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WORKING PAPER

**Manufacturing-led Transformation for  
Realizing India's Development Aspirations  
in the Context of a Fractured Trading System:  
Challenges, Opportunities, and  
Strategic Interventions**

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**October 2023**

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# Manufacturing-led Transformation for Realizing India's Development Aspirations in the Context of a Fractured Trading System: Challenges, Opportunities, and Strategic Interventions

Nagesh Kumar\*

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*[Abstract: India has emerged as the fastest-growing large economy, in the post-pandemic era. What are the prospects of India further accelerating its growth rate and emerging as the next growth pole of the world economy, which would be required to realize India's Vision 2047 of a developed economy? This article explores the key opportunities, prospects and policy priorities for sustaining India's growth momentum in a fractured trading system. It argues that a manufacturing-led transformation is imperative for India to realize its development aspirations of building a developed economy by 2047 and to address the challenge of employment creation and sustainable management of the balance of payments. As global companies restructure their supply chains on China+1 lines, India can potentially leverage its geopolitical and demographic sweet spots to build manufacturing capacities to feed growing domestic and global demand and tap the opportunities presented by the digital and green industrial revolutions. It is concluded with some policy lessons for tapping the opportunities for a manufacturing-led transformation of the country to a developed nation status by 2047.]*

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**Keywords:** Manufacturing Sector, Vision 2047, Globalization, Industrial Policy, Multilateral Trade Rules

## The Context

India has emerged as the fastest-growing large economy, in the post-pandemic era, as many leading economies of the world are facing a slowdown combined with persisting inflationary pressures while many others are reeling under the debt crisis. However,

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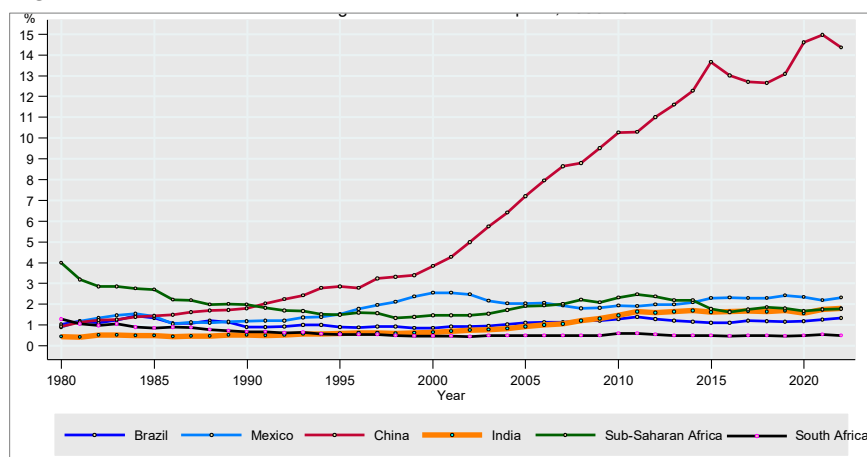
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despite the slowdown, China remains the prime growth pole of the world economy, contributing 35% of global growth in 2023, with India contributing 15%. Can India emerge as the next growth pole of the world economy, leveraging its demographic and geopolitical sweet spots, as China's growth slows down due to its transition into an ageing society? This would be possible by sustaining an accelerated growth momentum. Realizing India's Vision 2047 to become a developed economy also would require sustaining a robust growth momentum for the next two and a half decades. Indian economy needs to grow at around 8% per annum for the next 25 years to realize this aspiration from the current 6-7% per annum. However, sustaining an accelerated growth rate becomes challenging with the external context turning less benign with a rather flat growth of world trade and the rise of protectionism that has turned globalization into 'slowbalization.' The question that this article tries to answer is what are the key opportunities, prospects and policy priorities for sustaining India's growth momentum in a fractured trading system?

## Challenges presented by the Fractured Trading System for India

Firstly, it needs to be recognized that globalization has been a mixed legacy and has had asymmetric gains for different countries. While China increased its share in global exports from 1.79% to 14.36% between 1990 and 2022, other regions of the Global South had much more modest gains: India increased its share from 0.52% to 1.81%; Latin America and the Caribbean from 4.48% to 6.06%, while Sub-Saharan Africa was squeezed out with its share declining from 1.99% to 1.78% over the same period (*Figure 1*). China was able to exploit the opportunities presented by hyper-globalization and capture a greater share of rapidly expanding global trade at the cost of others by quickly enhancing its manufacturing capacity.

**Figure 1: Share of Global Merchandise Exports, India, China and Selected Developing Countries and Region, 1980-2022**

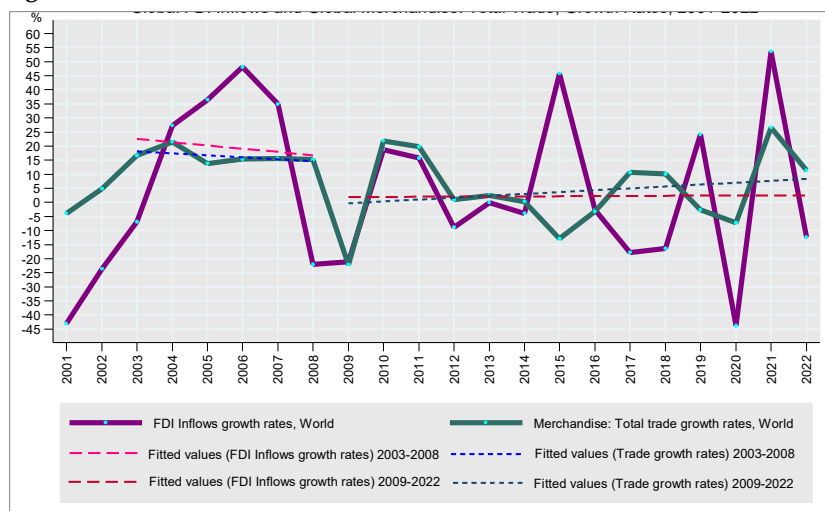


Source: ISID calculations based on World Development Indicators, World Bank, <https://data.worldbank.org>

The huge expansion of China's manufacturing capacity was a result of heavy strategic interventions. As documented extensively in the literature, the Chinese manufacturing prowess was underpinned by undervalued exchange rates, direct subsidies, local content regulations, among other strategic interventions.<sup>1</sup> Furthermore, China has been sustaining growing trade and current account surpluses over the years, sucking the global demand did not help other countries expand exports of manufactured goods to its large and growing market. In contrast, India has been sustaining growing merchandise trade deficits over the years, providing markets to other countries. Hence, the rise of India can be seen as a global public good. In that context, the ongoing decoupling and restructuring of the supply chains of global corporations on China+1 basis, presents an opportunity for India and other countries in the Global South to expand their global footprints.

