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**Make in India:  
So Far and Going Ahead**

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## Abstract

In 2014, the government changed in India and Narendra Modi became the Prime Minister. Since then a number of steps have been initiated by the government over the last eight years. One of the key steps has the efforts to increase the role and scale of manufacturing in India. This led to the Make in India initiative that was taken up towards the later part of 2014. A second round Make in India 2.0 to give a further boost came a few years later. However the pandemic hit in 2020. This impacted the manufacturing sector in a major way, primarily through the shortage of supplies of parts, components and raw materials. This led to the realization of becoming self-sufficient and the start of the Production Linked Incentive (PLI) schemes which are expected to boost manufacturing tremendously leading towards the aim of having manufacturing contributing about 25% of the GDP and the PLI schemes alone creating about 1 crore extra jobs.

In this report we trace the history of various actions taken by various Indian governments starting from Independence and then study the various steps that have been taken since 2014. We start with a chapter that contains all the actions since Indian Independence (1947) till 2014 and identify the challenges faced by these interventions. We then move to a chapter on Make in India, identifying the need for the same, the steps taken and the expectations from the same. We then identify the need for the PLI schemes and the next chapter describes the PLI schemes, some challenges expected in implementing the same and summarize by identifying that pure manufacturing supporting incentive schemes would not be sufficient. This leads to the next chapter on Linked Ecosystem Development where we identify and briefly describe various schemes that have been undertaken to support the growth of manufacturing like skill development, labor laws, ease of business measures, ease of investment, etc. In our final chapter, we end by summarizing some next steps that can be considered for undertaking towards making Make in India a success and some key metrics that may be followed to track its success.

While a tremendous effort, the Make in India initiative has been a continuously learning effort where all parts seem to be in consonance right now: PLI and the manufacturing-allied ecosystem development. While GDP growth and job creation appear to be immediate aims of this initiative, along with *atmanirbhartha*, we believe that as manufacturing increases in India, this will open up the opportunities for more investment in Research and Development (R&D) and this will lead to creation of more and more global products from India. As PLI stabilizes, suitable schemes to support R&D will then have to be developed. A key research initiative would be the development of indigenous raw materials to replace imports. Beyond the increase of manufacturing's contribution to GDP, enhanced tax receipts and new job creations, we look at the creation of, in the long term, comprehensive ecosystems in each of these sectors overlaying ideation, design, development and manufacturing. This would lead to the growth in creation of Indian origin products that will flourish globally.

Keywords: Make in India, manufacturing, manufacturing policy, ecosystem development

## Evolution of Manufacturing Policies

In this report we seek to explore the actions taken by the Government under the Make in India approach. It will look to understand the importance and impact of this effort in a changing economic environment. As a precursor to the same it is important to understand the various policies undertaken in India over the years, with their respective key objectives, impact, and limitations to understand the current regulatory environment, and the state of manufacturing sector.

Manufacturing sector in India went through different phases of regulations and development. The presence of poverty and unemployment before independence led to the planning for economic development of free India through industrialization. Post-independence, domestic manufacturing sector experienced Industrial foundation in 1950s, license-permit Raj between 1965-1980, liberalization in 1990s and to the current phase of global competitiveness ([Confederation of Indian Industry](#)). The Indian government came up with various plans and policies which started with emphasis on improving per capita income and need for public investment in Bombay Plan (1944) followed by Industry Policy Resolution (1948) which was built on the Bombay Plan, where the government followed a mixed economy model and created two sectors- the public sector and the private sector. During this time, the planning commission was not in place therefore, the Industrial policy resolution was broad in scope ([Goel and Bali, 2013](#)). In the subsequent years, the government of India setup the planning commission which formulated the five-year plans through which we can understand the focus areas of development from 1950-2014. Further, the Industrial Policy Resolution evolved over years starting with Industry Policy Resolution (1948) to New Industrial Policy (1991) and these policies considered aspects such as protection of infant industries, recognition of important industries which can have a multiplier effect and eventually, took the initial steps towards understanding the synergies present in the industrial ecosystem. In addition to the industrial policies discussed so far, there were other reforms in place such as Small-Scale Industrial Policy (1967), Monopoly and Restrictive Trade Practices Act (1969), Foreign Exchange Regulation Act (1973), Industries Disputes Act and Amendments (1947, 1976, 1982), Export-Import Policy (1992-1997; 1997-2002).

Post 1991, with liberalization, privatization, and globalization and with an end to license raj, the Indian markets were open to global competition. Further, the reforms encouraged MSMEs in the country. In the years ahead, National Strategy for Manufacturing (2006) focused on manufacturing competitiveness followed by National Manufacturing Policy (2011) which considered the improvement of industrial ecosystem as a significant step for the growth of the economy, and accordingly formulated the policy.

In this section, we briefly discuss the background of manufacturing policies starting with Bombay Plan and its key objectives.

### **Bombay Plan (1944)**

In the year 1944, a group of Industrialists prepared a plan for the economic development of India. The main objective of this plan was to achieve balanced economy and to achieve standard of living of the population by improving the per capita income. The plan intended to achieve this by altering the proportions in which agriculture, industry and services contribute to the national income. Further, it highlighted the importance of basic industries while considering the development of consumption goods industries. The basic industries to be developed as mentioned were power followed by mining and metallurgy, engineering,

chemicals, armaments, transport, cement, and others. Although industry wise objectives were not clear, the development of small-scale and cottage industries, transport and communication industry was considered important. Doubling the then total of 3,00,000 miles of roads and increasing railway mileage by 50% by then value of 41,000 miles were some of the schemes proposed ([Lokanathan](#)).

### Industrial Policy Resolution (1948)

The first comprehensive industrial policy was announced on 6 April, 1948. The government announced the Mixed Economy model through the industrial policy resolution while it considered a role of an active agent for itself ([Prasad](#)). The industries were classified into four categories: public sector, public-cum-private sector, controlled private sector, and private and cooperative sector. Further, the resolution also emphasized the importance of small and cottage industries and importance of foreign capital (if there is no harm) in the rapid industrialization of the country ([Prasad](#)). The objectives of the Industrial Policy Resolution were:

1. *To establish a social order of justice and equality of opportunity for all people*
2. *To promote a rapid rise in standards of people by exploiting latent resources of the country*
3. *To increase production*
4. *To offer opportunity to all for employment in the service of the community*

### Planning Commission (1950)

The Planning Commission was set up in the year 1950 and its main function was to “*assess and allocate plan resources, formulate plans and programs for area development, determine implementation methodology, identify resource constraints and appraise & adjust implementation*” ([Press Information Bureau](#), “Planning Commission to NITI Aayog”). During the period 1950- 2014, the planning commission formulated the following five-year plans. The five-year plans are centralized programmes focused on economic and social growth ([Mint](#)).

Five Year Plan	Period	Focus ( <a href="#">Press Information Bureau</a> , “Planning Commission to NITI Aayog”; <a href="#">Mint</a> ; <a href="#">National Resource Cell for Decentralized District planning (NRCDDP)</a> )
First Five-Year Plan	1950-1955	Agriculture and Irrigation <i>To achieve economic growth through higher savings and investments (Harrod-Domar model)</i>
Second Five Year Plan	1956-1961	Heavy industries and capital goods <i>To achieve rapid industrialization and focus on swadeshi or self-reliance (Mahalanobis model)</i>
Third Five Year Plan	1961-1966	Emphasis on exports
Fourth Five Year Plan	1969-1974	Agricultural development
Fifth Five Year Plan	1974-1979	Social sector spending, increasing employment, reducing poverty, attaining self-reliance
Sixth Five Year Plan	1980-1985	Infrastructure, speedy industrialization, technological self-reliance



Seventh Five Year Plan	1986-1991	Infrastructure, economic productivity, Production of food grains, generating employment
Eighth Five Year Plan	1992-1998	<i>“Improvement in the levels of living, health and education of the people, total employment, elimination of poverty and a planned growth in population”.</i>
Ninth Five Year Plan	1997-2002	<i>Growth with social justice and equity with involvement of people in the participatory planning process</i>
Tenth Five Year Plan	2002-2007	Targets GDP growth rate of 8% p.a. <i>Make the nation globally competent.</i> <i>“Providing adequate work opportunities, removing regional imbalances, improving quality of governance, integrating disaster management, providing information on schemes and programme of the Ministries and ensuring sectoral investments”.</i>
Eleventh Five Year Plan	2007-2012	To achieve a growth rate of 9% p.a. for the planning period. <i>Accelerate growth while making it inclusive.</i> Focus on income and poverty, education, health, women and children, infrastructure, and environment.
Twelfth Five Year Plan (Last Five-Year Plan)	2012-2017	To achieve an average annual economic growth rate of 8.2%. Focus on infrastructure, health, and education.

Table 1: Planning Commission Five Year Plans

## Industries Development and Regulation Act (1951)

Industries Development and Regulation Act (IDRA) was introduced to implement the Industrial Policy Resolution (1948) to control and regulate industrial development in the country ([e-PG Pathshala](#), “Sectoral Growth in India”). The Act provided Central government the control in terms of regulation and development of industrial activities. Further, the Act provided a provision to constitute Central Advisory Council (CAC) and a prior consultation with CAC was required before the Central government could take actions such as revocation of a license or taking over control of an industrial concern ([GoI](#), “The Industries (Development and Regulation) Act, 1951”). The three main objectives of the Industries and Development and Regulation Act were:

1. *To implement the Industrial Policy*
2. *Regulation and Development of scheduled industries*
3. *Planning and future development of New Undertakings (A system of licensing introduced)*

## First and Second Five Year Plans; and the Industrial Policy Resolution (1956)

The First Five Year Plan was announced in 1952 with an outlay of Rs. 2069 crores over the period 1951-1956. In this plan, agriculture development was the highest priority along with irrigation projects and power receiving importance. Production and distribution of electricity was considered as a priority considering its linkages with agriculture, irrigation projects, small scale enterprises, and industry expansion. The plan further highlighted the importance of linking the entire country through modes of transportation specially by road, shipping, and aviation. Agricultural initiatives and basic services such as transportation

related investments was discussed from a public sector point of view. Industrial expansion was said to rely on private initiatives that are supplemented by public sector and through foreign investments ([Planning Commission](#)).

The Second Five Year Plan (also known as Mahalanobis plan) was announced in 1956 with a focus on industrialization. For a long-term growth, the second five-year plan focused on developing heavy industry and capital goods through resource allocation ideas. Of Rs. 4672 crores on public spending, India noticed a shift from spending on agriculture to spending on industry with large and medium sized industries receiving maximum share ([Bhat](#)).

With parliament adopting the socialistic pattern of economy in 1954 and with goal of increasing the activity of state or public sector in industry activity and thus, giving lesser control to private firms, Industrial Policy Resolution was announced in 1956 ([Felipe et al.](#); [GoI](#), “Industrial Policy Highlights 2009”). The key objectives of IPR (1956) were:

1. *To accelerate economic growth and boost process of industrialization*
2. *To expand public sector*
3. *To develop heavy industries and machine making industries*
4. *To expand role of cottage and small-scale industries*
5. *To provide adequate incentives to workers and improve their working conditions*
6. *To improve the inflow of foreign capital*
7. *To reduce disparities in income and wealth and the removal of regional disparities*
8. *To prevent monopolies and concentration of wealth in the hands of small number of individuals*

The policy laid down three categories of industries:

1. *Schedule A: These industries are exclusive responsibility of the State*
2. *Schedule B: These industries are progressively state owned, and State will take the initiative of establishing new undertakings and private enterprises supplement the efforts of state*
3. *Schedule C: All remaining industries left the initiative and enterprise of private sector*

### **Small- Scale Industry Policy (1967)**

In 1954, Government of India set up an advisory board for the development of small-scale industries and in 1955, the board defined small scale units “as a unit employing less than 50 employees if using power and less than 100 employees if not using power and with a capital asset not exceeding Rs. 5 lakhs”. Later in 1960, the number of employees condition was dropped thus improving the scope of employment and rest of the definition of small-scale industries remains the same ([Sen and Ray](#)).

Small Scale sector was believed to be an employment intensive sector and thus, received attention in Indian industries. The objective of the Small-Scale Industry Policy (1967) was to *improve competitiveness by providing “Protection to small-scale enterprises from foreign and local competition”*. To achieve this the policy of reservation for exclusive manufacture in small scale industries was initiated with 47 items. This restriction allowed only the small-scale industries to produce these items and no capacity expansion was allowed for the medium and large-scale industries although they could produce ([Felipe et al.](#)). It is discussed that the policy of reservation was not helpful for growth of Indian exports since production was limited by capacity constraints caused by reservations in small scale industries ([Mohan](#), “Small-Scale Industrial Policy in India”).

