



Lighthouse
Info Systems Pvt. Ltd.

The Future of Fabrication : An Analysis of Global & Indian Market Dynamics



The Strategic Outlook in Brief



Steady Global Growth

The market is expanding at a **~4.7% CAGR**, driven by renewables and infrastructure, projected to reach **~USD 29 billion** by 2030.



India as a Growth Engine

Outpacing the global average with a **~6.3% CAGR**, fueled by national programs and clean energy expansion.



Transformation Underway

Industry 4.0 (automation, AI) and sustainability are fundamentally reshaping operations and creating new competitive advantages.

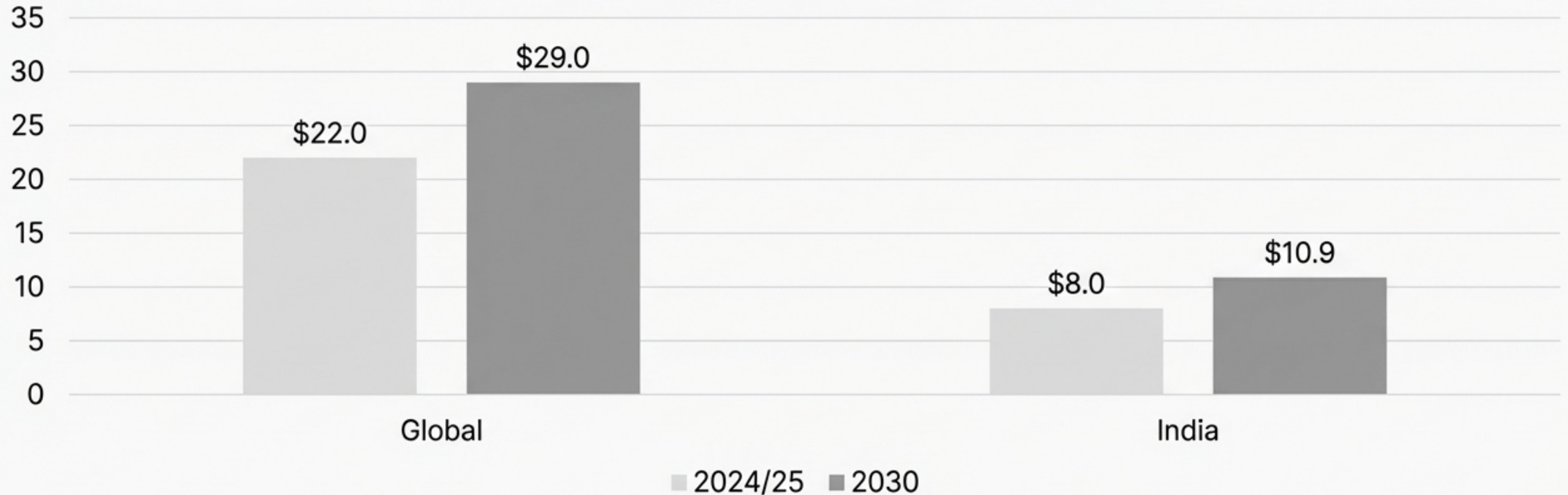


Financial Discipline is Key

Thin margins of **~4%** make scale, operational efficiency, and a focus on high-value segments paramount for survival and success.

Global Market Expands Steadily, India's Growth Accelerates

Metal Fabrication Market Size (USD Billion)



India's market is projected to grow ~1.35x faster than the global average, driven by a **6.3% CAGR** versus the global **4.7%**.