Even though India hasn't integrated deeply with global value chains or benefited significantly from globalization, slowbalization is bad news for India's economic growth. The slowdown of global trade and investments (as summarized in *Figure 2 and Table 1*) since the Global Financial Crisis of 2008/09 is very dramatic and sharp with average annual growth rates of world trade coming down from 16.41% in the pre-GFC period to 4% in post-GFC period and of FDI flows from nearly 20% to 2.2% respectively. Given the co-movement of India's growth rate and world trade observed in *Figure 3*, India's growth rate is affected by the slowdown. India may be losing an estimated one percentage point of economic growth due to slowbalization. This has implications for policy which should find a way to mitigate the loss of demand in international markets by some kind of augmentation in domestic aggregate demand and through job-creating industrialization. The latter is summarized in the following section.

**Figure 2: Global FDI Inflows and Global Merchandise: Total Trade, Growth Rates, 2001-2022**



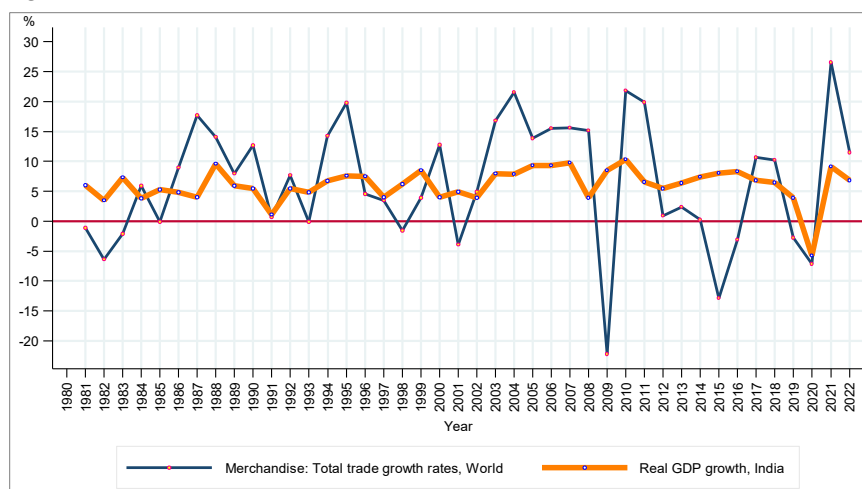
Source: ISID based on UNCTAD STAT and World Investment Report, 2023,  
<https://unctadstat.unctad.org/data>, [https://unctad.org/system/files/official-document/wir2023\\_en.pdf](https://unctad.org/system/files/official-document/wir2023_en.pdf)

<sup>1</sup> Mattoo et al (2012), Subramanian and Kessler (2014)

**Table 1: Average Growth Rates of Global FDI Inflows and Global Merchandise Trade, 2003-2022**

	2003-2008	2009-2022
<b>Global FDI Inflows</b>	19.65	2.22
<b>Global Merchandise: Total Trade</b>	16.40	4.00

Source: ISID based on UNCTAD STAT and World Investment Report, 2023,  
<https://unctadstat.unctad.org/data>, [https://unctad.org/system/files/official-document/wir2023\\_en.pdf](https://unctad.org/system/files/official-document/wir2023_en.pdf)

**Figure 3: Growth Rates of World Merchandize Trade and India's GDP, 1980-2022**

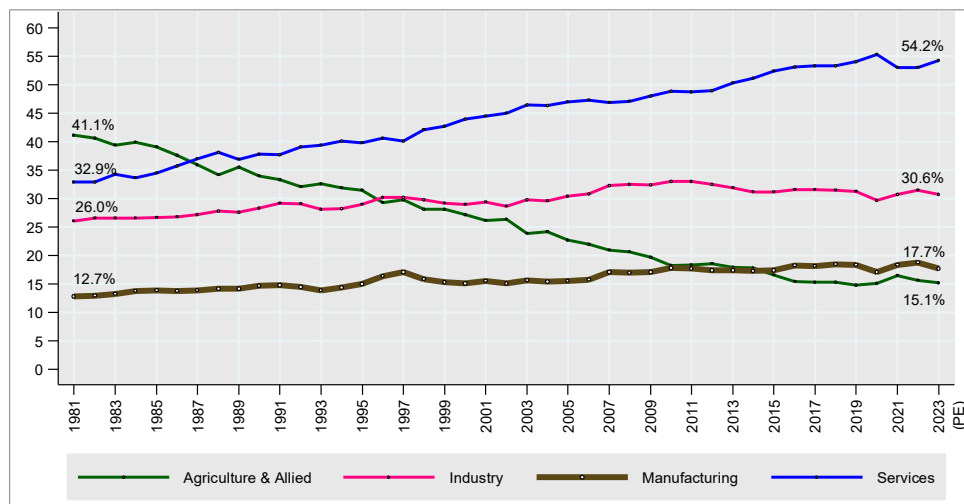
Source: ISID based on UNCTAD STAT and the World Development Indicators.