## **Monopoly and Restrictive Trade Practices Act (1969)**

Government of India in 1964 appointed a Monopolies inquiry commission to investigate the extent and effect of concentration of economic power in private hands. In 1967, Government decided to have some steps in place to ensure that there is no harm done due to the concentration of economic power in private hands. In this direction, the Monopoly and Restrictive Trade Practices Bill was introduced in 1967 which later was announced as an act in 1969. The bill had the following main provisions:

1. *Regulating expansions, mergers, amalgamations, and appointments of directors in respect of dominant undertakings*
2. *Regulation of new undertakings*
3. *Control and provision of monopolistic and restrictive trade practices*

## **Foreign Exchange Regulation Act (1973)**

Foreign Exchange Regulation is an act that consolidates and amends the law regarding:

1. *Regulating certain payments, dealing in foreign exchange and securities*
2. *Transactions indirectly affecting foreign exchange*
3. *Import and export of currency*
4. *Conservation and proper utilization of foreign exchange resources of the country in the interest of economic development*

Further, the acts related to Foreign Exchange Regulation and Monopoly and Restrictive Trade Practices restricted large business houses on expansion and foreign collaboration and investment.

## **Industries Disputes Act and Amendments (1947, 1976, 1982)**

The Industries Disputes act (IDA), 1947 dealt with provisions for investigations, settlement of industrial disputes, role of government in prescribing compensation and specifying notice period served by employers. Through an amendment to IDA 1947, government laid provisions in 1976 addressing layoffs such that it is mandatory for firms employing 300 or more workers to obtain permission from government to initiate layoffs, retrenchments, and closures. In 1982, government reduced the threshold to 100 workers from the existing 300 or more workers to obtain permission to initiate layoff, retrenchments, and closures ([Krishna Roy and Dubey](#)).

## **Industrial Policy (1977, 1980)**

To overcome the limitations of Industrial Policy Resolution (1956), the government of India announced the Industrial Policy in 1977 ([GoI](#), “Industrial Policy Highlights 2009”). The key provisions of Industrial Policy (1977) were:

1. *Closer interaction between agriculture and industrial sectors*
2. *Priority to generation and transmission of power*
3. *Exhaustive analysis of products suitable for production with respect to small scale sector*

4. *Identification of industries for large scale sector*
5. *Set up of District Industries Centre to provide services required by village entrepreneurs*
6. *An approach in place for foreign collaborations*
7. *Focus on balanced regional development*

Industrial Policy (1980) was based on the Industrial Policy (1956), and it marked the change in mindset towards foreign capital. The key objectives of the Industrial Policy (1980) were ([GoI](#), “Industrial Policy Highlights 2009”):

1. *Optimum utilization of installed capacity*
2. *Correction of regional imbalances*
3. *Promotion of export-oriented industries*
4. *Achieving higher productivity*
5. *Higher employment generation*
6. *Strengthening of the agricultural base through agro-based industries and promotion of optimum inter-sectoral relationship.*
7. *Equitable spread of investments through promotion of economic federalism*

### **New Industrial Policy (1991)**

High fiscal deficit during the 80s and the Gulf crisis which led to the payment crisis in the country, demanded a shift in the reforms addressing the structural rigidities in 1991 ([Reddy](#)). The focus of New Industrial policy in 1991 was to attract foreign investments and improving the regulatory environment in India. Through New Industrial Policy, the government wanted to accelerate industrial growth by improving industrial efficiency. The objectives of the New Industry Policy are:

1. *Promote economic growth*
2. *Emphasis on privatization, globalization, and liberalization*
3. *Abolition of industrial licensing*
4. *Relaxation on FDI rules*

Industrial licensing is abolished for all except 18 industries. These limited number of industries are related to security and strategic concerns, social reasons, hazardous chemicals, environmental reasons, and luxury consumption goods. Further, direct foreign investment up to 51% equity in highly important industries is permitted (J C Sandesara).

### **Export-Import Policy (1992-1997; 1997-2002)**

To view India as a globally oriented economy, the focus of Export-Import Policy (1992-1997) is on liberalization, privatization and globalization while promoting free trade. The main objectives of this policy are:

1. *To strengthen the base for export production*
2. *To facilitate technological production*
3. *To reduce imports to conserve foreign exchange but relaxing import regulations on essential items*
4. *To simplify procedural complexities*

5. *To integrate with the world economy through multilateral and bilateral trade arrangements*

The second five-year EXIM policy (1997-2002) had targets of achieving \$90-100 billion by 2000 and a 1% share in world trade. The key objectives of this five-year policy were restructuring and revamping of export promotion schemes, streamlining procedures, improving economic growth through improved production and exports by providing access to raw materials, intermediaries, components, consumables, and capital goods ([PHD Chamber](#)).

### **National Strategy for Manufacturing (2006)**

The National Strategy for Manufacturing (NSM) highlights that it is important to look at environments both internal and external to the firm to improve the manufacturing competitiveness. The external actions are policy oriented and within Central, State, and local governments while the internal actions are at a firm level ([National Manufacturing Competitiveness Council](#)). The NSM (2006) was developed to address the following key aspects:

1. *Continuous commitment to skill development and knowledge enhancement*
2. *Investments in R&D*
3. *Employment generation*
4. *To raise the stagnated share of manufacturing*
5. *Adopting best manufacturing practices and production techniques*

### **National Manufacturing Policy (2011)**

A stagnant state of manufacturing sector in India with a low share of contribution towards GDP, growing imports of capital equipment, and a need to create employment opportunities are some of the key concerns that Government of India wanted to address through the National Manufacturing Policy (2011). The objectives related to the policy are ([GoI \(Ministry of Commerce & Industry Department of Industrial Policy & Promotion\)](#)):

1. *To improve manufacturing share to at least 25% of GDP by 2022 and to increase manufacturing sector growth rate to 12-14% over medium term*
2. *To create additional 100 million jobs by 2022*
3. *To create National Investment and Manufacturing zones (NIMZ)*
4. *To create appropriate skill sets necessary for rural migrant and urban poor*
5. *To increase domestic value addition and improve technological depth in manufacturing*
6. *To improve global competitiveness of India's manufacturing through appropriate policies*
7. *To have a sustainable growth model especially with respect to environment*

National Manufacturing Policy (NMP) aimed at bringing special focus to employment intensive industries, capital goods, industries with strategic significance, industries where India enjoys a competitive advantage, small medium enterprises, public sector enterprises with the following objectives. Further, special policy interventions to achieve the above-mentioned objectives were rationalization and simplification of business regulations, simple exit mechanism for sick units, institutional mechanisms for technology development, including green technologies, industrial training, incentives for SMEs, special focus sectors, leveraging infrastructure deficit, and trade policy related aspects. NMP wanted to achieve the

goals through foreign investments, encouraging innovation, reducing compliance burden, and improving competitiveness of enterprises in the country

In terms of progress card of NMP, it is found that NMP didn't reach its key objectives of double-digit growth rates or improving the manufacturing sector. The share of manufacturing in GVA was 17.40% in 2011-12 to 18.36% in 2017-18 to 17.1% in 2019-20. Further, it is observed that NMP was ineffective with respect to job creation. The decline in labor productivity growth and total factor productivity growth further showed that the important objective of NMP, the technological depth is not addressed so far ([D. Goswami](#); [S.K. Kujur](#)).

## Summary

In this chapter, we discussed the various manufacturing policies till 2014 and their key objectives. Although the manufacturing sector grew at 4 percent per annum in the pre-independence era, since the economy was agriculture oriented, it did not improve the overall progress of the country and resulted in stagnation. In the period of 1950-1990, with some acceleration in industrialization through set up of heavy and basic industries, and with various key reforms (*such as reservation of key areas to public sector, importance of self-reliance as basis for development, industrial licensing system, control over large domestic firms, protective labor legislation, restrictions on foreign investments, and reservation of small industries*), the country witnessed sustained industrial growth with the annual average rate of over 5.5 percent ([Mohanty](#); [Reddy](#)). Although, the country improved its state from the previous period, the challenges persisted, and the objectives with which the policies were formulated remained unmet. Some of the key results show that import growth was better compared to export growth, overall export growth declined, poverty prevailed, structural rigidities existed, poor performance of public sector enterprises and lack of competition ([Reddy](#)).

Year	Policy/Act	Contributions and Limitations
1944	Bombay Plan	Shaped India's initial five-year plans <i>Limitation: Poor treatment of agricultural sector</i>
1948	Industrial Policy Resolution	Foundation of Mixed Economy Model: Importance of both public and private sectors <i>Restrictions on foreign investments</i>
1951	IDRA	Regulating industrial investment and productions
1956	First and the Second Five Year Plans; and the Industrial Policy Resolution	First five-year plan focused on agriculture and price stability Good harvests lead to the success of first five-year plan ( <a href="#">e-PG Pathshala</a> ).  During the second five-year plan, government target an annual national income growth of 4.5 % and achieved 4%. Further country witnessed food shortages and drought led to inflation ( <a href="#">Bhat</a> ). <i>Shifted focus to industry too soon (<a href="#">e-PG Pathshala</a>, "Historical Perspective of Planning in India").</i>  With scarce capital and base of entrepreneurship in its infancy stage, Industrial policy resolution (1956) emphasized the role of State in development of manufacturing sector ( <a href="#">GoI</a> , "Industrial Policy Highlights 2009")

		<i>Limitations of Industrial policy resolution (1956): Increased unemployment, Increased urban rural disparities, Sickness of industry (e-PG Pathshala, “Sectoral Growth in India”), reduced scope of private sector</i>
1977, 1980	Industrial Policy	Emphasis on decentralization and role of small-scale industries (1977) <i>Greater emphasis to large scale sector</i>  Promoting competition and domestic market and foreign investment in high-technology areas (1980) (GoI, “Industrial Policy Highlights 2009”)  <i>Restrictive regime of industrial growth (e-PG Pathshala, “Sectoral Growth in India”).</i>
1991	New Industries Policy	Deregulation, Privatization and Globalization Removal of bureaucratic hurdles  <i>Stagnation of manufacturing sector</i> <i>Selected industries received investments while basic industries received minimal</i>
2011	National Manufacturing Policy (NMP)	Identification of specific industries than one-size fits all approach  <i>“Lacked budgetary support through dedicated schemes to develop NIMZ (DPIIT, “Manufacturing Policy Reforms”)”</i> <i>Identifying champion sectors would have helped</i> <i>Implementation and monitoring of policies in a better way would help (Mani).</i>

Table 2: Objectives and Progress of Key Manufacturing Policies and Acts

The reforms in the 90s witnessed liberalization, privatization, and globalization, however the rigidities with respect to land and labor, bureaucratic approvals, and command-and-control regime still prevailed (Mohanty). This resulted in drastic loss of growth momentum in the later half of the 1990s (Mohan, “The Growth Record of the Indian Economy, 1950-2008”). In the subsequent years, with the stagnant manufacturing sector, the then government of India introduced the National Manufacturing Policy (NMP) in 2011 with the key objectives of increasing the manufacturing share of GDP to 25 percent by 2022 and to create 100 million jobs. However, the manufacturing sector performed poorly and the employment growth rate in aggregate manufacturing reduced from 1.3% (2010-2011) to negative growth rate in 2012-13 and remained negative up to 2017-18. The objective of improving technological depth in manufacturing industry remained unaddressed (D. Goswami; S.K. Kujur). Further, there was a need to identify champion sectors to improve resource efficiency, and global competitiveness (D. Goswami; S.K. Kujur; Mani) and the need to build a manufacturing ecosystem considering aspects such as skill creation, building indigenous technological capabilities, reduce structural bottlenecks and developing necessary infrastructure.

# Make in India

## Make in India

Since the change of government in India in 2014, amongst the need to improve productivity across all sectors for GDP growth, manufacturing and its growth was identified as key. To achieve such GDP growth, there is a need to improve regulations governing products and markets, land market reforms, and the role of government with respect to government owned companies. A change in reforms can improve competition and productivity growth which in turn could improve employment, and demand for goods and services. Greater demand would help in creating better investment opportunities ([McKinsey Global Institute](#), “India: The Growth Imperative”). In this chapter, we will look at how government of India has addressed the challenges associated with the manufacturing sector, since 2014, to improve the growth of the economy.

Considering the impact of various manufacturing policies discussed in the previous chapter, most importantly the need to build a manufacturing ecosystem addressing the stagnation in manufacturing sector and to improve the global manufacturing competitiveness, Government of India (GoI) launched the Make in India campaign in September 2014. The vision was to make India a global design and manufacturing hub. Like any other initiative, it was important to have a strategic roadmap to achieve the long-term goals. With the launch of Make in India campaign, government was clear about the change in mindset that was required from that of being an *issuing authority* to that of being a *business partner*. Therefore, the fundamental *principle* which the Government wanted to follow was “*Minimum Government, Maximum Governance*” ([GoI](#), “Make In India”).

