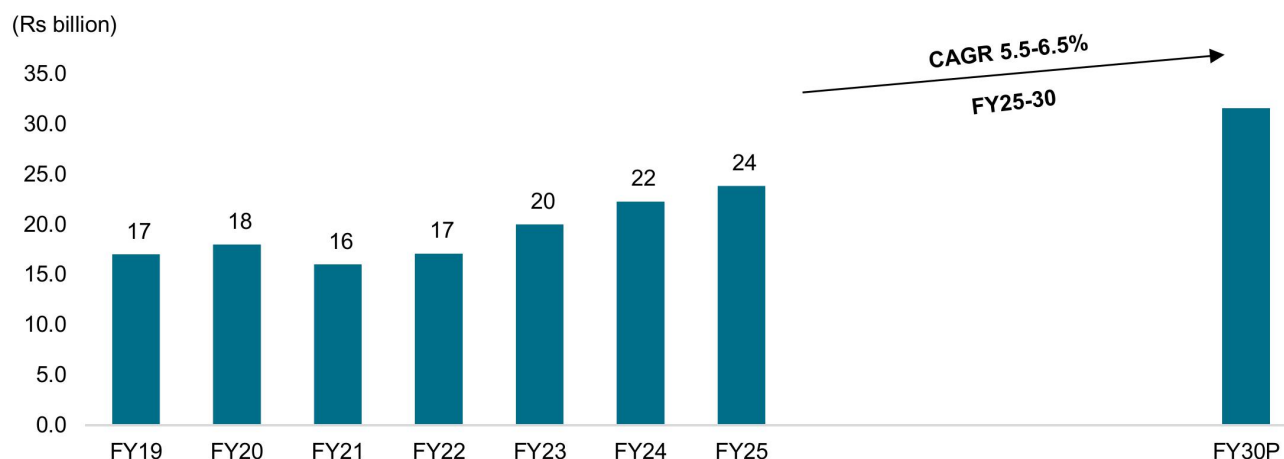
5.1 India Market Overview

Indian Expanded Polystyrene market is expected to grow at 5.5-6.5% till FY30

Expanded polystyrene (EPS) is a versatile and lightweight closed-cell foam material produced from solid polystyrene beads and a blowing agent, typically pentane, which leads to an air-filled structure comprising about 98% air. Known for its exceptional insulation properties, EPS is widely utilized in various industries, including construction for thermal insulation in walls, roofs, and floors, for its excellent impact resistance and cushioning capabilities for fragile items. Additionally, EPS is widely used as packaging buffer for electronics and home appliances, glass ware in medical applications, grapes packaging, cold storage of other fruits and vegetables. Also, EPS is employed in the automotive sector for lightweight components like seat cores and door panels, and in marine applications for buoyancy devices. The material is praised for its recyclability, moisture resistance, and durability, making it an eco-friendly choice suitable for diverse applications across multiple fields.

The expanded polystyrene market was valued at Rs 22 billion in FY24 and is expected to grow at a rate of 5.5-6.5% till FY30 reaching Rs 30-35 billion. The growth trajectory is driven by increasing demands across various sectors, particularly construction and packaging. One of the primary drivers is the expanding construction sector. EPS is valued for its thermal insulation properties, lightweight characteristics, and cost-effectiveness, making it a preferred material for insulation applications in roofs, walls, and floors of both residential and commercial buildings. In addition, government initiatives in India aimed at sustainable building practices and energy efficiency are further fueling the demand for EPS in construction. The growing urban population and rising disposable income in India also contribute significantly to this growth.

Expanded Polystyrene Market in India, Rs billion, FY19 to FY30P



Note: P-Projected

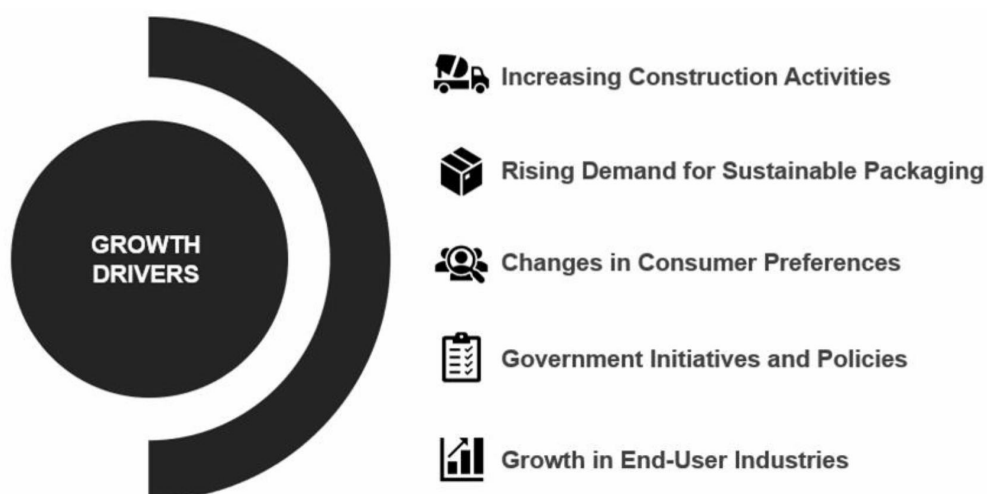
Source: Crisil Intelligence

The expanded polystyrene packaging segment is another crucial segment propelling EPS demand. Expanded polystyrene is widely used for food packaging, as it helps maintain the freshness and quality of products during transportation. Its excellent cushioning and protection properties make it a popular choice for packaging fragile goods, including electronics and consumer products. The significant increase in online shopping and takeaway food services, especially during and after the COVID-19 pandemic, has further amplified the demand for EPS packaging solutions.

