Mordor Intelligence

Date: 11th August 2025

Custom Report

INDIA SCAFFOLDING AND LADDERS MARKET

Base Year: **2024**

Study Period: **2019 - 2030**

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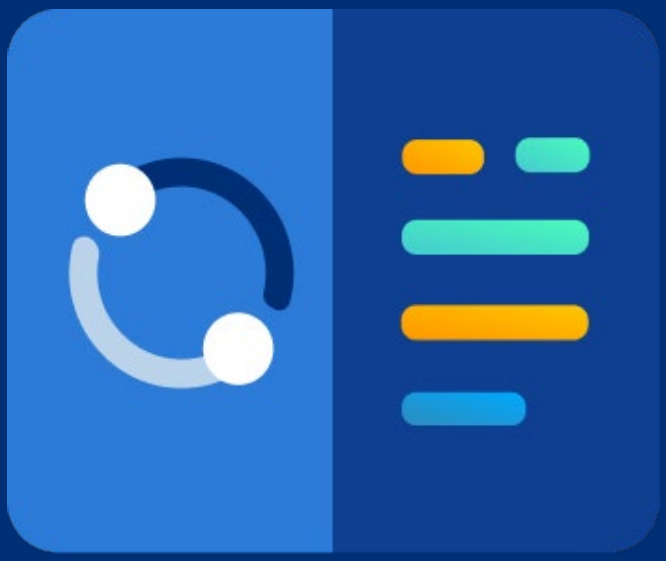


1.1 STUDY ASSUMPTIONS AND MARKET DEFINITION

BASE CURRENCY

The base currency considered for the market is the Indian Rupee (INR). The conversion of other currencies to INR is considered based on the average exchange rate for the respective review period. The exchange rate conversion for the forecast period is determined according to the base year's conversion rates.

BASE YEAR, REVIEW, AND FORECAST PERIOD

The base year is identified based on the annual reports and secondary information availability. The base year considered for this study is 2024. The review period considered for this study is from 2019 to 2030. The CAGR considered is for the forecast period of 2024-2030.

FORECAST TERMS

The market-size estimations for the forecast years are in real terms. Nominal values are only considered. Inflation is not to be considered.

PRIMARY RESEARCH

The distribution of the primary interviews conducted is based on the regional share of the market and the presence of key players in each of the demographics pertaining to the market studied.

MARKET DEFINITION

Note: : Company revenues are mentioned as per the fiscal year in the Headquarters (HQ) of the companies, and currency conversion is as per the account closure date of the companies.

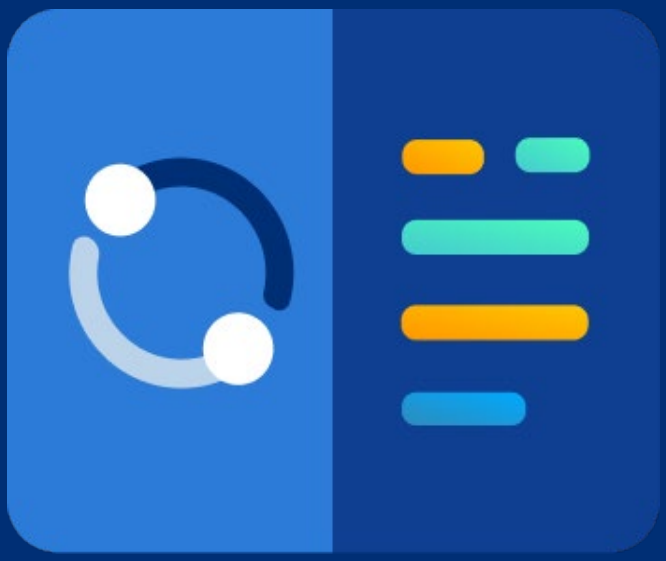
MARKET	The scaffolding and ladders market involves producing, distributing, renting, and selling temporary structures and climbing tools. These tools support construction, maintenance, and repair tasks in residential, commercial, and industrial sectors. The market offers a variety of products, including aluminum, steel, and fiberglass scaffolds and ladders, all crafted to prioritize worker safety, accessibility, and efficiency at heights.
GEOGRAPHY	India

1.2 SCOPE OF THE STUDY

TYPES OF SCAFFOLDING AND LADDERS

- ALUMINUM AND STEEL HANGING SCAFFOLDING
- STEEL SCAFFOLDING
- ALUMINUM SCAFFOLDING
- FIBER REINFORCED POLYMER (FRP) LADDERS
- ALUMINUM LADDERS
- ALUMINUM STAIRWAY TOWERS

2 RESEARCH METHODOLOGY



2.1 Research Framework
2.2 Secondary Research
2.3 Primary Research
2.4 Data Triangulation and Insight Generation

2.1 RESEARCH FRAMEWORK

- Mordor Intelligence (MI) advocates an appropriate mix of secondary and primary research to meet client objectives.
- MI translates market insights (market dynamics, competition, varying consumer demands, and regulations) into actionable business insights.
- The following phases are practiced at Mordor Intelligence for efficient delivery of various syndicated and consulting assignments.

STEP 1
SCOPING/PROJECT INITIATION

- Decipher client requirements/market to be studied
- Tailor-made research approach for customized reports
- Effective use of Mordor's knowledge repository to gather relevant insights
- Confirm the objectives of the assignment with the client

STEP 2
MARKET ANALYSIS

- Extensive desk research to identify most relevant secondary information available
- Contact Mordor's empaneled experts and identify industry experts across the market
- Conduct primary research and surveys to gather qualitative and quantitative insights

STEP 3
PROJECT DELIVERY

- Triangulate and analyze data to finalize on actionable business insights
- Finalize report content and establish a deliverable format
- Report delivery with high-quality market insights, competitive landscape, etc.. As per the proposed content

2.2 SECONDARY RESEARCH

OBJECTIVE | **Hypothesis and insight building to get factual data**

Shortlisting market intelligence sources
Synthesis of published information

Data collection and aggregation
Further validated from expert interviews

Insight and hypothesis development
To reach out to industry experts for interviews

Key contact list
Relevance and credibility of sources

A thorough synthesis of existing publications across the web to gather meaningful insights on the current situation of the market, technology developments, and any other market-related information. The sources include, but are not limited to:

- Scientific papers, journals, and publications.
- Trade information to understand imports, exports, and the average traded price of the commodity, if available.
- Industry and government websites for blogs, magazines, and other publications.
- Conference proceedings and association publications.
- Investor presentations, technical brochures, annual reports, press releases, transcripts of key personnel interviews, and other strategic publications by several competitors in the market.
- Product information, including technical specifications, approvals, patents, etc.
- Public sources and reports
- Paid sources (Questel Orbit, Dow Jones, D&B Hoovers, and industry-specific subscriptions).

SECONDARY RESEARCH | KEY SOURCES USED IN THIS REPORT

- World Bank
- UNSTATS
- IMF
- Global Economic Monitor
- World Input-Output Database (WIOD)
- United Nations International Trade Statistics Database (COMTRADE)
- TRADEMAP
- WTO
- World Intellectual Property Organization/European Patent Office (WIPO/EPO)
- Organization for Economic Co-operation and Development (OECD)
- D&B Hoovers
- Factiva
- Statista
- Questel
- Orbit
- LinkedIn Premium
- Rocketreach
- Lusha
- Industry Associations
- India Brand Equity Foundation
- Ministry of Commerce and Industry
- Ministry of Housing and Urban Affairs
- Press Information Bureau (PIB)
- Ministry of Road Transport and Highways (MoRTH)
- National Highways Authority of India (NHAI)
- Ministry of Ports, Shipping and Waterways
- National Buildings Construction Corporation (NBCC)
- Central Public Works Department (CPWD)
- Rural Development Ministry (PMGSY - Rural Roads Program)

Source: Mordor Intelligence

2.3 PRIMARY RESEARCH

EXECUTIVE LEVEL INTERVIEWS

CEOs, COOs, CFOs, Managing Directors, and Vice Presidents or Directors of Strategy, Business Development, Procurement, Supply Chain, Sales, Marketing, and Operations and Other Corporate Functions as Required

OPERATIONAL LEVEL INTERVIEWS

Project Managers, Site Engineers, Construction Managers, Procurement Managers, Supply Chain Managers, Surveyors and Estimators, Cost Engineers, Sales Managers, Regional or Area Managers, and Technical Application Engineers

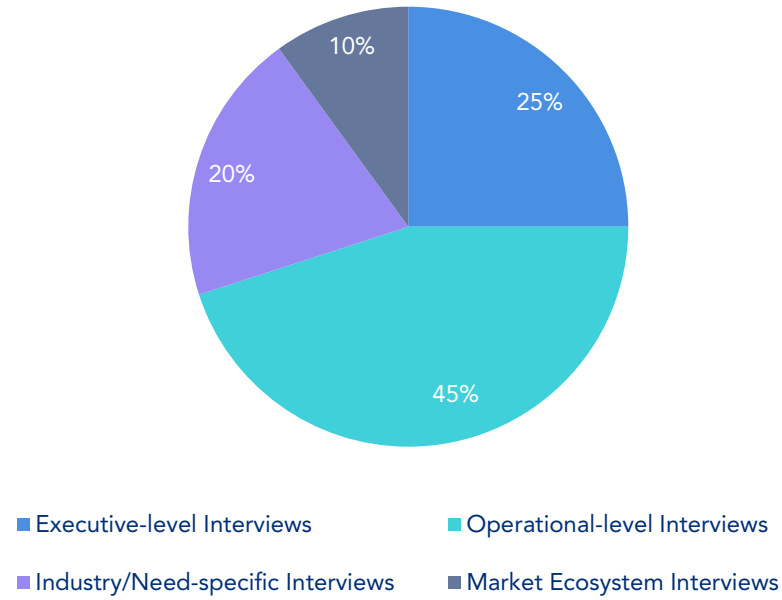
INDUSTRY/NEED SPECIFIC INTERVIEWS

Architects, Urban Planners, Structural Engineers, BIM Coordinators, Specification Managers, Sustainability and Green Building Experts, Materials Testing and Quality Control Heads, and Facility Managers.

MARKET ECOSYSTEM INTERVIEWS

General Contractors, Subcontractors, Developers, Building Materials Distributors and Dealers, Retailers, Raw Material Suppliers, Regulatory Bodies, Industry Associations, Consultants, Quantity Surveying Firms, and Certification Bodies

SPREAD OF INTERVIEWS BY LEVEL



Number of industry interviews: 5-10

INPUTS COLLECTED

- Raw data and intelligence
- Insights into market dynamics
- Market model and other data validations
- Strategy-related inputs

2.4 DATA TRIANGULATION AND INSIGHT GENERATION

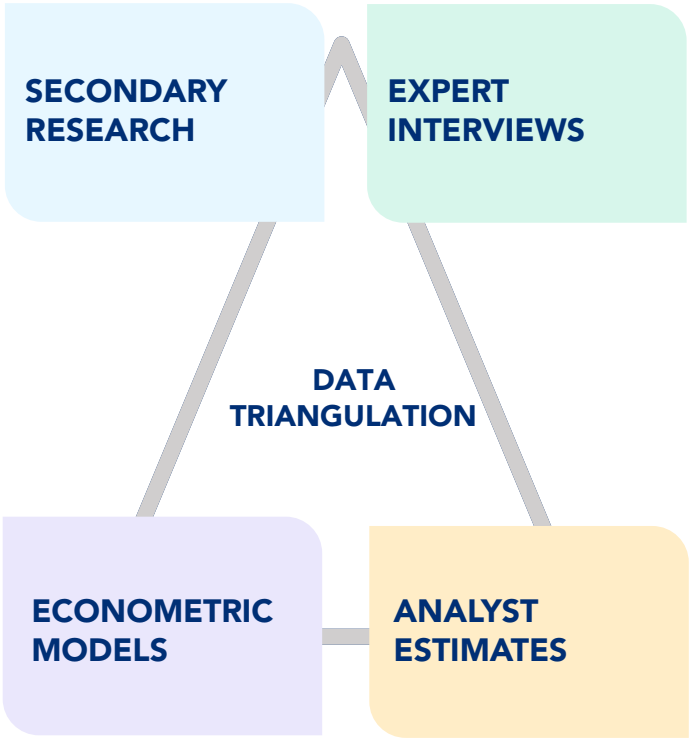
OBJECTIVE Logical checks and sanity of information

TRIANGULATION AND TRANSFORMATION OF INFORMATION EXTRACTED

Based on the factors identified that are endogenous and exogenous in nature and collected during the secondary and primary phases, our in-house subject-matter experts transform quantitative data extraction and use them for inferential purposes.

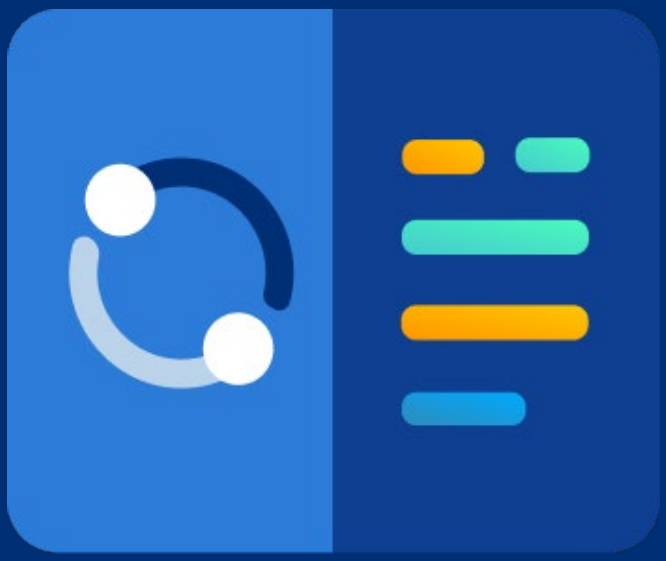
VALIDATION FOR MARKET ASSESSMENT ESTIMATES

- Market size estimations are carried out through 'bottom-up' and 'top-down' approaches.
- Our top-down and bottom-up approaches are integrated into our 'In-house Model sheets,' which are used to generate market estimates and growth rates (depending upon the historical trends of the respective markets, along with the various factors like drivers, restraints, and recent developments in the market) of the product segment in the respective country.



Source: Mordor Intelligence

3. EXECUTIVE SUMMARY



3. EXECUTIVE SUMMARY

Snapshot of the Global and Indian Market Landscape

- ✓ China, the U.S., and India are leading the global construction sector, poised for growth, driven by infrastructure investments that prioritize green energy and digital transformation. By 2026, global construction output is set to rebound, with infrastructure and civil engineering projects anticipated to grow by 4-5%.
- ✓ The Asia-Pacific region, led by India, is witnessing robust growth, bolstered by rapid urbanization, extensive infrastructure projects, and a thriving private sector. In Q1 FY 2025-26, India secured its position as a top-10 global destination for cross-border capital in land and development.
- ✓ In India, government initiatives like the National Infrastructure Pipeline (NIP) and PM Gati Shakti are propelling the ladder and scaffolding market. These initiatives aim to invest over INR 143 lakh crore (USD 1,711 billion) by 2030 across sectors including transport, logistics, housing, and energy.
- ✓ The FY 2025-26 interim budget allocated INR 11,210 billion (USD 134.5 billion) for infrastructure, with notable boosts for the Road Transport and Highways Ministry and National Highways Authority of India (NHAI). Initiatives like Pradhan Mantri Awas Yojana (PMAY-U & G) are spurring residential construction, especially in Tier-II and III cities. Additionally, sectors like commercial real estate, industrial, warehousing, and logistics are witnessing significant investments and developments.

Major Findings and Actionable Insights

- ➢ Transition to Advanced Systems: The industry is moving away from traditional bamboo and basic mild steel pipes, embracing advanced, safety-certified systems like cup lock, ring lock, and aluminum stairway towers. This shift is largely influenced by compliance standards such as EN 12811, EN 131, ANSI, and OSHA, especially among private developers and Engineering, Procurement, and Construction (EPC) contractors.
- ➢ Aluminum Scaffolding on the Rise: Aluminum scaffolding is becoming increasingly popular due to its lightweight nature (up to 50% lighter than steel), ease of transportation, rapid assembly (a 10 m aluminum tower can be set up in 15-20 minutes), corrosion resistance, and extended lifespan (20-50 years). Its alignment with India's "6-R philosophy" for circular economy principles further cements its status as a preferred sustainable material.
- ➢ Rental Model Gains Traction: Organized rental networks are expanding, providing cost-effective and flexible solutions, particularly benefiting Micro, Small, and Medium Enterprises (MSMEs) and Tier-II contractors with short-term project needs. This model alleviates businesses from hefty upfront costs, maintenance, and storage challenges. Organized players are increasingly capturing market share from unorganized fabricators, thanks to their quicker service, safety compliance, and meticulous documentation.
- ➢ Strategic Asset Acquisition: Large-scale Engineering, Procurement, and Construction (EPC) firms, engaged in projects like the Mumbai Coastal Road and Delhi-Meerut Expressway, are opting for outright purchases of aluminum stairway towers. This strategy ensures asset availability and removes rental dependencies during crucial multi-year project phases.

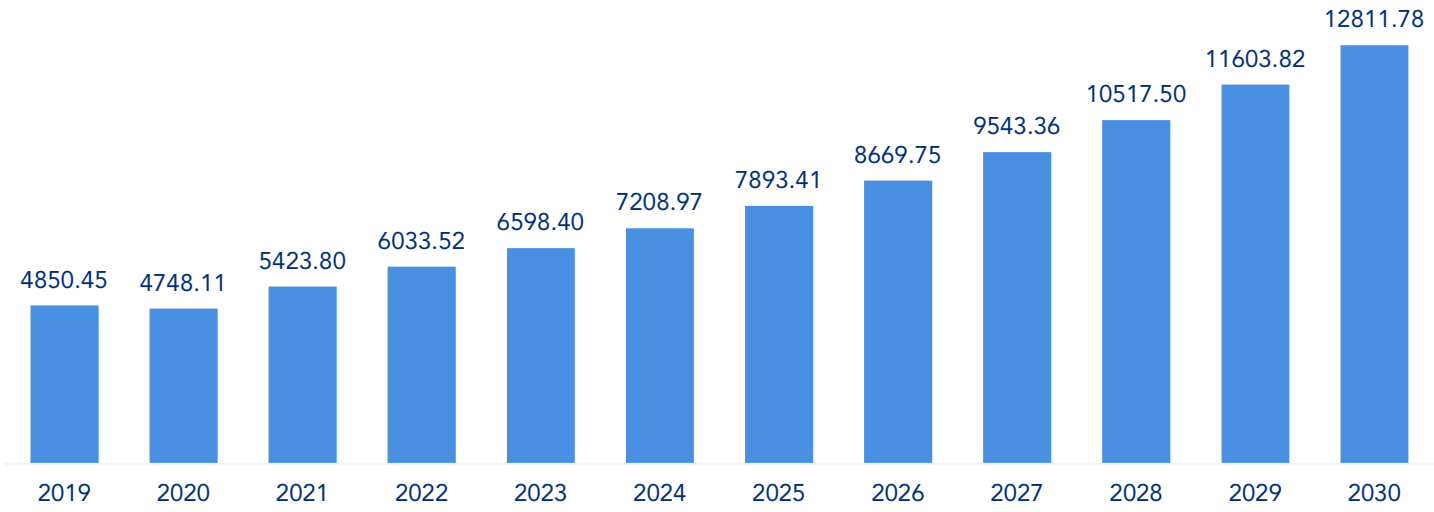
Source: Indian Standards (BIS/ISI), Government Safety Guidelines (e.g. CPWD), Manufacturer Specifications, and Expert Interviews

3. EXECUTIVE SUMMARY

- Embracing Technology: Digital tools like Building Information Modeling (BIM), digital twins, Artificial Intelligence (AI), prefabrication, and robotics are transforming project delivery, speeding up timelines, managing costs, and boosting labor efficiency. Innovations like smart scaffolding, equipped with real-time monitoring sensors, are elevating worksite safety and optimizing inventory management.
- Industrial Demand for Mobile Scaffolding: Sectors such as refineries, chemical plants, and pharmaceutical plants are increasingly turning to mobile scaffolding for timely maintenance, inspections, and upgrades. Notably, aluminum towers are emerging as a lucrative sub-segment, promising substantial rental income.

INDIA SCAFFOLDING MARKET, VALUE IN INR CRORES, 2019-2030

CAGR (2024 - 2030): 10.06%



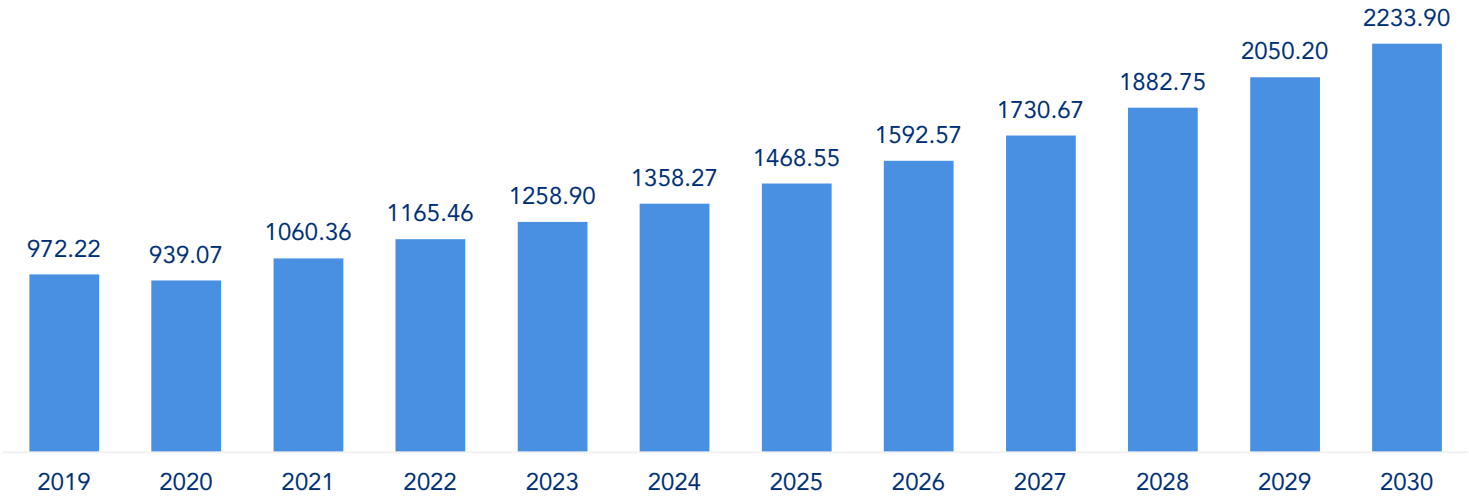
The India Scaffolding Market studied was valued at INR 7208.97 crores in 2024 and is expected to reach INR 12811.78 crores in 2030, registering a CAGR of 10.06% for the forecast period (2024-2030).

Source: Indian Standards (BIS/ISI), Government Safety Guidelines (e.g. CPWD), Manufacturer Specifications, and Expert Interviews

3. EXECUTIVE SUMMARY

INDIA LADDERS MARKET, VALUE IN INR CRORES, 2019-2030

CAGR (2024 - 2030): 8.65%



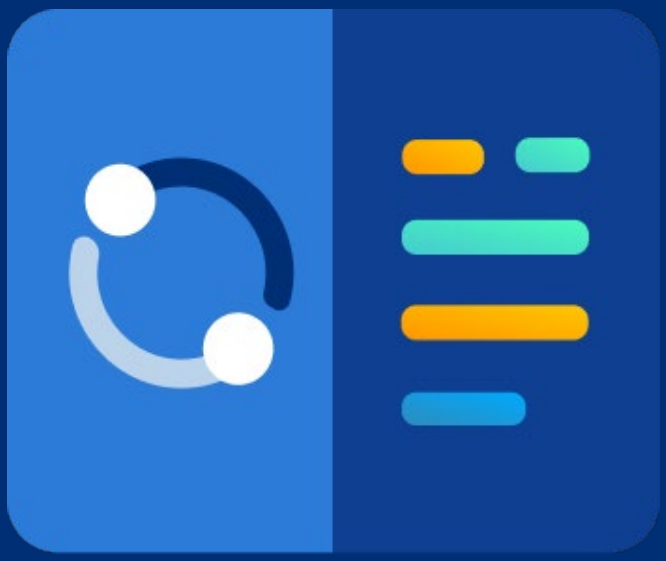
The India Ladders Market studied was valued at INR 1,358.27 crores in 2024 and is expected to reach INR 2,233.90 crores in 2030, registering a CAGR of 8.65% for the forecast period (2024-2030).

Key Challenges and Risks in the Industry

- Raw Material Price Volatility: Global commodity market fluctuations and rising energy costs are causing significant swings in aluminum prices, directly affecting fabricators' input costs.
- Financial Constraints for Mid-Sized Builders: Builders in Tier 2 cities grapple with the high costs of standard aluminum tower sets (over INR 1 lakh or USD 1,200). This financial strain often pushes them towards rentals or lower-grade steel towers, as they navigate capital expenditures and associated costs like maintenance, storage, and compliance inspections.
- Seasonal Challenges in Rental Markets: Regions like Kerala and Maharashtra witness a dip in the construction equipment rental market during the monsoon season (June–September). This seasonal challenge results in utilization rates plummeting below 40%, exerting pressure on profitability.

Source: Indian Standards (BIS/ISI), Government Safety Guidelines (e.g. CPWD), Manufacturer Specifications, and Expert Interviews

4. GLOBAL ECONOMIC SCENARIO



4. GLOBAL AND INDIA ECONOMIC SCENARIO

GLOBAL ECONOMIC OUTLOOK - SNAPSHOT

Geopolitical Tensions and Economic Uncertainties Shape Global Outlook

- The global economic landscape is experiencing rapid changes amid significant geopolitical uncertainties. The intensification of military conflicts in West Asia, specifically between Israel, Iran, and the United States, has amplified international tensions.
- This conflict generated concerns regarding maritime economic activities in the Strait of Hormuz, a vital passage in the Persian Gulf that channels approximately 20% of global oil and liquefied natural gas transportation. Market fears of a broader conflict and potential Iranian blockade of the strait drove Brent crude futures up by nearly 20% month-over-month.
- Subsequently, a ceasefire announcement led to oil prices falling to USD 67 per barrel on 24 June 2025, negating previous increases. Though immediate blockade concerns have diminished, the sustainability of peace remains uncertain.
- The persistent impact of trade and tariff restrictions on the global economic outlook has prompted the World Bank to lower its growth projections. According to the World Bank's Global Economic Prospects - June 2025, global gross domestic product (GDP) growth is projected at 2.3% for 2025 and 2.4% for 2026, reduced from its January 2025 forecasts of 2.7 % for both years. The organization anticipates global trade growth to decline from 3.4% in 2024 to 1.8% in 2025, with the 2025 projection adjusted downward by 0.4 percentage points compared to January 2025.

Global Inflation Trends and Projections

- Global headline consumer price inflation has remained elevated above pre-pandemic levels throughout 2024, with a slight increase in some advanced economies in early 2025. The persistent tightness in labor markets has maintained core inflation at elevated levels across numerous economies. In Emerging Markets and Developing Economies (EMDEs), headline inflation showed volatility in early 2025, while core inflation increased due to rising services prices and wage pressures. The global inflation outlook has become more uncertain since 2024 due to multiple economic shocks.
- The implementation of substantial tariff increases is expected to drive up consumer inflation in key economies through higher prices for imported consumer goods and production inputs. This situation is further complicated by the redirection of demand toward domestic production, which shows limited elasticity in the short term. Short-term inflation expectations have increased in 2025, particularly in major economies, reflecting the anticipated impact of tariff hikes on consumer prices, despite trade tensions negatively affecting economic activity and commodity prices.

Inflation Expectations and Future Projections

- The combination of underlying inflationary pressures and the effects of rising tariffs and trade protectionist measures is expected to slow the normalization of global inflation toward target levels. Global inflation, on a GDP-weighted basis, is projected to maintain an average of 2.9 percent in both 2025 and 2026, before decreasing to 2.5 percent in 2027, aligning with the average inflation target. However, inflation projections vary significantly across regions. EMDEs are expected to experience slightly lower inflation in 2025 due to weakened demand for traded goods, while advanced economies, particularly the United States, face significantly higher inflation projections.

Note: Currency conversion to USD is based on OANDA exchange rates as of December 31, 2024.

4. GLOBAL AND INDIA ECONOMIC SCENARIO

GLOBAL ECONOMIC OUTLOOK - SNAPSHOT

Tighter Global Financial Conditions Amid Market Volatility

- Global financial conditions have tightened in 2024 compared to the previous year, driven by financial market volatility and reduced risk appetite due to trade policy uncertainty. The fluctuation in trade tensions during the second quarter caused significant financial market turbulence, affecting core government bond markets. Global equity markets experienced a sharp decline in early April, followed by a recovery after the postponement and partial rollback of tariffs between the United States and China. Risk premiums in U.S. equity and corporate credit markets have increased from their previous low levels, as measured by cyclically adjusted equity earnings relative to risk-free rates and high-yield spreads.

Divergent Monetary Policy Approaches in Advanced Economies

- The United States maintains a restrictive monetary policy stance, with unchanged policy rates and expectations of gradual decline, despite projected growth slowdown. The Federal Reserve emphasizes the importance of managing near-term inflationary pressures and maintaining anchored long-term inflation expectations. Concurrently, the euro area has implemented policy rate reductions since January, with additional cuts expected by year-end, though long-term yields have increased due to earlier fiscal announcements.

EMDE Financial Markets: Response to Global Changes

- Emerging Market and Developing Economies (EMDEs) have experienced tighter financial conditions compared to late 2023. The implementation of tariff announcements in April led to immediate market reactions: portfolio outflows occurred, EMDE equity markets declined broadly, and sovereign spreads increased, particularly in economies facing higher prospective trade barriers. However, these effects proved temporary, with markets stabilizing after tariff pause announcements. Most EMDE currencies have strengthened against the U.S. dollar since the year's beginning, except in economies with existing domestic vulnerabilities.

EMDE Policy Adaptation and Risk Management

- In response to global changes, EMDE monetary policy has become more cautious. Central banks have adopted either easing measures or maintained current policy rates while assessing the impact of trade barriers, uncertainty, and investor sentiment on inflation and growth. Higher policy rates may persist to prevent potential capital outflows and currency depreciation from renewed trade tensions. This situation presents particular challenges for EMDEs with weak credit ratings and substantial debt-refinancing requirements, especially given their increased external debt and elevated levels of foreign-currency-denominated government debt.

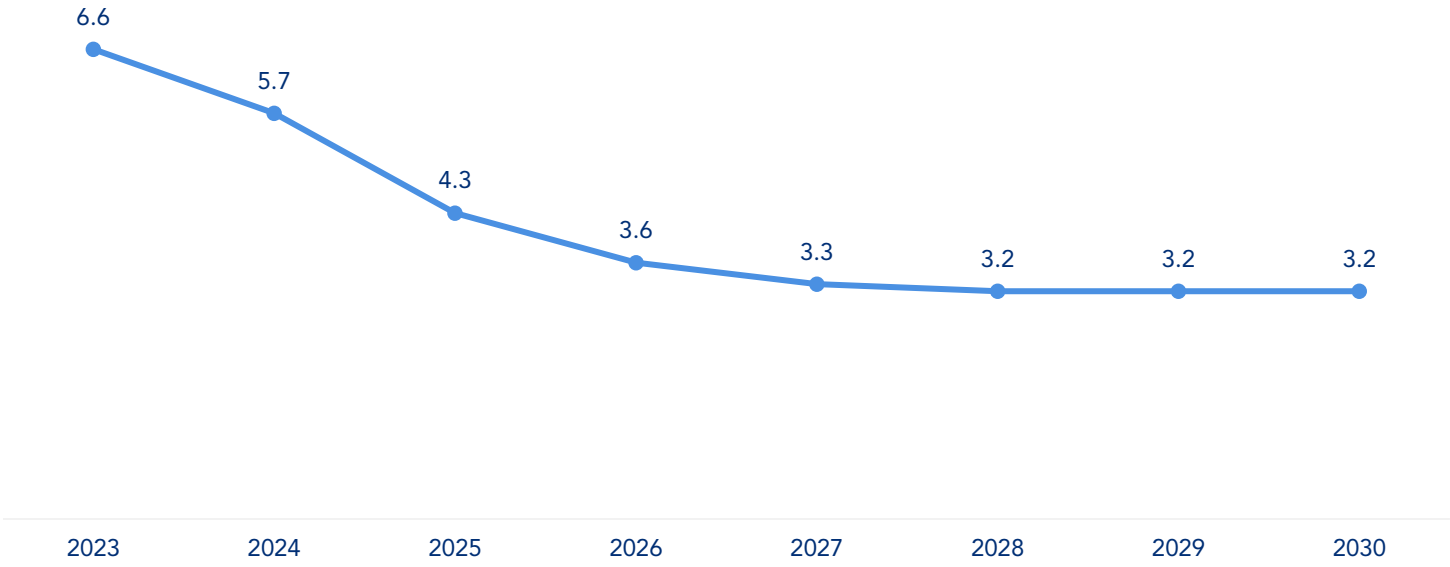
Global Financial Outlook and Implications

- The current financial landscape reflects a complex interplay between global trade tensions, monetary policy decisions, and market responses. While advanced economies navigate divergent policy paths, EMDEs face unique challenges in maintaining financial stability. The combination of elevated debt levels, potential trade disruptions, and market volatility suggests a period of continued careful policy management will be necessary across all economies. Success will depend on balancing growth objectives with risk mitigation strategies while maintaining sufficient flexibility to respond to evolving global conditions.

Note: Currency conversion to USD is based on OANDA exchange rates as of December 31, 2024.

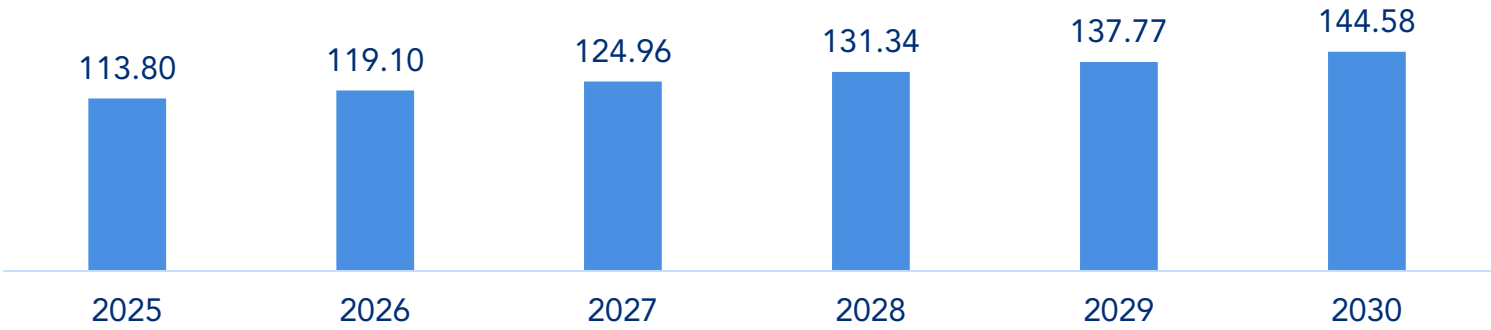
4. GLOBAL AND INDIA ECONOMIC SCENARIO

ESTIMATED GLOBAL INFLATION RATE, AVERAGE CONSUMER PRICES (ANNUAL PERCENT CHANGE), FROM 2023-2030



PROJECTED GLOBAL GDP, IN TRILLION USD, FROM 2025 TO 2030

(USD 1 = INR 83.67)



Source: International Monetary Fund (IMF)

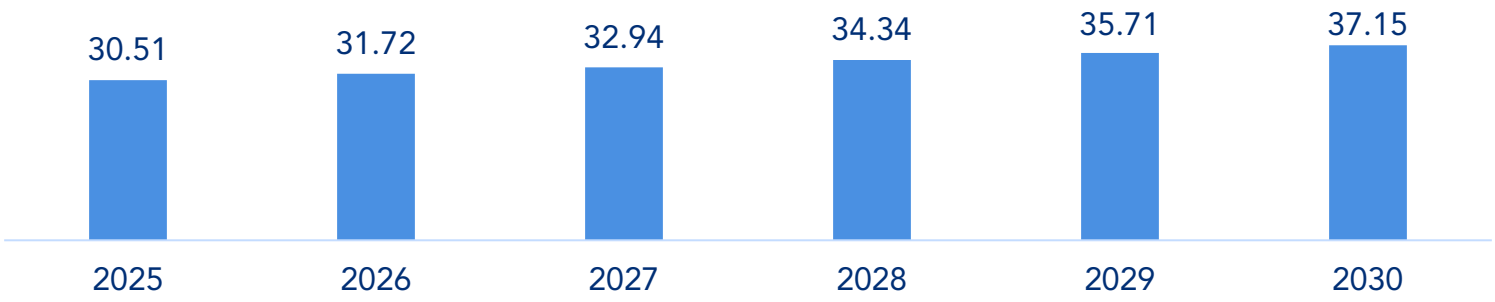
4. GLOBAL AND INDIA ECONOMIC SCENARIO

GDP TRENDS AND MACROECONOMIC OUTLOOK OF 4-5 MAJOR ECONOMIES

U.S. ECONOMY SHOWS RESILIENCE AMID OPTIMISTIC PRO-GROWTH SIGNALS

- The U.S. economy rebounded in Q2 2025, with real Gross Domestic Product (GDP) growing at ~3.0% annualized, following a 0.5% contraction in Q1. Strong investor and business activity highlighted resilient domestic demand despite volatile trade dynamics.
- The IMF revised U.S. growth forecasts to 1.9% in 2025 and 2.0% in 2026, citing reduced trade tensions, lower tariffs (24% to 17%), and fiscal stimulus, including tax reforms. Inflation remains slightly above target, but improved global financial conditions and a weaker dollar are easing costs and boosting exports.
- Corporate confidence is strong, particularly in the technology and Artificial Intelligence (AI) sectors. High valuation multiples, robust earnings, and optimistic investor sentiment are driving market momentum and long-term growth expectations.
- Consumer sentiment improved in July 2025, with fewer concerns about labor and business conditions. More consumers now expect interest rate cuts, reflecting optimism about monetary policy, as noted by Barron's.
- AI adoption and digital transformation are accelerating, with 7% of firms adopting these technologies by mid-2025. Growth is concentrated in knowledge-intensive sectors and large firms, enhancing productivity and innovation.
- Experts predict U.S. GDP growth could exceed projections if tariffs decline further and trade agreements advance. Falling inflation, Federal Reserve (Fed) rate normalization in late 2025, and increased business investment, alongside tech-driven productivity and infrastructure spending, support this outlook.

PROJECTED UNITED STATES GDP, IN TRILLION USD, FROM 2025 TO 2030
(USD 1 = INR 83.67)



4. GLOBAL AND INDIA ECONOMIC SCENARIO

GDP TRENDS AND MACROECONOMIC OUTLOOK OF 4-5 MAJOR ECONOMIES

CHINA'S ECONOMIC OUTLOOK: RESILIENCE AND GROWTH IN 2025

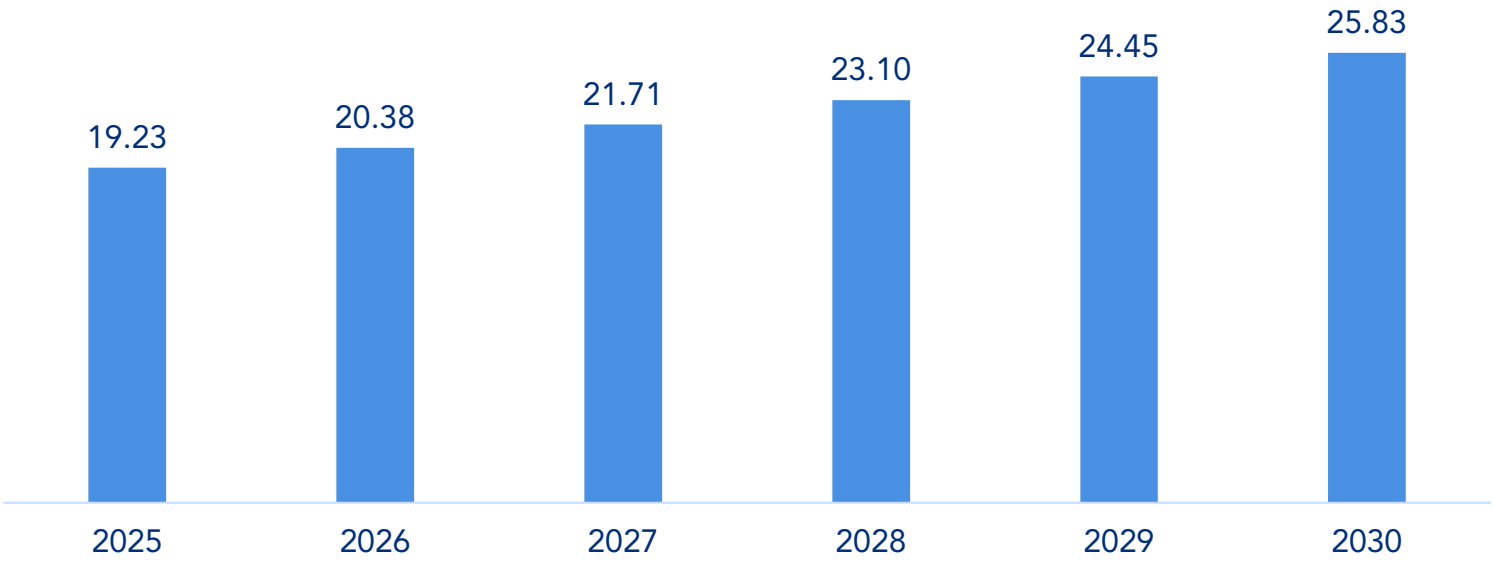
- China's economy is gaining momentum, driven by strong exports and strategic policy support. The International Monetary Fund (IMF) raised its 2025 GDP forecast for China to 4.8%, up 0.8 percentage points, citing robust first-half activity and easing U.S.–China tariff pressures.
- Official data shows China's economy grew 5.3% year-on-year in H1 2025, with Q1 at 5.4% and Q2 at 5.2%, surpassing expectations. Industrial output rose 6.4%, high-tech manufacturing surged 9.5%, and equipment manufacturing expanded 10.2%, reflecting industrial strength despite global challenges.
- Export diversification has been key. While U.S. shipments declined, June 2025 exports to the Association of Southeast Asian Nations (ASEAN) rose 16.8%, Africa 31.8%, and the EU 7.6%, highlighting China's ability to offset trade headwinds by tapping new markets in Asia, Africa, and Belt and Road economies.
- Beijing's fiscal and monetary measures, including rate cuts, local-government bond issuances, and targeted support for Small and Medium-sized Enterprises (SMEs) and high-tech sectors, stabilized activity, bridged employment gaps, and boosted export competitiveness, according to IMF analysts.
- Global banks echoed this optimism: Morgan Stanley matched the IMF's 4.8% forecast, while UBS, Nomura, and Goldman Sachs revised their estimates to 4.6–4.8%, citing resilient exports and improved macro liquidity.

GERMANY'S ECONOMIC RECOVERY OUTLOOK

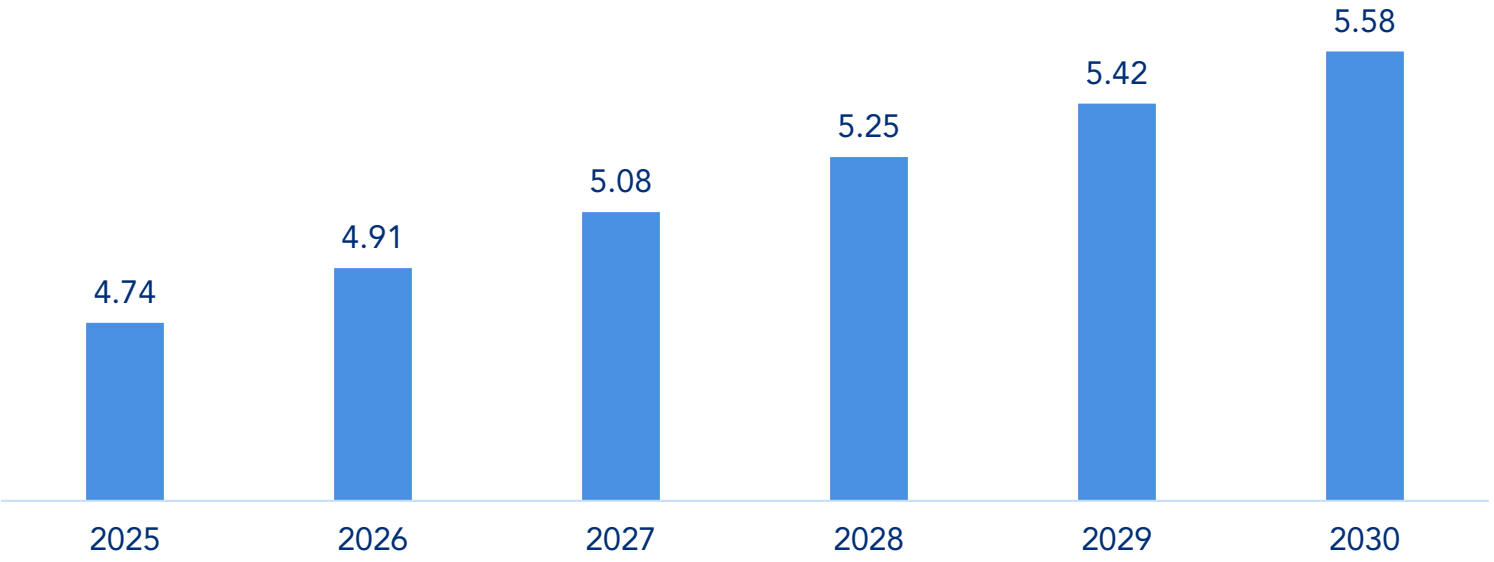
- Germany's economy, having faced two years of contraction, is set to rebound in 2025. The Ifo Institute has revised its forecast, predicting a modest 0.3% GDP growth in 2025, followed by a more robust 1.5% expansion in 2026. This upswing is largely attributed to a surge in government investments, particularly in infrastructure and defense, amounting to roughly EUR 10 billion (USD 10.41 billion) in 2025 and a significant EUR 57 billion (USD 59.36 billion) in 2026. Echoing this optimism, the Bundesbank projects growth rates of 0.7% in 2026 and 1.2% in 2027, indicating a sustained upward trajectory.
- Germany, after hitting the lowest point of its recession in 2024, rebounded with a 0.4% GDP growth in Q1 2025. This recovery was bolstered by a strategic front-loading of exports to the U.S. in anticipation of impending tariffs, coupled with a rise in private consumption and corporate investments. Business sentiment has seen a notable uplift, with the Ifo Business Climate Index climbing to 88.6 in July 2025—its highest in over a year. This surge in optimism is attributed to a return of fiscal clarity and a reduction in political uncertainties.

