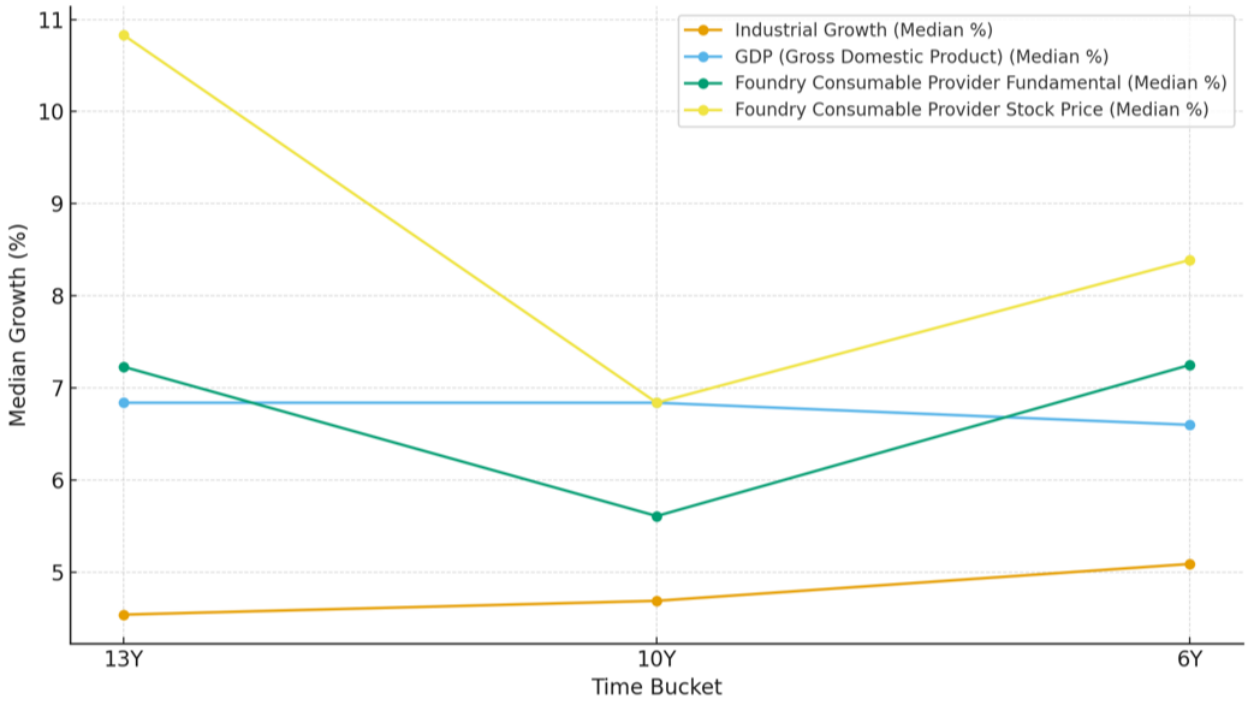

Supply in the Shadows: Foundry Consumables Leveraging Engineering and Capital Goods Growth

Introduction

The industrial advancement of India can be quantitatively evaluated by examining the Index of Industrial Production (IIP) data, which is regularly published by the Government of India. The IIP functions as a comprehensive indicator, capturing the performance across various industrial sectors and offering valuable insights into overall industrial activity in the country.

While the IIP includes a broad range of sectors—such as the manufacture of food products, beverages, tobacco products, and wearing apparel—not all these categories are directly relevant when analyzing the engineering and capital goods manufacturing industry. Therefore, a focused approach is required to accurately assess industrial growth specific to this sector.

Categories Representing Engineering and Capital Goods Manufacturing

A targeted selection of IIP categories more accurately reflects the dynamics of the engineering and capital goods manufacturing industry in India. These key categories are as follows:

- Manufacture of motor vehicles, trailers, and semi-trailers
- Manufacture of other transport equipment
- Manufacture of machinery and equipment not elsewhere classified (N.E.C.)