Through the strategic roadmap it was important to understand the *values* and how they align with the overall vision. Flexibility through regulations, a global statement, government as a business partner mindset, and trust in stakeholders as a foundation are some of the key values that were stated or could be identified through the Make in India campaign ([GoI](#), “Make In India”; [PTI](#)). Some of the factors to focus on such as better labor reforms promoting flexibility in work, change in mindset from gaining competitiveness to global leadership, joint and consistent action at state, center and firm level ([Bhattacharya, Bruce, and Mukherjee](#); [Bhattacharya, Bruce, and Agrawal](#)) confirm the importance of the values mentioned and their alignment with the vision.

The next important step in delineating the strategic roadmap was identifying the *objectives* that needed to be pursued to help India in making the vision (*of global design and manufacturing hub*) a reality. Make in India campaign aims to boost the share of manufacturing to 25 percent from 15 percent of GDP, and to promote export-led growth. To achieve this the government wanted to cut red bureaucracy, improve ease of doing business, attract investors, ease the investing regulations, focus on job creating and skill enhancement, improve the infrastructure and create a digital network ([PTI](#)).

A significant step while creating the strategic roadmap is to list the set of *strategies* to achieve the objectives. The key strategies as highlighted by government with the launch of the campaign are: (a) “*to instill confidence in India’s capabilities amongst potential partners, business community and citizens*”, (b) “*provide a framework for a vast amount of technical information on 25 industry sectors*”, (c) “*to reach out to audience locally and globally and keep them informed about the opportunities and reforms*” ([GoI](#), “Make In India”).

While the Make in India campaign was to be built on the collaborative effort of various stakeholders, the Department for Promotion of Industry and Internal Trade (DPIIT), a central government department under Ministry of Commerce and Industry, India is responsible to



accelerate and support a balanced development of industries in the country ([DPIIT, Role and Functions - DPIIT](#)). The key actions initiated by DPIIT laid the foundation for the Make in India campaign. Listing the actions that are required and executable is important to convert the strategies into operations. The next critical factor is to be able to track these actions, and to understand the responsible stakeholders and by when do we need to work on these actions. In this aspect, DPIIT initiated the collaborative effort by including various ministries, knowledge partners, and industry players, local and global to formulate an action plan to achieve the objective of improving the share of manufacturing to 25 percent of GDP by 2020. Further, DPIIT also created a help desk and the required digital platform to be able to track and provide information on the actions related to sector specific facts and figures, policies and reforms, and progress ([GoI, “Make In India”](#)).

It is important to understand that a strategic roadmap is an ongoing journey. With the manufacturing industry evolving locally and globally, in the next few sections we will look at how the strategic roadmap evolved or is adjusted through the initiatives, and further discuss the key reforms associated with Make in India

## Make in India 2.0

With the first version of Make in India, India turned into an assembly hub particularly in industries such as mobile phones, and consumer electronics where in manufacturers met the domestic demand through imported components. However, the domestic value addition stayed low below 30 percent. Therefore, GoI announced the second version, Make in India 2.0, with a focus on localizing the supply chain ([Das](#)). Currently, Make in India focusses on 27 sub-sectors under both manufacturing and service sectors and these sub-sectors are managed by Department for Promotion of Industry and Internal Trade (DPIIT), and Department of Commerce ([Ministry of Commerce & Industry, “Make in India 2.0”](#)).

Manufacturing Sector (By Department for Promotion of Industry and Internal Trade)		Service Sector (By Department of Commerce)	
S.No	Sub-sector	S.No	Sub-sector
1	Aerospace and Defence	1	Information Technology & Information Technology enabled Services (IT &ITeS)
2	Automotive and Auto Components	2	Tourism and Hospitality Services
3	Pharmaceuticals and Medical Devices	3	Medical Value Travel
4	Biotechnology	4	Transport and Logistics Services
5	Capital Goods	5	Accounting and Finance Services
6	Textile and Apparels	6	Audio Visual Services
7	Chemicals and Petrochemicals	7	Legal Services
8	Electronics System Design and Manufacturing (ESDM)	8	Communication Services
9	Leather & Footwear	9	Construction and Related Engineering Services
10	Food Processing	10	Environmental Services
11	Gems and Jewelry	11	Financial Services
12	Shipping	12	Education Services
13	Railways		
14	Construction		

15	New and Renewable Energy		
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Table 3: List of sub-sectors under Make in India 2.0

## NITI Aayog (2015)

The planning commission established in 1950 by Government of India had a style of central planning. The In 2015, Government of India formed the National Institution for Transforming India or NITI Aayog with a focus on cooperative federalism than central planning ([Press Information Bureau](#), “Planning Commission to NITI Aayog”). This was considered as it was believed that the planning commission was going Through policy fatigue, and the planning exercise followed by them was identified as irrelevant to the market economy and the planning commission had restrictive role in public-private partnerships. The following are some of the differences between NITI Aayog and Planning commission:

Planning commission (1950-2014)	NITI Aayog (2015)
To assess and allocate plan resources, formulate plans and programs for area development, determine implementation methodology, identify resource constraints and appraise & adjust implementation	Designing strategic policies, fostering cooperative federalism, providing knowledge and innovation support, and evaluation/ monitoring of major investments, providing a platform for resolution of inter-sectoral and inter-departmental issues, to focus on technology upgradation and capacity building for implementation of programmes (NITI Aayog)

Table 4: Difference in Functions of NITI Aayog and Planning Commission

## AatmaNirbhar Bharat Abhiyan

With the corona pandemic affecting various spheres including Indian economy (through both supply and demand shocks), in May 2020 the Indian government sensed the need to launch the self-reliant India mission also known as AatmaNirbhar Bharat Abhiyan ([GoI](#), “AatmaNirbhar Bharat Abhiyan”). The pandemic created both supply and demand shocks simultaneously. The demand shocks were in the form of increased uncertainty, lowered confidence levels, usage of the precautionary savings, and reduced wages which led to a fall in consumption, reduction in spending activities especially the non-essentials due to lockdown. Further, the economy witnessed risk aversion of businesses ([GoI \(Ministry of Finance; Department of Economic Affairs, Economic Division\)](#), *Economic Survey 2020-2021*). The closure of economic activity led to the supply shocks such as inability to fulfill demand, stock out scenarios, raw material shortage due to migration of labor and closure of markets, non-availability of work-from-home infrastructure specifically in some industries such as banking, construction industry took a major hit due to fixed cost, labor and raw material related challenges, unpredictable demand, shortage of raw material and packing material in food industry, automobile industry which was facing slow growth before the pandemic deteriorated further due to multiple challenges due to disruptions in supply chain and similar such challenges in other industries ([Shrey, Dutt and Roy](#)). The first order supply shocks led to second order effects which further got amplified due to international trade and financial linkages and eventually led to potential hysteresis effects due to the feedback loops. For example- reduction in household demand leads to reduction in revenues of firms which in turn could lead to potential wage loss or unemployment leading to reduction in household incomes ([GoI \(Ministry of Finance; Department of Economic Affairs\)](#), “Economic Survey 2020-2021”).

To address these supply and demand shocks, and to improve the existing slow growth of the Indian economy, the government of India announced the AatmaNirbhar Bharat Abhiyan mission. The five pillars of the mission are: Economy, Infrastructure, System, Demography, and Demand ([GoI](#), “AatmaNirbhar Bharat Abhiyan”).

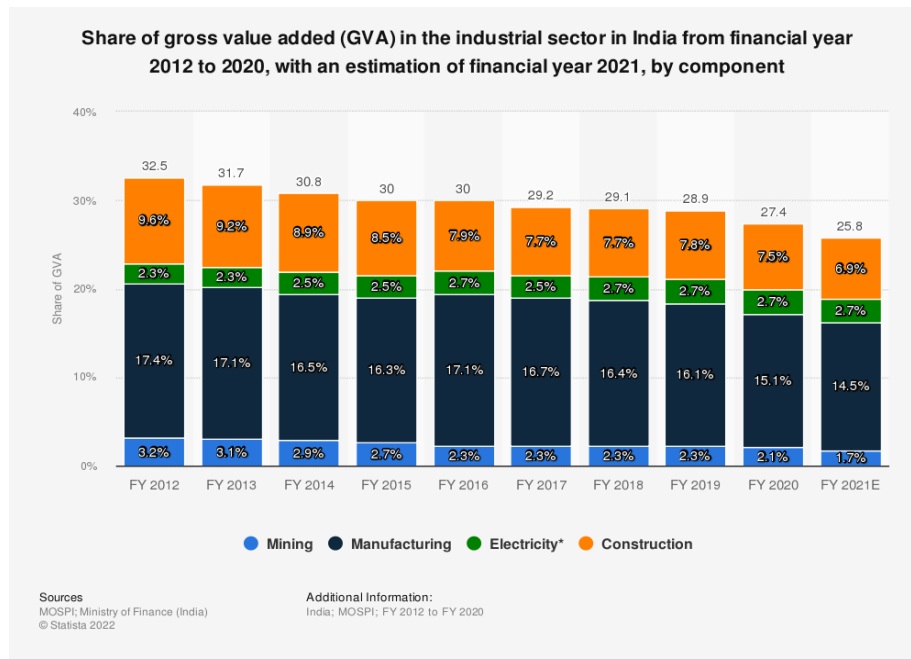


Figure 1: Sector wise share of GVA (Ministry of Finance, India)

With the share of manufacturing sector in Gross Value add (GVA) at 15.1% in FY20 over 17.4% in FY12 (as shown in Figure 1) indicating a dormant manufacturing sector and further, a greater reliance on China for imports pushed the Indian government to launch the self-reliant India mission. AatmaNirbhar Bharat Abhiyan emphasizes on ‘Local for Global’ and ‘Vocal for Local’. The main objectives are as in the adapted

Figure 2 ([IBEF](#), “Self-Reliant India (AatmaNirbhar Bharat Abhiyan)”).

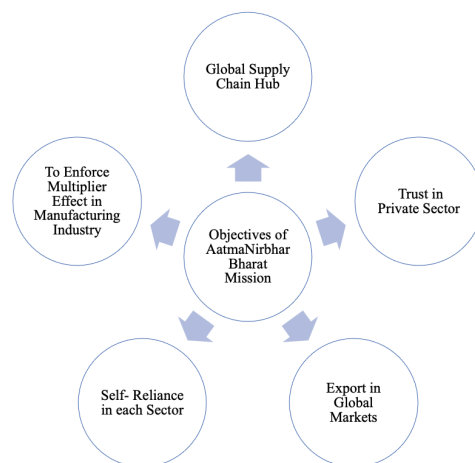


Figure 2: Objectives of AatmaNirbhar Bharat

The government of India announced a stream of AatmaNirbhar Bharat Abhiyan packages (1.0, 2.0, 3.0) along with the RBI measures which sums up to Rs. 29.87 lakh crore<sup>1</sup> as shown in the table below ([Ministry of Finance](#)). The various RBI measure to fight the impact created by Corona pandemic include liquidity management, regulation, and supervision (easing of working capital financing, and timelines related to loans of real estate sector), and decisions with respect to financial markets ([GoI](#), “RBI measure to fight COVID-19”).

GoI planned five phases of AatmaNirbhar Bharat along with RBI measures which included addressing businesses of MSMEs, poor including migrants and farmers, agriculture, new horizons of growth, and lastly government reforms and enablers ([National Portal of India](#)).

S.No	Item	Rs. Crore
1	Pradhan Mantri Garib Kalyan Package (PMGKB)	1,92, 800
2	ANB 1.0	11,02,650
3	PMGKB Anna Yojana	82,911
4	ANB 2.0	73,000
5	ANB 3.0	2,65,080
6	RBI Measures	12,71,200
<b>Total</b>		<b>29,87,641</b>

Table 5: AatmaNirbhar Bharat Packages

The AatmaNirbhar Bharat key measures include government reforms, measures for businesses, measures for agriculture and allied sectors, migrant workers, civil aviation, defence, energy, housing, and social sector ([Kumar](#)). These measures address deregulation and liberalization of sectors, strengthening production capacity, financial support, access to education, and ease of doing business ([GoI \(Ministry of Finance; Department of Economic Affairs, Economic Division\)](#), “Economic Survey 2020-2021”).

