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September 2025

Industry Report on Façade & Fenestration Market Outlook to FY'30F

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DEFINITIONS AND ABBREVIATIONS

S. No.	Term	Definition
1	ACP	Aluminium Composite Panel: A type of flat panel that consists of two thin aluminium sheets bonded to a non-aluminium core, used in building facades.
2	AGC	Asahi Glass Company: A global glass manufacturer known for architectural and automotive glass.
3	BIPV	Building Integrated Photovoltaics: Solar power generating products or systems that are integrated into the building envelope, such as facades or roofs.
4	Curtain Wall	A non-load-bearing exterior wall hung to the structural frame of the building, usually made of glass, metal panels, or thin stone.
5	DGU	Double Glazed Unit: A window composed of two panes of glass separated by a space filled with air or gas to improve insulation.
6	EBITDA	Earnings Before Interest, Taxes, Depreciation, and Amortization: A measure of a company's overall financial performance.
7	ESG	Environmental, Social, and Governance: Criteria for measuring a company's sustainability and societal impact.
8	Façade	The exterior front or face of a building, often involving complex cladding or glazing systems.
9	GRC	Glass Reinforced Concrete: A type of fiber-reinforced concrete commonly used in facades.
10	IGU	Insulated Glass Unit: Similar to DGU, designed to reduce heat transfer and improve energy efficiency.
11	IPO	Initial Public Offering: The process by which a private company offers shares to the public for the first time.
12	Low-E Glass	Low Emissivity Glass: Glass with a special coating to reduce heat transfer, improving energy efficiency.
13	MBE	Minority Business Enterprise: A designation for businesses owned by minorities.
14	Margin	The difference between the cost of a product and its selling price, often expressed as a percentage.
15	OEM	Original Equipment Manufacturer: A company that produces parts or equipment that may be marketed by another manufacturer.
16	RoCE	Return on Capital Employed: A financial ratio that measures a company's profitability and the efficiency with which its capital is employed.
17	SGU	Single Glazed Unit: A type of glazing that uses only one pane of glass, less efficient than DGU or IGU.
18	Sustainability	The ability to maintain ecological and social systems over the long term, often used in the context of building practices and materials.
19	Unitized System	A prefabricated facade system where panels are manufactured off-site and assembled on the building structure, allowing faster installation.
20	uPVC	Unplasticized Polyvinyl Chloride: A rigid, durable plastic material commonly used in window and door frames.

S. No.	Abbreviation	Full Form
1	ACP	Aluminium Composite Panel
2	AI	Artificial Intelligence
3	ANAROCK	ANAROCK Property Consultants
4	APAC	Asia-Pacific
5	ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers
6	ASM	Annual Survey of Manufactures
7	AUD	Australian Dollar
8	BFSI	Banking, Financial Services, and Insurance
9	BIM	Building Information Modeling
10	BIPV	Building Integrated Photovoltaics
11	BIS	Bureau of Indian Standards
12	BNP	BNP Paribas
13	BREEAM	Building Research Establishment Environmental Assessment Method
14	CAGE	Compound Annual Growth Estimator (assumed contextually)
15	CAGR	Compound Annual Growth Rate
16	CBAM	Carbon Border Adjustment Mechanism

17	CBRE	Coldwell Banker Richard Ellis
18	CE	Conformité Européenne (European Conformity)
19	CII	Confederation of Indian Industry
20	COGS	Cost of Goods Sold
21	COVID / COVID-19	Coronavirus Disease 2019
22	CPI	Consumer Price Index
23	CRE	Commercial Real Estate
24	CSR	Corporate Social Responsibility
25	CY	Calendar Year
26	CY-30F	Calendar Year 2030 Forecast
27	DBS	Development Bank of Singapore
28	DCCO	Date of Commencement of Commercial Operations
29	DGU	Double Glazed Unit
30	DPIIT	Department for Promotion of Industry and Internal Trade
31	EBITDA	Earnings Before Interest, Taxes, Depreciation, and Amortization
32	ECB	European Central Bank
33	ECBC	Energy Conservation Building Code
34	EPBD	Energy Performance of Buildings Directive
35	EPC	Engineering, Procurement and Construction
36	ESG	Environmental, Social, and Governance
37	EU	European Union
38	EUR	Euro
39	FAE	Facade and Envelope
40	FDI	Foreign Direct Investment
41	FG	Finished Goods
42	FRE	Facade Retrofit Efficiency (assumed contextually)
43	FRED	Federal Reserve Economic Data
44	FY	Financial Year
45	GCC	Gulf Cooperation Council
46	GDP	Gross Domestic Product
47	GEG	Green Energy Guidelines (assumed contextually)
48	GIFT	Gujarat International Finance Tec-City
49	GNDI	Gross National Disposable Income
50	GOI	Government of India
51	GRC	Glassfibre Reinforced Concrete
52	GRIHA / GRIHA/IGBC	Green Rating for Integrated Habitat Assessment / Indian Green Building Council
53	GST	Goods and Services Tax
54	GVA	Gross Value Added
55	GWS	Glass Wall Systems
56	HI	High Insulation
57	HPL	High-Pressure Laminate
58	HQ	Headquarters
59	HSE	Health, Safety, and Environment
60	HSN	Harmonized System of Nomenclature
61	IBEF	India Brand Equity Foundation
62	IGBC	Indian Green Building Council
63	IGCC	Insulating Glass Certification Council
64	II	Infrastructure Investment (assumed contextually)
65	IIP	Index of Industrial Production
67	IMF	International Monetary Fund
68	ING	Internationale Nederlanden Groep
69	INR	Indian Rupee
70	INREV	European Association for Investors in Non-Listed Real Estate Vehicles
71	IPD	Investment Property Databank
72	ISO	International Organization for Standardization
73	IT	Information Technology
74	JLL	Jones Lang LaSalle
75	LEED / LEED/IGBC	Leadership in Energy and Environmental Design
76	LGIM	Legal & General Investment Management

77	LLC	Limited Liability Company
78	MB-SE75 / MB-SR50N / MB-TT50	Aluprof Façade System Series
79	MCX	Multi Commodity Exchange
80	MOSPI	Ministry of Statistics and Programme Implementation
81	MT	Metric Ton
82	NA	Not Available / Not Applicable
83	NCC	National Construction Code (Australia)
84	NCR	National Capital Region
85	NGEU	Next Generation EU
86	NITI	National Institution for Transforming India
87	NRI	Non-Resident Indian
88	NSO	National Statistical Office
89	NSW	New South Wales
90	OEM	Original Equipment Manufacturer
91	PAT	Profit After Tax
92	PE	Private Equity
93	PIB	Press Information Bureau
94	PLI	Production-Linked Incentive
95	PMAY	Pradhan Mantri Awas Yojana
96	PVC	Polyvinyl Chloride
97	RAICO	German Facade System Manufacturer
98	RBI	Reserve Bank of India
99	REALTORS	Real Estate Agents
100	REIS	Real Estate Information System
101	RERA	Real Estate (Regulation and Development) Act
102	RLB	Rider Levett Bucknall
103	RMB	Renminbi (Chinese Currency)
104	RWW	Retrofit Window Wall (assumed contextually)
105	SAM	Serviceable Addressable Market
106	SEA	Southeast Asia
107	SFDR	Sustainable Finance Disclosure Regulation
108	SG	Singapore
109	SOM	Serviceable Addressable Market
110	SRG	Strategic Research Group (assumed contextually)
111	TAM	Total Addressable Market
112	TBD	To Be Decided
113	TDS	Tax Deducted at Source
114	TOD	Transit-Oriented Development
115	UAE	United Arab Emirates
116	UHNWI	Ultra-High-Net-Worth Individual
117	UK	United Kingdom
118	US / USA	United States of America
119	USD	United States Dollar
120	UV	Ultraviolet
121	VLT	Visible Light Transmission
122	WFM	Window & Façade Magazine
123	WICONA	German Facade System Brand
124	YOY	Year on Year

1. Global Macroeconomic Overview

1.1. Global GDP - Historical Trend & Growth Scenario Across Major Regions

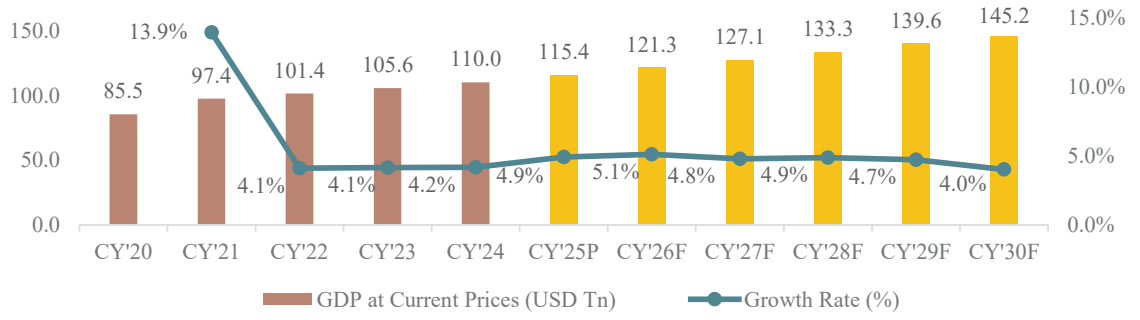
The nominal global GDP y-o-y growth rate is 4.9% from CY'24 to CY'25P; expected to sustain growth at a CAGR of 4.7% from CY'24 to CY'30F.

The global economy continues to demonstrate resilience amid a complex environment of moderating inflation, tight monetary policies, and evolving geopolitical dynamics. Between CY'20 and CY'24, the global economy registered a CAGR of **6.5%**, stabilizing after a period of heightened volatility driven by post-pandemic recovery efforts, supply chain realignments, and monetary policy tightening cycles.

Global GDP is expected to grow at a stabilized rate of 4.7% from CY'24-30F, driven by technological advancements, digital transformation, and infrastructure investments. The rise of green technologies and the shift towards sustainability will further support growth, alongside rising consumer demand in emerging markets and a growing youthful labor force.

Higher interest rates, tighter financial conditions and geopolitical conflicts, including Russia's war in Ukraine, evolving conflict in the Middle East and turbulent US tariff policy have introduced uncertainties for short period of time, however long-term growth stays intact.

Figure 1-1: Global GDP (current prices) in USD Tn & Growth Rate (%) Outlook, CY'20-30F



Source: World Economic Outlook, 2025, IMF, Ken Research Analysis
Note1: F represents Forecasted figures, all figures are reported for the calendar year, starting from January 1st to December 31st.
Note2: P refers to provisional number

Between CY'23 and CY'24, global GDP trends varied significantly across major economies due to a mix of domestic challenges and international factors.

Global Economic Leaders: USA and China maintain their positions as the largest economies globally.

India's Rapid Growth: India has the fastest growth trajectories, driven by a growing labor force and rising domestic consumption.

European Recovery: Europe's recovery is expected to extend into CY'25, led by Germany and the UK, as easing energy prices and lower inflation boost real income and household spending.

Table 1-1: GDP at Current Prices of Major Economies (USD Tn), CY20-30F

Countries	CY'20	CY'21	CY'22	CY'23	CY'24	CY'25P	CY'28F	CY'30F	CAGR (CY'20-24)	CAGR (CY'24-30F)
USA	21.3	23.6	25.7	27.4	29.2	30.5	33.6	35.9	8.2%	3.5%
China	14.8	17.8	17.9	17.7	18.3	19.2	23.6	26.2	5.5%	6.2%
Germany	3.8	4.3	4.1	4.5	4.6	4.7	5.2	5.5	4.9%	3.0%
Japan	5.1	5.1	4.3	4.2	4.1	4.2	4.8	5.1	-5.3%	3.7%
India	**2.4**	**2.8**	**3.2**	**3.5**	**3.9**	**4.2**	**5.8**	**6.8**	**12.9%**	**9.7%**
UK	2.7	3.1	3.1	3.3	3.6	3.8	4.4	4.8	7.5%	4.9%
France	2.6	2.9	2.8	3.0	3.2	3.2	3.5	3.7	5.3%	2.4%
Brazil	1.5	1.7	1.9	2.2	2.2	2.1	2.9	3.2	10.0%	6.4%
Canada	1.7	2.0	2.7	2.1	2.2	2.2	2.7	2.9	6.7%	4.7%
Italy	1.9	2.2	2.1	2.3	2.4	2.4	2.6	2.7	6.0%	2.0%
Australia	1.4	1.7	1.7	1.7	1.8	1.8	2.1	2.3	6.5%	4.2%

Source: World Economic Outlook, 2025, IMF, Ken Research Analysis
Note1: F represents Forecasted figures, all figures are reported for the calendar year, starting *from January 1st to December 31st.*
Note 2: P refers to provisional number

1.2. Key Factors Impacting the Global Business Environment

1.2.1 Geopolitical Situation & Risks

Factors such as political instability, trade tensions, regional conflicts, and regulatory changes can create uncertainty and challenges for businesses operating internationally. These conditions can affect market access, supply chains, investment decisions, and overall business strategies. As of CY'24, geopolitical risks including electoral polarization, intra- and inter-state conflicts, and evolving tariff regimes have significant economic implications, with sudden changes in trade duties further straining global operations and pricing structures.

India's merchandise and services exports aggregated **USD 778.2 Bn** in FY'24 (merchandise: **USD 437.1 Bn**; services: **USD 341.1 Bn**). USA remained the largest merchandise export destination, accounting for **17.9%** of India's exports during the period. Recent trade measures, including the U.S. Executive Order on Reciprocal Tariffs (effective April 9, 2025) which imposed an additional **26% duty** on Indian goods, and subsequent notifications in August 2025 raising duties on select products to ~**50%**, have created sector-specific headwinds.

Industries with high exposure to the U.S. market and reliance on price competitiveness such as **textiles and apparel, low-value chemicals, gems and jewelry, and select auto components** are expected to be more vulnerable to near-term margin pressure. By contrast, segments such as **Information Technology, Pharmaceuticals, and knowledge-driven engineering exports** remain relatively insulated, given their value-added nature and lower sensitivity to tariff shifts.

In terms of destinations, while the U.S. represents India's largest export market, accounting for nearly one-fifth of outbound shipments, India's diversified trade footprint includes the **European Union, UAE, and Southeast Asia**, which together provide a meaningful balance to overall demand. This geographic spread, coupled with resilient domestic consumption, reduces the concentration risk of U.S.-specific policy actions.

In conclusion, the tariff escalation is expected to exert pressure only on industries that were heavily dependent on tariff differentials vis-à-vis China. Enterprises with **engineering depth, differentiated capabilities, and established customer linkages** are expected to be less impacted than the broader trade landscape, thereby cushioning the long-term trajectory of India's external sector.

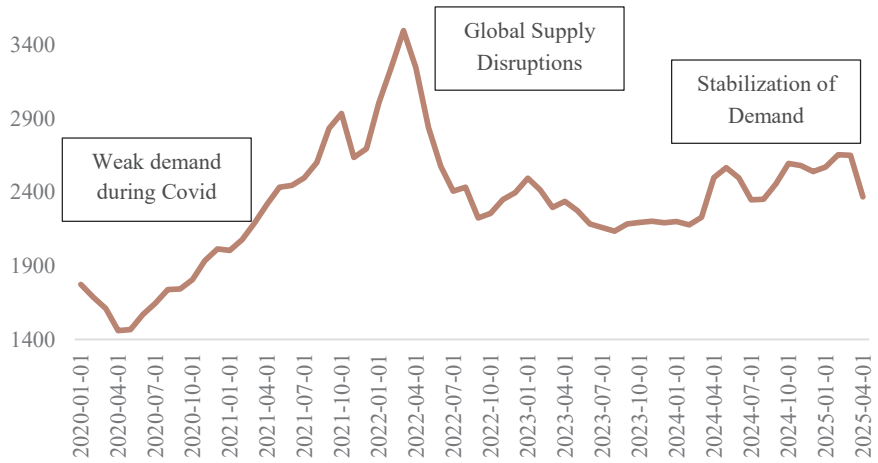
1.2.2 Production Trends & Price Volatility of Key Materials across Major Markets

Key materials like aluminum, glass, steel, and polymers, which serve as fundamental inputs across multiple industries, have experienced notable variability in availability and cost structures. These dynamics have had a cascading impact on industries reliant on material-intensive processes, influencing project timelines, cost estimates, and sourcing strategies.

Aluminum and Steel are two of the most widely used materials in façade and fenestration markets globally. These metals are essential for the construction of modern, durable, and energy-efficient building exteriors, including windows, doors, curtain walls, and cladding systems.

Aluminum is particularly favored for its lightweight, corrosion-resistant, and highly versatile properties, making it ideal for large glass panels, window frames, and complex architectural design.

Figure 1-2: Global Price Trend of Aluminum (in USD/MT), Jan 2020 – Apr 2025



Source: Federal Reserve Bank of St. Louis FRED, MCX

Aluminium prices surged from USD 1,460/MT in CY'20, driven by weak demand during the COVID-19 pandemic, to USD 2,635/MT in CY'21 as economies rebounded, before peaking at USD 3,498/MT in CY'22 amid supply disruptions from the Russia-Ukraine war. From CY'23 to CY'24, prices remained resilient, supported by strong demand from automotive and construction sectors, despite ongoing energy constraints.

Due to easing global supply and shifting market dynamics, aluminum prices have been trending lower, with the average price reaching **USD 2,179** / MT in CY'24 and reached **USD 2,367** / MT, as of April month in CY'25. This decline is also driven by improved production efficiency, reduced raw material costs, and a gradual stabilization of demand in key markets. The recent imposition of 50% U.S. tariffs on Indian aluminum products is expected to exert upward pressure on export prices, potentially tempering the pace of the overall decline.

China continues to dominate global aluminum output, driven by its expansive industrial base, access to key raw materials, and government-backed initiatives, positioning it as a key player in the global aluminum market.

Figure 1-3: Primary Aluminum Production (in Mn/MT) by Major Producers, CY'24

Source: The Aluminum Association, International Aluminum Institute, The London Metal Exchange, Ken Research Analysis
Note: All figures are reported for the calendar year, starting from January 1st to December 31st.

Table 1-2: Primary Aluminum Prices per MT across Major Markets, as of December CY'24

Key Countries	Prices per Ton in USD (as of December CY'24)
China	2,720
Europe	2,517
India	2,553
Canada	2,598
Australia	2,105
United States	2,541

Source: The Aluminum Association, International Aluminum Institute, The London Metal Exchange, Ken Research Analysis
Note: All figures are reported for the calendar year, starting from January 1st to December 31st.

Steel is considered for its strength, stability, and load-bearing capabilities, often used in structural components of façades and fenestration systems, such as frames, reinforcements, and cladding.

China leads global steel production with over 1,005 Mn MT, driven by its booming construction, infrastructure, and manufacturing sectors, creating vast domestic demand. This enables large-scale production at a lower cost due to economies of scale.

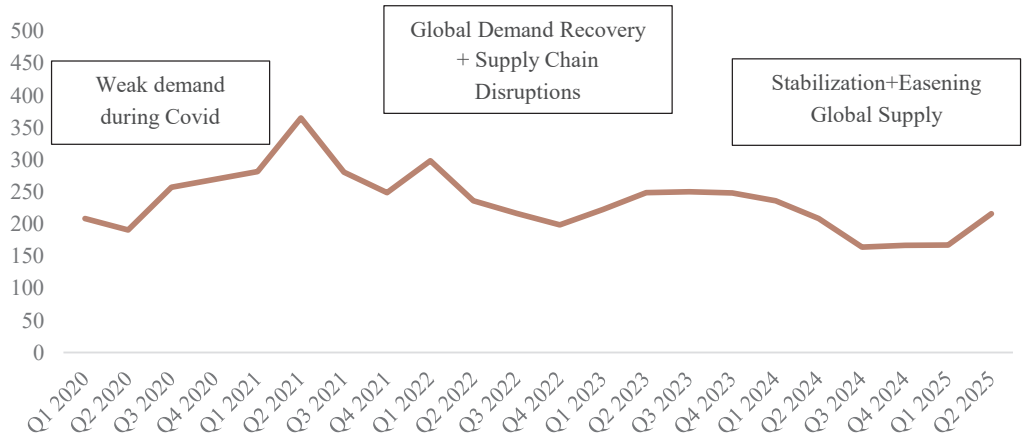
Figure 1-4: Steel Production (Mn metric tons) across Major Markets, CY'24

Source: World Steel Association, Ken Research Analysis
Note: Steel denotes Crude Steel Production, all figures are reported for the calendar year, starting from January 1st to December 31st.

Along with aluminum and steel, glass is another key component, foremost celebrated for its aesthetic impact delivering sleek, seamless façades and striking visual continuity.

Beyond its design appeal, it still offers advanced performance options such as low-emissivity coatings, laminated or tempered safety glass, and double- or triple-glazed insulating units to enhance energy efficiency, solar control, acoustic insulation, and occupant comfort in modern façade and fenestration systems.

Figure 1-5: Global Price Trend of Glass (in USD per metric tons), 2020 – Q2 2025



Source: Zhengzhou Commodity Exchange, Ken Research Analysis
Note1: All figures are reported for the calendar year, starting from January 1st to December 31st.
Note 2: All figures are converted from Renminbi (RMB) to USD at the exchange rate 1RMB=USD 0.14

Glass futures on the Zhengzhou Commodity Exchange dropped from **208.6 USD/MT** in Q1 CY'20 to a **Q2 CY'20 low of 190.5 USD/MT** as COVID lockdowns halted construction and sent producer inventories to record highs. From that trough, capacity cuts and urgent restocking drove prices up to **365.0 USD/MT in Q2 CY'21** amid soaring real-estate glass demand and policy-driven production curbs. As downstream activity weakened in CY'22—transport controls, logistical bottlenecks and high freight costs eroded sentiment—futures slid steadily to **198.6 USD/MT by Q4 CY'22**. A modest rebound in CY'23 on packaging and automotive-glass restocking lifted prices back toward **250.0 USD/MT** by Q3 CY'23, but in CY'24 easing energy costs and scheduled smelter maintenance pushed glass futures to multi-year lows in Q3 before a mild Q4 restock lifted them to **166.9 USD/MT**. In Q2 CY 25, flat glass prices increased due to rising raw material, labor, logistics, and energy costs.

1.2.3 Government Policies & Regulations

Major economies, including the U.S. and the EU, have revised tariff structures on key inputs such as aluminum, steel, and copper to both protect domestic industries and align with sustainability goals.

- As of March, CY'25, U**.S. has imposed a 50% tariff on steel and aluminum (starting June 4, CY'25)**, further solidifying its position to protect domestic industries while meeting its environmental objectives.
- Europe will implement the **Carbon Border Adjustment Mechanism (CBAM) in CY'26**, imposing a carbon price on imported goods to align with EU standards and prevent carbon leakage.
- **China, starting in January CY'25, has reduced tariffs on select recycled metals** to promote a circular economy and sustainable production, reflecting the rising role of green tariffs and sustainability-driven trade policies.

1.2.4 Technological Factors

Technological advancements like AI, automation, big data, and IoT are revolutionizing industries worldwide. However, the rise in cyberattacks, both in complexity and frequency, presents substantial challenges to businesses and national security.

2. India Economic Landscape

2.1. India GDP Growth

Resilient Growth Outlook: India's Nominal GDP to Rise 15.4% (y-o-y) in FY'25

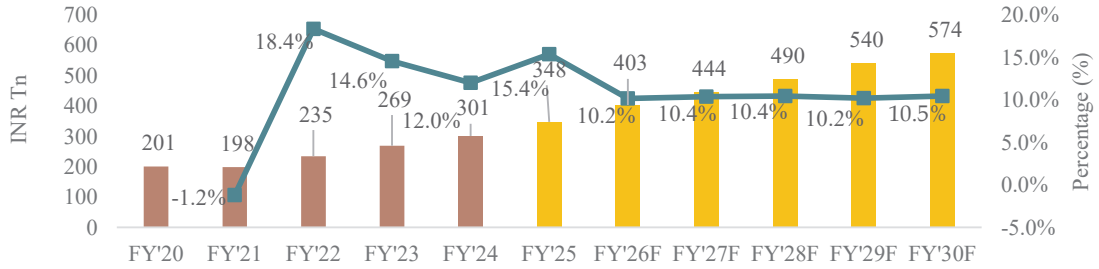
India is expected to reach a GDP of **INR 347.5** Tn in **FY'25**, growing at a rate of **15.4%.** India's economic momentum is set to accelerate, driven by a young, expanding labour force, rapid industrialization, and rising domestic consumption. The industrial and service sector have registered a **strong growth** over the past five years, supported by robust manufacturing, construction, and a broad-based recovery in financial, real estate, and consumer-facing services

According to the **International Monetary Fund (IMF)**, India has surpassed Japan marginally as the world's **fourth-largest economy** by the end of **FY'25**.

