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Assessing India's Potential as a Resilient and Competitive Alternative Manufacturing Hub

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ABSTRACT

The COVID-19 pandemic, coupled with escalating geopolitical tensions and supply chain disruptions, has triggered a global realignment of manufacturing networks. Companies are increasingly seeking alternatives to China's long-standing dominance in global manufacturing.
This paper evaluates India's potential to emerge as a resilient and competitive manufacturing hub amid this shifting landscape. With a demographic advantage, a large domestic market, supportive government policies like the Production Linked Incentive (PLI) scheme, and growing investor confidence, India is positioning itself as a viable alternative. However, the path is fraught with structural challenges including infrastructure bottlenecks, bureaucratic complexity, and a relatively low-skilled labor force in key industries. Using a mixed-methods research approach—incorporating secondary economic data, comparative benchmarking, and policy
analysis—this study assesses India's readiness across dimensions such as cost competitiveness, supply chain robustness, labor productivity, and regulatory efficiency. The findings suggest that while India offers considerable promise, realizing its manufacturing aspirations will require sustained reforms, targeted investments, and global market integration. The paper concludes with policy recommendations aimed at enhancing India's competitiveness in the evolving global manufacturing order.

Keywords: India Manufacturing, Global Supply Chain, China Plus One, PLI Scheme, Infrastructure, Competitiveness, FDI, Economic Resilience

INTRODUCTION

The COVID-19 pandemic exposed critical vulnerabilities in global supply chains, particularly their overdependence on a single country—China. As companies recalibrate production
strategies to improve resilience and mitigate geopolitical risks, there has been a strategic shift toward a "China Plus One" model of manufacturing. This pivot presents an unprecedented opportunity for countries like India to establish themselves as alternative hubs in the global production network.

India, with a population exceeding 1.4 billion, a growing middle class, and a robust digital infrastructure, is uniquely positioned to capitalize on this transition. Its manufacturing sector, which currently contributes around 17% of GDP, is projected to expand significantly if enabling
conditions are met (Ministry of Commerce and Industry, 2022). Government initiatives such as
Make in India, *Digital India*, and the *Atmanirbhar Bharat Abhiyan* have been launched to
enhance domestic manufacturing capability, attract foreign direct investment (FDI), and reduce import dependency.

Nevertheless, India faces stiff competition from established and emerging manufacturing

destinations like Vietnam, Mexico, and Indonesia, which offer leaner regulatory environments and superior logistics performance. India's infrastructure deficits, regulatory complexity, and
workforce skill gaps have historically hindered its industrial ascent. Yet, recent macroeconomic trends and strategic policy reforms are gradually altering this trajectory.

This paper critically assesses India's manufacturing potential by analyzing core enablers—cost advantage, market access, labor availability, industrial policy, and geopolitical positioning. It also compares India's performance against peer economies to identify gaps and opportunities.
Ultimately, the objective is to provide a grounded assessment of whether India can realistically emerge as a resilient and competitive alternative manufacturing hub in a rapidly evolving global landscape.

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1. HISTORICAL CONTEXT OF INDIA'S MANUFACTURING SECTOR

India's manufacturing journey has evolved through distinct phases, shaped by post-independence industrial policy, economic liberalization, and globalization.

Post-Independence Era (1947–1980s):
After independence, India adopted a state-led industrialization model, characterized by protectionism, import substitution, and central planning. The Industrial Policy Resolutions of 1956 and 1973 emphasized public sector dominance and self-reliance, leading to the creation of large state-owned enterprises (SOEs) in steel, heavy engineering, and chemicals. However, over-regulation, lack of competition, and the infamous "License Raj" stifled private enterprise and innovation.

Economic Reforms and Liberalization (1991 Onwards):
The balance-of-payments crisis of 1991 triggered a series of structural reforms, including deregulation, trade liberalization, and FDI liberalization. These reforms dismantled the License Raj and opened the Indian economy to global competition. Sectors such as automotive, pharmaceuticals, and IT hardware manufacturing began to grow, supported by international
partnerships and private investment.