The Engine of Infrastructure and Energy

Core Function

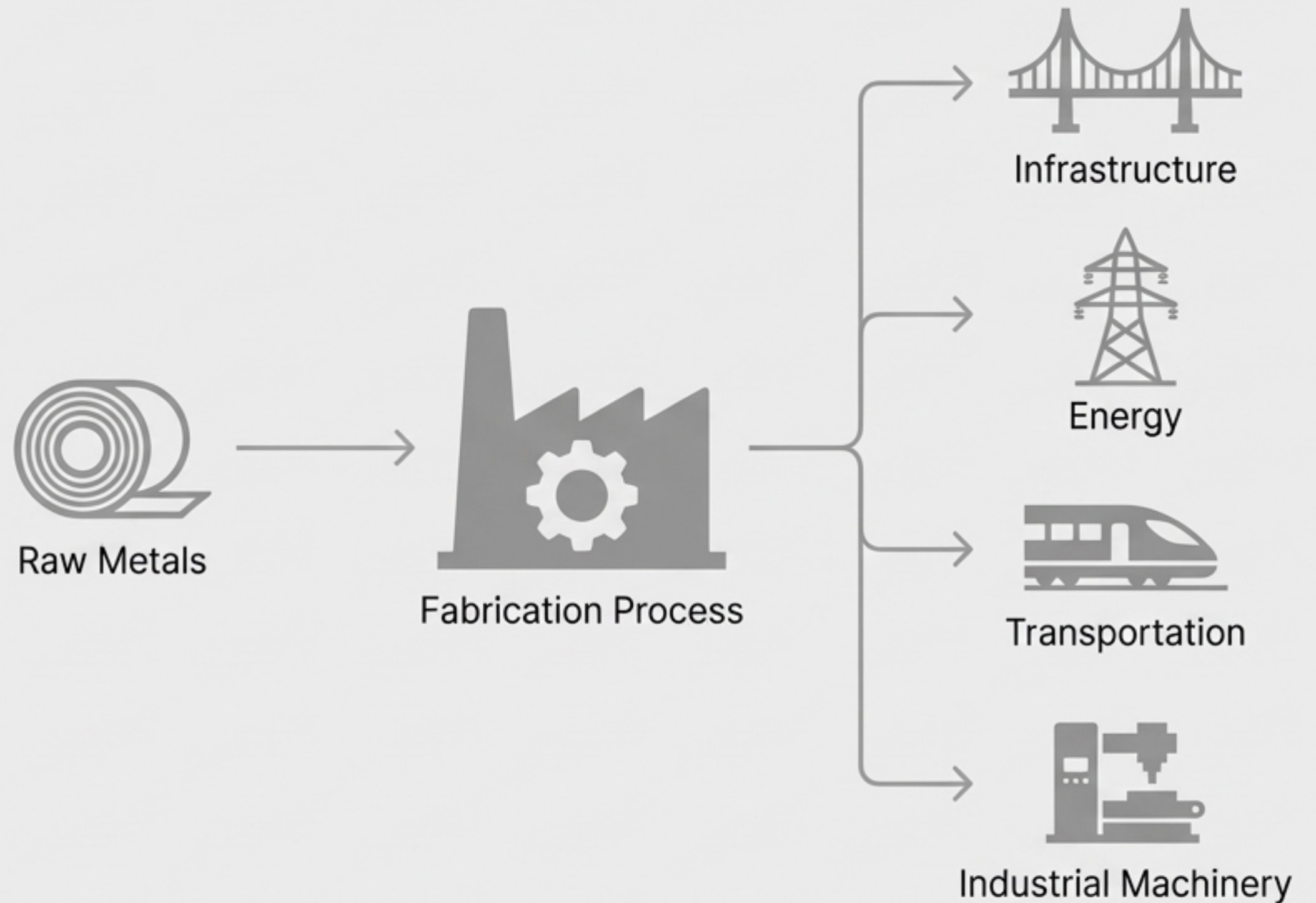
The industry's primary role is processing steel and other metals for critical end-use sectors: Infrastructure, Energy, Transportation, and Industrial Machinery.

Market Structure

Highly fragmented at the low end, but led at scale by integrated players executing large EPC and export-driven projects.

Primary Demand Driver

Demand is intrinsically linked to capital expenditure cycles, with long-term stability provided by major infrastructure and energy investments.



Twin Engines: Infrastructure Modernization & Clean Energy Transition



Sustained Infrastructure Spending

- Upgrades and expansion of roads, rail, and power grids.
- Construction of data centers and ongoing urbanization.



Clean Energy Transition

- Fabrication for solar and wind equipment (mounting structures, towers).
- Essential grid expansion and modernization to support renewables.

In India, demand is amplified by national programs for domestic solar capacity, wind localization, and defence manufacturing.