## Accelerating India's Growth Momentum through Manufacturing-led Transformation

The realization of Vision 2047 of developed country status and a US\$ 5 trillion economy by 2026/7 needs to be underpinned by inclusive and sustainable prosperity for all citizens through the creation of decent job opportunities for India's youthful workforce. The inability to create an adequate number of decent jobs in the past has led to nearly 86% of India's workforce getting locked in the informal sector without adequate social protection and remaining vulnerable to any shocks. The issue of decent job creation is linked with structural transformation associated with economist Arthur Lewis, where workers move over time from low-productivity activities (such as agriculture) to higher-productivity sectors (such as industry and services). India has witnessed the transformation of an agricultural-dominated economy into a services-dominated one by bypassing the industry. While the service sector has delivered robust growth rates, it has not been able to absorb workers especially the unskilled and semi-skilled ones, in a proportionate manner. As a result, agriculture continues to sustain as much as 46% of India's workforce with barely a 15% share of GDP (Figure 4). This services-oriented structural transformation, as it has been termed, has been able to absorb only 26% of the workforce in services. The manufacturing sector has been bypassed with its share in GDP stagnating at around 16-

17% in contrast to an average of 30% in the East Asian countries. Not only has the share of manufacturing stagnated in India, but there is also evidence of some deindustrialization taking place (see Amirapu and Subramanian 2015; Rodrik 2015; Kumar 2018). The neglect of manufacturing to underpin the structural transformation in India has cost the country dearly in terms of creating decent jobs. The manufacturing sector has the highest backward and forward linkages compared to any other productive sector (Figure 5). Hence, it generates more jobs indirectly for every direct job created.

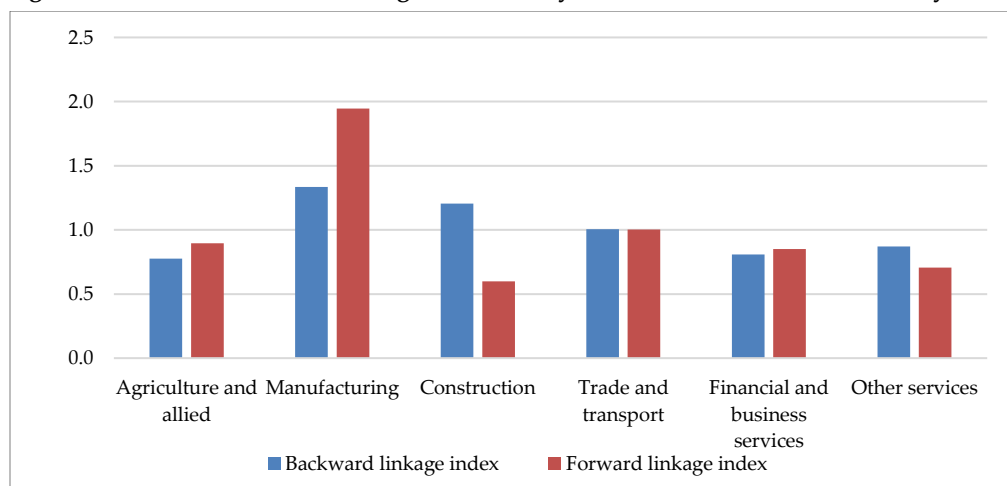
**Figure 4. GDP Share, by Sector, India, 1981-2023**



Notes: 1981: FY1980-1981. 2022-23: Provisional Estimates (PE).

Source: ISID calculations based on National Accounts Statistics.

**Figure 5: Backward and Forward Linkages Generated by Economic Sectors in Indian Economy**



Source: ISID computations based on India's Input-Output Tables



It is for this reason development states across the world promote the manufacturing sector. History corroborates that few countries if at all have attained prosperity without industrialization (Kaldor 1967). Kaldor (1967) has also argued persuasively that the growth of manufacturing not only drives economic growth but also enhances the productivity of the economy overall with increasing returns to scale which could be dynamic in nature. The Agenda 2030 on Sustainable Development adopted at the United Nations Summit in September 2015 comprising 17 Sustainable Development Goals also recognizes the transformative potential of the industrial sector and seeks to enhance its share in employment and GDP (SDG-9.2). By substituting imports or expanding exports, an expanded manufacturing sector could also help to make India's balance of payments (BoP) more sustainable --which tends to periodically get into stress.

Therefore, faster job-creating rapid economic growth through manufacturing-oriented structural transformation, complementing the robust growth of the services sector, is the key to inclusive and sustainable prosperity of India for the realization of its Vision 2047 of a developed country. In that context, the Make-in-India programme announced by Prime Minister Modi in 2014 which seeks to tap the potential of manufacturing for India's development, was timely. It was further reinforced by *Atmanirbhar Bharat Abhiyan* in 2020 as a strategy to pull the economy out of the Covid-19 pandemic comprising a production-linked incentives (PLI) scheme to boost local production in 14 sectors.

### **The 'New Washington Consensus' on Industrial Policy**

In achieving a manufacturing-led economic transformation, India could learn from the experiences of the industrialized and East Asian countries in fostering competitive manufacturing capacities through extensive state interventions. The developmental role of the State in these countries and the aspects of strategic interventions deployed that are collectively called industrial policy have been well documented in the literature (see Nayyar 2019; Kumar 2022b, for a review). After becoming a bad word in the heydays of globalization, industrial policy is back in fashion across the world. Among many trends that the slowbalization and the Covid-pandemic have accentuated is a shift towards a real economy comprising production, jobs, and localization replacing the earlier emphasis on finance, consumerism, and globalization. Rodrik (2022) has termed this trend 'Productivism Paradigm.' Governments around the world are adopting the so-called industrial policies that incentivize domestic manufacturing to create jobs and reshoring of value chains. The New Washington Consensus is not about liberalization and free markets. It is about industrial policy. A widely circulated IMF paper<sup>2</sup> *The Return of the Policy that shall not be named: Principles of Industrial Policy*, issued in 2019, recognized the 'strong commonalities in policies pursued by the Asian Miracles, and one cannot ignore the preeminent role of industrial policy in their development.' Over the past few years, there has been a deluge of evidence and debates on the relevance of industrial policy tools

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<sup>2</sup> Cherif and Hasanov (2019)

employed with varying degrees of success by traditional and late industrialisers (*The Economist* 2022). An extensive new review of evidence and experiences has concluded that ‘there is a generic and powerful economic case for industrial policy and that the usual critiques rely on practical rather principled objections’ and that the debate on industrial policy should be focused not on ‘the whether’ but on ‘the how’ (Juhasz, Lane and Rodrik 2023).