Further, **Morgan Stanley** estimates that India will surpass Germany to become the **third-largest economy** by **FY'28**, with a projected GDP of **INR 490 Tn**, cementing its position as a global economic powerhouse.

Looking ahead, the International Monetary Fund (IMF) projects that, with sustained reforms, India's real GDP could grow at an average rate of 8% annually through CY'47.

Figure 2-1: Indian Nominal GDP (at current prices) in INR Tn and Growth Rate (in %), FY'20 - FY'30F



Source: Ministry of Statistics and Programme Implementation (MoSPI), World Economic Outlook, 202, IMF, Ken Research Analysis
Note 1: F represents Forecasted figures, FY represents Financial Year starting April 1st to March 31st.

2.2. India's Growth Catalysts: Industrial Activity, FDI, Consumption Patterns, and Trade Agreements

IIP Growth Up to 5.0% in January CY'25, powered by strong performance in manufacturing.

As per Ministry of Statistics and Programme Implementation (MoSPI), the Index of Industrial Production (IIP) registered a notable growth of 5.0% in January CY'25, up from 3.2% in December CY'24, signaling a positive shift in industrial activity. While early CY'25 saw a strong recovery in January, industrial growth moderated between February and April, indicating a gradual cooling in manufacturing momentum.

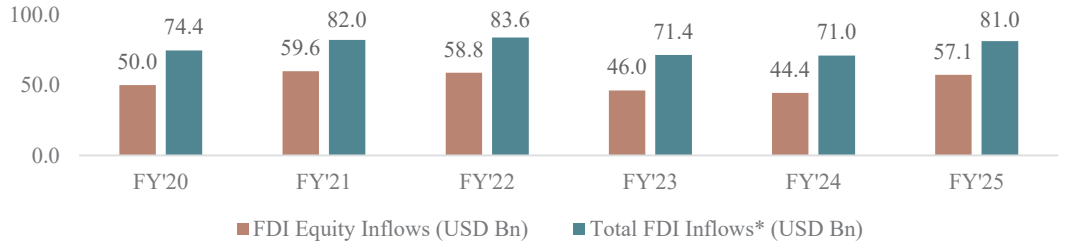
The growth was primarily driven by the **top 3 sectors**: **Mining (4.4%), Manufacturing (5.5%), and Electricity (2.4%).** The robust expansion in manufacturing, particularly at 5.5%, indicates solid production output across various industries, including sectors crucial to the construction and infrastructure markets, which rely on materials like steel, Aluminum, and cement.

The IIP Quick Estimate for January CY'25 stood at 161.3, compared to 153.6 in January CY'24, reflecting a year-on-year improvement. The increase in mining and electricity production underscores a stable supply of raw materials and energy, which is essential for continued economic development and industrial activity.

FDI inflows increased by reach USD 81.0 Bn by FY'25

Foreign Direct Investment (FDI) inflows to India rose by 14% to reach USD 81.0 Bn in FY'25, driven by investments in manufacturing, IT sector despite prevailing global tensions such as Russia-Ukraine Middle-East conflict. As of FY'25, the top source of FDIs in India were Singapore, followed by Mauritius and the United States. Moreover, Russia have also emerged as a fast-growing source country investing in India.

Figure 2-2: Total FDI Inflows in India (in USD Bn), FY'20 - FY'25



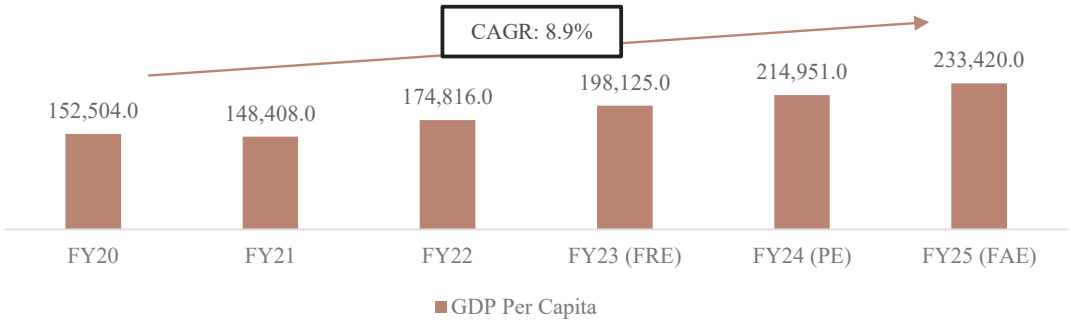
Source: RBI, DPIIT, Ken Research Analysis
Note 1: F represents Forecasted figures, FY represents Financial Year starting April 1st to March 31st.

Note2: The FY 24–25 FDI inflow figures are forecasted based on the released data, assuming a uniform distribution throughout the year. While total FDI inflow data is available for 11 months, equity inflow figures have been published for only 9 months. Projections are made accordingly to estimate the full fiscal year.

India's Per Capita gross national disposable income has expanded at a CAGR of 8.9% during FY'20-FY'25, retaining its status as world's fastest growing major economy.

Gross National Disposable Income (GNDI) continues to reflect rising living standards in India. Between FY'24 and FY'25, per capita GNDI at current prices increased from INR 214,951 to INR 233,420, reflecting a growth rate of 8.6%. This uptick is nearly at par with the previous year and indicates sustained income expansion driven by strong macroeconomic fundamentals and job market stability. As a result, higher disposable incomes are expected to further stimulate household consumption and support domestic demand in FY'25.

Figure 2-3: India's Per Capita Gross National Disposable Income (Current Price) in INR, FY19-FY25FAE



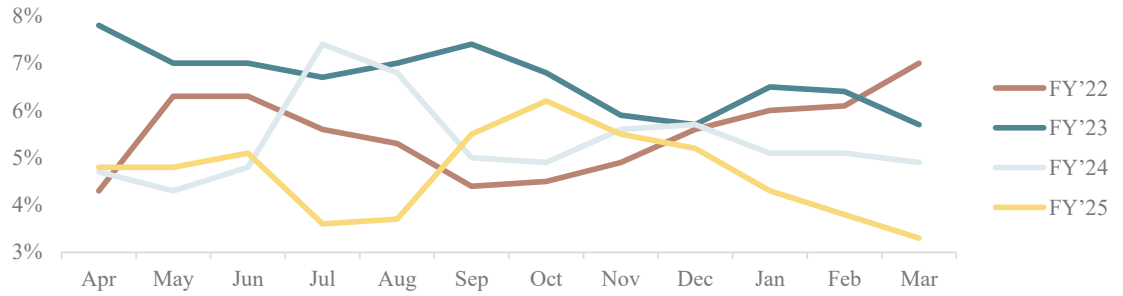
Source: MOSPI & Ken Research Analysis; Note: FRE: First Revised Estimates; PE: Provisional Estimates; FAE: First Advance Estimates
Note: FY represents the Financial Year ending on March 31

India's inflation eased to 3.3% in March FY'25, driven by government measures and falling prices in food items, with rural and urban inflation also showing declines.

As of March, FY'25, India's inflation has moderated to 3.3%, down from 3.8% in February FY'25, the lowest since August FY'19. This decline is driven by government measures such as buffer stocks, reduced GST rates, and subsidized sales, particularly on food items.

Rural inflation dropped from 4.6% in January FY'25 to 3.8% in February FY'25, while urban inflation fell from 3.9% to 3.3%. Key drivers of this decline include lower prices for vegetables, pulses, eggs, and milk, boosting consumer purchasing power. These trends reflect effective monetary policy and government actions supporting price stability.

Figure 2-4: India's Month-wise Inflation Trends, CPI Rate (%), FY'22 - FY'25



Source: Ministry of Statistics and Programme Implementation (MoSPI), Ken Research Analysis
Note 1: FY represents Financial Year starting April 1st to March 31st.

In response to moderating inflation and global economic challenges, the Reserve Bank of India (RBI) reduced the repo rate to 5.5% in June FY'25, down from 6.5% in April FY'23. This rate cut is part of a series of monetary policy actions aimed at supporting economic growth and providing liquidity to key sectors.

The repo rate cut, along with the government's fiscal measures, is expected to further stabilize inflation and encourage investment, providing relief to consumers and businesses, particularly in sectors like housing, consumer goods, and infrastructure.

2.3. India's Strategic Pursuit of Trade Agreements to Strengthen Global Integration

India has actively pursued a range of bilateral and multilateral trade agreements that aims integrate Indian economy with its global partners, facilitate flow of goods under lower tariff regimes, and attract cross-border investment.

Table 2-2: India's Bilateral and Multilateral Trade Agreements with Key Economies: Key Benefits

Country	FTA	FTA Benefits
UAE	Comprehensive Economic Partnership Agreement (CEPA)	Provides preferential market access, lowers tariff barriers, and promotes trade in goods and services.
Australia	Economic Cooperation and Trade Agreement (ECTA)	Facilitate trade with preferential access to markets for goods, services, and investment.
ASEAN (11 countries)	India-ASEAN Trade in Goods Agreement	Promote trade in goods with regional partners enhances cooperation on agricultural and industrial sectors.

South Asia (8 countries)	South Asian Free Trade Area (SAFTA)	Promotes regional economic cooperation, reduces trade barriers among South Asian nations.
Singapore	Comprehensive Economic Cooperation Agreement (CECA)	Enhances trade in goods, services, and investment between India and Singapore, facilitates regulatory alignment.
Japan	Comprehensive Economic Partnership Agreement (CEPA)	Strengthens trade relations, promotes investment, and facilitates sectoral cooperation in manufacturing and services.

Source: Ministry of Commerce, GOI

2.4. IMPACT OF CHINA +1 THEME

China +1 Strategy drives global supply chain shifts, boosting FDI in India and aligning with 'Make in India' initiative.

The China +1 strategy, driven by rising labor costs in China, geopolitical tensions (especially U.S.-China trade frictions), and pandemic-era supply chain disruptions, has reshaped global manufacturing and sourcing strategies. India has emerged as a key beneficiary, attracting increased FDI and aligning this momentum with its *'Make in India'* initiative launched in CY'14, which aimed to raise the manufacturing share of GDP from 15% to 25%.

Indian companies are strategically positioned to succeed in the international façade market, supported by a combination of competitive advantages. These include low-cost skilled labor, a well-integrated and efficient supply chain, ready availability of key raw materials such as aluminium and glass, and favorable geopolitical dynamics that enhance India's position as a reliable global manufacturing and export hub.

In response, the Indian government rolled out structural reforms, including the simplification of 44 labor laws into 4 codes. These initiatives have begun attracting global OEMs, EPC firms, and Tier-1 suppliers across electronics, textiles, and industrial components.

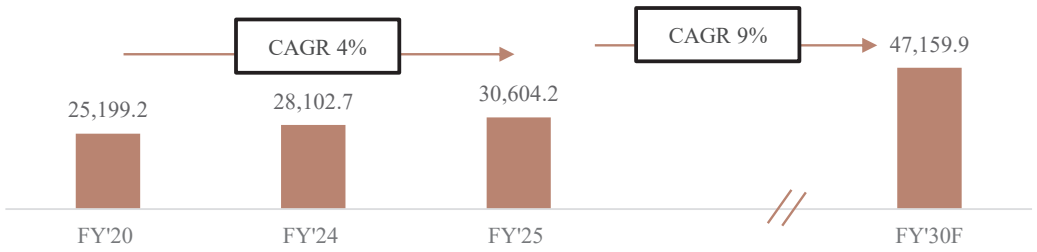
Impact on India's Façade and Fenestration Market:

- **Shift to Local Sourcing Supported by Raw Material Availability:** Developers are increasingly sourcing aluminum profiles, hardware, and curtain wall components from Indian suppliers, supported by abundant domestic availability of aluminum, glass, and steel—reducing import dependency.
- **Availability of Skilled labor**: A large pool of technically trained workforce and certified installers supports efficient project execution across the construction and infrastructure sectors.
- **Entrepreneurial Talent**: India's growing base of agile, innovation-driven entrepreneurs is accelerating advancements in sustainable building technologies and façade solutions.
- **OEM Export Base:** India is emerging as a contract manufacturing hub for façade components (e.g., unitized panels, extrusions) targeting UAE, SEA, US, Australia and EU under FTAs and PLI incentives.
- **Demand from Green Buildings & Infra:** Growth in LEED/IGBC-certified buildings, metros, and SEZs is accelerating tech transfer for advance façade from international players.

2.5. INDIA'S MANUFACTURING SECTOR: CATALYZING GROWTH AND INNOVATION IN A BLITZKRIEG ECONOMY

India's manufacturing sector historically grew at a CAGR of 4% during the period FY'20–25 and is set to witness expansion at a CAGR of 9% over the next five years to reach INR 47,159.9 Bn. According to PwC projections, the manufacturing sector contribution to GDP is estimated to reach **17.8% in FY'25**, and **20% by FY'30** driven by initiatives like the Production-Linked Incentive (PLI) schemes aimed at boosting domestic manufacturing attracting FDI, and boosting domestic production.

Figure 2-5: India's Manufacturing Industry GVA (in INR Bn), FY'20-FY'30



Source: PIB, MoSPI, NSO Industry Articles, Ken Research Analysis
Note 1: F represents Forecasted figures. FY represents Financial Year starting April 1st to March 31st.

According to IBEF, FDI equity inflows into the manufacturing sector over the past decade (CY'14–CY'24) reached ~**INR 13,708.0 Bn**, marking a 69% increase compared to the previous decade (CY'04–CY'14), which recorded inflows of around **INR 8,109.0 Bn**. This surge positions India to leverage both its digital and physical infrastructure, making it a key player in global supply chains and a driver of economic growth and job creation in the coming decade. India is targeting **INR 86,000.0 Bn** in goods exports by **CY'30**.

India's growing infrastructure and focus on high-growth sectors like construction are boosting demand in the façade and fenestration markets. As urban development and modern building projects expand, the need for materials such as steel, aluminum, and glass continues to rise.

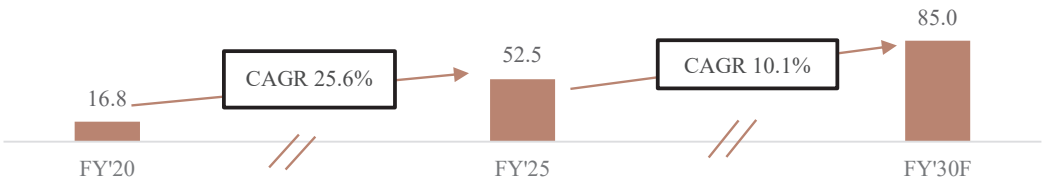
2.6. Indian Real Estate Sector: A transformative force in urbanization and economic growth

India's real estate market reached **INR 52.5 Tn in FY'25 and is projected to reach INR 85.0 Tn** by FY'30F, growing at 10.1% CAGR, driven by urban population growth. The growth in real estate is further driven by government's increased expenditure on infrastructure that is supporting industrial corridors, urban transit, and housing logistics.

Rising urban construction and policy-driven housing push are directly accelerating demand for energy-efficient façades and modern fenestration systems in both residential and mixed-use assets.

Regulatory measures such as **RERA** and the introduction of **REITs** have enhanced market transparency, increased investor confidence, and bolstered capital inflows from both domestic and foreign investors. Furthermore, as per DPIIT statistics foreign direct investment equity inflow in the real estate sector is ~**INR 45.0 Bn in April- March CY'25** *(includes Construction development: Townships, housing, built-up infrastructure and construction),* driven by favorable policy reforms, tax incentives, and FDI relaxation.

Figure 2-6: India Real Estate Market Size on the Basis of Revenue (in INR Tn), FY'20 - FY'25 – FY'30F



Source: IBEF, Ken Research Analysis

Within the India's real estate market Mumbai and NCR remain the key real estate hubs, driven by high population density and the concentration of industrial and corporate infrastructure.

Table 2-3: India's Residential Market Split of Top 8 Cities by Units Sold (Sales %), FY'25E

Top Cities	Residential Sales (%) in FY'25E
Mumbai	27.5%
NCR	16.7%
Bengaluru	15.8%
Pune	14.0%
Hyderabad	10.8%
Ahmedabad	5.4%
Kolkata	5.1%
Chennai	4.7%
Total	100%

Source: Real Estate Intelligence Service (REIS), JLL & Research, Ken Research Analysis
Note 1: The data for India covers 8 Major Cities – Mumbai, NCR, Bengaluru, Pune, Chennai, Hyderabad, Kolkata & Ahmedabad; FY represents Financial Year starting April 1st to March 31st.

Note 2: E refers to estimated

Mumbai continued to dominate the ultra-luxury residential market (*Residential unit priced >INR 0.4 bn*) in India with 52 transactions, accounting for ~88.0% of the total transactional value, emerging as the top city for high-value home sales in FY'25E. It was followed by Delhi-NCR, which saw limited but notable activity, particularly in Gurugram.

Table 2-4: India Residential House Sales (in Units) by Price Bracket in terms of Estimated Market Value (in INR Bn) and Market share (in %), FY'24

Price Bracket (in INR Bn)	FY'24 (in Units)	Estimated Market Value (INR Bn)	Market Share of segments of total Residential Market (in%)
<0.04	**2,83,167**	**2,265.3**	61.5%
0.04–0.1	**17,683**	**1,025.6**	27.9%
0.1–0.3	**1,768**	**282.9**	7.7%
0.3–0.4	**184**	**60.7**	1.6%
0.4–1	**46**	**24.1**	0.7%
1+	**19**	**23.4**	0.6%
Total	**3,02,867**	**3,682.1**	**100.0%**

Source: JLL, CBRE, Anarock, Industry Reports & Ken Research Analysis
Note 1: F represents Forecasted figures. FY represents Financial Year starting April 1st to March 31st.
Note 2: The data for India covers 8 Major Cities – Mumbai, NCR, Bengaluru, Pune, Chennai, Hyderabad, Kolkata & Ahmedabad; FY represents Financial Year starting April 1st to March 31st.

These trends highlight a dual-trajectory market anchored by mass demand in affordable housing, while selectively expanding in ultra-luxury segments across key metros.

The **total value of units sold in the housing market across India** has **witnessed a 96% growth** since FY'22, rising **from INR 3,406.9 Bn to INR 6,692.0 Bn in FY'25**, alongside an increase in the number of units sold from

4,20,544 to 4,95,154 during the same period. Notably, **NCR's share in market revenue nearly doubled, climbing from 12.0% in FY'22 to 25% in FY'25.**

Key Growth Drivers:

- Demand for luxury homes priced above INR 40.0 Mn has surged by 53.0% across seven major metropolitan cities.
- Increased investment activity from private market players such as Brookfield, Blackstone, and others.
- Growing presence and expansion of Global Capability Centres (GCCs).
- The National Capital Region (NCR) has recorded a substantial increase in its revenue market share.
- Bengaluru, MMR, and Pune have sustained their respective revenue market shares, whereas Hyderabad has experienced a decline in growth momentum.

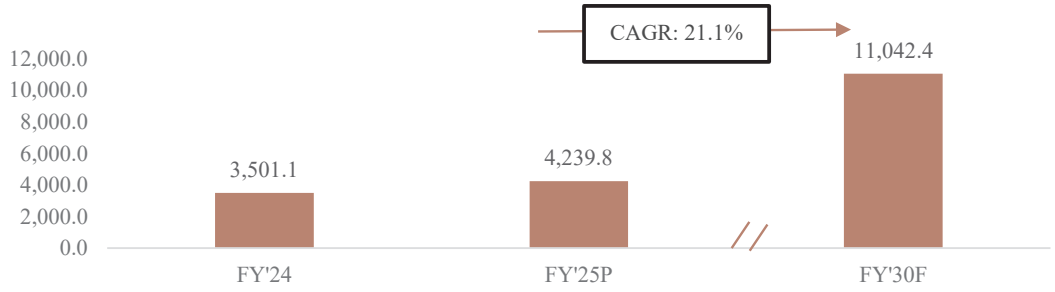
India's Commercial Real Estate Market: Robust Growth Across Key Sectors, Poised to Reach INR 11.0 Tn by FY'30

India's commercial real estate market is segmented into key sectors, with office space accounting for ~42.5%, retail space at 22.5%, industrial and warehousing space contributing 17.5%, hospitality at 12.5%, and other segments, such as data centers and healthcare facilities, representing the remaining 12.5% of the market.

India's commercial real estate sector was valued at INR 3,501.1 Bn by FY'24, reflecting moderate yet consistent growth vs the previous year.

By FY'30F, the market size is forecasted to reach INR 11,042.4 Bn, showcasing a strong upward trajectory. This substantial increase reflects the expanding demand for commercial spaces, driven by economic growth, urbanization, and business development across India.

Figure 2-7: India's Commercial Real Estate Sector Market Size (in INR Bn), FY'24-FY'25 & FY'30F



Source: IBEF, Knight Frank, Brickwork Ratings, Ken Research Analysis
Note 1: F represents Forecasted figures. FY represents Financial Year starting April 1st to March 31st.
Notes 2: The real estate market encompasses activities such as property acquisition, disposition, rental income generation, long-term asset management, advisory services, and other functions directly related to these areas.
Note 3: P refers to Provisional numbers

India recorded a strong gross absorption of 18.9 Mn sq. ft. in Q1 CY'25, marking a 10% year-on-year increase. Bengaluru led the leasing activity, accounting for 26.0% of the total, followed by Delhi-NCR at 19.0% and Mumbai at 18.0%. The technology sector was the top contributor, making up 32.0% of total leasing, while the BFSI and flex space segments accounted for 21.0% and 13.0%, respectively. Large transactions of 100,000 sq. ft. or more dominated the market, representing 47.0% of total leasing activity.

Table 2-5: India's Office Space Completion & Sales/Transactions (In Mn Square Meters), FY'23 - FY'24 - FY'25

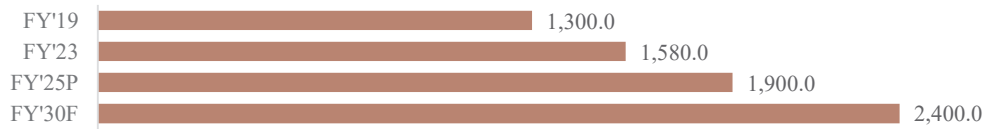
Parameters	FY'23	FY'24	FY'25
Completions *in Mn square meters*	4.0	4.7	4.0
Sales/Transactions *in Mn square meters*	5.5	6.7	7.8

Source: Knight Frank, Ken Research Analysis
Note 1: The data for India covers 8 Major Cities – Mumbai, NCR, Bengaluru, Pune, Chennai, Hyderabad, Kolkata & Ahmedabad
Note 2: FY represents Financial Year starting April 1st to March 31st.

India's global capability centers are set to Expand by 50% and Reach INR 8.6 Tn by FY'30F

As of FY'25, India hosts over **1,900** Global Capability Centers (GCCs). Projections indicate that this number is expected to surpass **2,400** within the next **3-4 years**. The growth of GCCs in India is driven by its **cost-effectiveness, skilled talent pool, robust digital infrastructure, and government support**, making it an attractive hub for global companies. As a result, the sector is set to become an **INR 8,600.0 Bn** industry by FY'30.