Asia-Pacific at the Forefront of Global Demand

Dominant Markets: Asia-Pacific and North America are the largest revenue pools for fabrication.

Growth Leader: **India** is positioned among the fastest-growing markets globally.

Key Enablers in India: Growth is propelled by government initiatives like '**Gati Shakti**' and '**Make in India**'.

Emerging Hubs: Western and Southern India are becoming key fabrication centers, driven by renewable-energy clusters and infrastructure buildouts.



Growth Momentum Index: A Regional View



Key Insight Callout

Asia-Pacific, powered by **India** and **China**, serves as the central hub for incremental fabrication demand.

Transmission Towers: The Backbone of Global Grids

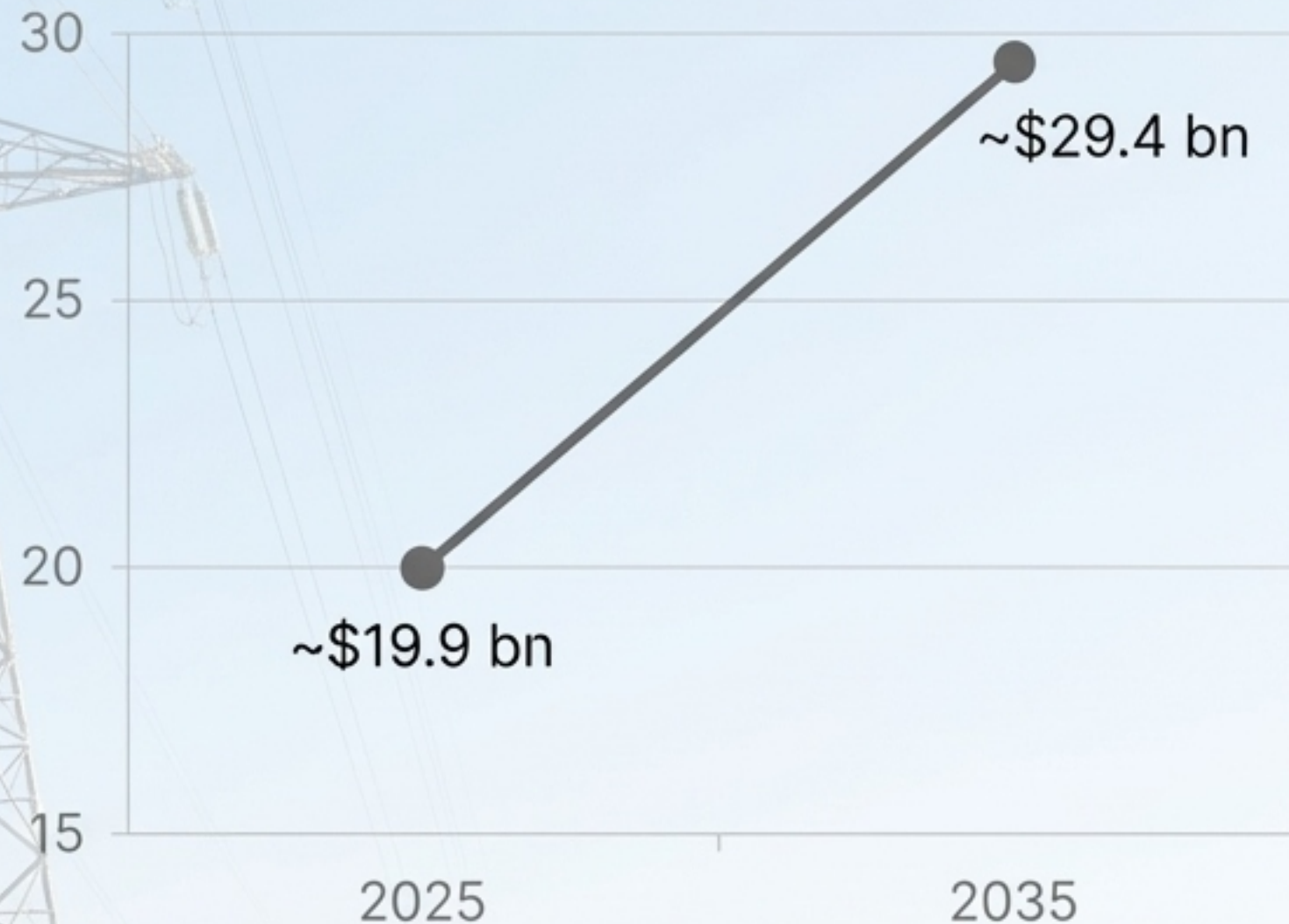
Core Driver

Growth is fueled by **global grid upgrades and expansion**, necessary to support widespread **electrification** and integrate **renewable energy sources**.