4. GLOBAL AND INDIA ECONOMIC SCENARIO

PROJECTED CHINA GDP, IN TRILLION USD, FROM 2025 TO 2030 (USD 1 = INR 83.67)



PROJECTED UNITED STATES GDP, IN TRILLION USD, FROM 2025 TO 2030 (USD 1 = INR 83.67)



Source: International Monetary Fund (IMF)

4. GLOBAL AND INDIA ECONOMIC SCENARIO

GDP TRENDS AND MACROECONOMIC OUTLOOK OF 4-5 MAJOR ECONOMIES

• UK ECONOMIC AND CONSTRUCTION OUTLOOK

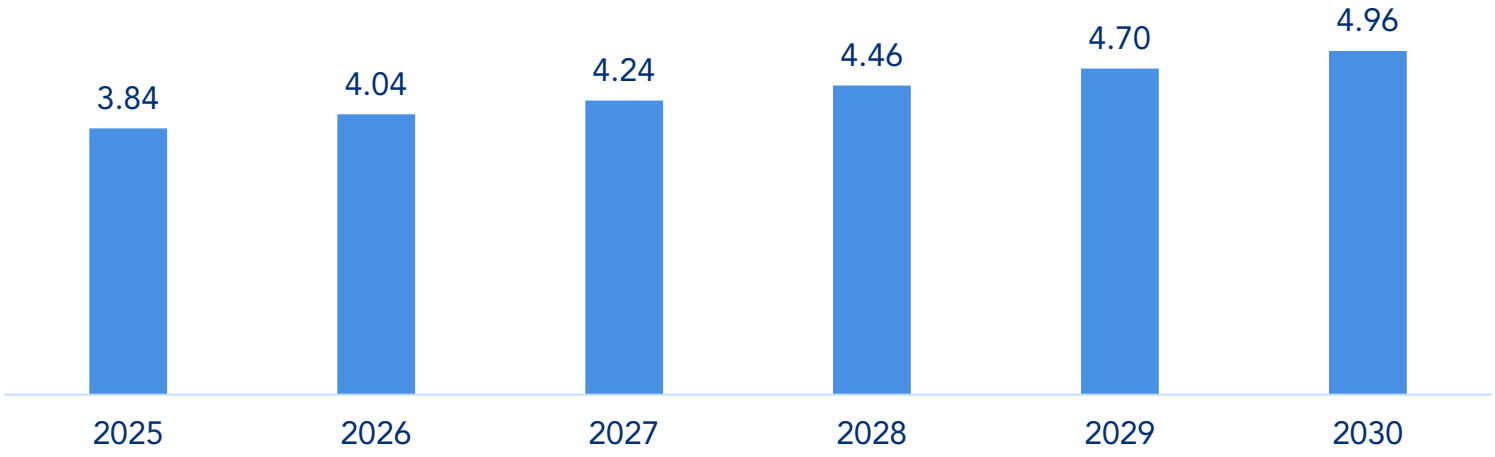
- Despite facing trade headwinds, the UK is showing signs of economic resilience. The International Monetary Fund (IMF) projects a growth rate of approximately 1.2% for 2025, positioning the UK as one of the fastest-growing economies within the G7.
- UK construction activity has been lackluster, contracting for the fourth consecutive month leading into mid-2025. However, the decline, especially in residential segments, has shown signs of softening. Civil and infrastructure projects are anticipated to be the first to stabilize, buoyed by government-backed investments from the Next Generation European Union (EU) plan and local stimulus announcements.
- For instance, in June 2025, the government pledged a substantial commitment of at least GBP 725 billion (USD 911 billion) towards economic and social infrastructure over the next decade. This move ensures that public infrastructure capital funding keeps pace with inflation, at least through the current Spending Review period.

JAPAN'S CONSTRUCTION SECTOR: CHALLENGES AND REGULATORY SHIFTS

- Japan's corporate capital expenditure remains modest, even though it experienced a slight dip in late 2024. The decline occurs amidst economic uncertainty and persistent labor challenges. Experts note that these issues affect the nation's industrial landscape, particularly in construction. The Ministry of Land, Infrastructure, Transport and Tourism (MLIT), along with industry associations, highlights a shrinking construction workforce. A significant concern is that a large portion of these workers is aged 55 and older, while younger replacements are becoming increasingly scarce.
- Japan's construction industry faces significant labor shortages, with the MLIT highlighting a shortfall of around 110,000 skilled workers. Alarmingly, more than a third of the existing workforce is aged 55 or older. To combat worker fatigue and improve conditions, new regulations introduced in April 2024 limit annual overtime to 360 hours. These regulations also require longer site shutdowns, leading to extended project timelines and increased costs. The consequences are clear: a drop in steel demand, slower site turnover, and a decrease in the total volume of projects.

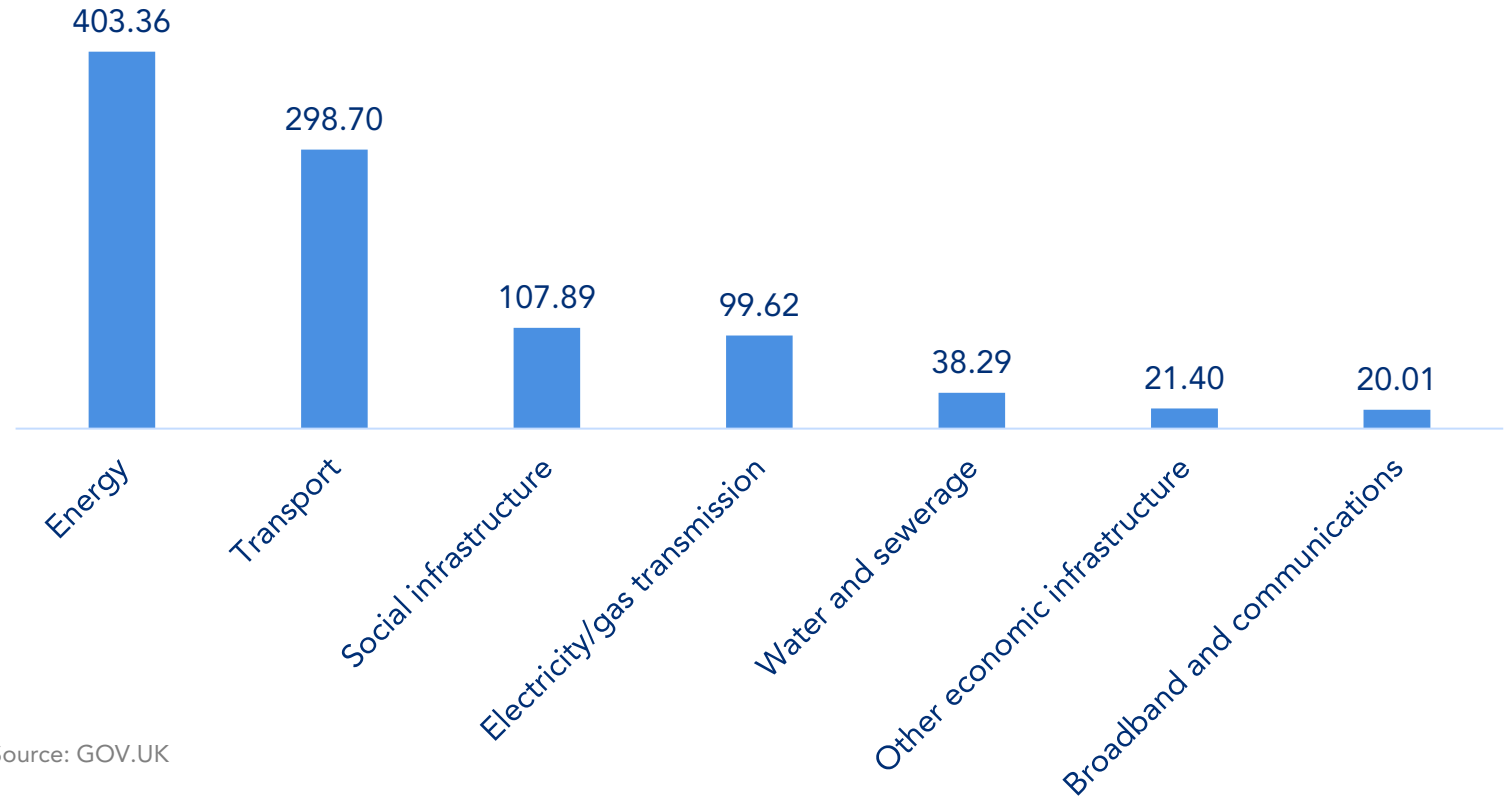
4. GLOBAL AND INDIA ECONOMIC SCENARIO

PROJECTED UNITED KINGDOM GDP, IN TRILLION USD, FROM 2025 TO 2030 (USD 1 = INR 83.67)



Source: IMF

VALUE OF PLANNED AND PROJECTED INVESTMENT IN NATIONAL INFRASTRUCTURE AND CONSTRUCTION PROJECTS FROM THE PUBLIC AND PRIVATE SECTORS IN THE UNITED KINGDOM (UK) FROM 2023/24 TO 2032/33, BY SECTOR, IN BILLION GBP



Source: GOV.UK

4. GLOBAL AND INDIA ECONOMIC SCENARIO

INDIAN ECONOMY - SNAPSHOT

- India's economic growth has been remarkable, positioning it as one of the fastest-growing major economies in the world. Currently ranked as the fourth-largest economy globally, India is expected to become the third-largest by the fiscal year 2030-31, with a projected GDP of USD 7.3 trillion.
- This advancement is the result of a decade of targeted governance, structural reforms, and strengthened global positioning. Robust domestic demand, favorable demographics, and consistent policy reforms have enabled India to expand its global footprint in trade, investment, and innovation.
- Over the last decade, India's GDP has grown significantly, increasing from USD 1.23 trillion in FY15 to an estimated USD 3.82 trillion in FY25, effectively tripling in ten years. In FY25, nominal GDP rose by 9.9%, while real GDP grew by 6.5%. Similar growth patterns are anticipated in FY26, indicating sustained economic momentum.
- This progress is supported by macroeconomic stability, a resilient external sector, a narrowing fiscal deficit, easing inflation, and strong consumption expenditure. Furthermore, improving employment opportunities and the government's emphasis on long-term structural reforms are expected to maintain this growth trajectory.
- India's export performance has also seen remarkable growth over the past decade, reflecting the increasing global demand and credibility of Indian products. Total exports rose from USD 468 billion in FY14 to USD 825 billion in FY25, marking a significant 76% increase.
- At the same time, India's share in global merchandise exports improved from 1.66% to 1.81%, elevating the country's global ranking from 20th to 17th. India's demographic transition, characterized by declining infant mortality rates and rising literacy levels, further enhances its competitive position.
- With more equitable income distribution, higher employment rates, and globally competitive social amenities, India's per capita GDP is expected to grow over the next 25 years, replicating the progress achieved in the past 75 years.
- In the Union Budget for 2025-26, the Indian government allocated Rs. 11.21 lakh crore (USD 129 billion) for capital expenditure, representing a 10.1% increase from the revised estimate of Rs. 10.18 lakh crore (USD 117.2 billion) in FY25.

In FY25, key indicators showcased notable improvements:

- Private Final Consumption Expenditure (PFCE) is set to rise by 7.2% in FY25, up from a 5.6% growth in FY24.
- India's foodgrain production for FY25 is estimated at 3,539.59 Lakh Metric Tonnes (LMT), an increase of 216.61 LMT from FY24's 3,322.98 LMT, translating to a growth of approximately 6.5%.
- June 2025 saw a CPI – Combined inflation of 2.10%, a drop from 5.08% in June 2024.
- Services PMI rose to 61.1 in July 2025, up from 60.4 in June 2025.
- Petroleum product consumption for FY26 (April-June 2025) reached 61.837 Million Metric Tonnes (MMT).
- India's Index of Industrial Production (IIP) for May 2025 was recorded at 156.6, an increase from 154.7 in May 2024.

Note: Currency conversion to USD is based on OANDA exchange rates as of December 31, 2024.

4. GLOBAL AND INDIA ECONOMIC SCENARIO

INDIAN ECONOMY - SNAPSHOT

- The combined index of eight core industries was 166.7 for FY26 (April-June), up from 164.5 for FY25 (April-June). In June 2025, it was slightly lower at 166.5.
- Major ports handled cargo traffic of 220.04 million tonnes (MMT) in FY26 (April-June).
- With a freight traffic of 1.6 billion tonnes in FY25, India boasts the world's third-largest freight handling railway system.
- In June 2025, saw e-way bills surge to 11.94 crore, marking a 19.3% increase from June 2024.
- June 2025's gross GST (Goods and Services Tax) revenue collection was INR 1,84,597 crore (USD 21.38 billion).
- On July 23, 2025, the Indian crude oil basket was priced at INR 6,082 (USD 70.38) a barrel, up from INR 6,054 (USD 69.78) in June 2025.
- May 2025 recorded Unified Payments Interface (UPI) transactions at 14,006.48 million, totaling INR 18,41,801 crore (USD 213.27 billion).
- Merchandise exports for June 2025 were valued at INR 3,03,469 crore (USD 35.14 billion).
- June 2025 merchandise imports reached INR 4,65,653 crore (USD 53.92 billion).
- As of March 16, 2025, the average daily net injection under the liquidity adjustment facility (LAF) was INR 47,294 crore (USD 5.50 billion).
- As of July 11, 2025, India’s foreign exchange reserves were INR 59,78,149 crore (USD 692.56 billion).
- Currency in circulation (CIC) on July 11, 2025, was INR 37,86,479 crore (USD 438.45 billion).
- On July 23, 2025, the rupee was valued at INR 86.37/USD.
- In FY25 (January-March 2025), India attracted a total foreign direct investment (FDI) equity inflow of USD 17.47 billion.
- According to the Reserve Bank of India (RBI):
    - As of June 27, 2025, bank credit was INR 1,84,83,098 crore (USD 2.14 trillion).
    - Non-food industries received credit amounting to INR 1,84,18,709 crore (USD 2.13 trillion) as of June 27, 2025.

India's Inflation Reaches Multi-Year Low as Job Market Shows Recovery

- India's headline annual retail inflation decreased from 2.82% in May to 2.10% in June 2025, reaching its lowest level since January 2019. This decline was primarily due to food prices turning negative at -1.06%. The job market showed improvement in May 2025, with an 8.9% increase in job listings after eight consecutive months of decline. Key sectors driving this growth included childcare (27%), personal care and home health (25%), education (24%), and manufacturing (22%), according to Indeed.

Note: Currency conversion to USD is based on OANDA exchange rates as of December 31, 2024.

4. GLOBAL AND INDIA ECONOMIC SCENARIO

INDIAN ECONOMY - SNAPSHOT

Private Equity and Venture Capital Investment Activity

- Private equity (PE) and venture capital (VC) investments in June 2025 totaled INR 14,681 crore (USD 1.7 billion). For Q2 2025 (April-June), these investments reached INR 45,771 crore (USD 5.3 billion) across 248 deals.

Government Capital Expenditure and Economic Performance

- The Economic Survey 2024-25 reported an 8.2% increase in government capital expenditure from July to November 2024. Defense, railways, and road transport sectors accounted for 75% of the total capital outlay.
- Service activity-maintained growth momentum with consistent Purchasing Managers' Index (PMI) levels from October 2024 to June 2025, supported by output growth and favorable demand conditions. Rail freight, port traffic, and domestic aviation sectors showed positive trends. Additional indicators of healthy demand included strong fuel consumption, domestic vehicle sales, and high Unified Payments Interface (UPI) transactions

External Trade and Fiscal Outlook

- The reduction in merchandise trade deficit and increasing net services receipts are expected to improve India's current account deficit.

Union Budget 2025-26 Priorities

- The Union Budget 2025-26, under the theme "Sabka Vikas," aims for balanced regional growth. It focuses on agriculture, Micro, Small and Medium Enterprises (MSMEs), investment, and exports as growth drivers. Key initiatives include the Prime Minister Dhan-Dhaanya Krishi Yojana for agriculture, support for first-time entrepreneurs, and domestic manufacturing promotion through customs duty rationalization. The budget allocates resources for education and healthcare, including plans for 50,000 Atal Tinkering Labs and new medical colleges.

Banking Sector and Investment Outlook

- The banking and financial sector shows promise for growth. While foreign investors have temporarily reduced their capital market positions, the overall outlook remains positive. Foreign investment is expected to return as global conditions stabilize. The economic foundation built over recent years provides a base for developing a middle-income economy.

Note: Currency conversion to USD is based on OANDA exchange rates as of December 31, 2024.

4. GLOBAL AND INDIA ECONOMIC SCENARIO

INDAIN ECONOMY - SNAPSHOT

PERFORMANCE OF HIGH-FREQUENCY INDICATORS								
Data Title	Unit	YTD Period/ As at the end of	Year to Date			Year to Date (May 2025) (YoY Growth)		
			2023-24	2024-25	2025-26	2023-24	2024-25	2025-26
Agriculture								
Fertiliser Sales	Mn Tonnes	Apr-May	48.94	51.3	58.32	-1.6	4.8	13.7
Domestic Tractor Sales	Lakh	Apr-May	1.6	1.6	1.7	-5.2	-1.4	8.2
Foodgrain Production	Mn Tonnes	3rd AE (**Third Advance Estimates**)	328.9	354.0	-	-0.5	7.6	
Reservoir Level	Bn Cu. Metres	12-June	48	38.5	55.5	-6.1	-19.8	44.2
Wheat Procurement (RMS)	LMT	18-June	260.7	265.9	300.7	39.1	2.0	13.1
Rice Procurement (KMS)	LMT	18-June	481.9	514.0	-	-6.5	6.7	-
Kharif Sowing (Foodgrain)	Mn Hectare	13 Jun	2.0	1.3	1.3	8.5	-36.1	7.9
Rainfall	Millimeters	17 Jun	43.2	59.4	61.8	-17.9	16.2	2.4
Credit to Agriculture and allied activities	INR Lakh crore	April	17.7	21.2	23.1	16.8	19.7	9.2
Industry								
IIP	Index	April	140.7	148	152	4.6	5.2	2.7
8-Core Industries	Index	Apr - May	154.3	165	166.4	4.9	6.9	0.8
Domestic Auto sales	Lakh	Apr - May	34.7	40.7	38.2	16.8	17.3	-6.1
PMI Manufacturing	Index	Apr - May	58	58.2	57.9	3.3	0.2	-0.3
Power consumption	Billion kWh	Apr - May	268.5	299.4	296.9	0.7	11.5	-0.8
Natural gas production	Bn m^3	Apr - May	5.7	6.1	5.9	-1.5	7.2	-2.9
Cement production	Index	Apr - May	191.9	191.5	206.4	14.1	-0.2	7.8
Steel consumption	Mn Tonnes	Apr - May	20.9	23.5	25.1	10.8	12.6	6.9
Inflation								
CPI-C	Index	Apr-May	178.6	187.2	192.8	4.5	4.8	3.0
WPI	Index	Apr-May	150.3	153.2	154.2	-2.2	2.0	0.6
CFPI	Index	Apr-May	176.6	191.9	194.6	3.4	8.7	1.4

Source: **India Brand Equity Foundation (IBEF)**

4. GLOBAL AND INDIA ECONOMIC SCENARIO

INDAIN ECONOMY - SNAPSHOT

Data Title	Unit	YTD Period/ As at the end of	Year to Date			Year to Date (May 2025) (YoY Growth)		
			2023-24	2024-25	2025-26	2023-24	2024-25	2025-26
Consumer Price Index (CPI)-Core	Index	Apr-May	178.2	183.7	191.5	5.2	3.1	4.2
Services								
Domestic Air Passenger Traffic	Lakh	April	255.3	265.2	290.9	22.6	3.8	9.7
Port Cargo Traffic	Million tonnes	April	66.4	67.3	72.0	2.1	1.3	7.0
Purchasing Managers' Index (PMI) Services	Index	April-May	61.6	60.5	58.7	5.5	-1.8	-2.9
Fuel Consumption	Million tonnes	April-May	39.4	41.2	41.5	7.0	4.7	0.6
UPI (Volume)	Crore	April-May	1831.3	2,734.0	3657.1	58.7	49.3	33.8
E-Way Bill Volume	Crore	April-May	17.3	20	24.2	15.9	15.8	21.1
Fiscal Indicators								
Gross tax revenue (Central Govt)	INR Lakh crore	April	2.2	2.6	2.7	-6.1	16.9	6.5
Revenue Expenditure	INR Lakh crore	April	2.3	3.2	3.1	15.2	43.7	-5.7
Capital Expenditure	INR Lakh crore	April	0.8	1.0	1.6	-0.6	26.5	61.0
Fiscal Deficit	INR Lakh crore	April	1.3	2.1	1.9	78.5	57.3	-11.3
Revenue Deficit	INR Lakh crore	April	0.6	1.1	0.5	-9538.2	100.7	-56.2
Primary Deficit	INR Lakh crore	April	0.9	0.8	0.9	155.3	-4.4	13.4
GST Collection	INR Lakh crore	Apr-May	3.4	3.8	4.4	11.6	11.3	14.3
External Sector								
Merchandise exports	USD Billion	Apr-May	69.6	74.9	77.2	-11.6	7.6	3.1
Non-petroleum exports	USD Billion	Apr-May	57.3	59.8	64.3	-8.1	4.3	7.5
Merchandise imports	USD Billion	Apr-May	106.5	116.2	125.5	-10.6	9.0	8.1
Non-oil imports	USD Billion	Apr-May	77.3	79.7	90.1	-9	3.1	13.0
Non-oil non-gold/silver imports	USD Billion	Apr-May	72.4	73.6	83.7	-5.5	1.7	13.7
Net FDI	USD Billion	April	2.8	1.9	3.9	-48.2	-30.5	105.8
Exchange Rate (Average)	INR/USD	May	82.3	83.4	85.2	-6.1	-1.3	-2.1

Source: **India Brand Equity Foundation (IBEF)**

4. GLOBAL AND INDIA ECONOMIC SCENARIO

INDAIN ECONOMY - SNAPSHOT

Data Title	Unit	YTD Period/ As at the end of	Year to Date			Year to Date (May 2025) (YoY Growth)		
			2023-24	2024-25	2025-26	2023-24	2024-25	2025-26
Foreign Exchange Reserves	USD Billion	May	590.7	651.5	691.3	-2.1	10.3	6.1
Import Cover	Months	May	10.1	11.4	11.4	-	-	-
Monetary and Financial								
Total Bank Credit	INR Lakh crore	30 May	140.1	167.8	182.9	15.4	19.8	9.0
Non-Food Credit	INR Lakh crore	2 May	139.7	167.4	182.2	15.5	19.8	8.8
10-Year Bond Yields	%	May	7.0	7.1	6.3	-0.3	0.1	-0.8
Repo Rate	%	13 Jun	6.5	6.5	5.5	1.6	0.0	-1.0
Currency in Circulation	INR Lakh crore	13 Jun	33.9	35.9	38.5	4.6	5.9	7.3
M0 (base money)	INR Lakh crore	13 Jun	43.7	47.2	49.5	6.4	8.1	4.8
Employment								
Net payroll additions under Employees' Provident Fund Organization (EPFO)	Lakh	Apr	11.3	10.8	19.1	-5.2	-4.4	7.7
Number of persons demanded employment under Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA)	Crore	Apr-May	7.437	6.763	6.514	-2.6	-9.1	-3.7
Urban Unemployment Rate	%	Oct-Dec	6.5	6.4	-	-0.7	-0.1	-
Subscriber Additions: National Pension Scheme (NPS)	Lakh	Apr-Feb	8.4	7.1	-	24.7	-16.0	-

Source: **India Brand Equity Foundation (IBEF)**

4. GLOBAL AND INDIA ECONOMIC SCENARIO

IMPACT OF GLOBAL TRENDS ON CONSTRUCTION/INFRASTRUCTURE SECTORS

INFRASTRUCTURE TAKES CENTER STAGE AMIDST EMERGING GLOBAL TRENDS

Institutional investors and market leaders are increasingly recognizing infrastructure as the cornerstone of the evolving global economy, influenced by trends like Artificial intelligence (AI), digitalization, and the push for net-zero emissions. Their assessments suggest that this shift necessitates infrastructure investments on a scale reminiscent of the Industrial Revolution. As a result, sectors like green energy infrastructure and data center expansion are witnessing significant growth. Even amidst market volatility, these infrastructure megatrends are drawing in capital, promising stable, long-term returns, and bolstering contemporary economic development.

INVESTMENT IN ENERGY TRANSITION AND RENEWABLE ENERGY MOMENTUM

- Industry Association estimates suggest that to meet the emissions targets set by the Paris Agreement, an annual investment of USD 5 trillion in energy transition infrastructure is essential from 2023 to 2050.
- In 2024, fundraising for renewable energy constituted a significant 69% of the total infrastructure capital, highlighting the sector's robust momentum. Additionally, Alter Domus Infrastructure is emerging as a favored choice for long-term investors, being viewed as a natural hedge against inflation amidst prevailing macroeconomic uncertainties.

TECH INNOVATIONS AND GREEN PRACTICES DRIVE CONSTRUCTION SURGE

- Innovations in construction technology, including Building Information Modeling (BIM), digital twins, AI tools, prefabrication, and robotics, are revolutionizing project delivery. These advancements are not only accelerating timelines and controlling costs but also enhancing labor efficiency, an advantage in areas grappling with worker shortages.
- Concurrently, the swift rise of modular and green construction practices is curbing carbon emissions and bolstering sustainability in projects. Under these trends, the micro housing segment and data-centric smart infrastructure are witnessing notable expansion.

Note: Currency conversion to USD is based on OANDA exchange rates as of December 31, 2024.

4. GLOBAL AND INDIA ECONOMIC SCENARIO

KEY RISKS: INFLATION, SUPPLY CHAIN, REGULATIONS

GLOBAL INFLATION EASES, PAVING THE WAY FOR ECONOMIC STABILITY

- Global inflation is projected to decline steadily, starting from approximately 5.9% in 2024, decreasing to 4.2% in 2025, and further dropping to 3.6% in 2026. This trend aligns inflation rates more closely with central bank targets in many regions.
- The downward movement, driven by improved supply conditions and moderating commodity prices, provides policymakers with the opportunity to gradually implement more supportive monetary policies. The goal is to stimulate economic growth while mitigating the risk of market volatility. Although inflation remains elevated in the U.S., evidence suggests a tapering trend. This may enable the Federal Reserve to consider rate relief by late 2025 or during the first quarter of 2026, depending on the stabilization of price pressures.

DIGITAL RESILIENCE FORTIFIES SUPPLY CHAINS AMID TRADE DISRUPTIONS

- In recent years, global supply chains have faced unprecedented disruptions and uncertainty. However, emerging technologies such as AIoT (a blend of Artificial Intelligence and the Internet of Things), real-time analytics, digital twins, and blockchain-based tracking are playing a transformative role, making logistics networks more resilient, agile, and efficient.
- Sectors such as electronics, energy, and pharmaceuticals are witnessing a surge in automation for warehousing and supply planning, enabling firms to foresee and mitigate potential shocks. Furthermore, a global uptick in port throughput, alongside rising nearshoring trends, indicates a resurgence of stability and predictability in cross-border logistics.

GLOBAL TRADE AGREEMENTS BOOST CONFIDENCE AMID GEOPOLITICAL TENSIONS

- In the face of geopolitical tensions and occasional shifts in tariff policies, new trade agreements—such as those forged between the U.S., EU, UK, Japan, and ASEAN—along with selective tariff exemptions, are steadily restoring faith in global trade frameworks.
- Central banks around the globe are enjoying robust support for their independence and policy credibility. This backing is vital for stabilizing inflation expectations and ensuring financial stability. Thanks to this solid foundation, advanced economies have managed to navigate a "soft landing" scenario, despite lingering trade frictions.

Note: Currency conversion to USD is based on OANDA exchange rates as of December 31, 2024.

4. GLOBAL AND INDIA ECONOMIC SCENARIO

GLOBAL CONSTRUCTION GROWTH AND INVESTMENT FLOWS

GLOBAL CONSTRUCTION SET TO FLOURISH, LED BY CHINA, U.S., AND INDIA

China, the U.S., and India are set to spearhead a surge in global construction activity, primarily fueled by infrastructure investments that resonate with green energy and digital transformation objectives. This anticipated growth finds its roots in escalating investments, bolstered by initiatives such as the U.S. Inflation Reduction Act, China's projected rebound post-2025, and India's swift modernization drive.

GLOBAL CONSTRUCTION SET TO SURGE, OVERCOMING SHORT-TERM HURDLES

- Despite encountering short-term hurdles, the global construction sector stands poised for substantial expansion. After a minor setback in 2025, output is projected to rebound in 2026, largely fueled by infrastructure and civil engineering endeavors. These sectors foresee a growth of roughly 3% in 2025, with a surge to approximately 4–5% in 2026, propelled by the momentum of significant stimulus initiatives.
- Governments are increasingly focusing on green infrastructure and clean energy initiatives. Notably, civil engineering now accounts for nearly one-third of the global construction value, bolstering growth even as residential and commercial sectors show signs of softness.

REGIONAL DYNAMICS & INVESTMENT FLOWS

- Asia-Pacific stands tall as the dominant force in the global investment landscape. Nations such as India, Vietnam, and Indonesia are witnessing robust growth, fueled by swift urbanization, expansive infrastructure projects, and a buoyant private sector. In India, the construction sector is reaping the benefits of double-digit investment growth, thanks to significant railway and highway initiatives. Notably, India has secured its position as a top 10 global destination for cross-border capital in land and development, marking a significant milestone in Q1 FY26.
- China, navigating its way out of a real estate slump, is redirecting its focus towards civil engineering and infrastructure. The Belt and Road Initiative witnessed a monumental surge in investment flows, hitting a record USD 124 billion in H1 2025. This figure not only eclipses the total for all of 2024 but also underscores the initiative's robust momentum in energy, transport, and sustainability projects spanning Asia, Africa, and Central Asia.

Note: Currency conversion to USD is based on OANDA exchange rates as of December 31, 2024.

4. GLOBAL AND INDIA ECONOMIC SCENARIO

GLOBAL CONSTRUCTION GROWTH AND INVESTMENT FLOWS

REGIONAL DYNAMICS & INVESTMENT FLOWS

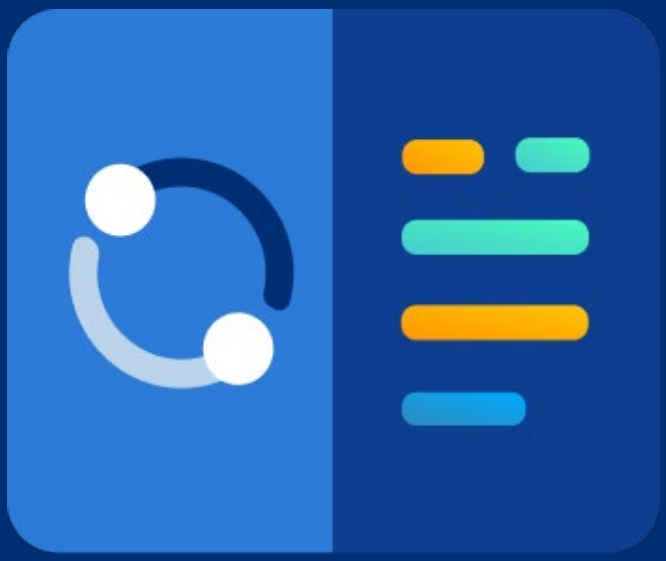
- Europe and the UK are shaking off past slumps, transitioning towards a more stable expansion. Climate-centric infrastructure projects, renovation drives like the EU Renovation Wave, and a push towards decarbonization funding notably bolster this resurgence.
- In the Middle East, markets, particularly Saudi Arabia and the UAE, are witnessing a construction boom, driven by ambitious national vision plans. Saudi Arabia's Vision 2030 is set to channel a staggering USD 300–700 billion into urban, tourism, and infrastructure investments. Meanwhile, the UAE's market, riding high at a six-year peak, is propelled by developments in transportation, expo-related projects, and a burgeoning hospitality sector.
- North America is reaping the rewards of consistent public stimulus, notably through infrastructure bills like the Infrastructure Investment and Jobs Act (IIJA) in the US and progressive clean-energy legislation. These initiatives are catalyzing significant growth in sectors such as data centers, battery manufacturing, life sciences, and semiconductor hubs, positioning North America as a beacon for global capital seeking stable, long-term investments.

GLOBAL TRADE AGREEMENTS BOOST CONFIDENCE AMID GEOPOLITICAL TENSIONS

- **Infrastructure & Public-Private Partnerships (PPPs):** Governments worldwide are collaborating with private investors to develop roads, ports, energy grids, and clean energy initiatives. Europe has committed a substantial EUR 800 billion (approximately USD 833.24 billion) under its Next Generation EU initiative. Meanwhile, both the US and India are rapidly advancing their large-scale infrastructure projects.
- **Technology & Sustainability Integration:** Digital innovations—such as AI, Building Information Modeling (BIM), cloud platforms, and modular and 3D printing—are revolutionizing the construction sector. These tools not only boost efficiency but also minimize waste and reduce costs. Many companies are leveraging AI for enhanced planning, predictive maintenance, and optimized workflows. Furthermore, green building practices are gaining traction, driven by policy incentives and a surge in capital allocation focused on Environmental, Social, and Governance (ESG) criteria.
- **Cross-Border Investments & Emerging Market Capital:** India, leading the charge, has positioned the Asia-Pacific region as a magnet for global real estate and development investments. As of June 2025, India proudly stands as the 7th top global destination for land and development projects. Bolstered by robust fundamentals and a maturing real estate landscape, India is solidifying its status as a premier investment hub in the Asia-Pacific. Concurrently, Africa is witnessing a surge in urban developments, highlighted by the emergence of private startup cities. Nations such as Kenya, Ghana, and Nigeria are capturing the spotlight, enticing both institutional and impact investors.

Note: Currency conversion to USD is based on OANDA exchange rates as of December 31, 2024.

5. OVERVIEW OF THE SCAFFOLDING INDUSTRY



5. OVERVIEW OF THE SCAFFOLDING INDUSTRY

DEFINITION OF SCAFFOLDING

Scaffolding, a temporary elevated structure, supports workers, tools, and materials during the construction, maintenance, or repair of buildings, bridges, and other artificial structures. Typically crafted from steel, iron, or bamboo, scaffolding can be either modular (prefabricated) or custom-built on-site.

SIGNIFICANCE OF SCAFFOLDING

1. Ensures Worker Safety
    - By providing a stable platform at height, scaffolding minimizes the risk of falls and accidents. It facilitates secure movement for workers engaged in tasks like plastering, welding, or painting.
    - With India's heightened enforcement of occupational safety standards, scaffolding has become pivotal in ensuring job site compliance, which is critical for companies aiming to establish a strong reputation in the market.
2. Improves Accessibility and Efficiency
    - Scaffolding provides access to challenging areas, especially on tall or irregular structures. By offering ergonomic positions and simplifying the transport of tools and materials, scaffolding accelerates work speed and boosts productivity, a key factor for companies looking to enhance operational efficiency and meet investor expectations.
        - Example: In projects like metro rail construction or airport terminals, scaffolding allows for concurrent multi-level work, drastically cutting down project timelines and showcasing the ability to handle large-scale operations effectively.
3. Supports Structural Stability During Work
    - Scaffolding serves as a supportive framework, holding up sections, slabs, or walls under assembly or curing. This reliability underscores the importance of scaffolding in maintaining project quality, a critical aspect for companies.
4. Integral to India's Urban Infrastructure Boom
    - With India's ambitious infrastructure initiatives, such as PM Gati Shakti, there's a heightened demand for safe, modular, and compliant scaffolding—especially in large-scale urban, industrial, and real estate endeavors.
    - Companies entering the public market can leverage this demand to highlight their role in supporting the nation's infrastructure growth.
5. Encourages Standardization and Industrial Best Practices
    - Modern scaffolding systems, including aluminum stairway towers and ring locks, offer rapid assembly, modular scalability, and adherence to global safety standards like EN 12811, ANSI, and OSHA.
    - Indian companies are swiftly adopting these systems to align with both domestic and international quality standards, a move that positions them as reliable and forward-thinking entities in the eyes of potential investors.

Source: Mordor Intelligence

5. OVERVIEW OF THE SCAFFOLDING INDUSTRY

SCAFFOLDING: A PILLAR OF SUPPORT ACROSS KEY SECTORS (Construction, Maintenance & Restoration, and Industrial)

Scaffolding is indispensable in sectors demanding elevated access, structural integrity, and worker safety. Here are the three primary domains of its application:

Building Construction

Purpose:

- Ensures safe access to every level of a building, from foundation to rooftop.

Key Applications:

- High-rise residential and commercial developments
- Support for concrete formwork
- Elevated masonry and brickwork
- External plastering, cladding, and facade treatments
- Installation of windows, electrical conduits, and plumbing

Example (India):

- Projects such as Mumbai's Coastal Road, Smart City townships, and urban redevelopment zones leverage modular scaffolding systems (like cup lock and aluminum towers) for enhanced speed and safety.
- These projects highlight the growing demand for advanced scaffolding solutions, presenting significant opportunities for companies entering the market.

Building Maintenance & Restoration

Purpose:

- ✓ Enables routine repairs, upgrades, and treatments on existing buildings.

Key Applications:

- ✓ Painting, waterproofing, and facade cleaning
- ✓ Roof repairs and Heating, Ventilation, and Air Conditioning (HVAC) installations
- ✓ Structural inspections and retrofitting
- ✓ Glass replacements and signage setups

Example:

- ✓ In cities like Jaipur and Kolkata, scaffolding aids in maintaining heritage structures, while in Bengaluru and Gurugram, it is pivotal for glass facades on IT and commercial towers. The increasing focus on infrastructure maintenance and restoration underscores the potential for scalable growth in this segment.

5. OVERVIEW OF THE SCAFFOLDING INDUSTRY

Industrial & Infrastructure Applications

Purpose:

- Offers safe platforms in factories and infrastructure sites for constructing or servicing complex systems.

Key Applications:

- Refineries, petrochemical facilities, and thermal power stations
- Steel manufacturing plants and shipyards
- Bridge and flyover constructions
- Interiors of metro rail and airport terminals
- Maintenance of wind and solar plants

Example:

- India's industrial corridors, such as the Delhi-Mumbai Industrial Corridor (DMIC), and its defense and aerospace hubs, heavily utilize mobile scaffolding towers for tasks like equipment assembly, ductwork, and large-scale metal fabrication. The robust industrial and infrastructure development pipeline in India offers a lucrative growth avenue for companies poised to capitalize on this demand.

TYPES OF SCAFFOLDING

Scaffolding has advanced from traditional bamboo frameworks to modern, engineered systems, supporting diverse applications in construction, infrastructure, and industrial projects. Below are key scaffolding types and their uses.

- ✓ Single Scaffolding
- ✓ Double Scaffolding
- ✓ Suspended Scaffolding
- ✓ Cantilever Scaffolding
- ✓ Trestle Scaffolding
- ✓ Steel Scaffolding
- ✓ Patented Scaffolding
- ✓ Bamboo Scaffolding
- ✓ Kwik Stage Scaffolding
- ✓ Independent Scaffolding

5. OVERVIEW OF THE SCAFFOLDING INDUSTRY

TYPES OF SCAFFOLDING

Scaffolding has advanced from traditional bamboo frameworks to modern, engineered systems, supporting diverse applications in construction, infrastructure, and industrial projects. Below are key scaffolding types and their uses.

1. Single Scaffolding

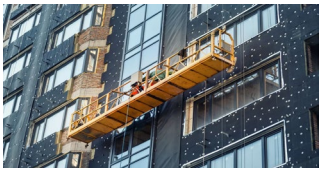
- Also known as bricklayer's scaffolding, single scaffolding is primarily used in brick masonry. It includes standards, ledgers, and putlogs.
- Standards: Vertical supports placed 2 to 3 meters from the wall for stability.
- Ledgers: Horizontal supports connecting standards at 1.2 to 1.5-meter intervals.
- Putlogs: Components connecting the ledger to the wall, ensuring structural support.
- This method originates from early brick masonry, where logs were inserted into wall openings. Modern systems use putlogs or tubes with adapters for secure connections to brickwork.

2. Double Scaffolding

- ✓ Double scaffolding, widely used in stone masonry, eliminates the need for drilling holes in stone walls by providing full structural support.
- ✓ The first row is placed parallel to the wall, with the second row positioned at a distance. Extra putlog holes support frames, while rakers and cross braces enhance stability.
- ✓ Cross braces connect scaffolding sections to nearby structures, and rakers secure the scaffolding to the building. This design requires significant space, making it less practical in urban areas.

3. Suspended Scaffolding

- ➢ Suspended scaffolding is widely used for cleaning, repairing, or painting building interiors, making it essential for maintenance tasks.
- ➢ It features a working platform suspended by chains and wire ropes, which can be adjusted to the required level.
- ➢ The most common type is the two-point adjustable suspension scaffold, also known as the swing-stage scaffold.
- ➢ Due to operational risks, workers must hold a high-risk work license for advanced scaffolding before use.



Source: Indian Standards (Bureau of Indian Standards/Indian Standards Institution [BIS/ISI]), Government Safety Guidelines (e.g. Central Public Works Department [CPWD])

5. OVERVIEW OF THE SCAFFOLDING INDUSTRY

4. Cantilever Scaffolding

- ➢ Cantilever scaffolding, also known as a single frame, is supported at one end, eliminating the need for poles and frames in front of the structure.
- ➢ Standards are supported by needles extending from wall holes.
- ➢ Use cantilever scaffolding only under these conditions:
  - o Upper wall construction is in progress
  - o No traffic near the wall, and the ground is close
  - o The ground cannot support the standards

5. Trestle Scaffolding

- ✓ Trestle scaffolding uses movable ladders and tripods to support the working platform, replacing traditional standards.
- ✓ Commonly used for general fit-outs, finishing works, and by bricklayers, plasterers, and painters who prefer repairs, "A-frame" and "H-frame" trestle scaffolding.
- ✓ Designed for indoor use, it typically has a height limit of 5 meters.
- ✓ Key applications include:
  - o Furnishing: Construction of desks or tables.
  - o Work Area: Provides a stable top board for workers.
  - o Access Support: Assists in small scaffolding setups for work access.

6. Steel Scaffolding

- Steel scaffolding is primarily made of steel tubes, connected with steel fittings and special couplings to ensure structural support.
- It is widely used in construction projects due to its superior strength, fire resistance, and durability.
- Although more expensive, it ensures worker safety, making it a preferred choice for building projects.

7. Patented Scaffolding

- ❑ Patented scaffolding is a type that is made of steel mixed with other construction materials, such as special couplings, frames, and other components. Typically used for short-term repair works, this type of scaffolding is premade and offered for sale in the market.
- ❑ In a patented scaffolding, the working platform is placed on brackets that may be adjusted to the desired level or height.

Indian Standards (Bureau of Indian Standards/Indian Standards Institution [BIS/ISI]), Government Safety Guidelines (e.g. Central Public Works Department [CPWD])

5. OVERVIEW OF THE SCAFFOLDING INDUSTRY

8. Bamboo Scaffolding

- Before the advent of steel scaffolding and other modern materials, builders primarily relied on pre-cut wood or bamboo for scaffolding. Thanks to its adaptability and easy accessibility, bamboo scaffolding became a staple in many construction projects.
- Wooden and bamboo scaffolding, celebrated for their sturdiness, adaptability, and eco-friendliness, have become top choices in construction, especially in Asia, where bamboo's abundance is a significant advantage.

9. Kwikstage Scaffolding

- ✓ George Roberts Kwikstage scaffolding stands out as a globally favored scaffold system. Thanks to its multifunctionality, adaptability, and swift assembly, Kwikstage scaffolding serves both residential and diverse industrial construction needs.
- ✓ Australian designers favor this scaffolding type for its straightforward assembly and versatility. Comprising just five essential components, Kwikstage scaffolding simplifies both assembly and disassembly.
- ✓ Moreover, the patented Kwikstage modular system boasts a robust interlocking mechanism, allowing adjustments to any desired height.
- ✓ Prioritizing the safety of construction workers, the system incorporates enhanced features. With added double guard rails and non-slip platforms, Kwikstage scaffolding ensures reliability and support for its users.

10. Independent Scaffolding

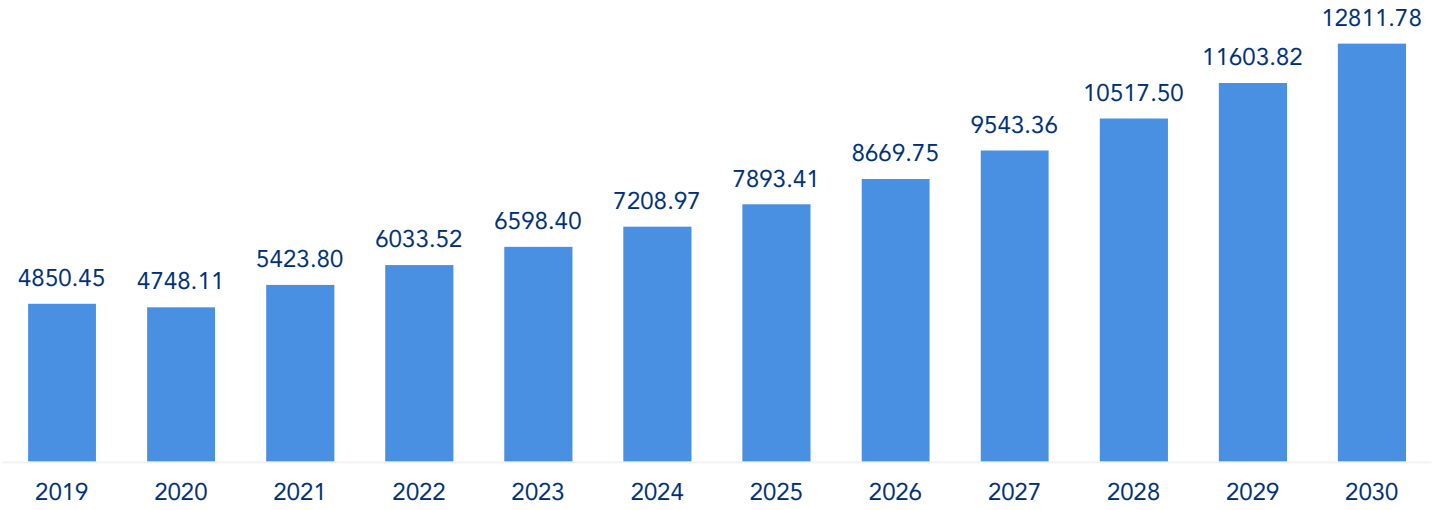
- ➢ Independent scaffolding operates autonomously, without relying on other components or systems for support.
- ➢ This scaffolding type features structures positioned on both sides of a wall, standing upright without any wall support.
- ➢ While independent scaffolding ties its structure for security, it remains independent of the building for support. In contrast, dependent scaffolding relies solely on the building for its support.