Key trends within the market indicate a shift towards sustainability and recyclability. Manufacturers are developing eco-friendly EPS products that utilize recycled materials, aligning with the global push for sustainable business practices. Additionally, advancements in manufacturing technologies and research initiatives are likely to enhance the efficiency of EPS production processes, further driving market growth.

Key Growth Drivers

The expanded polystyrene market in India is poised for robust growth, driven by several key factors. This growth is reflective of changing consumer demands and advancements in industry practices.



- **Increasing Construction Activities:** The booming construction sector is a primary driver for the EPS market in India. With significant investments in infrastructure and real estate, EPS is increasingly utilized for its lightweight and insulating properties. It is extensively used in building applications such as insulation panels for roofs and walls, which enhance energy efficiency in buildings. The EPS market is anticipated to grow as residential and commercial construction projects proliferate, necessitating efficient and sustainable building materials.
- **Rising Demand for Sustainable Packaging:** The escalating demand for sustainable packaging solutions significantly influences the EPS market. Businesses are shifting towards environmentally friendly packaging options due to growing environmental concerns and regulatory pressures. EPS is lightweight and recyclable, making it an ideal material for packaging in various sectors, including food and beverages. Its capacity to maintain product integrity during shipping further enhances its demand, especially in industries reliant on delicate products that require careful handling.
- **Changes in Consumer Preferences:** Shifts in consumer preferences towards convenience and quality have led to increased usage of EPS packaging. As disposable incomes rise, there is a growing trend of consumers seeking premium products that offer better protection and quality assurance, impacting industries like e-commerce and food services. EPS's role in packaging ensures that products remain safe, fresh, and intact when delivered to consumers, meeting their expectations for quality.
- **Government Initiatives and Policies:** Government initiatives such as the "Housing for All" mission and other infrastructure projects are significantly boosting the demand for EPS. The Indian government encourages the adoption of technologies that support energy-efficient and sustainable practices in construction through various incentives. With a focus on improving the construction landscape, these policies are expected to propel the consumption of EPS in the upcoming years, aligning with national goals for energy conservation and sustainability.

- **Growth in End-User Industries:** The growth of industries utilizing EPS as a core material also drives market expansion. The automotive sector, which relies on EPS for applications like seats and insulation, is experiencing rapid growth and innovation. Similarly, the food packaging sector is embracing EPS to preserve the freshness of products during distribution, thus increasing its utilization in packaging applications. The diverse applications of EPS across various industries highlight its versatility and contribute significantly to market growth.

Key Trend for Expanded Polystyrene Market

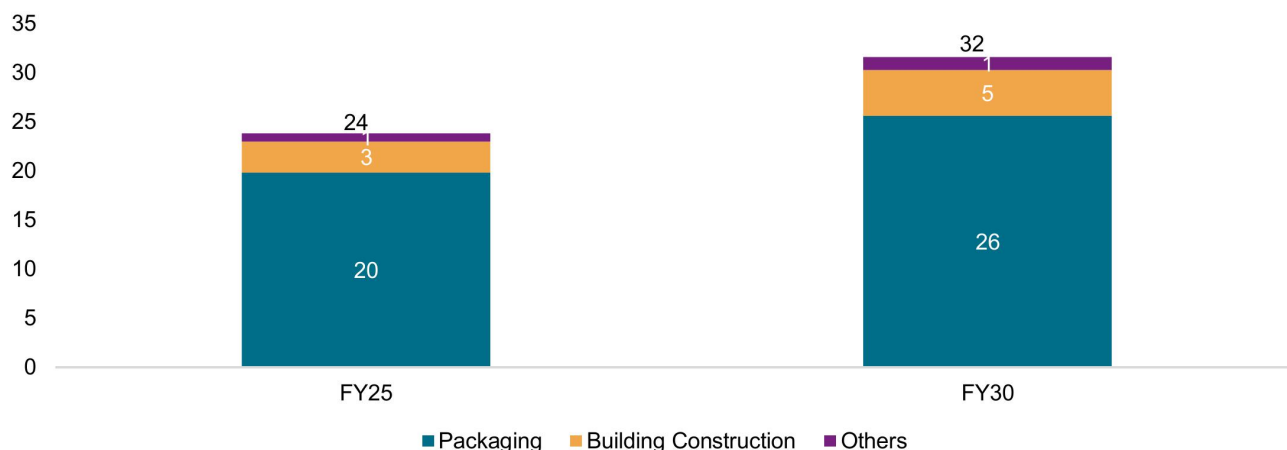
The expanded polystyrene market in India is experiencing significant transformations driven by various trends which reflect broader market dynamics. Below are the key trends with detailed explanations:

- **Increased Demand in Packaging:** A major driver of the EPS market is the escalating demand from the packaging industry. EPS packaging is particularly beneficial in the food and pharmaceutical industries, where maintaining temperature and ensuring the safety of delicate items during transit is crucial. Its shock absorption capabilities make it ideal for packaging fragile goods, thereby enhancing product safety during shipping.
- **Applications in Construction:** The construction sector remains a dominant consumer of EPS, accounting for a substantial market share. EPS is utilized for thermal insulation in buildings due to its excellent insulating properties which help in reducing energy costs. As the construction industry evolves, there is a growing trend towards using EPS in various applications such as load-bearing panels and as aggregates in lightweight concrete, which boasts durability and structural integrity. The rise in residential and commercial construction projects under government schemes significantly boosts the demand for EPS.
- **Regulatory and Environmental Considerations:** With increasing environmental awareness, there has been a notable push for sustainable practices within the EPS market. The government of India has implemented regulations to phase out single-use plastics, presenting an opportunity for EPS which is recyclable. As companies are pushed towards more sustainable materials, the EPS industry's ability to adapt and innovate to meet environmental standards will be key to sustaining its growth.
- **Technological Advancements:** Advancements in manufacturing technologies have led to improved production efficiencies and the development of innovative EPS products. Techniques that enhance the properties of EPS, such as reducing its weight while maintaining strength, are gaining traction. This trend not only improves the performance of EPS applications in various industries but also positions the manufacturers favorably in a competitive market by meeting diverse customer needs.
- **Growing Disposable Income and Urbanization:** The increasing disposable income, alongside rapid urbanization, is driving the demand for packaged goods and enhanced living conditions, which directly impacts the EPS market. A growing middle class is more inclined towards consuming packaged products, where EPS plays a critical role in ensuring product integrity and appeal.

Segmentation by Application

In FY25, the packaging sector dominates the Indian EPS market, accounting for 83%, followed by building and construction at 13%, and other applications (such as automotive components and consumer goods) making up 4%.

Segmentation by Application, value, FY25 to FY30



Source: Crisil Intelligence

Packaging: The dominant share of EPS in packaging is driven by its lightweight, shock-absorbing, and insulating properties, making it indispensable for food containers, electronics, and fragile goods. Globally, the packaging sector for EPS is expected to grow due to increasing e-commerce and the need for protective packaging of consumer goods. In India, rising disposable incomes and urbanization are further fueling demand. Sustainable packaging innovations and recycling initiatives are likely to mitigate environmental concerns and sustain growth.

- **Industrial Packaging:** EPS plays a significant role in industrial packaging due to its lightweight and insulating properties. Its closed-cell structure offers excellent thermal insulation, bacterial and pest resistance, making it ideal for protecting delicate products during transportation.
- **Food Packaging:** The food packaging sector heavily utilizes EPS to maintain the freshness of food items. EPS containers are widely used due to their ability to insulate and protect food during shipping and storage, which is critical for perishables. This application is expected to grow as the food delivery and retail sectors expand, demanding robust packaging solutions that ensure food safety and quality.

Building and Construction: In construction, EPS is widely used for thermal insulation in walls, roofs, and floors, contributing to energy efficiency and reduced carbon emissions. The growth of urban infrastructure projects in India, including residential and commercial buildings, is driving demand. Globally, governments' focus on energy-efficient buildings and green initiatives, especially in regions like Europe and Asia-Pacific, is expected to accelerate EPS adoption in this sector.

Others: EPS is also used in other applications such as automotive components and consumer goods. In automotive components, EPS is valued for its energy absorption and lightweight characteristics. It is extensively used in safety applications, such as car seat padding and sports helmets, to absorb impacts. Additionally, EPS is employed in seating for sports cars and as load-bearing elements in structurally insulated automotive panels. For consumer products, EPS is often used in packaging delicate items like electronics and toys. Its ability to mold into custom shapes ensures effective shock absorption during transport. Beyond packaging, EPS is also used in household items and garden products due to its mechanical resistance and low water absorption.

Segmentation by Product Type

The Indian expanded polystyrene (EPS) market is characterized by two primary product segments: plain EPS sheets and molded EPS packaging. Each segment plays a crucial role in various end-use industries and has specific growth outlooks.

Plain EPS Sheets

Plain EPS sheets are primarily utilized for insulation and packaging purposes. They are lightweight, durable, and have excellent thermal insulation properties, making them a preferred choice in several industries.

End-Use Industries

- **Construction:** EPS sheets are extensively used for thermal insulation in walls, roofs, and floors. They contribute to energy efficiency in buildings, influencing the demand in residential and commercial construction.
- **Food Packaging:** These sheets serve as liners in storage chambers, preserving freshness and temperature for perishable items.
- **Automotive:** EPS sheets are employed for lightweight applications that require thermal insulation and protection.

Molded EPS Sheets

Molded packaging refers to EPS products that are shaped into different forms using molds, facilitating their use in various packaging applications. This segment is particularly strong due to its adaptability and efficiency in protecting products during transit.

End-Use Industries

- **E-commerce:** The surge in e-commerce has amplified the demand for molded packaging, as it provides safe cushioning for fragile items like electronics and glass products.
- **Electronics:** Molded packaging is crucial for transporting sensitive electronic components, ensuring they remain undamaged during shipping.
- **Pharmaceuticals:** This packaging is used to protect temperature-sensitive medications, enhancing their stability during transportation.