Key Trend

A market shift towards **high-voltage lines** and comprehensive, **turnkey EPC** (Engineering, Procurement, and Construction) models.

Transmission Tower Market Growth (USD Billion)



Solar Structures: Riding the Renewable Wave

Core Driver

This is the fastest-growing fabrication segment, directly linked to global net-zero commitments and massive additions in solar capacity.

Market Growth

An exceptional ~11% CAGR, one of the highest in the entire industry.

Solar Mounting Structure Market Growth (USD Billion)



**~11%
CAGR**
Fastest-Growing
Segment

Pre-Engineered Buildings: Building the Future of Industry

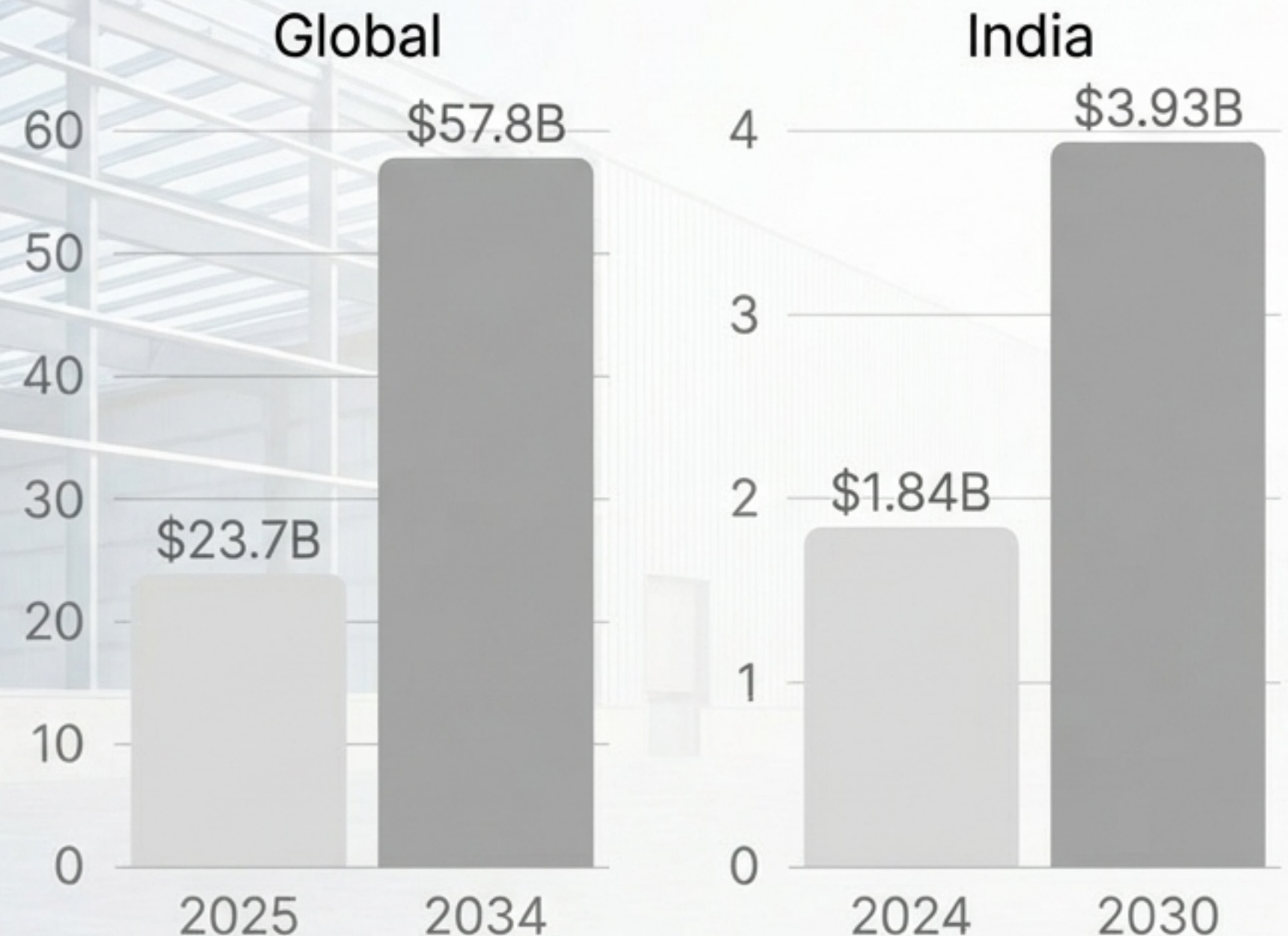
Core Driver

Demand is driven by the need for fast, cost-effective, and efficient construction for warehouses, factories, and logistics parks.

Growth Story

The global market is growing at ~10% CAGR, while India's market is set to nearly double by 2030, growing at an impressive **~13.5% CAGR**.

PEB Market Growth (USD Billion)



Sustainability: From Compliance to Core Advantage

Extended Product Lifecycle

Pointing out that durable, corrosion-resistant products reduce long-term replacement needs and lifecycle impact.

Direct Cost Reduction