Specifically, to make India a self-reliant nation and to handle the economic disruption caused by COVID-19, some of the major structural reforms as a part of AatmaNirbhar Bharat packages cover agricultural sector, new MSME definition, enactment of four labor codes, tariff policy reform in power sector, privatization of PSUs in non-strategic sectors, transparent auction of mining blocks, commercial mining in coal sector, production linked incentives (PLIs) in identified sectors, national GIS enabled land bank system, increase of FDI limit in Defence manufacturing, and various other initiatives that improved ease of doing business in India ([GoI \(Ministry of Finance; Department of Economic Affairs, Economic Division\)](#), “Economic Survey 2020-2021”).

### Micro, Small and Medium Enterprises (MSME) Policy

MSME Sector is an important sector in India that can contribute to the higher employment generation after agriculture sector, can help in regional development and in improving the domestic capabilities in the manufacturing sector. GoI introduced Udyam Registration Portal which incorporates the new definition of MSMEs as a part of AatmaNirbhar Bharat Package (w.e.f from 1st July, 2020). A total of 80,16,195 number of MSMEs registered on Udyam Registration Portal, with 6.36 crore people employed, with 76% employed in Micro enterprises. Further, while 31% were engaged in manufacturing activities and 69% were engaged in Services activities ([Office of Development Commissioner MSMEs](#)).

<sup>1</sup> 100,000 is 1 lakh; 100 lakh is 1 crore (10,000,000); hence a lakh crore is 1,000,000,000,000

New definition		
Enterprise (both manufacturing and services)	Investment in Plant and Machinery or Equipment	Turnover
Micro	Not exceeding Rs. 1 Cr	Not exceeding Rs. 5 Cr
Small	Not exceeding Rs. 10 Cr	Not exceeding Rs. 50 Cr
Medium	Not exceeding Rs. 50 Cr	Not exceeding Rs. 250 Cr

Table 6: New Definition of MSMEs ([Office of Development Commissioner MSMEs](#))

The various MSME reforms are ([GoI](#), “Schemes for MSMEs: Make In India”; [Invest India](#), “Schemes for MSMEs in India”) as follows. These reforms cover aspects such as helping MSMEs to meet their operational liabilities and resume post corona pandemic (ECLGS), addressing the employment concerns of widely dispersed traditional artisans and generating employment opportunities to micro-enterprises (PMEGP), credit guarantee to MSMEs where the corpus is contributed by GoI and Small Industries Development Bank of India (CGTMSE), and funding of khadi programme by khadi institutions (ISEC) to name a few ([Ministry of Micro, Small & Medium Enterprises](#)).

1. Emergency Credit Line Guarantee Scheme (ECLGS)
2. Prime Minister Employment Generation Programme (PMEGP)- Employment opportunities for MSMEs
3. ZED Certification Scheme - Zero defect & zero effect practices; 80% subsidy to MSMEs
4. A Scheme for Promoting Innovation, Rural Industry & Entrepreneurship (ASPIRE)- to create jobs and facilitate innovation
5. National Manufacturing Competitiveness Programme (NMCP)- Credit linked capital subsidy, lean manufacturing competitiveness, quality management etc.
6. Scheme for surveys, studies and policy research
7. Credit Guarantee Trust for Micro and Small Enterprises (CGTMSE) – to provide collateral free loans
8. Interest Subsidy Eligibility Certificate (ISEC) - Funding mechanism for khadi programme
9. Raising and Accelerating MSME performance (RAMP) programme
10. Portals helpful to MSMEs
  - a. Udyam, e-Shram, National Career Service (NCS)
  - b. AatmaNirbhar Skilled Employee Employer Mapping (ASEEM)

## Foreign Direct Investments (FDI) Reforms

Foreign Direct Investment (FDI) is a cross border investment and a key element in international economic integration leading to economic development, long-lasting ties between economies promoting international trade and a potential route for transfer of technology ([OECDiLibrary](#)). Make in India followed by AatmaNirbhar Bharat Abhiyan packages emphasized the importance of FDI reforms. Prior to 2014, the sector was not attractive to foreign investors with the restrictions on foreign capital investments, policy paralysis, and low FDI caps across some sectors. This led to the previous unsuccessful attempts with respect to FDIs (before 2014) when compared to the capital needs of the country. With other nations moving towards liberalized approach towards FDI reforms, the current GoI opened up the sectors to foreign investments considering FDI as an important driver of economic growth ([DPIIT](#), “Foreign Direct Investment Reforms in India”).

FDI liberalization across sectors as follows (GoI, “New Initiatives: Make In India”) highlights an increase in sectoral caps, more activities under automatic route, and easing of conditions.

<b>Sector</b>	<b>FDI Liberalization Strategy</b>
Defence	74% automatic route >74% government route
Civil Aviation	<ul style="list-style-type: none"> <li>• 100 % - Greenfield projects</li> <li>• 74% FDI automatic route - Brownfield projects</li> <li>• &gt;74% government route- Brownfield projects</li> </ul>
Broadcasting	<ul style="list-style-type: none"> <li>• 100% FDI - Broadcasting Carriage Services &amp; down-linking of news channels</li> <li>• 100% FDI government route- Broadcasting Content Service: Terrestrial Broadcasting FM (FM Radio) and Up-linking of ‘News &amp; Current Affairs’ TV Channels</li> <li>• 26% FDI Government route- Uploading/Streaming of News &amp; Current Affairs through Digital Media</li> <li>• 100% FDI automatic route- Up-linking of Non- ‘News &amp; Current Affairs’ TV Channels/ Down-linking of TV Channels</li> </ul>
Banking	74% FDI with 49% under automatic route and rest through government route
Railways	100% FDI under automatic route -construction, operation, and maintenance of Rail Infrastructure projects
Construction	100% FDI through automatic route; Removal of minimum floor area & minimum capital requirement
Pharmaceuticals	<ul style="list-style-type: none"> <li>• 100% FDI under automatic route -Greenfield pharma</li> <li>• FDI up to 74% under automatic route and 100% under government approval- Brownfield pharma.</li> </ul>
Plantation	100% FDI automatic route- coffee, rubber, cardamom, palm oil tree and olive oil tree plantations
Agricultural and Animal Husbandry	100% FDI automatic route
Telecom	FDI up to 100% with 49% under automatic route
Insurance and Pension	Sectoral cap of foreign investment to increase from 26% to 49% with foreign investment up to 26% to be under automatic route
Medical Devices	100% FDI- manufacturing of medical devices
E-Commerce	100% FDI - B2B e-commerce, Single brand retail trading entity permitted for B2C e-commerce and e-commerce food retailing
Retail	<ul style="list-style-type: none"> <li>• 100% FDI and 49% under automatic route are allowed</li> <li>• 100% FDI under automatic route - Duty Free Shops located and operated in the Customs bonded areas.</li> <li>• ‘State-of-art and ‘cutting-edge technology,’ sourcing norms can be relaxed</li> </ul>
Mining	100% FDI automatic route and Mining and mineral separation of titanium bearing minerals and ores, its value addition, and integrated activities under 100% Government Route
Petroleum and Natural	100% FDI through automatic route and Petroleum refining by the

Gas	Public Sector Undertakings (PSU), without any disinvestment or dilution of domestic equity in the existing PSUs with 49% automatic route
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Table 7: Sector-wise FDI Liberalization Strategies

In terms of impact, the FDI inflows (Apr 2000- Mar 2022) was \$847 billion while the FDI inflows (Apr 2014- Mar 2022) was \$523 billion which is 40 % of total FDI inflows in last 22 years.

## Summary

The Make in India initiative was launched by the government in 2014 with a vision of making India a global manufacturing hub and with a main objective of improving the manufacturing share of GDP to 25 percent. Later, the second version was introduced in 2018 and targeted at creating domestic supply chains. Make in India programme received a welcoming response in the industry which was evident when 71% of Multi-National Companies were positive about global expansion related investments in India. Ease of doing business, transparent and simplified taxation, trade initiatives, and liberal FDI policy are some of the initiatives appreciated ([EY India](#)).

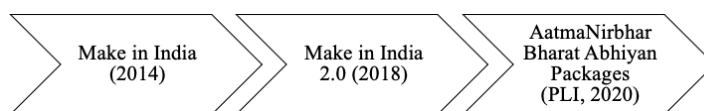


Figure 3: Make in India related Initiatives

After witnessing the various manufacturing policies before 2014, the stagnated growth and the impact of COVID-19, and the need for developing an ecosystem to achieve global manufacturing competitiveness, the GoI was clear about not going ahead with a ‘one-size-fits-all’ approach. It believed that it should employ a different approach of customizing its strategies and incentives towards each sector such it would enhance the rapid growth of the sector and economy. Also COVID-19 introduced shortages in parts, components and materials, driving the government to recognize the need for becoming self-reliant as the inevitable state. This led to the announcement of AatmaNirbhar Bharat Abhiyan Packages, with the intent of India a self-reliant nation, thereby identifying as the only way forward to boost the manufacturing sector and to overcome the challenges particularly unemployment related concerns.

While identifying the important sectors ([Bhattacharya, Bruce, and Mukherjee](#)) with higher productivity is a primary step, it was equally important to find new business models and enabling conditions (related to other aspects such as labor, skill, infrastructure, ease of doing business) to achieve the higher productivity. Introducing time-bound, targeted, and conditional incentives and sector-specific policies also act as drivers for the growth of the sector ([McKinsey Global Institute](#), “India’s turning point: An economic agenda to spur growth and jobs”). GoI rightly identified the champion sectors, related strengths of these sectors and had initiated the sector specific strategies and incentives accordingly. In the next chapter, we will look at the Production Linked Incentives (PLI) with respect to each of these champion sectors at a greater detail. In the subsequent chapter, we will discuss the linked ecosystems that help in creating the right conditions in accelerating the growth of manufacturing industry.

# Production Linked Incentives (PLI)

## Importance of PLI

In the previous chapter, we discussed the vision of GoI with respect to the Make in India initiative, and further discussed the progress with Make in India 2.0, and identified that the government intended to accelerate it through the AatmaNirbhar Bharat Abhiyan mission. To embark on a new trajectory of sustainable, and inclusive growth, there is a need to understand the stage of development of the economy and focus on specific sectors which have the potential to contribute maximum towards the growth of the economy versus one-size-fits-all approach. These specific sectors require individual attention since there are differences in their performance, and also in the factors that contribute to their competitiveness. Therefore, the initiatives of government to boost growth also need to vary across the sectors while targeting activities with real potential ([McKinsey Global Institute](#). “How to Compete and Grow: A Sector Guide to Policy”). To achieve the inclusive growth of the economy, one such scheme introduced by the GoI is the Production Linked Incentives (PLIs) scheme, a set of incentive schemes aimed at specific sectors while considering the differences and competitiveness between the sectors. These special sectors are also referred to as ‘Sunrise sectors’ or ‘Champion sectors’, which are believed to enforce the multiplier effect.

The Production Linked Incentives (PLI) schemes were launched under the AatmaNirbhar Bharat Abhiyan mission in March, 2020 to achieve rapid growth and holistic development of the industry. These PLI schemes are targeted at specific sectors (or champion sectors) with goods that the country sees as necessary for social good, taxes or employment generation reasons. Production linked incentives are financial incentives provided to firms to boost domestic manufacturing and the final consumer could receive the benefit in the form of lower prices ([Malik](#)). The key aspects of PLI are ([Thakkar](#), “Production-Linked Incentive Scheme – A Key Step towards Self-Reliant India”) :

1. *To improve industrial infrastructure through creation of large-scale facilities*
2. *To increase exports, and reduce dependency on imports*
3. *Improve employment opportunities*

Manufacturing sectors rely on service sectors, and therefore, the greater participation of manufacturing firms in the global value chain can improve the growth of service sector as well. Thus, the impact of a PLI scheme can flow beyond the intended champion sector improving the employment opportunities. In the next section, we will discuss the details of the PLI scheme and associated sectors.

## What is PLI?

The first PLI scheme, introduced under the AatmaNirbhar Bharat initiative, targeted three sectors: *Mobile and allied Component Manufacturing, Electrical Component Manufacturing, and Medical Devices*. PLI is a fiscal subsidy push that integrates India’s domestic manufacturing capabilities with requirements of global supply chains, to promote exports, to cut down on imports, to promote taxation and to increase employment opportunities. These incentives can be related to value additions, incremental sales, or investments ([Deloitte](#), “Emerging Production Linked Incentive Schemes”).