Post-2000 Global Integration:
In the 2000s, India became part of global value chains in IT services and, to a lesser extent, in manufacturing. The establishment of SEZs and improvements in telecom and logistics
infrastructure contributed to export-led growth in apparel, auto components, and electronics assembly. However, India lagged behind East Asian economies that pursued export-driven industrialization more aggressively.

Contemporary Industrial Strategy (Post-2014):
Recent years have seen a renewed push toward manufacturing, marked by *Make in India*, the National Manufacturing Policy (2011), and the *Atmanirbhar Bharat Abhiyan*. These efforts have targeted FDI growth, import substitution, and development of high-tech sectors such as defense production, mobile phones, and semiconductors.

Despite these policy initiatives, India's manufacturing growth has remained below potential, constrained by policy volatility, infrastructure challenges, and under-skilled labor. Nonetheless, the historical trajectory underscores the country's persistent aspiration to become an industrial powerhouse.

LITERATURE REVIEW

The viability of India as a competitive manufacturing hub has been widely discussed in academic literature, policy reports, and global consulting analyses. The literature reveals a spectrum of
perspectives on India's manufacturing prospects—ranging from cautious optimism to structural skepticism.

Competitiveness and Sectoral Potential

Dossani and Kenney (2007) argue that India's strength in services should be complemented by a strategic manufacturing push to ensure inclusive job creation. More recent analyses, such as by McKinsey Global Institute (2020), identify sectors like automotive, electronics, and chemicals as potential "champions" if cost, quality, and policy factors are aligned. They emphasize the need for deep supply chain integration and focused infrastructure in export-oriented zones.

Labor Productivity and Skill Gaps

Academic evaluations (e.g., Panagariya, 2018) consistently highlight low labor productivity and rigid labor laws as impediments to scale. The World Bank (2020) notes that India's manufacturing labor productivity is less than one-third that of China. These gaps are exacerbated by limited vocational training, lack of dual-education systems, and weak formal employment pathways, particularly in MSMEs.

MSMEs and Informality

According to the International Finance Corporation (IFC, 2021), over 63 million micro, small, and medium enterprises (MSMEs) form the backbone of India's manufacturing base. However, they face systemic barriers: low access to formal credit (only 16% use bank finance), poor digital adoption, and inconsistent power and logistics services. Studies argue that a resilient industrial ecosystem must empower MSMEs through technology transfer, cluster development, and easier regulatory compliance.

Comparative Trade and Supply Chain Integration

India's exclusion from major trade blocs like RCEP is often cited as a strategic handicap.

Baldwin (2016) underscores how modern manufacturing competitiveness is less about

comparative advantage in final goods and more about participation in regional and global supply chains. India's limited engagement in GVCs—accounting for only ~1.8% of global manufacturing exports—limits its capacity to scale production and benefit from trade multipliers.

Policy Environment and Investor Sentiment

Several consulting studies—such as Deloitte (2022) and EY India (2023)—report that investor interest is growing but tempered by on-ground realities. While the PLI scheme and infrastructure upgrades are seen as positive signals, land acquisition, tax complexity, and intra-state regulatory differences remain major concerns. The literature suggests that a unified national manufacturing strategy with localized implementation is key to attracting long-term capital.

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2. RESEARCH METHODOLOGY

This study employs a mixed-methods approach, combining qualitative and quantitative data to assess India's capacity to emerge as a resilient and competitive manufacturing destination. The methodology integrates the following components:

Secondary Data Analysis:

Statistical data from global institutions such as the World Bank, UNIDO, IMF, and World Economic Forum were used to analyze India's comparative performance in manufacturing.