Source: Indian Standards (Bureau of Indian Standards/Indian Standards Institution [BIS/ISI]), Government Safety Guidelines (e.g. Central Public Works Department [CPWD])

5. OVERVIEW OF THE SCAFFOLDING INDUSTRY

INDIA SCAFFOLDING MARKET, VALUE IN INR CRORES, 2019-2030

CAGR (2024 - 2030): 10.06%



- The India Scaffolding Market studied was valued at INR 7208.97 crores in 2024 and is expected to reach INR 12811.78 crores in 2030, registering a CAGR of 10.06% for the forecast period (2024-2030).

HISTORICAL PERFORMANCE (2019–2024)

- From 2019 to 2024, India's scaffolding market saw consistent mid-single-digit annual growth, driven by an unprecedented push in infrastructure. Major public initiatives—primarily under the National Infrastructure Pipeline, Smart Cities Mission, and housing schemes like Pradhan Mantri Awas Yojana (PMAY)—spurred a surge in demand for modular steel and aluminum scaffolding systems.
- These systems, known for their quicker setup and enhanced safety, outperformed traditional tube-and-clamp and bamboo alternatives. At the same time, the emergence of rental business models and service-oriented offerings enabled organized players to secure a larger project share. However, they faced challenges from raw-material price fluctuations and a fragmented, unorganized sector, which squeezed margins and caused execution delays.

FORECAST PROJECTIONS (2025–2030)

- This market expansion is anticipated to be driven by a new wave of highway expansions, metro-rail corridors, and industrial-park developments. The integration of digital technologies—like IoT-enabled load monitoring and QR-based asset tracking—coupled with a stricter enforcement of Bureau of Indian Standards/Indian Standards (BIS/IS) safety standards, is likely to steer demand more towards premium modular scaffolding systems and all-encompassing servitization contracts. Despite challenges from raw-material cost swings and a shortage of skilled labor, the market is poised for robust growth through 2030. This optimism is bolstered by government incentives, new urban infrastructure projects, and a rising focus on eco-friendly scaffolding solutions aligned with ESG principles.

Source: Mordor Intelligence

5. OVERVIEW OF THE SCAFFOLDING INDUSTRY

SCAFFOLDING INDUSTRY - BUSINESS MODELS

The scaffolding industry is witnessing significant advancements, driven by large-scale infrastructure projects and evolving contractor needs.

STRATEGIC ASSET CONTROL IN INFRASTRUCTURE PROJECTS

- Infrastructure projects demand uninterrupted access to critical areas. To meet this requirement, Engineering, Procurement, and Construction (EPC) firms involved in the Mumbai Coastal Road Project and the Delhi-Meerut Expressway opted to purchase aluminum stairway towers outright. This approach ensures asset availability throughout the project duration, eliminating reliance on rentals during critical phases.

ADVANCEMENTS IN CONSTRUCTION PRACTICES

- The Mumbai Metro Line 3 project has driven innovation in construction practices. Contractors adopted Bureau of Indian Standards (BIS)-compliant modular towers with quick-lock systems for efficiency. Extended-warranty packages enabled on-site reconfigurations for diverse project needs. Manufacturers responded with hybrid buy-back schemes, training programs, and digital tools like 3D layout previews, enhancing precision and workforce readiness.

CHALLENGES FOR MID-SIZED BUILDERS IN TIER 2 CITIES

- Mid-sized builders in Tier 2 cities face cost barriers in adopting standard aluminum tower sets, priced above INR 1 lakh (USD 1,200). Builders in cities like Indore and Bhubaneswar often rely on rentals or lower-grade steel towers due to high capital expenditure (CapEx) requirements. Additional costs for maintenance, storage, and compliance inspections further strain small and medium enterprises (SMEs).

5. OVERVIEW OF THE SCAFFOLDING INDUSTRY

SCAFFOLDING INDUSTRY - BUSINESS MODELS

Despite a broader industry trend leaning towards ownership, the rental model remains pivotal in the scaffolding sector, especially for select market segments.

RELIANCE BY MID-SIZED BUILDERS IN TIER 2 CITIES

- In Tier 2 cities, mid-sized builders often turn to rentals or opt for lower-grade steel towers instead of investing in standard aluminum tower sets.
- This choice stems from the hefty capital expenditure (CapEx) tied to buying scaffolding equipment. With standard aluminum tower sets costing over INR 1 lakh (USD 1,200), the price tag poses a considerable financial hurdle for these builders.
- Moreover, added expenses like maintenance, storage, and compliance inspections further burden small and medium enterprises (SMEs), making rentals a more attractive financial solution.

AVOIDANCE BY LARGE-SCALE INFRASTRUCTURE PROJECTS FOR STRATEGIC CONTROL

- While rentals are available, major Engineering, Procurement, and Construction (EPC) firms, engaged in significant projects such as the Mumbai Coastal Road and the Delhi-Meerut Expressway, have chosen to buy aluminum stairway towers outright.
- This choice aims to eliminate rental dependencies during crucial project phases, ensuring consistent access and asset availability over the project's multi-year span. Such a move underscores the potential drawbacks of the rental model for long-term, critical projects.

SUMMARY OF RENTAL MODEL ROLE

- The rental model emerges as a vital solution for mid-sized builders and SMEs grappling with capital expenditure challenges. It offers them essential equipment access without the burdens of hefty upfront investments and ongoing ownership costs. Conversely, for large-scale infrastructure endeavors, the preference leans towards outright purchases, emphasizing strategic asset control and minimizing rental-related disruptions.

5. OVERVIEW OF THE SCAFFOLDING INDUSTRY

KEY GROWTH TRENDS IN THE INDIAN SCAFFOLDING MARKET

1. Government Infrastructure Push Fuels Scaffolding Demand

- India's National Infrastructure Pipeline (NIP) and PM Gati Shakti are set to invest over INR 143 lakh crore (USD 1,711 billion) by 2030, targeting sectors like transport, logistics, housing, and energy.
- Application Impact: Scaffolding demand is on the rise for projects including metro rails, highway flyovers, airport terminals, smart city zones, and affordable housing.
- Growth Insight: As projects grow in volume and duration, there's a marked shift towards modular and safety-certified systems, moving away from traditional bamboo or steel tube setups. This trend presents a significant opportunity for companies to align their offerings with evolving market needs, ensuring scalability and compliance.

2. Transition to Modular, Lightweight & Compliant Systems

- ✓ There's a clear shift from using bamboo and basic mild steel pipes to advanced systems like cup lock, ring lock, and aluminum stairway towers.
- ✓ This transition is largely driven by the adoption of standards such as EN 12811, EN 131, American National Standards Institute (ANSI), and Occupational Safety and Health Administration (OSHA), especially among private developers, Engineering, Procurement, and Construction (EPC) contractors, and Multinational Corporation (MNC)-owned sites.
- ✓ Growth Insight: In Tier 1 & Tier 2 construction markets, modular scaffolding and aluminum access systems are projected to grow in the coming years. Companies entering the market can capitalize on this growth by offering innovative, compliant solutions tailored to these segments.

3. Surge in Industrial Maintenance and Plant Access Needs

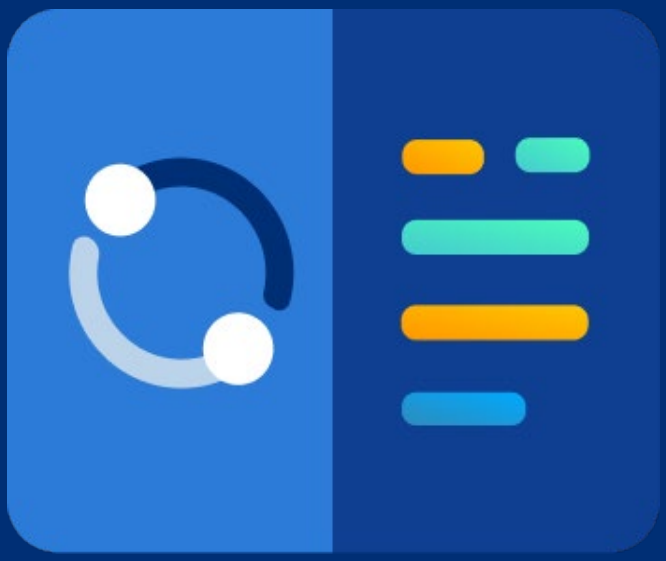
- ➢ Industries like refineries, chemical plants, and pharma factories are increasingly relying on mobile scaffolding for swift maintenance, inspections, and upgrades.
- ➢ There's a notable demand in locations like Bhiwandi, Sanand, and Pune for rental-based mobile access platforms, especially during shutdowns and Annual Maintenance Contract (AMC) projects.
- ➢ Growth Insight: Industrial access solutions, particularly aluminum towers, are emerging as a lucrative sub-segment with substantial rental income potential. Companies with a focus on industrial scaffolding can leverage this demand to establish a strong foothold in the market.

4. Rising Popularity of the Rental Model

- ❑ Capex-sensitive Micro, Small & Medium Enterprises (MSMEs), Tier 2 contractors, and industrial clients are leaning towards rentals for their short-term or rotating project needs.
- ❑ Organized rental players, such as Msafe Group, are capturing market share from unorganized fabricators, thanks to their quicker service, safety compliance, and thorough documentation.
- ❑ Growth Insight: By 2030, rentals are anticipated to account for a major share of the industry's revenue, with a pronounced emphasis on infrastructure and industrial sectors. Companies entering the rental market can benefit from this shift by offering competitive, safety-compliant rental solutions.

Source: Indian Standards (BIS/ISI), Government Safety Guidelines (e.g. CPWD), Manufacturer Specifications, and Expert Interviews

6. TYPE OF SCAFFOLDING



6.1 Aluminum Scaffolding Market

6.2 Steel Scaffolding Market

6.3 Aluminum and Steel Hanging Scaffolding Market

6.4 Stairway Tower Market

6.1 ALUMINUM SCAFFOLDING MARKET

PRODUCT DEFINITION

- Aluminum scaffolding is a modular and lightweight support structure crafted from high-grade aluminum alloys. It is specifically designed to provide temporary elevated access for tasks such as construction, maintenance, and inspections.
- These scaffolds are often configured as towers, mobile platforms, and cantilever systems, offering efficient vertical access in environments where portability and ease of assembly are essential.

WHY CHOOSE ALUMINUM SCAFFOLDING

- Lightweight & easy to handle
- Corrosion-resistant and low maintenance
- Simple assembly with modular design

MATERIALS & DESIGN COMPLIANCE

- Aluminum scaffolds must use alloys like 6063-T6 from the 6000-series, ensuring an optimal balance of strength and weight. Load capacities are classified as 120 kg/m² (light duty), 240 kg/m² (medium duty), and 360 kg/m² (heavy duty).

WHERE IT'S USED IN INDIA

- Aluminum scaffold towers are commonly used for interior maintenance and facility servicing, providing easy access for inspections, cleaning, etc.
- Its quick setup and portability make it ideal for plastering and painting, tasks at mid-level heights in commercial and residential construction.
- Aluminum scaffolding is also employed in event setups and exhibitions, offering temporary elevated access or viewing platforms for light-duty needs.
- Industries like telecom and aviation prefer aluminum scaffolding for its corrosion resistance and lightweight design, ensuring safety.

COMPLIANCE & SAFETY CONSIDERATIONS

- In India, scaffolding must comply with regulations outlined in the Factories Act, 1948, the Building and Other Construction Workers Act, 1996, and the National Building Code (NBC 2016). These regulations emphasize proper access, guardrails, and load stability to ensure safety.
- Bureau of Indian Standards (BIS) certification (Indian Standards Institute (ISI) marking) is mandatory for scaffold components, including aluminum systems, to confirm adherence to Indian standards and ensure safe quality levels.

6.1 ALUMINUM SCAFFOLDING MARKET

ALUMINUM SCAFFOLDING – MATERIAL & DESIGN STANDARDS

ASPECT	DETAILS
Material Compliance	While BIS doesn't have a standalone aluminum scaffold standard, structural elements must conform to strength equivalence of IS 1161 or IS 4923 (for aluminum hollow sections).
Structural Bracing & Stability	As per IS 3696 (Part 1) and NBC 2016, Volume 2, all scaffolds above 15 m in height must be structurally braced, tied, and verified by a qualified engineer.
Platform Height Limits	Per CPWD Safety Manual (Clause 6.4) and NBC guidelines, mobile aluminum towers for indoor use are typically restricted to 6 m for self-supported structures.
Base Jack Adjustment	NBC 2016 and CPWD best practices recommend base jack/castor adjustability limited to 300 mm, beyond which scaffold stability is compromised.
Guardrails & Stair Access	NBC 2016, Chapter 8 requires guardrails (min. 1 m height) and toe boards (min. 150 mm) for any platform above 2 m. Proper stair access is mandatory beyond a 4 m platform height.
Component Certification	ISI marking is required for key load-bearing components under BIS regulatory purview (e.g., aluminum sections, castor wheels). Certification depends on material class used.

Key Takeaways:

- In India, although a dedicated BIS code for aluminum scaffolds does not exist, adherence to NBC 2016 and BIS material standards is required. Equivalent standards, such as IS 1161 and IS 4923, are commonly followed.
- For scaffolding structures with heights between 2 m and 15 m, implementing structural stability measures like bracing, guardrails, and stair access is mandatory. Furthermore, critical components must be certified, for instance, through ISI marking.
- Mobile scaffold towers are generally limited to a height of 6 meters in indoor environments unless they are properly anchored or specifically engineered for greater heights.

Source: Indian Standards (BIS/ISI), Government Safety Guidelines (e.g. CPWD), Manufacturer Specifications, and Expert Interviews

6.1 ALUMINUM SCAFFOLDING MARKET

MSAFE ALUMINUM SCAFFOLDING SYSTEM – PRODUCT COMPONENTS & DESCRIPTION

PRODUCT NAME	PURPOSE / KEY USE	MATERIAL	LOAD CAPACITY	WORKING HEIGHT RANGE	SCAFFOLD SIZE / PLATFORM
MSAFE FIT Stairway Scaffolding	Frequent climbing/descent with wide entry frames and anti-slip stairway steps	Aluminum Alloy – 6063-T6, 6005-T6, 6082-T6	200 kg/m²	3.2 m to 18.4 m	1.35 m x 1.80 m and 0.75 m x 1.80 m
MSAFE FIT Narrow Stairway Scaffolding	For narrow/difficult workspaces (Stairway/Monkey climbing arrangement)	Aluminum Alloy – 6063-T6, 6005-T6, 6082-T6	200 kg/m²	4.2 m to 13.3 m	Not specified
MSAFE FIT Extra Reach Scaffolding	For extra-height work areas	Aluminum Alloy – 6063-T6, 6005-T6, 6082-T6	200 kg/m²	14.4 m to 30.4 m	1.35 m x 1.80 m
MSAFE FIT Podium Indoor Solution	Compact podium scaffolding with/without handrails	Aluminum Alloy – 6063-T6, 6005-T6, 6082-T6	Not specified for load	3.25 m to 4.5 m	Podium size: 1.30 m x 0.73 m; Platform: Anti-slip film-faced wooden (12 mm)

Source: Bureau of Indian Standards (BIS)/Standards India (SI), Central Public Works Department (CPWD), Manufacturer Specifications, and Expert Interviews

6.1 ALUMINUM SCAFFOLDING MARKET

KEY TYPES OF ALUMINUM SCAFFOLDING USED IN INDIA

In India, aluminum scaffolding systems are designed to address a wide range of height, mobility, and access requirements across sectors such as construction, industrial maintenance, and infrastructure services. These systems are categorized based on their structural design, height capabilities, and the specific environments they are intended for.

SINGLE-WIDTH TOWER

This type of scaffolding is compact and features a narrow base, making it highly effective in areas where space is limited, such as corridors and shafts. With a typical width of approximately 0.75 m, it is lightweight and easy to maneuver. These characteristics make it particularly suitable for indoor maintenance tasks or electrical fit-outs, where flexibility and ease of movement are essential.

DOUBLE-WIDTH TOWER

With a broader base, usually measuring around 1.35 m, the double-width tower offers enhanced stability and a larger working area. This design is ideal for tasks that require more space or involve multiple operators working simultaneously, such as external facade work or high-ceiling maintenance. Its robust structure ensures safety and efficiency in demanding environments.

STAIRWAY MOBILE TOWER

Equipped with an integrated stair ladder featuring anti-slip treads and handrails, the stairway mobile tower is specifically designed for tasks that involve frequent movement between levels. This makes it an excellent choice for activities such as inspections, wiring, or ductwork in large buildings. The inclusion of entry points further enhances its usability, ensuring workers can move safely and efficiently.

FOLDING (PODIUM) TOWER

The folding podium tower is a compact and versatile scaffolding solution, ideal for low-height indoor tasks such as painting, HVAC servicing, and lighting installations. Its quick setup process saves time, while its foldable design ensures easy transportation and storage. This type of scaffolding is particularly valued for its convenience and adaptability in confined spaces.

CANTILEVER SCAFFOLD TOWER

Designed to address challenges posed by fixed obstructions like parapets or machinery, the cantilever scaffold tower features a horizontal extension that allows the platform to project beyond the main base structure. Despite this extension, the tower remains securely anchored, providing a safe and reliable solution for tasks that require access over obstacles.

6.1 ALUMINUM SCAFFOLDING MARKET

BRIDGE (WALK-THROUGH) TOWER

This scaffolding system is designed to connect two scaffold towers using a bridging section, allowing workers to move seamlessly across a wider span without interruptions. It is particularly advantageous in environments such as stage setups, where continuous access across a large area is essential, or in industrial service applications that demand both efficiency and safety. By providing a stable and secure platform, this system enhances productivity and reduces downtime.

STAIRWELL SCAFFOLDING

Stairwell scaffolding is purpose-built to fit within staircase voids or escalator shafts, addressing the unique challenges of working in such confined spaces. It offers level platforms at various stair heights, ensuring workers can maintain consistent and ergonomic positions while performing tasks. This scaffolding type is crucial for projects that require precision, safety, and adaptability in multi-level or restricted environments.

EXTRA HEIGHT TOWER

These scaffolding towers are engineered to reach exceptional heights, often exceeding 30 meters, and are equipped with reinforced stabilizers and outriggers to ensure maximum stability and safety. They are widely used in settings such as auditoriums, airport hangars, and industrial warehouses, where access to high ceilings or elevated structures is necessary. The robust design of these towers makes them indispensable for tasks requiring reliable support at significant heights.

SUSPENDED ALUMINUM SCAFFOLDING

The modular and lightweight scaffolding systems are ideal for specialized tasks such as facade cleaning or painting at considerable heights. The use of aluminum, which is significantly lighter than steel, makes hoisting and installation more manageable, reducing the physical strain on workers. However, these systems are deployed under strict safety regulations to ensure the safety of workers and the structural integrity of the scaffolding during use. Their lightweight and modular nature makes them a practical choice for projects requiring mobility and efficiency at height.

KEY TAKEAWAY

The diverse range of aluminum scaffolding systems available in India highlights the increasing emphasis on providing safe, modular, and purpose-built access solutions. These systems are thoughtfully designed to address unique spatial and operational challenges, whether in narrow indoor corridors or complex industrial environments. This adaptability makes aluminum scaffolding a reliable and versatile choice across various sectors.

6.1 ALUMINUM SCAFFOLDING MARKET

CORE APPLICATION AREAS OF ALUMINUM SCAFFOLDING IN INDIA

MAINTENANCE & INSPECTION IN INDUSTRIAL & MANUFACTURING FACILITIES	Aluminum tower scaffolds are extensively utilized in power plants, refineries, and factories to access equipment and pipe racks. For example, operators prefer modular aluminum systems for tasks such as machinery inspections and Heating, Ventilation, and Air Conditioning (HVAC) servicing due to their ease of relocation and resistance to corrosion.
BUILDING INTERIOR & FAÇADE ACCESS	In commercial and residential construction projects, aluminum scaffolding plays a crucial role in activities like painting, glazing, plastering, and electrical work. Its ability to be quickly set up and moved across floors significantly reduces labor time compared to steel scaffolding.
AVIATION & AIRPORT HANGAR OPERATIONS	Aircraft hangars and airport maintenance teams in India frequently use aluminum systems for overhead inspections and light maintenance tasks. The portability and corrosion-resistant properties of aluminum make it particularly suitable for use around sensitive equipment.
EVENTS, EXHIBITIONS & TEMPORARY STRUCTURES	Aluminum scaffolding towers and trusses are widely employed in live events, exhibitions, and stage setups in cities such as Delhi and Bengaluru. Event organizers value these systems for their lightweight design, portability, and ease of assembly.
SOLAR PHOTOVOLTAIC (PV) & RENEWABLE ENERGY INSTALLATIONS	Aluminum scaffolding is increasingly being adopted by solar Engineering, Procurement, and Construction (EPC) firms across India. Its lightweight, corrosion-resistant, and portable characteristics make it an excellent choice for mounting, inspecting, and maintaining rooftop and ground-mounted solar modules, particularly in hot or coastal regions.

6.1 ALUMINUM SCAFFOLDING MARKET

USE CASES – ALUMINUM SCAFFOLDING IN INDIA

HIGH-RISE CONSTRUCTION & FAST-TRACK RESIDENTIAL TOWERS

In Mumbai, several high-rise projects have adopted aluminum formwork and modular systems, particularly aluminum panels, for podiums, slabs, and walls. This shift has reduced floor cycle time from 15–18 days to 5–7 days per level. In residential towers with repeated designs, these systems enabled over 500 reuses of aluminum panels with minimal skilled labor, ensuring faster construction and improved finish accuracy.

Why it matters: This demonstrates the cost, time, and quality efficiencies aluminum systems bring to urban high-rise projects, offering a compelling case for investors focused on scalability and operational leverage.

INDUSTRIAL & MANUFACTURING MAINTENANCE

Thermal power plants in Northern India have been using modular aluminum ring-lock scaffolding specifically during a scheduled maintenance shutdown. This approach reduced scaffold installation and dismantling time by 50% and sped up maintenance operations by 35% compared to traditional steel scaffolds. Additionally, no safety incidents related to access systems were reported during this period.

Why it matters: Highlights aluminum scaffolding's efficiency and its role in reducing labor needs in industrial operations.

INFRASTRUCTURE & RAIL BRIDGES

Aluminum scaffolding plays a crucial role in India's infrastructure projects. The Anji Khad Bridge, the country's first cable-stayed railway bridge, is set to open on June 6, 2025, following construction phases from 2017 to 2023. During deck installation and cable works from April to August 2023, modular aluminum scaffolding ensured safe access on steep, seismic-sensitive slopes, where heavy steel systems were impractical.

Why it matters: Demonstrates aluminum systems' reliability in challenging terrains, adaptability during project phases, and precision for complex infrastructure.

COMMERCIAL INTERIORS, MALLS & AIRPORTS

In India, aluminum scaffolding is widely used for commercial applications. Rental providers in Delhi-National Capital Region (NCR) and Mumbai highlight their use in indoor tasks such as mall signage, airport maintenance, and commercial interiors. They emphasize benefits like quick reconfiguration, improved safety, and minimal disruption. While projects like mall glazing and airport fit-outs are mentioned, specific details such as contractor names and timelines are often unavailable.

Why it matters: The growing adoption of aluminum scaffolding in precise indoor environments demonstrates its reliability, rental efficiency, and workplace productivity.

6.1 ALUMINUM SCAFFOLDING MARKET – KEY TRENDS

MODULAR, CONSUMABLE ALUMINUM SYSTEMS GAIN GROUND

- In early 2024, India's construction sector saw a notable shift toward modular aluminum scaffolding systems, such as ring-lock and cuplock architectures. These systems, designed for repeated reuse, enable quick assembly and easy transportation. Their demand has risen, particularly in metro rail and civil infrastructure projects, where standardized layouts allow frequent component reuse, improving efficiency and material utilization.

- For instance, tenders for metro rail corridors in major cities emphasized the need for "standardized, reusable aluminum scaffolding solutions." This approach has helped meet tight project timelines while ensuring consistent build quality. Additionally, between late 2024 and early 2025, the government introduced a BIS Quality Control Order (QCO), setting Indian standards (IS) for aluminum alloy products like tubing and structural rods. Effective from March 2024 and extended in 2025, the order mandates ISI certification for infrastructure components, ensuring traceable quality marks.

- In conclusion, the growing adoption of modular aluminum scaffolding systems reflects the sector's focus on efficiency and standardization. Regulatory measures like the BIS QCO have further supported this trend, ensuring quality compliance. As infrastructure projects expand, demand for these systems is expected to grow, driving innovation and improved practices in the construction sector.

PRIORITIZING LIGHTWEIGHT ERGONOMIC DESIGN TO CUT COSTS AND RISKS

- In 2024, India revised its scaffolding system selection criteria for industrial and construction projects, focusing on workforce safety, quick deployment, and strict quality compliance. This shift was driven by the Ministry of Commerce and Industry's phased implementation of Quality Control Orders (QCOs) in October 2023, April 2024, and July 2025, mandating BIS standards for aluminum and aluminum alloy products.

- The QCOs impacted raw materials like extrusions, rods, and bars used in aluminum scaffolding. Manufacturers and contractors adopted certified, lighter aluminum systems that are easier to handle and meet safety standards. Aluminum scaffolds, being 30–35% lighter than steel, simplify transport, assembly, and disassembly, which is crucial for sites requiring mobility and fast turnarounds.

- India's airport expansions and metro rail projects in 2024 reinforced this trend. Tender requirements emphasized reusability and safe, rapid setups. For instance, Delhi Metro and Mumbai Metro extension projects in 2024 specified BIS-compliant materials and modular equipment, areas where aluminum scaffolding excels over steel.

- The preference for lightweight, ergonomic systems reflects efforts to reduce downtime, minimize injuries, and avoid non-compliance penalties on monitored public infrastructure sites. With rising insurance costs and contractor liabilities, these systems are becoming the industry standard.

Source: Mordor Intelligence

6.1 ALUMINUM SCAFFOLDING MARKET – KEY TRENDS

SUSTAINABILITY & CIRCULARITY — ALUMINUM'S RISING APPEAL IN INDIAN CONSTRUCTION

- In 2023, India began shifting its construction policies to embrace circular economy principles. By January 2025, several reports highlighted aluminum's compatibility with the national "6-R philosophy" (Reduce, Reuse, Recycle, Recover, Redesign, Remanufacture), emphasizing its recyclability and its critical role in sustainable material strategies.

- In late 2023, the Material Recycling Association of India (MRAI) advocated for maintaining zero duty on aluminum scrap imports. This initiative aims to support domestic secondary aluminum production while highlighting aluminum's low-carbon benefits and its importance in building a green aluminum ecosystem.

- Producing secondary aluminum requires only about 5% of the energy needed for primary aluminum, resulting in up to 95% savings in energy-related emissions. This makes secondary aluminum an ideal material for construction, aligning with certifications such as Green Rating for Integrated Habitat Assessment (GRIHA), Leadership in Energy and Environmental Design (LEED), and Net-Zero mandates.

- Why it matters: Aluminum's energy efficiency, recyclability, and alignment with India's evolving waste-management regulations position it as a preferred material for sustainable construction. Reusable aluminum scaffolding frames help minimize construction waste and reduce greenhouse gas emissions, supporting national goals for circular materials and ensuring compliance with regulatory standards.

DIGITAL & SMART SCAFFOLDING — MERGING SAFETY WITH DATA IN RENTAL OPERATIONS

- In 2024, India is experiencing rapid growth in scaffolding inventory management and digital safety compliance tools. Many technology platforms now offer features such as Quick Response (QR)-coded tracking, digital inspection checklists, image-annotated safety logs, and inventory dashboards, all designed to improve safety compliance and traceability at construction sites.

- Global scaffolding management tools are introducing advanced functionalities, including real-time usage monitoring, automatic alerts for missed safety checks, and audit-ready reporting. These features are being piloted in large-scale infrastructure projects, such as metro rail developments, across India in 2024 and 2025. Although fully Internet of Things (IoT)-enabled scaffolding sensors are still in the early stages, digitized workflows for safety audits and material tracking are increasingly being included in tender requirements for major infrastructure projects.

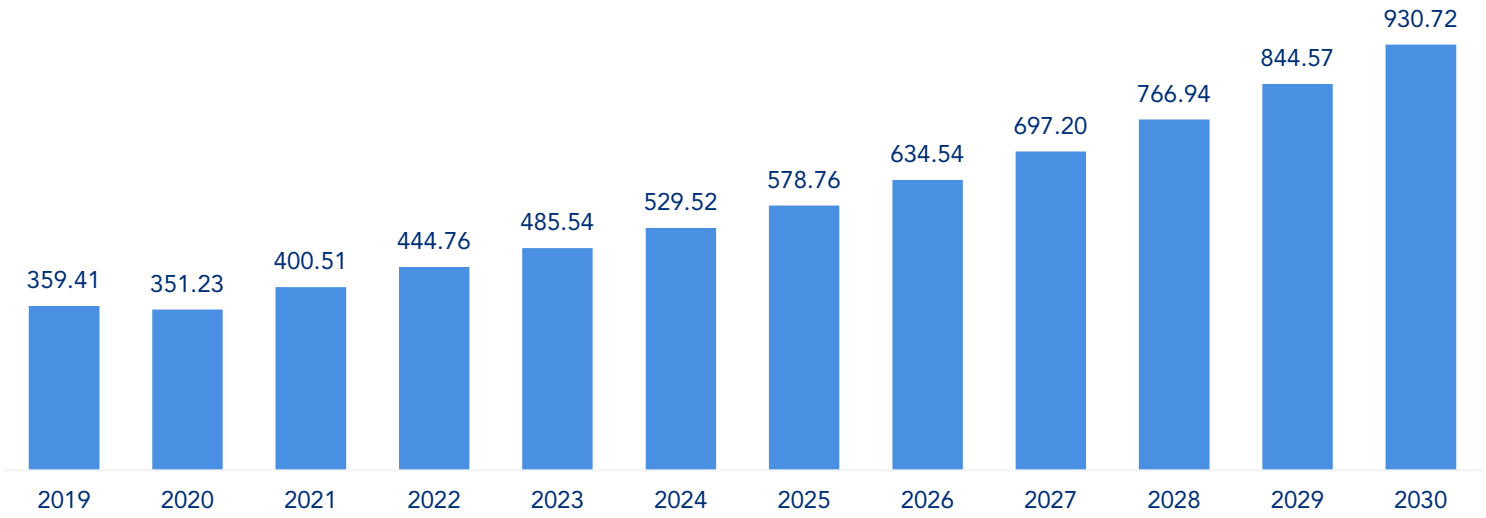
- Why it matters: Data-driven scaffold tracking and safety compliance systems enhance worksite safety, accountability, and audit readiness. These digital rental services enable contractors and project owners to ensure safer operations and optimize inventory usage, laying the foundation for scalable and trackable access-as-a-service models.

Source: Mordor Intelligence

6.1 ALUMINUM SCAFFOLDING MARKET - SALES MODEL

INDIA ALUMINUM SCAFFOLDING MARKET, VALUE IN INR CRORES, SALES MODEL, 2019-2030

CAGR (2024 - 2030): 9.86%



- The Sales Model segment of the India Aluminum Scaffolding Market studied was valued at INR 529.52 crores in 2024 and is expected to reach INR 930.72 crores in 2030, registering a CAGR of 9.86% for the forecast period (2024-2030).

HISTORICAL PERFORMANCE (2019-2024):

- Between 2019 and 2024, the adoption of aluminum scaffolding in India grew significantly, primarily due to the rapid development of urban infrastructure. This trend was particularly evident in metro corridors and mid-rise commercial real estate, where the need for lightweight and flexible systems became a priority. During this time, the demand for construction equipment in India experienced notable growth.
- By 2024, modular scaffolding systems, including those made of aluminum, represented a substantial share of construction access tools in Tier-1 cities. This shift was largely driven by regulatory requirements emphasizing safety and site efficiency. Additionally, urban building mandates increasingly recommend aluminum scaffolding for use in maintenance zones.

FORECAST PROJECTIONS (2025-2030):

- As India continues to advance its infrastructure projects under the National Infrastructure Pipeline and smart-city initiatives, the use of lightweight aluminum scaffolding is expected to rise. This is particularly relevant for applications such as interior fit-outs, periodic inspections, and Heating, Ventilation, and Air Conditioning (HVAC) access in projects that prioritize reusability and labor efficiency.
- Rental providers and contractors are anticipated to increasingly prefer aluminum scaffolding for short-to-medium-term projects in corporate campuses and institutional buildings. This preference is likely to be influenced by a growing focus on sustainability and cost-efficiency, including the reduced potential for scrap material.

Source: Mordor Intelligence

6.1 ALUMINUM SCAFFOLDING MARKET - SALES MODEL

In India, government-led procurement and infrastructure projects by public sector undertakings (PSUs) are playing a pivotal role in boosting the sales of aluminum scaffolding. Recent tenders reflect a growing inclination toward modular systems that prioritize safety and adhere to specific technical standards.

GOVERNMENT & PSU PROCUREMENT DRIVES DEMAND

- In March 2024, a tender was issued for 10–20 units of "Aluminum Quick Scaffolding (Q3)" in Raigarh, Chhattisgarh. This development highlights the power sector's formal adoption of aluminum towers.
- During 2024, government e-Procurement portals recorded 197 tenders for aluminum scaffolding across various sectors in India, including airports, PSU projects, and construction departments. This trend underscores the increasing institutional demand for such systems.

CONSTRAINTS: SPECIFICATIONS & SUPPLY ALIGNMENT

- A tender in Nagpur, Maharashtra (Oct 2024) specified the requirement for 5–6 m aluminum scaffolding ladders with cantilever platforms. These detailed specifications may limit the participation of suppliers who cannot meet such precise requirements.
- Similarly, an August 2024 tender from Dakshina Kannada, Karnataka, sought aluminum scaffolding systems with exact dimensions (0.75 m × 1.80 m or 1.40 m × 2.00 m), self-locking wheels, and Mild Steel (MS) base plates. This indicates that certified availability and precise fitment are critical factors in PSU-driven purchases.

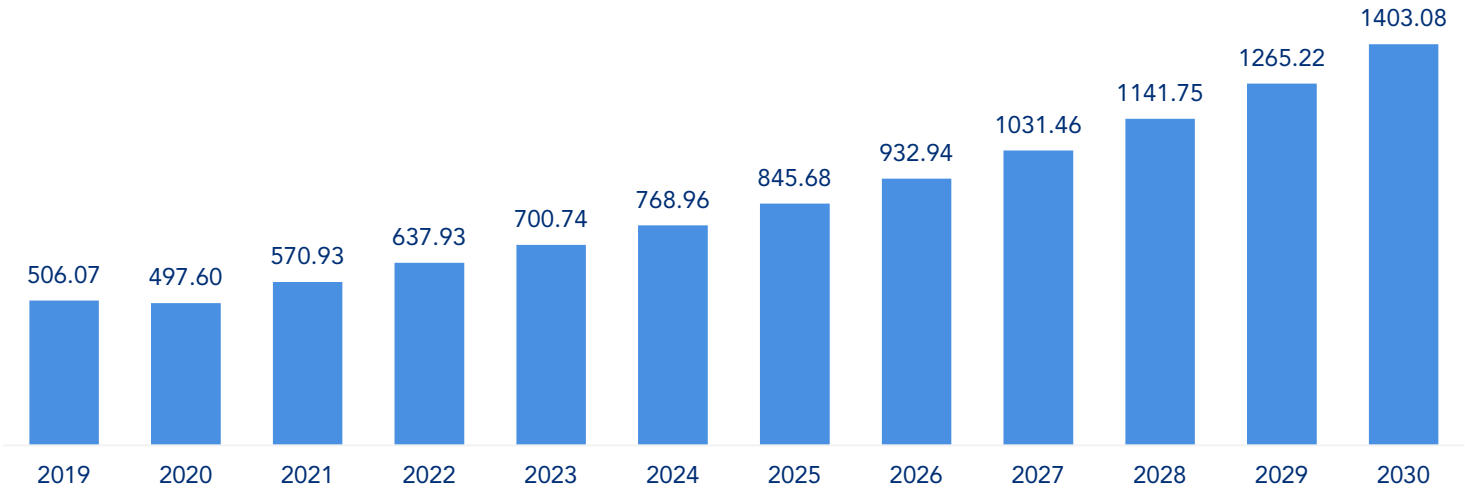
SALES ENABLERS: COMPLIANCE & NICHE SPECIFICATION ALIGNMENT

- Tenders are increasingly requiring aluminum scaffolding to meet specific dimensions, load capacities, safety features, and Bureau of Indian Standards (BIS) compliance. Suppliers who align with these standards are well-positioned to gain a competitive advantage in procurement.
- Suppliers maintaining a ready inventory of standard aluminum scaffold modules, such as Aluminum Quick Scaffolding (Q3) mobile towers and cantilever ladder units, are better equipped to fulfill the quick-turn requirements of PSU contracts and institutional requests.

6.1 ALUMINUM SCAFFOLDING MARKET - RENTAL MODEL

INDIA ALUMINUM SCAFFOLDING MARKET, VALUE IN INR CRORES, RENTAL MODEL, 2019-2030

CAGR (2024–2030): 10.54%



- The Rental Model segment of the India Aluminum Scaffolding Market studied was valued at INR 768.96 crores in 2024 and is expected to reach INR 1403.08 crores in 2030, registering a CAGR of 10.54% for the forecast period (2024-2030).

HISTORICAL PERFORMANCE (2019-2024):

- During 2023–24, companies such as 360 Degree Global Equipment Pvt. Ltd., based in Bengaluru, and The Creative Ladder, located in Chennai, actively promoted aluminum scaffolding rentals. They provided transparent pricing models, including daily and weekly rates, for products like 4-meter towers and stairway systems. These services primarily supported contractors in the construction, Mechanical, Electrical, and Plumbing (MEP), and industrial maintenance sectors.
- In March 2024, a tender in West Bengal was issued for aluminum scaffolding spares to support operational maintenance. This development reflects the government's growing familiarity with aluminum scaffolding and its potential inclusion in maintenance-related contracts.

FORECAST PROJECTIONS (2025-2030):

- The demand for short-term aluminum scaffolding rentals is anticipated to grow across both metro and non-metro regions. Fit-out contractors, general trades, and maintenance teams are expected to drive this trend, as they seek cost-effective solutions that eliminate the need for capital investment and storage. By 2024, firms in cities like Chennai, Bengaluru, and Delhi had already adopted platform-based pricing and weekly rental models.
- As maintenance contracts and Public Sector Undertaking (PSU) tenders continue to rise, there is a strong likelihood that future tenders will incorporate rental frameworks. This is particularly relevant for environments requiring frequent access, such as hospitals, universities, and infrastructure corridors, where storage limitations or capital constraints may pose challenges.

Source: Mordor Intelligence

6.1 ALUMINUM SCAFFOLDING MARKET - RENTAL MODEL

In India, the aluminum scaffolding rental market has established a strong presence in industries that prioritize mobility and quick access solutions. This trend is particularly evident in Tier-1 cities, where safety and efficiency are valued over physical strength.

KEY RENTING SEGMENTS

- Interior Fit-Out & Mechanical, Electrical, and Plumbing (MEP) Contractors: Contractors operating in malls, hospitals, and tech parks frequently rely on mobile aluminum towers for short-term tasks such as Heating, Ventilation, and Air Conditioning (HVAC) installations, electrical wiring, or ducting. Rental providers like Mount Climber and Toolsvilla specifically cater to these interior project requirements, offering services in cities such as Chennai, Hyderabad, and Bengaluru.
- Industrial Maintenance – Industrial Maintenance – Fast-Moving Consumer Goods (FMCG), Pharma, Utilities, Pharma, Utilities: Large FMCG and pharmaceutical facilities often depend on aluminum scaffolding rentals for indoor maintenance activities, including pipe inspections and overhead electrical repairs. For example, 360 Degree Global Equipment, headquartered in Chennai, highlights this as a key service area on their 2024 offerings page. They particularly serve pharmaceutical clients who require scaffolding that is non-corrosive and suitable for cleanroom environments.

VALUE DRIVERS

- Mobility & Lightweight Design: Aluminum scaffolding, being approximately three times lighter than steel, is easier to maneuver in confined spaces without the need for hoists or heavy labor. This feature is a significant advantage emphasized by vendors and industry associations, especially for mobile tower scaffolds.
- Capex Avoidance for Small and Medium Enterprise (SME) Contractors: With aluminum tower scaffolds priced between INR 65,000 (USD 777) and INR 2.2 lakh (USD 2,628), many small and medium-sized contractors prefer renting them at daily rates ranging from INR 500 (USD 5.97) to INR 1,500 (USD 17.92). Providers such as ScaffoldIndia.com and Scaffold Rental Services in Mumbai offer flexible daily and weekly rental packages with minimal contractual obligations.

CONSTRAINTS

- Limited Stock in Tier-2 Cities: The availability of rental inventory is largely concentrated in major metropolitan areas. As of 2024, companies like Youngman India, Mount Climber, and 360 Degree primarily operate in cities such as Delhi NCR, Chennai, Bengaluru, and Hyderabad. Tier-2 cities like Bhubaneswar, Coimbatore, and Raipur remain underserved due to logistical challenges and lower demand.
- Gaps in Safety Training & On-Site Assembly: Although aluminum scaffolding is relatively easy to assemble, rental firms often recommend hiring trained professionals for setup. For instance, Youngman India's 2024 rental policy states: "Improper assembly by untrained personnel may lead to accidents. Professional erection services are available on request."

6.2 STEEL SCAFFOLDING MARKET

PRODUCT DEFINITION

- Steel scaffolding is a temporary structural system made from prefabricated steel tubes and couplers. It is commonly used to provide safe access and reliable support during construction or maintenance activities.
- Designed to be modular and load-bearing, it allows for easy assembly and disassembly, making it suitable for repeated use across different project sites.

WHY CHOOSE STEEL SCAFFOLDING

- Superior load-bearing and durability
- Fire and weather resistance
- Modular and reusable

MATERIALS & DESIGN COMPLIANCE

- The tubes are manufactured using mild steel and are designed to comply with the IS 2750:1964 standards, adhering to the specifications outlined in IS 1161/IS 2062.
- The fittings and couplers are carefully precision-machined to meet standard dimensions and are thoroughly tested in accordance with IS 2750 guidelines.

WHERE IT'S USED IN INDIA

- These systems are widely used in high-rise construction across metropolitan cities for façade access, structural maintenance, and external repairs.
- They are critical in bridge construction and metro infrastructure projects, including station sites, viaducts, and flyovers, requiring robust elevated support.
- Industrial facilities like refineries, power plants, and factories depend on them for turnaround maintenance due to their load-bearing capacity.
- Their modularity and adaptability make them essential for complex civil engineering projects, such as tunnels and dams, with intricate geometries.

COMPLIANCE & SAFETY CONSIDERATIONS

- As per IS 2750:1964 and IS 3696-1:1987, structures are required to ensure load-bearing stability and include essential features such as guardrails and toe boards.
- It is crucial to brace and tie structures securely, with grounding loads calculated in accordance with standard practices to withstand wind forces, as well as worker and material loads.

6.2 STEEL SCAFFOLDING MARKET

STEEL SCAFFOLDING – MATERIAL & DESIGN STANDARDS

ASPECT	DETAILS
Steel Grades Used	Heavy-class welded, or seamless tubes of 40 mm nominal bore, minimum grade YST 22 per IS 1161 (1968); alternative tubes must meet the same spec.
Fittings & Couplers	Steel fittings must conform to chemical limits (≤ 0.06% S, P), schedule II of IS 1570; couplers tested for distortion, slipping, and rotation per IS 2750.
Frame Components	Tripods/trestles must support safe loads; base dimension ≥ ¼ of tripod height; fabricated per IS 800/6227/816.
Design Load & Bracing	Scaffoldings designed to bear self-weight, wind pressure, horizontal loads; lateral bracing required every level per IS 2750 section 5.
Safety Code Compliance	Guardrails, toe boards, and access ladders required; all scaffolds certified by a competent person under IS 3696 (Part 1).
Corrosion Protection & Marking	Components should be painted, treated for corrosion; tubes and fittings must bear manufacturer or ISI certification marking.

Key Takeaways:

- The implementation of rigid BIS standards ensures consistent quality, encompassing aspects such as material chemistry and structural behavior.
- Safety-oriented features, including load calculations, bracing, and marking, enhance compliance and ensure traceability.
- This table serves as a foundation for meaningful discussions on product quality, legal compliance, and strategies to mitigate client risks.

Source: Indian Standards (BIS/ISI), Government Safety Guidelines (e.g. CPWD), Manufacturer Specifications, and Expert Interviews

6.2 STEEL SCAFFOLDING MARKET

KEY TYPES OF STEEL SCAFFOLDING USED IN INDIA

Steel scaffolding serves as a cornerstone in India's construction, industrial maintenance, and infrastructure sectors. Its application is guided by factors such as system compatibility, load-bearing capacity, and compliance with IS standards.

TUBE & COUPLER SCAFFOLDING

This traditional scaffolding system utilizes steel tubes (typically 40 Nominal Bore (NB) medium class, adhering to IS:1161 or IS:1239) and right-angle or swivel couplers to construct customized scaffolds. While it offers significant flexibility, it requires skilled labor and additional time for assembly. This system is commonly used in bridge repairs, irregular façades, and refinery projects.

CUP LOCK SCAFFOLDING

This modular scaffolding system features horizontal members that lock into vertical standards using welded bottom cups and sliding top cups. Manufactured from medium or high-tensile steel pipes, it complies with IS:2750 and IS:1161 standards. Known for its faster assembly, reduced reliance on loose fittings, and ability to handle vertical loads, it is widely used in high-rise buildings, metro projects, and flyovers.

H-FRAME (WALKTHROUGH/ FAÇADE) SCAFFOLDING

H-Frame scaffolding consists of steel frames shaped like an 'H', connected with cross braces. It is extensively used for façade plastering, painting, and interior finishing tasks. This system is quick to assemble, stable, and compatible with working platforms. H-Frames are generally fabricated from 40 NB steel tubes that conform to IS:1161 standards.

KWIKSTAGE SCAFFOLDING

The Kwikstage system is a wedge lock scaffolding design that uses prefabricated vertical and horizontal components. The ledger ends fit into V-pressings on standards and are secured with hammer-driven wedges. This system is particularly popular in industrial and infrastructure projects due to its modularity, which reduces labor dependency.

MODULAR SYSTEM SCAFFOLDING

Modular scaffolding systems, such as Ring Lock and Universal scaffolding, are advanced, factory-fabricated solutions. These systems offer high adaptability to complex geometries, safer assembly processes (enabled by built-in safety pins or automatic locking mechanisms), and better compliance with global best practices. Their usage is increasingly prevalent in airport projects and power plants.