In November 2020, GoI announces 10 more champion sectors under the PLI scheme. Further, in 2021-2022 Budget, an outlay of 1.97 lakh crore was announced towards the PLI schemes for 13 key sectors (including earlier 3) for a period of 5 years starting from fiscal year (FY) 2021- 22 ([Press Information Bureau](#), “Production Linked Incentive Scheme”). The 14 PLI sectors are as follows:

1. Automobiles and auto components
2. Pharmaceuticals drugs
3. Specialty steel
4. Telecom & Networking Products
5. Electronic/ Technology Products
6. White Goods (ACs and LEDs)
7. Food products
8. Textile products: MMF segment and technical textiles
9. High efficiency solar PV modules
10. Advanced Chemistry Cell battery
11. Manufacturing of medical devices
12. Mobile manufacturing & specified electronic components
13. Critical key starting materials/ Drug intermediaries & Active Pharmaceutical Ingredients
14. Drone and Drone components

The incentives for all the sectors are provided directly from the budget. The incentives vary from sector to sector depending on the challenges faced by the sector ([Economic Times](#), “Global Ambitions”). For example, India is currently at the lower end of value chain with respect to steel manufacturing and COVID-19 had slowed down the growth of steel sector. Steel sector has a great potential with its contribution of more than 2% to GDP. Therefore, there is a need for PLI scheme with the objective of boosting domestic manufacturing, attracting investment in value added steel, and technology upgradation, with the objective of moving up the value chain ([IBEF](#), “Steel Industry”; [Mathur](#); [PwC and India Steel Association](#)). The incentive as a part of the PLI scheme can be calculated as follows ([MECON Limited](#)):

$$\text{Incentive} = (A/B) \times (B \text{ or } C \text{ or } D, \text{ whichever is lowest}) \times (\text{PLI rate as applicable})/100$$

A= Incremental Sales in current year

B= Weighted average sales price of the applicant in current year

C= Weighted average sales price in base year

D= Weighted average sales price in current year

Current year in A implies the year for which PLI is claimed. Weighted average sales price in current year in D is worked out jointly by Joint Plant Committee (JPC) and Project Management Agency (PMA).

## **PLI Application Process**

Keeping the vision of each identified sector in mind, the criterion for applicants was defined by the investment commitment, capacity creation and incremental turnover. Figure 4: PLI Application Process depicts the PLI application process which includes submission of application, examination, approval followed by baseline determination process and disbursement ([Ministry of Steel](#), “Production Linked Incentive Schemes: Specialty Steel”).

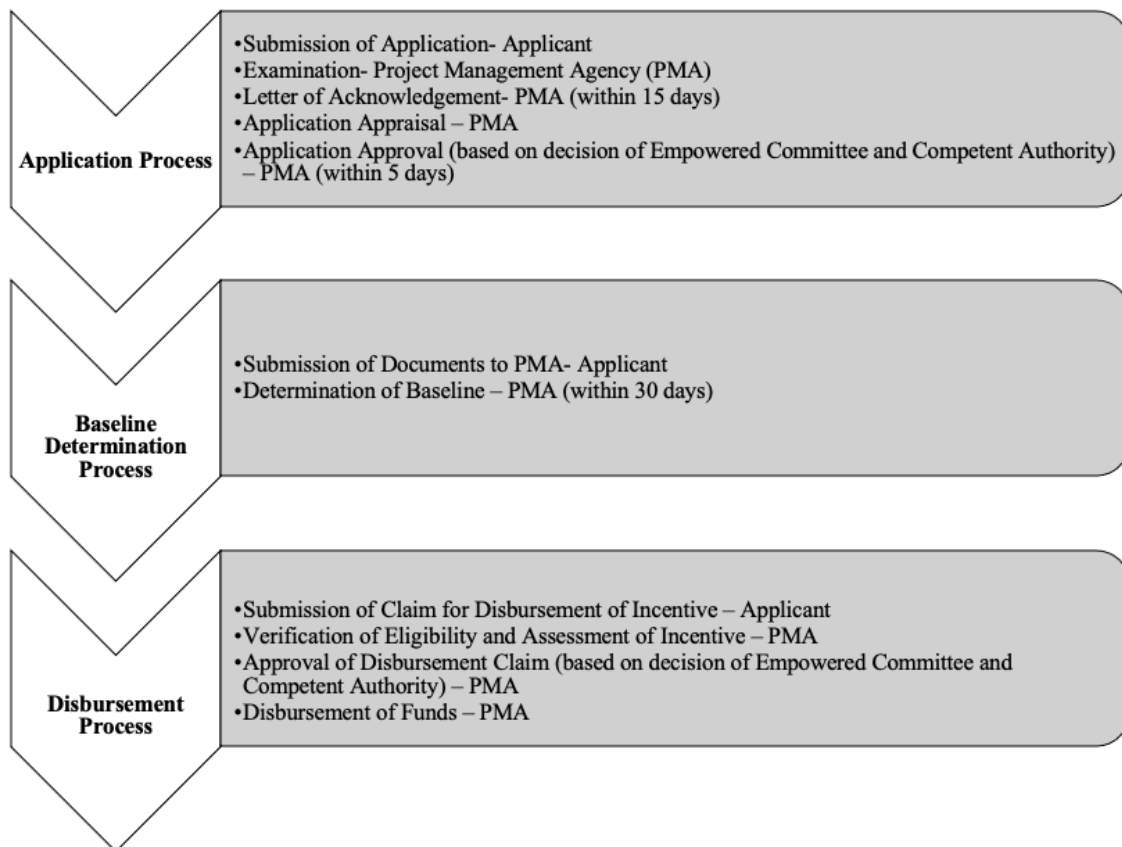


Figure 4: PLI Application Process

The applicants are offered a financial incentive based on value additions or incremental sales. At an operational level, the incentives are under the control of Central government through relevant ministries and the process flow for the PLI application process involves online application, evaluation of applications, selection of applicants, and disbursement of incentives. Post approval, the applicants pursue fulfillment of their investment and sales commitments. The monitoring systems in place ensure that the performance standards are met (Thakkar, “How Production-Linked Incentives Can Help Boost India’s Manufacturing Sector”).

### Sector-wise Initiatives and Impact of PLI

The current outlay of PLI is about Rs. 1.97 lakh crore for 14 sectors (GoI (Ministry of Finance; Department of Economic Affairs, Economic Division), *Economic Survey 2021-2022*). The PLI schemes are expected to boost India’s manufacturing output by Rs. 37,70,000 crores (IBEF, “Production Linked Incentive (PLI) Scheme”). Table 8 lists the sector-wise initiatives with the budget outlay (Ministry of Electronics & Information Technology. “PLI for Large Scale Mobile and Component Manufacturing”), the corresponding ministries/nodal departments responsible, the eligible products under the schemes, current status shortlisted applicants’ details, and the expected impact (gathered from various sources). From the budget outlay announced by GoI, we find that automobiles, and auto components sector received the highest allocation followed by mobile manufacturing and specified electronic components.

Sector and Budget Outlay (Rs. Cr)	Ministry/Nodal Department	Product Details	Status of Applications	Impact
Automobiles and auto components (57,042)	Ministry of Heavy Industries	The scheme has two components - Champion OEM Incentive Scheme and Component Champion Incentive Scheme	95 shortlisted out of 115, Ex:  Champion OEM (Ashok Leyland, Hyundai Motor India, Suzuki Motor Gujarat, Kia India etc.)  Champion OEM 2W & 3W (Bajaj Auto, Heto MotoCorp, etc.)  New Non-Automotive Investor (OEM) (Ola Electric, Booma Innovative Transport, etc.)	PLI scheme will lead to Incremental production of 2.3 lakh crore and 7.5 lakh jobs expected ( <a href="#">Press Information Bureau</a> , “Government Notifies PLI Scheme for Automobile & Auto components”)  Proposed Investment from applicants ( <a href="#">Press Information Bureau</a> , “The Production Linked Incentive (PLI) Scheme for Automobile and Auto component successful in attracting proposed investment of 74,850 crore against the target estimate of investment 42,500 crore over a period of five years”) 1. Champion OEM: Rs. 45016 Cr 2. Component Champion: Rs. 29834 Cr
Pharmaceutical Drugs (15,000)	Department of Pharmaceuticals	<b>Category 1:</b> Biopharmaceuticals, Complex generic drugs, Patented drugs, and drugs nearing patent expiry, Cell based or gene therapy drugs, Orphan drugs, Special empty capsules, Complex excipients, Phyto-pharmaceuticals,  <b>Category 2:</b> Except 41	55 pharma companies qualify out of 278 (Group A: 11, Group B: 9, Group C: 35 with 20 MSMEs)  Sun Pharmaceutical s, Cipla, Dr. Reddy’s, Aurobindo Pharma	PLI scheme will shift product diversification to high value goods, will accelerate innovation and R&D ( <a href="#">Press Information Bureau</a> , “PLI scheme for the Pharmaceutical Sector”)

		covered in other PLI for APIs/KSM/DI <b>Category 3:</b> Drugs not covered above (Repurposed drugs, anti-cancer, anti-diabetic drugs, etc., and other drugs not manufactured in India)		
Specialty Steel (6,322)	Ministry of Steel	Coated/Plated Steel Products, High Strength/Wear resistant Steel, Specialty Rails, Alloy Steel Products and Steel wires, Electrical Steel ( <a href="#">Press Information Bureau</a> , “FAQs on PLI for Specialty Steel”)	67 shortlisted out of 79  Ex: Tata Steel, JSW Steel, JSPL, AMNS India and SAIL	PLI scheme expected to boost domestic production of steel  Investment potential of applicants Rs 42,500 crore; Expected 70000 jobs; 26 million tons of capacity ( <a href="#">PTI</a> , “Top five steel cos, few others selected to invest under PLI scheme for specialty steel”.)
Telecom & Networking Products (12,195)	Ministry of Communication s- DoT	Core Transmission equipment, 4G/5G Next generation radio access network and wireless equipment, Access & Customer Premise equipment, IoT access device and other wireless equipment, <b>Enterprise equipment:</b> switches and routers, any other equipment as decided by	42 companies granted approval – 28 MSMEs and 17 applied to Design-led incentive  Ex: Nokia Solutions, Samsung India Electronics, Tejas Networks,	42 companies committed investment of Rs. 4,115 crores  Additional sales of Rs. 2.45 Lakh crores expected  Expected to generate > 44000 jobs ( <a href="#">Ministry of Communications</a> )

		<p>EGoS (<a href="#">GoI</a>, “Guidelines for Production Linked Incentive Scheme (PLI) for Promoting Telecom &amp; Networking Products Manufacturing in India”)</p> <p>DoT introduces design led PLI of 4000 Cr. (2022) part of the outlay 12195 Cr.</p>		
Electronic/ Technology Products (5,000)	Ministry of Electronics and Information Technology	Semiconductor fabrication, display fabrication, servers, computer hardware, Internet of Things devices as well as laptops and notebooks	First disbursement of Rs.53.28 cr to Padget Electronics (100% subsidiary of Dixon Technologies)	Huge export potential
White Goods (ACs and LEDs) (6,238)	Department for Promotion of Industry & Internal Trade (DPIIT)	Eligible products: ACs (components), High value and low value intermediaries of ACs, LED (core components), LED components	<p>In 2021- 42 firms selected with investment of Rs. 4614 Cr.</p> <p>In 2022- 15 out of 19 with Rs. 1368 Cr.</p> <p>Ex: Adani Copper Tubes, LG Electronics India, Mitsubishi Electric India</p>	<p>The scheme is expected to lead to total production of AC and LED lights components of about ₹1,22,671 crore over five years.</p> <p>15 Applicants will have production worth Rs. 25,583 crore over 5 years and will generate employment for 4000 people (<a href="#">PTI</a>, “15 more firms selected under PLI scheme for white goods”)</p>
Food Products (10,900)	Ministry of Food Processing Industries	Ready to Eat/ Ready to Cook (RTE/RTC) including products	182 applications under different categories approved	The PLI scheme will help create 2.5 lakh jobs, and expansion of food processing capacity of Rs. 30,000 crore

		containing Millet; Fruits and Vegetable Products; Marine Products; Mozzarella Cheese.	(includes 30 applications for millet-based products)  Ex: Amul, ITC, HUL, Britannia Industries, Parle Agro, Tata Consumer Products and Nestle India ( <a href="#">Tandon</a> , <a href="#">PTI</a> , “Food processing industry invests Rs 4,900 crore under PLI scheme so far: Government”))	So far investments of 4,900 crore under the PLI scheme ( <a href="#">PTI</a> , “Food processing industry invests Rs 4,900 crore under PLI scheme so far: Government”)
Textile products: MMF segment and technical textiles (10,683)	Ministry of Textiles	MMF Apparel, MMF Fabrics and Products of Technical Textiles	61 shortlisted out of 67  Ex: Ginni Filaments, Kimberly Clark India Pvt ltd, Arvind Ltd	A projected turnover of Rs 184,917 crore is expected with a proposed employment of 240,134 people through the applicants ( <a href="#">PTI</a> , PLI scheme for textiles: Govt approves 61 proposals of over Rs 19,000 crore”)
High efficiency solar PV modules (4,500- first tranche) (19,500- second tranche)	Ministry of New and Renewable Energy	To achieve target of 25000 MW of solar energy capacity by 2030  Applicant to setup manufacturing plant of minimum 1000 MW	Reliance Industries Ltd, Adani Group and Sri Shirdi Sai Group (first tranche)	The PLI scheme can lead to savings of Rs. 1.37 trillion in imports, and direct employment of 1,95,000 ( <a href="#">Mishra and Baruah</a> )  55 GW of PV manufacturing capacity (first tranche) ( <a href="#">Kala</a> )