Government policy documents, including reports from the Department for Promotion of Industry and Internal Trade (DPIIT), NITI Aayog, and the Ministry of Commerce and Industry, were examined to trace policy direction and investment trends.

Comparative Benchmarking:

India's competitiveness was benchmarked against countries like China, Vietnam, and Mexico using metrics such as:

- Labor cost per hour (ILO, 2022)
- Logistics Performance Index (World Bank, 2023)
- Ease of Doing Business indicators (World Bank archives)
- FDI inflow trends (UNCTAD, 2023)
- Export diversification and integration in global value chains (OECD, 2023)

Thematic Policy Analysis:

Key policy frameworks such as *Make in India*, *PLI Scheme*, *Gati Shakti National Master Plan*, and *Digital India* were evaluated based on their objectives, implementation status, and early outcomes. This involved reviewing white papers, press releases, and industry feedback.

Expert Interviews (Indicative Only):

While primary field interviews were not conducted for this paper, insights were derived from published interviews and statements of industry leaders and economists, such as those from CII, ASSOCHAM, and FICCI publications.

Limitations:

The study is constrained by the availability of up-to-date disaggregated manufacturing data post-2023. While macro-level indicators provide a directional view, the sectoral and regional variation within India may not be fully captured. Additionally, geopolitical shifts and external macroeconomic factors can influence outcomes beyond domestic policy control.

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3. OBJECTIVE OF RESEARCH

The central aim of this research is to evaluate India's potential to become a resilient and globally competitive manufacturing hub amid the ongoing global supply chain realignment. Specifically, the study seeks to:

1. **Assess Structural Readiness:**

Analyze India's infrastructure, labor force, energy costs, and policy landscape to determine its preparedness for large-scale manufacturing operations.

2. **Evaluate Policy Impact:**

Examine the effectiveness of government initiatives such as the Production Linked

Incentive (PLI) scheme, Make in India, and infrastructure programs like Gati Shakti in fostering a competitive industrial ecosystem.

3. **Compare Global Positioning:**

Benchmark India's performance against comparable manufacturing economies including

China, Vietnam, and Mexico, focusing on cost, ease of doing business, and global trade linkages.

4. **Identify Barriers and Enablers:**

Highlight the key constraints hindering India's manufacturing scale-up and identify strategic enablers that can enhance its attractiveness to global manufacturers.

5. **Provide Policy and Strategic Recommendations:**

Propose evidence-based suggestions for improving India's competitiveness through workforce development, regulatory simplification, infrastructure modernization, and innovation promotion.

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4. INDIA'S MANUFACTURING LANDSCAPE: CURRENT STATUS

India's manufacturing sector has long been identified as a key driver of inclusive economic growth and job creation. As of FY2022–23, the sector contributed approximately 17.4% to the national GDP and employed nearly 60 million workers (Ministry of Statistics and Programme Implementation, 2023). While ambitious policy frameworks have been launched over the past decade, their full-scale impact remains uneven across regions and sectors.

Sectoral Composition:

India's manufacturing output is concentrated in a few sectors:

- **Automobiles and Auto Components:** India is the world's fourth-largest auto market and a major exporter of two-wheelers and components.
- **Electronics and Semiconductors:** With mobile phone assembly growing rapidly, India has emerged as the second-largest mobile phone manufacturer by volume (ICEA, 2023).
- **Pharmaceuticals:** Known as the "Pharmacy of the World," India supplies over 20% of global generic drugs.
- **Textiles and Apparel:** A traditional strength, contributing significantly to exports and employment, though losing ground to Bangladesh and Vietnam in recent years.
- **Chemicals and Petrochemicals:** Fast-growing with potential in specialty chemicals, supported by PLI incentives and rising demand from the West.

Investment Trends:

India attracted record-high FDI inflows in manufacturing, reaching USD 21.3 billion in FY2021–22, up from USD 13.5 billion in FY2019–20 (DPIIT, 2022). Key investment
destinations include Gujarat, Maharashtra, Tamil Nadu, and Karnataka, driven by their industrial base, port connectivity, and relatively better governance.