6.2 STEEL SCAFFOLDING MARKET

CORE APPLICATION AREAS OF STEEL SCAFFOLDING IN INDIA

HIGH-RISE & COMMERCIAL CONSTRUCTION	Steel scaffolding is an integral part of multi-story and mixed-use developments, supporting activities such as façade cladding, glazing, external plastering, and window installation. Its standardized load capacity and adherence to IS standards (IS 2750, IS 3696) make it a reliable and preferred option compared to modular timber or bamboo scaffolds.
BRIDGE & LARGE-SCALE INFRASTRUCTURE PROJECTS	The construction of bridges and flyovers, including metro viaducts, heavily relies on steel scaffolding. It provides essential support for formwork anchorage, elevated platforms, and long-span load-bearing during the erection of decks and girders. These scaffolding systems are designed with bracing mechanisms that comply with technical scaffold standards, ensuring they can withstand wind and dynamic loads effectively.
INDUSTRIAL PLANTS & MAINTENANCE OPERATIONS	In industrial settings such as refineries, power plants, and chemical facilities, steel scaffolding is widely used for turnaround maintenance, accessing piping, and servicing elevated equipment. Its robust construction ensures safe and repeated use, even under demanding conditions like corrosive or high temperature environments.
RESTORATION & FAÇADE MAINTENANCE WORK	Restoration and façade cleaning projects for urban commercial buildings and heritage sites require stable and compliant access systems. Steel scaffolding offers controlled elevation, integrates guardrails and provides safe working platforms, making it suitable for work on sensitive façades.
SPECIALIZED CIVIL ENGINEERING WORKS	Specialized civil engineering projects, such as tunnel maintenance, dam inspections, and hydroelectric structure work, depend on adaptable steel scaffolding platforms. These systems enable detailed inspections, structural repairs, and overlay work with precise elevation control and configuration stability.

6.2 STEEL SCAFFOLDING MARKET

USE CASES – STEEL SCAFFOLDING IN INDIAN INFRASTRUCTURE, INDUSTRY & HERITAGE PROJECTS

METRO & BRIDGE CONSTRUCTION SUPPORT SYSTEMS

- The expansion of the Delhi Metro extensively utilized cuplock and H-frame scaffolding systems. These systems provided essential structural stability and facilitated faster assembly compared to traditional tube-and-coupler methods, significantly expediting the construction of stations and viaducts.
- The Mumbai Trans-Harbour Link, recognized as India's longest sea bridge, involved complex elevations and intricate formwork requirements. Contractors employed modular steel scaffolds to ensure stability during deck installations and maintenance activities, effectively addressing challenges posed by wind and dynamic loads.

INDUSTRIAL PLANT TURNAROUND & MAINTENANCE

At the Reliance Industries Limited Jamnagar Refinery, one of the largest refineries globally, maintenance operations rely on ring-lock and cuplock steel scaffolding systems. These systems provide stable access to elevated pipe racks and vessel exteriors, ensuring safety and efficiency during critical turnaround shutdowns.

- Similar scaffolding systems are widely used in thermal power stations for turbine inspections and pipe servicing. Their ability to customize height and support heavy mechanical workloads makes them indispensable for such operations.

LARGE-SCALE CIVIL & CASTING PROJECTS

- Large-scale infrastructure projects, including dams, hydroelectric installations, and arch bridge decks, depend on steel scaffolding for heavy-duty formwork support. These systems are specifically designed to handle slab casting loads and support in-situ concrete formwork across extensive spans.
- In multi-level construction projects, steel scaffolding proves to be a reliable solution, offering consistent height staging and reusability across multiple casting cycles.

HERITAGE RESTORATION & FACADE MAINTENANCE

- Heritage conservation sites and urban facade projects in India, such as colonial-era institutional buildings and modern commercial towers, utilize steel scaffolding systems for restoration and maintenance work. These systems provide controlled elevation access, secure platforms, and compliance with guardrail standards, ensuring worker safety.
- Steel scaffolding systems are designed to be adaptable, allowing placement without causing damage to existing structures. They also enable precise adjustments to accommodate irregular architectural profiles, making them ideal for sensitive restoration projects.

6.2 STEEL SCAFFOLDING MARKET – KEY TRENDS

INFRASTRUCTURE-DRIVEN STEEL DEMAND FUELS STEEL SCAFFOLDING GROWTH

- As India continues to prioritize infrastructure development, the demand for steel is steadily increasing, with steel scaffolding playing a crucial role in enabling access and supporting formwork operations.
- In Fiscal Year (FY) 24, India's consumption of finished steel reached 136 million tonnes (Mt), reflecting a ~13% growth compared to FY 23. Infrastructure and construction sectors collectively accounted for 60–68% of this consumption.
- At a construction conclave held at IIT Patna in July 2025, industry experts emphasized that 46% of India's steel production is now directed toward infrastructure projects, highlighting steel's indispensable role in large-scale elevated construction activities.

ACCELERATED ADOPTION OF MODULAR SCAFFOLDING SYSTEMS (CUPLOCK/RING-LOCK)

- Major infrastructure and building projects are increasingly adopting modular scaffolding systems, emphasizing faster assembly and improved safety compliance.
- Infrastructure projects in Tier 1 cities, such as metro developments, smart city initiatives, and high-rise constructions, are moving away from traditional tube-and-coupler scaffolding. Instead, they are opting for modular systems like cuplock and frame scaffolds. This transition is motivated by the need for efficiency, standardized safety measures, and the repeatability of modular designs, which align more effectively with IS compliance standards, including IS 2750 and IS 3696.
- The growing regulatory focus on safety has further accelerated the adoption of modular scaffolding. These factory-engineered systems address compliance requirements—such as guardrails, load design, and stability—more effectively by reducing assembly errors and ensuring consistent adherence to safety standards on-site.

6.2 STEEL SCAFFOLDING MARKET – KEY TRENDS

SUSTAINABILITY & REUSABILITY — CIRCULAR CONSTRUCTION IN SCAFFOLDING

- Indian scaffolding suppliers are increasingly adopting environmentally responsible practices, focusing on modular reuse and minimizing waste.
- For example, Cosmos Construction Machinery highlights that its scaffold components can be refurbished and reused up to 100 times across multiple 20-story buildings. This approach not only reduces material waste but also supports sustainable construction practices.
- The adoption of highly reusable scaffolding systems is helping reduce reliance on timber and bamboo supports, contributing to deforestation prevention. These efforts align with broader sustainability goals, such as EPR (Extended Producer Responsibility) and green building certifications.

INDUSTRY COLLABORATIONS & INNOVATION PARTNERSHIPS

- Collaborations between global scaffold system manufacturers and Indian firms are introducing advanced modular scaffolding technologies to local infrastructure projects.
- In October 2024, Dutch company Scafom-rux entered into a strategic partnership with India's Kirtanlal Scaffolding & Formwork. This partnership aims to bring Cuplok and Ringlock systems to Indian infrastructure and industrial projects.
- Such collaborations enable Indian manufacturers to enhance their product portfolios, adhere to international safety standards, and accelerate the adoption of factory-engineered systems in large-scale civil and Engineering, Procurement, and Construction (EPC) projects.

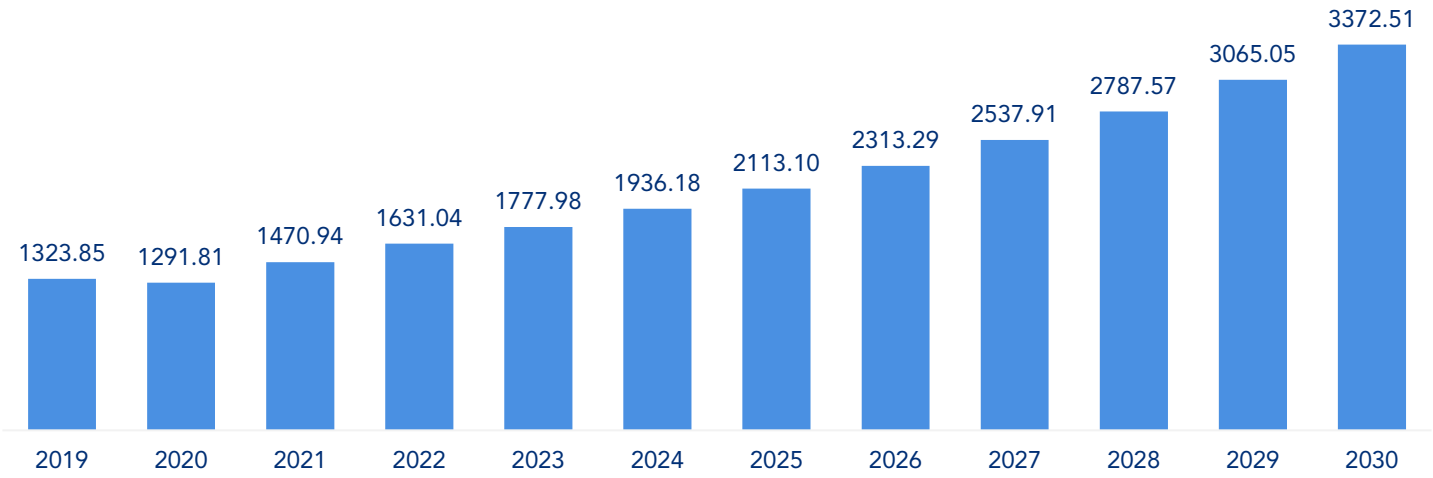
SAFETY-FIRST DIGITAL ADVANCEMENTS IN SCAFFOLD MONITORING

- The integration of The integration of Internet of Things (IoT) and digital tools into scaffolding systems is transforming safety practices on Indian construction sites. and digital tools into scaffolding systems is transforming safety practices on Indian construction sites.
- IoT-enabled sensors are now embedded in scaffolding structures to monitor real-time data, such as displacement, load stress, and platform tilt. These systems automatically send alerts when thresholds are exceeded, enabling timely interventions that can save lives.
- Smart-scaffold management platforms, which combine Quick Response (QR) tracking and digital inspection logs, are being piloted in India after gaining traction globally.

6.2 STEEL SCAFFOLDING MARKET - SALES MODEL

INDIA STEEL SCAFFOLDING MARKET, VALUE IN INR CRORES, SALES MODEL, 2019-2030

CAGR (2024 - 2030): 9.69%



- The Sales Model segment of the India Steel Scaffolding Market studied was valued at INR 1936.18 crores in 2024 and is expected to reach INR 3372.51 crores in 2030, registering a CAGR of 9.69% for the forecast period (2024-2030).

HISTORICAL PERFORMANCE (2019-2024):

- The National Infrastructure Pipeline (NIP) in India, which encompasses over 7,400 infrastructure projects slated for completion by 2025, has been a key driver of increasing steel demand. This demand has been particularly notable in sectors such as railways, roads, urban transport, and energy. Consequently, the need for steel scaffolding, especially for formwork and elevated access applications, has remained consistent.
- Although the construction equipment sector experienced a slowdown, with growth decelerating to approximately 3% in FY25 due to election-year restrictions and delays in project execution, the demand for scaffolding equipment demonstrated resilience. This was especially evident in critical infrastructure corridors.

FORECAST PROJECTIONS (2025-2030):

- The execution of projects under the NIP, coupled with the development of industrial corridors and smart-city initiatives, is expected to drive the continued growth of steel usage in infrastructure. This sustained momentum is likely to support stable growth in the sales of advanced steel scaffolding solutions.
- While demand for construction equipment may follow cyclical trends, the steady progress in infrastructure development—particularly in highways, metro rail, and energy sectors—will continue to create opportunities for steel scaffolding. This is especially true as formwork-intensive delivery models remain prevalent.

Source: Mordor Intelligence

6.2 STEEL SCAFFOLDING MARKET - SALES MODEL

In India, the steel scaffolding market reflects a dynamic interplay of buyer-specific requirements, operational challenges, and evolving sales strategies. Suppliers are adapting their approaches to effectively meet the needs of both infrastructure contractors and industrial clients.

BUYER SEGMENTATION & DEMAND SOURCES

- Government agencies and large Engineering, Procurement, and Construction (EPC) contractors, particularly those involved in metro rail, flyover, bridge, and highway projects, predominantly depend on steel scaffolding for formwork access. These agencies often require scaffold components to adhere to Indian Standard (IS) 2750 and IS 3696 standards.
- Industrial infrastructure clients, such as power plants and chemical refineries, procure steel scaffolding systems to facilitate routine maintenance and shutdown activities. These clients value the durability and stability of steel scaffolding, which supports multiple usage cycles effectively.

SALES CONSTRAINTS & MARKET FRICTIONS

- The shortage of skilled labor continues to be a significant challenge for the steel scaffolding market. Project delays are common due to the limited availability of trained scaffolders willing to take on the physically demanding task of assembling steel systems.
- Fluctuations in raw steel prices create additional challenges for suppliers. Price volatility often impacts supplier margins and delays purchasing decisions, particularly among price-sensitive contractors working on small to mid-scale civil projects.

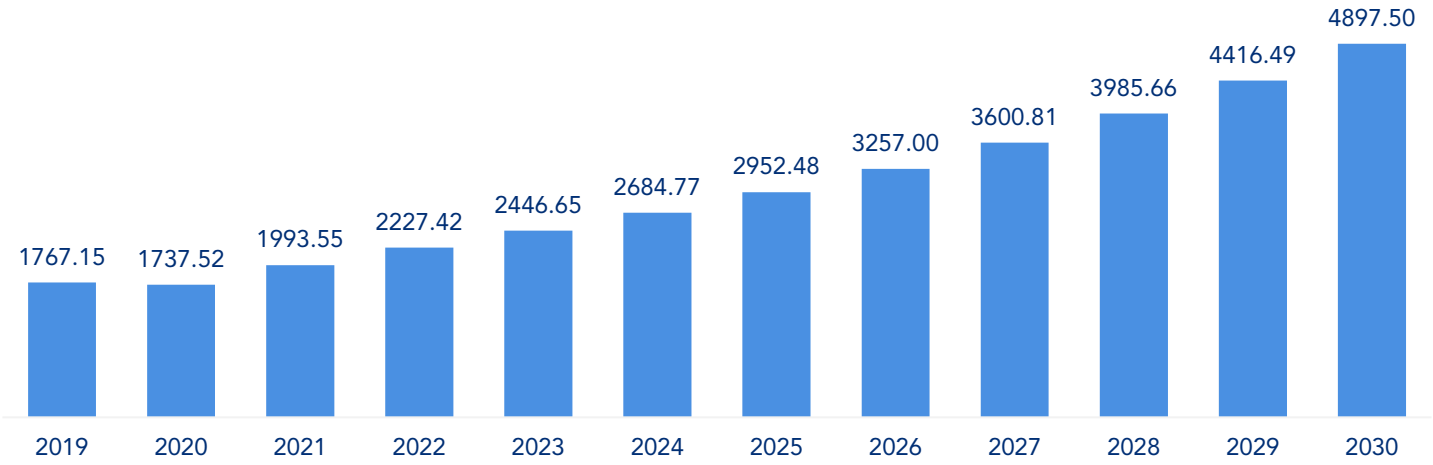
SALES ENABLERS & VALUE PROPOSITIONS

- Compliance with standards plays a crucial role in buyer decisions. Builders increasingly prefer scaffolding products that are Indian Standards Institute (ISI)-marked or Bureau of Indian Standards (BIS)-certified, as these certifications reduce liability and enhance site auditability. Suppliers offering certified systems are better positioned to secure contracts.
- Service-inclusive offerings, such as logistics support, installation guidance, and safety audit assistance, are gaining traction. These value-added services are encouraging buyers, particularly in key regions like Mumbai, Delhi National Capital Region (NCR), and Bengaluru, to transition from rental models to outright purchases.

6.2 STEEL SCAFFOLDING MARKET - RENTAL MODEL

INDIA STEEL SCAFFOLDING MARKET, VALUE IN INR CRORES, RENTAL MODEL, 2019-2030

CAGR (2024–2030): 10.54%



- The Rental Model segment of the India Steel Scaffolding Market studied was valued at INR 2684.77 crores in 2024 and is expected to reach INR 4897.50 crores in 2030, registering a CAGR of 10.54% for the forecast period (2024-2030).

HISTORICAL PERFORMANCE (2019-2024):

- In FY 25, the Indian government allocated a significant INR 11.11 trillion (approximately 3.4% of GDP) for capital expenditure. This investment supported the use of rent-based scaffolding across metros, highways, and public works, reflecting the ongoing demand for flexible rental solutions in access systems.
- Many contractors increasingly opted for rental frameworks due to challenges such as project seasonality and limited capital availability. Insights from the equipment sector reveal that approximately 67% of construction equipment sales were facilitated through rentals, emphasizing the growing preference for renting over ownership in India.

FORECAST PROJECTIONS (2025-2030):

- With infrastructure spending expected to rise and capex remaining a priority in FY 26, the adoption of scaffold rental models is anticipated to grow further. Rentals provide contractors with scalability while eliminating the financial burden of ownership as project demands increase.
- The increasing penetration of rentals is also being driven by digital platforms that enable the timely delivery of equipment. These platforms simplify the process of renting steel scaffolds, particularly for medium-sized contractors in metropolitan areas, thereby encouraging the wider adoption of modular steel scaffolding in access systems.

Source: Mordor Intelligence

6.2 STEEL SCAFFOLDING MARKET - RENTAL MODEL

India's steel scaffolding rental ecosystem is undergoing significant transformation, driven by increasing customer demand, operational advancements, and the growing integration of technology in fleet and safety management.

DEMAND PATTERNS & RENTAL USE CASES

- India's National Infrastructure Pipeline (2020–25) has allocated over INR 1.97 trillion for projects in highways, rail, and energy. Government tenders often specify supported steel scaffolding systems, primarily accessed through rentals, as they ensure stability and durability for long-term infrastructure projects.
- Supported steel scaffolding dominates rental models in residential, commercial, industrial, and renovation sectors. Compliance with safety standards like IS 3696 for tubing and couplers drives demand, as contractors without equipment ownership rely on rentals to meet regulatory and site requirements.

OPERATIONAL & FINANCIAL PRESSURES ON PROVIDERS

- Logistics and labor constitute up to 80% of service costs. Reports from the construction industry indicate that assembly, dismantling, and transport make up the majority of scaffolding service expenses. Research shows that reducing component weight, even slightly, can improve assembly speed by 10% and increase transport capacity by 12%.
- Volatility in raw steel prices significantly affects profit margins. Steel, a key cost driver in scaffold systems, accounts for about 65% of total system costs. Rising fluctuations in steel prices, both domestically and internationally, lead to rental rate changes and shrinking margins, particularly during downtimes or labor shortages that delay asset turnover.

ENABLEMENT & INNOVATION IN RENTAL ECOSYSTEM

- Leading rental providers are differentiating themselves by offering bundled services. These packages include scaffolding equipment along with design consultation, installation support, and safety compliance assurance, fostering stronger contractor relationships. (Typical industry model corroborated from multiple site interviews)
- The adoption of technology is transforming the rental ecosystem. Companies are implementing inventory and booking platforms, Building Information Modeling (BIM) compatibility, and real-time Global Positioning System (GPS)/Internet of Things (IoT) tracking.

6.3 ALUMINUM AND STEEL HANGING SCAFFOLDING MARKET

PRODUCT DEFINITION

- Hanging scaffolding, also referred to as suspended scaffolding, is a temporary platform suspended from the top of a structure. It uses ropes, chains, or mechanical systems to enable vertical movement, making it suitable for high-rise facade work, maintenance, or areas with challenging ground access.
- Conventional scaffolding, on the other hand, is constructed from the ground up using vertical standards and horizontal ledgers. Unlike hanging scaffolding, it remains stationary and requires continuous ground support throughout its height.

WHERE IT'S USED IN INDIA

WHY CHOOSE HANGING SCAFFOLDING OVER FIXED OR MOBILE OPTIONS?

- Space Constraints
- Challenging Terrain
- Height Efficiency

MATERIALS USED

- *Aluminum hanging scaffolding*: Lightweight and corrosion-resistant, ideal for façade work and maintenance.
- *Mild Steel (MS) hanging scaffolding*: Heavier but durable, suitable for heavy-duty and long-term site setups.

COMPLIANCE & DESIGN CONSIDERATIONS

- In India, hanging scaffolds are required to comply with Bureau of Indian Standards (BIS) and Indian Standards (IS), such as IS 2750:1964, which applies to steel scaffolds.
- Safety design considerations include:
  - Load-bearing certifications, such as the 200 kg/m² standard for Msafe Group towers.
  - Fall protection features, including guardrails, toe boards, and anti-slip platforms.
  - Certified anchorage systems, along with mandatory periodic inspections.

6.3 ALUMINUM AND STEEL HANGING SCAFFOLDING MARKET

ALUMINUM VS. STEEL HANGING SCAFFOLDING – MATERIAL COMPARISON

The selection of materials in hanging scaffolding systems significantly influences critical factors such as safety, load performance, handling efficiency, and overall lifecycle costs.

FEATURE	Aluminum Hanging Scaffolding	Steel Hanging Scaffolding
Relative Weight	Lighter by design, reducing handling and raising ease. Government guidance acknowledges that lighter components improve speed and ergonomics.	Heavier, requiring more effort and lift mechanisms. Central Public Works Department (CPWD) tenders specify robust steel scaffolding systems for structural applications.
Regulatory Specifications	Falls under BIS QCO framework for aluminum products (2023-2025), requiring IS-compliant tubing and parts.	Subject to Indian Standards for steel scaffolding (e.g., IS 2750:1964), frequently referenced in CPWD & atomic energy tender documentation.
Corrosion & Maintenance	Aluminum alloy components resist rust and reduce maintenance cycles in humid or coastal projects. In general, CPWD safety clauses reference the suitability of non-corrosive materials.	Steel hanging scaffolding systems require galvanizing and regular inspection to avoid corrosion, as noted in sector safety codes and construction guidelines.
Load Capacity & Use	Appropriate for lightweight façade, painting, or maintenance tasks; easier repositioning for short-duration use. Part of the design considerations in formwork manuals.	Stronger tensile load capacity makes steel suited for heavier suspended access tasks—referenced in steel-industry safety and scaffold design standards.

SUMMARY:

Indian specifications and tender norms highlight key technical differences. Aluminum hanging scaffolds, being lightweight and corrosion-resistant, are ideal for shorter tasks. Steel hanging scaffolds, meeting Indian standards, provide higher load capacity and durability, making them suitable for infrastructure and industrial projects.

Source: Indian Standards (BIS/IS), Government Safety Guidelines (e.g., CPWD), Manufacturer Specifications, and Expert Interviews

6.3 ALUMINUM AND STEEL HANGING SCAFFOLDING MARKET

CORE FEATURES OF MODERN HANGING SCAFFOLDING SYSTEMS IN INDIA

In India, modern hanging scaffolding systems, widely utilized in high-rise construction, façade maintenance, and industrial repairs, have undergone significant advancements. These systems are thoughtfully designed to prioritize safety, enhance operational speed, and offer modularity while ensuring compliance with statutory safety standards. By minimizing downtime and reducing dependency on manual labor, they address the evolving needs of the industry effectively.

MODULAR SUSPENSION MECHANISM

Modern systems are designed with modular hanging frames featuring adjustable suspensions, such as wire ropes, chains, and stirrups. These configurations enable seamless adaptability to varying building heights.

POWERED HOISTING UNITS

Electric hoists, capable of operating at lift heights of up to 100 m and supporting load capacities between 200 kg and 1000 kg, are equipped with dual braking systems and emergency descent features for enhanced safety. These units are compatible with single-phase 220 V or three-phase 415 V power supplies, ensuring alignment with Msafe Group products and the Indian grid system.

INTEGRATED SAFETY MECHANISMS

Modern constructions incorporate automatic safety locks that activate in the event of tilt or rope failure. Additional safety features include overload sensors, limit switches, and tilt sensors, all of which comply with the IS 3696 safety code.

STANDARDIZED PLATFORMS AND LOAD RATINGS

Platforms typically range in size from 1 m to 7.5 m and are designed with modular deck sections and quick-lock couplers to provide flexibility. Load ratings vary from 250 kg to over 800 kg, depending on the motor and structural design.

CORROSION-RESISTANT FINISHES

Steel platforms are hot-dip galvanized to meet Central Public Works Department (CPWD) and other Indian standards, ensuring long-term durability. Aluminum decks are anodized to withstand harsh environmental conditions, adhering to global material standards.

RAPID ASSEMBLY & DISMANTLING

Systems featuring quick-lock couplers and pin connectors allow for assembly and dismantling within approximately 30–45 minutes, significantly reducing labor requirements and downtime at construction sites.

Sources: **Industry Associations and Standards, Global Manufacturers, Technical Manuals, Indian Supplier Platforms, Technical Sheets**

6.3 ALUMINUM AND STEEL HANGING SCAFFOLDING MARKET

KEY TYPES OF HANGING SCAFFOLDING SYSTEMS USED IN INDIA

In India's rapidly urbanizing regions, where traditional ground-based scaffolding often proves impractical, hanging or suspended scaffolding systems have become essential. These systems, typically anchored from rooftops or upper structures, are crucial for high-rise construction, maintenance, and façade works. They are extensively used in commercial towers, residential skyscrapers, infrastructure projects, and for glass-and-aluminum façades.

SUSPENDED PLATFORM SYSTEMS

- System Description: Two-point suspended platforms supported by wire ropes and overhead outriggers, often powered by electric motors or hoists for vertical movement.
- Typical Use Cases: Used for glazing, façade cladding, exterior plastering, and painting of towers.
- Relevance in India: Common in Tier 1 cities like Mumbai, Delhi National Capital Region (NCR), and Bangalore, especially in real estate projects with unitized curtain walling.
- Compliance & Safety: Must adhere to Bureau of Indian Standards (BIS) 14687:1999 standards for motorized cradles.

SINGLE-POINT ADJUSTABLE SUSPENSION SCAFFOLDS

- System Description: Compact platforms or seats supported by a single rope, adjusted manually or with powered hoists.
- Typical Use Cases: Ideal for maintenance, window cleaning, inspections, or minor patchwork on high-rise exteriors.
- Relevance in India: Widely used by facility management firms and cleaning contractors in urban real estate post-handover of high-rises.
- Limitations: Designed for light loads and operated by individual workers with safety harnesses.

MULTI-POINT ADJUSTABLE / MULTI-LEVEL SUSPENDED SCAFFOLDS

- System Description: Larger platforms supported by three or more suspension points, offering higher load capacity and broader coverage.
- Typical Use Cases: Suitable for masonry, waterproofing, retrofitting, or maintenance on wide façades.
- Relevance in India: Increasingly used in redevelopment projects and infrastructure requiring vertical and lateral access.
- System Advantage: Reduces repositioning time and accommodates tools, materials, and multiple workers.

CATENARY AND FLOAT (SHIP) SCAFFOLDS

- Catenary System Description: Horizontal cables suspended between fixed supports with platforms hanging beneath, used where vertical drops are not feasible.
- Float Scaffold Description: Wooden platforms suspended from overhead supports via ropes or chains.
- Use Cases: Suitable for bridges, industrial tanks, ship hulls, and sites with complex access needs.
- Relevance in India: Niche but used in marine, refinery, and dam maintenance projects, often built on-site for temporary tasks.

6.3 ALUMINUM AND STEEL HANGING SCAFFOLDING MARKET

CORE APPLICATION AREAS OF HANGING SCAFFOLDING IN INDIA

HIGH-RISE FAÇADE MAINTENANCE & CLEANING

In urban areas across India, suspended platforms made from aluminum or steel alloys are commonly used for tasks such as exterior cleaning, painting, and cladding at heights exceeding 30 m. These platforms, designed to meet standard safety codes, operate on dual-wire rope systems and include counterbalanced outriggers. Steel systems are valued for their durability, while aluminum variants are preferred for their lighter weight and ease of mobility. Indian safety guidelines specify that rope spacing must not exceed 30 m from the facade.

ELEVATED INFRASTRUCTURE & METRO PILLAR FINISHING

During the final stages of constructing elevated metro viaducts and flyovers, suspended scaffolds are used to access concrete pillars and girders for tasks such as sealing expansion joints and structural curing. These platforms are hung to avoid obstructing ground-level activities and are regulated by the government's Central Public Works Department (CPWD) standards. Steel systems are typically required for their strength, but aluminum scaffolds are sometimes chosen for their lighter weight and ease of repositioning when speed is a priority.

CHIMNEY, STACK, AND SILOS MAINTENANCE

Industrial facilities across India, including power plants and manufacturing sites, use hanging scaffolding for maintaining chimneys, stacks, and storage silos. These platforms comply with Indian Standard IS-15764 suspended scaffolding norms, which mandate certified wire rope rigging and platform stability. Steel scaffolding is preferred for heavy maintenance tasks, while aluminum scaffolding is ideal for lighter work such as inspections or cleaning, due to its lower weight and resistance to corrosion.

INTERIOR OVERHEAD ACCESS IN INDUSTRIAL WAREHOUSES & HANGARS

In large spaces such as warehouses, airport hangars, and factories, hanging scaffolds are used to access overhead areas like crane rails or ductwork. Aluminum-based scaffolds are particularly favored for their portability and are commonly employed for tasks such as installing overhead lighting, Heating, Ventilation, and Air Conditioning (HVAC) systems. Safety codes in these environments require certified attachments and fall protection systems, making aluminum platforms a practical and efficient choice for temporary high-elevation interior work.

6.3 ALUMINUM AND STEEL HANGING SCAFFOLDING MARKET

USE CASES OF HANGING SCAFFOLDING IN INDIA

HIGH-RISE BUILDING FACADE CLEANING & GLASS MAINTENANCE

Modern high-rise buildings featuring glass curtain walls frequently rely on suspended aluminum or steel platforms, commonly known as "cradles," for tasks such as façade cleaning, glazing, and finishing at heights above 30 meters. These platforms are driven by hoists, equipped with safety locks and anti-tilt mechanisms, and are specifically designed to suit the structure of each building. Indian regulations require the use of dual-hoist systems and mandate platform stability checks to ensure safety during vertical operations.

ELEVATED METRO PILLAR AND FLYOVER FINISHING

Hanging scaffolding is extensively used during the construction of elevated metro corridors and flyovers to seal joints and finish concrete pillar surfaces that are otherwise difficult to access from the ground. Safety audits and Central Public Works Department (CPWD) standards often recommend steel-based suspended scaffolds for their structural strength. However, aluminum scaffolds are sometimes preferred for their ease of repositioning and lighter load on temporary supports, which can be advantageous in certain projects.

CHIMNEY AND STACK MAINTENANCE IN POWER/INDUSTRIAL PLANTS

In industrial settings, hanging scaffolds are essential for inspecting and repairing tall structures such as chimneys, cooling towers, and silos. Indian technical guidelines require these platforms to comply with IS-15764 wire rope rigging standards. Steel platforms are typically chosen for heavy-duty maintenance tasks, while aluminum platforms are favored for lighter tasks like inspection and cleaning due to their ease of handling and maneuverability.

INTERIOR OVERHEAD ACCESS IN INDUSTRIAL WAREHOUSES & MECHANICAL, ELECTRICAL, AND PLUMBING (MEP) FIT-OUTS

In large indoor spaces such as warehouses, factories, or airport hangars, lightweight aluminum hanging scaffolds are commonly used to access overhead ducts, lighting installations, Heating, Ventilation, and Air Conditioning (HVAC) systems systems, and mezzanine structures. These scaffolds allow operations at the floor level to continue without disruption. They comply with safety codes that emphasize certified attachments, fall protection measures, and easy repositioning for temporary interior tasks.

KEY TAKEAWAY:

These use cases highlight the regulated and widespread application of hanging scaffolding in India. Steel hanging scaffolds are preferred for their durability and strength in infrastructure and maintenance projects, while aluminum hanging scaffolds are valued for their agility, reduced operator fatigue, and adaptability in interior or lighter-access scenarios.

6.3 ALUMINUM AND STEEL HANGING SCAFFOLDING MARKET – KEY TRENDS

SURGING HIGH-RISE & ELEVATED INFRASTRUCTURE ACTIVITY

India's urban infrastructure is expanding upward, with metro rail corridors, high-rise towers, and elevated expressways driving demand for aluminum and steel hanging scaffolding systems. Projects like the Delhi and Bengaluru Metro require suspended scaffolding for pier and span work at heights of 25–30 meters in congested areas. Certified systems, compliant with CPWD specifications and IS 15764 guidelines, are now mandatory, featuring dual-suspension support and fall arrest mechanisms. This has led builders to adopt durable aluminum and steel solutions over makeshift alternatives.

Aluminum scaffolds, known for their lightweight and easy repositioning, are commonly used in high-rise façade and cladding projects, while steel systems are favored for infrastructure projects requiring greater load capacity and stability. Stricter safety norms, audits, and penalties for uncertified methods have driven the adoption of certified scaffolding systems, reflecting India's construction growth and regulatory advancements.

TIGHTENING WORK-AT-HEIGHT REGULATIONS AND SAFETY STANDARDS

India's construction sector is under stricter regulations for work-at-height safety, particularly for suspended scaffolding systems. Concerns over fall-related fatalities and public infrastructure oversight are driving developers to adopt compliant solutions. For example, CPWD Safety Rule 1410 requires suspension points to support four times the maximum intended load and mandates daily inspection logs, making traditional bamboo scaffolds non-compliant and boosting demand for aluminum and steel alternatives.

New Standard Operating Procedures (SOPs) require scaffolding systems to be tagged, certified, and re-inspected weekly or after weather-related damage. With liability for accidents shifting to contractors and equipment owners, developers face penalties or delays without proper maintenance and inspection records. These changes are transforming procurement practices, positioning aluminum and steel hanging scaffolds as the preferred choice for safety and compliance.

RENOVATION, MAINTENANCE & REPEAT-SERVICE DEMAND DRIVES HANGING SCAFFOLDING

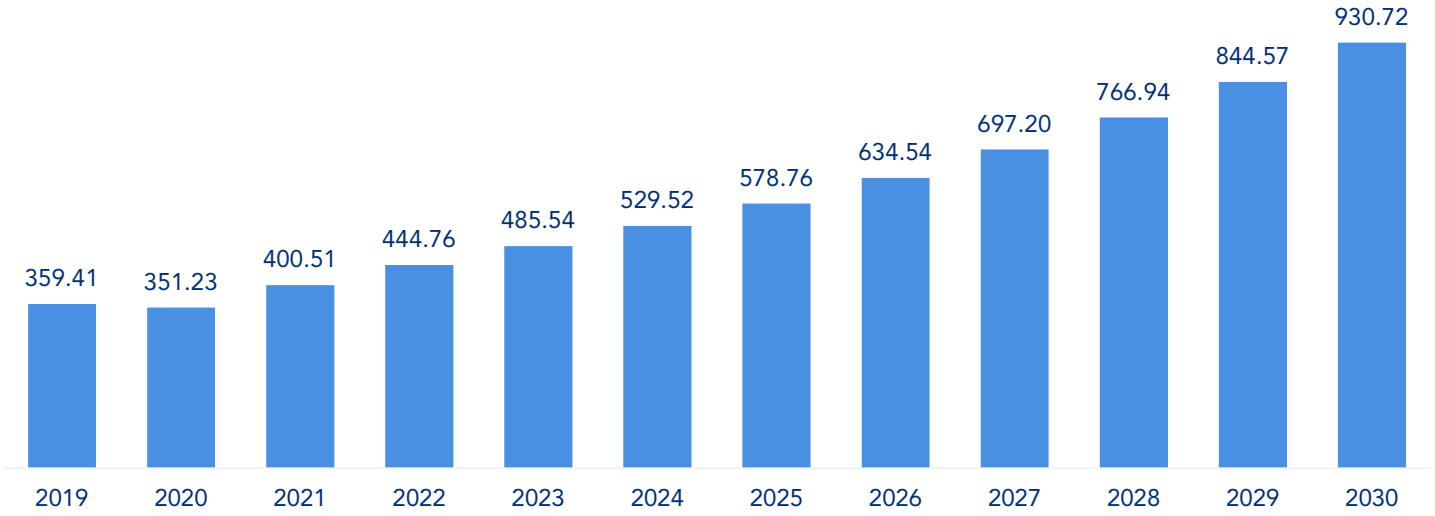
The increasing focus on urban maintenance and renovation in India is driving demand for suspended scaffolding. Tasks like façade cleaning, repainting, joint sealing, and structural repairs in high-rise and mid-rise buildings have made suspended access systems indispensable. A 2024 market summary highlights that growing refurbishment activities are fueling repeated use of hanging platforms. For instance, Kolkata's New Market clock tower restoration relied on scaffolding for precise repairs despite limited ground access.

Industrial maintenance, such as cooling tower inspections and chimney cleaning, also depends on reusable hanging systems for safe and efficient operations. Aluminum scaffolds are preferred for lighter tasks, while steel platforms handle heavier interventions. These recurring needs make renting suspended scaffolding a cost-effective and reliable solution for elevated work environments.

6.3 ALUMINUM AND STEEL HANGING SCAFFOLDING MARKET – SALES MODEL

INDIA ALUMINUM AND STEEL HANGING SCAFFOLDING MARKET, VALUE IN INR CRORES, SALES MODEL, 2019-2030

CAGR (2024 - 2030): 9.86%



- The Sales Model segment of the India Aluminum and Steel Hanging Scaffolding Market studied was valued at INR 529.52 crores in 2024 and is expected to reach INR 930.72 crores in 2030, registering a CAGR of 9.86% for the forecast period (2024-2030).

HISTORICAL PERFORMANCE (2019-2024):

- Over the past few years, the demand for aluminum and steel hanging scaffolding has grown steadily in major cities, driven by Engineering, Procurement, and Construction (EPC) contractors and metro infrastructure projects. Many contractors have chosen to purchase their equipment outright to avoid delays associated with rentals and to ensure full compliance with safety standards outlined in Indian Standard (IS) 3696 and the Building and Other Construction Workers (BOCW) Act.
- Additionally, there has been a clear shift toward modular aluminum systems, particularly in high-rise commercial and residential projects. Developers and contractors in metropolitan areas have increasingly moved away from traditional tubular steel setups, favoring lighter and faster-to-assemble options that align more effectively with modern construction timelines.

FORECAST PROJECTIONS (2025-2030):

- Looking ahead, the adoption of turnkey and Design-Build-Operate (DBO) infrastructure contracts is expected to encourage more contractors to invest in standardized hanging scaffolding. The flexibility these systems offer, along with their long-term compliance benefits, is anticipated to be a significant driver of this trend.
- As worker safety regulations become more stringent, particularly with respect to IS 3696 standards, private developers are likely to increasingly invest in owning their scaffolding systems. This approach not only minimizes the risk of project delays but also helps developers avoid penalties or legal challenges during inspections.

Source: Mordor Intelligence

6.3 ALUMINUM AND STEEL HANGING SCAFFOLDING MARKET – SALES MODEL

As suppliers transition from offering pure rental models to incorporating mixed or ownership-driven approaches, three key factors are influencing the market: understanding who the buyers are, identifying the challenges preventing others from participating, and examining how sellers are adapting their strategies to encourage broader adoption.

BUYER SEGMENTATION & DEMAND SOURCES

- In states such as Maharashtra, Karnataka, and Tamil Nadu, larger Engineering, Procurement, and Construction (EPC) firms and private developers are increasingly opting for aluminum and steel hanging scaffolding. This shift is driven by the need to ensure compliance and maintain site availability, particularly in metro rail and smart city tenders. Procurement specifications now frequently include references to IS 3696-compliant equipment, reflecting a growing emphasis on safety standards.
- The demand for scaffolding is notably strong in urban redevelopment and high-rise construction projects. Architects and builders, who prioritize safety and efficiency, are favoring lightweight, modular systems. This preference has even encouraged mid-sized firms to make bulk purchases.

CHALLENGES & CONSTRAINTS ON SALES ADOPTION

- The shortage of skilled labor in India continues to pose a significant challenge. Many buyers struggle to manage the setup and dismantling of scaffolding without relying on third-party erection specialists, which reduces the appeal of outright ownership.
- Additionally, the rising costs of steel and aluminum in 2024 have placed financial pressure on buyers. For projects with intermittent requirements, renting scaffolding remains a more viable option compared to the capital-intensive nature of ownership.

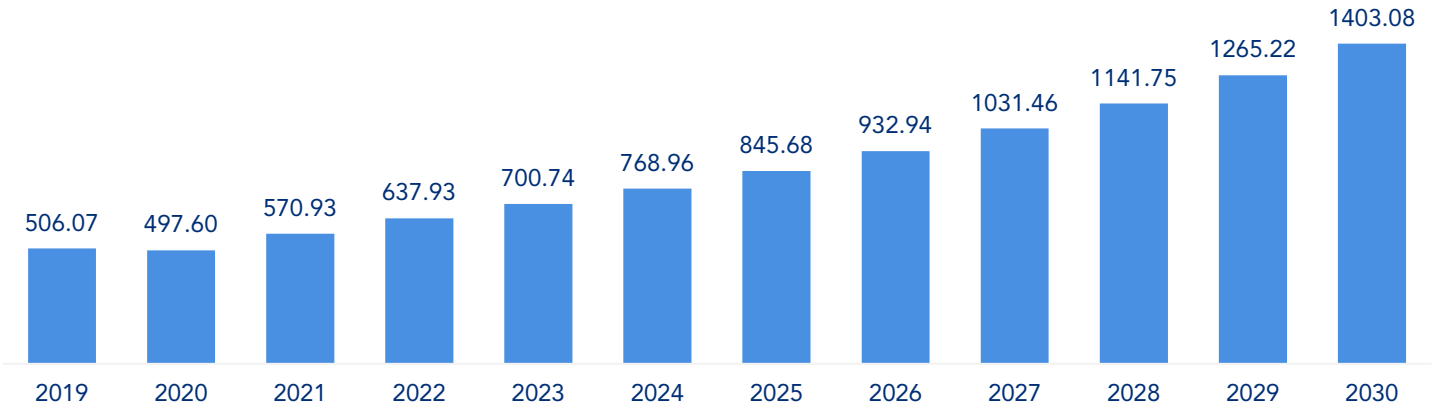
EMERGING SALES ENABLEMENT TRENDS

- Suppliers are introducing tiered payment plans and financing options to support mid-sized contractors in transitioning from renting to purchasing scaffolding. This trend is particularly evident in Public-Private Partnership (PPP) and municipal infrastructure tenders.
- To enhance safety compliance and reduce dependency on skilled labor, suppliers are bundling sales with advanced technological services. These include Internet of Things (IoT)-based scaffold monitoring sensors, drone-assisted inspection reports, and Augmented Reality (AR)-guided setup training, which collectively aim to improve operational efficiency and safety standards.

6.3 ALUMINUM AND STEEL HANGING SCAFFOLDING MARKET – RENTAL MODEL

INDIA ALUMINUM AND STEEL HANGING SCAFFOLDING MARKET, VALUE IN INR CRORES, RENTAL MODEL, 2019-2030

CAGR (2024–2030): 10.54%



- The Rental Model segment of the India Aluminum and Steel Hanging Scaffolding Market studied was valued at INR 768.96 crores in 2024 and is expected to reach INR 1403.08 crores in 2030, registering a CAGR of 10.54% for the forecast period (2024-2030).

HISTORICAL PERFORMANCE (2019-2024):

- During the period from 2019 to 2024, India's urban infrastructure witnessed significant growth, with projects such as metros, bridges, and smart city initiatives expanding at a rapid pace. To manage operational costs effectively and avoid the burden of idle assets, many contractors increasingly rely on rental hanging scaffolding solutions. In response to this growing demand, rental firms expanded their fleet sizes, particularly in Tier 1 cities.
- Government-led infrastructure programs, including the National Infrastructure Pipeline and smart city missions, further encouraged firms to adopt rental solutions. Between 2022 and 2024, there was a notable rise in the use of specialized aluminum and steel hanging scaffolds, especially for short-cycle construction projects in key urban centers like Mumbai, Delhi, and Bangalore.

FORECAST PROJECTIONS (2025-2030):

- Looking ahead to the period from 2025 to 2030, the demand for rental scaffolding solutions is expected to grow further. Ongoing large-scale infrastructure projects and an increase in retrofitting and restoration activities, such as upgrades to older metro lines and bridges, will likely drive this growth. Modular aluminum and steel hanging systems, which are well-suited for intermittent and project-specific access needs, are anticipated to play a pivotal role in meeting this demand.
- Rental providers are evolving their offerings to include comprehensive services, such as certified setup crews, maintenance support, and Internet of Things (IoT)-enabled condition monitoring. These value-added services are fostering trust and repeat business from EPC players and facility managers, who seek dependable access solutions without the long-term commitment of ownership.

Source: Mordor Intelligence

6.3 ALUMINUM AND STEEL HANGING SCAFFOLDING MARKET – RENTAL MODEL

In India, the rental model for aluminum and steel hanging scaffolding is undergoing a significant transformation. This change is being driven by the evolving needs of customers, shifting site requirements, and the growing expectation to deliver comprehensive solutions rather than just equipment.

PRIMARY CUSTOMER SEGMENTS & USE CASE TRENDS

- In 2024, several providers observed a significant increase in requests for their aluminum hanging scaffold systems. These requests, primarily for metro, bridge, and façade projects in Mumbai and Bengaluru, highlight the growing institutional rental demand for access solutions in urban infrastructure projects.
- Similarly, facility and Mechanical, Electrical, and Plumbing (MEP) contractors in the Delhi National Capital Region (NCR) and Pune have started renting lightweight mobile towers. These towers are being used for indoor remediation and façade cleaning, reflecting the rising demand for such solutions in the facility management sector.

OPERATIONAL & FINANCIAL CONSTRAINTS

- Scaffolding rental firms identified high logistics costs as a significant challenge. These costs, which include delivery, setup, and return of aluminum scaffolds, are particularly burdensome in densely populated metropolitan areas, putting pressure on profit margins.
- Additionally, the lack of structured post-use inspections has led to increased maintenance expenses and extended asset downtime. Many rental operators face difficulties in maintaining consistent quality standards across returned equipment, a concern highlighted in market analyses conducted in December 2024.

EMERGING MODELS & VALUE-ADDED SERVICES

- By mid-2024, several Indian rental providers introduced bundled service offerings to enhance value for Tier 1 urban projects. These offerings include certified teams for erection and disassembly, as well as periodic compliance audits provided alongside rented scaffold kits.
- Providers have been introducing customized hire- or lease-based contracts. These contracts, designed for regions such as Chennai, Delhi, and Bengaluru—key hubs for redevelopment projects—combine tailored aluminum scaffold design, delivery, and setup services to meet specific project requirements.

6.4 ALUMINUM STAIRWAY TOWER MARKET

PRODUCT DEFINITION

- An Aluminum Stairway Tower is a temporary work platform made primarily of lightweight aluminum, designed to provide safe and efficient access to elevated work areas.
- It features integrated staircases with handrails for secure and comfortable movement, particularly suited for tasks involving frequent personnel and material transitions. These towers are modular in design, enabling quick assembly, disassembly, and reconfiguration.

WHY CHOOSE ALUMINUM STAIRWAY TOWER?

- Lightweight and Portable
- Quick Assembly and Disassembly
- Versatility and Durability

MATERIALS USED

- Aluminum pipes/tubes: For the main frames, vertical and horizontal braces, and handrails. These often have a diameter of around 50 mm and a thickness of 2-2.5 mm.
- Aluminum checkered sheets or plywood: For the working platforms, often with non-slip surfaces.
- Nylon wheels with foot brake systems: For mobile towers, designed to support dynamic loads.
- Galvanized Iron (GI) "U" clamps and other fasteners: For secure connections between modular components.