Advanced Chemistry Cell battery (18,100)	NITI Aayog and Department of Heavy Industries	New generation technologies that can store energy as electrochemical or chemical and can convert back to electric  Integrated advanced batteries that satisfy requirements	3 selected out of 10  Ex: Reliance New Energy Limited, Ola Electric Mobility Private Limited, and Rajesh Exports Limited	Private players could create a manufacturing capacity to the tune of ~95 GWh ( <a href="#">Press Information Bureau</a> , “Three Companies signed Program Agreement under (PLI) Scheme for Advanced Chemistry Cell (ACC) Battery Storage”)
Manufacturing of medical devices (3,420)	Department of Pharmaceuticals	Cancer care, Radiology and imaging and nuclear imaging devices, Anesthetics & Cardio-respiratory, All implants	21 across 4 segments  Ex: Siemens Healthcare, Wipro GE Healthcare	Committed investment of 1059.33 crore and employment generation of about 6411 ( <a href="#">PTI</a> , “Govt. approves eight companies under PLI scheme for manufacturing medical devices”)
Mobile manufacturing & Specified electronic components (40,951)  IT Hardware (7,325)* ( <a href="#">Invest India</a> , “Schemes for Electronics Manufacturing”) *under review	Ministry of electronics and information technology	Mobile Phones, Specified Electronic Components (SMT components, Discrete semiconductor devices, passive components, PCB related, Sensors, transducers, actuators, crystals for electronic applications, System in package, MEMS, NEMS, ATMP units	32 (10 – mobile)  Ex: Padget Electronics Pvt Ltd	The PLI scheme is expected to bring additional production of Rs. 10, 69,432 crore and employment for 7,00,000 people.  For the quarter ending June 2022, applicants had undertaken sales of Rs 1,67,770 crore, including export of Rs 65,240 crore ( <a href="#">Press Information Bureau</a> , “First-ever Disbursement Approved by Empowered Committee in PLI scheme for Large-Scale Manufacturing”)
Critical key starting materials/ Drug intermediaries & Active Pharmaceutical	Department of Pharmaceuticals	51 eligible products listed and covers 53 APIs approved by Government	45 of 239 applications approved till now  13 MSMEs	21 Projects come up to make key APIs with an installed capacity of 33,895 tonnes ( <a href="#">Das</a> , “Around 21 API projects come up under the PLI

Ingredients (6,940)			Aurobindo Pharma, Karnataka Antibiotics, Hetero Drugs	scheme, shows data”)
Drone and Drone components (120)	Ministry of Civil Aviation	Airframe propulsion systems, power systems, batteries, and associated components, launch and recovery systems; Inertial measurement units, flight control module; Communication systems; Cameras, sensors; Detect and avoid systems, Software for drone and drone components	Second provisional list of 23 beneficiaries released (12 drone manufacturers and 11 drone component)	Expected to generate over 10,000 direct jobs over the next three years ( <a href="#">ANI</a> )

Table 8: Status, and Impact of Sector-wise PLI Initiatives

The set of industries identified and the sequence show a great level of thought. While automotive is a natural first choice given the growth of the industry in India, the opportunity to grow exports, the growing technological changes (with new adoptions by the day) and the potential for job creations. However, this sector still depends on imports and with newer technologies coming in, the PLI extended to cover the auto components sector. Further the schemes incentivizes newer technologies like electric and hydrogen fuel vehicles and with the increasing adoption of electric vehicle and growing advances in the battery for the same, a PLI has been suitably introduced for advanced chemistry cells ([Press Information Bureau](#), “PLI Scheme for Auto Sector Will Bring Fresh Investments”, [Goenka](#)). Similarly the PLI for speciality steels provides an opportunity for steel makers to forward integrate into the manufacture of such advanced steel products to support industries like automotive, etc.

Similarly seeing the potential for the labor intensive sectors like white goods and electronics products, there are PLI schemes for the same and there is one for the one level down of electronic component parts which besides supporting the above industries can also support the telecom, networks and mobile phone industries, that also have PLI schemes, and are expected to grow with new progresses like 5G. Similarly there are PLI schemes for the manufacture of medical devices and pharmaceuticals, and later an allied scheme to support the manufacture of various formulations and APIs (heavy import dependencies) has been introduced and this is expected to support the pharmaceutical industries.

Similarly PLI scheme on technical textiles is expected to created jobs and revive India’s premier position in that industry, and the PLI extends upstream to include MMF. Similarly



PLI schemes are being implemented to encourage the local manufacture of industries which are expected to grow fast in India like solar energy generation (PV modules) and drones.

## **Semiconductors and Display Manufacturing Ecosystem (PLI for chips)**

Through the National Policy on Electronics (2019) and AatmaNirbhar Bharat Abhiyan policies, the government aims at making India an Electronics System Design and Manufacturing (ESDM) hub. To boost the electronic manufacturing sector and promote exports, various incentive schemes have been announced like Programme for Development of Semiconductors and Display Fab Ecosystem (2021) ([Press Information Bureau](#), “Manufacturing of Electronic Items”). The programme provides incentive support to companies/consortia in Silicon Semiconductor Fabs, Display Fabs, Compound Semiconductors, Silicon Photonics, Sensors (including MEMS) Fabs, Semiconductor Packaging (ATMP/ OSAT), Semiconductor Design, etc. The PLI scheme involves a total outlay of Rs.76,000 crore (>USD 10 billion) covering every part of supply chain including electronic components, sub-assemblies, and finished goods, for each of the above products.

In 2022, a Modified Programme for Semiconductors and Display Fab Ecosystem (2022) was announced with various schemes to attract investments as:

1. *Modified Scheme for setting up of Semiconductor Fabs- Fiscal support of 50% of the Project Cost*
2. *Modified Scheme for setting up of Display Fabs -Fiscal support of up to 50% of Project Cost on pari-passu basis*
3. *Modified Scheme for setting up of Compound Semiconductors / Silicon Photonics / Sensors Fab/ Discrete Semiconductor Fabs and Semiconductor ATMP / OSAT facilities in India- Fiscal support of 50% of the Capital Expenditure*
4. *Design Linked Incentive Scheme – “It offers financial incentives, design infrastructure support across various stages of development and deployment of semiconductor design for ICs, Chipsets, SoCs, Systems & IP Cores and semiconductor linked design. The scheme provides both “Product Design Linked Incentive” and “Deployment Linked Incentive”.*

## **Challenges**

In an earlier section, we discussed that a strategic roadmap is an ongoing journey, and therefore, it is natural to face challenges when a new initiative undertaken. Production Linked incentives are incentives related to value additions, incremental sales, or investments announced by the government to boost the growth of the manufacturing industry. A key challenge as highlighted by the players in the automotive sector relates to difficulty in tracing the value-added activities of players beyond immediate suppliers in the value chain. The Ministry of Industries which handles the PLI scheme for automotive sector had currently shortlisted 95 of 115 PLI applicants. The Industrial Finance Corporation of India (IFCI) is the PMA for the PLI scheme associated with automotive industry. The Ministry asked the players to come up with a methodology to compute the domestic value addition. It is expected that the players would reach out to IFCI to come up with a methodology ([Chaliawala](#)). Similar challenges will come up in most of the sectors where PLIs have been granted. So appropriate processes will have to be designed on a case by case basis.

A very important challenge will be the need for change in mindset of both consumers (in terms of acceptance of Make in India products) and entrepreneurs (in terms of a mindset to invest in R&D). Accordingly, the change in vision and actions is essential with respect to the path from reviving manufacturing to global competitiveness to global leadership in terms of

policies, ease of doing business, infrastructure, and technological innovation. Currently, GoI is on track towards global competitiveness through the various reforms and initiatives. For example, with respect to ease of doing business, GoI started with addressing issues around simplifying the business environment and related approvals to creating better FDI reforms to the present focus on building an ecosystem emphasizing the reach for global leadership ([Bhattacharya, Bruce, and Mukherjee](#)).

A third challenge is the delay associated with long term projects and required clearances to execute them which can be detrimental to future investments. Such delays have been observed with respect to delayed payments of electronic and hardware manufacturers under their PLI scheme. One of the reasons cited is the administrative delay with the associated PMA under the PLI scheme ([Economic Times](#), “Firms press govt for delayed PLI payments”).

A fourth challenge faced by the Indian economy is the lack of an already existing ecosystem and a strong design industry, related infrastructure, and expertise with respect to chip manufacturing. In this context, India is lagging with respect to the global competition and a product or engineering oriented mindset along with significant R&D investment will be helpful. While understanding the gestation period, India can also develop its own Intermediate research organizations based on the lessons from other nations ([Mamphazy; Onkar](#), “How Intermediate Research Institutions Can Bolster Semiconductor Manufacturing In India”; [Onkar](#), “Indian Semiconductor Expertise”)

Production linked incentives is an important step towards the development of manufacturing ecosystem. Developing the planning for PLI as challenges surface is equally crucial. Instead of applicants or foreign investors treating the industry as shop-and-go scheme where once the scheme ends firms move to another territory, it is important for GoI to introduce more conditions where the development of manufacturing ecosystem is valued by the firms rather than the scheme itself ([Rathee](#)).

## Summary

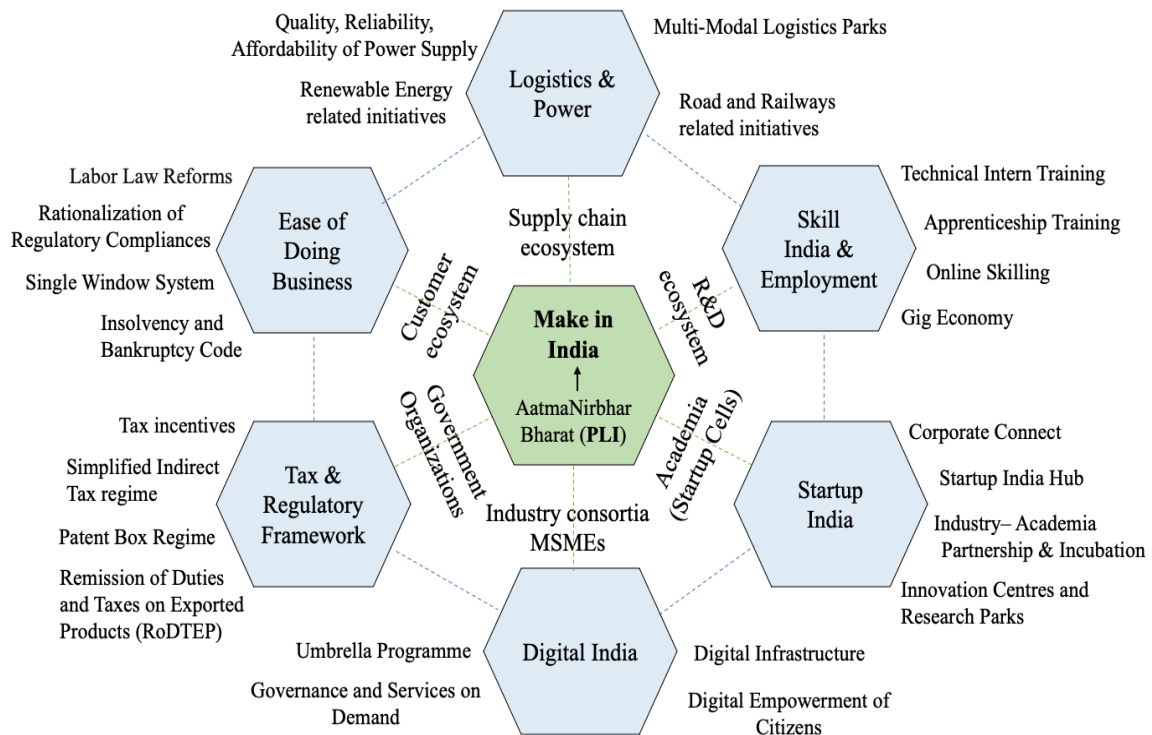
With an intention to improve the state of economy and manufacturing sector, the government has launched some important schemes to make some champion sectors competitive and such a scheme is the Production Linked Incentive scheme. The government considers PLI schemes as game-changers and they have the potential to generate Rs. 35-40 lakh crore of incremental revenues, and 1 crore jobs in next five years ([Mishra](#)). While PLI scheme is an important factor in driving the growth, PLI alone will not be sufficient. It is equally important to consider the various related reforms in order to experience the overall development of manufacturing ecosystem.