Industrial Corridors and Clusters:

The National Industrial Corridor Development Programme (NICDP) aims to establish 11 key industrial corridors (e.g., Delhi–Mumbai Industrial Corridor) to integrate manufacturing zones with transport infrastructure. Additionally, dedicated freight corridors and special economic
zones (SEZs) support production hubs but have seen mixed success due to regulatory and land acquisition hurdles.

Labor and Skill Base:

India has a vast labor pool, with over 65% of its population in the working-age group. However, the **formal skill base remains limited**, with only 4.7% of the workforce receiving formal vocational training, compared to 52% in the U.S. and 75% in Germany (NSDC, 2023). The Skill India Mission and initiatives under PMKVY (Pradhan Mantri Kaushal Vikas Yojana) are attempting to address this gap, with mixed outcomes so far.

Infrastructure and Logistics:

While India has improved in logistics rankings and industrial infrastructure, **cost and efficiency gaps persist**. Logistics costs are estimated at around 13–14% of GDP, higher than China (8%) and the EU (9%) (NITI Aayog, 2022). The launch of the **PM Gati Shakti National Master Plan**, an integrated infrastructure platform, is expected to address supply chain fragmentation and reduce turnaround times.

Digital and Regulatory Environment:

The digital public infrastructure—such as Aadhaar, UPI, and GSTN—has improved transparency, compliance, and ease of doing business. However, India still ranks low in contract enforcement and land registration ease, issues that deter foreign manufacturers requiring
long-term asset investment.

Despite these shortcomings, India's evolving industrial ecosystem and government-led reform momentum have created a more favorable outlook for manufacturing growth.

COMPARATIVE COMPETITIVENESS: INDIA VS. CHINA, VIETNAM, AND MEXICO (EXPANDED)

To evaluate India's readiness as a competitive manufacturing hub, it is vital to benchmark its performance against three prominent alternatives: China (the incumbent leader), Vietnam (the agile East Asian competitor), and Mexico (the Americas' nearshoring champion). This comparison spans five critical parameters: cost structure, supply chain maturity, infrastructure, institutional quality, and innovation capacity.

Cost Structure and Labor Advantage

India's labor cost advantage is widely acknowledged. With average manufacturing wages between $1.50 and $1.80 per hour (ILO, 2022), India is substantially cheaper than China ($6.50) and Mexico ($4.80), and slightly more competitive than Vietnam (~$2.80). However, this
advantage is offset by **lower productivity**—India's output per worker in manufacturing is less than half of China's and lags Vietnam by approximately 30% (World Bank, 2023). Thus, labor reforms, skilling, and digitization are critical to transforming low wages into a productivity dividend.

Infrastructure and Logistics Ecosystem

China's success is deeply rooted in its **world-class infrastructure**—including over 150,000 km of expressways, high-speed rail connectivity between all manufacturing hubs, and automated container ports. Mexico benefits from proximity to U.S. markets and integrated road-rail corridors. Vietnam has invested significantly in port modernization and logistics zones in the north and south. India, despite advances like the Delhi-Mumbai Industrial Corridor, still suffers from:

- High logistics costs (13–14% of GDP)
- Port congestion and long turnaround times (average dwell time of 44 hours)
- Limited multimodal integration

However, recent programs like PM Gati Shakti and Bharatmala aim to transform India's logistics profile by 2030, which

could reduce logistics costs to 9–10% of GDP—comparable with global best practices.

Trade Openness and Market Access

Vietnam's inclusion in trade agreements like RCEP, CPTPP, and bilateral deals with the EU and Japan gives it **unparalleled market access** for a small economy. Mexico's advantage lies in
USMCA and nearshoring trends driving investment from the U.S. India has taken strides in negotiating FTAs with the UAE, Australia, and the UK (ongoing), but its exclusion from RCEP
limits its Asia-Pacific competitiveness. Customs inefficiencies, non-tariff barriers, and a complex tariff regime still act as deterrents.