The aggressive manner of adoption in recent times of industrial policy by some of the most advanced economies, is a case in point. For instance, in the US, once the greatest champion of free markets and globalization, the Biden Administration has defined its industrial policy recently with the \$280 billion CHIPS and Science Act, the \$737 billion Inflation Reduction Act, and the \$550 billion Infrastructure Investment and Jobs Act. These Acts will foster local manufacturing and innovation of semiconductors chips, electric mobility, and other new technology products through hundreds of billions of dollars in subsidies and tax breaks. The European Union has followed suit with its own set of incentives and support for local producers. The new ‘Green Deal industrial plan for the net-zero age’ of February 1, 2023, sets out a European approach to boost the EU’s net-zero industry, through measures to improve the competitiveness of the EU’s net-zero industry including the ‘net-zero industry act’ of 16 March 2023, which aims to simplify the regulatory framework for production of key technologies, set targets for EU industrial capacity in 2030. One major outcome of the EU’s climate-focused industrial policy includes the European Battery Alliance, a network to coordinate research and subsidize battery manufacturing across the continent (Siripurapu and Berman 2022). EU is also looking to increase its share of the global semiconductor market and lead the way in quantum computing. Furthermore, the EU in December 2022 decided to impose a Carbon Border Adjustment Mechanism (CBAM), which will initially apply to imports of certain goods and selected precursors whose production is carbon intensive such as cement, iron, steel, aluminium, fertilizers, electricity, and hydrogen. EU importers must pay for emissions by buying CBAM certificates. The policy is set to take effect in 2026, with a transitional phase starting October 1, 2023. The policy is widely seen as unilateral, protectionist and discriminatory adopted to safeguard domestic businesses (Ellie 2023).

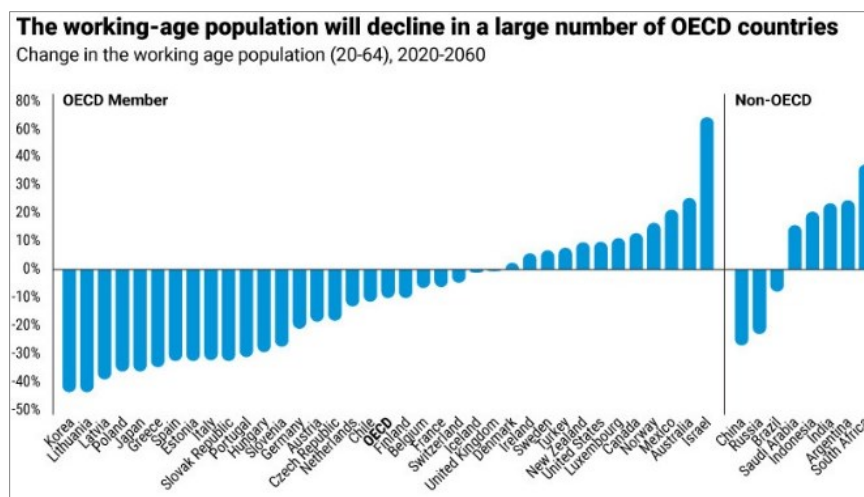
### **India’s Twin Sweet Spots for Manufacturing**

Disruptions in supply chains such as those following the COVID-19 pandemic and the Ukraine War have pushed global corporations to gradually de-risk their supply chains by diversifying them on China+1 basis. The restructured production is being directed to friendly countries, termed friend-shoring. The IR4.0 is also a possible driving factor. In the past, global value chains (GVCs) were outsourced to developing countries to leverage labour cost differences among other locational factors (Kumar 2002). Robotization of production driven by IR4.0 tends to neutralize the labour cost advantage enjoyed by developing countries. The reshoring of global value chains is, therefore, a real possibility and can affect the export prospects of developing countries (Kumar 2023a).

One could argue that India's recent manufacturing push through various industrial policy instruments is a part of the global trend of governments incentivizing domestic manufacturing to create jobs and re-shore value chains. India will be helped by its position as a "geopolitical sweet spot," having friendly relations with key industrial countries in the West and East. This will allow India to benefit from global companies' friend-shoring supply chains to diversify them away from China.

India is also enjoying a "demographic sweet spot" with a relatively young population. The proportion of the working-age population in India will peak at 68.9% around 2030 and will stay favourable for a few decades. This contrasts rapidly ageing populations in most industrialized countries such as Japan and European countries as well as newly industrialized countries such as the Republic of Korea and China (Figure 6). The youthful population also makes it possible for the country to train them in emerging disciplines such as machine learning among other artificial intelligence (AI) tools to harness the emerging IR4.0 technologies for its development besides catering to the global skills requirements, becoming the talent capital for the world (see Kumar 2023a).

**Figure 6: Changing proportions of Working Age Population, 2020-2060**



Source: World Economic Forum, <https://www.weforum.org/agenda/2020/02/ageing-global-population>

## Opportunities for Manufacturing-led Transformation

As India strives to build competitive manufacturing capabilities, an important question would be: What opportunities are available to India in terms of feeding the domestic demand versus external markets and emerging opportunities? Given below are a few pointers for these opportunities.

## 1. Making for India

The biggest opportunity for expanding the country's manufacturing base is by producing for domestic consumption. One should start by reversing the trend of the rising share of imports in final consumption, as Indian companies outsourced production offshore to save costs in the decade following 2004 with an appreciation of the rupee in real terms.<sup>3</sup> Outsourcing has been practised widely by several well-known Indian companies by getting their products manufactured in other countries, mainly China, and then continuing to sell them under their brand names. Outsourcing of production was practised even for several price-sensitive home electrical and electronic appliances (electric fans, toasters, mixer-grinders, juicers, wall clocks, TVs, refrigerators, air-conditioners, etc.) that used to be manufactured in the country for many decades. Reversing this trend of hollowing-out of the Indian industry is the first step towards industrialization.

Then there are other industries with significant import dependence such as power equipment, electronics, a variety of organic and inorganic chemicals and active pharmaceutical ingredients (APIs), that can be manufactured within the country as adequate domestic demand exists. The PLI schemes announced by the Government as a part of the *AatmaNirbhar Bharat* package in 2020 are trying to incentivize domestic production of some of these products. Considering that India's manufactured imports add up to \$370 billion per annum (out of the total imports of around \$750 billion in 2022–23), the substitution of even 50% of the manufactured imports in a gradual manner could enhance the current scale of manufacturing value-added of roughly around \$550 billion per annum by 33%. Therefore, there is considerable potential for strategic import substitution. Growing demand for consumer and capital goods and defence equipment would continue to provide additional opportunities for the local manufacturing base with scale economies. The competitive manufacturing plants exploiting scale economies would also be able to tap opportunities that may arise in the international markets.