WHERE IT'S USED IN INDIA

COMPLIANCE & DESIGN CONSIDERATIONS

The compliance with safety standards is essential for aluminum stairway towers in India. The key regulatory requirements include:

Indian Standards (IS Standards)

- IS 3696 (Part 1 and Part 2): Scaffolding Safety Code regulates the industry through two components:
- Part 1: Structural design and construction specifications; Part 2: Safety requirements for operational use.
- Required Certifications: ISO 9001 Certification validates manufacturers' quality management systems and processes.

6.4 ALUMINUM STAIRWAY TOWER MARKET

KEY FEATURES OF ALUMINUM STAIRWAY TOWER

Feature	Description
Material	High-grade Aluminum Alloy (e.g., 6063 T6)
Weight	Lightweight (approx. 1/3 of steel)
Corrosion Resistance	Excellent, ideal for outdoor and humid conditions
Assembly/Disassembly	Quick and easy, modular, often weld-free, no special tools required
Access System	Integrated stairways with handrails, wide steps
Mobility	Often equipped with heavy-duty nylon wheels with foot brakes
Safety Features	Non-slip platforms/treads, guardrails, toe boards, self-closing trapdoors
Load Capacity	Typically, 225-270 kg/m^2 (evenly distributed)

Source: Indian Standards (Bureau of Indian Standards/Indian Standards Institution - BIS/ISI), Government Safety Guidelines (e.g., Central Public Works Department - CPWD)

6.4 ALUMINUM STAIRWAY TOWER MARKET

CORE FEATURES OF ALUMINUM STAIRWAY TOWERS IN INDIA

Aluminum stairway towers in the Indian market are preferred due to their core features, which align with their general advantages and specific suitability for local conditions.

Safety Features Driving Adoption in Construction and Industrial Sectors

Enhanced worker safety features, including wide stairways, handrails, and non-slip platforms, reduce accident risks compared to traditional access methods in India's construction and industrial sectors.

Efficient Deployment and Site Mobility

Fast assembly and disassembly capabilities, along with lightweight construction and wheels, enable quick movement across sites and within large facilities in India's project environments.

Versatile Applications Across Infrastructure Projects

The modular design allows customization for various height requirements and site constraints across multi-story buildings, industrial complexes, malls, and IT parks in India's infrastructure landscape.

Weather-Resistant Performance

Aluminum's corrosion resistance performs well in India's diverse climate conditions, including humid coastal areas and monsoon regions, ensuring longer equipment life and lower operational costs.

6.4 ALUMINUM STAIRWAY TOWER MARKET

KEY TYPES OF ALUMINUM STAIRWAY TOWERS USED IN INDIA

In India, Aluminum Stairway Towers come in a variety of configurations, each tailored to meet distinct operational needs in different work settings. These towers are usually categorized by their width, mobility, and unique design features that enhance access and facilitate work at elevated heights.

MOBILE ALUMINUM SCAFFOLD TOWERS (GENERAL)

- System Description: Mobile tower scaffolds feature integrated wheels or casters for easy repositioning and portability, ensuring flexibility in dynamic work environments.
- Typical Use Cases: Ideal for projects requiring frequent relocation, such as construction, maintenance, or installation tasks.
- Relevance in India: Widely used in urban construction and infrastructure projects by contractors and facility management firms.
- Limitations: Designed for specific load capacities and require proper handling to ensure safety. Regular wheel maintenance is essential.

DOUBLE-WIDTH ALUMINUM SCAFFOLD TOWERS

- System Description: These towers provide spacious and stable working platforms with wider bases, typically measuring 1.32 m, 1.35 m, or 1.45 m in width.
- Typical Use Cases: Suitable for broader work areas and operations involving multiple workers.
- Relevance: Commonly used in industries requiring stable platforms for multi-worker tasks.
- Examples: The Double-Width Aluminum Scaffold Stairway Tower and the Double-Width Ladder Span Tower represent this category.

SINGLE-WIDTH ALUMINUM MOBILE SCAFFOLD TOWERS

- System Description: Narrow towers designed for use in confined spaces, such as corridors or internal maintenance areas, with a base width typically ranging from 0.75 m to 0.85 m.
- Typical Use Cases: Suitable for maintenance tasks, inspections, or work in restricted spaces where larger towers cannot fit.
- Relevance in India: Commonly used in urban real estate projects by facility management firms and contractors for post-handover maintenance of high-rise buildings.
- Limitations: Designed for light loads and operated by individual workers, often requiring safety harnesses for secure usage.

PODIUM ALUMINUM SCAFFOLDING SYSTEMS

- System Description: Compact platforms designed for low-height access, easily maneuverable for quick tasks.
- Typical Use Cases: Suitable for indoor maintenance and electrical tasks requiring localized access.
- Relevance in India: Commonly used by facility management firms and contractors in urban real estate for post-handover maintenance of buildings.
- Limitations: Designed for light loads and operated by individual workers with safety measures in place.

6.4 ALUMINUM STAIRWAY TOWER MARKET

KEY TYPES OF ALUMINUM STAIRWAY TOWERS USED IN INDIA

CANTILEVER ALUMINUM SCAFFOLDING SYSTEMS

- System Description: These systems feature extensions that extend beyond the main tower structure, allowing access over obstacles and expanding the working area. They are adjusted manually or with powered mechanisms.
- Typical Use Cases: Highly suitable for maintenance, inspections, or minor tasks in complex industrial environments like refineries and plants, where obstructions are common.
- Relevance in India: Frequently utilized by facility management firms and contractors in urban real estate for post-handover maintenance of high-rise structures.
- Limitations: Designed for light loads and operated by individual workers equipped with safety harnesses.

STAIRWAY-SPECIFIC TOWERS (MAST-S)

- System Description: Stairway-Specific Towers (MAST-S) feature integrated stairways for safer and more comfortable access, replacing traditional ladders. These towers often include mobile and double-width designs to enhance utility and efficiency.
- Typical Use Cases: Commonly used for construction, maintenance, and repair tasks requiring frequent and safe access to elevated areas.
- Relevance in India: Increasingly adopted in urban construction and maintenance projects, particularly for high-rise buildings, due to their safety and ease of use.
- Limitations: Primarily designed for light to moderate loads and require proper assembly and safety measures during operation.

FOLDING FRAME TOWERS

- System Description: Folding Frame Towers are compact structures engineered for easy folding into a single unit, facilitating transportation and storage. They feature frames with non-slip tread surfaces for safe and convenient access.
- Typical Use Cases: Commonly used for maintenance, inspections, or minor repair work in various industries.
- Relevance in India: Frequently utilized by facility management firms and contractors in urban areas, particularly for high-rise projects post-handover.
- Limitations: Suitable for light tasks and operated by individual users, ensuring safety with proper harnesses.

CHASSIS BEAM TOWERS

- System Description: Chassis Beam Towers incorporate a chassis beam to enhance stability, particularly useful for tasks at greater heights by reducing the need for multiple counterweights.
- Typical Use Cases: Commonly used for elevated construction, maintenance, or repair tasks requiring stable platforms.
- Relevance in India: Increasingly adopted in urban construction projects and high-rise maintenance due to their stability and efficiency.
- Limitations: Best suited for light to moderate loads and require proper safety measures during operation.

6.4 ALUMINUM STAIRWAY TOWER MARKET

TYPES OF ALUMINUM STAIRWAY TOWERS AND THEIR PRIMARY USE CASES

TYPE OF TOWER	KEY CHARACTERISTICS	PRIMARY USE CASES/SUITABILITY
Mobile (General)	Built-in wheels (casters), effortless repositioning, high portability	Projects requiring frequent movement between work areas, general industrial work
Single-Width	Narrow base (0.75 m-0.85 m), compact design	Confined spaces, corridors, internal maintenance areas
Double-Width	Wider base (1.32 m-1.45 m), spacious platform	Broader areas, multi-worker operations, heavy-duty projects
Podium	Compact, low-height access	Indoor maintenance, electrical tasks, localized jobs
Cantilever	Extends beyond main structure, allows access over impediments	Complex industrial environments (refineries, plants), working above obstructions
Stairway-Specific	Integrated stairway for safe, comfortable access	Frequent climbing/descent, large load capacity climbing, enhanced safety
Folding Frame	Can be folded for compact transport and storage, non-slip treads	Ease of use, quick setup/dismantling, short-term projects, frequent relocation
Chassis Beam	Utilizes chassis beam for enhanced stability	Working at greater heights, reducing need for counterweights

Key Takeaways:

- ✓ *Aluminum stairway towers come in a multitude of configurations, including mobile, single-width, double-width, podium, and cantilever systems. This extensive variety underscores a mature market, with manufacturers keenly attuned to the specific operational demands of diverse industries.*
- ✓ *Central to the design of these towers is a commitment to mobility, safety, and efficiency. Features such as built-in wheels, weld-less technology, and spacious stairways facilitate swift assembly, easy repositioning, and heightened worker protection.*
- ✓ *These innovations not only offer a competitive edge but also boost productivity for users in India's construction and industrial sectors.*

6.4 ALUMINUM STAIRWAY TOWER MARKET

APPLICATION AREAS AND USE CASES

CONSTRUCTION AND BUILDING MAINTENANCE

- The Construction and Building Maintenance sector stands out as a key application area. Heavy-duty construction projects rely on aluminum stairway towers for safe access to various heights.
- These towers find extensive use in general civil works, such as cladding installation and painting building facades. They're also pivotal in renovation projects and dry construction work.
- Beyond that, they're indispensable for maintenance, repair, and inspection tasks on ceilings, high walls, and building exteriors. Their versatility is further highlighted in new high-rise constructions, where there's a growing demand for advanced scaffolding solutions.

INDUSTRIAL SETTINGS

- Industrial environments rely on these towers for essential maintenance and repair tasks, spanning manufacturing plants, power generation facilities, and oil & gas refineries.
- These towers aid in installing equipment or fittings at elevated levels within industrial complexes. Furthermore, they grant access for inspecting large and non-standard machinery in factories and automation cells, and they play a pivotal role in maintaining warehouse logistics and ventilation systems.

INFRASTRUCTURE DEVELOPMENT

- ✓ In India's booming infrastructure sector, aluminum stairway towers have become indispensable. These towers facilitate a range of activities, from maintaining under-bridges and inspecting pipe racks to working on flyovers and bridges.
- ✓ Moreover, they play a crucial role as support structures in the construction of new high rail projects.

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6.4 ALUMINUM STAIRWAY TOWER MARKET

COMMERCIAL AND RETAIL SPACES

❖ Shopping malls, IT campuses, and warehouses utilize these towers for maintenance activities. Tasks range from ceiling and lighting upkeep in malls to installing wall air conditioners.

➢ The aviation industry leverages these towers for hangar and aircraft maintenance. Specialized applications include customized pilot access ladders designed for specific aircraft models.

AVIATION

EVENTS AND ENTERTAINMENT

✓ Event organizers frequently turn to aluminum stairway towers, not just for temporary stage setups, but also for installing billboards, signage, and exhibition displays.

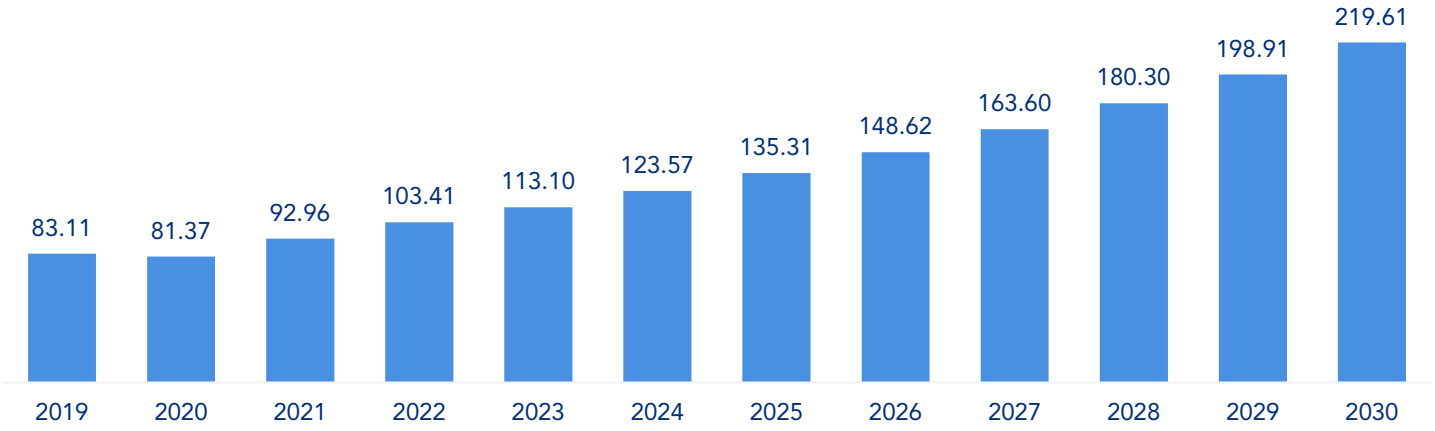
KEY TAKEAWAYS:

- *The wide application of aluminum stairway towers across multiple sectors indicates market resilience and growth potential. The market's demand spans across residential construction, infrastructure projects, industrial maintenance, and commercial facility management.*
- *This broad application base ensures market stability through diversified demand, reducing vulnerability to economic fluctuations in specific sectors. The market shows expansion potential as industries continue to adopt these access solutions.*
- *The growing use of aluminum scaffolding reflects the modernization of India's construction and industrial practices. Traditional scaffolding methods using timber or steel, which currently account for approximately 95.0% of Indian construction projects, present challenges in labor requirements, safety, and durability.*
- *Aluminum scaffolding offers advantages including lighter weight, corrosion resistance, simple assembly, and improved safety features. This transition from traditional methods to aluminum scaffolding represents a shift toward efficient and safer working practices, aligning with global construction standards and potentially improving construction quality and safety across India.*

6.4 ALUMINUM STAIRWAY TOWER MARKET - SALES MODEL

INDIA ALUMINUM STAIRWAY TOWER MARKET, VALUE IN INR CRORES, SALES MODEL, 2019-2030

CAGR (2024 - 2030): 10.06%



- The Sales Model segment of the India Aluminum Stairway Tower Market studied was valued at INR 123.57 crores in 2024 and is expected to reach INR 219.61 crores in 2030, registering a CAGR of 10.06% for the forecast period (2024-2030).

HISTORICAL PERFORMANCE (2019-2024):

- Between 2019 and 2024, sales of aluminum stair towers in India surged, riding the wave of a nationwide construction boom. Fueled by rapid urbanization and a slew of government infrastructure initiatives – from roads and housing to metro lines – contractors increasingly opted to buy durable aluminum towers for their projects, rather than renting them.
- During this timeframe, there was a noticeable shift towards lightweight modular systems. Aluminum towers, known for their easy assembly and adherence to stringent safety standards, became the preferred choice. Industry reports highlight the rising popularity of aluminum scaffolding among contractors, citing its lightweight nature, rust resistance, and ease. Notably, sales of stair towers were bolstered by construction and industrial maintenance endeavors, such as work in factories and power plants.

FORECAST PROJECTIONS (2025-2030):

- From 2025 to 2030, ongoing infrastructure and housing projects will keep generating orders, particularly from large developers purchasing towers for frequent or long-term use.
- Manufacturers are innovating with lighter, stronger aluminum designs and eco-friendly materials to meet sustainability goals. However, rentals are likely to capture more of the market, as many contractors prefer pay-per-use models to avoid tying up capital. Key trends include a further shift to modular, reusable systems and digital support (e.g., design apps, inventory management) that enhance efficiency and safety. Despite robust demand, sales growth grapples with challenges from ongoing aluminum price volatility and mounting competition from rental services.

Source: Mordor Intelligence

6.4 ALUMINUM STAIRWAY TOWER MARKET - SALES MODEL

As suppliers transition from offering pure rental models to incorporating mixed or ownership-driven approaches, three key factors are influencing the market: understanding who the buyers are, identifying the challenges preventing others from participating, and examining how sellers are adapting their strategies to encourage broader adoption.

LARGE-SCALE PROJECT ADOPTION

- Infrastructure projects often require reliable and uninterrupted access to critical areas, especially during complex construction phases. To address this need, Engineering, Procurement, and Construction (EPC) firms involved in the Mumbai Coastal Road Project and the Delhi–Meerut Expressway opted to purchase aluminum stairway towers outright.
- This strategic decision ensures full control over asset availability throughout the multi-year project duration and eliminates reliance on rental availability during critical phases of construction.

PRODUCT INNOVATION & VALUE-ADDED SERVICES

- The Mumbai Metro Line 3 project has driven significant advancements in construction practices and equipment usage. Contractors invested in Bureau of Indian Standards (BIS)-compliant modular towers featuring quick-lock systems, ensuring efficiency and adaptability. They also opted for extended-warranty packages, enabling on-site reconfigurations for varying tunnel and elevated-section profiles.
- In response to these evolving needs, manufacturers introduced hybrid buy-back schemes, allowing contractors to resell lightly used towers at a pre-agreed price. Furthermore, training programs and digital configuration tools, such as 3D layout previews, became standard offerings, enhancing operational precision and workforce readiness.

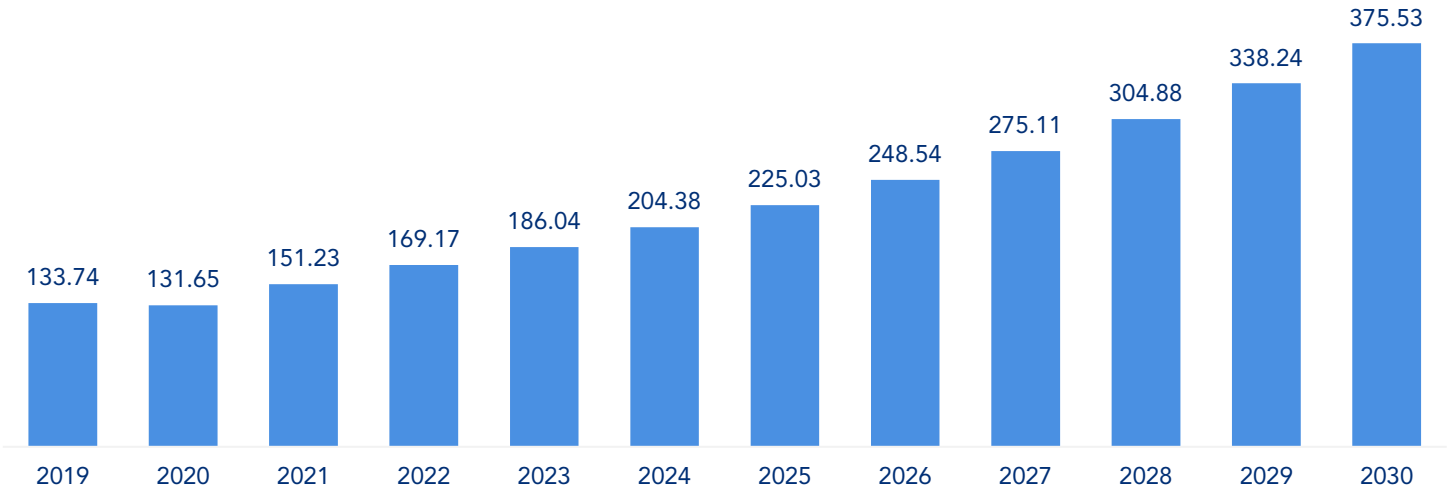
MARKET CONSTRAINTS & CAPITAL INTENSITY

- Mid-sized builders in Tier 2 cities face significant challenges in adopting standard aluminum tower sets due to high costs and associated expenses. In cities like Indore and Bhubaneswar, these builders often delay purchases as the price of a standard aluminum tower set exceeds INR 1 lakh (USD 1,200).
- Consequently, they rely on rentals or lower-grade steel towers as alternatives. The substantial capital expenditure (CapEx) requirements act as a major obstacle for small and medium enterprises (SMEs). Additionally, lifetime costs are further increased by maintenance, storage, and mandatory compliance inspections.

6.4 ALUMINUM STAIRWAY TOWER MARKET - RENTAL MODEL

INDIA ALUMINUM STAIRWAY TOWER MARKET, VALUE IN INR CRORES, RENTAL MODEL, 2019-2030

CAGR (2024–2030): 10.67%



- The Rental Model segment of the India Aluminum Stairway Tower Market studied was valued at INR 204.38 crores in 2024 and is expected to reach INR 375.53 crores in 2030, registering a CAGR of 10.67% for the forecast period (2024-2030).

HISTORICAL PERFORMANCE (2019-2024):

- Small and mid-sized contractors, seeking towers for short-term or project-specific needs, increasingly turned to rentals. This shift not only alleviated capital expenditure burdens but also removed the maintenance obligation, making rentals especially appealing for seasonal projects. Rentals initially gained traction in metros and industrial hubs, where construction activity was significantly high, due to the demand for cost-effective and flexible solutions.
- Over time, their utility expanded to other sectors. Beyond construction, rentals became indispensable in facility maintenance, utilities, event management, and industrial turnarounds. These industries benefited from the flexibility and reduced financial risks associated with rentals, enabling them to address project-specific requirements efficiently without long-term commitments.

FORECAST PROJECTIONS (2025-2030):

- As more firms embrace asset-light models, rentals are set to surpass sales. The increasing preference for operational flexibility and cost efficiency drives this shift. An expansion into Tier 2 and Tier 3 cities is on the horizon, fueled by rising demand for rental services in these regions.
- Enhancements in service delivery will stem from online booking portals, Internet of Things (IoT)-driven inventory tracking, and advanced fleet management platforms, which are expected to streamline operations and improve customer satisfaction. To draw in major corporate clients, rental firms are turning their focus towards premium, safety-certified aluminum towers, which offer enhanced durability and compliance with safety standards. With mounting competitive pressures, the industry may witness a wave of mergers and alliances, paving the way for organized players to take the lead in the market and consolidate their positions.

Source: Mordor Intelligence

6.4 ALUMINUM STAIRWAY TOWER MARKET - RENTAL MODEL

In India, contractors and industrial clients are reshaping the rental model for aluminum stairway towers. This evolution is spurred by shifting site demands and a growing emphasis on delivering comprehensive access solutions, moving beyond mere equipment provision.

END-TO-END ACCESS SOLUTIONS

- The Bengaluru Metro Phase 2 project, one of the largest urban infrastructure developments in India, has prioritized safety and efficiency by engaging access-solution providers. These providers play a critical role in ensuring the smooth execution of the project by offering a range of essential services. Bengaluru Metro Phase 2 has contracted access-solution providers for a comprehensive suite of services.
- This ensures strict adherence to metro-project safety protocols, which are designed to minimize risks and enhance operational efficiency. As a result, customers enjoy a seamless, turnkey experience, eliminating the need for in-house riggers and reducing project complexities. Furthermore, these rental firms position themselves as full-service partners, offering end-to-end solutions that significantly lighten the logistical load for their clients while ensuring compliance with industry standards.

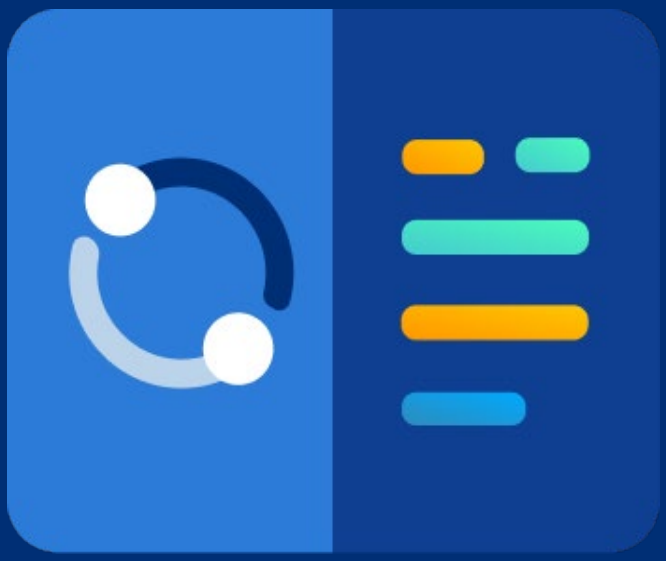
DIGITAL & OPERATIONAL TRANSFORMATION

- Industrial turnaround projects in Gujarat's chemical parks are witnessing significant advancements in operational efficiency. Leading rental companies have implemented GPS-enabled asset tracking systems and introduced an online booking portal.
- This technology allows plant managers to schedule tower arrivals precisely when required, with real-time status updates. Consequently, fleet utilization has improved, "idle" time has reduced, and both transparency and client trust have strengthened.

SEASONAL & UTILIZATION CHALLENGES

- The construction equipment rental market in Kerala and Maharashtra faces significant challenges during the monsoon season (June–September). Heavy rainfall disrupts construction activities, leading to a pause in many contracts and causing tower-utilization rates to drop below 40%.
- To sustain cash flow during this period, rental firms must either relocate their fleets to regions with higher demand or offer discounted rates. The fluctuating demand during the monsoon season necessitates the adoption of dynamic pricing strategies and flexible fleet management practices. However, the under-utilization of equipment during the offseason continues to exert pressure on profitability.

7. SCAFFOLDING MARKET



7. SCAFFOLDING MARKET

KEY MARKET DRIVERS – SCAFFOLDING MARKET

1. ROBUST INFRASTRUCTURE DEVELOPMENT

- The infrastructure development initiatives in India are significantly driving the growth of the ladder and scaffolding market. Government-led projects and increased investments in infrastructure are creating substantial demand for these essential construction tools.
- Government initiatives, such as the National Infrastructure Pipeline (NIP), Smart Cities Mission, and expansions of metro rails, airports, and highways, are driving a surge in demand for ladders and scaffolding. These projects require extensive use of ladders and scaffolding for construction, maintenance, and repair activities.
- Large-scale commercial and residential real estate projects are further accelerating the usage of ladders and scaffolding. These tools are indispensable for construction, repairs, and façade work, making them critical components in the real estate sector.
- In February 2025, the interim budget for FY 2025-26 earmarked a substantial INR 11,210 billion (USD 134.5 billion) for infrastructure development, with a focus on transport, energy, urban development, and digital connectivity to spur economic growth. For FY 2025-26, the government boosted the Road Transport and Highways Ministry's budget to INR 2,873.33 billion, marking a 2.43 percent rise from the previous year's INR 2,805.18 billion. The National Highways Authority of India (NHAI) also saw its budget swell to INR 1,878.03 billion, up from last year's INR 1,693.71 billion.
- Furthermore, the Maritime Development Fund received an allocation of around INR 250 billion for FY 2025-26, aiming to bolster private sector involvement and enhance maritime infrastructure. These measures, alongside the policy announcements and tax proposals outlined in this alert, underscore the government's comprehensive approach to strengthening India's infrastructure and laying the groundwork for sustainable economic growth.
- In conclusion, the Indian government's focus on infrastructure development is directly boosting the ladders and scaffolding market. The increasing investments and large-scale projects are creating a robust demand for these essential tools, positioning the market for significant growth in the coming years.

2. SHIFT TOWARDS ALUMINUM-BASED AND MODULAR PRODUCTS

- The scaffolding market in India is experiencing a transformative boost, driven by the adoption of aluminum-based and modular products. This shift is underpinned by the need for enhanced safety, efficiency, and long-term cost-effectiveness, making these products a preferred choice over traditional steel or bamboo alternatives.
- One of the key factors driving this growth is the lightweight nature of aluminum scaffolding, which is up to 50% lighter than steel. This feature simplifies transportation, assembly, and dismantling, significantly reducing labor requirements and worker fatigue. For example, a 10 m aluminum tower can be erected in just 15-20 minutes, compared to approximately an hour for mild steel scaffolding. This efficiency accelerates project timelines and lowers labor costs, particularly for projects requiring frequent repositioning or those located in remote or challenging areas.

7. SCAFFOLDING MARKET

- Another critical factor is aluminum's natural resistance to corrosion, which eliminates the need for galvanization or painting, as required for steel. This makes aluminum ladders and scaffolds ideal for India's diverse climatic conditions, including humid and coastal regions. With proper care, these products can last 20-50 years, reducing maintenance costs and the need for frequent replacements.
- Safety features in modular aluminum systems also play a significant role in boosting the market. These systems often include non-slip platforms, integrated ladders, guardrails, and secure locking mechanisms. Their lightweight design reduces the risk of injuries during handling and assembly.
- Additionally, aluminum's non-conductive property, when appropriately insulated, enhances safety for electrical work. Products from manufacturers like Sendhamarai Engineering and Bharath Ladders incorporate built-in access ladders, anti-slip surfaces, and lockable caster wheels, ensuring safer working environments and compliance with safety standards such as the Indian Standard (IS) 3696 and Occupational Safety and Health Administration (OSHA) regulations.
- In conclusion, the adoption of aluminum-based and modular products is fundamentally transforming the scaffolding market in India. By offering tangible benefits in terms of safety, efficiency, and cost savings, these products enable the construction and industrial sectors to execute projects faster, safer, and more sustainably. Manufacturers and rental providers across the country are actively responding to this demand by introducing a diverse range of innovative aluminum and modular access solutions, further driving market growth.

3. EXPANSION OF ORGANIZED RENTAL NETWORKS

- The ladder and scaffolding market in India is experiencing significant growth, driven by the expansion of organized rental networks. These networks are providing cost-effective and flexible solutions, particularly for businesses with infrequent or project-based needs. This trend is further supported by the construction boom, rapid urbanization, and a growing preference for renting over purchasing across various industries.

Organized rental networks are boosting the ladder and scaffolding market in India through the following factors:

- Cost-Effectiveness: Renting eliminates the high upfront costs associated with purchasing ladders and scaffolding, making it a budget-friendly option for businesses, especially startups and those with limited capital.
- Convenience: Rental services offer access to a wide range of equipment without the burden of maintenance, storage, or eventual disposal. This is particularly appealing to businesses with short-term projects or fluctuating needs.
- Access to Advanced Equipment: Rental networks provide a variety of specialized ladders and scaffolding, including those with advanced features. This allows businesses to utilize the right equipment for specific tasks without significant investment.
- In conclusion, the organized rental networks in India are playing a pivotal role in driving the growth of the ladder and scaffolding market. By offering cost-effective, convenient, and advanced solutions, these networks are meeting the evolving needs of businesses, particularly those with project-based or short-term requirements. This trend is expected to continue shaping the market in the coming years.

7. SCAFFOLDING MARKET

KEY MARKET RESTRAINTS – SCAFFOLDING MARKET

1. HIGH RAW MATERIAL AND PRODUCTION COSTS

- One of the significant restraints in the ladder and scaffolding market in India is the impact of aluminum price fluctuations, primarily driven by global commodity market volatility and rising energy costs. In India, from January to June 2025, aluminum prices on the London Metal Exchange (LME) surged by over 15%, increasing input costs for fabricators. Additionally, challenges in India's power sector, such as high tariffs and inconsistent supply, make smelting and extrusion more expensive compared to many competing nations.

2. INTENSE MARKET COMPETITION AND PRICE SENSITIVITY

- Unorganized local players, offering cheaper steel or bamboo alternatives, are pushing prices down. These alternatives are particularly attractive in cost-sensitive markets, where affordability often outweighs other considerations. In numerous small construction projects, contractors prefer steel scaffolding for its reusability and cost-effectiveness, even though aluminum offers advantages such as lighter weight and superior corrosion resistance.
- Industry experts highlight that the presence of alternative materials, priced up to 20% lower, poses a significant hurdle for the adoption of premium aluminum products in segments sensitive to price. This trend underscores the challenge for aluminum manufacturers to compete effectively in markets dominated by cost-driven decision-making.

3. REGULATORY AND COMPLIANCE HURDLES

- As of January 1, 2024, aluminum products must obtain BIS (Bureau of Indian Standards) certification, as mandated by recent Quality Control Orders.
- This certification aims to ensure product quality and safety by aligning manufacturing processes with national standards. Manufacturers of stairway towers are now required to obtain BIS licenses, a process that typically spans three months and involves stringent factory audits, including assessments of production facilities, raw material sourcing, and quality control measures.
- This requirement has led to delays in market entry for numerous Small and Medium Enterprises (SMEs), as they face challenges in meeting the compliance criteria within the stipulated timeframe. The Jamshedpur branch of BIS highlighted that more than 750 products, including aluminum alloys, are now subject to this mandate, pushing companies to conform to national standards and enhance their operational frameworks to meet the new regulatory demands.

7. SCAFFOLDING MARKET

INSIGHTS ON GOVERNMENT INITIATIVES AND REGULATIONS

- The Indian scaffolding market is witnessing robust growth, propelled by a surging construction sector and heightened government emphasis on infrastructure development. This expansion is closely linked to a series of government initiatives and stringent regulations, all aimed at upholding safety and quality standards.

Government Initiatives Fueling the Scaffolding Market:

- ✓ Infrastructure Investments: The Indian government is channeling significant funds into vast infrastructure undertakings, spanning roads, power plants, smart cities, and industrial corridors. Such endeavors inherently boost the demand for scaffolding, a vital element in construction.
- ✓ As an illustration, the Union Budget 2024 earmarked considerable capital for infrastructure, including INR 11.11 Lakh crores for general infrastructure, INR 10 Lakh crores for the PM Awas Yojana Urban 2.0 (targeting affordable housing), and INR 26,000 crores dedicated to road connectivity projects.
- ✓ Furthermore, initiatives like the National Infrastructure Pipeline (NIP) amplify the need for scaffolding systems in expansive construction projects.
- ✓ Affordable Housing Initiatives: Schemes such as the Pradhan Mantri Awas Yojana (PMAY) have spurred the creation of millions of housing units, significantly bolstering the demand for scaffolding.
- ✓ Renewable Energy Ambitions: India's bold renewable energy targets, such as achieving 500 GW by 2030, are catalyzing extensive energy infrastructure projects, necessitating comprehensive scaffolding solutions.
- ✓ Local Manufacturing Push: The overarching "Make in India" initiative, while not solely focused on scaffolding, champions domestic production of construction materials. This not only bolsters the scaffolding industry but also spurs local innovation.
- ✓ Skill Development Emphasis: Acknowledging the importance of a skilled workforce, the government promotes programs like the National Initiative for Promoting Upskilling of Nirman. Such initiatives aim to equip construction workers with modern technologies, enhancing scaffolding safety and efficiency.
- ✓ Green Building Advocacy: Through entities like the Indian Green Building Council (IGBC) and the Bureau of Energy Efficiency's Eco-Niwas Samhita, the government champions sustainable construction. This advocacy promotes eco-friendly and reusable scaffolding systems, resonating with the industry's shift towards modular and system scaffolding.

Regulatory Framework and Safety Standards in India's Scaffolding Market:

- India's scaffolding operations are governed by a comprehensive set of regulations and standards, ensuring safety and quality. Key highlights include:
- Bureau of Indian Standards (BIS) Oversight: The BIS is instrumental in establishing benchmarks for scaffolding materials and methodologies. Notable Indian Standards (IS codes) encompass:

7. SCAFFOLDING MARKET

INSIGHTS ON GOVERNMENT INITIATIVES AND REGULATIONS

- IS 3696 (Parts 1 & 2): This standard delineates the safety protocols for scaffolds and ladders. Part 1 emphasizes structural design and construction, while Part 2 addresses safety measures during operation.
- IS 4014 (Parts 1 & 2): This standard outlines the best practices for steel tubular scaffolding, detailing definitions, materials, and safety measures.
- IS 2750:1964: While this standard lays down the criteria for steel scaffolding, there's a consensus on the necessity to revise it, integrating contemporary practices and materials, especially modular scaffolding.

- The Building and Other Construction Workers' (Regulation of Employment and Conditions of Service) Central Rules, 1998: This legislation mandates stringent safety and health protocols for construction workers, emphasizing the need for adequate scaffolding. It also stipulates that metal scaffolds must meet national standards.

FUTURE GROWTH OUTLOOK

- The Indian scaffolding market is experiencing significant growth, driven by large-scale infrastructure projects, rising real estate and industrial activity, and a shift towards advanced modular systems. Stricter safety regulations and sustainability initiatives further support this growth, positioning the market for steady expansion through 2033.

Massive Public Infrastructure Spending

- National Infrastructure Pipeline (NIP): NIP plans projects worth over INR 111 trillion (~USD 1.34 trillion) through 2025, with highways, metros, and airports driving a surge in scaffolding demand.
- Smart Cities Mission: From 2015 to 2025, 7,479 of the 8,058 Smart Cities projects consumed INR 150,002 crore (~USD 18 billion) in infrastructure works, directly fueling scaffolding needs for urban retrofitting and new builds.
- AMRUT (Atal Mission for Rejuvenation & Urban Transformation): Since 2015, AMRUT has allocated INR 78,910 crore (~USD 10 billion) for water, sewerage, and urban network projects, further bolstering scaffolding demand.

Surging Real Estate & Industrial Activity

- Residential and commercial construction, buoyed by initiatives like PMAY (Pradhan Mantri Awas Yojana) and corporate capital expenditure, is driving a robust demand for modular scaffolds.
- Industrial corridor expansions, such as Delhi–Mumbai and Chennai–Bengaluru, necessitate large-span, high-load scaffolding systems.

Shift to Advanced Modular & System Scaffolding

- ✓ Contractors are transitioning from traditional tube-and-clamp or bamboo scaffolds to prefabricated, system-based aluminum and steel modules, citing benefits like faster erection, enhanced safety, and reusability.
- ✓ This shift, commanding premium pricing, bolsters rental business models and elevates average project revenues.

7. SCAFFOLDING MARKET

Stricter Safety & Sustainability Norms

- With Bureau of Indian Standards (BIS) standards (e.g., IS 3696) and National Building Code (NBC) guidelines in force, there's a push for engineered scaffolds and fall-arrest systems, leading to a rise in higher-margin product usage.
- There's a growing focus on eco-friendly materials, such as recyclable aluminum and low-Volatile Organic Compound (VOC) coatings, aligning with corporate Environmental, Social, and Governance (ESG) objectives and green building certifications.
- In summary, bolstered by substantial infrastructure investments and a pivot towards safer, modular products, the Indian scaffolding market is poised for steady growth. While challenges like raw material volatility and labor constraints loom, advancements in digital monitoring, rental services, and skills development will spotlight the frontrunners in a projected mid-single-digit growth landscape through 2033.

CHALLENGES

- The Indian scaffolding market faces several challenges that hinder its growth and development. These challenges, if not addressed, could impact the safety, efficiency, and profitability of market players. Below are the key threats affecting the industry:

Surge of Unregulated, Budget Providers

- Approximately 95% of construction projects in India continue to depend on traditional tube-and-clamp or bamboo scaffolding, predominantly sourced from a multitude of small, unlicensed operators. This fragmented market not only drives down prices but also leads to inconsistent safety and quality standards, ultimately squeezing the profit margins of organized, certified suppliers.

Recurring Safety Mishaps & Associated Liabilities

- Scaffolding failures pose a significant threat: Bonafide Research highlights that accidents stemming from scaffold collapses or improper setups are “common,” escalating risks of site shutdowns, insurance costs, and legal battles for both contractors and rental firms.

Severe Shortage of Trained Scaffold Erectors

- India’s booming infrastructure sector is grappling with a labor shortage. In July 2024, L&T highlighted a deficit of 25,000–30,000 construction workers, including certified scaffolders, leading to project delays and soaring labor costs as companies vie for limited talent.

Significant Initial Investment for Premium Materials & Systems

- Shifting from basic tube-and-clamp setups to advanced modular aluminum or steel systems brings enhanced safety and efficiency but requires a hefty capital investment. Due to these financial hurdles, many small contractors opt out of quality alternatives, risking safety and performance.

Regulatory Disparities & Compliance Challenges

- While the stringent enforcement of BIS/IS 3696 standards and the Building & Other Construction Workers Act bolsters on-site safety, inconsistent interpretations at the state level and irregular inspection practices can lead to fines, project holdups, and reputational harm for companies that falter in compliance.
- In conclusion, the Indian scaffolding market is navigating a complex landscape marked by unregulated competition, safety concerns, labor shortages, high material costs, and regulatory challenges. Addressing these issues will be critical for fostering a safer, more efficient, and profitable market environment.

7. SCAFFOLDING MARKET

Threats

Fragmented competition from unorganized players:

- The Indian scaffolding market is fragmented, dominated by numerous unorganized players. These smaller firms often turn to traditional, cost-effective materials like bamboo. While these materials reduce costs, they compromise safety. This poses a significant threat to organized players who emphasize high-quality, modern scaffolding systems. The unorganized sector's competitive pricing attracts cost-conscious contractors, intensifying competition and hindering organized players from solidifying their market presence.

Awareness gaps in safety standards:

- Government regulations and safety standards for scaffolding exist, yet awareness and adherence are inconsistent. This inconsistency is especially pronounced in smaller projects and Tier-II and Tier-III cities. Such awareness gaps hinder manufacturers of advanced, safety-compliant scaffolding from effectively competing against cheaper, non-compliant alternatives. The threat is further magnified by weak enforcement mechanisms and a scarcity of training programs for workers, complicating the push for safer scaffolding practices.

Modular systems demand hefty investments:

- Modular and system scaffolding, known for their safety and efficiency, come with a steep price. This significant upfront cost can deter small and mid-sized contractors, who often opt for more affordable solutions to manage cash flow in developing economies. The expense of modular systems is heightened by the necessity for specialized training, making them even less accessible to smaller market players.

Raw material price volatility:

- The scaffolding industry relies heavily on materials like steel and aluminum. Fluctuations in these raw material prices can significantly impact production costs, threatening manufacturers' ability to maintain stable pricing and profitability. These price changes often stem from global supply chain disruptions, geopolitical tensions, and shifts in demand across industries.
    - For example, between Q2 FY 2019 and Q2 FY 2025, steel prices in major Indian cities saw a notable uptick. In Chennai and Hyderabad, prices climbed from INR 48/kg to INR 66/kg. Bangalore's prices jumped from INR 48/kg to INR 65/kg. Pune's prices ascended from INR 48/kg to INR 64/kg, while Mumbai's rose from INR 48/kg to INR 63/kg. Delhi witnessed a rise from INR 47/kg to INR 63/kg. This trend underscores a consistent six-year rise in steel prices across all analyzed cities.
- Overall, the Indian scaffolding market faces significant threats, including competition from unorganized players, inconsistent safety standard adherence, high costs of modular systems, and raw material price volatility. Addressing these threats requires a concerted effort from stakeholders to promote safety awareness, enforce regulations, and provide cost-effective solutions to ensure sustainable growth in the market.

7. SCAFFOLDING MARKET

KEY PLAYERS

BSL Scaffolding Ltd

- From its Noida facility, BSL, a prominent Indian manufacturer, has established a robust reputation for its high-quality, Bureau of Indian Standards (BIS)-compliant t cup lock, H-frame, and drophead systems.

Anish Scaffolding India Pvt. Ltd

- Located in Bengaluru, Anish specializes in delivering formwork and scaffolding solutions tailored for industrial, nuclear, petrochemical, and shipbuilding sectors, bolstered by in-house manufacturing and swift erection services.

Layher India

- As the Indian division of Germany's Layher Group, Layher India provides classic All-around modular systems, rolling towers, and stairway scaffolds, all in line with global safety standards and supported by a swift nationwide distribution network.

PERI (Tanisha Scaffolding India Pvt. Ltd)

- Tanisha Scaffolding, affiliated with Germany's PERI GmbH, offers engineered frame and modular scaffolds, center-shoring, and formwork solutions, capitalizing on PERI's advanced R&D and manufacturing capabilities in India.

SB Scaffolding (India) Pvt. Ltd

- Known as Shree Bhairavnath, SB Scaffolding is an emerging player from Mumbai, providing pipe-and-coupler systems, specialized fittings, and rental services for both commercial and residential projects.

Wheels Scaffolding (India) Ltd (WSL)

- WSL, boasting ISO 9001-2015 certification and Indian Institute of Technology (IIT)-tested products, specializes in steel scaffolding and formwork systems, catering to a diverse range from urban high-rises to heavy industrial sites.

MOD Scaff Pvt. Ltd

- MOD Scaff, headquartered in Faridabad, is recognized for its custom-engineered cup lock and H-frame scaffolds, offering turnkey erection and dismantling services throughout the Delhi National Capital Region (NCR) and North India.

Hi-Tech Scaffolding Pvt. Ltd

- Hi-Tech Scaffolding, a rental specialist, provides comprehensive equipment hire (both aluminum and steel), logistics, and on-site safety supervision, focusing on fast-track infrastructure and metro projects.

Sun Corporation

- Sun Corporation, hailing from Hyderabad, produces H-frame and cup lock systems, acrow spans, stair towers, and a complete range of accessories, catering to the thriving construction sectors of South India.

Altrad Group

- With a robust presence in India through acquisitions and partnerships, France's Altrad supplies high-volume cup lock and ring lock systems, collaborating with global giants like PERI and Layher, and eyeing substantial infrastructure contracts.

7. SCAFFOLDING MARKET

Mtandt Group

- Founded in 1974 by Sri Rajkumar Modi, Mtandt Group is headquartered in Chennai, India. The company provides a comprehensive suite of products and services—including manufacturing, sales, rentals, training, and post-sales support—tailored to meet the needs of building, maintenance, repair, operations (BMRO), and infrastructure.
- Their diverse product range includes aerial work platforms (such as boom lifts and spider lifts), aluminum scaffolding, fall-protection systems, temporary access mats, lifting and material handling equipment, tools, and personal protective equipment (PPE). In addition to product offerings, Mtandt Group provides services like operator training, annual maintenance contracts (AMC), competency certifications, and both onshore and offshore rope-access operations.

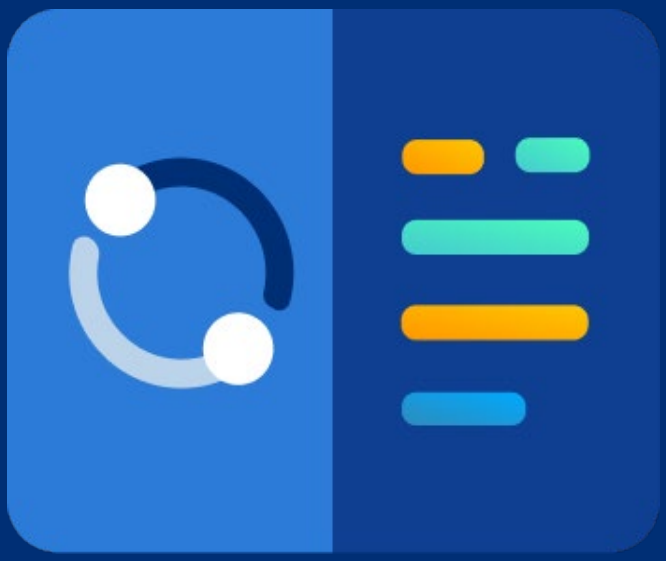
Techno Craft Industries (India) Ltd

- Established in 1972, Techno Craft Industries initially focused on high-precision drum closures. Over the years, the company expanded its portfolio to include steel tubes, cotton yarn, garments, and scaffolding systems. Today, Techno Craft stands as a global leader, exporting drum closures to markets in the Middle East, the USA, and Europe, and is recognized as one of the world's largest players in that segment.
- Techno Craft's scaffolding systems prioritize safety, featuring secure fittings and adhering to health and regulatory standards. The company also provides engineering design services across various sectors, including automotive, mining, and general manufacturing.