Institutional Quality and Governance

Mexico outperforms India in contract enforcement, judicial predictability, and customs
procedures—factors critical for MNCs establishing long-term operations. Vietnam scores higher on ease of starting a business, construction permits, and enforcement timelines. India, despite its improvements in digital governance and the abolition of retrospective taxation, struggles with:

- Delayed legal enforcement
- Intra-state regulatory inconsistencies
- Onerous compliance regimes, particularly for MSMEs

Innovation and Industrial Clusters

China's industrial parks are innovation hubs—blending universities, R&D labs, design firms, and suppliers. Vietnam has built electronics clusters around Samsung, while Mexico specializes in automotive and aerospace. India's cluster-based approach is less mature, often hampered by land acquisition issues and uneven state capacity. However, emerging tech parks in Telangana, Tamil Nadu, and Karnataka, along with semiconductor policies, are creating new nodes of innovation.

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5. THE ROLE OF MSMEs IN INDIA'S MANUFACTURING BASE

India's Micro, Small, and Medium Enterprises (MSMEs) constitute the **foundation of its industrial ecosystem**. With over 63 million enterprises employing around 110 million people, MSMEs contribute approximately 30% to GDP and 49% of total exports (Ministry of MSME, 2023). They are particularly dominant in labor-intensive sectors like textiles, auto components, handicrafts, food processing, and light engineering.

Regional and Sectoral Footprint

MSMEs are spread across states like Maharashtra, Tamil Nadu, Gujarat, Uttar Pradesh, and West Bengal, often clustered in industrial belts or export hubs. For example:

- **Tirupur (Tamil Nadu):** Knitwear and textiles
- **Rajkot (Gujarat):** Engineering and diesel engines
- **Moradabad (U.P.):** Brassware and handicrafts

This regional diversity allows for specialization but also poses challenges in standardization, quality control, and collective branding.

Challenges Facing MSMEs

Despite their scale, MSMEs face chronic limitations:

- **Access to Credit:** Only 16% of MSMEs have access to formal finance (IFC, 2021). Many rely on NBFCs or informal lenders at high interest rates.
- **Technological Obsolescence:** A large proportion use outdated machinery and lack digitization.
- **Compliance Burden:** MSMEs face over 5,000 possible compliance touchpoints annually—many with penalties and overlapping jurisdictions.
- **Market Volatility:** Global shocks like COVID-19 and supply chain disruptions hit smaller units disproportionately due to lower resilience and working capital buffers.

Policy Support and Institutional Gaps

Government schemes like the Emergency Credit Line Guarantee Scheme (ECLGS), MUDRA loans, and the Udyam portal have improved access to finance and registration. However, more structural interventions are needed:

- Promote digital B2B platforms and e-marketplaces for MSME exports
- Establish regional tech centers for skill upgrades and machine modernization
- Streamline labor, tax, and environmental regulations under a "single window" for MSMEs
- Encourage MSME participation in global supply chains through vendor development programs with large OEMs

MSMEs as Catalysts for Export-Led Growth

India's export goals—USD 1 trillion in goods by 2030—are unlikely to be achieved without integrating MSMEs into formal supply chains. Initiatives like the *One District One Product (ODOP)* scheme are early attempts to brand regional capabilities for export. However, better logistics, packaging support, customs facilitation, and export financing are needed to translate MSME capabilities into global competitiveness.

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6. KEY ENABLERS AND GOVERNMENT INITIATIVES

India's strategic intent to transform into a global manufacturing powerhouse is supported by a suite of government initiatives designed to overcome long-standing structural bottlenecks. This section outlines key programs and policy measures that serve as enablers of manufacturing competitiveness.