## 2. Making for the World or Export-Oriented Manufacturing

Notwithstanding the slowbalization and rising protectionist trends, India is likely to benefit from the strategy of global corporations to de-risk their supply chains by diversifying them on a China+1 basis. This reshoring is likely to help India get integrated with the global and regional value chains. Furthermore, strengthening India's presence in traditional areas such as textiles and clothing, leather goods, gems and jewellery, processed foods, vaccines and generic pharmaceuticals, automobiles and components, refined petroleum products, steel and non-ferrous metals, and some types of machinery and electrical equipment is vital, besides making inroads in new areas and markets. Given India's rather marginal 1.8% share of global merchandise exports, even a very small rise of

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<sup>3</sup> Kumar (2018) for evidence.

0.5% in this share over the next 2–3 years will add US\$ 100 billion to India's exports and possibly US\$150 billion to manufacturing value-added (MVA).

### **3. Sunrise Industries: Electronics & Semiconductors**

The digital revolution also provides fruitful opportunities for fostering manufacturing in India. India can leverage its unique strengths such as its pool of technical manpower, software and chip design capability, and large domestic market to exploit these opportunities. Annual imports of electronics are of the order of \$80 billion and are growing rapidly with projections of \$400 billion of imports by 2025. Emergence of India as the net exporter of mobile handsets since 2022 is an important development with Apple and Samsung assembling their mobile handsets in India in an increasing manner. However, the value addition of the handsets assembled in the country needs to be enhanced. In that context, Chinese vendors of Apple allowed to establish joint ventures to produce components. The recent government initiatives to develop design, manufacture and export semiconductor chips including through US\$ 10 billion Semiconductor Mission to foster manufacture of semiconductor chips and displays leveraging India's leadership in software development and chip design. This has led to some credible investment proposals for semiconductor chips and displays, which, if successful, could transform the whole electronics ecosystem while reducing import dependence. The manufacture of semiconductors in the country will help to catalyse the electronics ecosystem comprising a whole range of downstream products.

### **4. Sunrise Industries: Green Industrialization**

A whole new range of green industries primarily driven by India's ambitious targets of clean energy transition with 50% of energy coming from renewable sources by 2030. These targets are driving the manufacture of green and blue hydrogen, solar panels, and wind turbines. The government is also promoting electric mobility and energy efficiency which is leading to a rising emphasis on the production of electric vehicles (EVs) and two-wheelers. Electric mobility is creating a rising demand for Li-Ion batteries and other storage solutions. All these sectors offer very promising industrialization avenues while also advancing the sustainability agenda. India should aim to become a global hub of compact EVs (including two and three-wheelers) and batteries. The Government has also announced a \$2.3 billion Green Hydrogen Mission to make India a leading manufacturer and exporter of green hydrogen. These new green industries will not only help to create jobs and incomes but also advance India's Net Zero target.

To sum up, translating these opportunities for strategic import substitution, export promotion and digital and green industrialization has the potential to lift India's MVA from the current \$550 billion to \$1 trillion by 2026/7, thus advancing the government's \$5 trillion economy target and creating millions of decent jobs in the process. Manufacturing value added could reach US\$ 7.5 trillion out of the projected GDP of \$30 trillion in 2047.

## Strategic Interventions for Manufacturing-led Transformation: A Policy Agenda

What could be the policy lessons for accelerating growth of the manufacturing sector for decent job creation, complementing robust services sector growth, as an additional engine to power India's transformation towards a developed economy and emergence as a global growth pole? Over the past decade, the government has taken several reforms to tap the potential of the manufacturing sector. Recognizing that manufacturing sector development requires a conducive policy ecosystem or industrial policy, covering promotional measures including incentives, a supportive trade and exchange rate regime, finance and credit, an innovation-friendly intellectual property regime, and supportive physical and social infrastructure, implemented in a strategic and coordinated manner, as summarized below.

*Incentivisation of Manufacturing Investments:* As a part of the Make-in-India programme, the Government has focused on improving the ease of doing business (EODB) in India through the abolition of obsolete regulations and processes that hindered industrial investments. The government has also increased FDI ownership limits in several sectors—such as railways, defence manufacturing, insurance, and medical devices—and created an investment promotion and facilitation agency, *Invest India*. Import tariffs were raised in select sectors to give some infant industry protection. The corporate tax rates were lowered especially for new enterprises. Major reforms such as the Goods and Services Tax (GST) which made India a single market for the first time and the Indian Bankruptcy Code (IBC) which provided a framework for resolution of non-performing assets of the banking sector were introduced. As a result of these steps, India's place in the World Bank's EODB rankings moved up sharply from 142 in 2014 to 63 in 2019 (before the index was abandoned in 2021). India has started to attract greater magnitudes of FDI inflows, which crossed a record figure of \$81 billion in 2021-22 (Kumar 2023b). India has also developed the third largest ecosystem for Start-ups in the world with nearly 100,000 recognized start-ups of which more than 100 have become unicorns.

The make-in-India programme was reinforced in a big manner by the production-linked incentives (PLI) scheme introduced in 2020 as a part of the *Aatmanirbhar Bharat* package announced to revive the economy in the aftermath of the Covid-19 pandemic. The PLI scheme provides a 4-6% incentive to boost local production (or substitute imports) and exports for 14 select sectors. These include sunrise and green manufacturing products, such as solar photovoltaic cells and modules, advanced chemistry batteries, active pharmaceutical ingredients, large-scale electronics, medical devices, speciality steels, and telecom and networking equipment. To create a full ecosystem of electronics, the government launched in 2022 a \$10 billion Semiconductor Mission to foster the manufacture of semiconductor chips and displays. Also in 2022, the government announced a \$2.3 billion Green Hydrogen Mission to make India a leading manufacturer and exporter of green hydrogen.

Given that all the major governments of the world including the US and EU are offering investment incentives to attract investments, incentives of the type that are offered under PLI for a fixed term are desirable to build industrial capacities and help to scale them up. The early results have been encouraging. India has turned into a net exporter of mobile handsets after being a net importer. Monthly exports of India-assembled mobile handsets crossed \$1 billion in September 2022. There are indications that Apple could be sourcing 25% of its handsets from India by 2025, up from under 5-7% at present. Leading Indian energy companies have also committed large investments in the manufacture of green hydrogen. There are also some credible proposals for the manufacture of semiconductor chips and display devices, including by Micron and Foxconn. However, PLI has not been able to attract investment in several other sectors, forcing the Government to review the scheme. It may also be desirable to link the incentives offered under PLI to progressive value-addition rather than just the value of production or sales.