Prior to 2014 there were supportive schemes initiated with the intention to boost the manufacturing sector. However, with a new vision for Make in India, and keeping the productivity and related growth barriers in mind, the government has taken various steps to enhance the growth of the manufacturing sector. The steps included continuing some of the existing supportive reforms with new amendments, and also by introducing new reforms which could lead to the development of manufacturing ecosystem development. Some of these steps include introduction of Goods and Services tax, financial market reforms, employment related reforms, FDI policy reforms (as discussed earlier), phased manufacturing programme, Digital India, Skill India to name a few. In the next chapter, we will delineate the different supportive schemes that lead to development of a linked ecosystem supporting the Make in India programme.

## Linked Ecosystem Development

*“Ecosystems form when a collaborative network of stakeholders—enabled by digital technology—come together in meaningful ways to solve shared challenges and meet shared objectives. With manufacturing, the ecosystem consists of players all along the value chain—from vendors to suppliers—and, by working together, they can help minimize industry-wide disruption (Rutgers).”*

The growth of Indian firms, and the manufacturing sector so far was slow and stagnated which prevented their presence in the global value chain. One of the primary reasons for such a state is lack of competitiveness which was driven by lack of economies of scale, higher factor input costs, challenges related to labor, power, and infrastructure (Deloitte, “Manufacturing- The key to growth and innovation”). Through a benchmarking analysis in 2012, it is found that India was lagging in some of the key operational areas when compared to its global peers. These key operational areas are broadly categorized into three areas: technical systems (end-end design, supply chain management etc.), Infrastructure including talent management and support functions, Capabilities and mindsets covering aspects related to alignment, execution, and continuous improvement (Dhawan, Swaroop and Zainulbhai). In 2020, another report highlighted that some of the concerns related to India’s supply chain specifically the infrastructure sector along with the skill development needs continue to hinder the growth of the manufacturing industry (Maitra et al.). Thus, it becomes all the more important to develop the ecosystems to capture maximum economic value and scale the potential for new growth and learning.



*Figure 5: Linked Ecosystems' Development and Key Initiatives*

While we looked at the importance of sector specific initiatives in the previous chapter and the approach of GoI in improving the competitiveness of sectors with the higher

productivity, in this chapter we discuss the linked ecosystems that are necessary to witness the overall development of manufacturing industry in India. The Government of India is making every possible effort to develop ecosystems (see

Figure 5) that can support Make in India initiative. Some of the linked ecosystems in this direction relate to various initiatives with respect to Skill India, Startup India, Digital India, Tax & Regulatory Framework, Ease of doing business, and Logistics & Power (with only some of the key initiatives related to the ecosystems are listed in the

Figure 5).

While designing a policy is an important step towards development, implementation is an equally critical aspect. Ecosystems are efficient when a collaborative network of stakeholders come together with a common objective. The different Ministries of India are one of the key stakeholders with respect to the linked ecosystems, and in leading the growth of the industry with the support of the other stakeholders. The following are the nodal agencies or Ministries associated with each of the components in

Figure 5.

Linked Ecosystems	Key Departments/Ministries
Skill India	Key Departments governing Skill India Mission ( <a href="#">IBEF</a> , “Skill India Mission”) Ministry of Skill Development and Entrepreneurship (MSDE) National Skill Development Corporation (NSDC) Sector Skill Councils (SSC)
Startup India	For various action points ( <a href="#">Startup India</a> ), the following Ministries are responsible: Ministry of Labour and Employment Ministry of Environment, Forest, and Climate Change Department of Promotion Industry and Internal Trade and SIDBI Ministry of MSME Ministry of Corporate Affairs Department of Revenue NITI Aayog Ministry of Human Resource Development (MHRD) Department of Science and Technology Department of Biotechnology
Digital India	Institutional Mechanisms at National level involves Monitoring Committee on Digital India ( <a href="#">Ministry of Electronics &amp; Information Technology</a> , “Digital India: A programme to transform India”): <ul style="list-style-type: none"> <li>• Prime Minister - Chairman</li> <li>• Finance Minister</li> <li>• Minister of Communications &amp; IT</li> <li>• Minister of Health</li> <li>• Minister of Rural Development</li> <li>• MHRD</li> </ul>
Tax & Regulatory Framework	Key Departments related to taxation in India ( <a href="#">Invest India</a> , “Taxation Overview in India”): Central Board of Indirect Taxes and Customs Department of Revenue, Ministry of Finance Income Tax Department

Ease of Doing Business (EoDB)	Key Department for improving EoDB index is Department of Promotion of Industry and Internal Trade ( <a href="#">Development Monitoring and Evaluation Office (DMEO)</a> ). However, improvement in EoDB index is related to various factors concerned with other Ministries as well. Improving EoDB is responsibility of both State and Central government ( <a href="#">ET BFSI.com</a> )
Infrastructure (Logistics & Power)	Key Departments related to Infrastructure are ( <a href="#">DPIIT, Infrastructure Ministries</a> ): Ministry of Civil Aviation Ministry of Surface Transport Ministry of Railways Ministry of Power Ministry of Communication Ministry of Urban Development

Table 9: Linked Ecosystems, and Key Departments and Ministries

In the next few sections, we will discuss the linked ecosystems, related initiatives, and the impact of some of the key initiatives (gathered from various sources).

## Skill India

As per International Labour Organization (ILO), there could be a shortage of ~29 Mn skilled personnel by 2030 and with 75% of working population, it is important to have a mission such as Skill India, launched in 2015. Skill India aimed to implement a comprehensive skill development training programme that can help India become self-reliant. This programme wanted to improve the development of the country by bridging the gap between industry demands and skill requirement. The government aimed to train >40 crore people by 2022 through ([IBEF](#), “Skill India Mission”):

1. Apprenticeship training: to enhance the apprenticeship opportunities in the country by providing post-education job training in engineering
2. Technical Intern training programme encourages international cooperation by facilitating transfer of skills, technology, and expertise among the participating countries
3. Online skilling: The ‘e-Skill’ India portal links B2C e-learning sites that operate digitally and build & source e-learning content.

The government has introduced several schemes for a better implementation of Skill India Mission; some of the key schemes are:

1. Pradhan Mantri Kaushal Vikas Yojana (PMKVY): Skill-based learning programme
2. Jan Shikshan Sansthan: Vocational training to underprivileged population
3. Integration with General Education: Phased incorporation of vocational educational programme in mainstream education
4. Pradhan Mantri YUVA (PM YUVA) Yojana: Entrepreneurship education
5. SANKALP (Skills Acquisition and Knowledge Awareness for Livelihood Promotion): Focus on improvement of quality, strengthening of institutions and inclusion of weaker sections in skill training ([Ministry of Skill Development and Entrepreneurship](#)).

Initiative	Key Focus Area	Year Initiated	Policy/Action	Impact
Pradhan	Skill	2015-	PMKVY 3.0: Create	PMKVY 1.0 (2015-2016) –

Mantri Kaushal Vikas Yojna (PMKVY)	Development & Employment	2021	an ecosystem To enable youth to take up industry relevant training Promote sustainable skill centers To initiate Second phase (2021-2026) ( <a href="#">GoI (Ministry of Skill Development and Entrepreneurship)</a> )	19.85 lakh trained; 2.62 lakh placed  PMKVY 2.0 (2016-2020) – 89.59 lakh candidates trained  PMKVY (2020-2026)-2.78 lakh trained between 2020-2021  Electronics and Hardware sector reported highest (54%) placements under PMKVY ( <a href="#">IBEF</a> , “Manufacturing”); <a href="#">IBEF</a> , “Pradhan Mantri Kaushal Vikas Yojana (PMKVY)”)
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Table 10: Skill India Initiative and Impact

## Startup India

The Startup India Initiative was launched in 2016 with an aim to boost entrepreneurship, economic growth, and employment across India. The initiative focusses on three areas: Simplification and Handholding, Funding Support and Incentives, and Industry- Academia Partnership and Incubation. Startup India’s 19-point action plan includes research parks to propel innovation, annual startup fests, easier and faster exit, simplifying process with mobile app and portal and more ([IBEF](#), “Startup India - Empowering Startups for Growth”).

Initiative	Key Focus Area	Year Initiated	Policy/Action	Impact
Various initiatives related to Startup India	Startup India	2016	Reducing regulatory burden on startups Funding support and initiatives Industry-Academia partnership and Incubation	One person companies – no restriction on paid up capital and turnover; reducing residency limit for Indian citizen to set up from 182 to 120 days Government recognized 50000 startups creating 5.5 lakh jobs (2021) 104 startups joined “Startup India Showcase”, an online discovery platform India has 61,400 startups with new recognized startups up from 733 in 2016-2017 to 14000 in 2021-2022 ( <a href="#">IBEF</a> , “Manufacturing”); <a href="#">Padmanabhan</a> )

Table 11: Startup India Initiative and Impact

## Digital India

Concerns such as digital poverty, low skill development, illiteracy, digital divide, lack of internet access in some areas, and lack of access to banking facilities in remote villages are some of the factors that affect the growth of the economy. Rural population is going to be 63% of total market in India by 2025, and 80% of the current rural population is yet to adopt digital mode of payments ([Kumar](#), “Why Bridging the Digital Gap in Rural India is Extremely Important”). The aim of Digital India initiative, therefore, is to make India as a digitally empowered society and knowledge economy. The three main vision areas ([Ministry of Electronics & Information Technology](#), “Digital India”) of Digital India are:

1. Digital Infrastructure as a core utility for every citizen
2. Governance and Services on Demand
3. Digital Empowerment of Citizens

Initiative	Key Focus Area	Year Initiated	Policy/Action	Impact ( <a href="#">McKinsey Global Institute</a> , “Digital India: Technology to transform a connected nation”)
Various initiatives related to Digital India	Digital India	2015	e-Governance would be promoted through a centralized initiative Improvement in digital infrastructure Easy access to common service centre Digital empowerment of citizens	<b>Broadband Highway-</b> Broadband connectivity in rural areas via optical-fibre cable to gram panchayats; more than 110,000 have been linked <b>Universal mobile connectivity-</b> Mobile services already cover 554,530 of the country’s 597,608 villages <b>Public Internet Access-</b> Service available at almost 300,000 of the country’s 546,286 <b>E-governance-</b> Electronic tenders - 926,070 in 2017–18 from 476,983 in 2014–15 <b>e-Kranti-</b> to deliver government services digitally. Progress has been made on 33 of e-Kranti’s 44 projects. <b>Promote electronics manufacturing-</b> domestic mobile handset manufacturing output increased from 60 million units in 2014–15 to 225 million in 2017–18

Table 12: Digital India Initiative and Impact

## Infrastructure

One of the important pillars of Make in India is ‘New Infrastructure’ to drive economic growth by enabling industrial and urban infrastructure development ([GoI](#), “New Initiatives: Make In India”). Infrastructure initiatives include initiatives with respect to power, bridges, dams, roads, and urban infrastructure development. As a part of the Union Budget 2022-2023, the government of India allocated Rs. 10 lakh crores to enhance the infrastructure sector ([IBEF](#), “Infrastructure Development in India: Market Size, Investments, Govt Initiatives”).