Make in India

Launched in 2014, the *Make in India* initiative aims to boost the manufacturing sector's GDP share to 25%. It targets 25 priority sectors including automotive, defense, electronics, and pharmaceuticals. The initiative emphasizes FDI

liberalization, faster clearances, and industrial corridor development. Though progress has been mixed, it has increased investor visibility and laid the foundation for more targeted reforms.

Production Linked Incentive (PLI) Scheme

One of the most impactful interventions, the PLI scheme offers performance-based incentives to manufacturers in 14 sectors—including mobile phones, semiconductors, medical devices, and textiles. With a total outlay of INR 1.97 lakh crore (approximately USD 24 billion), the scheme aims to:

- Increase domestic production
- Enhance export competitiveness
- Promote import substitution

According to DPIIT (2023), the PLI for mobile manufacturing alone helped attract investments from global players like Apple's contract manufacturers (Foxconn, Pegatron, Wistron), leading to a 139% rise in smartphone exports in FY2022–23.

PM Gati Shakti National Master Plan

Launched in 2021, this digital platform integrates 16 ministries to streamline infrastructure planning and reduce project delays. It provides geospatial mapping of economic zones, industrial corridors, and connectivity assets. Gati Shakti is expected to significantly reduce logistics costs and improve turnaround times across modes—critical for just-in-time manufacturing models.

Ease of Doing Business and Labor Reforms

India has undertaken significant reforms to improve the business environment:

- Simplification of labor codes into four comprehensive laws (though implementation remains state-dependent)
- Digital tax compliance and faceless assessments
- Startup India and Invest India platforms for investor support

While these reforms signal intent, execution inconsistencies and regulatory overlap across states remain issues.

Semiconductor and Electronics Ecosystem Development

Recognizing strategic vulnerabilities in electronics and chip supply chains, India has allocated USD 10 billion to develop a domestic semiconductor ecosystem. The plan includes:

- Subsidies for fab units
- Design-linked incentives
- Specialized industrial parks (e.g., Dholera in Gujarat)

This effort aligns with global trends toward localization and "chip sovereignty."

Export Promotion and Market Diversification

Schemes such as the Remission of Duties and Taxes on Exported Products (RoDTEP) and India's new foreign trade policy (2023–2028) aim to make exports more competitive. These are complemented by India's participation in global value chain discussions at forums like QUAD and the Indo-Pacific Economic Framework (IPEF).

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7. BARRIERS TO GROWTH AND STRUCTURAL CHALLENGES

Despite its demographic and market potential, India's path to becoming a global manufacturing hub is obstructed by deep-rooted structural challenges. These constraints limit the scalability, predictability, and cost competitiveness that global manufacturers require.

Infrastructure Deficiencies

Although programs like Bharatmala and Gati Shakti are improving physical infrastructure, India continues to lag in logistics efficiency and industrial connectivity. The country ranks 38th in the World Bank's *Logistics Performance Index* (2023), behind China (19th) and Vietnam (43rd). Key issues include:

- Poor last-mile connectivity to ports and industrial clusters
- High logistics costs (13–14% of GDP)
- Congested urban transport systems

Land Acquisition and Industrial Zoning

Land acquisition in India is often slow, legally complex, and politically sensitive. Varying state-level regulations, local resistance, and unclear land titles can delay projects for years. This makes the setup of new manufacturing units unpredictable, especially for foreign investors unfamiliar with India's land laws.

Regulatory Complexity and Compliance Burden

Although several national-level reforms have been introduced, India's federal structure means business regulations vary significantly across states. According to the Economic Survey (2022–23), enterprises still face an average of 1,000 regulatory filings annually. Despite digitalization efforts, bureaucratic red tape, licensing requirements, and inconsistent enforcement persist.

Labor Market Rigidities

While India has reformed its labor codes to improve flexibility, implementation is uneven. Additionally, the informal sector—comprising over 80% of the workforce—limits labor productivity and complicates workforce planning. Skills mismatches, low female labor force participation (~24%), and lack of industry-academia linkages further constrain talent readiness.