***Pro-active Investment Promotion:*** Investment promotion, especially of FDI inflows should go beyond ease of doing business, marketing and facilitation to proactive targeting which can help to attract investment inflows of better 'quality' than those that enter on their own.<sup>4</sup> Proactive targeting requires the investment promotion agency to have a strong research and analysis department that will help it to identify areas where the size of domestic demand and/ or the country's other advantages/ resources justify localization of production in a competitive manner. It would go on to develop viable investment projects to entice potential global corporations to invest in them including through requests for proposals (RFPs). The RFPs would enable the country to obtain the best terms from rival MNCs in terms of deepening value addition, export promotion, vertical inter-firm linkages and vendor development, and transfer of technology, among others. A case in point is the orders placed for 1200 civilian passenger airliners by Indian carriers in 2022-23 which exceed the combined annual commercial aircraft production of both Airbus and Boeing. India's investment promotion agency could have used this opportunity of having a relatively large domestic demand to invite both Airbus and Boeing to bid for an assembly line of single-aisle jet aircraft to be set up in India, offering them some facilities such as land and incentives but also some performance requirements in terms of value-addition. The assembly of aircraft in the country could unleash an ecosystem for several ancillary units that supply parts to the aircraft makers. The investment promotion agency could also examine how the offset conditions attached to the government procurements can be best exploited by proposing the development of a vendor base, among other possibilities.

***Manufacturing Sector Needs to be Supported by a Specialized Financing Institution:*** Access to affordable credit is critical for industrial development. Hence, in European countries as well as in East Asian countries the governments have intervened to ensure easy access to affordable credit to foster industrialisation, as is clear from experiences of Germany with KfW, Brazil with BNDES, South Korea with KDB, and China with CDB. In

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<sup>4</sup> See Kumar (2002) for a discussion of quality of FDI and its dimensions.

India too, a trinity of development financing institutions, namely, the Industrial Finance Corporation of India, the Industrial Development Bank of India, and the Industrial Credit and Investment Corporation of India played an important role in providing term-lending to the industry till 2001 when they were made to convert themselves into commercial banks as a part of financial sector reforms (See Nayyar 2015, Kumar 2017). Thus, since the turn of the century, industrial credit has been primarily catered to by commercial banks especially the public sector banks for both long- and short-term investment needs. The corporate bond market which plays an important role as a source of long-term finance to industry worldwide, has failed to develop in India despite decades of reforms and lacks depth and scale. After the initial spurt in the 1990s, the importance of the stock market as a source of capital also declined. Enterprise surveys do corroborate that finance for investment is a constraint faced by them, especially for small and medium-scale firms forcing an overwhelming proportion (70-75%) of them to rely on internal sources. Commercial Banks remain ill-equipped for term lending due to asset-liability mismatches and lack of technical expertise.

As observed earlier, India's 2047 Vision requires it to grow around 8% p.a. which would require the manufacturing sector to grow at around 9-10% p.a. for the next 25 years. To catalyse staggering investments in the manufacturing sector needed for sustaining accelerated growth, ISID (2023) has proposed the creation of a new DFI for the industrial sector namely, the *National Industrial Development Bank of India* (NIDBI), besides strengthening the corporate bond market. The creation of NIDBI will help drive industrialization by addressing the gaps in the existing industrial financing system in tune with national priorities. It could also develop specialized expertise in project appraisal, risk management, and impact assessment, and keep track of emerging developments globally and responses needed at the national level.

***Address the vulnerability of MSMEs:*** Contributing nearly a third of India's GDP, MSMEs have been an important engine of economic growth. However, MSMEs face several constraints and remain vulnerable to shocks given their small scale of operation, weak financial status and unorganized nature. MSMEs have been affected by the liberalization of India's trade policy since 1991, particularly after the removal of quantitative restrictions in 2000-01. The sharp rise in the import penetration of several consumer goods including handicrafts among other labour-intensive goods generally produced by MSMEs may have affected their growth prospects. An ISID study found that consumer durables/non-durables predominantly accounted for the major surge in imports leading to the share of consumer goods imports in total imports of India rising from 11.7% in 1996-97 to almost 19% in 2019-20.<sup>5</sup> Organized retail and e-commerce companies have become an important conduit of imported goods in the consumer goods space as corroborated by the import figures of single-brand as well as multi-brand retailers. Although India has frequently deployed safeguards against import surge provided under the WTO Agreement on

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<sup>5</sup> Arun Kumar (2023)



Safeguards and the WTO Agreement on Anti-Dumping, MSMEs may have been handicapped in seeking government intervention being unorganized and lacking strong lobbying ability. Besides promoting and adopting sector-specific policies such as those adopted for toys and games that have brought about desired results over the past couple of years, it is also important to harness the potential of the organized retail sector. The marketing power of organized retail and e-commerce players may be leveraged by imposing a performance requirement on them to develop their local vendor base among MSMEs for exports commensurate with their imports of consumer goods. This would also help Indian MSMEs integrate with global value chains.

***Innovative activity of enterprises needs to be strengthened:*** India has moved up the global innovation rankings from 81 in 2015 to 40 by 2022. Thanks to its leadership in ICT software, India's AI preparedness is considered to be relatively high. India has also emerged as an important base for R&D by MNEs hosting 1600 global capability centres (GCCs). However, at 0.7% of GDP (although possibly an underestimate), India's R&D expenditure is rather low compared to other emerging countries. Furthermore, only 39% of this expenditure is undertaken by the industry and the bulk is spent by the public-funded national research laboratories. Indian industry needs to scale up R&D activity sharply if it is to emerge as a significant player as a manufacturing hub and to leverage new technologies such as artificial intelligence and machine learning (AI/ML). In that context, the establishment of the National Research Foundation (NRF) is an important initiative, which could hopefully power the innovative activity of Indian enterprises. The government could also consider restoring weighted deductions for R&D expenditure by companies, especially for incremental R&D intensity. India can also consider adopting a second-tier patent system viz. Utility Models or Petty Patents that provide limited protection for incremental innovations. East Asian countries have extensively used Utility Models to foster incremental innovations. Utility Models may particularly encourage innovative activity of MSMEs that is of a generally incremental nature.