Key Challenges for Expanded Polystyrene Market

The expanded polystyrene (EPS) market in India is currently facing several key challenges that significantly impact its growth and sustainability. Below are detailed explanations of these challenges, all supported by reliable sources.

Environmental Concerns: One of the primary challenges confronting the EPS market is the significant environmental concerns associated with its disposal and the recycling process. Expanded polystyrene is not biodegradable, contributing heavily to plastic waste pollution, which poses risks to wildlife and ecosystems. The disposal of EPS materials, particularly in landfills, generates substantial pollution, and the challenges surrounding effective recycling hinder sustainable practices. Increased regulations and consumer demand for environmentally friendly alternatives are forcing companies to seek out greener production and disposal methods.

Strict Regulations: The expanded polystyrene industry is also under pressure due to stringent government regulations regarding its production and use. Many countries, including India, have implemented laws that limit the use of certain types of plastic, including EPS, to combat environmental degradation. This regulatory environment compels manufacturers to innovate and invest in alternatives that comply with sustainability mandates, which can incur significant

costs and slow market growth. The necessity for compliance with these regulations adds another layer of complexity to operations and market positioning.

Cost Fluctuations of Raw Materials: Another critical challenge is the volatility in the prices of raw materials essential for EPS production, such as styrene, which is derived from crude oil. Fluctuations in crude oil prices directly impact the cost of production, affecting profit margins for manufacturers. For example, if the price of styrene increases, the overall production costs rise, leading to higher prices for consumers, which can reduce demand. This instability influences not just EPS but also broader polystyrene markets, complicating forecasting and financial planning for businesses.

Competition from Alternative Materials: Competition from alternative materials represents a significant hurdle for the EPS market. With a growing focus on sustainable packaging solutions, businesses are increasingly turning to biodegradable materials, paper, and other eco-friendly substitutes. These alternative materials often come with lower environmental impacts, attracting consumers and businesses seeking to reduce their ecological footprints. As a result, EPS manufacturers must innovate and enhance the sustainability of their products to remain competitive.

Supply Chain and Infrastructure Issues: The EPS market faced logistical challenges related to supply chain disruptions, particularly those exacerbated by the COVID-19 pandemic. Issues such as inadequate transportation networks and insufficient local production facilities impact the efficiency of distribution and increase overhead costs. Transportation disruptions can cause delays in fulfilling orders while leading to increased costs for importing materials or exporting products. Moreover, the current infrastructure does not adequately support the recycling of EPS, which hinders circular economy initiatives for these materials.

6 Assessment of Competitive Landscape of Expanded Polystyrene Market in India

6.1 Key Manufacturers

Expanded polystyrene (EPS) is widely used in various industries due to its lightweight, insulating properties, and versatility. In India, several key manufacturers dominate the market, each with distinct capacities, products, and geographic footprints. Some of the manufacturers are listed in the table below:

Key Manufacturers of Expanded Polystyrene in India

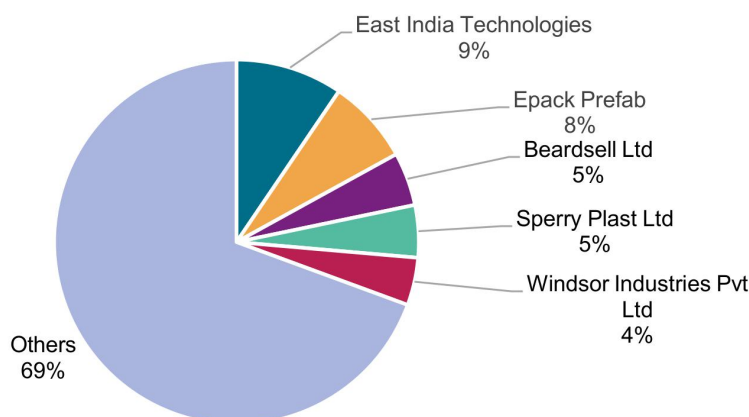
Manufacturers	FY22		FY23		FY24		FY25	
	Manufacturin g plants	Installed capacity	Manufacturin g plants	Installe d capacity	Manufacturin g plants	Installe d capacity	Manufacturin g plants	Installe d capacity
		(MT/ annum)		(MT/ annum)		(MT/ annum)		(MT/ annum)
Epack Prefab Technologies Ltd	1	8,400	1	8,400	1	8,400	1	8,400
Beardsell	-	-	-	-	1	2,640	1	3,720
Sperry Packagings Pvt Ltd	-	-	-	-	1	2,160	-	-
East India Technologies Pvt Ltd	-	-	-	-	1	9,000	-	-
K. K. Nag Pvt Ltd*	-	-	-	-	1	12,000	-	-
Windsor Industries Pvt Ltd	2	4,500	2	4,500	2	4,500	2	4,500
Sperry Techno Solutions Pvt Ltd	-	-	-	-	1	4,800	1	4,800
Arnav Polymers Pvt Ltd	-	-	-	-	-	-	-	-
Andhra Expanded Polystyrene Pvt Ltd	-	-	-	-	-	-	-	-
Hakimuddin Thermo India Pvt Ltd	-	-	-	-	-	-	-	-
Lakshmi Samanvaya Polymers	-	-	-	-	-	-	-	-
Machhar Polymer Pvt Ltd	-	-	-	-	-	-	-	-
Rhyno Thermopack Industries	-	-	-	-	-	-	-	-
Rishika Packaging	-	-	-	-	-	-	-	-
Shri Sirinivasa Polymers	-	-	-	-	-	-	-	-
Styrotech Industries Pvt Ltd	-	-	-	-	-	-	-	-
Surinda Packaging Pvt Ltd	-	-	-	-	-	-	-	-
Shri Hari Shankar Industries	-	-	-	-	-	-	-	-