Limited Supply Chain Integration

India remains weakly integrated into global value chains (GVCs), contributing to less than 2% of global goods trade. Compared to China's deeply integrated manufacturing ecosystems and Vietnam's electronics GVC participation, India lacks backward and forward linkages, particularly in high-tech industries. The reliance on imports for components undermines

self-reliance efforts and raises exposure to global shocks.

Judicial and Contract Enforcement Delays

India ranked 163rd in the *Enforcing Contracts* category of the World Bank's 2020 Doing

Business report, with contract resolution taking an average of 1,445 days. Weak enforcement mechanisms deter long-term investments and affect supplier confidence in multi-tier value chains.

Environmental and Energy Challenges

High industrial electricity tariffs, especially for small manufacturers, affect cost competitiveness. In several states, commercial tariffs are nearly double the residential rates.

Additionally, balancing manufacturing growth with environmental sustainability, particularly in energy-intensive sectors, is emerging as a pressing policy dilemma.

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8. OPPORTUNITIES FOR STRATEGIC POSITIONING

Amid global uncertainties, India holds several strategic levers to reposition itself as a trusted and competitive manufacturing base. These opportunities align with global business trends, geopolitical realignments, and domestic reform momentum.

China Plus One Strategy

India's foremost opportunity stems from the global movement to diversify manufacturing supply chains away from China. The U.S.–China trade tensions, COVID-19 disruptions, and concerns over overdependence have led global firms to seek alternative bases. According to a Kearney survey (2022), over 75% of U.S. companies have considered relocating at least part of their supply chains. India's scale, political stability, and market potential make it a prime candidate.

Demographic Dividend and Urbanization

India is projected to have the world's largest working-age population until 2047. With over 300 million people expected to move to urban areas in the next 20 years, this shift presents a vast labor and consumer base for industrial expansion—provided adequate skills, housing, and transport infrastructure are in place.

Strategic Geography and Political Alignment

Located between East Asia and the Middle East, India is well-positioned to serve as a transshipment and production node. Its participation in the QUAD, IPEF, and enhanced ties with the EU, UAE, and Australia offer opportunities to deepen trade and technology partnerships

while enhancing resilience in critical supply chains.

Digital and Financial Infrastructure

India's public digital platforms—such as Aadhaar, UPI, DigiLocker, and e-Shram—have created a base for financial inclusion, identity verification, and formal workforce tracking. This lowers

administrative costs for businesses and improves regulatory compliance—key advantages for scaling operations efficiently.

Green Manufacturing and ESG Integration

As environmental, social, and governance (ESG) criteria gain traction globally, India can position itself as a destination for sustainable manufacturing. Investment in green hydrogen, electric mobility, and solar production—backed by government incentives—offers a path to attract ESG-conscious investors and buyers.

Tier-II and Tier-III City Industrialization

Emerging manufacturing hubs in cities like Aurangabad, Coimbatore, Hosur, Surat, and Lucknow are witnessing rising investments due to lower costs, land availability, and better
governance. With proper infrastructure planning, these cities could complement metro areas and expand India's manufacturing footprint.

Reforms in Trade and Customs Digitization

India's ICEGATE and SEZ reforms, along with improvements in customs processing time (reduced from 105 hours in 2017 to 44 hours in 2022 at sea ports), enhance export competitiveness. Further integration with digital trade platforms can enable SMEs to plug into global trade more seamlessly.

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9. SUGGESTIONS

To convert its manufacturing potential into realized economic strength, India must adopt a dual-pronged strategy: resolving structural weaknesses and leveraging emerging strengths. The following recommendations are organized into actionable policy and institutional pillars:

Institutional Coordination and Policy Continuity

Create a centralized National Manufacturing Coordination Council to harmonize policy across ministries and states.