***Closing Gaps in Industrial Infrastructure and Logistics:*** The Indian Government is implementing an ambitious plan of logistics infrastructure and industrial corridors to obviate infrastructure constraints as well as to provide efficient logistics infrastructure to facilitate industrialization. This includes the National Industrial Corridor Programme covering include Multi-Modal Transport Network – Railways, Highways, Expressways, Waterways, Airports, and Ports; Logistic/Transshipment Hubs; Industrial Cities/Townships and Urban Infrastructure sometimes termed as FIRE Corridors (Freight, Industrial, Railways and Expressways). There are 11 industrial corridors underway covering the length and breadth of the country. The first one, Delhi Mumbai Industrial Corridor (DMIC) is the most advanced in terms of implementation. The programme is now a part of the \$1.2 trillion National Master Plan for Multi-modal Connectivity launched in 2021. However, the corridor development has been slow having been affected due to many constraints such as land acquisition, the environment/forest clearances, legal disputes, delayed construction by some States, Covid-19 pandemic-related lockdowns, and by poor

coordination within and between States. Coastal Economic Zones and Ports-led development also have important potential. Around 95% of India's trade by volume and 70% by value passes through ports. Areas in and around ports are attractive industrial locations given their easier access to global markets. This explains the higher concentration of investments and industrial agglomeration in the coastal regions. The Government of India under the Sagarmala Perspective Plan has identified 14 areas to be developed as Coastal Economic Zones. It has also identified 30 potential clusters to be developed in these zones including power generation, refineries and petrochemicals, cement, electronics, apparel, leather, furniture, and food processing. As many as 240 of the 377 SEZs are also located in coastal states. The ongoing initiatives have helped improve India's place in the World Bank's Logistics Performance Index by 6 places to 38 out of 139 countries in 2023.

***Making India's Education System and Skill Development Fit-for-Purpose:*** The availability of skills is a critical ingredient for success in industry. India needs to completely revamp the educational system to produce the type of skills that are needed including for the incipient digital revolution. The government is also paying attention to skill development through the Skill-India Mission. The National Skill Development Corporation is approaching the skill gaps by expanding public-private collaboration, initiating pathways for international mobility, and increasing women's participation in the labour force. Given the growing scarcity of skills that are fit-for-purpose for AI/ML, the industry is learning to reinvent strategies for recruitment, training, and retention of talent.<sup>6</sup> The government is also paying attention to skill development through the Skill India mission. The National Skill Development Corporation is approaching the skill gaps by expanding public-private collaboration, initiating pathways for international mobility, and increasing women's participation in the labour force. This would include revamping secondary and higher education to design thinking and problem-solving and introducing coding in schools, besides improving the quality of education at all levels. The seats in secondary schools, colleges, and higher education institutions need to be rebalanced in favour of Science, Technology, Engineering and Mathematics (STEM) vis-à-vis traditional humanities and arts disciplines. Even within IITs and other engineering institutions, there is a need to rebalance the seats in favour of computer science, AI, data science, machine learning, and algorithm-related courses against traditional engineering disciplines such as civil, mechanical or chemical engineering.

The National Education Policy (NEP) 2020 emphasizes multidisciplinary education, vocationalization, STEM, and strengthening technical education with a focus on cutting-edge areas like AI, big data analysis, and machine learning, among others that would be critical for harnessing IR40. It also envisages Digital Universities that would enable

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<sup>6</sup> See for instance, <https://www.livemint.com/technology/tech-news/indian-it-cos-struggle-to-fill-digital-skills-gap-11626025655102.html>; <https://economictimes.indiatimes.com/tech/information-tech/inside-the-war-for-tech-talent-in-india/articleshow/88677638.cms>; <https://economictimes.indiatimes.com/tech/information-tech/it-firms-battle-attrition-with-tech/articleshow/90742792.cms>

students to design a more personalized and flexible education. It also recognizes the need to avoid the commercialization of education and the importance of providing affordable quality education. These changes will help the Indian education system produce graduates who would be needed rather than those who cannot find a job. A big expansion in the public-funded education and training sector through raising the national education spending to the recommended 6% and above, from the current level of 4.4%, to provide affordable, quality education in the emerging AI/ML-related fields through a reformed education and skill development framework would pay rich dividends to the country in terms of harnessing the potential of IR4.0 for its own inclusive development. This could help the country become the skill capital of the world.

***Exchange Rate Management:*** Exchange rate management has been an important industrial policy tool. East Asian countries have widely used managed exchange rates as a tool for fostering industrialization. Japan has extensively used the depreciated exchange rate of the yen to boost the competitiveness of its exports until the Plaza Accord of 1985. In the early years of industrialization, the Republic of Korea (ROK) rationed foreign exchange, giving priority to importers of capital goods and intermediate inputs (Chang and Zach 2019:203). The Chinese government adopted initially a dual-track exchange rate system, allowing the market-determined exchange rate to operate parallel with the overvalued official exchange rate, and the dual-track system converged to a managed floating system in 1994, followed by a hard peg during 1995-2005, allowing the exchange rate of yuan to move within a narrow band since 2005 (Lin 2019). The Indian rupee, on the other hand, has tended to appreciate in real terms over the years especially after 2004 despite the country consistently running current account deficits, due to significant short-term capital inflows. The rupee appreciation has led to the erosion of the competitiveness of Indian products thus encouraging the outsourcing of production by Indian companies for even their domestic markets (Kumar 2018). As a part of industrial policy, therefore, the RBI should be required to maintain a competitive and slightly depreciating exchange rate of rupee in real terms and vis-à-vis the major competitors in the export markets.