Note: *Combined capacity of Expanded Polystyrene (EPS), Expanded Polypropylene (EPP) and other foams at 5 five manufacturing plants

Please note that the list above is indicative only and not exhaustive

Source: Industry, Crisil Intelligence

Company Market Share (%), value, FY24



Note: Kindly note that revenue details with respect to EPS segment for all the players is not available except for Epack, hence Crisil has not provided FY25 market share. Please note in FY25, Epack had a market share of ~8% in the domestic EPS market.

Source: Crisil Intelligence

EPack Prefab Technologies Limited

EPack Prefab Technologies Limited was established in 1999 and is headquartered in Greater Noida, Uttar Pradesh, India. EPack Prefab Technologies Limited operates in India's construction industry, specializing in prefabricated building solutions. The company focusses on engineering, fabrication, and project management. The company offers pre-engineered building solutions that cater to industries, including logistics, healthcare, education, and power generation. The company is accredited with ISO 9001:2015 and ISO 14001:2015 certifications.

Key Product Offerings

EPack Prefab Technologies Limited offers products for various sectors. Their key offerings include:

- **Pre-Engineered Buildings (PEB):** Constructed for quick assembly and designed to cater to diverse needs such as industrial complexes, commercial structures, and warehouses.
- **EPS Packaging Solutions:** The company is into manufacturing of EPS products, which is used in insulation and protective packaging for various industries, including electronics and automotive.
- **Prefabricated Structures:** These structures utilize quick construction processes, allowing for timelines reduction and cost reductions in building construction.

Geographical Presence

EPack Prefab Technologies Limited operates primarily out of Greater Noida and has geographical footprint across India. The company has manufacturing plants located in Uttar Pradesh, Rajasthan, and Andhra Pradesh.

Current Manufacturing Capabilities

For PEB, the company has a manufacturing infrastructure with an annual production capacity of 133,922 metric tonnes per annum (MTPA) as of FY25.

With an annual production capacity of 8,400 MT the EPS business segment contributes 16% to the total revenues. The revenue from EPS business segment has grown at a rate of ~8% from FY22 to FY25 from Rs 1,448.66 million to Rs 1,806.86 million.

EPack Prefab Technologies Limited Financials

Particulars	UOM	FY-22	FY-23	FY-24	FY-25
Revenue From Operations	Rs Million	4,501.06	6,567.61	9,049.02	11,339.17
OPBDIT	Rs Million	355.40	515.30	869.93	1,177.93
OPBDIT Margin	%	7.90%	7.85%	9.61%	10.39%
PAT	Rs Million	195.23	239.72	429.59	593.22
PAT Margin	%	4.31%	3.63%	4.74%	5.20%
Return on Equity	%	21.16%	21.01%	29.12%	21.55%
Return on Capital Employed	%	19.33%	20.31%	27.21%	21.10%
Net Debt	Rs Million	655.00	926.33	1,296.20	538.95
Net Debt to OPBDIT	ratio	1.84	1.80	1.49	0.46
Net Debt to Equity	ratio	0.64	0.73	0.77	0.15
Net Fixed Assets Turnover Ratio	ratio	3.13	4.46	4.70	4.15
Net Working Capital Days	days	6	16	4	16
Segmental Revenue					
Pre-fab Business	Rs Million	3,052.40	4,754.66	7,378.43	9,532.31
EPS Packaging Business	Rs Million	1,448.66	1,812.95	1,670.59	1,806.86

Notes:

Formulae used for calculation is as follows:

OPBDIT= Revenue from Operations- Total Expenses+ Finance Costs+ Depreciation and Amortization

OPBDIT Margin: OPBDIT/ Revenue from Operations

RoE= PAT/ Average of total equity

RoCE% (excluding other income) = (EBITDA- Depreciation and amortization cost- other income)/ Average of (Total debt+ total equity)

EBITDA= (Revenue from operations+ other income)- Total expenses+ Depreciation and amortization cost+ Finance cost

Net debt= Total debt- Cash and cash equivalents- Bank balances other than cash and cash equivalents

Net fixed asset turnover ratio = Revenue from operations for the year/ Average of (Net Property, plant and equipment, Capital work-in-progress and Right-to-use assets)

Working capital days= Inventory days+ Receivable days- Payable days

Inventory Days= Inventories/ COS*365

Receivable Days= Receivables/ Revenue from Operations*365

Payable Days= Trade Payables/ COGS*365

Source: Company Filings, Crisil Intelligence

Beardsell Ltd

Founded in 1936 and headquartered in Chennai, Beardsell Limited has offerings in manufacturing and installing prefabricated cold storage solutions, cleanrooms, and insulated packaging products.

Key Offerings to End-Use Industries

The company's product portfolio caters to end-use industries, some of the key products and end use segments includes:

- **Prefabricated building solutions:** The prefab building elements manufactured by the company finds applications in cold Storages, Food Processing Plants, Pharmaceuticals and Roofing applications.
- **EPS segment:** EPS has varied applications in insulation and packaging.