Figure 2-8: Number of GCCs in India, FY'19-FY'30F



Source: IBEF, Brickwork Ratings, Ken Research Analysis
Note 1: F represents Forecasted figures. FY represents the Financial Year starting 1st April to 31st March.
Note 2: P represents provisional number

3. Overview of the Façade and Fenestration Industry

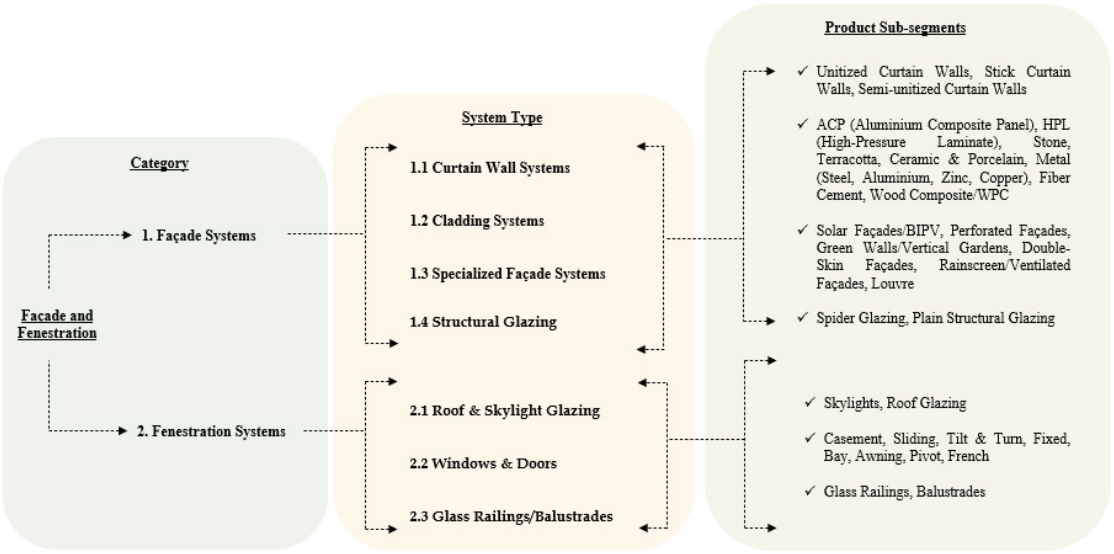
The Façade and Fenestration segment serves as the critical interface between a building's interior and its external environment, combining advanced materials, precision engineering and architectural design to deliver both form and function. By integrating high-performance glazing, thermally broken framing, rainscreen cladding and structural glazing, these systems regulate daylight, control solar heat gain, ensure air and water tightness, and contribute significantly to occupant comfort, space and energy efficiency.

According to Ken Research, **Façade and Fenestration systems now command ~15.0 % of total construction costs**, an increase from ~3.0 % in CY'2000, ~8.0 % in CY'2010 and ~12.0 % in CY'20, underscoring their evolution into critical structural and energy-performance components rather than purely decorative elements (Knight Frank Report).

Façade systems incorporate a wide variety of materials, including Glass, Aluminium, Aluminium Composite Panels (ACP), and other high-performance cladding systems.

Fenestration refers to the openings in the building envelope such as windows, doors, and skylights which allow natural light, ventilation, and physical connectivity between indoor and outdoor environments. As per the U.S. Department of Energy, well-designed fenestration systems can reduce a building's energy consumption by up to 12.0% to 33.0% through better ventilation, daylighting and insulation.

Figure 3-1: Product Taxonomy of the Façade and Fenestration Market



Source: Industry Experts and Ken Research Analysis

Façade and fenestration solutions are engineered to meet the exacting requirements of a broad spectrum of clients ranging from:

- **Residential** (spanning apartments, independent homes and builder floors, fenestration typically centers on casement and sliding windows alongside balcony and main-entry door systems. These elements not only enhance natural ventilation and daylight penetration but also bolster perimeter security and acoustic comfort for occupants)

- **Commercial** (office towers, co-working hubs, retail outlets, shopping malls and hotels lean heavily on curtain-wall assemblies, structural glazing and high-performance window units, often paired with ventilated rainscreen cladding. Beyond delivering iconic street-facing aesthetics, these façades optimize daylight harvesting, improve thermal insulation and reinforce each building's signature identity)

- **Industrial** (warehouses, manufacturing plants and special economic zones prioritize robustness and operability. Standard aluminum windows, insulated metal panels and straightforward cladding systems deliver the durability and temperature control industrial processes demand)

- **Public Infrastructure** (high-traffic, mission-critical facilities such as airports and hospitals employ unitized curtain walls, blast-resistant glazing and strategically integrated shading to balance safety, energy efficiency and abundant natural light. Educational campuses, from schools to universities, often adopt uPVC or aluminum window systems and energy-optimized façades to support both occupant comfort and institutional sustainability goals)

4. GLOBAL FAÇADE MARKET

The global façade market is poised for a measured recovery in CY'25, underpinned by a resurgence in real-estate pipelines, renewed infrastructure spending and the easing of financing headwinds.

The façade and fenestration sector has transitioned from a **mere construction support function to a core architectural discipline**, integral to sustainability and energy-performance objectives. Despite headwinds such as elevated financing costs and material-price inflation, ~60.0% of industry executives anticipate an uptick in development activity over the next 12 months, underscoring confidence in continued envelope system demand.

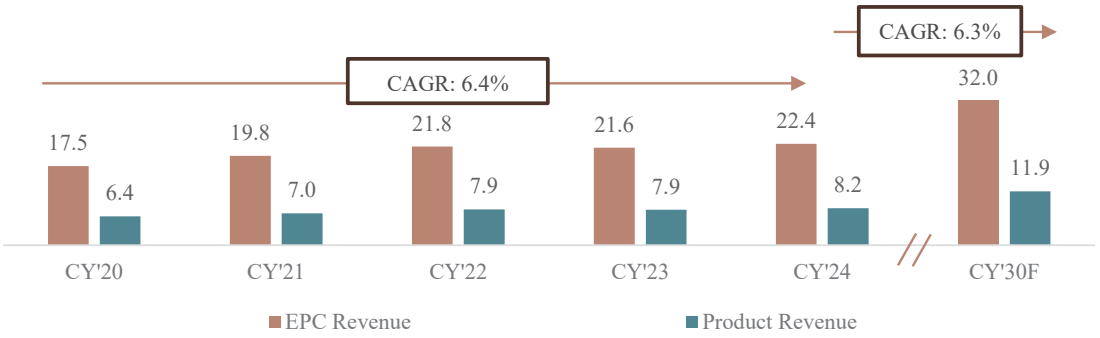
Europe: Amid subdued investment sentiment, the number of newly approved construction projects remains 40–50% below pre-pandemic levels across major markets. This is due to elevated interest rates, stricter financing conditions, and investor caution amid economic volatility and uncertain returns.

North America & APAC: Housing and logistics pipelines are rebounding, led by U.S. growth corridors (Dallas, Atlanta, Phoenix) and renewed momentum in markets like Japan and Singapore.

India: Urbanization-driven expansion and government infrastructure initiatives position India as a compelling long-term opportunity for high-performance façades.

Across all regions, CY'24's incoming administrations are leveraging real-estate development as an economic stimulus, deploying policy measures to accelerate construction starts and support the envelope-systems value chain.

Figure 4-1: Global Façade Market Size, in USD Bn, CY'20-24 & CY-30F



Revenue (in USD Bn)	CY'20	CY'21	CY'22	CY'23	CY'24	CY'30F	CAGR CY'20-24	CAGR CY'24-30F
EPC Revenue (A)	17.5	19.8	21.8	21.6	22.4	32.0	6.4%	6.1%
Product Revenue (B)	6.4	7.0	7.9	7.9	8.2	11.9	6.4%	6.5%
Product % of EPC Revenue (B/A)	36.6%	35.4%	36.2%	36.6%	36.6%	37.2%		

Source: Industry Articles, Interview with industry experts, Ken Research Analysis
Note 1: All values are in CY (Calendar Year), which refers to the period from 1st January to 31st December of the respective year
Note 2: EPC Revenue: Finished Goods + Installed revenue stated above represents the combined revenue from both finished façade materials and installation services, encompassing the total earnings generated by EPC façade contractors globally while Product Revenue: Finished Goods includes the COGS as a percentage of the total revenue earned by the EPC façade contractors globally.

Based on the data, façade-related work typically constitutes **~35–37% of the total EPC (Engineering, Procurement, and Construction) project revenue**, underscoring its significant contribution within the overall construction value chain.

As construction activity accelerates worldwide, the global façade market is witnessing steady growth, driven by rising demand for energy-efficient buildings, stringent environmental regulations, and growing urban infrastructure. At a country level, this shift varies basis their macroeconomic scenario, real estate and construction trends, competition scenario.

4.1. Leading Countries in the Façade and Fenestration Market

EU5, United States, Canada and Australia together represent ~60 % of the global façade market, underpinned by their strong economic fundamentals and sustained infrastructure and real-estate investments

1. EU5 (Germany, UK, Italy, Spain & France)

EU5 Macroeconomic Recovery Underpins Façade Market Revival

In CY'24, Europe's economic recovery gained modest momentum, with real GDP growth rising to 0.7% from 0.4% in CY'23. Peripheral economies like Spain and Italy led the recovery and are expected to outperform core markets over the next two years—Spain is projected to grow by 2.7% in CY'25, driven by strong labor markets and consumption.

Italy, supported by NGEU (European Union – Next Generation EU) funds and tourism, is forecast to grow by 0.8%. In contrast, France faces fiscal tightening and rising unemployment, while the UK is set for moderate 1.1% growth, and Germany is expected to underperform at 0.2%, constrained by energy costs and industrial slowdowns.

European CRE Sentiment Peaks in Late CY'24; Retail Leads and Hotel Investments Jump 70%

The European Commercial Real Estate (CRE) sector faced headwinds from macroeconomic instability and financial market disruptions over the last two years. However, investor sentiment rebounded significantly by the end of CY'24, with the INREV Consensus Survey (Annual investor sentiment and outlook report) showing its highest positive outlook since inception.

Retail emerged as the top-performing asset class, while office space lagged due to evolving workplace norms. **Hotels recorded a 70% surge in investments in CY'23 to CY'24,** highlighting investor interest in post-COVID tourism recovery.

CRE Investment by Country in CY'24

Despite recent macroeconomic headwinds, European CRE investment rebounded in CY'24, driven by renewed investor confidence across major markets. Southern Europe, particularly Spain and Italy, outperformed expectations, signaling a shift from their traditional post-crisis underperformance.

Table 4-1: Investment Scenario in European Countries in CY'24

Country	Investment (USD Bn)	Y-o-Y Growth (%)
UK	54.1	27%
Germany	28.1	15%
France	16.2	0%
Italy	10.2	67%
Spain	9.4	23%
Total	**169.6**	21%

*Source: CRE and **BNP Paribas Real Estate**, published in March 2025*
Note: 1 EUR ≈ 1.08 USD

Competitive Landscape in the EU5 Façade Market

The EU5 façade **market is fragmented** but increasingly shaped by energy-efficiency mandates, ESG-led retrofits, and the adoption of advanced materials. **Permasteelisa Group (Italy)** remains a pan-European leader in complex curtain wall systems, driven by its strong engineering capabilities and track record in delivering bespoke façade solutions for iconic global projects.

Schüco International (Germany) and Reynaers Aluminium (Belgium) also hold dominant positions in the market, owing to their advanced product portfolios, focus on innovation, and established networks across residential and commercial real estate. Their ability to combine performance, design flexibility, and compliance with evolving energy regulations has positioned them as preferred partners in modern construction.

Country-level competition varies as UK has consolidated competition scenario with players such as **Yuanda and Alumet**, while Spain and Italy are witnessing growth in local engineering firms focused on mid-rise and hospitality-led projects. Rising emphasis on decarbonization and updates to the EU's Energy Performance of Buildings Directive (EPBD) are further boosting demand for passive façades and modular units.

2. *United States*

U.S. CRE poised for 6.6% total growth in CY'25 as inflation stabilizes

The U.S. commercial real estate (CRE) market is positioned for recovery in CY'25 after two years of negative capital appreciation (CY'24). Forecasts suggest a **6.6% total growth**, including **1.7% capital appreciation**, driven by stabilizing inflation, falling interest rates, and sustained GDP growth (**2.1% expected in CY'25**). *(LGIM America Report CY'25).* This anticipated rebound in the CRE market is expected to positively influence construction activity.

Q4 CY'24 records peak apartment, industrial & office transactions; early CY'25 deliveries poised to normalize supply

Q4 CY'24 saw the strongest transaction volume for apartments, industrial, and office sectors indicating investor confidence. **Sector-wise outlook**:

- **Industrial & Apartments**: Recovery is strongest, with low new supply pipelines aiding balance.
- **Retail**: Minimal new construction; already tight supply and modest rent growth make it stable.
- **Office**: Remains weak due to hybrid work trends; high vacancy rates persist (~13.9%)

In early CY'25, the **U.S. residential real estate market showed signs of stability**, supported by 2.3% GDP growth and a moderated inflation rate of 3.0%. Median existing home prices rose 4.8% Y-o-Y, indicating steady construction momentum. *(National Association of REALTORS® Research Group)*

South Carolina led in new residential construction activity, issuing one permit per 118 residents. Notably, states like New Mexico and New Jersey recorded over 50% growth in permit issuance since CY'19 *(National Association of REALTORS® Research Group).*

It is expected façade system costs as a percent of total construction cost are expected to rise, especially for mid- to high-rise commercial and residential projects. This may be due to re-imposed tariffs on steel and aluminum imports in early CY'25.

Competition scenario

Permasteelisa North America, Enclos Corp., Harmon Inc. are the top 3 players. These players are distinguished by their ability to manage complex, large-scale projects across commercial, institutional, and high-rise segments.

- **Permasteelisa North America** has delivered complex façades for iconic developments such as the World Trade Center in New York and Salesforce Tower in San Francisco.
- **Enclos** is known for its work on the Hudson Yards development, the Apple Campus in Cupertino, and the Museum of Modern Art (MoMA) expansion.
- **Harmon Inc**. has executed major contracts including the U.S. Bank Stadium in Minneapolis and the Comcast Technology Center in Philadelphia. Their leadership is reinforced by their consistent involvement in technically demanding and architecturally significant projects across the country.
- **Yuanda USA Corporation** is a subsidiary of China-based Yuanda Group, specializing in unitized curtain wall systems and high-performance façades for skyscrapers and commercial developments. It is known for delivering complex façade packages across major U.S. cities including New York, Los Angeles, and San Francisco.
- **W&W Glass, LLC** is one of the largest architectural glass and glazing contractors in the U.S., known for its expertise in structural glass walls and point-supported glazing systems. With a legacy of landmark projects, it serves both private and institutional clients across North America.

Large contractors dominate landmark commercial projects, while mid-sized regional players focus on specialized curtain wall and glazing systems. Innovation in unitized façades and energy performance is driving competition in high-rise urban development zones.

3. *Canada*

Economic Recovery and Real Estate Trends

Canada's economy demonstrated modest resilience in late CY'24, with real GDP expanding by 0.5% in Q4 CY'24 and full-year growth reaching 1.6%, supported by lower interest rates and a temporary rise in exports. However, escalating tariff risks and political uncertainty in early CY'25 have started to weigh on investment. (*Spring CY'25, Canadian Construction Association*).

Construction and Real Estate Investment Trends

The construction sector grew by **1.1% in Q4 CY'24 but still registered a second consecutive annual decline of 0.3%,** largely due to weakness in single-family housing and repair construction.

Material cost pressures persisted, as the Industrial Product Price Index rose 0.8%, driven by a 7% increase in wood product prices. The Building Construction Price Index recorded modest gains, particularly in **Ontario, Saskatchewan, and Alberta**, reflecting regional cost variations. Canada's construction industry remains heavily reliant on imported materials such as steel and aluminum from the U.S., leaving it exposed to tariff-driven volatility (*Spring CY'25, Canadian Construction Association*).

In Q1 CY'25, **building construction investment rose 3.3% to USD 66.6 Bn**, with non-residential activity up 2.8%, driven by institutional (+5.6%) and industrial (+3.7%) segments. (*Statistics Canada*).

Recent Investments

As of March, CY'25, total investment in building construction stood at USD 22.2 Bn, reflecting a 0.9% monthly dip but a 5.4% Y-o-Y increase, signaling cautious yet sustained activity. **Residential**

investment declined 1.8%, mainly due to a sharp drop in multi-unit construction in Ontario and Quebec, while single-family home investment showed marginal growth.

Competition Outlook

Flynn Group of Companies, GRC Architects & Façade Systems, Ferguson Neudorf Glass are the top 3 players. Canada's market is regionalized and supply-driven, with Flynn holding a significant share nationally. Sustainability regulations and public infrastructure investments are fostering a shift toward performance façades. U.S. imports and players influence the competitive environment, especially in Ontario and British Columbia.

Key 2025 construction trends in Canada:

- **Green building**, which is expected to account for 25% of total construction, driven by stricter energy codes and growing climate resilience efforts. The industry is increasingly adopting Integrated Project Delivery (IPD) and prefabricated methods to reduce delays and manage costs, particularly amid persistent labor shortages as over 30% of the workforce nears retirement (*Onsite, Canadian Construction Magazine*).

- **Digital adoption** through BIM and AI is helping improve project efficiency and reduce rework.

These shifts are supported by renewed public investment in **infrastructure and affordable urban housing**, with residential and infrastructure projects expected to lead sectoral growth in CY'25, while commercial real estate shows moderate expansion via mixed-use and data center developments.

4. *Australia*

Economic Recovery and Real Estate Trends

Australia's construction and real estate market in CY'24 showed signs of recovery, driven by improving macroeconomic conditions and growing demand in key states. Total dwelling approvals increased by 4.2% Y-o-Y in Q1 CY'25, with **Queensland and Western Australia** leading this growth. **Residential approvals reached 172,000 units nationally**, while commercial segments like office, education, and warehouse facilities also picked up pace, especially in Brisbane and Adelaide (*State of the Land Report 2025; Industry Report: Residential Market Outlook, Jan 2025*).

Construction Outlook and Market Momentum

The combined built-up area across **residential, commercial, and infrastructure construction reached ~187 Mn square meters by the end of CY'24**. This growth is supported by large-scale public investments, such as Victoria's Big Build and Brisbane's Olympic-related developments.

These **infrastructure programs are contributing over USD 13.4 Bn** *(1 AUD ≈ 0.67 USD)* in **construction activity.** Commercial completions in healthcare and education saw over 8% Y-o-Y growth. (*RLB Australia Market Intelligence, Q4 CY'24*).

Façade Market Shifts and Cost Drivers

The cost of façade systems has grown as a share of total construction costs, especially in high-performance and premium buildings. As of early CY'25, façade costs range from 18% to 25% of overall construction costs in commercial projects and up to 30% in luxury residential towers. This trend is linked to **rising demand for energy efficiency, thermal comfort, and compliance** with evolving green building codes (*Slattery National Market Update, March CY'25*).

Construction cost inflation remained a major concern in CY'24, driven by rising material prices and persistent labor shortages. While overall escalation eased from 11% in CY'22 to 6–8% in CY'24, costs

for aluminium, steel, and glazing materials increased by 9–12% Y-o-Y. Labor shortages continue to affect timelines, with nearly 28% of construction firms reporting unfilled skilled roles (*RLB Q4 CY'24; Australian Spotlight on 2025*).

Competitive Landscape and Leading Players

In Australia, the façade and fenestration market operate through a clear bifurcation between **EPC contractors** and **general contractors**, each playing distinct roles in project execution. **SRG Global** is one of the few prominent EPC contractors with a dedicated façade division, managing end-to-end delivery—from design and procurement to installation—by sourcing materials globally. Other EPC players include **G. James** and **Micos Group**, the latter being the second-largest player after SRG, known for integrated façade solutions. In contrast, major general contractors such as **Multiplex, Lendlease, Built, Mirvac, Hickory**, and **Buildcorp** typically operate without in-house façade capabilities.

They give out separate contracts for façade supply and installation, usually hiring specialized subcontractors for each. This setup is common in both Australia and the U.S., where full-service EPC-led façade execution is still limited. Most façade work is split between different suppliers and installers. However, as the demand for high-performance façades grows and building regulations become stricter, there's a clear shift toward more integrated delivery models—making EPC players more important for complex, premium projects.

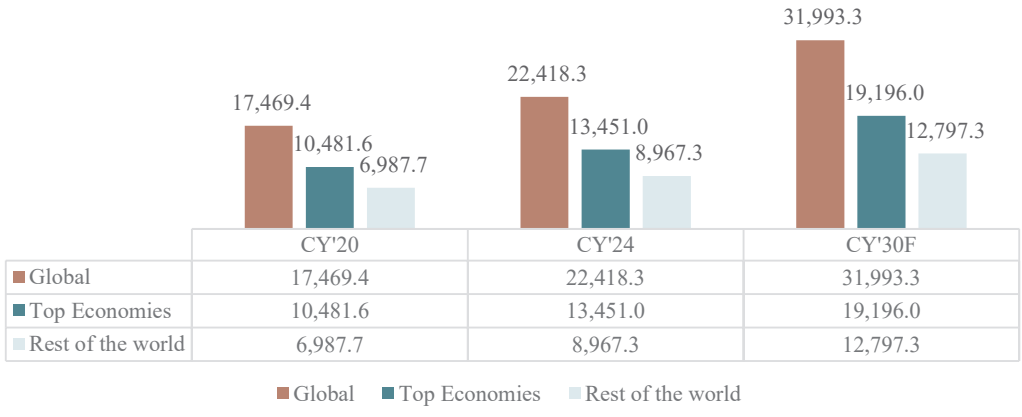
4.2. Global Façade Market size, CY'20-30F

Rising construction and material inflation pressures overall project budgets, making façade systems often among the most capital-intensive components more sensitive to cost optimization. As real estate supply-demand dynamics fluctuate, developers tend to recalibrate façade specifications, balancing aesthetics, energy performance, and compliance within tighter cost envelopes.

Competitive intensity within the façade industry further influences **pricing, timelines, and product innovation, especially in high-growth urban corridors.** Increasing emphasis on sustainability, energy efficiency, and design quality, the demand for advanced façade and fenestration systems is expected to grow.

The global façade market (finished goods + installation revenue) is projected to reach USD 31,993.3 Mn by CY'30F, up from USD 22,418.3 Mn in CY'24 *(refer figure 4-2).*

Figure 4-2: Global Façade Market Size (EPC Revenue) in USD Mn CY'20, CY'24 & CY'30F

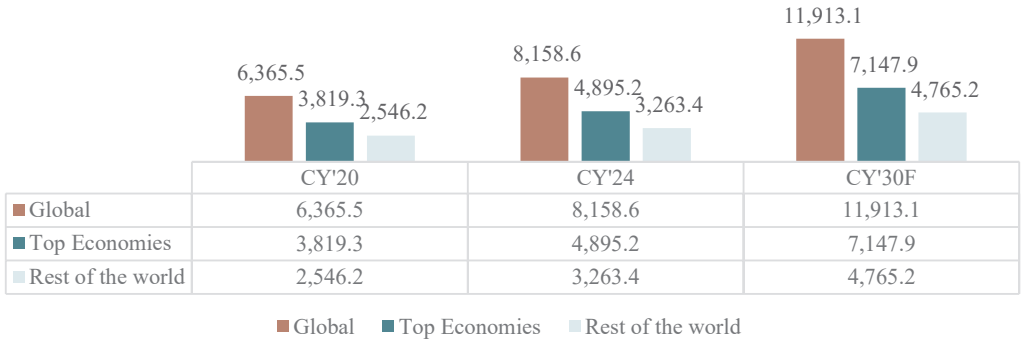


Source: Industry Articles, Interview with industry experts, Ken Research Analysis

Note 1: All values are in CY (Calendar Year), which refers to the period from 1st January to 31st December of the respective year.
Note 2: Top economies include Unites States, Canada, EU5, Australia while rest of the world includes GCC region, APAC & more.
Note 3: EPC Revenue: Finished Goods + Installed revenue stated above represents the combined revenue from both finished façade materials and installation services, encompassing the total earnings generated by EPC façade contractors globally

The global façade market (finished goods revenue only) is expected to reach USD 11,913.1 Mn by CY'30F, up from USD 8,159.6 Mn in CY'24 *(refer figure 4-3)*. Of this, the **US, EU5, Canada, and Australia** collectively contribute ~USD 7,147.9 Mn, while the Rest of the World accounts for ~USD 4,765.2 Mn. Notably, **over 60% of the global market** comes from export-focused regions, highlighting strong opportunities for façade manufacturers to tap into both developed and growing international markets.