- Manufacture of electrical equipment
- Manufacture of fabricated metal products, except machinery and equipment
- Manufacture of basic metals
- Manufacture of other non-metallic mineral products

IIP Weightage for Key Categories

Each of these categories is assigned a specific weight within the IIP, signifying its relative importance to the overall index. The weights for the selected categories are detailed below:

- Manufacture of motor vehicles, trailers, and semi-trailers: 4.8573
- Manufacture of other transport equipment: 1.7763
- Manufacture of machinery and equipment not elsewhere classified: 4.7653
- Manufacture of electrical equipment: 2.9983
- Manufacture of fabricated metal products, except machinery and equipment: 2.6549
- Manufacture of basic metals: 12.8043
- Manufacture of other non-metallic mineral products: 4.0853

Growth Analysis of the Engineering and Capital Goods Manufacturing Industry

To assess the growth of India's engineering and capital goods manufacturing industry, the median growth rates of the relevant IIP categories have been analyzed over 13-year, 10-year, and 6-year periods. These metrics are compared alongside India's GDP growth, the profit and loss (P&L) growth of a leading foundry consumables provider, and the stock price growth of the same company. The comparative data is presented on the table below:

	13 Year Median Growth	10 Year Median Growth	6 Year Median Growth
Engineering and Capital Goods Manufacturing	4.54%	4.69%	5.09%
India GDP	6.84%	6.84%	6.60%
Foundry Consumable provider P&L Growth	7.23%	5.61%	7.25%
Foundry Consumable provider stock Price Growth	10.83%	6.84%	8.39%

Further details regarding the calculations supporting the above analysis can be found in the attached spreadsheet.

https://docs.google.com/spreadsheets/d/1ggEBzg6yt7lt3MLPvY24NQITSLtE2Zs-/edit?usp=drive_link&ouid=101853675292815110313&rtpof=true&sd=true

India’s Economic Transformation: Moving Up the Value Chain

Overview of India’s Economic Progress

Over the past decade and a half, India has witnessed significant growth in middle-class incomes, aspirations, and spending habits, leading to increased participation in capital markets. This transformation mirrors how rising family incomes prompt lifestyle upgrades, such as moving to larger homes and investing in better household items. Similarly, as the Indian economy has expanded from $1.8 trillion to approximately $4.2 trillion, the country has upgraded its infrastructure, including roads, railways, energy systems, and industrial facilities.

India's economic journey during the last 10–15 years can be compared to a young graduate moving from a small town to a major city to begin their career. Now, India is entering a new phase: ascending the value chain, much like an ambitious professional seeking more complex and higher-growth opportunities.

Key Drivers of Engineering & Capital Goods Manufacturing Growth

The following factors have acted as major catalysts for growth in Engineering & Capital Goods Manufacturing, thereby boosting demand in foundry and related sectors:

1. Capital Expenditure Fuel

Infrastructure Development

National Highway Network Expansion:

The National Highway network has grown by approximately 60%, increasing from 91,287 km in 2014 to 146,195 km today. High-speed corridors expanded dramatically from 93 km to 2,474 km, representing a comprehensive upgrade of the transportation backbone that moves goods, cement, steel, and machinery. (source : **https://www.pib.gov.in/PressReleasePage.aspx?PRID=2091508**)

Metro Network Growth:

India’s operational metro network increased from around 248 km in 2014 to approximately 1,013 km by May 2025, now spanning 23 cities. This expansion involves extensive civil works, depots, rolling stock, traction power, and station construction, all of which require cast and fabricated parts. (source : **https://www.pib.gov.in/PressNoteDetails.aspx?ModuleId=3&NoteId=155002**)

Energy Sector Advancements

Renewable Energy Capacity:

Installed renewable energy capacity (excluding large hydro) surged from about 35.8 GW in 2014 to nearly 192.5 GW by August 2025, a more than fourfold increase. The current mix includes approximately 123 GW of solar and 52.7 GW of wind power, fueling consistent demand for transformers, switchgear, wind turbines, and solar tracker hardware. (source : **https://mnre.gov.in/en/year-wise-achievement/**)