Geographical Presence

Beardsell primarily operates within India but also engages in international trade. BSL has eight manufacturing units in Chennai, Thane, Bengaluru, Karad, Hyderabad, Hapur, Kochi, and Coimbatore (including the subsidiary and controlled entity)

Windsor Industries Pvt Ltd

Windsor Industries Pvt Ltd, founded in 1989, company has product portfolio of EPS packaging, its components and disposable products and packaging materials, particularly EPS (Expandable Polystyrene) and BOPP (Biaxially Oriented Polypropylene) products.

Current Manufacturing Capabilities

The company's EPS plant has production capacity of 4500 MT.

Key Offerings to End-Use Industries

The company caters to following products:

- **EPS Disposable Glasses:** Windsor offers EPS disposable cups in various sizes i.e. 135 ml, 150 ml, 200 ml, 250 ml, and 300 ml., the company produces around two million glasses per day.
- **EPS Disposable Plates and Bowls:** The range includes various designs and sizes, suitable for different culinary needs.
- **BOPP Self-Adhesive Tapes:** These products cater to packaging requirements, with a production capacity of approximately 400 MTPA.
- **Bio-Degradable Crockery:** Windsor produces eco-friendly disposables made from biodegradable corn starch.
- **EPS building and industrial packaging:** Windsor caters to products in EPS segment for industrial packaging and building insulation solutions.

Geographical Presence

The company has a strong geographical presence in Northern India, particularly in Kurali and Baddi. These locations serve as key operational hubs for manufacturing and distribution, allowing the company to efficiently reach its clients across the region and beyond.

Sperry Group

Sperry Group manufactures thermoplastic rubber compounds, plastic-moulded components and expanded polystyrene foam. Its EPS operations are managed through Sperry Techno Solutions Pvt Ltd (STSPL) and Sperry Packagings Pvt Ltd (SPPL).

Current Manufacturing Capabilities

For EPS division, STSPL operates manufacturing facility located at Greater Noida with a production capacity of 4,800 MTPA. Similarly, SPPL, located near Sri City in South India, has manufacturing capacity of 2,160 MTPA.

East India Technologies Pvt Ltd

East India Technologies Pvt. Ltd. (EITPL) is in the manufacturing of Expanded Polystyrene (EPS) products, based in Greater Noida, Uttar Pradesh, India. The company has been operational since its inception in 1989. The company specializes in range of products including packaging for kitchenware, ice boxes, and protective packaging solutions for various industries.

Key Offerings to End-Use Industries

East India Technologies provides EPS products and services to meet the needs of different industries. Their key offerings include:

- **EPS Moulding:** Customized moulding solutions for electronics industry, automobile industry, home appliances etc.
- **EPS Packaging:** Protective packaging materials for items like electronics, glassware, and handicrafts.

Geographical Presence

East India Technologies operates primarily in India, with manufacturing centers located in Greater Noida. The company also manufactures PCBs in its EMS division.

Current Manufacturing Capabilities

The company has an annual manufacturing capacity of 9,000 MT for EPS production.

K.K Nag Pvt Ltd

K.K. Nag Pvt. Ltd was founded in 1965 in Pune, India, the company manufactures packaging material and insulation products primarily for the white goods industry and automobile components manufacturers. It also manufactures roto-moulded products such as disposable lavatories and tanks. The company has six manufacturing facilities, three in Maharashtra, two in Tamil Nadu and one at Puducherry.

Key Offerings to End-Use Industries

K.K. Nag Pvt. Ltd. offers products focusing on packaging and insulation solutions. Their key offerings include:

- **Expanded Polystyrene (EPS):** Commonly used for packaging consumer goods and thermal insulation.
- **Expanded Polypropylene (EPP):** Known for its durability, EPP is used in the automotive industry for applications requiring lightweight and shock-absorbent materials.
- **Rotational Moulding Products:** This includes products like insulated boxes and pallets that are used in transportation and storage solutions.

Geographical Presence

The headquarters of K.K. Nag Pvt. Ltd. is located in Pune, India, with manufacturing facilities spread across multiple locations, including Maharashtra, Puducherry and Chennai.

6.2 Financial Benchmarking

Revenue from Operations (Rs. Million)

Manufacturers	FY22	FY23	FY24	FY25	CAGR (FY22-25)
Epac Prefab Technologies Ltd	4,501.06	6,567.61	9,049.02	11,339.17	36.07%
Beardsell Ltd	1,861.34	2,320.12	2,449.50	2,683.50	12.97%
Sperry Plast Ltd*	1,722.74	2,193.30	2,407.59	-	18.22%
East India Technologies Pvt Ltd*	2,370.39	4,729.97	2,707.12	-	6.87%
K. K. Nag Pvt Ltd#	2,463.52	3,169.32	-	-	28.65%
Windsor Industries Pvt Ltd*	1,292.85	1,533.23	1,343.68	-	1.95%
Sperry Techno Solutions Pvt Ltd*	0.19	1,130.62	1217.90	-	N.m.