Figure 4-3: Global Façade Market Size (Product Revenue) in USD Mn CY'20, CY'24 & CY'30F



	CY'20	CY'24	CY'30F
Global	6,365.5	8,158.6	11,913.1
Top Economies	3,819.3	4,895.2	7,147.9
Rest of the world	2,546.2	3,263.4	4,765.2

Source: Industry Articles, Interview with industry experts, Ken Research Analysis
Note 1: All values are in CY (Calendar Year), which refers to the period from 1st January to 31st December of the respective year.
Note 2: Top economies include United States, Canada, EU5, Australia while rest of the world includes GCC region, APAC & more.
Note 3: Product Revenue: Finished Goods includes the COGS as a percentage of the total revenue earned by the EPC façade contractors globally.

Global Façade Market for the Top Economies (EPC Revenue)

The global façade market across the EU5, United States, Canada, and Australia is projected to grow from **USD 13,451.0 Mn in CY'24 to USD 19,196.0 Mn by CY'30F *(refer figure 4-4)***. The EU5 region continues to dominate, accounting for **USD 8,275.6 Mn in CY'30**, driven by sustained demand in Germany, the United Kingdom, and Italy. The United States follows closely with a projected market size of **USD 8,282.7 Mn**, while Canada and Australia are expected to exhibit stable growth.

Figure 4-4: Global Façade Market Size (EPC Revenue) of EU5, US, Canada & Australia in USD Mn, CY'20, CY'24 & CY'30F

S. No.	Value (in US) Mn by Regions	CY'20	CY'24	CY'30F	CAGR CY'20-24	CAGR CY'24-30F
1	**EU5**	5,185.7	5,886.1	8,275.6	3.2%	5.8%
1.1	Germany	2,466.9	2,525.2	2,928.4	0.6%	2.5%
1.2	UK	665.4	1,001.3	1,838.6	10.8%	10.7%
1.3	Italy	638.4	1,003.2	1,496.3	12.0%	6.9%

1.4	Spain	991.2	723.4	1,055.8	-7.6%	6.5%
1.5	France	423.7	633.0	956.6	10.6%	7.1%
2	**US**	3,449.9	5,628.8	8,282.7	13.0%	6.6%
3	**Canada**	1,107.2	982.1	1,194.5	-3.0%	3.3%
4	**Australia**	738.8	954.0	1,443.2	6.6%	7.1%
Total		**10,482**	**13,451**	**19,196**	6.4%	**6.1%**

Source: Industry Articles, Interview with industry experts, Ken Research Analysis
Note 1: All values are in CY (Calendar Year), which refers to the period from 1st January to 31st December of the respective year.
Note 2: EPC Revenue: Finished Goods + Installed revenue stated above represents the combined revenue from both finished façade materials and installation services, encompassing the total earnings generated by EPC façade contractors

Global Façade Market for the Top Economies (Product Revenue)

Excluding installation revenue, the global finished goods façade market is expected to reach USD 7,147.9 Mn by CY'30, up from USD 4,895.2 Mn in CY'24 ***(refer figure 4-5).*** The EU5 and the United States are anticipated to remain the largest contributors. Notably, the United Kingdom and Italy are projected to post strong growth, driven by increased adoption of energy-efficient façade systems and rising retrofit activity across key urban corridors.

Figure 4-5: Global Façade Market Size (Product Revenue) of EU5, US, Canada & Australia in USD Mn, CY'20, CY'24 & CY-30F

S. No.	Value in US Mn by Regions	CY'20	CY'24	CY'30F	CAGR CY'20-24	CAGR CY'24-30F
1	**EU5**	2,078.1	2,368.4	3,282.4	3.3%	5.6%
1.1	Germany	1,036.4	1,136.3	1,300.4	2.3%	2.3%
1.2	Spain	360.7	272.5	467.2	-6.8%	9.4%
1.3	Italy	320.1	388.9	570.3	5.0%	6.6%
1.4	France	156.8	245.3	392.4	11.8%	8.1%
1.5	UK	204.1	325.4	552.2	12.4%	9.2%
2	**US**	1,127.2	1,857.5	2,947.7	13.3%	8.0%
3	**Canada**	401.3	383.0	456.4	-1.2%	3.0%
4	**Australia**	212.7	286.2	461.3	7.7%	8.3%
Total (EU5, US, Canada & Australia)		**3,819.3**	**4,895.2**	**7,147.9**	**6.4%**	**6.5%**

Source: Industry Articles, Interview with industry experts, Ken Research Analysis
Note 1: All values are in CY (Calendar Year), which refers to the period from 1st January to 31st December of the respective year.
Note 2: Value mentioned above states revenue from Finished Goods which includes the COGS percentage of the total revenue by the EPC façade contractors globally.

Several factors are further supporting the growth of the global façade market, including the increasing emphasis on **adopting high-performance alternatives, pursuing sustainability certifications, and the inflow of investments in infrastructural activities along with digitally advanced technologies.**

The global façade market is being propelled by multiple complementary growth drivers:

1. **Adoption of High-Performance Building Envelopes:** Incorporating features like double-skin façades, thermal breaks, and low-emissivity glazing *(refers to glass that has a microscopically thin, transparent coating, minimizes the amount of infrared and ultraviolet (UV) light),* is gaining popularity to meet

stringent energy efficiency standards. *For instance, compliance with ASHRAE Standard 90.1-CY'22 has led to ~9.4% source energy savings and 8.9% energy cost savings in commercial buildings.*

2. **Integration of Green Building Certifications:** The pursuit of certifications like LEED and BREEAM has driven the adoption of sustainable façade & fenestration solutions, including high-performance glazing and ventilated façades. *For example: **Salesforce Tower (San Francisco)** and **Bloomberg HQ (London)** — employ ventilated façades, high-VLT glazing, and operable windows for energy and air quality optimization.*

3. **Increased Investment in Infrastructure & Industrial Projects**: Infrastructure developments, such as airports and hospitals, are incorporating advanced façade systems like blast-resistant glazing and unitized curtain walls to enhance safety and energy efficiency. *Global airports like **Istanbul Airport** and **Changi Terminal 4 (Singapore)** feature expansive curtain walling, blast-resistant glazing, and high-spec access systems increasing façade spend per sq. meter.*

4. **Advancements in Digital Design and Fabrication:** The utilization of Building Information Modeling (BIM) and parametric design tools has streamlined the design and fabrication of complex façade systems. *For example: Projects like **The Edge in Amsterdam** and **Apple Park (Cupertino)** deploy full-scale **BIM**, **parametric modeling**, and **automated fabrication** workflows to prototype, test, and deliver precision façade systems.*

In CY'24, **unitized curtain walls**, **ventilated rainscreens**, and **double-skin façades** were dominant globally for their proven efficiency and performance. Moving into 2025, there's a clear shift toward **energy-efficient, low-carbon, and fire-safe façade systems** including **triple glazing**, **smart façades**, and **non-combustible rainscreens**.

Globally, the façade market is poised for steady growth through CY'30. This transition is fueled by growing investments in retrofitting aging building stock, especially across Europe, North America, and Asia-Pacific. This is anticipated to drive increased cross-border trade in façade and fenestration systems, as global markets seek high-performance, compliant solutions to meet rising design and sustainability benchmarks.

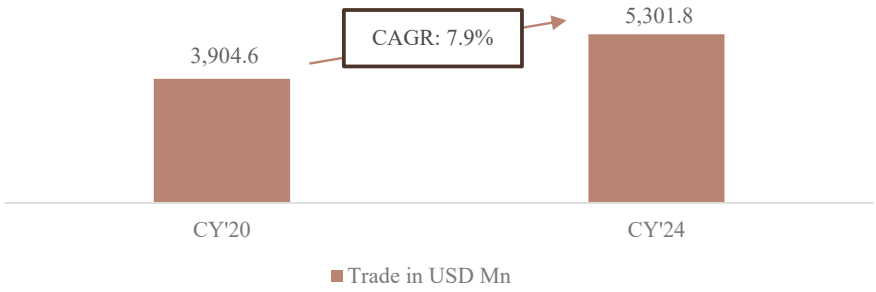
5. TRADE SCENARIO

Global Trade Value of façade and fenestration quadrupled in CY'22 before returning to Pre-Surge Levels

In the wake of the COVID-19 pandemic, global façade and fenestration markets experienced acute disruptions as lockdowns and transport bottlenecks stalled material deliveries and delayed construction timelines.

With factories running at reduced capacity and ports overwhelmed, **developers and contractors across the UK, US and Germany deferred façade orders**, triggering a sharp contraction in trade volumes. As restrictions lifted, a vigorous restocking wave ensued: US aluminum-extrusion importers ramped up inventories from roughly 18,000 tons in CY'21 to nearly 27,000 tons by late CY'23 to re-engage suspended curtain-wall projects, while German distributors of structural glazing and rainscreen panels placed exceptional back-to-back orders to replenish depleted stocks.

Figure 5-1: Trade Value of Façade & Fenestration, Global Level (excl. China), CY'20 & 24



Source: Volza data as on 17 June 2025, Ken Research Analysis
Note 1: HSN codes referred are 70080010, 76101000 & 70080090 refers to the Multiple-walled insulating units of glass used in façade and fenestration
Note 2: The above data excludes the trade value of China.
Note 3: All values are in CY (Calendar Year), which refers to the period from 1st January to 31st December of the respective year.
Note 4: The chart is titled "Trade Value" as it represents the total global transaction volume of façade and fenestration systems. Since every export from one country is an import for another, the global import and export values are inherently identical. Therefore, the figure cannot be exclusively categorized as either imports or exports.

By CY'23, the early rise in demand slowed down as companies used up their inventories and reduced new orders. Contractors in the UK drew down masonry supplies, leading to a 30.0% Y-o-Y drop in brick imports in August CY'23 versus August CY'22; in the US, aluminum-extrusion shipments were intentionally scaled back to correct a mid-pandemic surplus; and in Germany, glass-panel imports, a cornerstone for high-performance façades declined by nearly 15.0% in H1 CY'23 compared to the same period the year before.

#1 Leading importer of façade units: United States (Source: Volza)

The **United States retains its top import position** (refer 5-2) anchored by major **growth corridors in Texas, Florida and North Carolina**, thanks to a vast construction market and corporate migration. Stricter energy codes and ESG mandates have spurred large-scale retrofit programs, boosting imports of high-performance glazing and insulated cladding. Simultaneously, wider adoption of modular, unitized systems has driven ports on both coasts to upgrade logistics, further reinforcing U.S. import volumes.

Other Leading importers of façade units: EU Germany, France, Austria and Belgium (Source: Volza)

In CY'24, **Germany, France and Austria** retained their positions as Europe's core real estate investment hubs, even after a pronounced market correction in CY'23–24 sparked by elevated inflation and successive ECB rate hikes. CBRE reports that Q1 CY'24 commercial real estate investment across Europe amounted to **USD 43 Bn**, a 40% YOY decline as transaction volumes contracted amid tighter financing conditions.

Germany bore the brunt of this slowdown, with commercial capital values **dipping nearly 14% in late CY'23**, yet its resilient logistics and residential segments continued to fuel demand for new façade installations and envelope retrofits. Meanwhile, France and Austria leveraged their stable macroeconomic backdrops to drive a wave of energy-performance upgrades and sustainability-focused refurbishments across mixed-use and premium office portfolios, underscoring the critical role of modern façade systems in enhancing asset value and meeting ESG targets.

In CY'24, **Belgium** witnessed a sustained decline in new residential building permits, with just 1,717 units approved in December, a 7.1% drop month-over-month, driven mainly by sharp declines in Wallonia and

stagnation in Brussels *(Source: Statbel).* In contrast, renovation permits consistently outnumbered new construction.

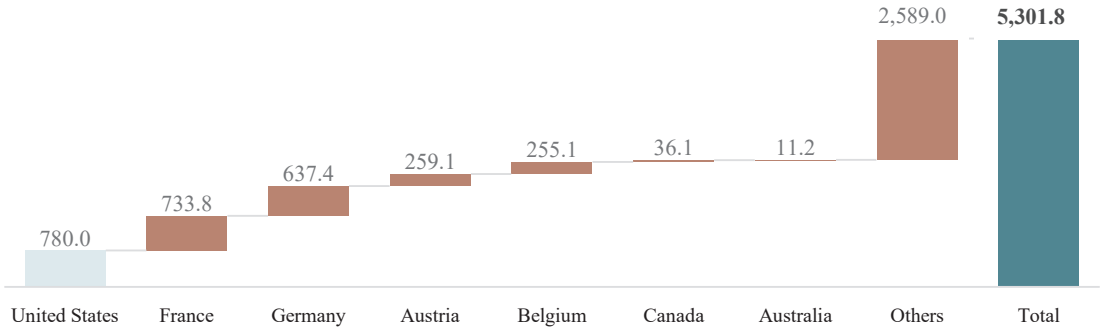
According to ING *(Internationale Nederlanden Groep: globally recognized multinational bank and financial services corporation),* after a 1 % contraction in CY'24, construction output is projected to recover by **+0.5 % in CY'25**, driven primarily by renovation and public infrastructure investments.

In CY'25, development pipelines are expected to remain subdued, with investors shifting focus to repositioning and upgrading existing assets. Prime residential and logistics assets in Western Europe remain resilient, while secondary office and retail stock will require significant capital expenditure to remain competitive. New environmental regulations, such as the **EU Taxonomy and SFDR**, are prompting owners to prioritize energy efficiency improvements.

At the same time, the European Commission's '**Renovation Wave'** strategy aims to double annual renovation rates by CY'30, especially for **schools, hospitals, and social housing**. This is expected to drive strong demand for façade upgrades across public and residential buildings. **France's RE2020 regulation** also mandates improved thermal performance for new buildings, supporting the adoption of advanced façade systems. Additionally, **Germany's GEG (Building Energy Act), revised in CY'24**, requires higher energy standards for building envelopes, encouraging the use of better-insulated façades and energy-efficient glazing.

Canada and Australia currently contribute a modest share to global façade and fenestration trade, both markets hold significant potential. Countries like India, China, and Vietnam have emerged as key suppliers of cost-effective products and raw materials that offers competitive pricing and scalable manufacturing. As both countries continue to face labor shortages and project cost pressures, their reliance on high-quality, pre-engineered imports from Asia is expected to grow, unlocking greater trade opportunities in the façade and fenestration segment

Figure 5-2: Importing Countries in USD Mn (excl. China), CY'24



Source Volza data as on 17 June 2025, Ken Research Analysis
Note 1: HSN codes referred are 70080010, 76101000 & 70080090 refers to the Multiple-walled insulating units of glass used in façade and fenestration
Note 2: The above data excludes the trade value of China.
Note 3: All values are in CY (Calendar Year), which refers to the period from 1st January to 31st December of the respective year.
Note 4: Others include Netherland, Italy, UK, Switzerland, Saudi Arabia etc.

#1 Leading exporter of façade units: Poland *(Source: Volza)*

Among European and global window markets, **Poland now ranks first in the proportion of high-technology products** within its total exports, outpacing long-industrialized peers such as **Italy, Spain and Finland**. This

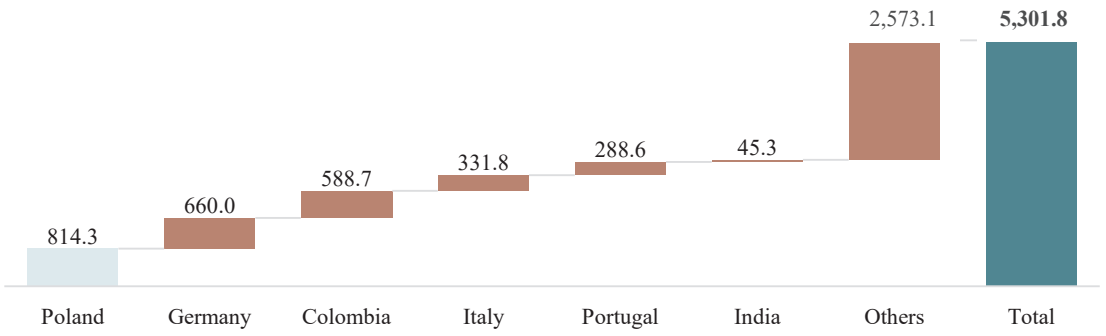
leadership reflects substantial investments in advanced manufacturing capabilities and a focus on premium façade and fenestration solutions.

Poland's largest aluminium curtain-wall specialist, **Aluprof,** has established itself on landmark projects with systems such as MB-SR50N, MB-TT50 and the unitized MB-SE75/85 SG. Similarly, **Ponzio's** PF152 HI and ESG series dominate the domestic market, underpinned by robust fabrication infrastructure and international certification standards. Meanwhile, Eko-Okna, headquartered in Kornice and recognized as Europe's largest producer of aluminium and uPVC windows and doors, secured a USD 104 Mn loan to construct 4 new production plants, significantly expanding its output of PVC windows and timber-frame assemblies.

In CY'24, global demand for high-performance façade and fenestration systems was met by leading exporters with strong industrial ecosystems. **German players** like *Schüco*, *WICONA*, and *RAICO* leveraged high-capacity, innovation-led production and certified materials to serve premium international markets. In **Colombia**, *Tecnoglass* anchored a dynamic export base, supported by growing construction-material shipments and a strong U.S. market presence.

Italy's northern and central regions, home to *Permasteelisa* and *Secco Sistemi*, maintained global relevance through design-led manufacturing and export resilience. Meanwhile, **Portugal's** industrial goods exports grew by +2.5% YoY, with firms like *Custom Fenestration* expanding capacity to meet rising global demand for PassivHaus and high-performance systems.

Figure 5-3: Exporting Countries in USD Mn (excl. China), CY'24



Source: Volza data as on 17 June 2025, Ken Research Analysis
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Note 2: The above data excludes the trade value of China.
Note 3: All values are in CY (Calendar Year), which refers to the period from 1st January to 31st December of the respective year.
Note 4: Others include Slovenia, Turkey, Netherlands, Austria etc.

While global façade and fenestration trade in CY'24 remained shaped by shifting supply chains, industrial recovery, and sustainability mandates across major exporting nations, its ripple effects are increasingly evident in emerging markets. India, in particular, has seen a notable rise in import & export dependency.

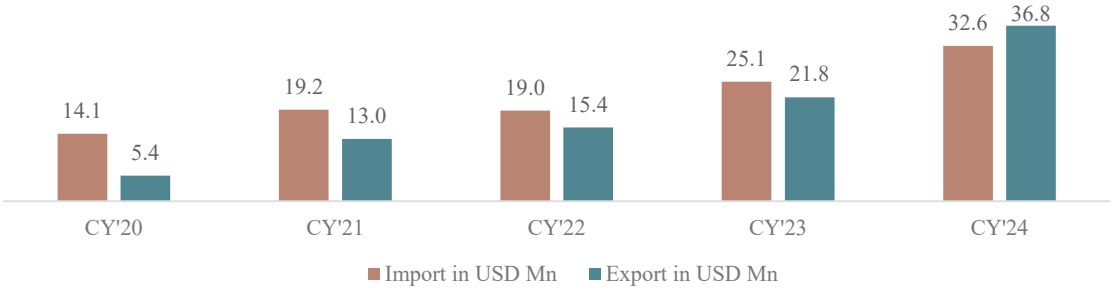
India's façade and fenestration sector is characterized by concurrent growth in inbound and outbound trade

India's façade and fenestration **import trade has grown markedly in recent years**, mirroring the expansion of its residential, commercial and infrastructure development sectors. **Premium high-rise projects in Mumbai and Bengaluru** routinely source advanced insulating glass units and thermally broken frame systems from Germany

and China to comply with stringent energy-efficiency regulations. At the same time, large infrastructure programs, such as the **Delhi–Mumbai Industrial Corridor and metro-rail expansions**, have driven demand for ventilated rainscreens and unitized curtain-wall modules, even as labor fluctuations and rising input costs occasionally disrupt supply chains and financing conditions.

Concurrently, India's export trade in façade and fenestration products has gained momentum, underpinned by domestic manufacturers' investments in automated fabrication lines and international quality certifications. For example, **Indian-made aluminum curtain-wall panels and uPVC window systems** are now specified on mixed-use developments in the UAE and Saudi Arabia, where competitive pricing and reliable lead times offer an edge over regional suppliers. In West African retrofit projects, locally produced insulated metal cladding, backed by CE and IGCC approvals has helped project owners achieve rapid envelope upgrades at reduced capital outlay.

Figure 5-4: Import & Export Value, and Growth Trend Analysis of India (excl. China), CY'20-24



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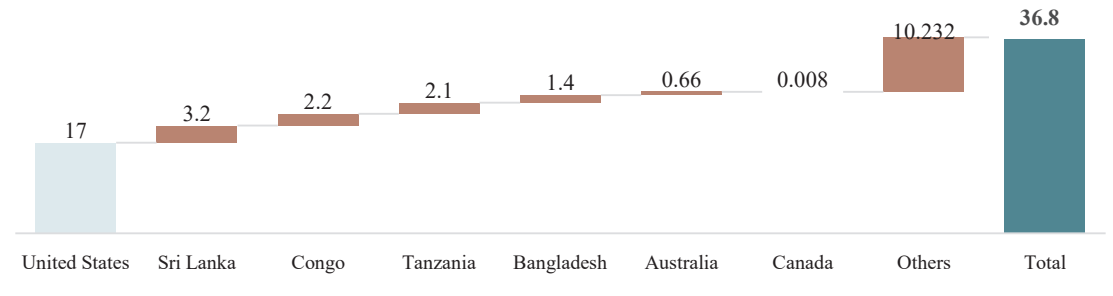
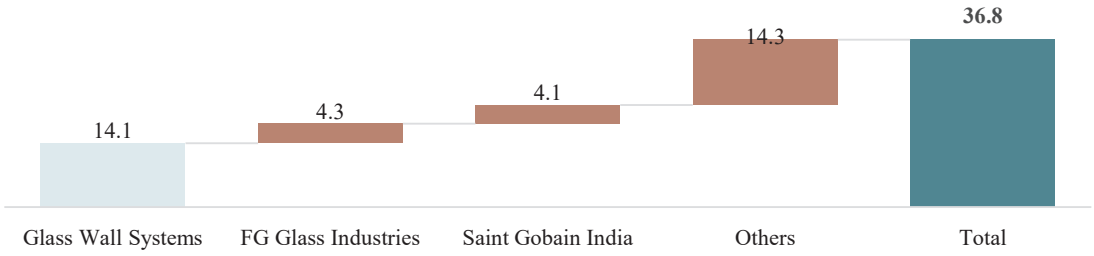
Note 3: All values are in CY (Calendar Year), which refers to the period from 1st January to 31st December of the respective year.

Figure 5-5: Top 5 Export Destinations by Value from India, in USD Mn (excl. China), CY'24



Source: Volza data as on 17 June 2025, Ken Research Analysis
Note 1: HSN codes referred are 70080010, 76101000 & 70080090 refers to the Multiple-walled insulating units of glass used in façade and fenestration
Note 2: The above data excludes the trade value of China.
Note 3: All values are in CY (Calendar Year), which refers to the period from 1st January to 31st December of the respective year.
Note 4: Other include Bhutan, Nepal, Cambodia, Vietnam, Australia and more.

Figure 5-6: Top 3 Exporters in USD Mn (excl. China), CY'24



Source: Volza data as on 17 June 2025, Ken Research Analysis
Note 1: HSN codes referred are 70080010, 76101000 & 70080090 refers to the Multiple-walled insulating units of glass used in façade and fenestration
Note 2: The above data excludes the trade value of China.
Note 3: All values are in CY (Calendar Year), which refers to the period from 1st January to 31st December of the respective year.
Note 4: Other include Velankani Information Systems ltd., Mewar Traders Engg. Alom Aluminium and more.
Note 5: Players such as FG Glass and Saint-Gobain, operate as pure-play glass exporters and not façade exporters (supplying flat/ processed/ specialty glass products to global markets.

Few Indian players with well-established international presence such as GWS, FG Industries and Saint-Gobain have secured a strong foothold in the global market. Their competitive advantage is underpinned by cost-efficient labor, an optimized supply chain, reliable access to key raw materials and a favorable geopolitical environment.

Glass Wall Systems, 2nd largest provider of façade solutions in India (in terms of revenue in FY'24 & FY'25), distinguished itself as India's largest façade exporter in CY'24 (in terms of revenue). (Refer Table 5-6). By Leveraging their extensive domestic expertise, they are well-positioned to excel in the export market as well. Its "ISO 14001 environmental management certification" and compliance with IGCC (International Green Construction Code) further validates its adherence to global quality, sustainability and performance benchmarks.