Power Grid Expansion:

Power Grid Corporation of India (PGCIL) expanded interstate power distribution significantly. By FY25, PGCIL managed about 180,000 circuit kilometers of transmission lines, 552,000 MVA of transformation capacity, and 282 substations. Compared to 2014 figures—113,587 circuit kilometers, 219,579 MVA, and 188 substations, this represents growth of 59% in circuit kilometers, 163% in transformation capacity, and 52% in substations. Much of this development has focused on higher-voltage, equipment-intensive facilities. (source : **https://www.powergrid.in/sites/default/files/annual_reports/PowergridAnnualReport-2023-24.pdf**?)

Railway Modernization

Dedicated Freight Corridors:

India has introduced freight corridors designed exclusively for goods trains, requiring new wagons, reinforced under-frames, and heavy-duty yard equipment.

2. Private Capital Expenditure Fuel

Lower Corporate Tax Rates

Since September 2019, the headline corporate tax rate has been reduced to 22% for existing domestic companies and 15% for new manufacturing companies that begin production within the specified timeframe. These lower rates enhance project returns, encouraging companies to invest in India rather than import goods. (source : **https://www.pib.gov.in/Pressreleaseshare.aspx?PRID=1585641**)

Production-Linked Incentive (PLI) Programs

The central government has introduced Production-Linked Incentive schemes across 14 manufacturing sectors, with a total allocation of ₹1.97 lakh crore. Sectors relevant to Engineering & Capital Goods Manufacturing include:

- Mobile Manufacturing and Specified Electronic Components
- Manufacturing Medical Devices
- Automobiles and Auto Components
- Specialty Steel
- Telecom & Networking Products

- Electronic/Technology Products
- White Goods (ACs and LEDs)
- High-efficiency Solar PV Modules
- Advanced Chemistry Cell (ACC) Battery
- Drones and Drone Components

(source : **https://www.pib.gov.in/PressReleseDetailm.aspx?PRID=2086347**)

Next Push: AI/Sovereign Data Center Capacity + Grid and On-Site power + Clean water

In today's rapidly evolving technological landscape, adopting a 10-year outlook is bold, but even a shorter long-term perspective reveals several inevitable trends for India's future. The exponential increase in internet penetration over the last decade has made sovereign data center development a necessity for the country. As a densely populated nation, India's demand for secure, domestic data infrastructure is driven both by regulatory requirements and technological ambitions.

Expansion of Sovereign Data Center Capacity

India's data center (DC) IT load is forecasted to exceed 4.5 GW by 2030, a dramatic increase from approximately 1.26 GW as of April 2025, according to Colliers. This acceleration is underpinned by factors such as the Reserve Bank of India's data localization mandate for payment systems (Source : **https://www.rbi.org.in/commonman/english/scripts/FAQs.aspx**?) and the significant investment of ₹10,372 crore through the India AI Mission, aimed at expanding domestic AI computing capabilities

Rising Demand for Compute and GenAI Adoption

India ranks among the global leaders in generative AI (GenAI) adoption, with 92% of knowledge workers reportedly using AI at work. This widespread usage highlights the robust domestic demand for computational resources. As a result, building out native data center capacity is not optional for hyperscalers. According to ICRA and Colliers, there is a multi-gigawatt data center pipeline and flagship projects like Google's planned 1 GW campus in Andhra Pradesh, which includes a $2 billion commitment to renewable energy. (Source : **https://economictimes.indiatimes.com/tech/technology/third-party-data-centre-capacity-projected-to-reach-2500-mw-by-fy28-icra/articleshow/124109412.cms?utm_source=chatgpt.com&from=mdr**)

Energy Requirements and the Shift Toward Clean Power

The anticipated growth in India's data center capacity— According to Colliers, India's DC capacity is set to ~3–4× by 2030—will bring a massive increase in energy demand. Central Electricity Authority (CEA) have identified data centers as a key driver of rising power requirements. Although coal remains a major component of India's energy grid, hyperscalers are increasingly securing large renewable energy power purchase agreements (PPAs) and striving towards 24/7 clean power. Achieving this will require substantial investments in energy storage and grid upgrades to accommodate the unique load profiles created by AI workloads.