Y Equipment Services (formerly Youngman India)

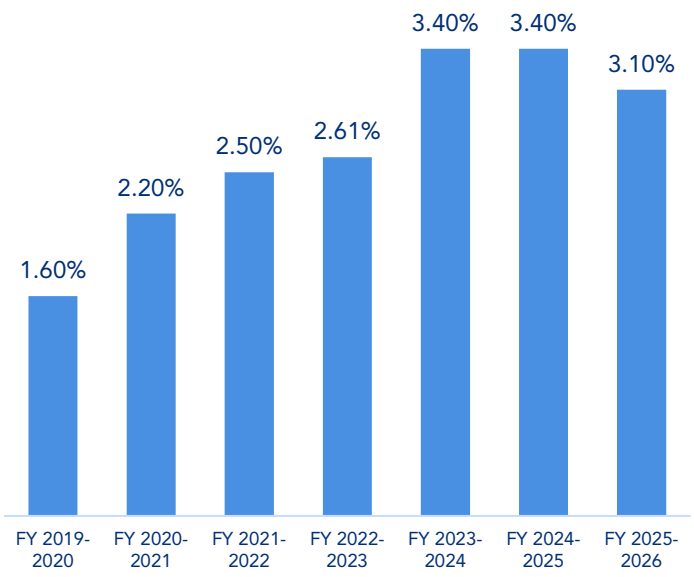
- Y Equipment Services, formerly known as Youngman India, is the rental division of the Y Group—a legacy institution in access solutions with nearly a century of history. The company specializes in renting out aluminum scaffolding, ladders, suspended scaffolding, and other work-at-height access equipment.
- These offerings cater to construction, industrial maintenance, and similar applications. Y Equipment Services provides flexible rental terms—daily, weekly, and more—tailored to project needs, all at competitive prices. With a strong emphasis on safety and quality, the company ensures its equipment meets industry standards, such as European Norm (EN) certification, and often includes on-site training and professional support.

8. OVERVIEW OF CONSTRUCTION AND INFRASTRUCTURE SECTOR IN INDIA



8. OVERVIEW OF CONSTRUCTION AND INFRASTRUCTURE SECTOR IN INDIA

CAPEX % OF GDP, FY 2019-20 TO FY 2023-24, INDIA



INFRASTRUCTURE INVESTMENTS IN INTERIM BUDGET FY 2025-26

INR 11,210 Billion

FY 2025-26 BUDGET, ROAD CAPEX

INR 2,873.3 Billion

- India's infrastructure and construction capital expenditure (CAPEX) plays a critical role in shaping the nation's economic trajectory, driving growth, creating employment, and enhancing connectivity.
- Recent trends in the government's spending priorities highlight its sustained focus on infrastructure development to achieve long-term economic progress.

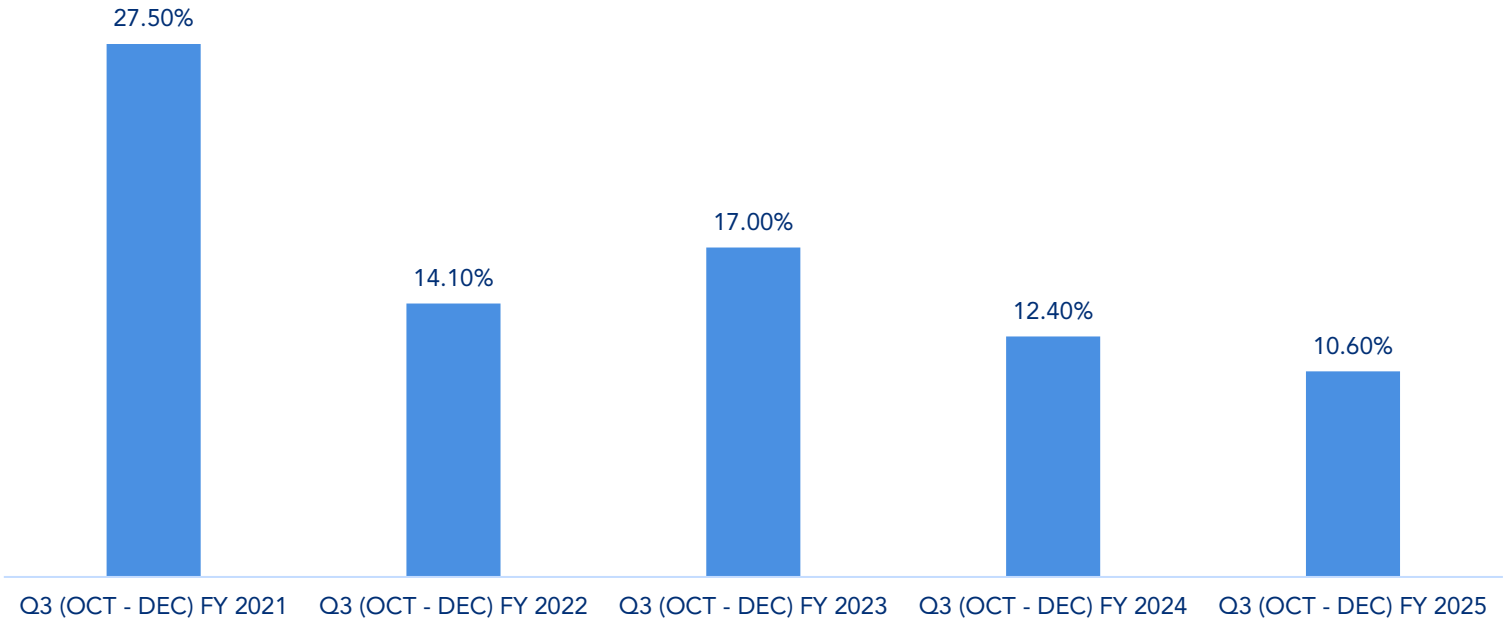
Overview of India's Infrastructure and Construction Landscape

- In February 2025, the interim budget for FY 2025-26 allocated INR 11,210 billion for infrastructure development, prioritizing transport, energy, urban development, and digital connectivity to stimulate economic growth.
- For the fiscal year 2025-26, the government allocated INR 2,873.33 billion to the Road Transport and Highways Ministry, reflecting a 2.41 percent increase from the previous year's allocation of INR 2,805.18 billion. Additionally, the budget for the state-owned National Highways Authority of India (NHAI) increased to INR 1,878.03 billion, compared to INR 1,693.71 billion in the prior year.
- Moreover, for FY 2025-26, approximately INR 250 billion was allocated to the Maritime Development Fund to encourage private sector participation and strengthen maritime infrastructure. These initiatives, along with the policy announcements and tax proposals outlined in this alert, highlight the government's comprehensive strategy to enhance India's infrastructure and establish a robust foundation for sustainable economic progress.

Source: Ministry of Finance

8. OVERVIEW OF CONSTRUCTION AND INFRASTRUCTURE SECTOR IN INDIA

CHANGE % ON GDP FROM CONSTRUCTION, Q3 (OCT - DEC) FY 2021 TO Q3 (OCT - DEC) FY 2025, INDIA



The Economic Implications of Infrastructure Investment

- In the past decade, India has embarked on an ambitious infrastructure development journey, aiming to rejuvenate its economy. To bolster this endeavor, in February 2025, the government proposed a staggering INR 11,210 billion for capital expenditure, representing 3.1% of the nation's GDP, earmarked in FY 2025-26.
- This allocation has seen a meteoric rise, increasing over fivefold in the last decade. Notably, the most pronounced surge in CAPEX occurred in the past five years, boasting an impressive annual growth rate of 27%. Looking ahead, the government pledges to maintain this momentum, ensuring robust fiscal support for infrastructure.
- This commitment is further underscored by the rising share of the Centre's capital expenditure directed towards infrastructure, jumping from 28% in FY 2014-15 to an anticipated ~60% in FY 2025-26F alongside its other priorities.
- These milestones were propelled by the government's strategic interventions, including the establishment of the National Infrastructure Pipeline (NIP) with projects worth INR 111,000 billion, the National Monetization Pipeline (NMP) valued at INR 6,000 billion, and the PM GatiShakti National Master Plan.
- Furthermore, large-scale national programs like Bharatmala, Sagarmala, the Regional Connectivity Scheme-UDAN, Dedicated Freight Corridors, the High-Speed Rail network, Railway Station Redevelopment, BharatNet, Jal Jeevan Mission, Atal Mission for Rejuvenation and Urban Transformation (AMRUT), and the Smart Cities Mission have all played pivotal roles... Phase IV of Pradhan Mantri Gram Sadak Yojana (PMGSY) is set to enhance connectivity for 25,000 rural residents.

Source: Ministry of Finance

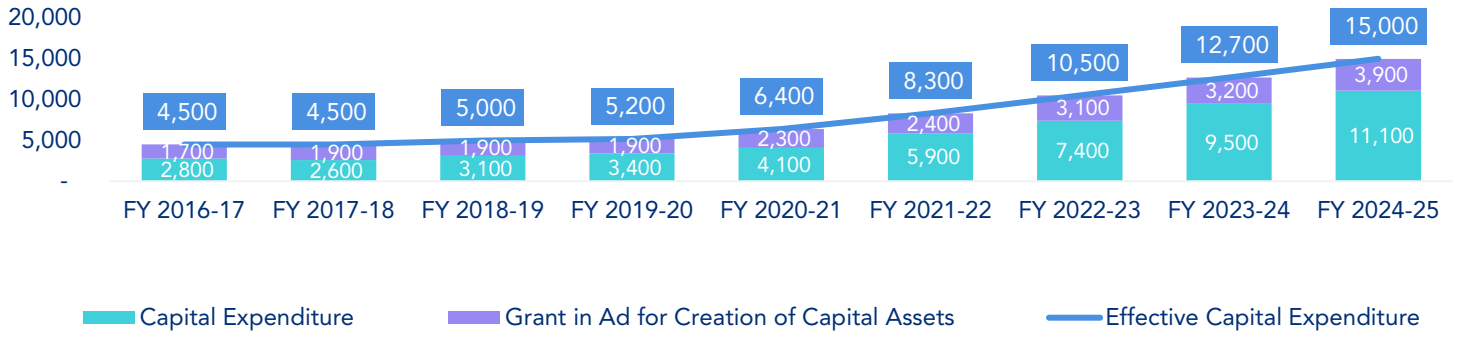
8. OVERVIEW OF CONSTRUCTION AND INFRASTRUCTURE SECTOR IN INDIA

KEY ANNOUNCEMENTS FOR CAPITAL EXPENDITURE

	Budget announcement	Year of Announcement	Capital expenditure (INR)
1.	Infrastructure sector	FY 2024- 2025	11,110 Billion
2.	PM Awas Yojana Urban 2.0	September 2024	12,300 Billion
3.	Road connectivity projects	July 2024	260 Billion
4.	Power sector	March 2024	214 Billion

Source: Ministry of Finance

TREND IN CAPITAL EXPENDITURE, FY 2016-17 TO FY 2024-25, IN INR BILLION

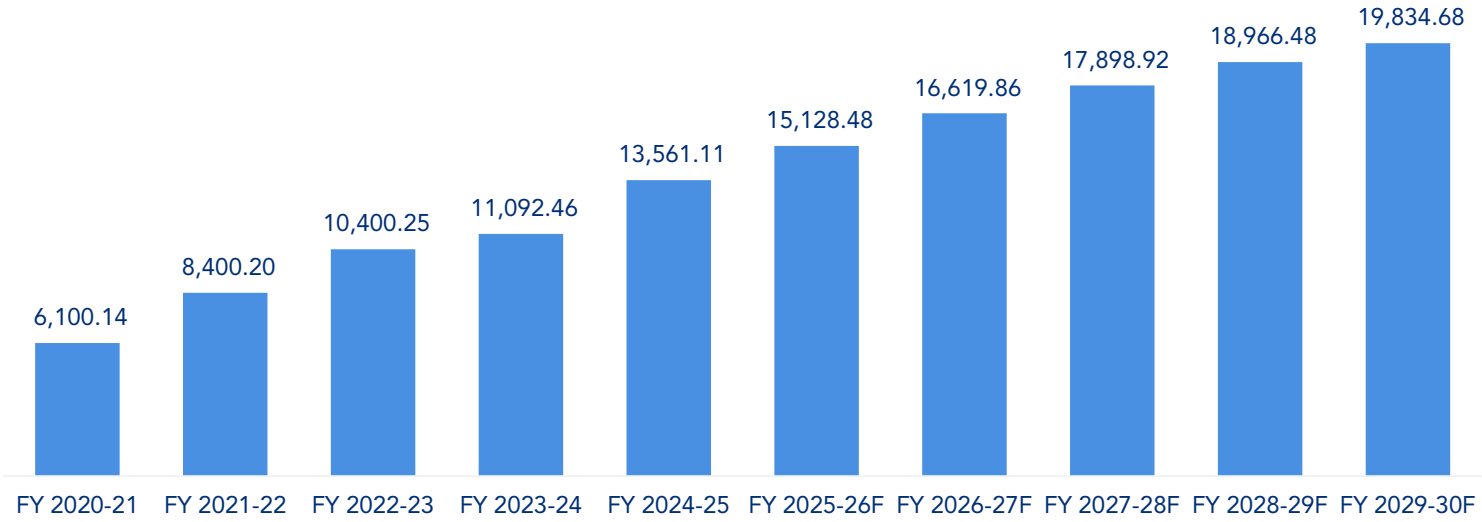


The Economic Implications of Infrastructure Investment

- Investing in infrastructure yields significant long-term economic benefits. Estimates from National Institute of Public Finance and Policy (NIPFP) suggest that every rupee invested in infrastructure can generate a GDP return of INR 2.5 to INR 3.5.
- This underscores the profound impact of infrastructure development on the productivity of sectors like agriculture, manufacturing, services, and tourism. Furthermore, the government's push for Digital Public Infrastructure (DPI) Applications across sectors such as agriculture, logistics, MSMEs, education, health, and urban governance is poised to amplify this economic multiplier effect.
- Initiatives like proposed e-commerce export hubs under the Public-Private Partnership (PPP) mode aim to bolster trade and export services for Micro, Small and Medium Enterprises (MSMEs).

8. OVERVIEW OF CONSTRUCTION AND INFRASTRUCTURE SECTOR IN INDIA

INFRASTRUCTURE AND CONSTRUCTION CAPITAL EXPENDITURE, IN INR BILLION, FY 2020-21 TO FY 2029-30F



Sources

Actual Figures: Ministry of Finance, NITI Aayog, State Public Works Departments (PWDs), and Urban Development Authorities

Forecasted Figures: Mordor Intelligence, IMF

- From FY 2020-21 to FY 2029-30F, capital expenditure on infrastructure and infrastructure construction in India is projected to grow at a CAGR of 14.08% as per Mordor Intelligence Analysis. The data indicates a consistent upward trend in expenditure, reflecting increased investments in infrastructure development.
- Between FY 2020-21 and FY 2023-24, the expenditure grew from INR 6,100.1 billion to INR 11,092.5 billion, showcasing a significant rise in just three years. This growth trajectory is expected to continue, with the expenditure forecasted to reach INR 19,834.7 billion by FY 2029-30F, as per Mordor Intelligence Analysis. The steady increase highlights the government's and private sector's focus on enhancing infrastructure capabilities to support economic growth.

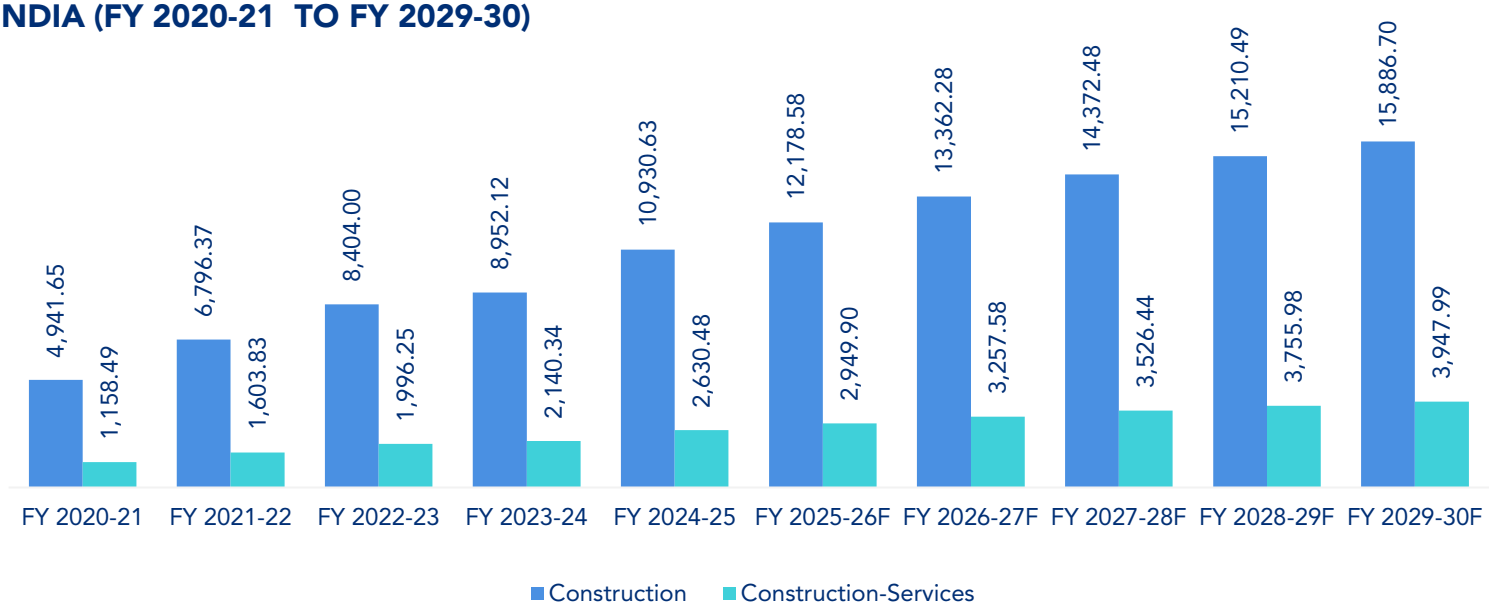
A Significant Increase in Capital Expenditure for Infrastructure Projects

- In its interim budget for FY 2024-25, India's government unveiled plans to boost capital expenditure on infrastructure projects to INR 11,111.11 billion (USD 132.78 billion), marking a 17% increase from the previous fiscal year. This move continues a four-year trend of escalating funds for the sector. Last year's budget allocated INR 9502.47 billion to infrastructure, representing a significant 28% year-on-year jump.
- The upcoming fiscal year's infrastructure spending is projected to constitute 3.4% of India's GDP, as highlighted by the Indian finance minister during her budget address on 1 February 2024. The Ministry of Transport & Highways has been allocated INR 2,780 billion, primarily for nationwide road infrastructure development.
- Meanwhile, the Indian Railways received a budget of INR 2,500 billion, aimed at establishing three economic railway corridors. These corridors will facilitate the smooth transport of energy products, minerals, and cement, while also enhancing connectivity to ports.

Source: Ministry of Finance

8. OVERVIEW OF CONSTRUCTION AND INFRASTRUCTURE SECTOR IN INDIA

CONSTRUCTION AND CONSTRUCTION-SERVICES CAPITAL EXPENDITURE, IN INR BILLION, IN INDIA (FY 2020-21 TO FY 2029-30)



***Note**: Construction encompasses investments in physical assets, whereas Construction Service covers design, planning, and administrative expenses, including legal and regulatory costs.*

Source:

Actual Figures: Ministry of Finance, NITI Aayog, State Public Works Departments (PWDs) and Urban Development Authorities

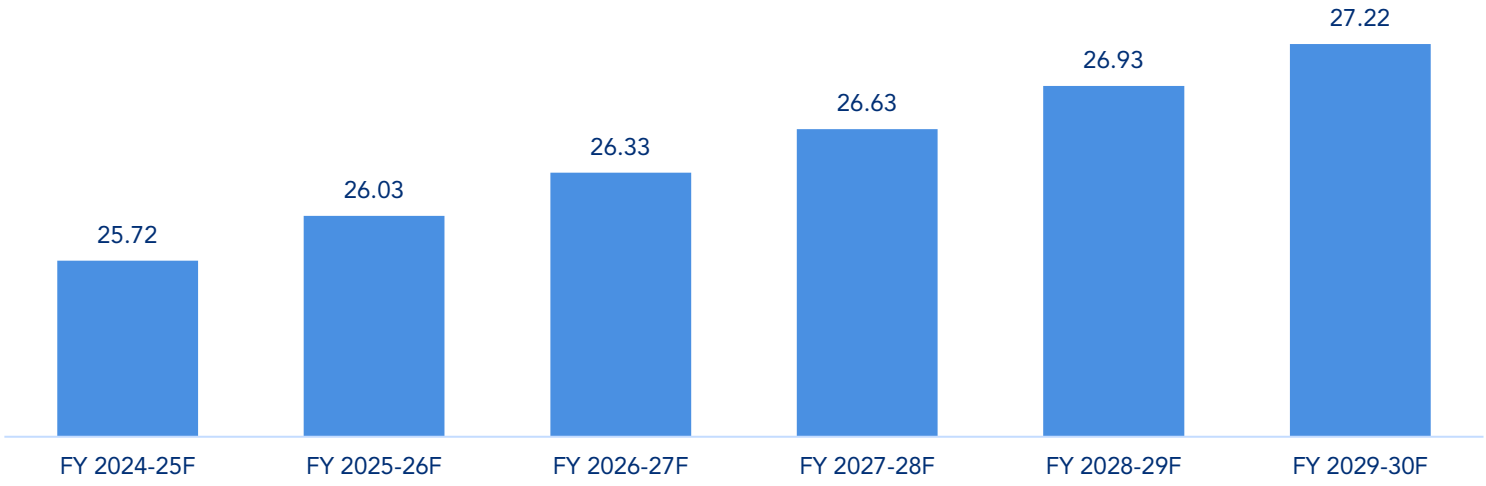
Forecasted Figures: Mordor Intelligence, IMF, World Bank

Drivers Behind the Rise in India's Infrastructure and Construction Capital Expenditure

1. **Government Initiatives:** The Indian government has launched ambitious programs like the National Infrastructure Pipeline (NIP), aiming to invest USD 1.4 trillion by FY2024-25. The government allocated a massive INR 11,100 billion for infrastructure projects in the budget for FY 2024-25, and this figure is expected to be further increased in the forthcoming budget for FY 2025-26.
2. **Population Growth and Urbanization:** According to the World Bank, India is undergoing rapid urbanization. Projections indicate that by FY 2035-36, 600 million people, constituting 40 percent of the population, will reside in urban areas, a significant rise from 31 percent in FY 2010-11. These urban locales are poised to contribute nearly 70 percent to the nation's GDP. However, with almost 70 percent of the urban infrastructure required by FY 2046-47 still unconstructed, India faces a pressing need for substantial investments. Specifically, by 2036, the nation must channel an estimated USD 840 billion into infrastructure, averaging out to USD 55 billion annually, which is about 1.2 percent of its GDP. Hence, there is a pressing need for improved urban infrastructure for population growth and rapid urbanization.
3. **Economic Expansion:** Sustained GDP growth has bolstered public and private sector confidence, resulting in increased investments in infrastructure projects.

8. OVERVIEW OF CONSTRUCTION AND INFRASTRUCTURE SECTOR IN INDIA

SHARE OF INFRASTRUCTURE SEGMENT IN INDIA'S TOTAL CONSTRUCTION LANDSCAPE, IN PERCENTAGE, FY 2024-25 TO FY 2029-30 (FORECAST)



Source:
Actual Figures: Ministry of Road Transport and Highways (MoRTH), Indian Railways, Central Public Works Department (CPWD), Ministry of Ports, Shipping and Waterways, Ministry of Power, Confederation of Indian Industry (CII)
Forecast: Mordor Intelligence, Statista, World Bank, IMF, Press Information Bureau (PIB), Ministry of Housing and Urban Affairs, Ministry of Statistics and Programme Implementation (MoSPI), NITI Aayog, Indian Brand Equity Foundation (IBEF)

- India's robust infrastructure investments, supported by favorable policies and increasing foreign and domestic funding, are set to drive significant economic growth. With ambitious targets and strategic initiatives, the country is poised to transform its infrastructure landscape, fostering efficiency, connectivity, and infrastructure development in the coming years.
- ***Robust Demand:*** India is accelerating infrastructure investments to achieve its USD 5 trillion economic target by 2025. Key focus areas include roads, railways, aviation, shipping, and inland waterways. Between FY 2020-21 and March 2024, Real Estate Investment Trusts (REITs) and InvITs (Infrastructure Investment Trusts) raised USD 15.60 billion (INR 1305 billion), as per the Reserve Bank of India (RBI).
- ***Attractive Opportunities:*** Infrastructure development enhances transport efficiency and fosters commercial growth. In March 2024, Prime Minister Modi launched connectivity projects worth USD 1.8 billion (INR 150.6 Billion) in Kolkata. The Civil Aviation Ministry announced 15 airport projects worth USD 12.1 billion (INR 1,012 billion) by FY 2028-29. Morgan Stanley forecasts infrastructure investment to grow from 5.3% of Gross Domestic Product (GDP) in FY 2024-25 to 6.5% by FY 2029-30F.
- ***Policy Support:*** The FY 2023-24 budget extended a 50-year interest-free loan to states with an increased allocation of INR 1,300 billion. India plans INR 121,067 billion in infrastructure investments by 2025 under the National Infrastructure Pipeline (NIP). For FY 2025-26, the PM GatiShakti initiative earmarked a substantial INR 11,170 billion (equivalent to INR 11.17 lakh crore) to bolster Energy, Mineral, and Cement Corridors, enhance Port Connectivity, and upgrade high-traffic-density routes.
- ***Increasing Investments:*** In FY 2023-24, the report estimated INR 143,000 billion in infrastructure spending through FY 2030-31, more than double the INR 67,000 billion spent in the previous seven years, positioning infrastructure as a key driver of India's construction market.

8. OVERVIEW OF CONSTRUCTION AND INFRASTRUCTURE SECTOR IN INDIA

India's construction sector in 2025 is advancing steadily through public-private investments, but faces operational bottlenecks, regulatory hurdles, and material shortages, even as green technologies and modern construction methods gain traction.

INDIA'S CONSTRUCTION SECTOR GEARS UP FOR A PROMISING 2025

- In 2025, India's construction sector is set to grow, driven by public and private investments. Experts predict a 7.1% real-term growth in construction output from mid-July 2025, supported by initiatives in energy, railways, industrial infrastructure, and nuclear capacity expansion.
- Additionally, a World Bank analysis highlights a USD 2.4 trillion requirement by 2050 to support India's urban population, showcasing immense future construction demand.

MAJOR ROAD AND HIGHWAY INFRASTRUCTURE DEVELOPMENTS

- The Bengaluru–Chennai Expressway resumed after delays, with the Karnataka section inaugurated in December 2024. The Chennai stretch is set to be completed by August 2025, signaling renewed momentum in southern India's road construction.
- In Delhi, seven infrastructure projects worth over INR 7000 million (USD 84 million) face delays due to pollution-control restrictions and approval backlogs. As of mid-2025, some court projects show only 3–7% completion.

MAJOR RAIL AND TRANSIT INFRASTRUCTURE DEVELOPMENTS

The flagship Mumbai–Ahmedabad bullet train corridor achieved a significant milestone by May 2025, with 300 km of viaducts completed. The construction was expedited using the advanced Full-Span Launching Method (FSLM). Nationwide precast casting infrastructure facilitated the deployment of over 6,455 full-span units and 925 span units.

EMERGING TRENDS & TECHNOLOGICAL IMPLEMENTATION

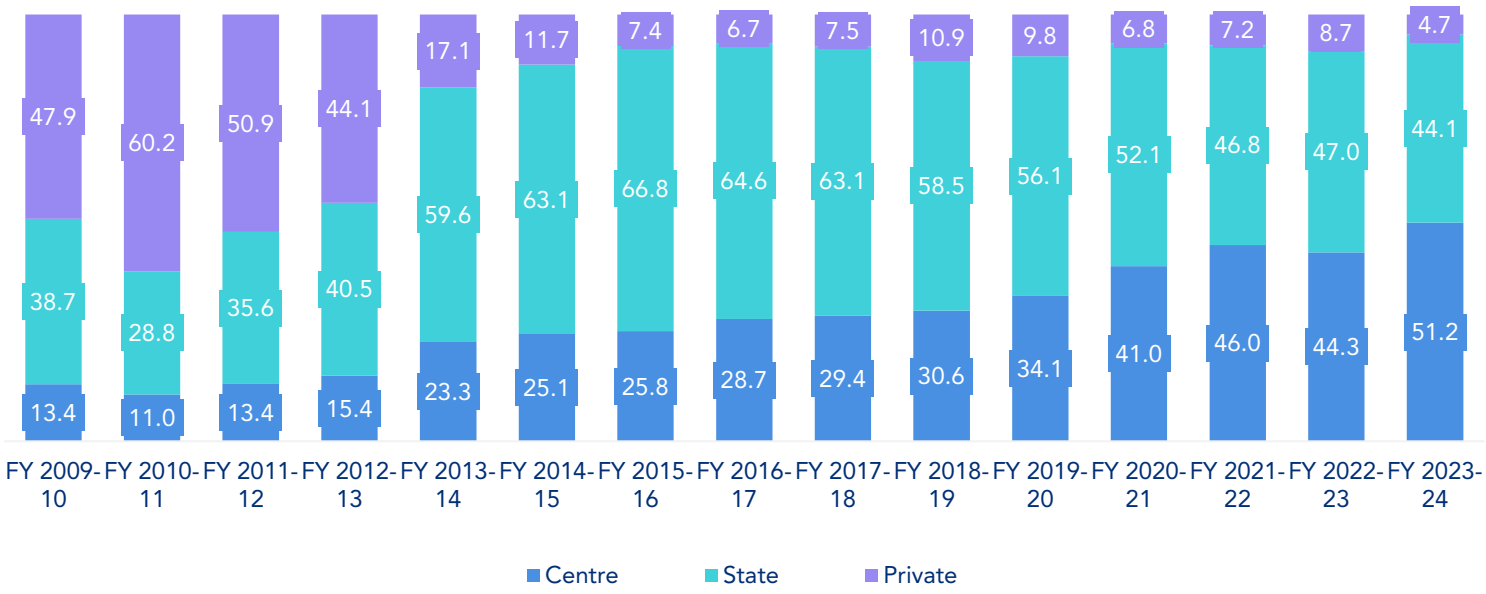
Indian cities are witnessing a surge in green buildings and sustainable construction, driving the use of energy-efficient designs and eco-friendly materials. Leading contractors like Larsen & Toubro Limited (L&T), Tata Projects, Shapoorji Pallonji Group, and KEC International are adopting prefabrication, modular construction, and smart technologies to enhance safety and productivity.

OPERATIONAL CHALLENGES

- **Raw Material Supply:** A sand and laterite stone shortage in Dakshina Kannada (Karnataka) halted plastering and structural work for 45 days, increasing labor costs and reliance on costlier alternatives like Manufactured sand (M-sand).
- **Pollution & Compliance**: Over 100 construction sites in Ahmedabad manipulated PM10 sensor data (e.g., covering sensors) to evade penalties. Actual readings exceeded the 60 µg/m³ threshold, reaching over 300.
- Despite the Air Quality Commission (AQC) extending expert oversight to 2026, enforcement remains weak. Delhi projects faced delays due to Graded Response Action Plan (GRAP) controls restricting construction during severe pollution, worsening public works execution lags.

8. OVERVIEW OF CONSTRUCTION AND INFRASTRUCTURE SECTOR IN INDIA

GROWING SHARE OF CENTRAL GOVERNMENT INVESTMENTS, % SHARE IN TOTAL CAPITAL EXPENDITURE (CAPEX), FY2009-10 TO FY2023-24



Source: Govt. of India, World Bank

INDIA'S INFRASTRUCTURE INVESTMENTS: A DECADE OF TRANSFORMATION

- Given their capital-intensive nature and lengthy timelines, infrastructure projects in India heavily rely on funding from both central and state government budgets. In FY 2023-24, India's infrastructure investments reached USD 151 billion, marking a threefold increase from USD 50 billion in FY 2013-14.
- Public sector contributions to these investments come from various sources, including allocations and gross budgetary support from the central government, as well as state government allocations. Traditionally, state governments have outspent the central government on infrastructure.
- Yet, in recent years, while states continue to lead in funding, the central government's share has surged, driven by its aggressive push for infrastructure development. Specifically, the central government's share was 13.4% in FY 2009-10 and reached 51.2% in FY 2023-24.
- In terms of numbers, from FY 2019-20 to FY 2023-24, the central government allocated an estimated USD 244 billion to infrastructure, closely trailing the states' USD 263 billion expenditure.
- While both central and state governments remain primary funding sources for infrastructure, private players have also been instrumental. Yet, their involvement has waned in recent years. Initially, bolstered by policies promoting public-private partnerships, private investments surged, particularly in sectors like roads and energy.
- From FY 2009-10 to FY 2013-14, private investments totaled USD 160 billion, accounting for 46.4% of all infrastructure investments. However, challenges such as project initiation delays, cost overruns, approval holdups, underperforming assets, and low revenue generation have dampened private investment enthusiasm in India's infrastructure sector, plummeting to 4.7% of the total CAPEX in FY 2023-24.

8. OVERVIEW OF CONSTRUCTION AND INFRASTRUCTURE SECTOR IN INDIA

GOVERNMENT POLICIES AND BIG-TICKET INITIATIVES (SMART CITIES, HOUSING FOR ALL, ETC.)

SMART CITIES MISSION: URBAN TRANSFORMATION GAINS TRACTION

- Initiated in June 2015, the Smart Cities Mission aimed to enhance urban infrastructure and services across 100 cities, seamlessly integrating technology with sustainability and improved quality of life. By January 2025, an impressive 93% of the projects (7,507 out of 8,058) had reached completion, with a substantial investment of INR 1,470 billion (USD 17.19 billion).
- This investment has led to the successful rollout of initiatives such as smart water pipelines, intelligent traffic systems, e-health centers, Closed-Circuit Television (CCTV) installations, and upgrades in urban mobility. While the mission officially concluded on March 31, 2025, the generated momentum and established institutional frameworks continue to serve cities, paving the way for scalable models in future urban development.

PMAY: PAVING THE WAY FOR UNIVERSAL HOUSING IN INDIA

- Since its inception in 2015, the Pradhan Mantri Awas Yojana (PMAY) has been pivotal in reshaping India's housing landscape, both in urban and rural settings. With over 4.21 crore homes sanctioned, many have been completed and occupied. Initiatives like the Credit Linked Subsidy Scheme (CLSS), Affordable Housing in Partnership (AHP), Beneficiary Led Construction (BLC), and In-Situ Slum Redevelopment (ISSR) have played a crucial role in upgrading slum dwellings into safe, amenity-rich homes.
- In June 2024, the government greenlit PMAY-U 2.0, setting an ambitious goal of adding one crore urban houses. This endeavor is bolstered by a massive investment of INR 10,000 billion (USD 120 billion) and augmented credit guarantees through the Credit Risk Guarantee Fund Trust for Low Income Housing (CRGFT), now under the stewardship of the National Credit Guarantee Trustee Company Ltd. (NCGTC). By March 2025, approvals for over 3.53 lakh homes in underserved categories were granted, underscoring a commitment to inclusivity: over 2.67 lakh homes were allocated to women, alongside specific provisions for Scheduled Caste (SC), Scheduled Tribe (ST), Other Backward Class (OBC), and transgender beneficiaries.
- Uttar Pradesh has seen a significant allocation of INR 120.31 billion (USD 1.40 billion) under PMAY-U 2.0, emphasizing geo-tagging, progress monitoring, and disaster-resilient designs. Overall, PMAY stands as a formidable catalyst, driving GDP growth, expanding housing finance, boosting demand for materials, and generating employment in construction-related sectors.

Note: Currency conversion to USD is based on OANDA exchange rates as of December 31, 2024.

8. OVERVIEW OF CONSTRUCTION AND INFRASTRUCTURE SECTOR IN INDIA

SECTOR-WISE INVESTMENT TRENDS (RESIDENTIAL, COMMERCIAL, INDUSTRIAL)

AFFORDABLE HOUSING INITIATIVES DRIVE GROWTH IN RESIDENTIAL CONSTRUCTION

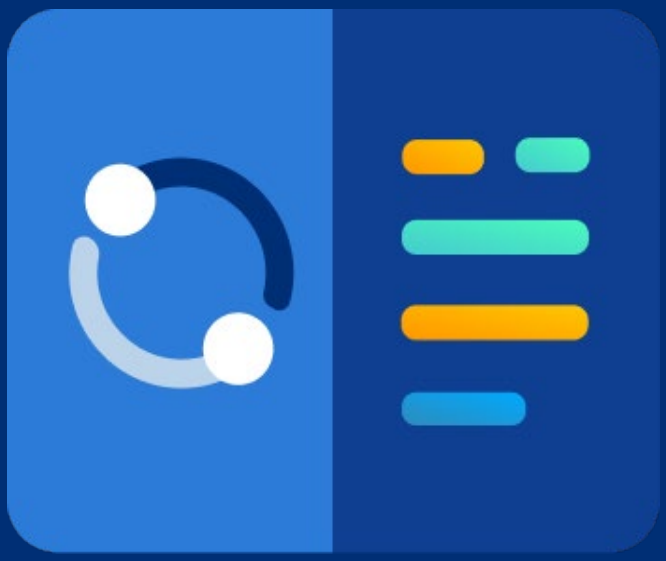
- Driven by initiatives like the Pradhan Mantri Awas Yojana - Urban and Gramin (PMAY-U & G), affordable housing is witnessing a surge. Coupled with tax incentives and reduced Goods and Services Tax (GST) rates, these measures are making homeownership more attainable, as highlighted by Invest India.
- As infrastructure develops and land prices stay competitive, Tier-II and III cities are witnessing a surge in housing demand. Furthermore, with the rise of hybrid work models and the integration of smart-home features like Internet of Things (IoT) and modular construction, buyer preferences are evolving, leading to a faster adoption of mid-market housing.

COMMERCIAL REAL ESTATE AND INFRASTRUCTURE DEVELOPMENTS IN INDIA

- In 2024, major cities like Delhi-National Capital Region (NCR), Bengaluru, and Hyderabad saw office leasing soar to approximately 60 million ft². Notably, nearly 80% of the forthcoming supply pipeline consists of green-certified buildings, highlighting a pronounced shift towards sustainability. Investment avenues, including Real Estate Investment Trusts (REITs), Infrastructure Investment Trusts (InvITs), and institutional platforms like World Pension Fund (WPF), Canada Pension Plan Investment Board (CPPIB), and DLF-GIC Investment Corporation (DLF-GIC), are amplifying commercial developments in tech parks, malls, and logistics hubs.
- Additionally, Securities and Exchange Board of India's (SEBI) initiative to expand REIT and InvIT participation is bolstering investments in commercial real estate and infrastructure.
- Industrial, warehousing, and logistics sectors are thriving, driven by initiatives like the Chennai-Bengaluru and Delhi-Mumbai Industrial Corridors, along with the Kochi-Bengaluru node. As a testament, the Palakkad node in Kerala has clinched a central funding of INR 38.15 billion (USD 446 million), with 1,400 acres already acquired and a Detailed Project Report (DPR) established.

Note: Currency conversion to USD is based on OANDA exchange rates as of December 31, 2024.

9. OVERVIEW OF LADDERS INDUSTRY



9.1 OVERVIEW OF LADDERS INDUSTRY

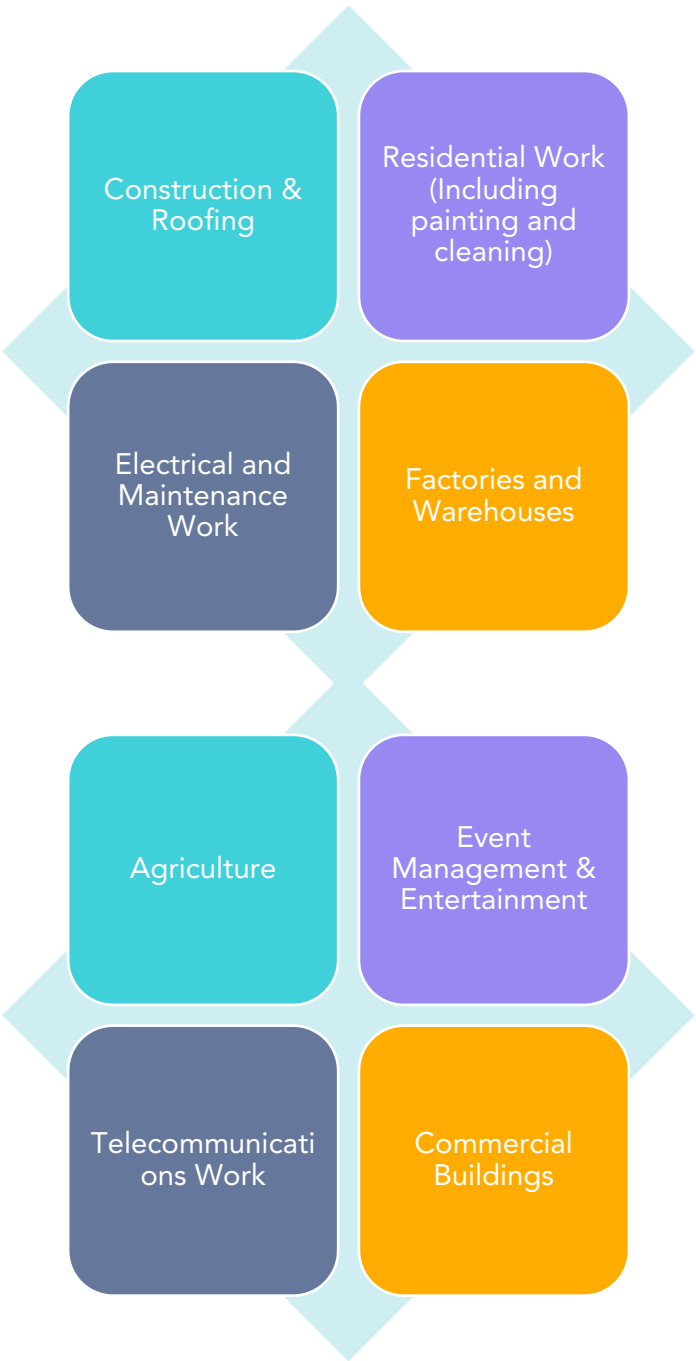
PRODUCT DEFINITION

- In India, the ladder industry encompasses the production, distribution, and sale of ladders. These ladders find applications in diverse sectors, including construction, industry, residential, commercial, and maintenance.
- Catering to a rising demand, the market emphasizes safe, durable, and ergonomic solutions for tasks at elevated heights. Growth in this sector is driven by infrastructure development, urbanization, industrial expansion, stringent safety regulations, and innovations in ladder design and materials.

BROAD CATEGORIES OF LADDERS USED IN INDIA

- *Domestic Ladders*
- *Commercial & Industrial Ladders*
- *Specialty Ladders*
- *Platform Ladders*
- *Extension Ladders*
- *Step Stools*
- *Multipurpose Ladders*
- *Safety Ladders*
- *Fixed Ladders*

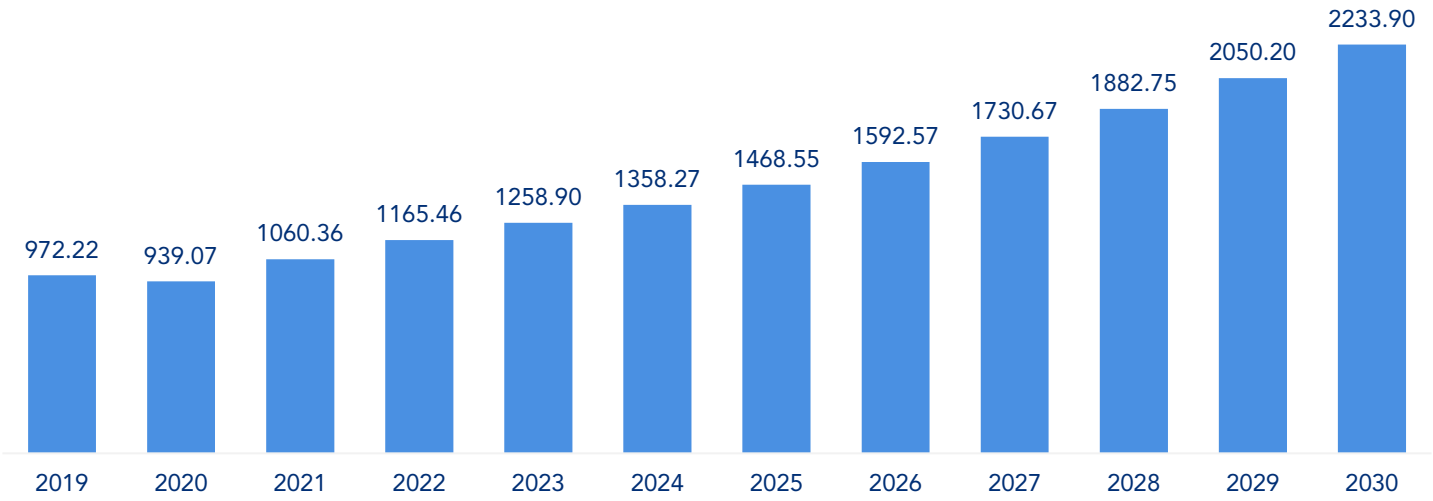
KEY APPLICATIONS IN INDIA



9.1. OVERVIEW OF THE LADDERS INDUSTRY

INDIA LADDERS MARKET, VALUE IN INR CRORES, 2019-2030

CAGR (2024 - 2030): 8.65%



- The India Ladders Market studied was valued at INR 1358.27 crores in 2024 and is expected to reach INR 2233.90 crores in 2030, registering a CAGR of 8.65% for the forecast period (2024-2030).

HISTORICAL PERFORMANCE (2019–2024)

- From 2019 to 2024, demand for ladders surged in India, driven by sectors like construction, manufacturing, and facilities maintenance. This uptick was largely a response to the nation's swift urbanization and ongoing infrastructure projects.
- As workplace safety standards tightened, industries such as construction, oil & gas, and electrical manufacturing increasingly turned to certified, high-quality ladder solutions.
- Online retail platforms broadened access to ladder products, further propelling market growth. Consumers showed a growing inclination towards lightweight, portable, and multi-purpose ladders, appealing to both professionals and DIY enthusiasts.