GWS's international presence is demonstrated through multiple successful and ongoing supply orders for projects in the United States and Australia. Notable U.S. projects include Jackson Avenue, 1400 Wabash, 2300 Market Place, 3201 Cuthbert, Spark, and Harper Court, while in Australia, they have supplied to projects such as Dove and CMAR. This makes them the only Indian player to have supplied façade systems in these regions.

Companies like GWS will be benefitted by the **proposed U.S.–India trade agreement**, as underscored by India's Ministry of Finance, is projected to ease tariff and non-tariff barriers and energize exports from mid-CY'25 onwards, thereby unlocking broader access for sophisticated façade assemblies. In parallel, India's domestic production and consumption of façade and fenestration systems have also surged, reinforcing the nation's expanding role in key markets such as the United States.

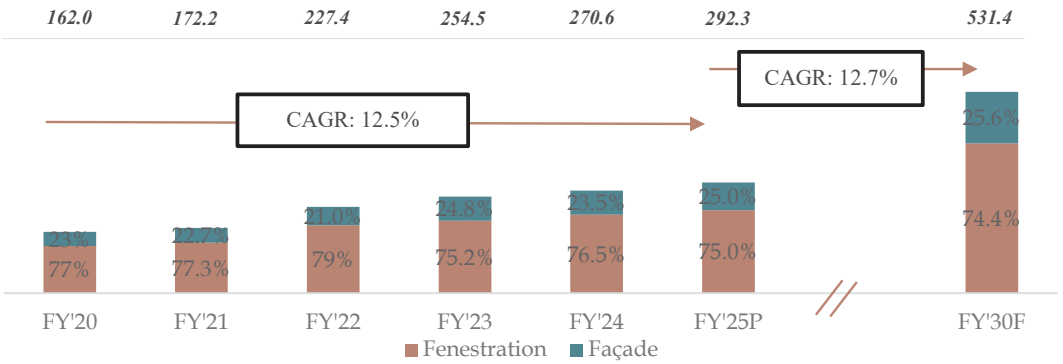
6. India Facade and Fenestration Market

6.1. Facade and Fenestration Addressable Opportunity

Robust real estate expansion, heightened demand for premium-quality envelopes, and rising product prices are fueling the façade and fenestration market

In recent years, **India's façade and fenestration sector** has matured from a peripheral niche into a strategic cornerstone of the construction ecosystem. Valued at **INR 292.3 Bn** in FY'25P, the market is poised to expand at a CAGR of 12.7 %, reaching **INR 531.4 Bn** by FY'30F. These products are designed to meet specific architectural requirements, providing optimal functionality, thermal performance, and aesthetic integration for both residential and commercial applications.

Figure 6-1: Market Segmentation - Façade and Fenestration in India (INR Bn), FY'20-FY'30F



Market Size (in INR Bn)	FY'20	FY'25P	FY'30F	CAGR FY'20-25P	CAGR FY'25P-30F
India Façade Market (A)	37.3	73.1	136.0	14.4%	13.2%
India Fenestration Market (B)	124.7	219.2	395.4	11.9%	12.5%
India Façade and Fenestration Market (A+B)	162.0	292.3	531.4	12.5%	12.7%

Source: Industry Articles, Ken Research Analysis
Note: FY represents the financial year starting 1st April to 31st March.
Note: P refers to the provisional number

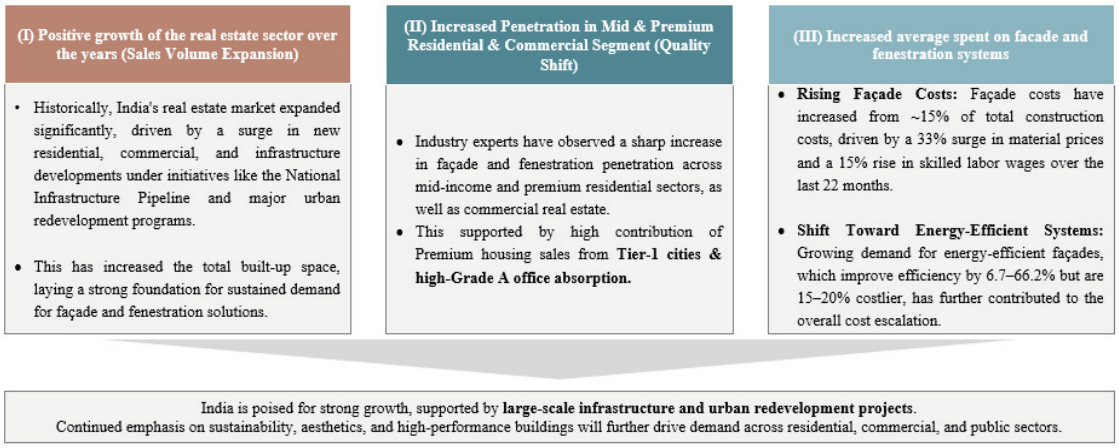
India's façade and fenestration market is being propelled by a **convergence of sectoral dynamics**, from a booming real estate pipeline and evolving quality benchmarks to shifting cost structures, creating a robust foundation for sustained expansion:

- **Rapid Real Estate Expansion**: Strong project completions (averaging over 8.0% annual growth between FY'20 and FY'25) have driven higher volumes of envelope-system installations across residential and commercial segments.

- **Premium-Segment Penetration**: Housing market is witnessing a decisive tilt toward premium homes, with properties priced above INR 10.0 Mn accounting for 62.0% of all residential sales during the first half of CY'25. This marks a sharp rise from 51.0% in the first half of CY'24, signaling strong momentum in the high-end housing segment spurring deeper adoption of curtain walls, thermally broken frames and high-performance glazing. *For example: MTM – Tower 3, Popularly known as "The Park" is one of the largest residential towers in South Mumbai (subject to inclusion in the industry report).*

- **Rising Per-Square-Meter Expenditure**: Average system costs climbed by ~14 % over five years, from INR 1,200–1,500 per sqm in FY'20 to INR 1,350–1,725 per sqm in FY'25, driven by higher aluminum and float-glass prices alongside inflationary pressures *(Construction Times, ANAROCK Report, CY'19; RBI Inflation Reports, FY20–25)*. ***Note:*** *These prices are indicative and vary by project specifications and region, impacting our cost structure.*

Figure 6-1: Growth Drivers of Façade and Fenestration Market



Source: Industry Experts, Industry News, Industry Articles, Ken Research Analysis

As the façade and fenestration market scales rapidly on the back of sustainability, urbanization, and design innovation, it simultaneously faces mounting challenges.

Despite robust growth prospects, India's façade and fenestration industry **continues to grapple with several structural impediments**. A **large unorganized segment floods the market with low-cost, substandard materials**, eroding consistency and undermining adherence to global performance benchmarks. Regional climate variability, particularly in coastal hubs such as Chennai, drives up project costs by demanding specialized, corrosion-resistant systems to withstand humid, saline conditions. Moreover, comparatively low investment in domestic R&D has perpetuated dependence on imported façade technologies, slowing the development of indigenous, high-performance solutions *(Research Gate, Economic times, CY'24)*.

Table 6-1: Other Key Challenges in Façade and Fenestration Market

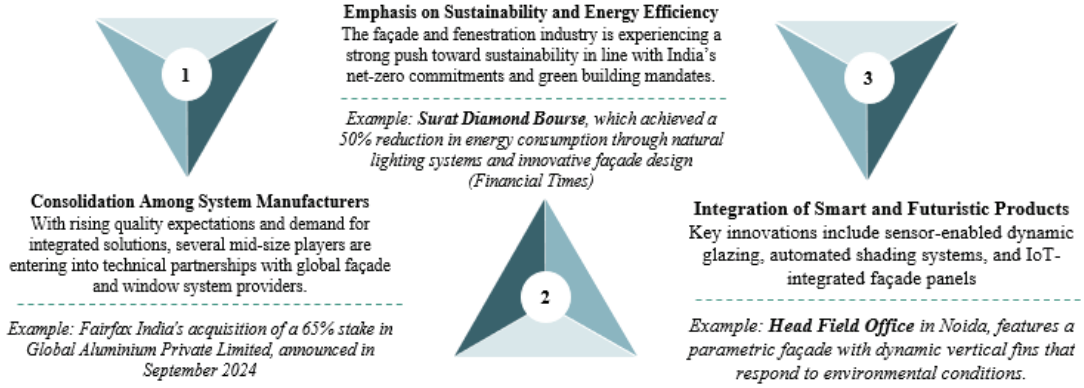
Challenges		Description	Instances
Supply Side challenge	**Low Budgeting**	Developers, especially in Tier II/III cities, allocate minimal budgets for façades and fenestration (10–15% of project costs), prioritizing structural elements.	In Surat, mid-segment residential projects often use basic aluminum cladding to cut costs. *(Trade India)*
	Intense Competition	Low-cost offerings and price undercutting by small players create fierce competition, squeezing margins for organized firms.	Local vendors in Chennai supply substandard uPVC windows at lower prices. *(Trade India)*
	Long Gestation Periods *(IJISET, Journal)*	Façade and fenestration projects, especially custom stick systems, have long lead times (6–12 months) due to onsite fabrication.	NA
Demand Side challenge	**Perception of Energy-Efficient Façades as Costly**	Buyers and developers often view them as non-essential or luxury add-ons rather than performance-driven investment	NA

Source: News Articles, Industry Articles, Ken Research Analysis

As India's façade and fenestration market matures, **three key trends / dynamics** are set to chart its evolution over the coming years:

- **Industry Consolidation:** Leading system manufacturers are pursuing strategic mergers, acquisitions and joint ventures to achieve scale efficiencies, broaden product portfolios and strengthen distribution networks
- **Sustainability & Energy Performance:** Demand is intensifying for eco-certified envelope systems—low-emissivity glass, high-insulation façades and recycled-content cladding—driven by stringent building codes and corporate ESG mandates
- **Smart & Next-Gen Solutions:** Integration of IoT-enabled shading, electrochromic glazing and predictive maintenance platforms is accelerating the shift toward intelligent façades that optimize daylight, thermal comfort and lifecycle costs.

Figure 6-2: Key trends in Indian Façade and Fenestration Market



Source: News, Industry Articles, Ken Research Analysis

6.1.1 Sustainability And Energy Efficient Facade and Fenestration Products

The 2025 CRE Sustainability Report shows that India's commercial real estate sector is quickly moving toward greener, more eco-friendly buildings. Today, over **60.0% of companies** prefer to work in buildings that are green-certified, and more than **70.0% of large investors** now consider sustainability before putting money into real estate. Many big developers are also aiming to make their buildings net-zero and meet ESG (Environmental, Social, Governance) goals. The report also says that green buildings can charge **15–20% higher rent** compared to regular ones.

The façade and fenestration industry are experiencing a strong push toward sustainability in line with India's net-zero commitments and green building mandates. International players such as RWW, Mitrex, Winpro, SRG Global often benefit from **green tax credits or incentives** in their home countries for using eco-friendly materials and sustainable building practices, resulting in **effective tax savings and improved project viability** Developers are actively seeking AdIGBC *(Advisory Council of Indian Green Building Council)*, GRIHA *(Green Rating for Integrated Habitat Assessment)*, and LEED *(Leadership in Energy and Environmental Design)* certifications, which encourage the adoption of energy-efficient façades and windows. Key focus areas include:

- **Low-E and DGU (*Double Glazed Unit refers to a window or façade system made of two glass panes separated by a spacer and sealed to form a single unit*) Glazing**: High-performance insulating glass units that minimize solar heat gain while maximizing thermal insulation

- **Thermally Broken Aluminum Profiles**: Window framing systems engineered to interrupt conductive heat transfer and improve envelope efficiency

- **Living Façades & BIPV (*Building-Integrated Photovoltaics refers to solar power-generating systems*)**: Green walls and building-integrated photovoltaic panels that enhance thermal comfort, sequester carbon and generate on-site renewable energy

India's sustainable façade segment represents an estimated ~15% of the overall market, INR 12.4 Bn of the total façade market for FY'25 and expected to increase to ~30% in future, driven by a convergence of stricter energy codes, ESG-aligned financing criteria and growing developer preference for low-emission envelope systems.

Several high-profile Indian projects exemplify the shift toward energy-efficient façade systems:

- **CII-Sohrabji Green Business Centre, Hyderabad**
  India's first IGBC Platinum-rated building features **double-skin façades** and **dynamic louvers** to optimize solar control and thermal performance.
- **GIFT City Towers, Gujarat**
  Integrates **Low-E glazing**, **DGU (Double-Glazed Units)**, and **Building-Integrated Photovoltaic (BIPV)** modules to support **net-zero energy** goals and improve building envelope efficiency.
- **Prestige Tech Forest, Bengaluru**
  A benchmark in sustainable commercial real estate, delivered by Glass Wall Systems, the campus incorporates **energy-efficient curtain walls**, **shading devices**, and **green-rated façade materials** to reduce operational carbon footprint.

With **10,000+ green-rated projects** registered nationally and Smart Cities and infrastructure corridors specifying high-efficiency envelopes, India stands on par with mature markets in embedding sustainability at the forefront of façade design and procurement.

6.2 Façade Market Size and Segmentation

6.2.1 India Façade Overview and Growth Trajectory

The Indian façade market is underpinned by 3 core drivers: Premiumization of building envelopes, Heightened emphasis on energy-efficient design, and Robust capital deployment into high-rise and commercial real estate.

Façade solutions are integral components of modern architectural design, encompassing the exterior cladding of a building. They are highly engineered products, designed in accordance with stringent technical specifications, to provide stability and structural integrity to building frameworks. These solutions enhance thermal efficiency, acoustic performance, and aesthetic appeal, while ensuring long-term durability.

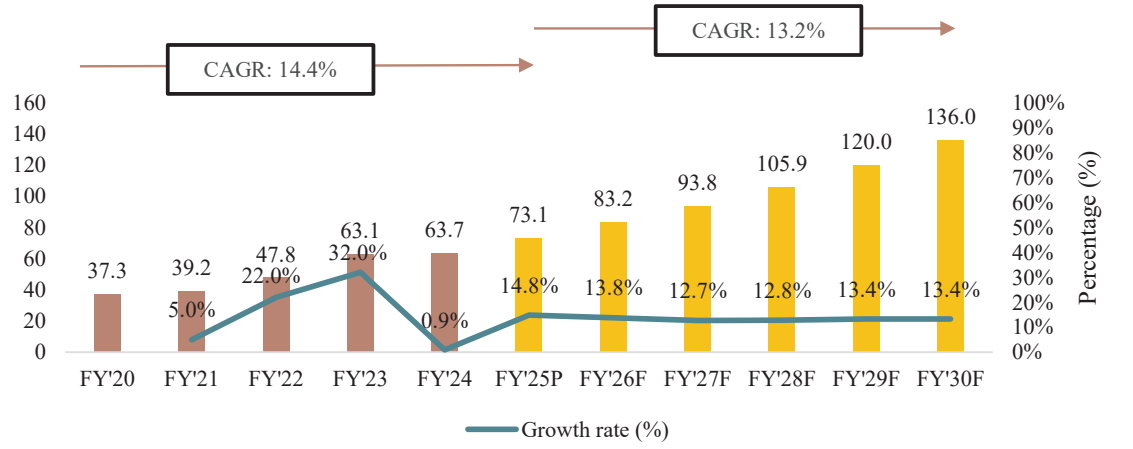
In FY'20, the **Indian façade market was valued at INR 37.3 Bn**, more than doubling to **INR 73.1 Bn in FY'25P** at a CAGR of 14.4%. This expansion is underpinned by a buoyant construction and real estate environment, characterized by heightened project activity, the adoption of innovative materials (such as green concrete) and advanced design methodologies and a strategic shift toward energy-efficient, sustainable envelope systems. **Regulatory incentives (**such as Indian Renewable Energy Development Agency (IREDA) offer concessional loans to developers undertaking housing projects that integrate solar power or energy-efficient designs and a trend

toward premiumization, Tax Incentives & Depreciation Benefits for green buildings) have further driven demand, with housing products priced above INR 100 Mn constituting the largest and fastest-growing segment in FY'24 *(Knight Frank, CY'24).*

The market's growth trajectory has been robust yet cyclical. In FY'21, COVID-**19 interruptions compressed growth to 5.0 %, followed by a sharp 22% rebound in FY'22** fueled by infrastructure initiatives and real-estate revival. FY'23 sustained momentum with 32% growth, before FY'24's rate moderated under a high-base effect, inflationary pressures and peak input costs. Industry estimates indicate that ~70% of planned projects were deferred or scaled back in FY'24 owing to escalating material and financing expenses.

FY'26 is expected to mark a rebound & stabilize, driven by the rollout of **Smart Cities Phase II in Tier 2 and Tier 3 centers such as Indore, Nagpur and Agartala**, which will spur demand for façade-intensive civic infrastructure. Thereafter, the Indian façade market is **projected to expand at a CAGR of 13.2 %** to reach INR **136.0 Bn by FY'30F**, underpinned by rising architectural complexity, more stringent energy-efficiency mandates and growing adoption of fully integrated envelope solutions.

Figure 6-3: India Facade Market Size, by Value (INR Bn), FY'20 - FY'30F



Source: Industry Articles, Ken Research Analysis
Note 1: F represents Forecasted figures. FY represents the Financial Year starting 1st April to 31st March
Note 2: P refers to Provisional number

India's façade market is being shaped by **emerging design paradigms, urban infrastructure initiatives and large-scale industrial investments**, each creating new avenues for envelope-system demand. Some of the growth drivers are as follows:

- **Revival of Vernacular Architectural Motifs:** Architects and developers are integrating traditional Indian design elements, such as jali-inspired perforated screens, terracotta rainscreens and stone latticework into contemporary façades to enhance cultural resonance and climatic performance. *Example: Rajkot Airport Terminal, Gujarat, features a modern interpretation of jali screens for daylight control and passive cooling.*

- **Transit-Oriented Development & Urban Renewal:** The national push for TOD around metro corridors and urban regeneration schemes is driving demand for high-performance façades in transit hubs and adjoining commercial districts, where durability, thermal efficiency and visual identity are critical. *Example: Rajkot Airport Terminal incorporates façade systems tailored for passenger flow, wayfinding and energy efficiency in a high-traffic environment.*

- **Industrial-Corridor & Logistics-Hub Expansion:** Major initiatives such as the Delhi–Mumbai Industrial Corridor and new logistics hubs under the National Logistics Policy require resilient, low-maintenance envelope solutions for warehousing, manufacturing and expo facilities. *Example: Yashobhoomi (India International Convention & Expo Centre), Dwarka, Delhi, employs insulated metal panels and unitized curtain walls to meet stringent climate-control and load-bearing requirements.*

While the façade market is witnessing growth, it continues to face critical challenges that hinder scalability and standardization.

- **Escalating Input Prices (Supply Side Challenge)**: Volatility in the cost of aluminum, specialty glass and engineered coatings is compressing supplier margins and increasing project budgets

- **Shortage of Skilled Façade Technicians (Supply Side Challenge)**: A limited pool of certified installers and fabricators is driving up labor wages and extending project timelines (Savills Report)

- **Unpredictable Project Timelines & Design Revisions (Supply Side Challenge)**: Frequent schedule delays and last-minute façade design changes disrupt fabrication planning and inventory management, impeding on-time delivery (WFM).

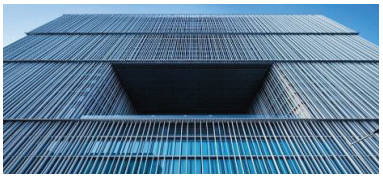
- **Downward Pricing Pressure (Demand Side Challenge)**: In the mid-income and affordable housing segments, cost-sensitive developers often demand price concessions that undercut quality, despite rising raw-material expenses (WFM)

Several factors are further supporting the growth of the Indian façade market, including increasing emphasis on sustainability and the adoption of **innovative design trends** such as:

1. **Emergence of Adaptive and Smart Façades:** These systems utilize sensors and automated mechanisms to adjust shading, ventilation, and transparency based on factors like sunlight, temperature, and wind. *For example: Bagmane Rio: Largest electrochromic façade project in the world (Façade material provided by GWS) and **Hive House in Surat**, designed by Openideas Architects. Its façade is inspired by hexagonal patterns found in nature and features a **solar-sensor–based dynamic façade**, which adjusts its geometry in response to sun exposure.*
2. **Incorporation of Kinetic and Media Façades:** These facades offer functional benefits like adaptive shading and real-time information dissemination. *For example: Mondeal Square: Largest LED media façade project in India (Façade material provided by GWS) and **Mondeal Square, Ahmedabad** –LED media façade, utilizing ~5 km of LED strips across 5,300 m² handled by **Atelier Dada**, while the media façade system was delivered through a collaboration with **Pyramid Technologies.***
3. **Adoption of Prefabricated and Modular Façade Systems:** To address challenges related to construction timelines and labor shortages, the industry is shifting towards prefabricated and modular façade solutions. These systems allow for faster installation, consistent quality, and reduced on-site disruptions.

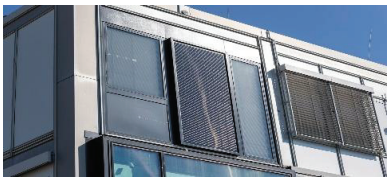
Figure 6-4: Innovative Façade Designs

I. Adaptive & Smart Facade



II. Kinetic Façade

III. Prefabricated and Modular Façade Systems



IV. Biophilic systems and switchable glazing

Source: Industry Articles, Ken Research Analysis

Among the most advanced envelope technologies gaining traction in the façade sector are **biophilic systems and switchable glazing**. Biophilic façades marry structural supports and smart-tinting glass to create dynamic exterior skins that enhance indoor air quality, regulate daylight penetration and foster a stronger connection between occupants and the natural environment. Meanwhile, **electrochromic or "switchable" glass panels** offer real-time control over light transmission and opacity via an applied electrical stimulus, providing both glare mitigation and adaptable aesthetics for premium commercial and institutional developments.

These innovative façade products are primarily offered by organized players catering to premium projects, where design innovation, energy efficiency, and compliance are critical.

6.2.2 Market Segmentation by Structure

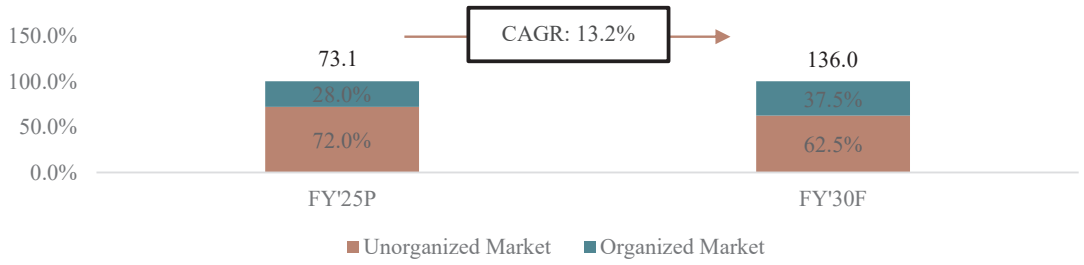
Unorganized Segment captures significant value share with cost-effective, mass-market façade solution.

Organized players in the façade segment are entities with **overall annual revenues surpassing INR 0.3 Bn**, engaged in comprehensive end-to-end operations as delineated in the product taxonomy *(refer to Figure 3-1)*. These entities oversee the entire value chain, including design, manufacturing, installation of facade systems.

The Indian façade market remains **dual-structured**, with **organized players** gradually expanding their footprint. In FY'25P, organized players are expected to account for 28.0% of the total market, valued at **INR 20.5 Bn**, and are **projected to grow at a CAGR of 20%**, **reaching INR 51.0 Bn by FY'30F**. This sharp growth is driven by increasing demand for premium and complex façade solutions such as unitized curtain wall systems, high-performance glazing, and customized façade engineering, which typically command higher margins and align with evolving architectural aesthetics and energy standards.

Meanwhile, the **unorganized segment is expected to** hold a **dominant 72.0% share in FY'25P**, **valued at INR 52.6 Bn**, but is projected to grow at a **relatively slower CAGR of 10.1%, reaching INR 85.0 Bn by FY'30F**. This segment is largely driven by demand from budget-conscious projects, especially in Tier 2 and 3 cities, and focuses on cost-effective solutions such as ACP cladding, stick glazing, and basic aluminium frame systems.