Establish five-year industrial policy roadmaps that survive electoral cycles, providing predictability for long-term investors.

Encourage cooperative federalism by offering performance-linked fiscal incentives to states that improve ease of doing business, logistics, and labor market reforms.

Infrastructure and Logistics Transformation

Expand multimodal logistics parks (MMLPs) under Gati Shakti to ensure first- and last-mile connectivity.

Digitize infrastructure approvals through a single digital interface integrating GIS-based mapping, land banks, and utility planning.

Introduce infrastructure user charges (tolling, freight subsidies) linked to service quality to ensure sustainability of investments.

Skill Development and Human Capital Integration

Scale apprenticeship programs through mandatory industry participation, targeting sectors with high labor intensity like textiles and electronics.

Establish district-level Centers of Manufacturing Excellence in collaboration with private players to offer modular, on-demand training.

Incentivize reskilling and upskilling through tax credits for firms and income support for trainees.

Boosting MSME Competitiveness and Resilience

Implement differential compliance regimes based on firm size and risk profile to reduce the administrative burden on small units.

Provide matching grants for Industry 4.0 technology adoption in clusters (e.g., IoT sensors, predictive maintenance systems).

Create an MSME Export Portal for product promotion, certification, logistics booking, and export credit—all under a unified dashboard.

Global Value Chain Integration and Trade Strategy

Fast-track comprehensive FTAs with the EU, Canada, and the UK while aligning with origin rules favorable to Indian exporters.

Modernize India's tariff schedule and customs codes to align with World Customs Organization's HS2022 system, reducing disputes and clearance delays.

Develop strategic trade partnerships focused on electronics, green technologies, and defense manufacturing with trusted economies (e.g., Japan, U.S., South Korea).

Green and Sustainable Industrialization

Mandate ESG disclosures for medium and large manufacturers and link PLI payouts to carbon reduction benchmarks.

Facilitate green bonds and blended finance models to fund solar rooftops, battery storage, and wastewater recycling in industrial zones.

Launch a "Sustainable Manufacturing Index" to rank states on green production practices, energy mix, and waste recycling.

Innovation, R&D, and Cluster Modernization

Establish manufacturing innovation hubs near leading universities (e.g., IITs, IISc) focusing on materials science, robotics, and clean tech.

Expand financial support for design-linked manufacturing and product prototyping via SIDBI and National Research Development Corporation (NRDC).

Formalize industry-led cluster councils to facilitate inter-firm collaboration, technology pooling, and international marketing campaigns.

These recommendations aim to align India's industrialization path with global manufacturing trends, investor expectations, and sustainability imperatives.

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11. CONCLUSION

India's ambition to emerge as a global manufacturing leader is both timely and necessary. As the world recalibrates supply chains to favor resilience, geopolitical alignment, and environmental sustainability, India has an opportunity to offer a compelling alternative to overconcentrated production models.

The country already possesses crucial advantages: a massive labor force, rising domestic demand, a growing startup ecosystem, and a reform-minded government. Policies like the Production Linked Incentive scheme, the Gati Shakti Master Plan, and labor code simplification reflect a strategic commitment to industrial growth.

However, as the comparative analysis shows, India must compete with nations that offer leaner governance, tighter supply chains, and faster trade access. Structural barriers—including fragmented infrastructure, skill shortages, judicial inefficiencies, and inconsistent regulatory
implementation—continue to slow industrial momentum.

The way forward requires India to adopt a "whole-of-government" and "whole-of-economy"
approach—one that treats manufacturing not as an isolated sector, but as the cornerstone of job creation, technological advancement, and global integration. By building robust institutions, empowering MSMEs, fostering sustainability, and investing in next-generation infrastructure and skills, India can translate aspiration into achievement.

The next decade is critical. If India successfully delivers on its industrial promise, it could
become not only a resilient alternative to China but a new anchor in the global manufacturing order.

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