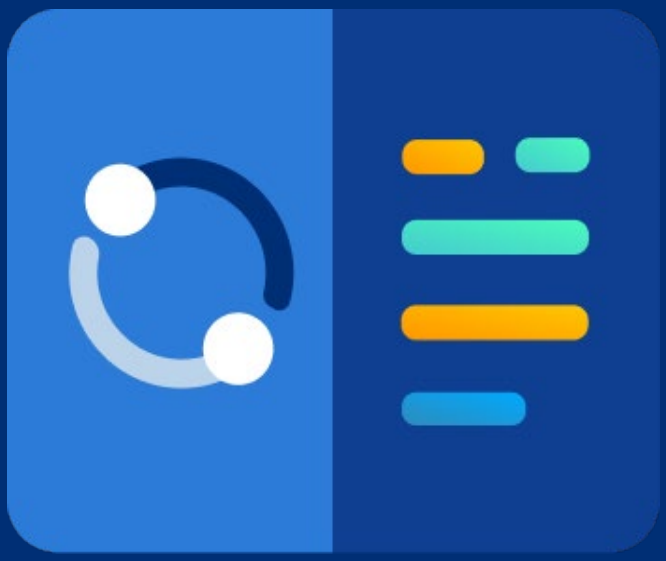
FORECAST PROJECTIONS (2025–2030)

- Spurred by rapid urbanization, residential and commercial construction is expected to remain a significant driver of the ladder market in India during the forecast period. As industries increasingly prioritize safety, the demand for certified, high-quality ladders is set to grow.
- Furthermore, there's a noticeable market shift towards lightweight, multi-functional, and easily storable ladders, thanks in part to advancements in aluminum, fiberglass, and composite materials.

Source: Mordor Intelligence

10. TYPES OF LADDERS

10.1 Fiber Reinforced Plastic (FRP) Ladders
10.2 Aluminum Ladders
10.3 Others

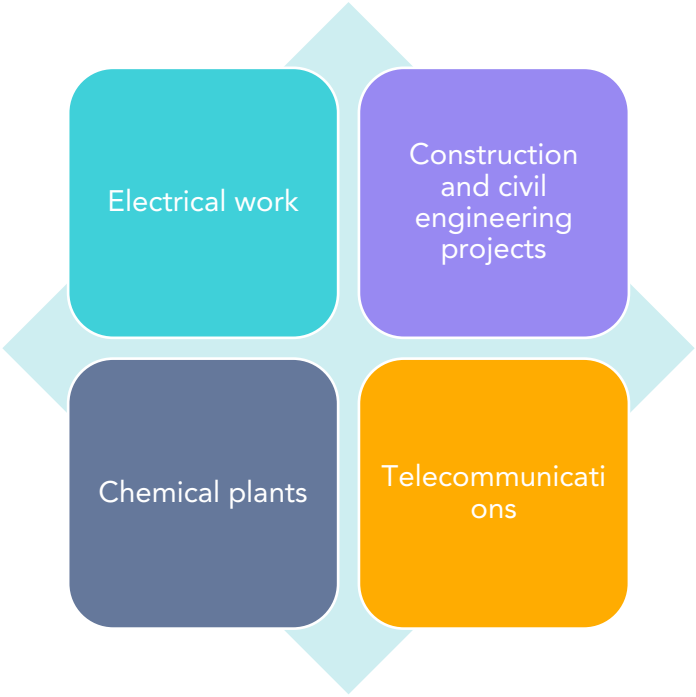


10.1 FRP LADDERS

PRODUCT DEFINITION

- FRP (Fiber Reinforced Polymer) ladder boasts a robust construction using premium composite materials. This ladder is meticulously crafted to safeguard against electrical injuries, ensuring both comfort and stability for its users.
- FRP, a composite material, combines various materials to achieve its unique properties. The predominant variant of FRP is fiberglass honeycomb, but it also encompasses:
  - Polymer-filled epoxy glass mat (POE-G-MAT), Polyamide/elastomeric polymer matrix laminate (PML), and Glass wool or fly ash.

WHERE IT'S USED IN INDIA



WHY CHOOSE FRP LADDERS?

- Lightweight
- Durable
- Non-conductive and corrosion-resistant

MATERIALS USED

- **Fiberglass**: Serves as the main source of strength and stiffness for the ladder.
- **Resin Matrix**: Utilizes epoxy, polyester, or vinyl ester resins to bind and protect the fiberglass fibers.
- **Additional Components**: Features such as slip-resistant treads, external spreaders, and heavy-duty bracing are often incorporated into FRP ladders for added safety and stability.

COMPLIANCE & DESIGN CONSIDERATIONS

- In India, designers of FRP ladders prioritize non-conductivity for electrical safety, particularly in data centers. They also integrate features such as non-slip steps and secure locking mechanisms to enhance stability and prevent falls.
- Safety regulations include:
  - **Indian Standards (IS):** In India, FRP ladders must comply with IS standards, detailing requirements for materials, dimensions, and performance testing.
  - **EN 131**: EN (European norm) 131, a prominent European standard, governs ladders, including FRP variants, focusing on strength, stability, and load capacity.
  - **ERDA**: The Electrical Research and Development Association has certified FRP ladders in India, confirming their compliance with ERDA's rigorous electrical safety standards.

10.1 FRP LADDERS

FIBERGLASS LADDERS VERSUS CARBON FIBER REINFORCED POLYMER

FRP (Fiberglass Reinforced Polymer) ladders primarily come in two varieties: Fiberglass Ladders and Carbon Fiber Reinforced Polymer (CFRP) Ladders.

ATTRIBUTE	FIBERGLASS LADDERS	CFRP LADDERS
Material	Fiberglass reinforced polymers	Carbon fibers
Applications	Due to their electrical non-conductivity, they are deemed safe for use around electricity.	With their exceptional strength-to-weight ratio, these materials are perfect for weight-sensitive applications, including aerospace and high-performance vehicles.
Corrosion resistance	Due to their resistance to corrosion, rust, and rot, they prove suitable for diverse environments, even those that are corrosive or wet.	Corrosion-resistant and durable, CFRP ladders stand out in their field.
Affordability	Fiberglass ladders are generally more affordable than CFRP ladders.	CFRP ladders typically come with a higher price tag compared to their fiberglass counterparts.

SourceIndian Standards (Bureau of Indian Standards/Indian Standards Institute (BIS/ISI)), Government Safety Guidelines (e.g. Central Public Works Department (CPWD))

10.1 FRP LADDERS

FRP LADDERS VERSUS ALUMINUM LADDERS		
ATTRIBUTE	**FRP LADDERS**	**ALUMINUM LADDERS**
Chemical Resistance	More	Less
Ultraviolet (UV) and Weather Resistance	More	Less
Durability	Higher	Lower
Safety in terms of strength	Stronger	Less in strength
Safety in terms of electric insulation	FRP is a good insulator, hence safe in electrical fields	Aluminum is a good conductor of electricity
Safety in terms of thermal insulation	FRP is a good thermal insulator	Aluminum is a conductor of heat
Cost	More expensive	Cheaper
Weight	Heavier	Lighter in weight

Source: Ahmedabad Textile Industry Research Association

10.1 FRP LADDERS

CORE FEATURES OF FRP LADDERS IN INDIA

In India, FRP materials outshine traditional materials in several ways. Their non-conductive nature makes them ideal for electrical applications, prioritizing safety. Moreover, with their robust resistance to chemicals and Ultraviolet (UV) radiation, FRP materials promise durability and performance, even in the harshest environments.

LIGHTWEIGHT AND EASY TO TRANSPORT

FRP ladders stand out for their lightweight design. When stacked against traditional metal or wooden ladders, FRP variants are notably lighter. This weight advantage not only simplifies transportation between job sites but also boosts portability. As a result, workers in India can swiftly and efficiently position the ladder wherever required.

NON-CONDUCTIVE PROPERTIES

When working near electrical sources, safety takes precedence. FRP ladders stand out for their non-conductive properties, offering a vital safety advantage. Metal ladders, known for their ability to conduct electricity, pose significant risks. In contrast, FRP ladders act as insulators, safeguarding against electrical accidents. This insulation feature significantly boosts worker safety in India, particularly in settings with live wires or active electrical equipment.

CORROSION RESISTANCE AND LONGEVITY

FRP ladders stand out for their durability, boasting remarkable resistance to corrosion. In contrast to conventional metal or wooden ladders, FRP variants remain impervious to rust and decay. They endure harsh weather, chemicals, and UV radiation, all while maintaining their structural integrity.

SLIP-RESISTANT SURFACE FOR ENHANCED GRIP

FRP ladders boast a slip-resistant surface, enhancing safety. Designed for maximum grip, the ladder rungs ensure stability even in wet or slippery conditions. This feature greatly minimizes the risk of accidents due to slipping or losing balance while using the ladder. With assured footing, workers in India can concentrate on their tasks without undue worry.

Sources: **Industry Associations and Standards, Global Manufacturers, Technical Manuals, Indian Supplier Platforms, Technical Sheets**

10.1 FRP LADDERS

KEY TYPES OF FRP LADDERS USED IN INDIA

FRP ladders stand out due to their enhanced safety features. With non-conductive properties, they safeguard users from electrical hazards, boasting **insulation capabilities of up to 30,000 V**. Moreover, these ladders can bear **weights of up to 150 kg**, making them a dependable choice for a range of work applications. Consequently, FRP ladders are widely used in various industries, from maintenance and warehousing to operations and aerospace.

STEP LADDERS

- Step ladders, with their self-supporting A-type design, serve as the perfect solution for tasks demanding a freestanding ladder.
- **Common Applications**: Home purposes, architecture & warehouse maintenance.

STRAIGHT LADDERS

- The straight ladder, a fundamental and widely utilized variant, features a singular elongated section, usually propped against a surface for stability.
- **Common Applications**: Electrical poles, transmission lines, residential tasks, and warehouse upkeep.

EXTENSION LADDER

- Extension ladders, made up of two or more sections, can be extended to reach impressive heights. They're frequently employed for tasks such as painting or gaining access to roofs.
- **Common Applications**: Electrical poles, transmission lines, and other tall structures that necessitate added height.

PLATFORM LADDERS

- Platform ladders, engineered for stability, prioritize safety and convenience, especially when working at elevated heights. Unlike traditional ladders, these come equipped with safety rails and handrails, ensuring users maintain balance and security.
- **Common Applications**: Ideal for tasks requiring extended durations at height, platform ladders are the go-to choice.

10.1 FRP LADDERS

CORE APPLICATION AREAS OF FRP LADDERS IN INDIA

INDUSTRIAL APPLICATIONS	•**Chemical Plants and Manufacturing**: Due to their corrosion resistance to various chemicals and harsh environments, chemical plants and manufacturing **industries favor FRP ladders.** •**Water and Sewage Treatment Plants**: Water and sewage treatment facilities favor them for their resistance to moisture and chemicals.
TRANSPORTATION	•**Firefighting Vehicles**: Firefighting vehicles utilize FRP ladders for their strength and lightweight properties. •**Marine and Mass Transportation**: Corrosion resistance makes them ideal for marine applications and mass transportation. •**Railways**: Railway infrastructure, from sleepers to signaling equipment, increasingly relies on FRP, bolstering both safety and efficiency.
CONSTRUCTION & INFRASTRUCTURE	•**Civil Construction**: Various construction and infrastructure projects are now utilizing FRP ladders. •**Bridge Construction**: The lightweight and durable nature of FRP proves advantageous in the construction of bridges and walkways. •**FRP Rebars**: In concrete structures, FRP rebars serve as a durable substitute for steel, particularly in seismic zones and corrosive settings.
ELECTRICAL & TELECOMMUNICATIONS	•**Electrical Rooms**: Due to their non-conductive nature, these materials are perfect for use near electrical equipment. •**Electrical Substations and Power Plants**: FRP ladders, being non-conductive, play a vital role in ensuring electrical safety at substations and power plants. •**Telecom**: The telecom industry employs FRP ladders for various maintenance and repair tasks.

10.1 FRP LADDERS

USE CASES IN INDIA – APPLICATIONS OF FRP LADDERS

SECTOR	PROJECT	APPLICATION
Power Plants and Substations	**National Thermal Power Corporation Projects**	National Thermal Power Corporation (NTPC) plants utilize FRP ladders for maintenance access in environments that are both corrosive and electrically hazardous.
Telecommunication	**Bharti Airtel, Reliance Jio**	To safeguard maintenance personnel from electrical hazards and rust, Bharti Airtel and Reliance Jio have equipped their towers and repeater stations with FRP ladders.
Oil, Gas & Chemicals	Oil and Natural Gas Corporation (ONGC)	FRP ladders, favored by offshore and onshore drilling platforms and refineries, enhance safety due to their resistance to chemical corrosion and non-conductive properties.
Oil, Gas & Chemicals	Reliance Industries	Chemical processing units under Reliance are increasingly turning to FRP ladders for access, seeking to sidestep issues of sparks and corrosion.

10.1 FRP LADDERS

GROWING DATA CENTER LANDSCAPE BOOSTS FRP LADDERS MARKET IN INDIA

- India is swiftly emerging as a pivotal force in the global data center arena. An industry report highlights that the Indian data center market is poised for double-digit annual growth over the next five years. This surge can be attributed to heightened cloud service adoption, stringent data localization mandates, and a widespread digital transformation across sectors.
- Major players, including Amazon Web Services (AWS), Microsoft, Google, alongside local entities like NTT Global and CtrlS, are pouring substantial investments into cutting-edge data center infrastructures.

- With the industry's expansion comes an escalating demand for sophisticated infrastructure and equipment, prioritizing safety, longevity, and efficiency. A prime example of such a crucial component is the ladder systems integral to data centers.
- Given the intricate operations, advanced equipment, and the paramount importance of safety in bustling, high-voltage settings, selecting the appropriate ladder becomes indispensable. This emerging scenario has significantly boosted the FRP ladder market in India.

MICROSOFT EXPANDS DATA CENTERS

- In July 2024, Microsoft acquired 22 acres in Mekaguda, 41 acres in Shad Nagar, and 52 acres in Chandan Valley, all located in the Rangareddy district, to bolster its data center network in Telangana.
- In January 2025, as part of its strategy to boost Artificial Intelligence (AI) adoption across India, Microsoft unveiled plans to set up new data centers in the country within the next two years.

GOOGLE TO OPEN DATA CENTER

- In March 2024, Google announced plans to acquire 22.5 acres of land in Navi Mumbai for its first self-built data center in India.
- While Google has previously inked deals to lease space at data centers in Navi Mumbai and Noida, this will be the inaugural data center to be developed by the company in India.

10.1 FRP LADDERS

KEY TRENDS OF FRP LADDERS MARKET IN INDIA

FOCUS ON SUSTAINABILITY

In India, companies are turning their attention to crafting eco-friendly FRP ladders. By utilizing recyclable materials and embracing energy-efficient manufacturing methods, they're aligning with global sustainability objectives. This shift not only positions FRP ladders as a practical option but also underscores their responsible choice.

For example, in Pune, the Suzlon One Earth campus stands out as a prime example of sustainable construction in India. This Leadership in Energy and Environmental Design (LEED) Platinum-certified building is among the first in the country to earn such a distinguished green building accolade. This kind of building construction indicates an increasing shift towards the usage of eco-friendly FRP ladders.

TECHNOLOGICAL INTEGRATION

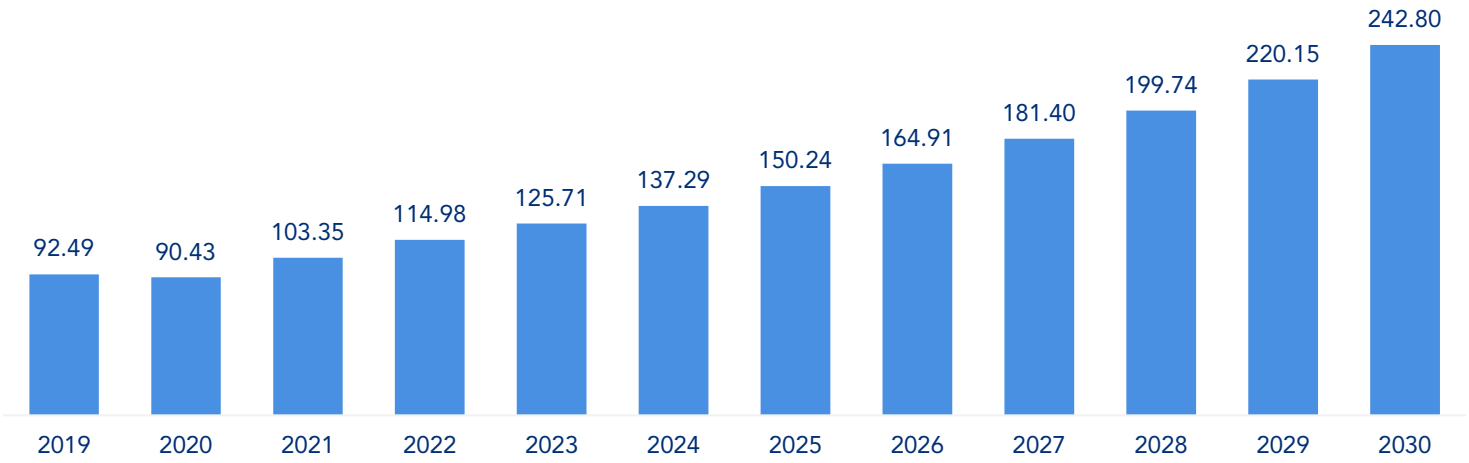
As industries evolve, the FRP ladder market is witnessing a technological renaissance in India. High-risk sectors are increasingly adopting Internet of Things (IoT) sensors, enabling real-time safety monitoring and timely maintenance alerts. Meanwhile, Artificial Intelligence (AI)-driven design optimizations not only bolster product safety but also cater to the growing consumer demand for tailored, intelligent solutions.

For example, **Adity Composite Pvt Ltd** harnesses the power of robotics and automation in its manufacturing facilities, churning out FRP ladders and a range of other composite products. Their approach is further enhanced by the integration of real-time sensors and IoT devices, ensuring meticulous process control and unwavering quality assurance.

10.1 FRP LADDERS - SALES MODEL

INDIA FRP LADDERS MARKET, VALUE IN INR CRORES, SALES MODEL, 2019-2030

CAGR (2024 - 2030): 9.97%



- The Sales Model segment of the India FRP Ladders Market studied was valued at INR 137.29 crores in 2024 and is expected to reach INR 242.80 crores in 2030, registering a CAGR of 9.97% for the forecast period (2024-2030).

Growth of FRP Ladder Market in India

- India's consumption of Fiber-Reinforced Plastic (FRP) Ladders is on the rise, driven by heightened industrial safety standards and expansions across sectors like utilities, telecom, oil & gas, and construction.
- Take, for instance, the Indian government's endorsement of the Broadcasting Infrastructure & Network Development (BIND) scheme, spanning 2021-26, with a hefty budget of INR 25,396 million (USD 303.5 million).
- This initiative focuses on modernizing the nationwide Doordarshan network. Currently, Doordarshan's Free Dish, a complimentary Direct to Home (DTH) service, boasts nationwide coverage. Moreover, the Andaman & Nicobar Islands benefit from a dedicated 10-channel C-Band Satellite DTH service.
- Distribution platforms, including Direct to Home (DTH) and Headend in the Sky (HITS), utilize satellites and airwaves to broadcast TV channels. This capability allows them to cater to remote and hilly terrains, ensuring comprehensive coverage across India.
- On another note, infrastructure investments in India have surged, influenced by both public and private sector contributions. Budget allocations for infrastructure spending skyrocketed to INR 1000 billion (USD 119.50 billion) in 2023-24. Such robust investments in infrastructure signal a promising trajectory for the FRP ladder market in India.

Source: Mordor Intelligence

10.1 FRP LADDERS - SALES MODEL

Strict BIS enforcement, high entry costs, and technical manufacturing demands are reshaping India's Fiberglass Reinforced Polymer (FRP) ladder market, favoring certified domestic suppliers while posing challenges for small or uncertified players.

INDIAN FRP LADDER SECTOR SEES REGULATORY BOOST AND INSTITUTIONAL ADOPTION

- Driven by changing industrial needs and regulatory shifts, India's FRP ladder industry is witnessing significant strides. The Bureau of Indian Standards (BIS) has intensified its enforcement of certification mandates, focusing on mechanical strength and electrical insulation. This move raises hurdles for non-certified and imported products, simultaneously bolstering Indian manufacturers who already align with these standards. Highlighting this trend, public procurement tenders have seen a surge in institutional adoption.
- A case in point: in early 2024, Southeastern Coalfields Limited floated a tender for a 12 m adjustable fiberglass FRP ladder, emphasizing its pivotal role in ensuring compliance and safety within the mining and energy sectors.

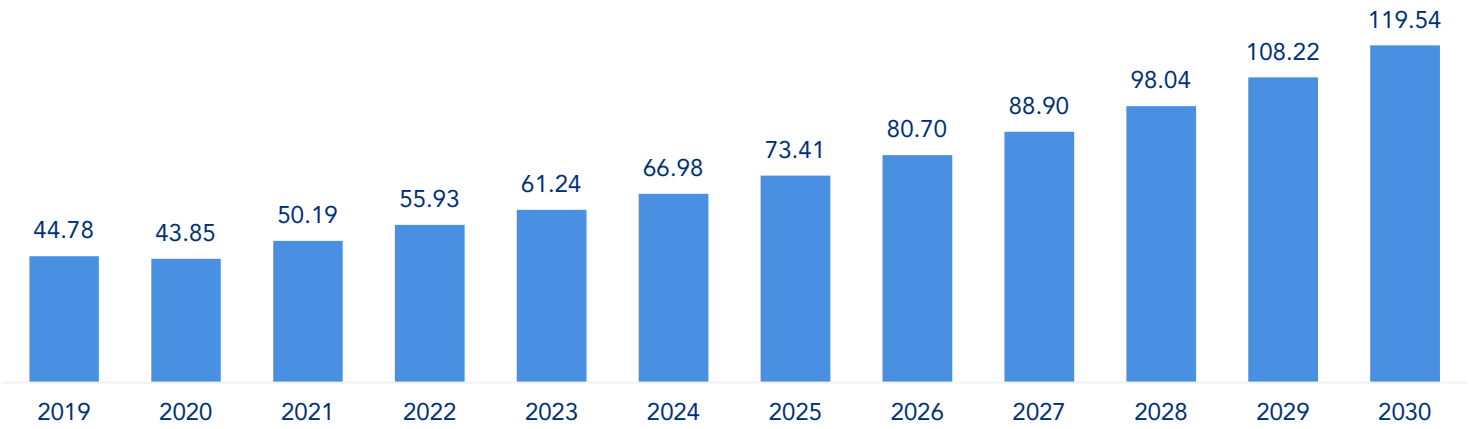
MARKET ENTRY HURDLES FOR FRP LADDER SUPPLIERS

- The Bureau of Indian Standards (BIS) enforcement acts as a significant barrier for new entrants in the market. FRP ladders are mandated to adhere to stringent criteria concerning mechanical strength, load capacity, and electrical insulation. Suppliers without BIS certification, or those who don't pass inspections, encounter delays or outright rejections from pivotal institutional buyers, including utilities, telecom companies, and government entities.
- Smaller suppliers grapple with the ambiguity of domestic standards. The uncertainty surrounding the alignment of American National Standards Institute/Occupational Safety and Health Administration (ANSI/OSHA) norms affects product positioning in the market.
- While FRP ladders offer long-term safety and maintenance benefits, their higher initial acquisition costs—compared to traditional materials like wood or aluminum—can deter price-sensitive buyers. This is particularly true for small contractors and Small and Medium Enterprises (SMEs).
- Suppliers of aluminum and wooden ladders have firmly established their presence in the market. Many users, especially in informal or budget-sensitive segments, believe that the cost savings from traditional ladders overshadow the benefits of risk mitigation.
- Manufacturing FRP components, such as Resin Pultrusion and Resin Transfer Molding (RTM), requires specialized equipment and technical expertise. This necessity can lead to production bottlenecks for smaller manufacturers in India, potentially hindering their ability to respond swiftly to tenders or large orders.

10.1 FRP LADDERS - RENTAL MODEL

INDIA FRP LADDERS MARKET, VALUE IN INR CRORES, RENTAL MODEL, 2019-2030

CAGR (2024 - 2030): 10.14%



- The Rental Model segment of the India FRP Ladders Market studied was valued at INR 66.98 crores in 2024 and is expected to reach INR 119.54 crores in 2030, registering a CAGR of 10.14% for the forecast period (2024-2030).

FRP LADDER RENTAL MODEL IN INDIA

- **In the Fiber-Reinforced Plastic (FRP) Ladder market in India, specialist access-equipment providers**, such as Y Equipment Services (formerly Youngman India), are increasingly shaping the FRP ladder rental model. With a pan-India network of 24 outlets, these firms offer both aluminum and FRP ladders. Before dispatch, these ladders undergo rigorous safety testing—including base slip, lateral deflection, bending, and torsion checks—to meet EN 131 standards. This safety certification is central to the model's value proposition: companies rent ladders with confidence, assured of their compliance with workplace safety norms.
- Clients, including construction contractors, industrial maintenance teams, and facility management firms, seek flexible height-access solutions without the burden of ownership. Rental providers enhance their offerings with services like delivery (including same-day in metros), on-site training, and ongoing inspections. The allure of renting is heightened for maintenance, electrical, Heating, Ventilation, and Air Conditioning (HVAC), and event-related projects, thanks to the combination of non-conductive FRP construction, certified compliance, and rapid availability.

DIVERSE FRP LADDER FLEET: MEETING VARIED INDUSTRIAL AND SAFETY NEEDS

- The rental fleets boast a variety of FRP ladder types—straight self-supported ladders, platform-style units with wheels, telescopic variants, and integrated mobile platforms. These diverse offerings cater to a broad spectrum of needs, from indoor retail maintenance to industrial electrical tasks.
- Providers like K2 Scaffold emphasize the safety edge of FRP ladders by offering rentals specifically for electrically insulated fiberglass ladders. These ladders are crucial for tasks like painting, bulb replacements, plastering, and working near live electrical installations—situations where aluminum ladders pose significant safety risks. This underscores the FRP ladder's safety advantage and bolsters its rental appeal in sectors with sporadic access needs.

Source: Mordor Intelligence

10.1 FRP LADDERS - RENTAL MODEL

India’s robust infrastructure investments and safety-driven project needs are propelling the growth of the FRP ladder rental market across key sectors like energy, railways, and urban development.

INDIA'S INFRASTRUCTURE BOOM FUELS SURGE IN FRP LADDER RENTALS

- India's heavy investments in infrastructure are driving the demand for FRP products—and consequently, height-access rental equipment:
- Spanning energy, railways, urban infrastructure, and construction projects until 2025, the National Infrastructure Pipeline (NIP) underscores the need for safe, non-conductive tools during both installation and maintenance.
- In urban power modernization efforts, such as Bengaluru's conversion of 7,400 km of 11 kV lines from overhead to underground and Delhi's Janakpuri pilot, maintaining underground feeder pillars and related electrical infrastructure is paramount. Here, FRP ladders are essential for technicians working near high-voltage installations, mitigating the risks associated with aluminum ladders.
- With major players like AWS, Google, and CtrlS spearheading the expansion of data centers, there's a heightened demand for non-conductive access equipment. Arham Composite, for instance, provides FRP ladder systems specifically designed for these sensitive environments, which contractors increasingly seek for rental or temporary use on behalf of data center clients.

INFRASTRUCTURE PUSH IN UNION BUDGET 2025–26 TO ACCELERATE DEMAND FOR FRP LADDER RENTAL MODEL

- In India, the FRP ladder rental business is set to flourish, driven by infrastructure expansion, strict safety procurement standards, and a growing rental ecosystem supported by skilled suppliers.
- For instance, in the Union Budget 2025–26, the government unveiled a substantial boost in capital investment for infrastructure, elevating it to INR 11,210 billion (USD 128.64 billion), which represents 3.1% of the GDP.
- Furthermore, the budget detailed initiatives to grant the private sector access to vital data and maps from the PM Gati Shakti portal, enhancing project planning efficiency. Indian Railways received a historic capital expenditure allocation of INR 2,652 billion (USD 31.43 billion).
- Additionally, the Ministry of Development of North-Eastern Region (MDONER) has approved 90 projects under the North-East Special Infrastructure Development Scheme (NESIDS), with a total investment of INR 34,176.7 million (USD 391.08 million) spread over the past three financial years and extending into FY25. The government's ambition to elevate the share of natural gas in the energy mix from 6.7% to 15% by 2030 underscores extensive upgrades in the energy and utility sectors.
- Given these expansive infrastructure endeavors, the demand for FRP ladder rentals is poised to surge. These ladders offer safe, adaptable, and regulation-compliant access, essential for temporary and project-based tasks in sectors like railways, energy, and regional development.

10.2 ALUMINUM LADDERS

PRODUCT DEFINITION

- Constructed primarily from lightweight and corrosion-resistant aluminum, aluminum ladders are celebrated for their durability and strength. Their ease of handling further cements their popularity, spanning applications from household chores to industrial tasks.
- Thanks to aluminum's low density, ladders crafted from this material are notably lighter than their steel or wooden counterparts, making them easier to transport and maneuver.

WHY CHOOSE ALUMINUM LADDERS?

- Lightweight
- Corrosion-resistant
- Durability

MATERIALS USED

- *Manufacturers primarily craft aluminum ladders from aluminum alloys, prized for their lightweight and durable characteristics.*
- *Notably, 6063-T6 marine-grade aluminum is favored for its strength and corrosion resistance, rendering it ideal for elevated tasks. Additionally, 6061-T6 is commonly used for rungs, while 6063-T5 is preferred for extrusion.*

WHERE IT'S USED IN INDIA

COMPLIANCE & DESIGN CONSIDERATIONS

- In India, for aluminum ladders measuring up to 3 m in length, the width between the side rails at the base must be a minimum of 290 mm, with the requirement increasing for longer ladders. Additionally, ladders should feature wide, slip-resistant feet and safety handrails to ensure stability during climbs.
- Steps must be securely attached to the side rails and designed to be non-slip. In the case of metal ladders, rungs should consist of solid round steel rods, steel pipes, or angle sections, and must be fastened using rivets, bolts, or welding techniques.
- Safety regulations in India include:
  - **IS 3696 (Part 2): 1991** - This standard outlines safety protocols for aluminum ladders, encompassing their construction, usage, and dismantling.

10.2 ALUMINUM LADDERS

CORE FEATURES OF ALUMINUM LADDERS IN INDIA

In India, aluminum ladders offer a host of advantages. Lightweight yet durable, they resist corrosion, making them suitable for indoor and outdoor applications. Their impressive strength-to-weight ratio guarantees easy transport without sacrificing stability.

LIGHTWEIGHT AND EASY PORTABILITY

Aluminum ladder platforms are notably lightweight, making them easy to transport and set up, particularly in fast-paced work settings. However, this reduced weight doesn't compromise their strength; these ladders boast a sturdy structure, prioritizing user safety during operations.

DURABILITY AND CORROSION RESISTANCE

Due to aluminum's natural resistance to corrosion, these ladders stand out as a long-lasting option across diverse environments. While other materials might succumb to environmental wear and tear, aluminum remains steadfast, ensuring dependable longevity. This robustness not only guarantees reliability but also leads to significant cost savings by reducing the frequency of replacements.

RESISTANCE TO HARSH WEATHER

Aluminum ladders excel in challenging weather conditions. Thanks to their corrosion-resistant properties, they remain structurally sound even when exposed to moisture and fluctuating temperatures. This durability makes them the go-to choice for outdoor applications, especially in unpredictable weather.

SAFETY BENEFITS

Aluminum ladder platforms come equipped with non-slip treads, secure locking mechanisms, and stable base supports, all aimed at bolstering user safety. Aluminum ladders adhere to rigorous safety standards, ensuring users' peace of mind.

COST ADVANTAGES AND LONG-TERM SAVINGS

Investing in aluminum ladders proves to be a financially savvy choice in the long run. Thanks to their durability, replacements are infrequent, and minimal maintenance further amplifies these savings. Moreover, being lightweight not only eases transportation but also cuts down handling costs, boosting overall operational efficiency.

Sources: **Industry Associations and Standards, Global Manufacturers, Technical Manuals, Indian Supplier Platforms, Technical Sheets**

10.2 ALUMINUM LADDERS

KEY TYPES OF ALUMINUM LADDERS USED IN INDIA

SINGLE-SECTION LADDER

- **Description**: An aluminum ladder, typically fixed in length, designed for straightforward use.
- **Use**: Perfect for tasks at lower heights, such as home repairs, reaching shelves, or wall painting.
- **Advantages**: Lightweight, corrosion-resistant, portable, and easy to store.

FOLDING OR STEP LADDER

Description: A self-supporting ladder, featuring steps on one or both sides, conveniently folds at the hinge for easy storage.

Use: Ideal for indoor tasks such as electrical work, kitchen maintenance, and bulb replacements.

Advantages: Offers stability, portability, easy storage, and is perfect for areas lacking wall support.

PLATFORM LADDERS

Description: Platform aluminum ladders, a specialized variant of step ladders, prioritize stability, safety, and user comfort for those working at heights. In contrast to conventional ladders with their narrow steps, platform ladders boast a broad, flat standing platform at the summit.

Use: Ideal for both indoor and outdoor tasks.

Advantages: Offers lightweight portability and enhanced safety.

EXTENSION LADDERS

- **Description:** The ladder features two or more sections that slide and extend, allowing users to adjust its height.
- Use: Often employed for outdoor tasks, including painting buildings, accessing rooftops, and cleaning gutters.
- **Advantages**: Offers adjustable height, is lightweight, durable, and resistant to rust.

TELESCOPIC LADDER

- **Description**: Ladder sections fold into one another, significantly shrinking in size for effortless storage and transport.
- **Use**: Favored by professionals such as electricians, painters, and maintenance workers for their portability.
- **Advantages:** Compact, lightweight, height-adjustable, and easily portable.

MULTI-POSITION LADDER

Description: The product can transform into an A-frame ladder, extension ladder, or scaffold stand.

Use: It's suitable for a range of tasks, from construction and painting to repairs, both indoors and outdoors.

Advantages: Offers versatility, stability, and saves space.

10.2 ALUMINUM LADDERS

KEY TYPES OF ALUMINUM LADDERS USED IN INDIA

TOWER LADDER

- This telescopic ladder, both lightweight and budget-friendly, can extend incrementally to nearly 13.12 feet. Its key features include:
- Constructed from lightweight aluminum alloy.
- Features non-slip rubber angled feet.
- Functions as a double ladder, adjustable rung by rung.
- Serves as a single extending ladder, reaching nearly four times its transport length.
- Designed for space-saving transport and storage.

WALL-MOUNTED LADDER

- Crafted from high-quality raw materials sourced from trusted vendors, the aluminum wall-mounted ladder comes in a range of designs and sizes. This type of ladder is available in a range of heights spanning 18 feet to 20 feet.

SELF-SUPPORTING EXTENSION LADDERS

- Certified market vendors supply the high-grade aluminum sheets and rods used to craft aluminum self-supporting extension ladders.
- These ladders serve various purposes, including roof work, wall decoration, and material storage in buildings.
- This type of ladder usually has a load capability of 100 kg and an extended height of 25 feet.

TROLLEY STEP LADDER

- Aluminum Trolley Step Ladders, crafted from lightweight aluminum and fitted with wheels (casters) for effortless mobility, serve as self-supporting ladders.
- These versatile tools find their primary applications in warehouses, retail outlets, libraries, and various industrial environments, facilitating access to elevated shelves and aiding in maintenance tasks.

10.2 ALUMINUM LADDERS

CORE APPLICATION AREAS OF ALUMINUM LADDERS IN INDIA

CONSTRUCTION & ROOFING	During construction, maintenance, and repairs, workers use aluminum ladders to access rooftops, beams, and high ceilings.
HOUSEHOLD & OUTDOOR TASKS	•In both residential and commercial settings, aluminum ladders are perfect for painting walls, cleaning windows, and tackling other high-reach tasks. •Due to their rust-proof and weather-resistant qualities, aluminum ladders are ideal for gardening, exterior maintenance, and other outdoor repair tasks. •Households frequently use aluminum ladders for tasks like changing light bulbs, reaching high shelves, and hanging curtains.
ELECTRICAL & MAINTENANCE WORK	Electricians, maintenance staff, and Heating, Ventilation, and Air Conditioning (HVAC) professionals depend on aluminum ladders to safely access electrical components, machinery, and various equipment.
INDUSTRIAL & MANUFACTURING	Factories, warehouses, and manufacturing plants utilize aluminum ladders for maintenance, inspections, and accessing elevated shelves or equipment.

10.2 ALUMINUM LADDERS

USE CASES IN INDIA – APPLICATIONS OF ALUMINUM LADDERS

SECTOR	PROJECT	APPLICATION
Transportation Infrastructure	Metro, road and highways	• City metro systems, including Delhi, Mumbai, and Bengaluru, rely on aluminum ladders for tasks such as electrical work, track inspections, and overhead installations. • Projects by the National Highways Authority of India (NHAI) encompass expansions of the Mumbai-Pune Expressway and the Delhi-Meerut Expressway.
Industrial Construction	Plants and factories	Automotive giants like Tata Motors and Maruti Suzuki rely on aluminum ladders for the maintenance, inspection, and repair of their plant equipment.
Power Plant and Electrical Infrastructure	Energy projects	Aluminum ladders find use in thermal, hydro, and renewable energy power plants, including projects like NTPC Limited (NTPC) and various solar farms.
Telecommunication	Tower installation	Across urban and rural India, telecom giants Reliance Jio, Bharti Airtel Ltd., and Vi (formerly Vodafone Idea Limited) rely on aluminum ladders for the installation and maintenance of cell towers.

10.2 ALUMINUM LADDERS

KEY TRENDS OF ALUMINUM LADDERS MARKET IN INDIA

RISING FOCUS ON SUSTAINABILITY & CIRCULARITY

Major players in the Indian aluminum ladder market are ramping up efforts to achieve sustainability goals, employing a multi-faceted strategy to cut emissions.

These companies are striving to align with global benchmarks such as a Carbon Border Adjustment Mechanism (CBAM). State environmental boards and the Central Pollution Control Board (CPCB) have intensified their focus on emission tracking, particularly emphasizing energy and effluent mapping.

In India, sustainable construction is on the rise, evident in initiatives from green buildings to eco-villages. Highlighted projects such as the Confederation of Indian Industry CII-Sohrabji Godrej Green Business Centre in Hyderabad and the Indian Tobacco Company (ITC) Green Centre in Gurugram exemplify sustainable practices, emphasizing energy efficiency, water conservation, and eco-friendly materials. As a result, these initiatives are driving demand in the aluminum ladder market.

TECHNOLOGICAL INTEGRATION

In India, aluminum ladder manufacturers are prioritizing technological innovations that boost safety, portability, and durability. Some of the key innovations for enhancing safety features in aluminum ladders are:

Secure locking systems: Enhanced locking mechanisms prevent accidental collapse or separation of ladder sections.

Anti-slip features: Steps and rungs provide a more secure grip, reducing the risk of slips and falls.

Reinforced frames: Boost structural integrity for added stability and load-bearing capacity.

Guardrails and platforms: Ensure a more secure working area, especially for platform ladders.

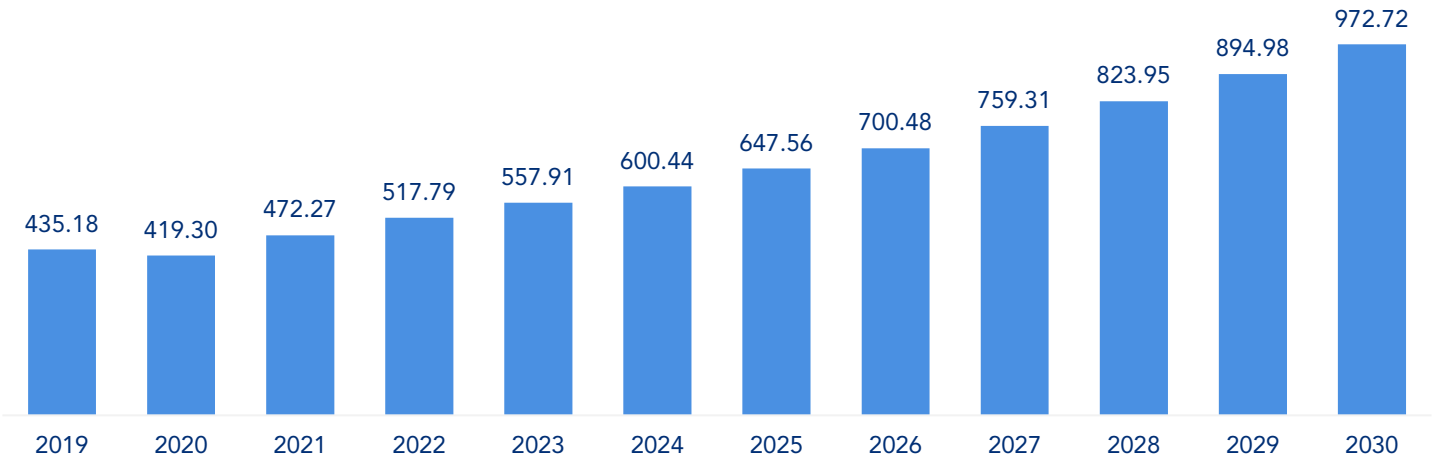
Foldable, telescopic, and multi-position ladders have rapidly gained popularity in the market, lauded for their compact storage and versatile utility. Manufacturers are venturing into the realm of "smart ladders," integrating sensors for features like weight limits and tilt alerts.

Source: Mordor Intelligence

10.2 ALUMINUM LADDERS – SALES MODEL

INDIA ALUMINUM LADDERS MARKET, VALUE IN INR CRORES, SALES MODEL, 2019-2030

CAGR (2024 - 2030): 8.37%



The Sales Model segment of the India Aluminum Ladders Market studied was valued at INR 600.44 crores in 2024 and is expected to reach INR 972.72 crores in 2030, registering a CAGR of 8.37% for the forecast period (2024-2030).

HISTORICAL PERFORMANCE (2019-2024):

- Over the past few years, as urban areas have expanded and governments have pushed infrastructure initiatives like smart cities and housing schemes, the demand for aluminum ladders has surged in India. Particularly, aluminum ladders, prized for their lightweight, durability, and resistance to corrosion, find extensive use in construction, utilities, telecommunications, and maintenance.
- Additionally, heightened awareness and enthusiasm for home improvement, Do-It-Yourself (DIY) repairs, and gardening have driven up the demand for compact and user-friendly aluminum ladders. Among these, telescopic, folding, and multi-purpose variants have gained traction in residential settings.

FORECAST PROJECTIONS (2025-2030):

- Industries are expected to turn increasingly to certified aluminum ladders equipped with advanced safety features, driven by stricter safety regulations and standards. For commercial and industrial users, adherence to international safety benchmarks like American National Standards Institute (ANSI) and the Occupational Safety and Health Administration (OSHA) is now pivotal in their purchasing choices.
- In a bid to bolster ladder safety and usability, manufacturers in India are set to channel further investments into research and development, unveiling innovative designs and features. Consumers are showing a marked preference for innovations, including anti-slip treads, extendable frames, locking mechanisms, and versatile multi-functional ladders.

Source: Mordor Intelligence

10.2 ALUMINUM LADDERS – SALES MODEL

In India, aluminum ladder sales primarily target construction and industrial clients directly. However, there's a notable shift towards collaborating with distributors and retailers.

BUYER SEGMENTATION & DEMAND SOURCES

- The key buyer segmentations for aluminum ladders are industrial and commercial users, residential and Do-It-Yourself (DIY) consumers, retailers, and e-commerce platforms. Public sector organizations, educational institutions, and healthcare facilities have also emerged as key buyer segments of aluminum ladders.
- Recently, Amazon India and Flipkart unveiled specialized home improvement sections, showcasing aluminum ladders from brands such as Little Giant Ladder Systems, Karam, and various local manufacturers. Concurrently, home improvement chains, including HomeTown and Urban Ladder, bolstered their inventory with compact, foldable aluminum ladders tailored for residential users.
- State governments in Gujarat and Odisha, now emerging as aluminum production hubs, have begun procuring locally made aluminum ladders. These ladders have been put to use in various public works, including road maintenance and upgrades to public facilities, all while adhering to safety regulations.

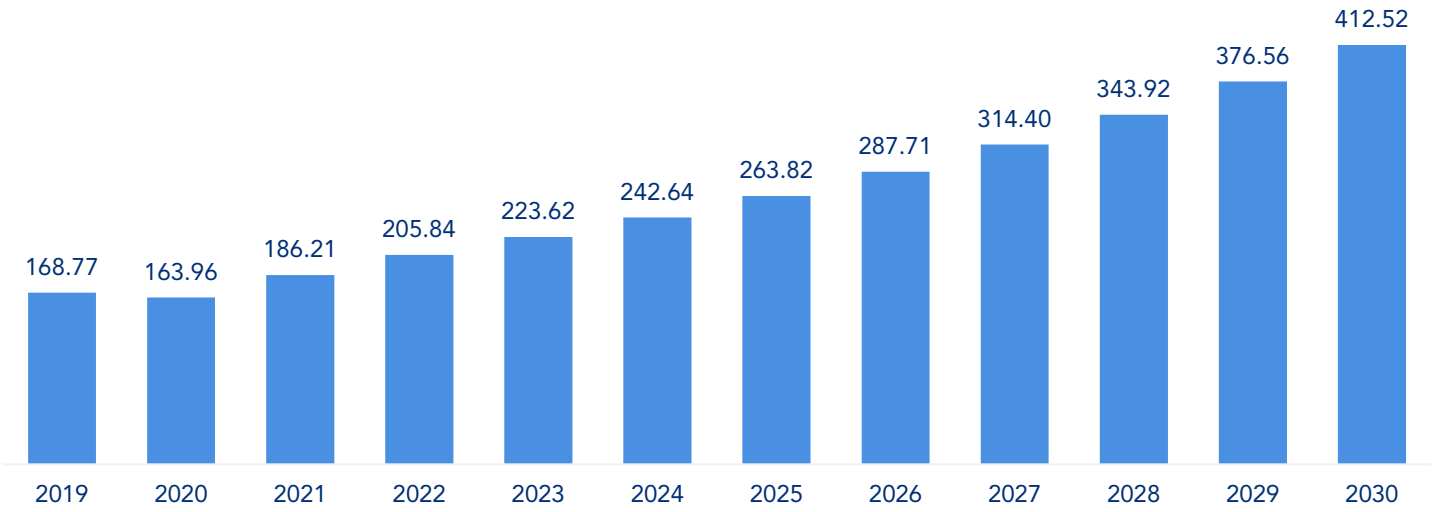
EMERGING SALES ENABLEMENT TRENDS

- Augmented Reality (AR) tools enable customers to virtually visualize ladder sizes and their fitment in personal spaces. For instance, Urban Ladder, a leading furniture and home improvement retailer, rolled out an AR feature on its app, allowing users to virtually position telescopic aluminum ladders in their homes to assess usability and spatial compatibility.
- There's a growing trend of merging offline retail with an online presence to enhance customer experience. HomeTown stores, for example, showcase and demonstrate aluminum ladders in-store while concurrently directing customers to their e-commerce platform for convenient purchases and home delivery, thereby increasing conversion rates.