Figure 6-5: India Façade Market Split by Organized and Unorganized Segment (INR Bn), FY'25P & FY'30F



Market Size (in INR Bn)	FY'25P	FY'30F	CAGR (FY'25P-30F)
India Organized Façade Market (A)	20.5	51.0	20.0%
India Unorganized Façade Market (B)	52.6	85.0	10.1 %
Total Façade Market (A+B)	73.1	136.0	13.2%

Source: Industry Articles, Ken Research Analysis
Note 1: FY represents the financial year starting 1st April to 31st March.
Note 2: P refers to Provisional numbers
Note 3: Organized Players have same definition in both façade and fenestration market

The market share of the organized segment is expected to continue rising **from 28% in FY'25P to 37.5% by FY'30F**, supported by sustained activity in the residential and commercial real estate markets across Tier-1 cities during FY'25. This momentum is further driven by a 2–4% YOY escalation in greenfield construction costs *(CBRE Research)*.

Additional growth is fueled by increased investment in the residential and commercial sectors. States like Karnataka are attracting FDI for **hyperscale data centers, alongside Microsoft's commitment to digital skilling initiatives**. Similar trends are also emerging in Maharashtra and New Delhi (*Crisil Real Estate Report).*

Along with the growing presence of organized players, product adoption patterns have also become more specialized. Solutions such as unitized curtain walls, structural glazing, and ventilated façades have become standard choices in mid-to-premium segments, replacing earlier reliance on conventional glazing and basic cladding systems.

6.2.3 Market Segmentation by Product Type

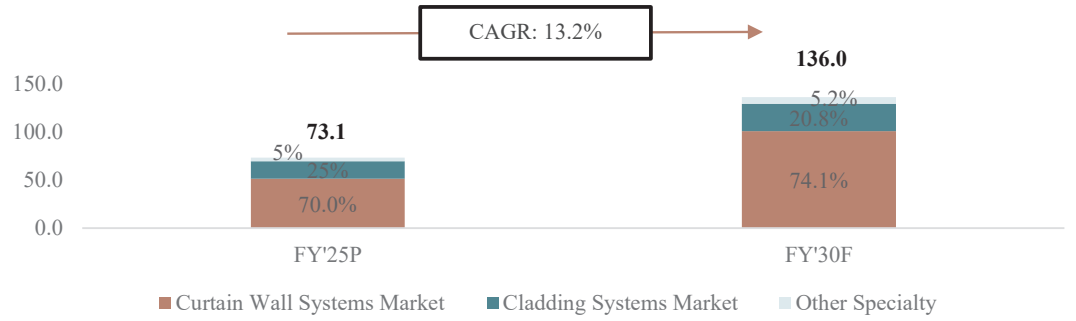
Curtain wall systems hold the largest market share due to their versatile applicability

The façade solutions market comprises three primary product categories: **Curtain Wall Systems, Cladding Systems & Glazing Systems.**

A **curtain wall system** is a non-load-bearing external wall that is hung ("curtains") from the building's structural frame. The **curtain wall market in India is valued at INR 51.2 Bn in FY'25P**, expected to grow at a **CAGR of 14.5%** between FY'25P and FY'30F, valued at **INR 100.7 Bn**. Curtain wall systems have comparatively better penetration in India due to strong demand from high-end commercial and residential projects and easy availability of raw materials like aluminum and glass.
Cladding System is an external layer attached to a building's structure primarily for protection, insulation, and aesthetic enhancement while Glazing System is a framework of glass panels installed in façades to allow natural light, enhance energy efficiency, and contribute to the building's design.

Cladding and glazing systems are mainly used for surface protection and aesthetic appeal but offer limited thermal insulation and structural integration compared to glazing systems, which is why their usage is relatively lower in high-performance building façades.

Figure 6-6: Segmentation of India Façade Market, By Product Type (INR Bn), FY'25P & FY'30F



Market Size (in INR Bn)	FY'25P	FY'30F	CAGR (FY'25P-30F)
Curtain Wall Systems Market (A)	51.2	100.7	14.5%
Cladding Systems Market (B)	18.3	28.3	9.1%
Other Specialty* (C)	3.7	7.0	14.0%
Total Façade Market (A+B+C)	73.1	136.0	13.2%

Source: Industry Articles, Ken Research Analysis
Note 1: FY represents the financial year starting 1st April to 31st March.
Note 2: P refers to Provisional numbers
**Other Specialty in the façade market refers to unique and customized products such as smart façades, energy-efficient materials, and innovative solutions that do not fall under Curtain Wall or Cladding Systems.*

Some of the growth drivers propelling the market includes:

- **Curtain Wall Systems:** Curtain wall systems are witnessing increased adoption, driven by the growing demand for Grade A+ office spaces and premium hospitality projects, as developers seek high-performance façade solutions that offer superior aesthetics, energy efficiency, and long-term durability. In CY'24, commercial office stock across the top 7 cities surpassed 700 Mn Sq ft., boosting the demand for high-specification unitized façades that meet stringent thermal and acoustic standards.

- **Cladding and Specialized Cladding Solutions:** Stone, terracotta, HPL, and fiber cement cladding reflects increasing architectural sophistication and sustainability focus. **Under India's Smart Cities Mission, 100 cities** are mandated to adopt green building norms, propelling demand for ventilated and energy-efficient cladding systems.

- **Energy-Efficient Façade Materials:** Demand for high-performance glazing, low-E coatings, and composite insulation panels is accelerating, aligned with **the Energy Conservation Building Code *(ECBC CY'22)*** adoption across states. Bureau of Energy Efficiency estimates indicate that building envelope improvements could deliver up to **30% energy savings**, pushing builders to upgrade façade specifications, particularly in mid- to high-rise projects.

As the façade sector progresses toward FY'30F, it is expected to evolve from a traditional component supplier to a strategic enabler of sustainable, efficient, and visually distinct urban infrastructure.

Product differentiation, regulatory alignment, and integration of advanced materials are set to drive the next phase of value creation across India's dynamic façade landscape.

6.2.4 Market Segmentation by Material Type

ACP, Aluminium and Metals are the preferred choice of material in India Facade Products

In FY'25P, aluminium composite panels and metal façades formed the dominant share of India's façade market, supported by their cost efficiency, easy availability, lightweight nature, and design flexibility. Glass continues to be the preferred choice for infill applications in commercial and high-rise residential projects, while aluminium plays a central role across façade layers, from structural mullions and transoms to cladding frames, louvers, and shading fins, resulting in higher overall consumption.

Standard clear and Low-E glazing remain widely used in glazing applications because of their cost advantage over finished aluminium systems. Specialty cladding materials such as terracotta and sustainable composites are emerging, with growth linked to India's sustainability commitments and the increasing demand for natural, low-carbon building envelope solutions.

While material innovation is reshaping façade product portfolios, its adoption varies significantly across different market segments. The end-user priorities differ basis type, budget, aesthetic preferences, and sustainability goals. High-end commercial and premium residential projects are quicker to adopt advanced materials like sustainable panels and dynamic glazing.

6.2.5 Market Segmentation by End Users

The commercial market occupies a market share of 45% due to its high usage in Grade A offices, retail spaces, malls, hotels etc.

Commercial segment: In FY'25P, commercial developments accounted for the **largest façade value share at INR 33.1 Bn**, expanding at a CAGR of 14.5%, driven by widespread specification of full-building curtain-wall systems, dynamic façades and high-performance glazing over extensive envelope areas. This growth is supported by the record of office net absorption i.e. ~**49.6 Mn sq ft in CY'24** (highest in five years), with the top seven cities such as Bengaluru, Chennai, Delhi NCR, Hyderabad, Kolkata, Mumbai, and Pune.

Residential Sector: Consumer preference in India is shifting toward upgraded lifestyles, reflected in the growing share of high-end and luxury housing. Once accounting for just 15–18% pre-COVID, this segment captured 41%

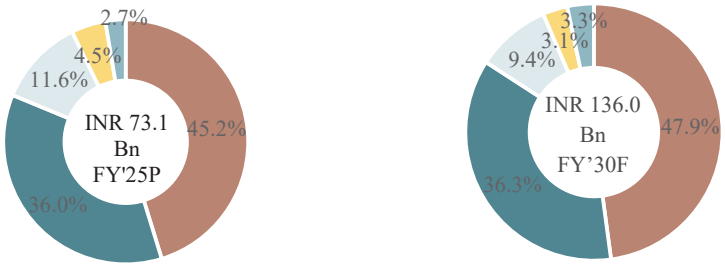
of new launches in Q1 CY'24 across the top 8 cities, up from ~37.0% the previous year. This growth is driven by NRI interest and optimism in India's real estate outlook. *(Cushman & Wakefield Report)*

Industrial Segment: The sector has grown on the back of rising demand for warehousing, with Grade A facility stock projected to reach 200 Mn sq. ft. by CY'25, attracting a total investment potential of USD 10 Bn (INR 83,000 Cr. (at 1 USD = INR 83). Industrial façades such as prefabricated metal panels and insulated wall systems for warehouses and data centers are functional and cost-effective. While these projects involve large surface areas, the per-unit value of façade materials is significantly lower compared to commercial and residential high-rises.

Luxury projects increasingly adopt unitized façades, smart glazing, and advanced cladding especially in Tier 1 and emerging Tier 2 cities like Ahmedabad and Kochi unlike mid-income housing, which still relies on basic systems.

Public Infrastructure and Mixed-Use Developments: This segment will witness growth owing to the new airport, metro, and convention center projects coming in the cities like Delhi, Bengaluru, and Ahmedabad.

Figure 6-8: Segmentation of India Façade Market by End Users, in Value (INR Bn), FY'25P And FY'30F



Market Size (in INR Bn)	FY'25P	FY'30F	CAGR (FY'25P-30F)
Commercial Façade Market (Office spaces, Retail Spaces, Hotels etc.)	33.1	65.1	14.5%
Residential Façade Market (High-rise, Independent/detached houses, Gated Residential Societies, Villas)	26.3	49.4	13.4%
Public Infrastructure Façade Market (Hospitals, Schools & Universities, Airports etc.)	8.5	12.8	8.6%
Industrial Façade Market (Manufacturing, SEZs, Warehousing etc.)	3.3	4.2	5.0%
Mixed-use & Margin Façade Market	2.0	4.5	18.4%
Total Façade Market	73.1	136.0	13.2%

Source: Industry Articles, Ken Research Analysis
Note 1: F represents Forecasted figures.
Note 2: FY represents the Financial Year starting 1st April to 31st March.
Note 3: P refers to provisional numbers
Note 4: Mixed-use includes buildings used for both residential and commercial purposes.

The segmentation of façade demand across commercial, residential, industrial, and public infrastructure sectors has not only diversified product specifications but also altered the geographic concentration of growth. While sector-specific needs continue to evolve, the **intensity of façade investments is becoming increasingly city-driven, influenced by the scale, maturity, and architectural ambition of developments across Tier 1 markets**.

6.2.6 Market Segmentation by Cities

Delhi captured >30.0% of the façade market value, driven by high-value commercial and residential developments

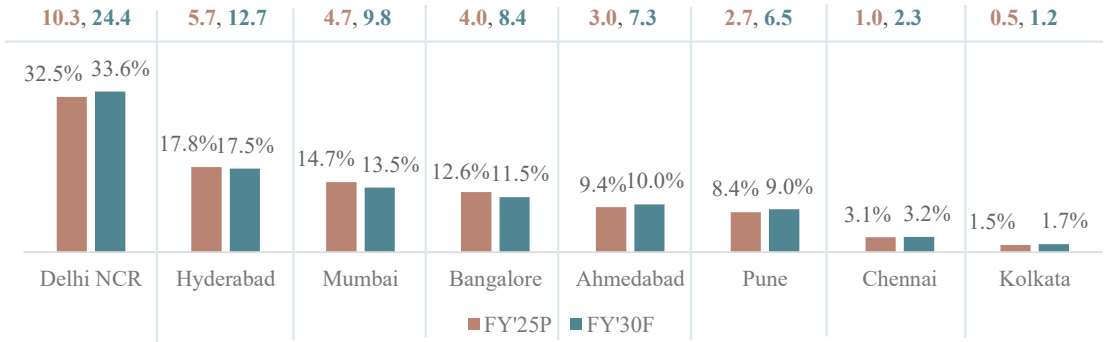
The Indian façade market is geographically concentrated, with Tier 1 cities accounting for the Serviceable Addressable Market (SAM). This is driven by higher levels of real estate development, infrastructure investment, and the presence of large-scale, advanced projects that require modern façade systems.

Table 6-2: Key Drivers of Façade Market Growth by Region in India

Region	Key Drivers
Delhi-NCR	Strong demand in IT-ITeS, BFSI, GCCs; Major leasing in Noida and Gurugram; Grade A warehousing; Rental growth
Mumbai	Dominant office and retail market; Leading destination for data centers and financial services; Strong FDI inflow
Hyderabad	Large supply of commercial spaces; Rising tech and startup ecosystem; Key data center investments
Bangalore	High office absorption; Major GCC hub; Rapid infra and metro expansion; Top tech and R&D location
Pune	Growing demand for flex and tech space; Affordable residential clusters; Industrial /logistics expansion
Chennai	Growth in manufacturing; IT corridor demand; Strong retail sector performance; Surge in data centers
Ahmedabad	Industrial warehousing; Logistics corridor investments; SEZ growth; Rise in mid-income housing demand
Kolkata	Emerging commercial real estate; increasing public infrastructure investments (metro, airport expansion); growth in affordable and mid-segment housing; upcoming warehousing hubs in peripheral regions.

Source: Industry Reports, Industry Articles, Ken Research Analysis

Figure 6-9: Segmentation of India Façade Market, By City Type (INR Bn), FY'25P and FY'30F



Market Size (in INR Bn)	FY'25P	FY'30F	CAGR (FY'25P-30F)
Delhi NCR	10.3	24.4	18.8%
Hyderabad	5.7	12.7	17.6%
Mumbai	4.7	9.8	16.1%
Bangalore	4	8.4	15.9%
Ahmedabad	3.0	7.3	19.4%

Pune	2.7	6.5	19.7%
Chennai	1	2.3	18.4%
Kolkata	0.5	1.2	21.0%
Total	31.8	72.7	18.0%

Source: Industry Reports, Industry Articles, Ken Research Analysis
Note 1: FY represents the Financial Year starting 1st April to 31st March.
Note 2: P refers to provisional numbers
Note 3: The values presented in the table represent the Serviceable Addressable Market (SAM). This includes revenues generated from Commercial, Residential, Public Infrastructure, and Mixed-Use & Margin segments within Tier 1 cities only.

A similar shift is evident in the fenestration segment, where demand is rising for energy-efficient, acoustically superior, and design-integrated window and door systems.

As urban development has become more sophisticated, the need for advanced fenestration solutions such as double or triple-glazed units, thermally broken frames, and automation-ready systems is steadily growing across both residential and commercial projects.

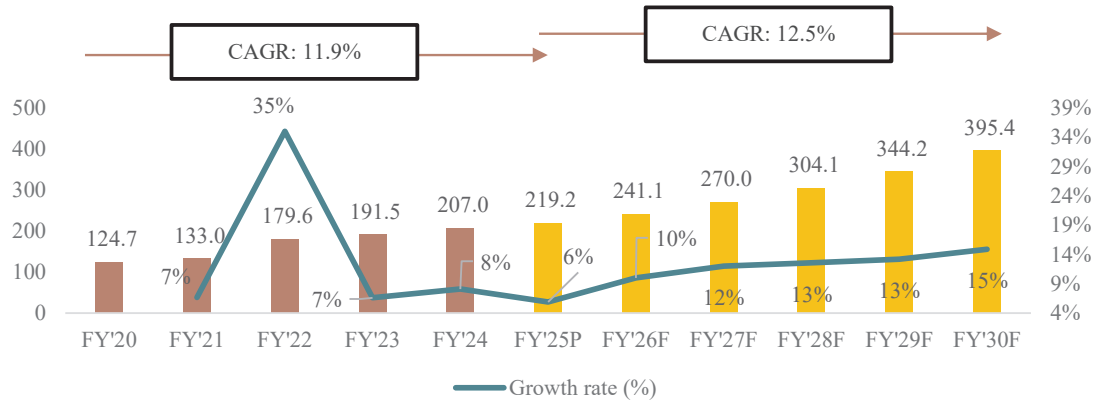
3.1. 6.3. Fenestration Market Size and Segmentation

6.3.1. India Fenestration Overview and Growth Trajectory

India's fenestration market is projected to register a CAGR of 12.5 % through FY 30F, underpinned by strong residential-sector expansion and rising demand for energy-efficient window and door systems

In FY'22, India's fenestration market recorded its highest expansion, **35 % YOY, propelled by a 30% surge in PMAY supported housing completions** and accelerated adoption across Tier-1 and Tier-2 cities under the post-COVID infrastructure stimulus.
By FY'25P, the **market is valued at INR 219.2 Bn** and is projected to grow at a CAGR of 12.5 %, reaching **INR 395.4 Bn by FY'30F**.

Figure 6-10: Indian Fenestration Market Size, By Value (INR Bn), FY'20 - FY'30F



Source: Industry Articles, Ken Research Analysis
Note 1: F represents Forecasted figures. FY represents the Financial Year starting 1st April to 31st March.
Note 2: P refers to provisional numbers

Fenestration demand is being propelled by rapid high-rise construction, an INR 757.0 bn investment pipeline and stringent green-building regulations.

- **Urbanization:** India, the world's second-largest urban system, is expected to contribute up to 40.0% of the national GDP by CY'30, it is expected to have 1.5 Bn population till CY'30 with ~40.0% urban population *(Crisil Report)* driven by rapid urban expansion and economic clustering. NITI Aayog's Growth Hubs initiative, which redefines city-regions and promotes high-quality, sustainable urban infrastructure, is accelerating demand for advanced fenestration solutions in emerging economic zones beyond traditional metros. ***Example:*** *Launched in CY'24, the Surat Economic Region plan targets a USD 1.5 Tn economy by 2047 through over 50 projects and 20 policy reforms aligned with Viksit Gujarat 2047.*

- **Infrastructure development:** The real estate sector has also seen investment, with **INR 757.0 Bn invested in CY'24, a 51.0% increase from CY'23**. Additionally, the **Pradhan Mantri Awas Yojana (PMAY) 2.0's** is further boosting demand, particularly for affordable, low-maintenance uPVC fenestration solutions.

- **Decline in poverty levels indicates rise in middle and high-income group in India**: The proportion of those in the middle and high-income groups increased over the years. India's **per capita income**, a broad indicator of living standards, **rose from INR 94,420.0 in FY'20 to INR 99,403.9 FY'24** *(Crisil report).* This has led to higher demand for advanced fenestration systems such as **triple-glazed windows and uPVC frames** in both commercial and residential sectors.

Fenestration continues to account for the largest share of the Indian Façade and Fenestration Market, supported by residential demand and infrastructure rollout, but faces **persistent challenges** such as:

- **Intense Competition from International Brands (Supply Side Challenge):** The Indian hardware industry is grappling with intense competition from international brands, particularly from Turkey, China, and Europe. These global players leverage superior quality, advanced technologies, and competitive pricing to gain an edge, presenting significant challenges to Indian manufacturers.

- **Variability in Quality Standards (Supply Side Challenge):** "***Umesh Ghai****, Managing Director of Cotswold SEA Pvt. Ltd*.," highlights that India's divergent quality standards complicate project delivery, unlike the harmonized regulatory frameworks commonly found in Europe and the United States.

- **High Costs and Regulatory Hurdles (Demand Side Challenge):** *"**Manish Kumar**, Director and Principal Façade Consultant at TDS Coetus Pvt. Ltd.,"* highlighted several challenges facing the market – *"Advanced materials and technologies often come with high costs, posing a barrier to widespread adoption, especially in the residential sector", & "Compliance with varying standards and enforcement across different states can be challenging."*

These challenges continue to hinder scalability and quality consistency in the fenestration industry. Addressing these structural gaps is critical to unlocking the next phase of market maturity. Although the market is dominated by **large players in the organized sector**, there is a significant presence of **regional and local manufacturers in the unorganized sector**.

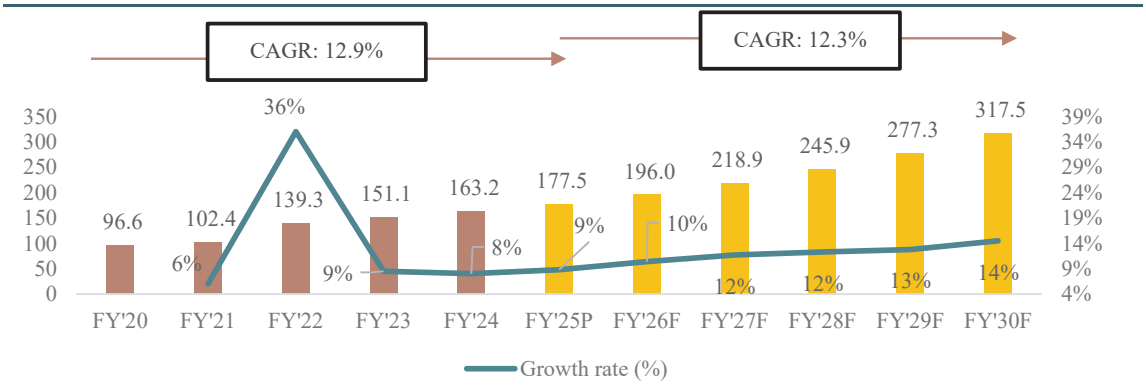
6.3.2 India Residential Fenestration Overview and Growth Trajectory

India's Residential Fenestration segment has delivered consistent expansion, underpinned by rapid urbanization, increasing household incomes and government housing initiatives such as the Pradhan Mantri Awas Yojana.

Between FY'20 and FY'25P, India's residential fenestration market expanded at a CAGR of 12.9%, climbing **from INR 96.6 Bn to INR 177.5 Bn**. The most pronounced acceleration occurred in FY'22, when the market surged by 36%, driven by a **post-COVID housing push under PMAY** and heightened demand in Tier-1 and Tier-2 cities. Continued urbanization and growth in the mid-income and affordable housing segments have sustained this upward trajectory.

Looking ahead, the market is projected to grow at a CAGE of 12.3% from FY'25P to FY'30F, **reaching INR 317.5 Bn**. This forecast reflects accelerated adoption of energy efficient materials, such as uPVC and aluminum systems, as homebuyers and developers increasingly prioritize sustainability and long-term operating cost savings.

Figure 6-11: Indian Residential Fenestration Market Size, By Value (INR Bn), FY'20 - FY'30F



Source: Industry Articles, Ken Research Analysis
Note 1: F represents Forecasted figures. FY represents the Financial Year starting 1st April to 31st March.
Note 2: P refers to provisional numbers

As of FY'25, the residential segment contributes ~81.0% to the overall Indian fenestration market. This dominant share is expected to remain strong, though it may see a **slight decline to around 80.3% by FY'30F, as commercial and institutional projects begin to pick up pace**. However, residential demand will continue to lead the market, driven by sustained urban housing growth, rising individual homeownership, and increasing adoption of energy-efficient fenestration in apartments and gated communities.

6.3.3. Market Segmentation by Market Structure

88% of the residential fenestration market is unorganized due to high-cost sensitivity at the consumer level.

In FY'25P, India's residential fenestration market remains highly fragmented, driven by a broad product mix and structural factors such as **acute price sensitivity, limited regulatory enforcement and certification norms, and low entry barriers for local fabricators** offering basic aluminium frames, conventional glass and cost-effective uPVC systems. Consequently, unorganized and semi-organized players account for ~88 % of total market value, creating a bifurcated landscape with divergent growth trajectories.

By contrast, the organized residential fenestration segment, valued at **INR 21.3 Bn in FY'25P,** is projected to expand at a CAGR of 15.8 % through FY'30F, underpinned by **technological innovation, government measures promoting sustainable building practices and rising disposable incomes**.