Emphasizing that resource efficiency (less waste, lower energy use) directly reduces operating expenses.



100% Recyclability

Highlighting steel's inherent advantage in a circular economy, as it can be recycled without quality loss.

Lower-Carbon Production

Showcasing the industry shift to Electric Arc Furnaces (EAFs) and more energy-efficient processes.

Quantifying Decades of Progress in Steel Sustainability

100%

Recyclability Without
Quality Loss

~50%

Reduction in Energy Use
per Ton (over 40 years)

~37%

GHG Reduction
Since 1990

These long-term gains in steel production provide a strong, sustainable foundation for the entire fabrication industry, making sustainability economically attractive.

Industry 4.0: Forging a More Efficient Future



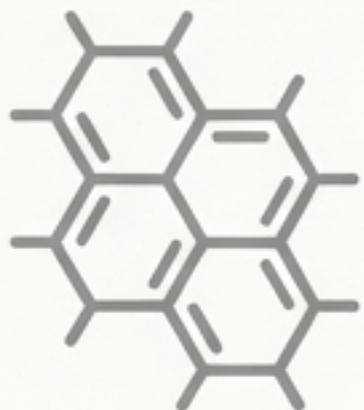
Automation & Robotics

Robotic welding, cutting, and material handling to improve throughput and address labor shortages.



Digitalization

Adoption of IoT, Digital Twins, and AI-driven quality inspection to reduce downtime and material waste.



Advanced Materials

Growing capability to process high-strength steels, aluminum, and special alloys for new-age sectors like EVs and aerospace.