Note: #Financials for FY24 are not available. Growth is on YOY basis

*-CAGR for FY22-FY24 period since FY25 financials are not available

N.m.-Not meaningful

Source: Company Filings, Crisil Intelligence

Operating profit before depreciation, interest and taxes (OPBDIT) (Rs. Million)

Manufacturers	FY22	FY23	FY24	FY25	CAGR (FY22-25)
Epac Prefab Technologies Ltd	355.40	515.30	869.93	1,177.93	49.10%
Beardsell Ltd	125.70	177.65	204.93	227.00	21.78%
Sperry Plast Ltd*	159.17	74.12	123.62	-	-11.78%
East India Technologies Pvt Ltd*	260.32	340.65	292.75	-	6.05%
K. K. Nag Pvt Ltd#	147.68	234.59	-	-	58.85%
Windsor Industries Pvt Ltd*	45.30	81.13	86.60	-	38.27%
Sperry Techno Solutions Pvt Ltd*	0.10	60.28	65.19	-	N.m.

Note: #Financials for FY24 are not available. Growth is on YOY basis

*-CAGR for FY22-FY24 period since FY25 financials are not available

N.m.-Not meaningful

Formula used for OPBDIT calculation is as follows:

OPBDIT= Revenue from operations- total expenses+ finance cost+ Depreciation and amortisation expense

Source: Company Filings, Crisil Intelligence

Profit after tax (PAT) (Rs. Million)

Manufacturers	FY22	FY23	FY24	FY25	CAGR (FY22-25)
Epac Prefab Technologies Ltd	195.23	239.72	429.59	593.22	44.84%
Beardsell Ltd	28.12	84.94	82.20	98.30	51.77%
Sperry Plast Ltd*	62.62	-45.41	34.71	-	-25.55%
East India Technologies Pvt Ltd*	83.98	127.31	67.66	-	-10.24%
K. K. Nag Pvt Ltd#	46.70	82.49	-	-	76.63%
Windsor Industries Pvt Ltd*	10.29	34.92	34.05	-	81.91%

Manufacturers	FY22	FY23	FY24	FY25	CAGR (FY22-25)
Sperry Techno Solutions Pvt Ltd*	0.10	25.93	24.29	-	N.m.

Note: *Financials for FY24 are not available. Growth is on YOY basis

N.m.-Not meaningful

*-CAGR for FY22-FY24 period since FY25 financials are not available

Source: Company Filings, Crisil Intelligence

Key financial Ratios (FY24)

Manufacturers	OPBDIT%	PAT%	Gross Margin, %	RoE@	RoE	RoCE (with other income)	RoCE (without other income)	Current ratio	Interest coverage ratio
Epac Prefab Technologies Ltd	9.61%	4.74%	32.30%	29.93%	29.12%	28.16%	27.21%	1.12	5.12
Beardsell Ltd	8.37%	3.31%	32.89%	12.69%	12.67%	17.57%	13.79%	1.16	5.35
Sperry Plast Ltd	9.22%	-1.08%	21.83%	19.42%	16.38%	15.52%	18.24%	1.42	3.15
East India Technologies Pvt Ltd	10.81%	2.49%	37.35%	6.39%	6.39%	11.03%	10.70%	0.93	2.45
K. K. Nag Pvt Ltd#	7.40%	2.60%	42.46%	18.29%	18.15%	22.78%	21.87%	0.97	6.74
Windsor Industries Pvt Ltd	6.45%	2.53%	22.73%	7.72%	7.72%	11.61%	11.46%	2.21	11.09
Sperry Techno Solutions Pvt Ltd	5.35%	1.99%	22.24%	37.30%	37.13%	20.49%	20.22%	1.09	15.61

Note: #Financials ratios are for FY23

Formulae used for the above table are as follows:

OPBDIT%= OPBDIT/ Revenue from operations

PAT%= PAT/ Total income

RoE@%= PAT/ Average of tangible equity; Tangible equity= Total equity- intangible assets

RoE= PAT/ Average of total equity

RoCE%(including other income)= (EBITDA- Depreciation and amortization cost)/ Average of (Total debt+ total tangible equity)

RoCE% (excluding other income) = (EBITDA- Depreciation and amortization cost- other income)/ Average of (Total debt+ total equity)

EBITDA= (Revenue from operations+ other income)- Total expenses+ Depreciation and amortization cost+ Finance cost

Current ratio= Current assets/ Current liabilities

Interest coverage ratio= (Finance cost+ PBT+ Depreciation and amortization cost)/ Finance cost

Source: Company Filings, Crisil Intelligence

Key financial Ratios (FY25)

Manufacturers	OPBDIT%	PAT%	Gross Margin, %	RoE@	RoE	RoCE (with other income)	RoCE (without other income)	Current ratio	Interest coverage ratio
Epac Prefab Technologies Ltd	10.39%	4.75%	34.33%	21.89%	21.55%	22.68%	21.10%	1.42	5.05
Beardsell	8.46%	3.65%	30.96%	13.08%	13.07%	15.59%	14.40%	1.23	6.60

Formulae used for the above table are as follows:

OPBDIT%= OPBDIT/ Revenue from operations

PAT%= PAT/ Total income

RoE@%= PAT/ Average of tangible equity; Tangible equity= Total equity- intangible assets

RoE= PAT/ Average of total equity

RoCE%(including other income)= (EBITDA- Depreciation and amortization cost)/ Average of (Total debt+ total tangible equity)

RoCE% (excluding other income) = (EBITDA- Depreciation and amortization cost- other income)/ Average of (Total debt+ total equity)