Figure 6-12: Segmentation of India Residential Fenestration Market, By Persona (INR Bn), FY'25P and FY'30F

Market Size (in INR Bn)	FY'25P	FY'30F	CAGR (FY'25P-30F)
Organized Fenestration Market (A)	21.3	44.4	15.8%
Unorganized Fenestration Market (B)	156.2	273.1	11.8%
Total Fenestration Market (A+B)	177.5	317.5	12.3%

Source: Industry Articles, Ken Research Analysis
Note: FY represents the financial year starting 1st April to 31st March.
Note 2: P refers to provisional numbers

In contrast, the **unorganized sector is characterized by cost sensitivity,** a significant presence of regional manufacturers, and strong demand from rural and budget housing segments. Both sectors cater to distinct market needs, thereby contributing to the overall growth of the fenestration industry.

Table 6-3: Comparison of Fenestration products by market structure

Feature	Organized Sector (Premium)	Unorganized Sector (Affordable)
uPVC Window *(Price in INR per sq ft.)*	600 – 1,300	200 – 400
uPVC Door *(Price INR per sq ft.)*	750 – 1,000	600 – 850
Quality	High (multi-glazed, certified)	Basic (single-glazed, uncertified)
Warranty	10–20 years	1–5 years

Source: Industry Reports, Industry Articles, Ken Research Analysis

Example: **uPVC Doors**: Standard sizes (e.g., 3x7 feet) are priced between INR 750 and INR 1,000 per sq ft. while basic models are available at INR 600 to INR 850 per sq ft., depending on size and specifications.

6.3.4. Market Segmentation by Type of Material

Raw material availability significantly influences product pricing and, in turn, shapes consumer purchasing decisions

Material selection is critical to envelope performance, with each substrate - **Aluminium, uPVC, glass, wood and composite** offering a unique balance of structural integrity, thermal efficiency, cost and visual appeal to suit diverse project specifications.

Aluminium and uPVC lead mainstream applications on account of their inherent strength, durability, minimal maintenance requirements and competitive pricing. Timber continues to be specified for high-end residential and heritage restorations, prized for its natural insulation properties and aesthetic warmth.

Composite and hybrid materials are increasingly adopted in institutional and luxury developments, where bespoke fire, acoustic and structural performance criteria demand tailored solutions. Concurrently, glazing has evolved from basic infill to a sophisticated façade element: advanced low-emissivity, double-glazed and electrochromic systems now deliver precise daylight modulation, enhanced thermal control and compliance with rigorous sustainability standards.

Table 6-4: Aluminum Fenestration: Backed by Robust Local Production

Material	Manufacturing Base	Import Dependency	Retail Adoption
Aluminium	Strong	Moderate *(thermal breaks, coatings)*	Strong *(premium, commercial)*
uPVC	Strong	Moderate *(resins)*	Strong *(affordable, mid-income)*
Glass	Strong	High *(smart glass)*	High *(urban residential, commercial)*
Wood	Limited	High *(premium timber)*	Niche *(luxury, heritage)*
Others*	Limited *(fabrication-driven)*	High *(raw materials)*	Limited *(institutional projects)*

Source: Industry Articles, Ken Research Analysis
*Note 1: *Others represent Structural Steel & High-Performance Alloys, Engineered Stone Composites (Quartz, Granite Infusions), Natural Cork Laminates*

In recent years, adoption trends have begun shifting across segments. uPVC and plastic-based systems are increasingly preferred in **mass housing and budget-sensitive projects**, where affordability and low maintenance are critical.

In contrast, **Tier-2 and Tier-3 cities** are driving broader uptake, as rising home ownership and awareness of energy efficiency push demand for uPVC-based fenestration. Meanwhile, **aluminium continues to anchor premium and large-scale developments**, while **sustainable composites** are steadily gaining relevance, supported by India's green building initiatives.

6.3.5. Market Segmentation by Cities

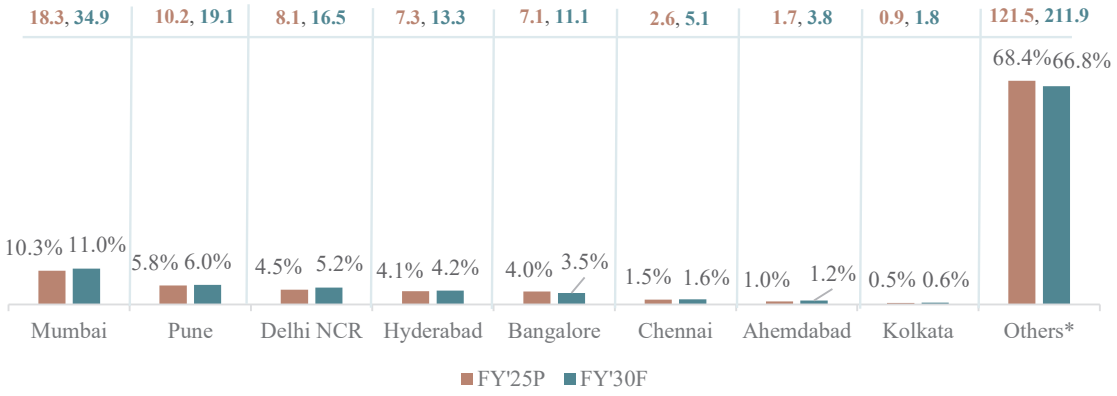
Top #8 Cities spearhead India's residential fenestration market growth, capturing 11.0% share by FY'30F

India's residential fenestration market is witnessing a notable concentration of growth within key urban centers. In FY'25P, the top seven cities **Mumbai, Pune, Delhi NCR, Bangalore, Hyderabad, Chennai, Ahmedabad and Kolkata** collectively accounted for **31.6%** of the total market, with this share projected to rise to 33.3% by FY'30F.

Mumbai remains the dominant market, increasing its share from 10.3% in FY'25P to 11.0% in FY'30F, followed by steady gains in cities like **Pune, Delhi NCR, and Bangalore**. Emerging hubs such as Chennai, Ahmedabad and Kolkata are expected to nearly double their contribution by FY'30F, signaling rising construction activity and higher fenestration adoption in these regions.

While Tier-2 and Tier-3 cities will continue to account for a substantial ~**66% share**, the increasing dominance of urban markets reflects a clear trend toward more organized, preimmunized residential fenestration demand in India's leading metropolitan clusters.

Figure 6-14: Segmentation of India Residential Fenestration Market, By City Type (INR Bn), FY'25P and FY'30F



Market Size (in INR Bn)	FY'25P	FY'30F	CAGR (FY'25P-30F)
Mumbai	18.3	34.9	13.8%
Pune	10.2	19.1	13.2%
Delhi NCR	8.1	16.5	15.5%
Hyderabad	7.3	13.3	13.0%
Bangalore	7.1	11.1	9.5%
Chennai	2.6	5.1	14.3%
Ahmedabad	1.7	3.8	17.3%
Kolkata	0.9	1.8	15.1%
Others*	121.5	211.9	11.8%
Total	**177.5**	**317.5**	**12.3%**

Source: Industry Articles, Ken Research Analysis
Note 1: FY represents the Financial Year starting 1st April to 31st March.
Note 2: Others represent all the remaining Tier 2, 3, 4 & 5 cities such as Kanpur, Meerut, Jaladhar, etc.
Note 3: P refers to provisional numbers

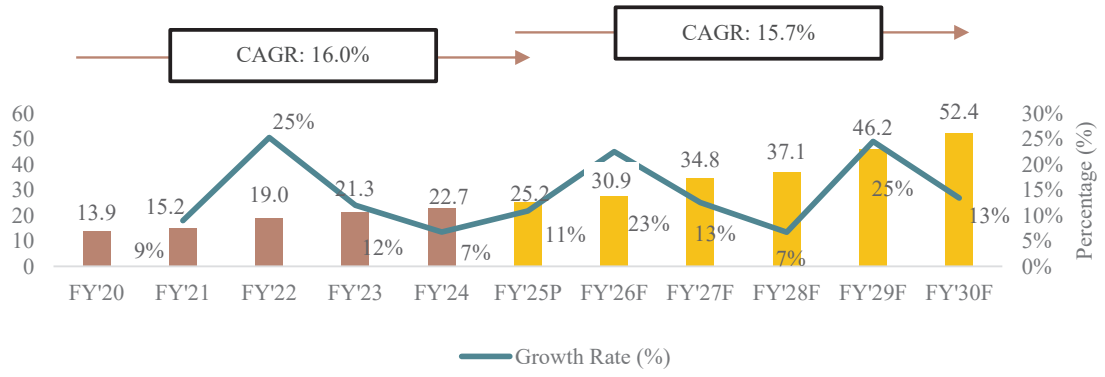
In FY 24, the **residential sector contributed ~81 % of India's total real-estate value**, positioning premium housing developments as the principal catalyst for high-end fenestration demand. To execute these sophisticated projects, top EPC contractors - **Larsen & Toubro, Shapoorji Pallonji, Tata Projects and NCC,** are forging alliances with specialist system providers such as **Aluplex, Yes Systems (a GWS subsidiary) and Schüco India** to deliver advanced, luxury-grade window and door assemblies.

6.3 Luxury Fenestration- Residential

The Luxury Fenestration market is predominantly driven by the residential segment, underpinned by the rapid growth of India's ultra-high-net-worth individual population.

Given the dominance of high-end residential projects in Tier I cities, the luxury fenestration segment merits focused analysis. **Valued at ~ INR 25.2 Bn in FY'25P**, this segment has expanded at a CAGR of 16.0% between FY'20 and FY'25P, driven in large part by the growing population of India's ultra-high-net-worth individuals, whose demand for bespoke, performance-driven window and door systems continues to accelerate.

Figure 6-15: India Premium to Ultra Luxury Residential (Project > INR 100 Mn), Fenestration Market Size, by Value (INR Bn), FY'20 - FY'30F



Source: Industry Articles, Ken Research Analysis
Note 1: F represents Forecasted figures. FY represents the Financial Year starting 1st April to 31st March.
Note 2: P refers to provisional numbers
Note 3: This includes two segments of the Indian residential market: Ultra-Luxury (above INR 300 Mn) and Premium to Luxury (INR 100–300 Mn)

Some of the growth drivers of acceleration are as follows:

- **Pricing Gap Between Premium and Affordable Fenestration:** Premium fenestration products are typically priced 3 to 4 times higher than standard affordable solutions. This price differential is driven by the use of advanced materials, imported hardware, superior thermal and acoustic performance, higher durability standards, and customized design specifications tailored to luxury residential requirements. *(refer table 5-3).*

- **Emergence of Premium-Focused Niche Players:** The growing demand for ultra-luxury homes is being addressed by specialized players. *For example: Yes Systems, a subsidiary of GWS, caters exclusively to the*

high-end segment. It operates as a high-margin business focused on delivering custom, energy-efficient fenestration solutions. As of March 2025, Yes Systems has shown consistent growth over the last year, from INR 221.7 Mn in FY'24 to INR 338.1 Mn in FY'25 (revenue from operations). It is now positioning itself as India's leading premium fenestration provider.

- **Growing Emphasis on Regulatory Compliance and Certification**: With the rise in luxury housing and premium fenestration solutions, regulatory bodies are increasingly focusing on energy efficiency, structural safety, and green building norms. Compliance with standards such as ECBC, BIS certifications, and GRIHA/IGBC ratings is becoming essential, especially for high-end residential projects. This shift is encouraging organized players to invest in R&D and international collaborations to meet evolving regulatory benchmarks, paving the way for the next wave of sustainable and performance-driven innovation in the fenestration industry.

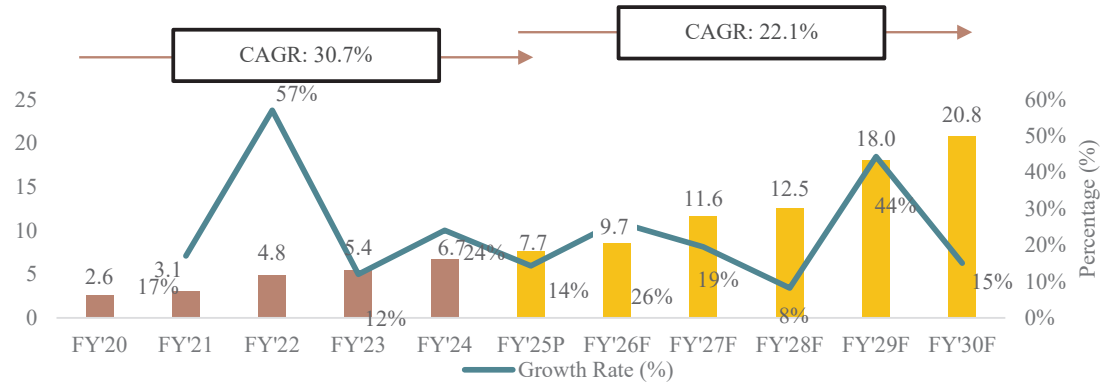
6.3.1. Ultra Luxury Residential Fenestration Market

Propelled by rapid UHNWI growth, premium-spec residential projects, stringent sustainability mandates and smart-glazing integration, India's ultra-luxury fenestration market is poised to reach INR 20.8 Bn by FY'30F

The ultra-luxury residential fenestration segment in India has demonstrated explosive growth over the past five years, with revenue rising from **INR 2.6 Bn** in FY'20 to **INR 7.7 Bn** in FY'25, an impressive CAGR of 30.7 %. Notable milestones include a 57 % jump in FY 22 and a 24 % increase in FY'24, reflecting strong post-pandemic recovery and surging demand for premium window and door systems.

Looking ahead, the **market is projected to maintain robust expansion at a 22.1 % CAGR** through FY'30, with revenues climbing to **INR 20.8 Bn by FY'30F**. Although growth moderates slightly in the mid-decade (FY'27–FY'28), a renewed 44.3 % uptick in FY'29 underscores the ongoing appetite for ultra-luxury fenestration in high-end residential projects.

Figure 6-16: India Ultra Luxury Residential (Project > INR 300 Mn), Fenestration Market Size, by Value (INR Bn), FY'20 - FY'30F



Source: Industry Articles, Ken Research Analysis
Note 1: F represents Forecasted figures. FY represents the Financial Year starting 1st April to 31st March.
Note 2: P refers to provisional numbers
Note 3: This includes Ultra-Luxury segment (projects above INR 300 Mn)

Some of the growth drivers of acceleration are as follows:

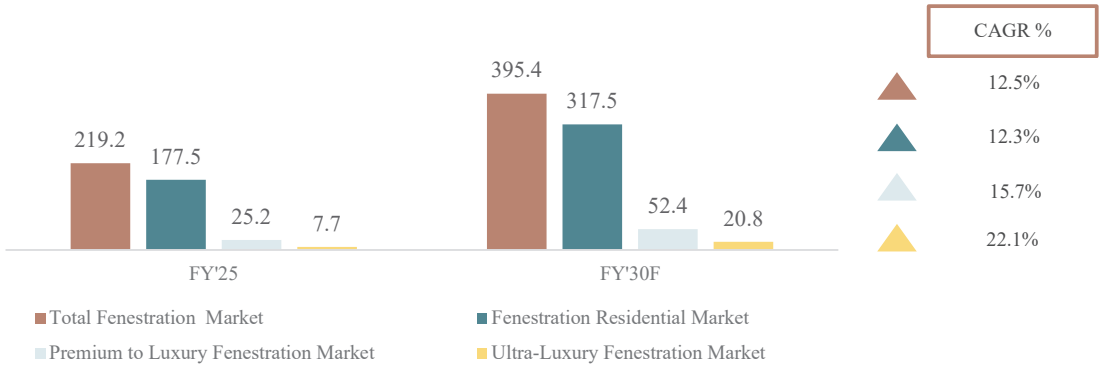
- **Surge in UHNWI Population**: India ranks 6th globally in UHNWI population (individuals having Net Worth of INR 250 Mn and above) and third in Asia, trailing only China and Japan. By CY'24, the nation's UHNWI count had reached 13,600, marking an annual growth rate of 6%. This figure is expected to rise by 50% by 2028, outpacing the global average growth of 30%. India's mainboard IPOs jumped from INR 619 Bn in FY'24 to INR 1,630 Bn in FY'25 a 163% increase. This sharp rise in fundraising reflects the growing depth of India's capital markets, which is closely linked to the rise in ultra-high-net-worth individuals. As equity markets grow, so does private wealth, creating a strong cycle between market activity and wealth creation. *(Source Industry reports and DBS)*

- **Premiumization of Residential Offerings**: Developers are increasingly specifying unitized façades, smart glazing and custom finishes to differentiate luxury projects, reflecting willingness to invest 3–4X more than standard fenestration solutions.

- **Stringent Sustainability & Certification Norms**: ECBC, IGBC and LEED requirements in top-tier developments are accelerating uptake of low-E, double-glazed and thermally broken systems.

- **Architectural Ambition in Tier I Cities**: Landmark projects in Mumbai, Delhi NCR and Bengaluru are specifying premium fenestration as a signature element, creating reference cases that further stimulate market growth

Figure 6-17: Comparative view of Fenestration market in FY'25



Source: Industry Articles, Ken Research Analysis
Note 1: F represents Forecasted figures. FY represents the Financial Year starting 1st April to 31st March.
Note 2: P refers to provisional numbers
Note 3: Total fenestration market includes all types of end users such as commercial, residential and more. Residential fenestration includes only residential fenestration revenue. Premium and Ultra luxury includes residential fenestration revenue from luxury and ultra luxury residential fenestration market

India's fenestration market is poised for strong growth, with the total market expected to expand from **INR 219.2 Bn in FY'25** to **INR 395.4 Bn by FY'30F**, reflecting the rising demand for energy-efficient and design-driven solutions, driven by demand for premium aluminum systems and large-format glazing in high-end residences. The ultra-luxury segment, at INR 7.7 Bn, focused on bespoke solutions like triple glazing and motorized systems in homes priced above INR 300 Mn. Growth in these segments is concentrated in metro cities, aligned with rising high-value real estate transactions.

7. Regulatory Landscape Governing the Façade & Fenestration Industry in India

India has both National and State-level regulations to govern façade and fenestration.

Table 7-1: India based Regulatory Guidelines

Regulation	Description
Eco-Niwas Samhita (ENS) 2024	• Energy Conservation & Sustainable Building Code • Requires fenestration products (sash + frame) to be tested per ISO-15099 standards and compliance is to be verified by accredited labs
Bureau of Indian Standards (BIS), latest revision in 2020	• Issues technical specifications for glass used in façades, covering safety, performance, and durability • Includes IS 2553 for safety glass, IS 2594 for clear glass, and IS 3548 for insulating glass units (IGUs)
Energy Conservation Building Code (ECBC), 2017	• Issued by the Bureau of Energy Efficiency (BEE), defines minimum energy efficiency norms for commercial buildings in India • It emphasizes the use of advanced materials and technologies, including energy-efficient glazing and insulation, to reduce overall energy consumption
National Building Code (NBC), 2016	• It outlines standards for building design and construction in India, covering structural safety, fire protection, and sustainability. • It includes **dedicated provisions for glass façades**, focusing on material performance, wind load resistance, and fire safety compliance
Fire and Life Safety Regulations (NBC & Local Building Codes), 2016	• Comprehensive fire safety standards for buildings, including provisions for **fire-resistant materials** used in façades • **State and municipal by-laws** may include **additional requirements for fire-rated glass**, aligned with NBC guidelines and site-specific risk profiles
CCPS Guidelines on Glass in Buildings, 2011	• Aim to standardize glass use in buildings across India. • It provides recommendations on **human safety**, **fire safety**, and **energy performance**
Green Building Rating Systems (LEED, 2001, GRIHA, 2007)	• Offers voluntary standards for sustainable building design and construction. • They promote the use of environmentally friendly materials, including energy-efficient glass, to reduce the carbon footprint of buildings
Environmental Protection Act (EPA) 1986	• This Act governs pollution control and the environmental impact of manufacturing industries, including glass production. • It sets limits on emissions and waste generated during the manufacturing process.

Source: Bureau of Indian Standards, Ken Research Analysis

State Regulations on Glass Façades: Several states in India have established specific regulations and guidelines regarding the use of glass in building façades. Top #5 states with high construction activities basis RERA & Infrastructure Data regulations have been mentioned below.

Table 7-2: State based Regulatory Guidelines

State	Regulation Description
Maharashtra	MCGM mandates **openable glass panels** in façades, especially near refuge areas for smoke ventilation and fire access
Delhi	DDA (Master Plan) and PWD require **safety glass in façades**; CPWD maintenance manual echoes NBC's double glazing safety norms
Karnataka	ECBC-based guidelines (e.g., BEEP) enforce insulated glazing (e.g., U-value, VLT, shading) for high-rise public buildings

Source: State government websites, Ken Research Analysis

In Rajasthan, Rajasthan Housing Board **mandates the use of BIS-certified safety glass** in all critical façade areas. Andhra Pradesh **requires façade glazing to withstand specified external impact forces**, while the Greater Hyderabad Municipal Corporation **enforces international-standard safety glass** for all commercial buildings in Telangana.

While evolving regulations continue to shape product standards, safety norms, and energy efficiency requirements, they have also created clear differentiation between organized and unorganized players. Compliance with these frameworks often demands higher technical capabilities, certifications, and investments—favoring established players with robust operational infrastructure.

Effective October 1, CY'25, **Reserve Bank of India's Project Finance Directions, CY'25 introduce a harmonized framework** for banks, NBFCs and other regulated entities, enhancing funding certainty for real-estate schemes with substantial façade and fenestration requirements. Key stipulations include:

- **Defined Project Phases & DCCO Limits**: Construction finance is segmented into design, build and operational stages, with a maximum extension of three years for infrastructure and two years for non-infrastructure projects, ensuring timely completion and handover of envelope installations.

- **Pre-Closure Compliance**: Disbursement to a project is contingent on verification of all requisite statutory and technical clearances, such as fire-safety glazing approvals and environmental consents for cladding systems—before financial closure.

- **Exposure Floors & Collective Stress Resolution**: Lenders must maintain minimum exposure levels (10 % of aggregate exposure and adopt a principle-based regime for coordinated resolution upon any credit event, reducing the risk of unilateral funding withdrawals for façade contractors.

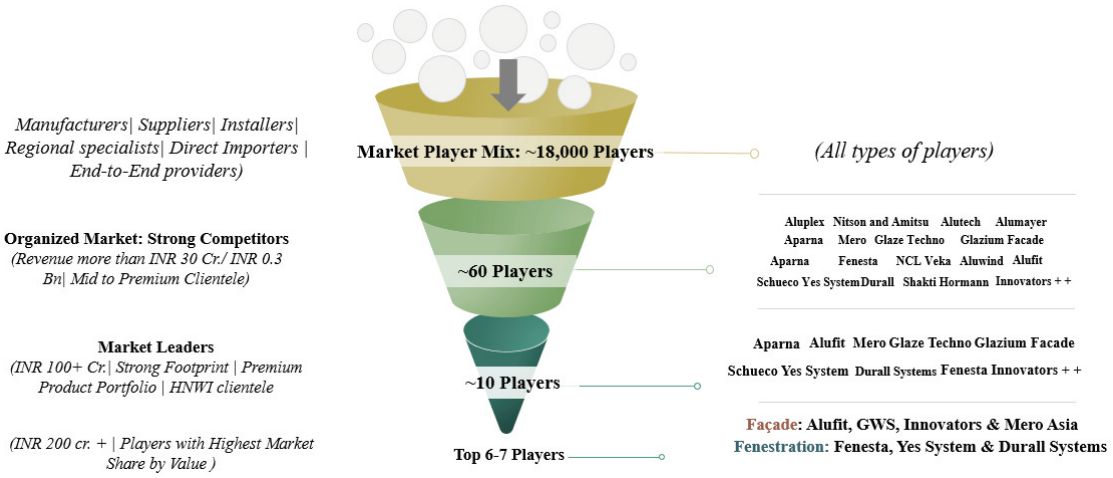
8. Key Players Business, Operational and Financial Overview

The façade and fenestration industry in India is characterized by a diverse set of players, ranging from large manufacturers, suppliers, installers, regional players, material suppliers or end to end providers. This diversified landscape **comprises ~18,000 players**, making the **market highly fragmented**. *(refer figure 8-1)*

Players with a control on **in-house design, fabrication, and installation capabilities** *(such as GWS)* are better positioned to cater to **premium and large-scale projects**. In contrast, smaller regional participants largely address mid-sized or highly price-sensitive developments.

Moreover, only a small fraction of organized façade and fenestration players (high revenue contributors) have secured mega projects in Tier-1 cities.