Digital Platforms & Services

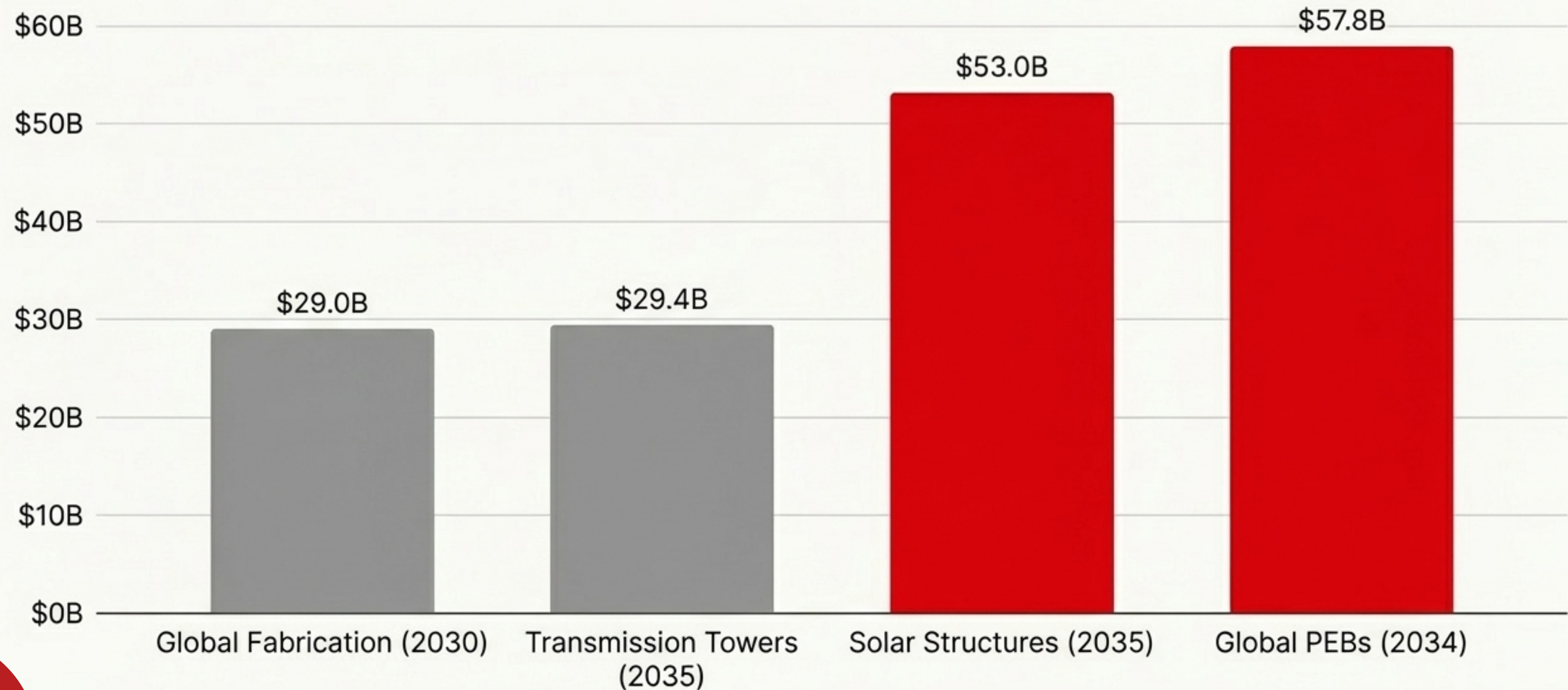
Expansion into value-added services like RFID tracking and remote monitoring to offset thin margins.

					High Impact
					High Impact
					Medium-High Impact
					Medium-High Impact

Adoption of Industry 4.0 is the primary driver of double-digit productivity gains. It is no longer optional for competitive survival.

Mapping the Largest Revenue Pools

Forecast Market Size by Segment (USD Billion)



High Capex Demands and the Imperative for Efficiency

The Challenge



Structurally High Capital Expenditure

The industry requires routine reinvestment of **~5–10% of revenue** into heavy machinery, automation, and plant modernization.

The Solution



Operational Efficiency as the Differentiator

Automation and digital tools are essential for delivering **double-digit productivity gains**, which directly improve uptime and asset utilization to **justify capex**.