EBITDA= (Revenue from operations+ other income)- Total expenses+ Depreciation and amortization cost+ Finance cost

Current ratio= Current assets/ Current liabilities

Interest coverage ratio= (Finance cost+ PBT+ Depreciation and amortization cost)/ Finance cost

Source: Company Filings, Crisil Intelligence

Key financial Ratios (FY24)

Manufacturers	Net debt (Rs. Million)	Net debt/ OPBDIT	Net Debt/ Equity	Net fixed asset turnover ratio	Working capital days
Epac Prefab Technologies Ltd	1,296.20	1.49	0.77	4.70	4
Beardsell Ltd	230.31	1.12	0.32	4.05	-9
Sperry Plast Ltd	475.32	2.99	1.15	2.58	28
East India Technologies Pvt Ltd	932.77	3.19	0.85	1.76	42
K. K. Nag Pvt Ltd [#]	158.45	0.68	0.32	5.55	-24
Windsor Industries Pvt Ltd	107.34	1.24	0.23	4.21	50
Sperry Techno Solutions Pvt Ltd	121.74	1.87	1.17	4.33	-12

Note: [#]Financials ratios are for FY23

Ratios used for the above table are as follows:

Net debt= Total debt- Cash and cash equivalents- Bank balances other than cash and cash equivalents

Net fixed asset turnover ratio = Revenue from operations for the year/ Average of (Net Property, plant and equipment, Capital work-in-progress and Right-to-use assets)

Working capital days= Inventory days+ Receivable days- Payable days

Inventory Days= Inventories/ COS*365

Receivable Days= Receivables/ Revenue from Operations*365

Payable Days= Trade Payables/ COGS*365

Source: Company Filings, Crisil Intelligence

Key financial Ratios (FY25)

Manufacturers	Net debt (Rs. Million)	Net debt/ OPBDIT	Net Debt/ Equity	Net fixed asset turnover ratio	Working capital days
Epac Prefab Technologies Ltd	538.95	0.46	0.15	4.15	16
Beardsell	169.60	0.75	0.21	4.14	6

Ratios used for the above table are as follows:

Net debt= Total debt- Cash and cash equivalents- Bank balances other than cash and cash equivalents

Net fixed asset turnover ratio = Revenue from operations for the year/ Average of (Net Property, plant and equipment, Capital work-in-progress and Right-to-use assets)

Working capital days= Inventory days+ Receivable days- Payable days

Inventory Days= Inventories/ COS*365

Receivable Days= Receivables/ Revenue from Operations*365

Payable Days= Trade Payables/ COGS*365

Source: Company Filings, Crisil Intelligence

Credit Rating

Manufacturers	Issuer	Date	Rating
Epac Prefab Technologies Ltd	ICRA Limited	Aug-25	A (Stable)
Beardsell Ltd	Care Edge	Aug-25	BBB (Stable)
Sperry Plast Ltd	Crisil Limited	Feb-24	BB (Stable)
East India Technologies Pvt Ltd	ICRA Limited	Oct-24	BBB (Stable)
K. K. Nag Pvt Ltd	Crisil Limited	May-24	BBB+ (Stable)
Windsor Industries Pvt Ltd	Care Edge	Aug-24	BB+ (Stable)

Note: Credit ratings for Sperry Techno Solutions Pvt Ltd is not available

Source: Credit rating agencies, Crisil Intelligence

7 Annexure I: Glossary

Abbreviations used in the report

Abbreviation	Full form
GDP	Gross Domestic Product
GSDP	Gross State Domestic Product
NSO	National Statistics Office
TANSIDCO	Tamil Nadu Small Industries Development Corporation Limited
GVA	Gross Value Added
NNI	Net National Income
IIP	Index of Industrial Production
PFCE	Private final consumption expenditure
WPI	Wholesale Price Index
CPI	Consumer Price Index
PEB	Pre-engineered building/ Pre-engineered steel building
RCC	Reinforced Cement Concrete
GFCF	Gross fixed capital formation
3PL	Third-party logistics
PLI	Production Linked Incentive
NMP	National Monetisation Pipeline
NIP	National Infrastructure Pipeline
JNNURM	Jawaharlal Nehru National Urban Renewal Mission
AMRUT	Atal Mission for Rejuvenation and Urban Transformation
PMAY-U	Pradhan Mantri Awas Yojana - Urban
PMAY-G	Pradhan Mantri Awas Yojana – Gramin
LGSF	Light Gauge Steel Framing
SCM	Smart Cities Mission
BIM	Building Information Modeling
PPGL	Pre-Painted Galvalume
BIS	Bureau of Indian Standards
ISO	International Organization for Standardization
BMTPC	Building Materials and Technology Promotion Council
MoHUA	Ministry of Housing and Urban Affairs
NBC	National Building Code
DMI&SP	Domestically Manufactured Iron & Steel Products
EPS	Expanded Polystyrene
STSPL	Sperry Techno Solutions Pvt Ltd
SPPL	Sperry Packagings Pvt Ltd

Abbreviation	Full form
EITPL	East India Technologies Pvt Ltd
OEM	Original Equipment Manufacturer
FRP	Fibreglass Reinforced Plastics
EPP	Expanded Polypropylene

Source: Crisil Intelligence



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