Figure 8-1: Competition Funnel in the Façade and Fenestration Market



Source: Companies' Websites, Annual Reports, Proprietary Databases, Ken Research Analysis

Players operating at the bottom of the funnel *(refer figure 8-1)* compete on parameters such as **quality, client portfolio, design and engineering capabilities**. In contrast, **price sensitivity** is significantly higher at the top of the funnel, particularly in the fenestration segment, where competition is also intense.

Other key factors and their impact on the market structure are mentioned below *(refer to figure 8-2).*

1. ***Technical expertise:*** *Determines a player's ability to execute complex projects/ designs*
2. ***Manufacturing strength:*** *Determines large-scale production capacity and faster delivery timelines*
3. ***Innovation:*** *Product differentiation through sustainable raw material, automation, smart facades*
4. ***Client track record****: Builds trust and repeat business influencing market reputation*
5. ***Price sensitivity:*** *Impacts competitiveness in cost-driven projects, especially in mid-scale and government projects*
6. ***Integration capabilities****: Reflects how well a player can offer end-to-end solutions*
7. ***Product durability****: Affects lifecycle costs and long-term client satisfaction, especially in premium segments.*
8. ***Regulatory compliance****: Ensures eligibility for high-value projects and minimizes risk of project delays or penalties*

Organized players *(with revenue >INR 0.3 Bn)* have strategically positioned themselves to deliver non-negotiable product performance and adherence to construction regulations. They meet the growing demand with complex building norms, durability, and lifecycle expectations.

Organized players have begun to distinguish themselves by focusing primarily on **high-value commercial and luxury residential projects**, typically **valued more than INR 0.3 Bn per project**.

While, unorganized players ***(with revenues below INR 0.3 Bn)*** primarily compete on price, catering to cost-sensitive, small-scale developers. Their operations typically involve lean teams, limited in-house technical capabilities, and a higher reliance on subcontracting or standard off-the-shelf components. As a result, there may be variability in product quality and execution standards. Regulatory compliance and long-term durability may receive less emphasis compared to larger, more established players.

8.1 Cross- Comparison basis Operational & Financial Parameters

Top 7 players in Indian Façade and Fenestration market with **leading financial performance in FY'24 & FY'25P** include,

1. *Alufit International Pvt. Ltd (Alufit)*
2. *Glass Wall Systems (India) Limited. (GWS)*
3. *Innovators Facade Systems Ltd. (Innovators)*
4. *Mero Asia Pacific Engineering Private Limited (Metro Asia)*
5. *Durall Systems India Pvt. Ltd. (Durall)*
6. *Fenesta Building Systems (Fenestra)*
7. *Yes Systems Pvt. Ltd. (Yes Systems)*

Table 8-1: Basic details & operational cross comparison of the leading players

Parameters		Facade				Fenestration		
		Alufit	GWS	Innovators	Mero Asia	Durall Systems	Fenesta	Yes Systems
Business Overview	Incorporation year	1984	2002	1999	1988 (India)	1992	2002	2021
	HQ	Bangalore, Karnataka	Mumbai, Maharashtra	Mumbai, Maharashtra	Wurzburg, Germany (Global HQ) Chennai, Tamil Nadu (India)	Mumbai, Maharashtra	Gurugram, Haryana	Mumbai, Maharashtra
	No. of employees in India *(as on Dec 2024)*	~522	280+	~332	~125	~40	NA	~42
Geographical & Operational Capabilities	Geographical Presence	Pan India *(major metropolitan areas)*	Pan-India *(Majorly in Bangalore, Delhi, NCR, Kolkata, Ahmedabad, Hyderabad and Pune)*	Pan India (Majorly Western India)	Singapore; Wurzburg,Germany; Chennai, India; Kuala Lumpur, Malaysia	Pan India (Majorly Western India)	Pan India	Pan India
	Manufacturing Facility	3 *(Facilities in Bengaluru, Hosur, and Mumbai)*	1 (Vile Bagad, Maharashtra)	1 (Wada, Maharashtra)	1 (Chennai, India specific)	NA	1 extrusion plant in Kota and 7 fabrication units in Bhiwadi, Chennai, Bhubaneswar and Hyderabad	1 (Vile Bagad, Maharashtra)
	Production Capacity per annum *(in units/ Sq Ft.)*	Unitized panel ~ 100 - 120 Doors 30-40 per day	140 panels per day or 1,60,000 Sq Mt. Expected to grow up to 210,000 Sq Mt.	~ 40-60 Unitized panel ~50 Windows ~30-40 Doors per day	NA	NA	8,600 MT to 12,284 MT *annual uPVC extrusion capacity*	NA
	Cities with High consumption	Bengaluru, Chennai, Pune,	Pan-India metros: heavy	Presence in PAN India with a large	Presence in Pan India with greater	Mumbai and Navi Mumbai	South and west India along with	Pan-India metros: heavy presence in

		Mumbai, Delhi, Kolkata, Gurugram (major metros; Bengaluru historically largest market)	presence in Mumbai/Pune, Bengaluru, Delhi NCR, Hyderabad, Kolkata, Ahmedabad, etc.	demand in Mumbai, Gujrat and Pune followed by the Northen region mainly Delhi, Gurgaon, Noida, Chandigarh, Jaipur and Lucknow with smaller presence in southern and eastern part of the country	visibility in Chennai, Mumbai, and Kolkata		Delhi NCR and Maharashtra	Mumbai/Pune, Chennai, Delhi NCR, Hyderabad, Ahmedabad, etc.
Clientele & Project Profile	**Major Projects (Landmark Projects)**	Amazon, Intel, Goldman Sachs, TCS, Hyderabad International Airport, The SkyView & others	The Capital, Kohinoor Square, Bagmane Rio, Lodha World One, Altimus, Oberoi 360 West, Wipro IT SEZ, Reliance Twin Tower, Mondeal Square, The 42 and Kingfisher House	Lodha Group, Raheja Universal, Oberoi Realty Ltd, Tata Housing, Reliance Industries Ltd., Adani Developers Pt. Ltd., Cipla Ltd.	Mumbai International Airport Limited, Tata Consultancy Services Limited – Chennai (TCS Signature Tower), HCL	*Pan India, Singapore & Seychelles*	Cresh NCR, Belair NCR, Shantiniketan, Kolkata iconic and more.	NA

Source: Companies' Websites, Annual Reports, Proprietary Databases, Ken Research Analysis,
Note 1: NA refer to Not Available

Table 8-2: Financial Cross-comparison of the leading players, FY'23-25

Parameters	Façade					Fenestration		
	Financial Year	Alufit	GWS	Innovators	Mero Asia	Durall Systems	Fenesta	Yes Systems
Revenue from Operations in (INR Mn)	FY'25	NA	2,447.61	2,213.74	NA	NA	8,562.70	338.07
	FY'24	5,461.79	2,821.71	2,151.09	1,890.83	347.60	8,139.10	221.71
	FY'23	4,925.90	2,405.11	1,811.66	2,918.11	652.20	6,876.70	NA
Domestic Façade Solutions (INR Mn)	FY'25	NA	1,300.55	NA	NA	NA	NA	NA
	FY'24	NA	1,501.43	NA	NA	NA	NA	NA
	FY'23	NA	2,248.32	NA	NA	NA	NA	NA
International Façade Products Supply (INR Mn)	FY'25	NA	1,147.06	NA	NA	NA	NA	NA
	FY'24	NA	1,320.28	NA	NA	NA	NA	NA
	FY'23	NA	156.79	NA	NA	NA	NA	NA
EBITDA[1] (INR Mn)	FY'25	NA	580.86	357.96	NA	NA	NA	149.25
	FY'24	463.37	431.86	320.46	117.14	44.46	NA	NA
	FY'23	-11.24	118.56	190.88	185.63	89.42	NA	NA
EBITDA Margin[2] (%)	FY'25	NA	23.73%	16.17%	NA	NA	NA	44.15%
	FY'24	8.48%	15.30%	14.90%	6.2%	12.79%	NA	NA
	FY'23	-0.23%	4.93%	10.54%	6.4%	13.71%	NA	NA
PAT (INR Mn)	FY'25	NA	438.09	160.11	NA	NA	NA	137.03
	FY'24	113.64	119.53	152.64	72.84	47.84	NA	82.98
	FY'23	-209.70	161.11	84.21	121.32	56.97	NA	NA
PAT Margin[3] (%)	FY'25	NA	17.90%	7.23%	NA	NA	NA	40.53%
	FY'24	2.08%	4.24%	7.10%	3.85%	13.76%	NA	37.43%
	FY'23	- 4.26%	6.70%	4.65%	4.16%	8.73%	NA	NA

Adjusted PAT[4] (INR Mn)	FY'25	NA	438.09	NA	NA	NA	NA	NA
	FY'24	322.77	281.42	NA	NA	NA	NA	NA
	FY'23	-208.56	161.11	NA	NA	NA	NA	NA
Adjusted PAT Margin[5] (%)	FY'25	NA	17.90%	NA	NA	NA	NA	NA
	FY'24	5.91%	9.97%	NA	NA	NA	NA	NA
	FY'23	-4.23%	6.70%	NA	NA	NA	NA	NA

Source: Companies' Websites, Annual Reports, Proprietary Databases, Financial Reports, Ken Research Analysis
Note 1: NA refer to Not Available
Note 2: Indexed on the basis of revenue in FY'24/ FY'25
Note 3: The players mentioned above have been classified as either façade or fenestration players based on their primary business focus and principal revenue generating segment; however, it is important to note that façade players may also derive a minor portion of their revenue from fenestration activities and similarly, fenestration players may generate limited revenue from façade-related projects.
Note 4: The revenue reported for Fenesta is reported from the annual report of DCM Shriram. It is stated under "Fenesta Building System" their reported revenue represents "Fenesta Building System" external sales revenue.
Note 5: Fenesta do not operate in luxury segment.
Note 6: Formula Used-
(1) EBITDA is calculated as restated profit for the year plus tax expenses, exceptional items, depreciation and amortization expense, finance costs less other income.
(2) EBITDA Margin (%) is calculated as EBITDA divided by revenue from operations, expressed as a percentage.
(3) PAT Margin (%) is calculated as restated profit for the year divided by revenue from operations, expressed as a percentage.
(4) Adjusted PAT is calculated as restated profit for the year before exceptional items.
(5) Adjusted PAT margin (%) is calculated as adjusted PAT for the year divided by revenue from operations, expressed as a percentage.

Table 8-3: Financial ratio Cross-comparison of the leading players, FY'23-25

Parameters	Facade					Fenestration		
	Financial Year	Alufit	GWS	Innovators	Mero Asia	Durall Systems	Fenesta	Yes Systems
ROCE[1] (%)	FY'25	NA	38.32%	15.87%	NA	NA	NA	77.38%
	FY'24	6.36%	22.52%	16.84%	NA	15.18%	NA	NA
	FY'23	-3.44%	7.05%	11.29%	NA	22.66%	NA	NA
ROE[2] (%)	FY'25	NA	32.7%	10.42%	NA	NA	NA	88.67%
	FY'24	2.20%	11.1%	11.06%	NA	19.00%	NA	NA
	FY'23	-4.02%	17.2%	6.68%	NA	28.00%	NA	NA
Gross Fixed Asset Turnover Ratio[3]	FY'25	NA	5.88	2.15	NA	NA	NA	6.64
	FY'24	12.90	7.33	2.21	NA	3.91	NA	NA
	FY'23	12.42	6.56	2.33	NA	8.90	NA	NA
Net Debt to Total Equity Ratio[4]	FY'25	NA	-0.41	NA	NA	NA	NA	-0.29
	FY'24	0.00	-0.10	NA	0.03	NA	NA	NA
	FY'23	0.04	0.24	NA	0.18	NA	NA	NA
Debt to Total Equity Ratio[5]	FY'25	NA	0.06	0.38	NA	NA	NA	NIL
	FY'24	0.06	0.16	0.30	0.25	0.67	NA	NA
	FY'23	0.09	0.46	0.30	0.57	0.76	NA	NA

Source: Companies' Websites, Annual Reports, Proprietary Databases, Financial Reports, Ken Research Analysis
Note 1: NA refers to Not Available
Note 2: Indexed on the basis of revenue in FY'24/FY'25
Note 3: Formulas used:

(1.) Return on Capital Employed ("ROCE") (%) is calculated as EBIT divided by Capital Employed, expressed as a percentage. EBIT is calculated as the sum of restated profit before and tax plus finance costs. Capital employed is sum of total equity, non-current borrowings, current borrowings and deferred tax liabilities minus intangible assets
(2.) Return of Equity (ROE) (%) is calculated as restated profit for the year divided by average of total equity at the beginning of the year and total equity at the end of the year, expressed as a percentage.
(3.) Gross Fixed asset turnover ratio is calculated as revenue from operations divided by property, plant and equipment at cost
(4.) Net Debt to Total Equity Ratio is calculated as Net Debt divided by total equity. Net Debt is sum of non-current borrowings and current borrowings less cash and cash equivalents and bank balances other than cash and cash equivalents.
(5.) Debt to Total Equity Ratio is calculated as sum of non-current borrowings and current borrowings divided by total equity.

Key Observations

- **Alufit's** positioning reflects operational consistency supported by efficient cost management. The company's ability to recover its receivables within a shortened cycle has contributed to improved cash flow visibility. The company has been associated with several marquee projects across India, reflecting its commitment to innovation, quality, and timely execution.

- **GWS** is the youngest and the only company in India with extensive integrated operations. The business was founded by Jawahar Hariram Hemrajani and Kamlesh Arjunlal Chaudhari as a partnership firm in 2002, positioning the company among the early entrants in the façade market in India. It offers end-to-end façade solutions, from design to execution combined with proposed backward-integration and glass processing capabilities. Its scalable business model enables expansion into new geographies or verticals without compromising financial strength. Long-standing relationships with key clients result in repeat business, further solidifying its position as a reliable and trusted leader in the industry. GWS is a leading export focused façade player in India with 45%+ of revenue in FY'25 coming from international markets. The company is largely focused on commercial projects.

- **Innovators** exhibited strength in maintaining stable operations despite having the smallest revenue base among peers. Its ability to sustain margins over two financial years indicates cost control and pricing discipline across projects. The company is largely a domestic player. It is now trying to penetrate the international markets.

- **Mero Asia** is a subsidiary of Singapore-based Mero Asia Pacific Pte Ltd and ultimately part of Germany-based Mero TSK International GmbH & Co KG. The company specializes in the supply and installation of façade solutions including unitized building systems in glass, aluminium, stainless steel glazing, cladding, and skylights for commercial and institutional projects.

- **Durall Systems** offers integrated solutions covering the design, manufacturing, supply, and installation of façades, doors, windows, and interior partitions. The company serves a range of end-user segments, supporting various project requirements across residential, commercial, and institutional developments.

- **Fenesta Building Systems,** a part of the DCM Shriram Group, operates in the windows and doors segment in India. The company focuses on the design, manufacture, installation, and service of uPVC and aluminium windows and doors. With manufacturing units and a retail presence in over 350 cities, Fenesta provides end-to-end solutions for residential, commercial, and institutional spaces. It manages in-house R&D, extrusion, and fabrication, and follows a customer-focused approach to deliver its products and services.

- **Yes Systems** offers integrated solutions covering the design, manufacturing, supply, and installation of ultra-luxury fenestration solutions. The company under its brand name "ORIA Fenestration" serves high-end individual residences and ultra-luxury residential complexes.

GWS has the highest contribution from exports, with **46.9% of its revenue in FY'25** coming from international markets when compared to peers* This indicates a balanced revenue mix between domestic and overseas projects.

The leading façade and fenestration firms are all actively translating strategic ambitions into tangible initiatives such as expanding capacity, enhancing technological capabilities, and embedding sustainability as a core differentiator.
*Peers include Innovators, Alufit, Mero Asia, Durall Systems, Yes Systems and Fenesta

Table 8-3: Recent developments and Future plans

Player Names	Sustainability & Innovation	Recent Developments	Future Plans
Alufit	3.5 Mn safe man-hours; strong HSE focus	In 2024, Alufit established a new plant in Bengaluru	Plans to double revenue via Joint Venture to INR 10 Bn in 3 to 4 yrs focusing primarily on green buildings
GWS	By targeting Scope 2 carbon neutrality by 2027, the company sets a benchmark in sustainability, reflecting its strong commitment to environmental responsibility as displayed in its "Prestige Techforest Project".	GWS has the lowest embodied carbon in our façade products and their façade products are among the group of 120 players globally to have received the Dow Quality Bond Members certification.	Focussing on sustainable facade tech. They are also expanding Vile Bhagad Facility over an additional area of 18,211 sq. mt.
Innovators	Deliver innovative building envelope solutions such as modular cleanroom partitions, panels, and metal doors aiming for global recognition	The company posted sales of INR 2,213.74 Mn (up from INR 2,151.09 Mn) reflecting steady growth and profitability.	Continued focus on sustainability and innovation in façade technology
Mero Asia	Maintains ISO approved integrated management system	NA	Continued focus on conscious material sourcing
Durall Systems	Expertise in customized Aluminum and Glass architectural solutions, partnership with European players to design exclusive architectural products	NA	NA
Fenesta	Focus on energy-efficient uPVC and aluminium systems that improve insulation.	Expanded uPVC extrusion capacity at Kota plant by over 40%, from 8,600 to 12,284 MT/year	Plans include geographic expansion into new territories and broadening its product suite with façade systems and aluminium lines.
Yes Systems	Fabrication and installation of high-end ultra luxury fenestration systems globally.	Engineered window system to cater to the ultra-luxury real estate commercial sector of the industry, being exclusive fabricators for high end luxury systems. Grew multiple exclusive partnerships from France, Spain and Turkey in recent months.	Intends to strengthen its product presence in the rapidly expanding ultra-luxury residential complexes by providing high-end fenestration solutions, while simultaneously addressing the growing demand from premium individual residences.

Source: Companies' Websites, Annual Reports, Proprietary Databases, Financial Reports, Ken Research Analysis
Note 1: NA refer to Not Available
Note 2: Indexed on the basis of revenue in FY'24 & FY'25

Note 3: HSE refers to Health, Safety, and Environment.

Leading players in the façade and fenestration industry have differentiated themselves through technological advancement, sustainability practices, and execution capabilities, their strategic focus remains largely centered on high-value urban projects.
This competitive positioning underscores the growing importance of innovation, compliance, and operational scale in shaping market leadership.

As industry continues to evolve, these dynamics are expected to play a critical role in defining future growth opportunities and challenges.

9. Challenges and Issues

Here are 3 India-specific, supply-side challenges in the façade and fenestration market,

- **Low Budget Allocation by Developers**: Allocating only ~15.0% of total project (especially in Tier 2 & 3 cities) cost to façade and fenestration systems results in widespread use of low-cost, substandard materials, especially in mid-segment residential projects.

- **Façade System Costs have increased ~14% over 5 Years:** Average system costs rose from **INR 1,200–1,500 per sqm in 2020** to **INR 1,350–1,725 per sqm in CY'25**, primarily due to inflation in **aluminum and float-glass prices**. Suppliers face margin pressure, while developers are forced to rework specifications.

- **Long Gestation Periods due to onsite fabrication:** Custom stick façade systems in India require **6–12 months** for completion due to labor-dependent **onsite assembly** and delays in design finalization. Prolonged project timelines affect inventory planning and increase working capital burden for contractors.

10. Way Forward

The global façade Total Addressable Market (TAM) is projected to reach USD 11.9 Bn over the same period, underscoring significant revenue-generation opportunities for the Indian Façade players.

Global Façade and Fenestration markets are poised for targeted expansion across both mature and emerging regions, fueled by evolving regulatory frameworks, stringent sustainability mandates and rising demand for high-performance envelope solutions:

- **United States:** Accelerated retrofit activity in aging commercial cores, particularly New York, Chicago and San Francisco have high-margin opportunities exist in unitized curtain-wall upgrades, LEED-compliant glazing retrofits and integrated smart-façade installations.

- **Australia:** Net-zero building targets and stringent façade performance standards in Sydney and Melbourne are driving uptake of solar-integrated, ventilated cladding and high-insulation systems.

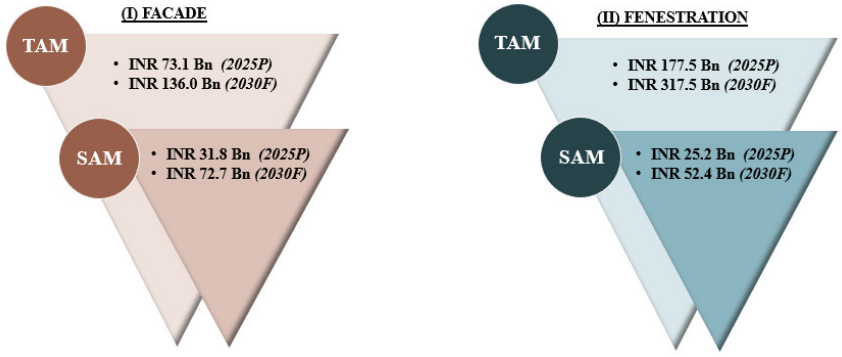
- **Canada:** Extreme climate variability and recent updates to the National Building Code are underpinning demand for airtight, high-insulation envelope systems in Toronto and Vancouver's high-rise residential and mixed-use sectors.
- **EU5 (Germany, France, Italy, Spain, UK):** Advanced ventilated façades, fire-compliant cladding and BIPV technologies are gaining ground, while high aesthetic and safety requirements in civic and institutional projects sustain consistent demand across both green-field and adaptive-reuse segments.

- **India:** Indian Façade and Fenestration market has an opportunity size of ~INR 453.0 Bn by FY'30F witnessing strong growth, driven by urban expansion, premiumization, and a shift toward energy-efficient building solutions.

The Total Addressable Market (TAM) in India is estimated at ~INR 250.0 Bn in FY'25P, projected to reach ~INR 453.0 Bn by FY30F, supported by strong demand across commercial, residential, and institutional segments.

The Serviceable Addressable Market (SAM) is expected to grow from ~INR 57.0 Bn in FY'25P to ~INR 125.0 Bn by FY'30F, reflecting the increasing adoption of premium fenestration systems, aluminum/glass façades, and government-led green building initiatives. With tier-1 cities leading adoption and tier-2/3 cities showing strong momentum, India represents a high-potential growth corridor for both standardized and customized façade solutions.

Figure 9-1: Target Market Opportunity in India Façade and Fenestration Market, FY'25P & FY'30F



Source: Ken Research Analysis
TAM: Target addressable market; SAM: Serviceable addressable market
TAM for Façade includes Revenue generated from the penetration of façade in the overall construction market (incl. Residential, commercial and infrastructural) from both organized and unorganized market while TAM in Fenestration includes revenue generated from the residential market.
SAM for Façade includes Revenue generated from Commercial, Residential, Public Infrastructure and Mixed-Use Margin in Tier 1 cities and for Fenestration includes India Premium to Ultra Luxury Residential Fenestration Market Size.

India's façade and fenestration market is poised for growth, driven by *government-led infrastructure, smart city initiatives, and real estate expansion*.

Future key projects include:

- **Smart Cities Mission Expansion (CY'25–30)**: **Project Scope**: The Smart Cities Mission, with INR 480.0 Bn. allocated, aims to develop 100 smart cities, with 30 cities like Bhubaneswar, Surat, and Indore prioritizing sustainable urban infrastructure by CY'30.

- **Industrial and Logistics Corridors**
  - ✓ **Delhi-Mumbai Industrial Corridor (CY'25–32)**: Spanning 1,500 km, this INR 1200 Bn. project includes logistics hubs and warehouses requiring 15 Mn sq. m of façade materials by CY'32.
  - ✓ **Chennai-Bengaluru Industrial Corridor (CY'25–30)**: Targeting 100,000 new industrial units, this project will drive demand for durable façade solutions.

- **Luxury Real Estate Developments**

- ✓ **Mumbai's Worli and Bandra Redevelopment (CY'25–30)**: High-end residential projects like Lodha World Towers and Oberoi Skyz will require 1.5 Mn sq. m of luxury fenestration by CY'30.
- ✓ **Bengaluru's Prestige and Embassy Projects (CY'25–28)**: Luxury villas and commercial complexes in Whitefield and Hebbal will demand smart glazing and Jali-inspired designs.

Numerous upcoming projects globally and in India will propel the façade and fenestration industry's growth through CY'30, driven by strategic investments.