Semiconductor Self-Reliance and Water Infrastructure Needs

India's progress toward semiconductor self-reliance is evident through projects like the Tata–PSMC fabrication plant in Dholera and Micron's ATMP facility in Sanand. These semiconductor fabs depend on access to industrial-scale ultrapure water (UPW), requiring millions of gallons daily. Producing one gallon of UPW necessitates approximately 1.4–1.6 gallons of municipal water, emphasizing the critical need for expanded clean-water and water reuse infrastructure to support both technological and environmental goals. (source : **https://www.pib.gov.in/PressReleaseIframePage.aspx?PRID=2010132**)

Integrating Infrastructure Trends

We began with the base run-rate of the engineering/capital-goods IIP (Index of Industrial Production). Across the last 13-year, 10-year, and 6-year buckets, that base has stepped up from 4.54% → 4.69% → 5.09% (our compilation).

Base Run Rate remains the steady glide:

The National Infrastructure Pipeline (NIP) projects about ₹111 lakh crore (that is, ₹111 trillion) of capex over FY2020–FY2025—an organizing framework spanning roads, urban transit, energy, and water; execution momentum since 2014 in highways and metros supports continuity rather than one-off spurts. (source : **https://www.pppinindia.gov.in/report/**)

Energy capacity keeps adding hardware.

The Ministry of New & Renewable Energy (MNRE) shows steady additions; cumulative non-large-hydro renewables as of August 2025 stand around ~192 GW (solar ~123 GW; wind ~52.7 GW), implying ongoing grid and balance-of-plant equipment demand. (source : **https://mnre.gov.in/en/physical-progress/**)

Railway modernization is always a budget priority at least in the near term.

Railways' capital outlay is in the ₹2.62–₹2.65 lakh crore range for FY2024-25/FY2025-26; operational metro length expanded from 248 km (2014) to 1,013 km (May 2025) across 23 cities—a pipeline that sustains casting-heavy equipment demand (rolling stock, yard gear, traction, stations). (source : **https://www.pib.gov.in/PressReleasePage.aspx?PRID=2036104**)

Private-sector capex conditions are supportive

Corporate credit quality remains resilient: ICRA's H1-FY2026 report shows an upgrade-to-downgrade ratio of ~2.9×, consistent with healthier balance sheets and a willingness to invest (even if quarterly prints are lumpy). (source : **https://www.icra.in/CommonService/**)

Augmentation factors

- AI/Sovereign data-center capacity is scaling from ~1.26 GW (Apr 2025) toward >4.5 GW by 2030, pulling through grid equipment, cooling plants, and industrial-water systems.
- The IndiaAI Mission (cabinet-approved ₹10,300–₹10,372 crore outlay) formalizes domestic compute—another durable driver of local capacity.

- Semiconductor build-outs (e.g., Tata-PSMC fab, Dholera; additional units under the India Semiconductor Mission) and their ultra-pure water needs amplify industrial-water and power-quality investments.

Implications for Foundry-Consumables Providers

When the engineering/capital-goods IIP base is sustained and augmented by AI/data center, grid, water, and semiconductor infrastructure, both casting tonnage and consumables intensity per ton (including filters, feeding systems, coatings, refractories, metal treatment, and binders/release agents) increase.

The guiding equation for foundry-consumables providers is:

P&L health of foundry-consumable providers > Base run-rate of engineering/capital-goods IIP + (AI/DC + Grid infra + Water/Semi infra kicker)

Key Takeaway

India's infrastructure base is firmly rooted in ongoing, publicly funded programs (NIP, Railways, MNRE energy additions). The next phase of growth will be propelled by data center capacity expansion, IndiaAI investments, and semiconductor fabrication buildouts, further amplifying demand for engineering, grid, and water-related equipment and consumables.