The Profitability Equation: Scale, Efficiency, and Value

~4%

Average Net
Profit Margin

70-80%

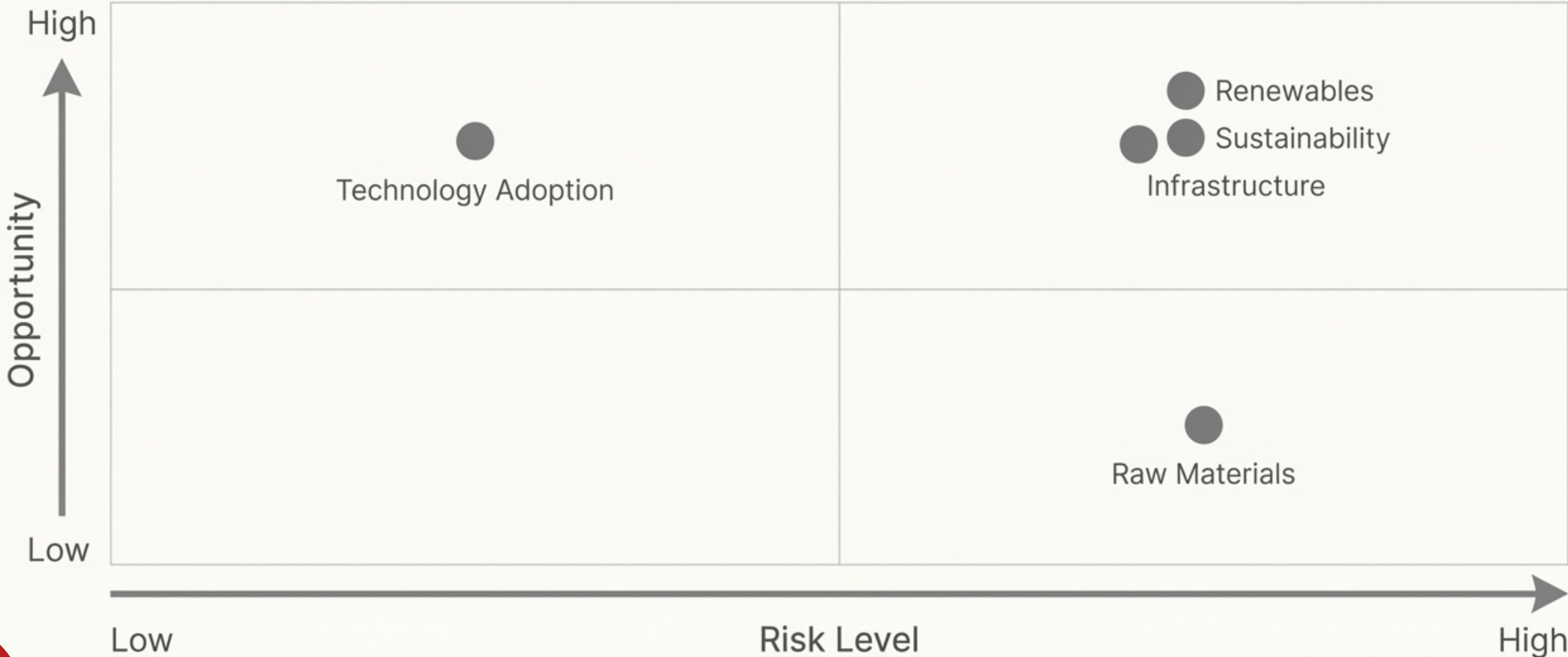
Raw Material Share
of Input Costs

**Value-Added
Services**

Key to Improving
Margins (e.g., Turnkey
EPC, Defence, Service
Contracts)

Success hinges on maximizing asset utilisation, managing material price volatility, and strategically shifting towards higher-value contracts.

Navigating the Strategic Landscape: A Risk vs. Opportunity Matrix



Six Imperatives for Future Growth and Profitability

1



Accelerate Industry 4.0 Adoption

Invest in automation, AI, and modern ERP/MES systems.

2



Dominate High-Growth Segments

Prioritize renewable energy, electrification, and EV components.

3



Integrate Vertically & Expand Services

Secure raw materials and move into turnkey EPC and lifecycle services.

4



Lead with Sustainable Practices

Embed recycling and circular-economy models as a competitive advantage.

5



Diversify Geographically and by Portfolio

Reduce risk through regional diversification and adjacent services.

6



Pursue Strategic M&A and Partnerships

Use consolidation and partnerships to gain scale and accelerate innovation.

The Future of Fabrication: Key Takeaways

- **Growth is solid, with India and Renewables as the stars.** Global CAGR is ~4.7%, but India (~6.3%) and renewables (~11%) are the key growth engines.
- **Technology is the primary enabler of competitiveness.** Automation and Industry 4.0 are essential for efficiency gains.
- **Thin margins demand operational excellence.** With average net margins of ~4%, cost control, scale, and value-added services are critical.
- **Sustainability is a core business and cost advantage.** Green practices are now required by customers and offer both compliance and economic benefits.

The fabrication industry is poised for intelligent, sustainable growth.

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