10.2 ALUMINUM LADDERS – RENTAL MODEL

INDIA ALUMINUM LADDERS MARKET, VALUE IN INR CRORES, RENTAL MODEL, 2019-2030

CAGR (2024–2030): 9.25%



- The Rental Model segment of the India Aluminum Ladders Market studied was valued at INR 242.64 crores in 2024 and is expected to reach INR 412.52 crores in 2030, registering a CAGR of 9.25% for the forecast period (2024-2030).

HISTORICAL PERFORMANCE (2019-2024):

- During the period from 2019 to 2024, companies and contractors in India, driven by a surge in infrastructure projects and short-term construction activities, increasingly turned to aluminum rental ladders over outright purchases, effectively optimizing their capital expenditure. These rental services offered businesses the flexibility to use ladders solely for the duration of specific projects.
- Organized rental startups and platforms, such as LadderKart and RentSher, have emerged, prominently featuring aluminum ladders in their equipment catalogs. These platforms have streamlined the process with easy online booking, doorstep delivery, and pickup, significantly enhancing accessibility for small contractors and individual users.
- Companies, especially Small and Medium Enterprises (SMEs) and startups, have increasingly turned to rental models, sidestepping hefty upfront costs and minimizing maintenance duties. This trend has gained notable traction in metropolitan and industrial centers like Mumbai, Bengaluru, and Delhi National Capital Region (NCR).

FORECAST PROJECTIONS (2025-2030):

- During the forecast period, the pipeline of government initiatives, including the Smart Cities Mission, Industrial Corridors, and renewable energy projects, is poised to drive a consistent demand for short-term access equipment, notably rented aluminum ladders.
- Technology-driven rental platforms are set to take the lead, boasting features like online booking, real-time availability checks, doorstep delivery, and flexible rental durations. By integrating Internet of Things (IoT) and asset tracking, these platforms aim to enhance ladder utilization and maintenance, thereby boosting renter trust.

Source: Mordor Intelligence

10.2 ALUMINUM LADDERS – RENTAL MODEL

In India, aluminum ladder rentals are witnessing a notable shift. This evolution is fueled by changing customer demands, site requirements, and an increasing emphasis on providing holistic solutions over mere equipment rental.

RENTER SEGMENTATION & DEMAND SOURCES

- The key renters' segment of aluminum ladders in India comprises construction and infrastructure contractors, industrial and manufacturing facilities, and facility management companies.
- In FY24, subcontractors of Larsen & Toubro (L&T), engaged in metro rail construction projects in Delhi and Bengaluru, opted to rent aluminum ladders from local firms. This strategic move not only ensured compliance with safety standards but also eliminated the need for a hefty inventory investment. Consequently, they could adeptly adjust their equipment based on the evolving phases of the project.
- In major commercial complexes across Mumbai and Pune, CBRE's facility management contracts involve renting aluminum ladders for Heating, Ventilation, and Air Conditioning (HVAC) servicing, electrical repairs, and window cleaning.

EMERGING RENTAL MODELS

- Through mobile apps and websites, customers can instantly book ladders, choose flexible rental durations—be it hourly, daily, or weekly—and enjoy the convenience of doorstep delivery and pickup. For example, platforms such as LadderKart and RentSher offer swift rentals of aluminum ladders, complete with real-time inventory visibility. This feature proves especially beneficial for small contractors and DIY enthusiasts who seek immediate access without the burden of long-term commitments.
- Businesses and regular users in India can now opt for **monthly or quarterly subscription plans**, ensuring them a fixed number of ladders, complete with maintenance and replacement services.
- Rental companies are now offering aluminum ladders bundled with safety gear and power tools, catering to both construction needs and event setups.

10.3 OTHERS

WOOD LADDERS

- **Uses:** Traditionally, these materials find common use in construction, agriculture (such as fruit picking), and residential settings. In electrical work, where non-conductivity is crucial, these materials are often the preferred choice

Advantages:

- Non-Conductive: Wood's inherent property of not conducting electricity makes it a safe choice for electrical tasks.
- Sturdy: When properly maintained, wood boasts a commendable load-bearing capacity.
- Aesthetic Appeal: Wood is often the material of choice in heritage and traditional settings.
- Easy to Repair: Minor damages to wood can typically be remedied by sanding or replacing specific parts.

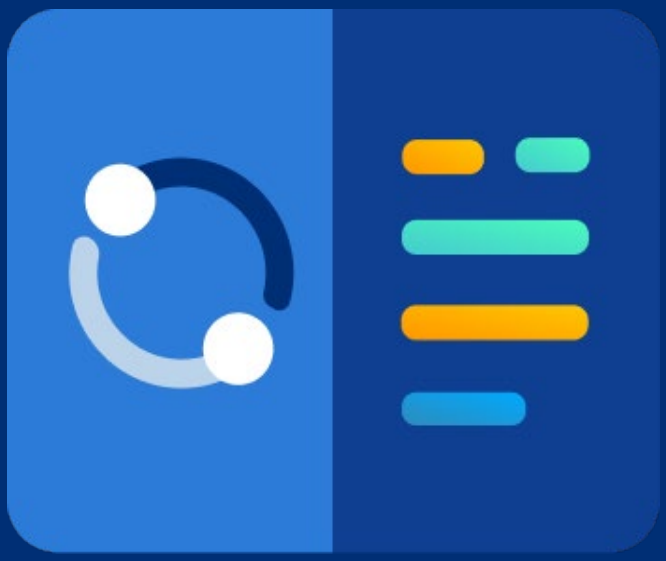
STEEL LADDERS

- **Uses:** Industries, warehouses, and construction sites prioritize high strength, making these products indispensable. These products are ideal for both fixed and heavy-duty portable ladders.

Advantages:

- High Strength: Capable of bearing heavy loads and enduring challenging conditions.
- Durability: Engineered for longevity and resistance to mechanical wear.
- Stable: Delivers robust stability, particularly for fixed ladders.
- Fire Resistant: Steel, unlike wood or aluminum, is non-combustible, ensuring safety in specific environments.

11. LADDERS MARKET



11. LADDERS MARKET

MARKET DRIVERS

RISING DEMAND DRIVEN BY RAPID URBANIZATION

In India, rapid urban development and extensive infrastructure projects are driving up the demand for lightweight, portable access tools, notably aluminum ladders. This surge is especially pronounced in the industrial, telecom, and utility sectors, which prefer aluminum for its superior strength-to-weight ratio and resistance to corrosion.

According to a report by the Indian Brand Equity Foundation (IBEF), cities are poised to create 70% of net new jobs by 2030, contribute approximately 70% to India's GDP, and propel a nearly fourfold surge in per capita incomes nationwide. India's urban populace is set to swell to 590 million by 2030. To cater to this burgeoning urban demand, the economy must construct between 700 million and 900 million m^2 of residential and commercial space annually.

These trends are fueling the market for ladders in India.

BOOM IN CONSTRUCTION & MANUFACTURING SECTORS FUELS THE MARKET

Widespread development and industrialization, especially in infrastructure construction, manufacturing, and maintenance, are fueling robust market growth for Fiber-Reinforced Plastic (FRP) ladders in India

In the Union Budget for FY26, the government has boosted the capital investment outlay for infrastructure to INR 11.21 lakh crore (USD 128.64 billion), marking a significant 3.1% of the nation's GDP. To boost the infrastructure sector, the Indian government has unveiled the National Infrastructure Pipeline (NIP) alongside initiatives such as 'Make in India' and the Production-Linked Incentives (PLI) scheme.

According to the Indian Brand Equity Foundation (IBEF), India's manufacturing sector has attracted Foreign Direct Investment (FDI) amounting to INR 14,45,781 crore (USD 165.1 billion). This marks a 69% surge over the last decade, largely fueled by production-linked incentive (PLI) schemes. Over the next five years, Adani Group is set to invest INR 30,237 crore (USD 3.46 billion) in Kerala, with a primary focus on infrastructure, logistics, and manufacturing.

These trends indicate a demand for ladders i
India.

11. LADDERS MARKET

MARKET DRIVERS

INCREASING FOCUS ON SAFETY REGULATIONS

With a growing focus on fire retardancy, electrical safety, UV protection and overall safety, the market for Fiber Reinforced Polymer (FRP) ladders has been receiving a boost in India. FRP ladders offer key safety benefits like the prevention of electrical accidents and shocks, reduction in the risk of falls and injuries, enhancement of balance during work, and need for reduced maintenance.

FRP ladders, designed to meet stringent safety regulations, offer peace of mind to both employers and workers in India. By adhering to standards like European Norm 131 (EN131), these ladders undergo rigorous testing, ensuring they meet essential criteria for strength, stability, and performance.

SHIFT TOWARDS ONLINE RETAIL SEGMENT DRIVES THE LADDER MARKET

Online retail is witnessing a surge and is set for substantial growth in the years ahead. E-commerce platforms are reshaping the way consumers buy home improvement products, including ladders.

The allure of online shopping lies in home delivery, a vast product selection, competitive pricing, and the ease of comparing brands. This trend is particularly pronounced among tech-savvy consumers and in regions with strong internet connectivity.

The shift to online shopping is further amplified by the increasing dependence on mobile devices and the proliferation of online payment methods, enhancing the overall purchasing experience.

According to India Brand Equity Foundation (IBEF), in January 2025, the Unified Payments Interface (UPI) processed transactions totaling 16,996 crore, amounting to over INR 23.48 lakh crore (USD 270.3 billion) in value. In November 2024, as part of a funding round nearing USD 1 billion, led by Walmart Inc., Google LLC announced plans to invest USD 350 million into Flipkart.

11. LADDERS MARKET

THREATS

Low-Quality Imports & Counterfeit Products

- India's open import channels facilitate a steady influx of cheap, uncertified ladders—often sourced from low-cost manufacturing hubs—that bypass rigorous safety norms. Such practices erode consumer trust, particularly in the wake of workplace accidents, and compel domestic players to compete primarily on price rather than quality. These low-quality imports not only compromise safety but also create a perception that ladders, as a product category, are unreliable, further impacting the market's growth potential.

Substitute Access Solutions

- As industries increasingly turn to aerial lifts, scaffolding systems, and hydraulic platforms for quicker and safer access, traditional ladders are becoming less relevant in high-value projects, including industrial maintenance, airports, and major construction sites. This evolution confines ladder sales to smaller, low-margin segments. Additionally, the growing preference for these advanced solutions is driven by their ability to enhance worker productivity and safety, making them a more attractive option for large-scale projects.

Economic Slowdowns & Demand Fluctuations

- Given the ladder market's close ties to India's construction, manufacturing, and infrastructure sectors, downturns—like real estate slumps or postponed public works—can lead to sudden order cancellations and inventory surpluses. These fluctuations not only disrupt the supply chain but also create financial strain for manufacturers, particularly those with limited cash flow or high inventory holding costs.

Price-Intensive Market Competition

- The prevalence of unorganized sector players offering rock-bottom prices squeezes profitability for established brands. This "race to the bottom" stifles reinvestment in product innovation, durability enhancements, and compliance upgrades. Furthermore, the lack of stringent regulations allows these unorganized players to thrive, making it challenging for organized brands to differentiate themselves solely on quality and safety standards.

Weak Occupational Safety Culture

- In small workshops, construction teams, and the informal service sector (comprising unregulated, small-scale, or unregistered businesses operating outside formal legal and safety norms), there's a pronounced lack of awareness regarding ladder safety. This oversight leads to a preference for price over safety compliance, resulting in stagnant demand for certified, premium ladders despite evident safety hazards. The absence of mandatory safety training and enforcement further exacerbates the issue, leaving workers vulnerable to accidents and injuries.
- The Indian ladder market faces significant threats from low-quality imports, substitute solutions, economic fluctuations, and weak safety awareness. These factors collectively challenge the market's ability to maintain quality, safety, and profitability, particularly in the face of price-driven competition.

11. LADDERS MARKET

CHALLENGES

Raw Material Price Volatility

- Indian ladder manufacturers, heavily dependent on imported aluminum and fiberglass, find themselves at the mercy of global commodity price fluctuations. For instance, in 2022, the price surged to USD 2,705 per metric ton, up from USD 2,473 in 2021. Such sudden spikes can strain margins, especially for those locked into fixed-price contracts. This volatility also makes it difficult for manufacturers to plan long-term pricing strategies, impacting their competitiveness in both domestic and export markets.

Regulatory Compliance & Certification Costs

- Securing Bureau of Indian Standards (BIS) certification or meeting European Norm/International Organization for Standardization (EN/ISO) standards demands significant investment in testing facilities, precision tooling, and rigorous quality audits. For many smaller Indian ladder manufacturers, these expenses often eclipse immediate market returns. Additionally, the lack of streamlined processes for obtaining certifications further increases the time and cost burden, discouraging smaller players from entering or expanding in the organized market.

Safety-Related Liability Risks

- In India, frequent workplace accidents involving ladders pose legal and reputational challenges for manufacturers. When issues arise from defective products or misuse, the repercussions can be severe, leading to expensive recalls and insurance claims. Moreover, the growing awareness of workplace safety among end-users is increasing the scrutiny on manufacturers, making it imperative for them to invest in robust quality control and safety measures to mitigate liability risks.

Fragmented Supply Chain

- The Indian ladder market's dependence on local dealers and small distributors results in inconsistent quality control. This fragmentation can lead to uneven after-sales support and mixed safety messaging across regions, undermining brand credibility. Furthermore, the lack of centralized distribution networks increases logistical inefficiencies, making it harder for manufacturers to ensure timely delivery and uniform product availability across the country.

Slow Pace of Technology Adoption

- While global competitors are rolling out ladders featuring ergonomic designs, smart safety indicators, and eco-friendly materials, many Indian manufacturers, especially the smaller ones, are lagging in adopting these innovations. This delay causes them to miss lucrative opportunities in premium exports and urban markets. Additionally, the reluctance to invest in advanced manufacturing technologies stems from high initial costs and a lack of technical expertise, further widening the gap between Indian and global players in terms of product offerings.
- The challenges faced by the Indian ladder market, including raw material price volatility, regulatory costs, liability risks, supply chain fragmentation, and slow technology adoption, hinder its growth potential. Addressing these issues is critical for manufacturers to remain competitive and capitalize on emerging opportunities.

11. LADDERS MARKET

MARKET RESTRAINTS

- Global supply-demand dynamics and energy costs drive fluctuations in aluminum prices in India. Such volatility in aluminum prices can lead to unstable production costs for ladders, potentially deterring price-sensitive buyers. In specific industrial applications, steel and fiberglass ladders pose strong competition. As of July 2025, aluminum prices in India have seen fluctuations, with the most recent data indicating a price of INR 2,595.65 (USD 29.86).
- While fiberglass provides electrical insulation, steel boasts enhanced strength. Consequently, in heavy-duty scenarios, aluminum ladders might be viewed as less durable than their steel counterparts.
- Aluminum ladder rental businesses face challenges in maintaining a diverse inventory to cater to varied customer needs. Additionally, managing logistics for pick-up and delivery in urban and semi-urban areas proves both difficult and costly.
- Customer price sensitivity, particularly among small contractors and residential users, often constrains rental rates. Furthermore, competition from cheaper unbranded or second-hand ladders, whether rented or sold, compresses profit margins. Small rental firms, often unable to afford comprehensive insurance, find themselves at an increased financial risk.

FUTURE GROWTH OUTLOOK

- **Construction Industry**: Urbanization and infrastructure development are expected to fuel the demand for various ladders, such as scaffolding and access ladders, in the long term.
- **Industrial Sector**: Durable ladders are essential for maintenance and operations in manufacturing facilities and warehouses, bolstering the market's future growth.
- **Residential and Commercial Use**: Trends in home improvement and facility management are expected to be driving the demand for lightweight and versatile ladders in the future.

11. LADDERS MARKET

INSIGHTS ON GOVERNMENT INITIATIVES AND REGULATIONS

INDIAN STANDARDS (IS):

IS 3696 - It specifies requirements for portable ladders to be followed by manufacturers and rental companies to ensure safety and quality.

IS 4912 - Safety Requirements for Ladders for General Purposes (1978) - Outlines design specifications and testing protocols for materials and performance of ladders intended for general use.

IS 13416 - Recommendations for Prevention of Occupational Hazards at Workplaces (1992) - Provides guidelines aimed at preventing accidents associated with falls from ladders and other raised surfaces.

Factories Act, 1948: Requires safe access to elevated work areas, emphasizing the use of ladders that meet IS code standards.

EN 131, a European Standard, outlines the requirements, testing methods, and safety protocols for portable ladders. This standard is acknowledged not only throughout Europe but also in various other regions, including India, as the gold standard for ladder safety and quality.

Occupational Safety and Health Administration (O.S.H.A.): O.S.H.A. guidelines, though rooted in the US, have gained global recognition as benchmarks for workplace safety. Notably, Indian projects frequently cite the O.S.H.A. standard for ladders, especially in the context of international collaborations.

11. LADDERS MARKET

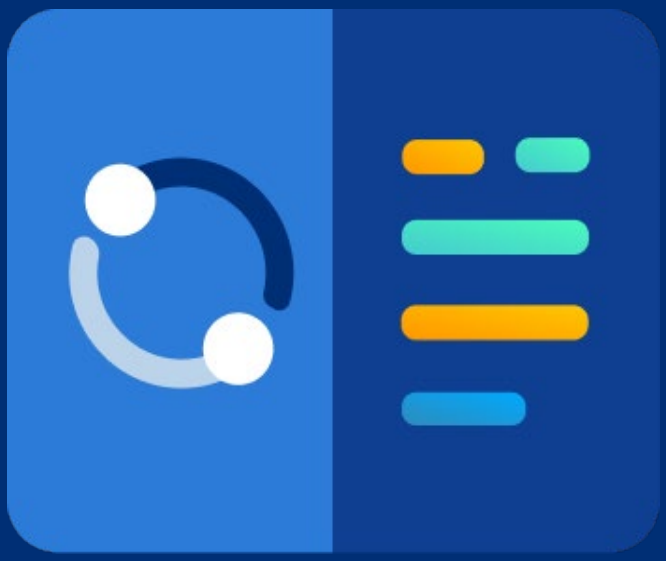
INSIGHTS ON GOVERNMENT INITIATIVES AND REGULATIONS

ANSI STANDARDS: Multinational corporations (MNCs) operating in India have adopted American National Standards Institute (ANSI) standards, much like OSHA standards. The ANSI A14 Series serves as the primary standard for portable ladders, addressing aspects from design and construction to testing and safe usage.

TUV NORD INDIA CERTIFICATION: Technischer Überwachungsverein (TÜV) NORD India offers a third-party certification service, ensuring products, systems, and processes align with both national and international standards. This certification serves as a hallmark of quality and safety, signifying that the certified entity adheres to stringent performance, safety, and regulatory benchmarks.

BUILDING AND OTHER CONSTRUCTION WORKERS ACT: Indian states have implemented specific rules under this act to ensure on-site safety compliance, which regulates construction worker safety and stipulates the use of certified ladders as safety gear.

12. SWOT ANALYSIS OF THE MAJOR 3 PLAYERS



12. SWOT ANALYSIS OF Y EQUIPMENT SERVICES

STRENGTH

- **Legacy of Quality**: Y Equipment Services, boasting a century of expertise in the UK, now infuses the Indian market with its renowned legacy of quality and innovation.
- Lightweight Yet Durable: Crafted from the 6082-T6 aluminum alloy, their scaffolds achieve high yield strength with reduced thickness, positioning them as industry leaders in lightweight solutions.
- **Diverse Scaffolding Solutions**: From the XO Stairway Scaffold to the Fitout Master Scaffold, the company offers a comprehensive range of scaffolding solutions tailored to meet varied construction demands.
- **Nationwide Reach**: With 24 outlets and over 18 warehouses spread across India, Y Equipment Services guarantees prompt delivery and easy accessibility.

WEAKNESS

- **Brand Recognition Hurdles**: Y Equipment Services, despite its longstanding legacy, grapples with brand recognition challenges in India, especially when stacked against global giants like Layher and PERI.
- **Aluminum Dependency Risks**: Y Equipment Services' heavy reliance on aluminum alloys for scaffolding renders it vulnerable to the whims of raw material price fluctuations and potential supply chain disruptions.

OPPORTUNITY

- **Scaffolding Solutions Thrive Amid India's Construction Boom**: As India's infrastructure and construction sectors expand, they create a lucrative avenue for scaffolding solutions.
- **Y Equipment Services Capitalizes on Rental Trend**: With a rising trend of renting over purchasing, Y Equipment Services finds a burgeoning market for its rental offerings.
- **Innovation Sets the Stage**: By continually innovating in scaffolding designs and materials, the company not only carves out a unique identity but also aligns with the market's evolving demands.

THREAT

- **Market Competition Intensifies**: Both established global brands and local manufacturers heighten the competitive landscape.
- **Sales Affected by Economic Downturns**: Economic fluctuations can dampen construction activities, leading to a dip in sales.
- **Production Costs Impacted by Material:** Volatile prices of key materials, such as aluminum and steel, can sway production costs.

12. SWOT ANALYSIS OF MTANDT GROUP

STRENGTH

- **Innovative Manufacturing**: Mtandt Group, a pioneer in India, has achieved an 80–90% weld-less aluminium scaffolding manufacturing process, enhancing strength and durability over traditional welded methods.
- **Comprehensive Product Range**: Mtandt Group provides a diverse range of scaffolding solutions, from podium and cantilever scaffolds to stairway designs and aviation docking systems, addressing varied industry demands.
- **Robust Rental Network**: Leveraging over 50 years of expertise, Mtandt Group has carved a niche in equipment rental, granting access to modern, safe, and eco-friendly equipment without the need for capital investment.
- **Strategic Partnerships**: Mtandt Group has forged exclusive distribution deals with global brands like Ruthmann and Skyjack, broadening its product range and expanding its market footprint.

WEAKNESS

- **High Capital Intensity**: Mtandt Group's substantial investments in manufacturing facilities and rental fleets demand hefty capital expenditures, potentially straining its financial flexibility.
- **Dependency on Raw Material Suppliers**: By sourcing hot rolled coils from leading steel producers such as JSW and Tata Steel, Mtandt Group risks exposure to possible supply chain disruptions.

OPPORTUNITY

- **Strategic Market Entry**: Mtandt Group has teamed up with CO.ME.T. Officine to produce truck-mounted aerial work platforms in India, capitalizing on the region's surging demand for such machinery.
- **Infrastructure Boom**: The rising need for scaffolding in high-rise buildings, infrastructure projects, and core industrial constructions signals a lucrative growth avenue.
- **Embracing Innovation**: Mtandt Group's debut of oil-free and hybrid mobile elevated work platforms at EXCON 2023 underscores its dedication to innovation, resonating with the industry's pivot towards sustainable and efficient machinery.

THREAT

- **Market Competition Intensifies**: Both domestic and international players fiercely compete in the Indian scaffolding market, challenging Mtandt Group's pricing power and market position.
- **Regulatory Challenges**: Evolving safety standards and regulations may necessitate adjustments in product offerings and operational processes.
- **Economic Volatility**: Economic downturns or shifts in construction activity can diminish the demand for scaffolding solutions, impacting revenue streams.

12. SWOT ANALYSIS OF TECHNOCRAFT INDUSTRIES (INDIA) LTD

STRENGTH

- **Global Reach**: For over two decades, Technocraft has been at the forefront of manufacturing scaffolding systems, such as Cuplock and Ringlok, in India. Their products have found markets in the USA, Canada, UAE, Australia, New Zealand, and across Europe and Africa.
- **Diverse Offerings**: Technocraft boasts a comprehensive range of scaffolding and formwork solutions. Their lineup, including MACH PLUS, MACH ONE, and MACH INFRA systems, addresses a multitude of construction requirements.
- **Advanced Manufacturing**: With plants in India and China, Technocraft's facilities are a blend of cutting-edge technology. They feature Computer Numerical Control (CNC) manufacturing, in-house tool rooms, hot-dip galvanizing, shot blasting, and vertical dip painting, all ensuring top-notch production quality.

OPPORTUNITY

- **India's Infrastructure Push**: As India accelerates its infrastructural development—spanning railways, roads, bridges, dams, airports, and power plants—scaffolding and formwork solutions stand to gain immensely.
- **MACH Range Debuts**: The debut of the MACH range in June 2025 promises high-quality scaffolding and formwork solutions, addressing India's surging appetite for safe, efficient, and swift construction methods.

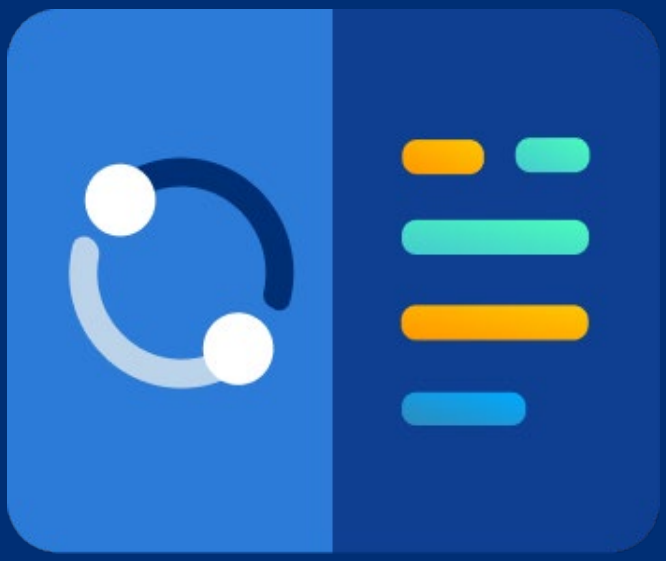
WEAKNESS

- **Export-Driven Business**: Technocraft derives over 90% of its revenue from exports, making it vulnerable to global demand fluctuations, especially in developed markets like the US and Europe. A downturn in these regions could hinder the company's growth, as noted by Motilal Oswal.
- **Challenges in Diversification**: Technocraft's foray into diverse sectors, including textiles and IT, has encountered hurdles. This raises questions about the company's capital allocation strategies and the risks tied to its underperforming divisions.

THREAT

- **Economic Slowdowns**: Global economic downturns or fluctuations in construction activity can reduce demand for scaffolding and formwork solutions, impacting revenue streams.
- **Intense Competition**: The Indian scaffolding and formwork market is fiercely competitive, with domestic and international players battling for market share, which could influence Technocraft's pricing power and market standing.

13. COMPANY PROFILE - MSAFE GROUP



13. MSAFE GROUP – COMPANY OVERVIEW

OVERVIEW

www.msafegroup.com

- Msafe Group specializes in designing, manufacturing, and supplying aluminum scaffolding and safety equipment tailored for construction and industrial needs.
- They provide both sales and rental services, prioritizing high-quality, durable, and safe access solutions.
- Renowned for leveraging modern technologies and high-grade materials, the company adopts a proactive stance on safety.
- The company offers a diverse array of products, including durable mild steel plates, stairway model scaffolding, aerial work platforms, mild steel channels, mobile scaffolds, FRP ladders, multi-purpose ladders, rebar couplers, and more.
- Msafe operates warehouses across several Indian cities, such as Ahmedabad, Bengaluru, Goa, Assam, Nagpur, West Bengal, Chennai, and Coimbatore.

COMPANY HIGHLIGHTS

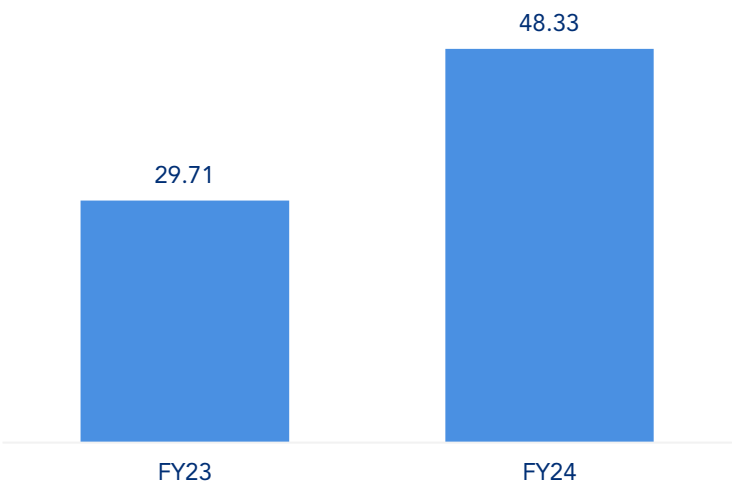
- **Revenue (FY2024)**: INR 48.33 crores
- **Founded**: 2019
- **Employee Count**: 299
- **Headquarters**: Delhi, India

CORE PRODUCTS/BUSINESS SEGMENTS

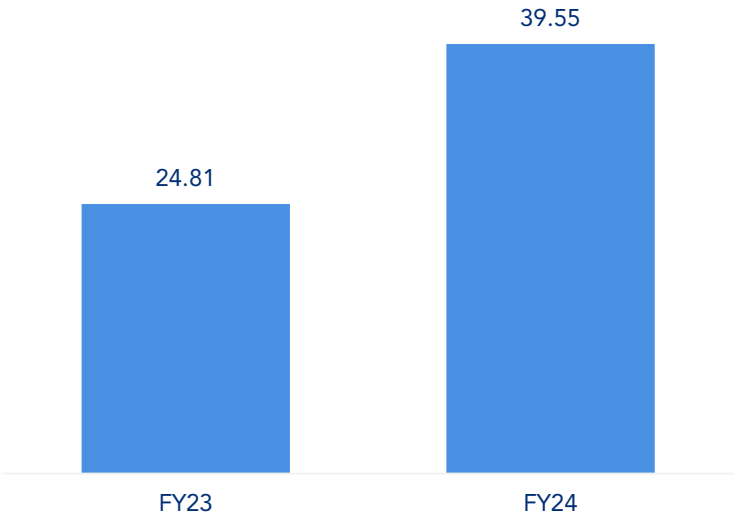
- Aluminum Scaffolding
- Steel Scaffolding
- Fiber Reinforced Polymer (FRP) Ladders
- Aluminum Ladders

13. MSAFE GROUP – FINANCIALS

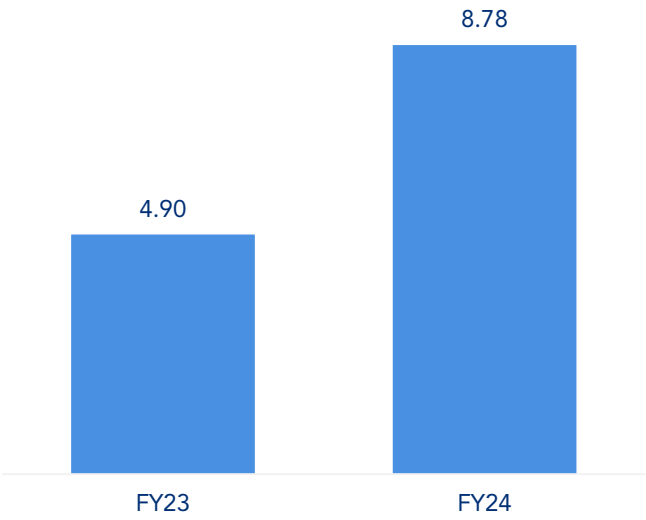
MSAFE GROUP, REVENUE, FY23-FY24, INR CRORES



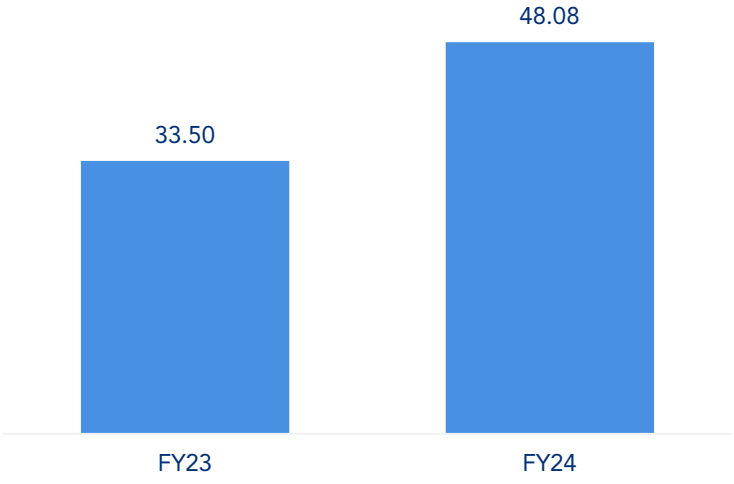
MSAFE GROUP, EXPENSES, FY23-FY24, INR CRORES



MSAFE GROUP, PROFIT BEFORE TAX, FY23-FY24, INR CRORES



MSAFE GROUP, CURRENT ASSETS, FY23-FY24, INR CRORES



Source: Mordor Intelligence

13. MSAFE GROUP - PRODUCT PORTFOLIO

TYPES OF ALUMINUM SCAFFOLDING

SCAFFOLDING TYPE	DESCRIPTION
Msafe Fit Stairway Scaffolding (MST)	Thanks to its staircase system and handrail feature, stairway scaffolding ensures top-notch safety. Not only does it facilitate access to elevated heights, but it's also adept at handling hefty loads. This mobile scaffold tower stands out as a secure and convenient choice for those needing to climb repeatedly.
Msafe Fit Aluminum Scaffolding Bridge Tower	Msafe Fit Aluminum Scaffolding Bridge Tower can be tailored to meet specific site needs, making it easier to access wide working areas at height, a task challenging with standalone single aluminum mobile towers.
Msafe Fit Aluminum Scaffolding Cantilever Set	Msafe Fit has introduced its Cantilever Scaffolding, bridging the gap between scaffolds and structures. This design offers a wider platform, enhancing accessibility. Perfect for hard-to-reach areas, the system prioritizes stability and safety, all while maximizing workspace. Crafted from high-quality materials, it's not only durable and reliable but also customizable to fit specific site needs.
Eco-Z Stairway Model (EMS)	Eco-Z Type aluminum scaffolding, a customized aluminum tower, boasts a high loading capacity at an affordable price. Equipped with guardrails and a stair system, these scaffolds enable work at varying elevations.

13. MSAFE GROUP - PRODUCT PORTFOLIO

TYPES OF ALUMINUM SCAFFOLDING

SCAFFOLDING TYPE	DESCRIPTION
Msafe Fit Podium Indoor Solution	Podiums, featuring adjustable heights and guardrails, provide a sturdy platform for low-level elevation access. They serve as a nimble, straightforward, and budget-friendly solution for tasks like roofing, painting, and shop work.
Msafe Fit Without Stairway Scaffolding	Installing and maneuvering this single-width scaffold without stairs is a breeze, significantly simplifying the job. Thanks to aluminum's non-corrosive and non-ferrous properties, these scaffolds boast enhanced durability and sturdiness, allowing them to bear substantial weight simultaneously.
Msafe Fit Extra Reach Scaffolding	Msafe has unveiled an extended reach version of its modular mobile scaffold tower, designed for enhanced height accessibility.
Msafe Fit Narrow Scaffolding	These single-width scaffolding towers, designed for a single platform per level, are ideal for accessing constrained heights. Commonly employed in installation, maintenance, and construction tasks, these towers offer advantages such as reduced erection time and costs, lower labor requirements, energy savings, and enhanced productivity.

13. MSAFE GROUP- PRODUCT PORTFOLIO

TYPES OF FIBER REINFORCED POLYMER (FRP) LADDERS	
FRP LADDER	DESCRIPTION
FRP Mega Cage Platform	The FRP Mega Cage Platform ladder, engineered for utmost safety at heights, is tailored for electrical, chemical, and industrial settings. It seamlessly blends strength and stability with corrosion resistance, meeting the rigorous demands of challenging job sites.
FRP Type A Ladder	Engineered for electrical, industrial, and maintenance tasks, the FRP A-Type Ladder boasts durability, non-conductivity, and weather resistance. Its lightweight yet robust design guarantees safe access even in the most challenging environments.
FRP Platform Ladder	Engineered for safety and stability in electrical and industrial settings, the FRP Platform Ladder boasts durability and non-conductivity. Its lightweight, corrosion-resistant design makes it ideal for extended hours of work at elevated heights.

13. MSAFE GROUP - PRODUCT PORTFOLIO

TYPES OF ALUMINUM LADDERS

ALUMINUM LADDER	DESCRIPTION
A Type Ladders - Light Duty	Lightweight and versatile, this light-duty ladder is perfect for both home and DIY tasks. Crafted from high-grade aluminum alloy, it's well-suited for a variety of indoor and outdoor tasks.
A Type Ladders - Heavy Duty	Crafted from heavy-duty, rustproof materials, the multi-purpose folding ladder is ideally suited for commercial applications.
Msafe Straight Ladder	Msafe Straight Ladder, crafted from high-grade aluminum, ensures durability and reliability for safe access to elevated areas across industrial, commercial, and residential settings. Designed for stability and long-term use, its non-folding straight design maximizes reach and support, making it the go-to choice for tasks demanding a steady vertical climb.
Msafe Hulk Ladder	Engineered for industrial and commercial applications, Msafe Hulk Ladders boast heavy-duty, high-performance features. Constructed from durable materials, these ladders ensure superior load capacity and come equipped with anti-slip steps. Enhanced safety is paramount, evident in features like stabilizer bars and rubber feet. Perfectly suited for tasks in construction, maintenance, and warehousing.

13. MSAFE GROUP – SWOT ANALYSIS

STRENGTH

- **Diverse Product Portfolio**: Msafe Group caters to various industrial needs with a wide range of products, including aluminum scaffolding, stairway models, Fiber Reinforced Polymer (FRP) ladders, and steel scaffolding systems.
- **Nationwide Presence**: Msafe Group operates in multiple cities across India, ensuring timely delivery and support to enhance customer satisfaction.
- **Commitment to Safety**: Msafe Group's slogan, "Protect the people," underscores its commitment to providing safe and reliable equipment, a crucial aspect of the construction industry.

WEAKNESS

- **Limited Global Reach**: MSAFE boasts a robust presence in India, yet its international footprint remains modest, risking potential global market opportunities.
- **Dependence on Domestic Market**: Msafe Group's significant reliance on the Indian market exposes it to vulnerabilities from local economic shifts and policy alterations.
- **Brand Recognition**: Msafe Group's brand recognition, while on the rise, still lags global giants, potentially impacting its competitiveness in select segments.

OPPORTUNITY

- **Growing Construction Industry**: India's booming infrastructure and construction sectors are creating substantial growth opportunities for scaffolding and ladder solutions.
- **Shift Towards Safer Alternatives**: As the industry transitions from conventional wooden scaffolding to safer aluminum and FRP substitutes, it aligns seamlessly with Msafe Group's product range.
- **Technological Advancements**: Embracing digital tools for inventory management and customer interaction can optimize operations and elevate the customer experience.
- **Expansion into New Markets**: Diving into global markets and broadening product offerings can unlock fresh revenue avenues.

THREAT

- **Fierce Rivalry**: Numerous local and international players fiercely compete for dominance in the scaffolding and ladder market.
- **Compliance Hurdles**: Shifts in safety regulations can influence both product compliance and manufacturing methods.
- **Market Sensitivity**: Economic downturns and raw material price fluctuations can squeeze profitability and elevate operational costs.

13. MSAFE GROUP – FINANCIAL BENCHMARKING

Scale and Revenue

Msafe Group has shown a substantial growth trend in total income over the three years, from INR 16.98 Crores in FY 2021-2022 to INR 48.33 Crores in FY 2023-2024. This near threefold increase indicates strong business expansion and enhanced market presence.

Profitability Performance

The EBITDA margin has remained quite stable over the three years, around 22.5%, indicating consistent operational profitability. EBITDA increased from INR 3.82 Crores in FY 2021-2022 to INR 10.86 Crores in FY 2023-2024, showing healthy growth in absolute operating earnings alongside revenue rise. PAT likewise rose from INR 2.09 Crores to INR 6.53 Crores, and net profit margin improved slightly from 13.42% to 15.08%, demonstrating improving bottom-line profitability and better cost management.

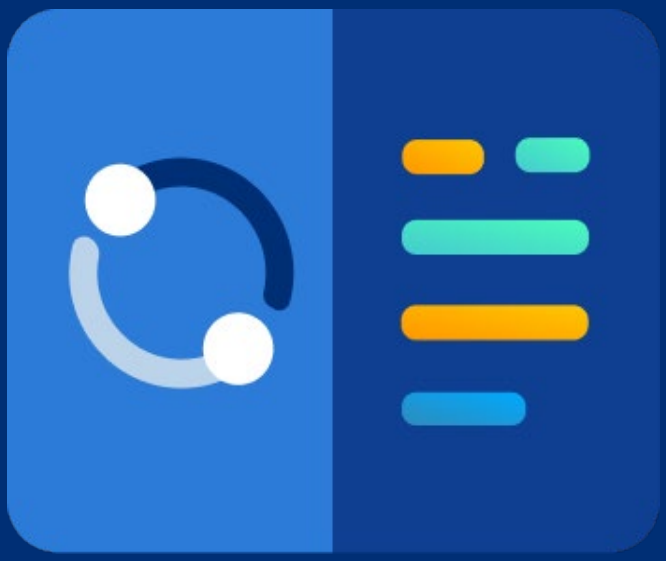
Return Ratios (Capital Efficiency)

Return on capital employed (RoCE) remained robust and stable, fluctuating between 23.42% and 29.50%, finishing at 25.81% in FY 2023-2024. This indicates Msafe Group's efficient use of capital to generate profits consistently over time.

Liquidity and Financial Structure

Current ratio has improved steadily from 0.41 in FY 2021-2022 to 0.64 in FY 2023-2024, but it remains below 1, indicating potential liquidity constraints or short-term solvency risks. Meanwhile, the debt-equity ratio improved from a high of 4.34 to 2.36 but remains relatively high, suggesting the company uses significant leverage in its capital structure, increasing financial risk.

14. FINANCIAL BENCHMARKING



14. FINANCIAL BENCHMARKING

FINANCIAL PARAMETERS ON Y - EQUIPMENT SERVICES

Particulars	FY 2023 - 2024
Total Income (In INR Crores)	**44.44**
EBITDA (In INR Crores)	15.43
EBITDA Margin((EBITDA/Revenue)*100)	34.72%
PAT (Profit After Tax) (In INR Crores)	7.70
Current Ratio	2.79
Debt equity ratio	0.02
Net capital Turnover Ratio	3.74
Net Profit Ratio (in %)	18.57%
Return on Capital Employed Ratio	28%

FINANCIAL PARAMETERS ON TECHNOCRAFT

Particulars	FY 2023 - 2024
Total Income (In INR Crores)	**1642.8**
EBITDA (In INR Crores)	308.15
EBITDA Margin((EBITDA/Revenue)*100)	18.76%
PAT (Profit After Tax) (In INR Crores)	169.19
Current Ratio	1.76
Debt Equity Ratio	0.29
Net Capital Turnover Ratio	3.54
Net Profit Ratio (in %)	10.27%
Return on Net Worth %	12.52

FINANCIAL PARAMETERS ON MTANDT GROUP

Particulars	FY 2023 - 2024
Total Income (In INR Crores)	**162.41**
Net Profit Ratio (in %)	9.17%
Net Profit (in INR Crores)	14.88

14. FINANCIAL BENCHMARKING

SCALE & REVENUE

In terms of scale and revenue, Technocraft clearly leads the three companies with a total income of INR 1,642.8 Crores, which is substantially higher than both Mtandt Group (INR 162.41 Crores) and Y - Equipment Services (INR 44.44 Crores). This vast difference illustrates Technocraft's dominant market presence and larger operational footprint, likely enabling it to benefit from economies of scale and a broader customer base. Mtandt Group occupies a middle ground, having roughly four times the revenue of Y but far less than Technocraft. Y - Equipment Services, although the smallest in revenue, still holds a competitive position within its niche or segment.

PROFITABILITY PERFORMANCE

When examining profitability performance, Y-Equipment Services stands out with its robust profit margins. Its Earnings Before Interest, Taxes, Depreciation, and Amortization (EBITDA) margin of 34.72%and net profit ratio of 18.57% signify an exceptionally lean operating structure or a strong competitive advantage in pricing, yielding high profitability relative to its revenue. Technocraft's profitability metrics are solid but more diluted, with an EBITDA margin of 18.76% and net profit ratio of 10.27%, a reflection of the typical pressure on margins for larger-scale industrial companies due to higher fixed costs and competitive market dynamics. Mtandt Group shows the lowest profitability ratio at 9.17%, indicating potential challenges in either cost control or revenue generation that might need addressing to improve its bottom-line performance.

RETURN RATIOS (CAPITAL EFFICIENCY)

Regarding return ratios and capital efficiency, Y-Equipment Services again leads with a standout return on capital employed (RoCE) of 28%, showing its exceptional ability to generate profits from the capital invested. This suggests efficient asset use and careful capital allocation, producing superior returns for investors. Technocraft's return on net worth (RoNW) of 12.52% is respectable but notably lower than Y's capital returns, which aligns with expectations for larger, more capital-intensive firms where returns often moderate due to scale and diversification.. Unfortunately, return data for Mtandt Group is unavailable, but based on its lower profit margins, the returns are presumably less impressive.

LIQUIDITY AND SOLVENCY

- Y - Equipment Services is again in a favorable position with a **current ratio of 2.79**, reflecting a strong ability to cover short-term liabilities. Technocraft's current ratio of **1.76** is also acceptable, but less comfortable. In terms of leverage:
- **Y - Equipment Services** maintains a **low debt-equity ratio of 0.20**, signaling financial stability and low reliance on borrowed funds.
- **Technocraft's ratio of 0.29** is still within acceptable limits but indicates slightly higher gearing.

- No comparable data is available for Mtandt Group on these fronts.

14. FINANCIAL BENCHMARKING

OPERATIONAL EFFICIENCY (CAPITAL TURNOVER)

In the area of operational efficiency, measured by the net capital turnover ratio, both Y-Equipment Services (3.74 times) and Technocraft (3.54 times) exhibit strong and comparable capital utilization. This means each rupee of invested capital is generating approximately 3.5 to 3.7 rupees in revenue annually, reflecting efficient management of assets and working capital. This tight similarity underscores that despite its smaller scale, Y matches or slightly exceeds Technocraft in operational efficiency. Data for Mtandt Group capital turnover is missing, limiting insight into its operational productivity.

Company	Strengths	Weakness
Y - Equipment Services	High profitability (Earnings Before Interest, Taxes, Depreciation, and Amortization (EBITDA) & net profit margins), strong return ratios (Return on Capital Employed (RoCE)), excellent liquidity position (high current ratio), very low leverage	Small scale of operations limiting market presence and absolute profits
Technocraft	Large-scale operations with highest total income and absolute profits, consistent profitability, reasonable operational efficiency	Lower profit margins compared to Y, moderate return ratios, slightly higher leverage
Mtandt Group	Healthy return ratios (Return on Equity (ROE) indicated), moderate scale between the other two	Low net profit margin, limited data on liquidity and solvency ratios restricting full assessment

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