***Augmenting Aggregate Demand through Income Transfers:*** Generally industrial policy focuses on easing the supply-side constraints on industrialization. However, the demand side should not be overlooked. As earlier observed above, the slowdown of world trade and rising protectionism in the global economy, a phenomenon referred to as slowbalization has affected the growth rate of the Indian economy by an estimated one percentage point by reducing the demand for goods and services exported by India. The slowbalization is likely to be intensified with the threat of recession and stagflation looming large in the industrialized countries. In that context, some kind of augmentation of aggregate demand would be critical for sustaining robust growth rates of GDP in general and manufacturing in particular. To mitigate the loss of demand in the international markets, the Government may consider an income support scheme for the bottom 30% of the population. Besides stimulating economic growth and demand for manufactured products, such a scheme could also help to make a dent in the rising

inequalities and persisting poverty, as recognized by the NITI Aayog (2023) (also see Kumar 2022a). The digital infrastructure to implement such a scheme is already in place. Income transfers under UBI can also be linked to some other social objectives, for example, by making it conditional to putting girls in school. The fiscal sustainability of this needs to be worked out but as it would do away with several social welfare schemes run by the Government, releasing resources that could be channelled into the new scheme. It is arguable that compared to free rations for the 800 million people that the Government is currently providing since the Covid pandemic, the bottom 400 million being provided with a combination of rations and income support (conditional cash transfers) would have a greater impact in terms of augmenting demand.

***Supportive Regional and Multilateral Trade Rules:*** India's opportunity to get integrated with the supply chains of global companies will be facilitated by its participation in a broader regional trading arrangement. Although India has free trade arrangements with key regional players such as Japan, the Republic of Korea, the ASEAN, and Australia, its inability to be a part of a regional agreement with cumulative rules of origin may affect its attractiveness for value chain integration adversely. From that point of view, India should consider joining either the Regional Comprehensive Economic Partnership of East Asia (RCEP), or the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), or the incipient trade agreement under the Indo-Pacific Economic Framework (IPEF). Among the three options, the terms of joining RCEP may be less onerous compared to the other two because of their coverage of non-trade issues that may undermine India's development policy space. India has participated in the negotiations of RCEP throughout and may be able to negotiate a long transition or exceptions to protect its vulnerable sectors. Being part of the regional arrangement would certainly be an advantage.

Finally, in the context of G20 and international cooperation, there is a need to retrieve some of the policy space for pursuing industrialization and access to environmentally sound technologies. It may be helpful to have flexibility to deploy some performance requirements such as domestic content requirements (DCRs) which have been used extensively by the industrialized countries in the West as well as in the East but were withdrawn under the WTO's TRIMs Agreement. India's use of DCRs for solar PVs was successfully challenged in WTO in 2015-16. However, in 2022, President Biden of the US has authorized the use of the Defence Production Act and super preferences under the Buy America Act including DCRs among other actions to spur local manufacturing of solar power equipment. Hence, India should develop a consensus in G20 and other forums regarding policy flexibility to deploy the use of DCRs for building its renewable energy equipment industry through a 'peace clause.' Similarly, there is a need to facilitate access to environmental technology by extending the patent waiver for such technologies following the precedence of TRIPs and Public Health adopted in 2003 which has helped to address the global AIDS challenge. India could also seek to define the provisions for the transfer of technology under Article 66.2 of the TRIPs Agreement, which has remained the best endeavour clause in the absence of detailed provisions.

*A Coordinated and Dynamic Approach to Industrial Policy:* A key lesson from the experiences of the East Asian countries is the criticality of pursuing different elements of industrial policy such as investment facilitation, trade policy, innovation policy, exchange rate management, financing and credit in a coordinated manner. Unless coordinated to reinforce each other, these strategic interventions may neutralize each other. For instance, the effectiveness of raising tariffs to provide infant industry protection to local production can be neutralized by the appreciation of real exchange rates, as it has often done in India's case. To ensure that all different elements of industrial policy are coordinated, it is important to have a high-powered industrial policy secretariat with powers to call upon different arms of the government to come together at a single platform and coordinate their actions. To be effective, such an industrial policy secretariat should be operating from the Prime Minister's Office to enjoy effective convening power over different offices and line ministries and departments that deal with different sectors including steel, electronics, textiles, chemicals and fertilizers, pharmaceuticals, oil and natural gas, heavy industries, defence production, commerce and industry, MSMEs, science & technology, financial services, economic affairs, finance and RBI.

In the East Asian countries, the industrial policy was also adapted over time to the changing requirements. ROK initially focussed on labour-intensive products (toys, textiles and garments, shoes) in the 1960s, started heavy and chemical industries in the early 1970s, as wage costs started to rise, to stay competitive and moved on beyond the 1980s to focus on emerging industries such as automobiles and electronics. Similarly, China upgraded its export structure from simple toys, textiles and other cheap products in the 1980s and 1990s to high-value, technologically advanced machinery and ICT (information and communication technology) products in the 2000s (Lin 2019).

## **Concluding Remarks**

The foregoing analysis has shown that a manufacturing-led transformation is imperative for India to realize its development aspirations of building a developed economy by 2047 and to address the challenge of employment creation and sustainable management of the balance of payments. Industrial policy and emphasis on the real economy is a global trend in the context of slowbalization, rising protectionism and fractured trading system. As global companies restructure their supply chains on China+1 lines, India can potentially leverage its geopolitical and demographic sweet spots to build manufacturing capacities to feed growing domestic and global demand and tap the opportunities presented by the digital and green industrial revolutions. To tap these opportunities, a strategic approach is needed to harness the potential of manufacturing, for which many useful lessons are available from the experiences of East Asian countries. In that context, India should build on PLI to a more proactive targeting approach to investment promotion that would help to attract better quality investments meeting its development needs. The manufacturing-led transformation would also need to be supported by a specialized term-lending

institution, by competitive management of exchange rates, efficient physical infrastructure and logistics facilities. A fit-for-purpose educational and skill development system can not only feed the domestic requirements of skilled manpower but also has the potential to make the country a talent hub for the world in the context of ageing societies and the rise of Industry 4.0. The innovative activity of Indian enterprises has to rise sharply to enhance their competitiveness in international and domestic markets. MSMEs need to be integrated with the value chains of organized retail through performance requirements. Some augmentation of aggregate demand through conditional income transfers to the bottom 30% of the population could also help in addressing the rising income inequalities in the country. India also needs to make the regional and global trade rules supportive of its ambitious manufacturing-led transformation. Finally, to be effective, the different elements of industrial policy as outlined above need to be pursued in a coordinated manner. This would require a high-powered institutional architecture for a coordinated implementation of industrial policy.

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