Initiative	Key Focus Area	Year Initiated	Policy/Action	Impact
Industrial corridors and 21 new nodal cities	Infrastructure	2011 & 2016	2016- National Industrial Corridor Development and Implementation trust  Propose 11 industrial corridor projects with 32 nodes ( <a href="#">DPIIT</a> , “National Industrial Corridor Programme.”)	Industrial corridors and 21 new nodal cities: large land parcels, good connectivity etc.  Pradhan Mantri Gati Shakti National Plan (2021) - 100 PM Gati Shakti freight terminals for multimodal logistics facilities  India’s ranking on construction permits improved from 184 in 2014 to 27 in 2019  ( <a href="#">DPIIT</a> , “National Industrial Corridor Programme.”; <a href="#">Economic Diplomacy Division</a> )
Roadways	Infrastructure	2014-current	Standardized processes for bidding and tolling Tax sops, FDI encouragement	Highway construction in India increased at 17.00% CAGR between FY16-FY21. In FY21, 13,298 kms of highways were constructed (IBEF, 2022)  GST on construction equipment reduced from 28% to 18% to boost infrastructure development Pradhan Mantri Gati Shakti National Plan (Budget 2022-2023)  National highways to be



				<p>expanded by 25,000 kms with a funding of Rs. 20,000 crores</p> <p>To create a digital platform that would enable 16 ministries to collaborate</p> <p>(<a href="#">IBEF</a>, “Roads”; <a href="#">IBEF</a>, “Infrastructure”; <a href="#">IBEF</a>, “Road Infrastructure in India.”; <a href="#">MyGov Team</a>)</p>
Railways	Infrastructure	2014-current	<p>100% FDI</p> <p>Various measures to boost revenues, to improve energy efficiency</p>	<p>Revenue increased at a CAGR of 2.57% in FY16-FY19 and reached \$bn 27.71 in FY19 (<a href="#">IBEF</a>, 2022)</p> <p>Freight – accounts for 75.2% of total revenue (FY22); 16.68\$ bn (FY16) and 18.55\$ bn (FY22)</p> <p>Passenger earnings- 6.90 \$bn (FY16) and 4.98 \$bn (FY22)</p> <p>Operating ratio above 95% since 2016 and highest in 2017-18 at 98.44%</p> <p>Pradhan Mantri Gati Shakti National Plan (Budget 2022-2023)</p> <p>A 2,000-kilometer railway network to be placed under 'Kavach'</p> <p>Next 3 years- 400 new Vande Bharat trains-improved energy efficiency</p> <p>(<a href="#">IBEF</a>, “Infrastructure”; <a href="#">IBEF</a>, “Railways”; <a href="#">MyGov Team</a>; <a href="#">Nag</a>; <a href="#">Sun</a>)</p>
Faster Adoption and Manufacturing of (Hybrid &) Electric Vehicles (FAME)	Infrastructure	2015-FAME I 2019-FAME II	<p>FAME I- progressive induction of reliable, affordable and efficient electric and hybrid vehicles (xEV). Outlay of Rs. 8.95</p>	<p>Under National Electric Mobility Mission Plan</p> <p>FAME I: 2.8 lakh xEVs supported with total demand incentives of approximately Rs. 3.6bn, 425 electric and hybrid buses with Rs. 2.8</p>

			bn FAME II- outlay of Rs. 100 bn for a period of 3 years	bn, 520 Charging Stations/ Infrastructure for Rs. 430 Mn (approx.) were sanctioned  FAME- II: 4,69,315 EVs have been supported by way of Demand Incentive of about Rs. 18.69 bn, increase in sale of electric two- wheeler, 6,315 e-buses sanctioned, 2,877 charging stations sanctioned  ( <a href="#">Ministry of Heavy Industries</a> , “FAME I”; <a href="#">Ministry of Heavy Industries</a> , “Ministry of Heavy Industries supports 2,31,257 Electric Vehicles under Phase-II of FAME India Scheme till 1st February, 2022 by way of Demand Incentive amounting to about Rs. 827 Cr.”; <a href="#">Press Information Bureau</a> , “Year-End-Review of Ministry of Heavy Industries -2021”)
MITRA scheme	Infrastructure	2021	To set up 7 Parks with a total outlay of Rs. 4,445 crore	To create an integrated textiles value chain at one location Reduce logistics cost of Industry 1 lakh direct and 2 lakh indirect employment per park  ( <a href="#">IBEF</a> , “Manufacturing”; <a href="#">Ministry of Textiles</a> , “PM Mega Integrated Textile Region and Apparel Parks Scheme”; <a href="#">Ministry of Textiles</a> , “Notification issued for setting up of 7 MITRA Parks with a total outlay of Rs. 4,445 crore.”)

Table 13: Infrastructure Initiative and Impact

## Power

The low conventional energy sources of India are not sufficient for meeting the current rapidly growing needs of the country. Therefore, it becomes essential to look at the other sources of energy such as a solar and hydro power sectors. Some of the key strategies by GoI are introduction of Uniform Renewable Purchase Obligations (UPRO) ensuring all electricity distribution entities to produce a minimum quantity from renewable sources of energy, Green Cities in each state powered by solar energy, developing hybrid renewable energy projects that combine two or more renewable energy sources, and to build a sustainable power grid through round-the-clock power supply obtained from both conventional and non-conventional energy sources. This combined power is sent to distribution companies (DISCOMs), which receive attention through schemes from GoI to improve their operational efficiency ([IBEF](#), “Renewable Energy”).

Initiative	Key Focus Area	Year Initiated	Policy/Action	Impact
Various Power related initiatives	Power	2015-2021	Various initiatives with respect to Generation, Transmission, Distribution and Connection	<p>2015- 2021: India adds 117.9 GW of power generation capacity (64.5 GW of conventional sources, 53.4 GW renewable sources)</p> <p>India’s ranking on getting electricity improved from 137 in 2014 to 22 in 2020</p> <p>(<a href="#">PTI</a>, “India adds 9.7 GW of power generation capacity this fiscal till Feb 28”; <a href="#">Invest India</a>, “Stepping up to Endless Opportunities”)</p>
Ujwal DISCOM Assurance Yojna (UDAY)	Power	2015	<p>. Targeted Activities:</p> <ul style="list-style-type: none"> <li>• To improve operational efficiency</li> <li>• Reduction of cost of power generation</li> </ul> <p>2. Financial Turnaround</p> <p>3. Energy efficiency and conservation</p>	<p>Between 2014-15 and 2019-20, the Aggregate technical and commercial (AT&amp;C) losses at the national level declined from 26% to 21%. Losses varied across states</p> <p>Average cost of supply (ACS)- Average revenue realization (ARR) gap declined marginally from Rs 0.77 per unit in 2014-15 to Rs 0.72 in 2019-20 with wide variation across states.</p> <p>Smart metering is about minimizing human intervention, and real-time data gathering, billing and</p>

				<p>collection (EY, 2020).</p> <p>Smart Metering Implementation Status (2022): 34 out of 60 projects completed 53,94,963 smart meters of the sanctioned (1,12, 75,739) deployed</p> <p>(<a href="#">PRS Legislative Research; EY India</a>, “Smart Metering Adoption in India- Now, Next, and Beyond”; <a href="#">Ministry of Power</a>, “All India Smart Metering Status”, <a href="#">Ministry of Power</a>, “Smart Metering Status”)</p>
Revamped Distribution Sector scheme	Power	FY 2021-22 to FY 2025-26	Result-linked financial assistance to DISCOMs	<p>To reduce AT&amp;C losses across India to 12-15% by 2024-25</p> <p>To eliminate the ACS-ARR gap by 2024-25</p> <p>(<a href="#">Press Information Bureau</a>, “PM launches Power Sector’s Revamped Distribution Sector Scheme”; <a href="#">REC Limited</a>)</p>
Green Energy Corridor scheme	Renewable Energy	GEC I: 2015 GEC II: 2022	<i>Synchronizing electricity produced from RE with conventional power stations in the grid</i>	<p>8651 ckm of intra-state transmission lines and 19, 558 MVA of substations created under first phase of Green Energy Corridor scheme.</p> <p>GEC phase II approved for addition of 10,750 circuit kms (ckm) of transmission lines and approx. 27,500 MVA transmission capacity</p> <p>(<a href="#">Ministry of New and Renewable Energy</a>, “Inter-state transmission lines and Creation of Sub-stations”; <a href="#">Press Information Bureau</a>, “Cabinet approves Intra-state Transmission System- Green Energy Corridor Phase -II”)</p>

PM KUSUM	Renewable Energy	2019	<i>Energy security to farmers and share of installed capacity of electric power from non-fossil-fuel sources to 40% by 2030</i>	<p>Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyaan</p> <p>As of May 2022, over 1.16 lakh standalone solar pumps installed</p> <p>Over 2.5 lakh solar pumps under different stages of installation</p> <p>(<a href="#">Ministry of New and Renewable Energy</a>, “Over one lakh standalone solar pumps installed under PM-KUSUM scheme”)</p>
Various initiatives related to Renewable Energy	Renewable Energy	2014-2021	<p>To reduce carbon intensity</p> <p>Approval to solar city and parks</p> <p>PLI scheme in Solar PV manufacturing</p>	<p>India’s RE capacity increased by around 250 percent (2014-2021)</p> <p>Target installed RE capacity of 450 GW by 2030 of which 280 GW from solar</p> <p>Percentage of contribution of renewable energy to total installed capacity- from 12.92% in 2014 to 29.14% in 2022</p> <p>(<a href="#">IBEF</a>, “Renewable Energy”)</p>
Solar related initiatives	Renewable Energy		<p>Approval to solar city and parks</p> <p>PLI scheme in Solar PV manufacturing</p>	<p>Solar capacity increased from 2.6 GW to more than 46 GW in last 7.5 years. Plug and play model helps in reducing solar power tariff by more than 75%. Low solar tariff of 1.99/unit achieved</p> <p>Solar Park scheme doubled from 20 to 40 GW</p> <p>Rooftop Solar Programme Phase II - to install RTS capacity of 4,000 MW in the residential sector by 2022 (IBEF, 2022)</p> <p>(<a href="#">IBEF</a>, “Renewable Energy”; <a href="#">Ministry of New and</a></p>

				<a href="#">Renewable Energy, “Initiatives &amp; Achievements”</a>
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Table 14: Power related Initiatives and Impact

## Goods and Service Tax (GST)

Before introduction of GST, business decisions largely were based on tax considerations and difference in tax regimes across states. Further, the ‘tax on tax’ effect created distorted structure in consumption and production. The levy of entry tax at the borders of different states created bottlenecks and affected the inventory costs. With the introduction of GST in 2017, government created ‘one nation, one tax’ environment to simplify the tax structure, improve tax compliance, improve governance, to improve supply chain efficiency and boost growth ([IBEF](#), “Advantage GST: Transforming Businesses and Spurring India’s Growth”).

Initiative	Key Focus Area	Year Initiated	Policy/Action	Impact
GST	Tax related	2017	One nation, One market, One tax - motto of GST Consistency in return details and filing across states automation of tax compliances	GST expected to boost exports by 10-14 percent, and boost GDP by about 2% ( <a href="#">Bhattacharya, Bruce, and Agrawal</a> )  Highest revenue mobilization in April and October 2022-2023 ( <a href="#">Mint</a> , “Has GST reduced inter-state disparities?”) Difficult to assess the impact of GST with lack of economic activity during lockdown followed by slower market growth ( <a href="#">Chawla</a> )

Table 15: GST Initiative and Impact

## Ease of Doing Business

World Bank ranks 190 economies on ten parameters considering the entry to exit of a business cycle indicating how easy it is to conduct business in a country. These ten parameters are ([Ministry of Commerce & Industry and DPIIT](#)):

1. Starting a Business
2. Dealing with Construction Permits
3. Getting Electricity
4. Registering Property
5. Getting Credit
6. Protecting Minority Investors
7. Paying Taxes
8. Trading Across Borders
9. Enforcing Contracts

## 10. Resolving Insolvency

Initiative	Key Focus Area	Year Initiated	Policy/Action	Impact
Ease of doing business related regulatory reforms	Ease of doing business	2014	In 2014, GOI launched various regulatory reforms aimed at making it easier to do business in India	<p>Rationalisation of regulatory compliances: Study in 2020 shows 69000 regulatory compliances reduced to 33000 in 2022</p> <p>National Single window system: time bound and hassle-free approvals</p> <p>Insolvency and Bankruptcy code (2016): easing the process of exit.</p> <p>Time to resolve insolvency reduced from 4.3 (2017) to 1.6 years (2020)</p> <p>142nd (2014) to 63rd (2019) in 'World Bank's Ease of Doing Business Ranking 2020</p> <p>India ranks 48 in Global Innovation Index 2020</p> <p>(<a href="#">Banerjee</a>, “Transformation in Ease of Doing Business Environment”; <a href="#">Banerjee</a>, “Ease of Doing Business for AatmaNirbhar Bharat”; <a href="#">GoI</a>, “Ease of Doing Business”).</p>

Table 16: Ease of Doing Business Initiatives and Impact

### Labor Laws

There are several initiatives taken by the Ministry of Labor and Employment for ease of doing business. Some of the key initiatives are ([Ministry of Commerce & Industry](#), “Ease of Doing Business”; [Ministry of Labour & Employment](#)):

1. Four labor codes announced by simplifying and rationalizing 29 Central Labor Laws and providing provisions for one registration for an establishment
2. To bring transparency and accountability in labor laws enforcement, Shram Suvidha Portal was launched.
3. Simplifying number of registers to be maintained by establishments under Central Labor Laws

4. Compliance regime based on self-certification for Startups leading to no inspection taking place within the first year
5. Compliance regime based on self-certification for MSMEs (< 3 years old) leading to a random risk-based inspection system

Initiative	Key Focus Area	Year Initiated	Policy/Action	Impact
New labour codes	Ease of doing business	2019	Consolidates 44 labor laws into 4 categories: Code on wages (2019) Code on Occupational safety (2020) Code on Industrial relations (2020) Code on social security (2020) <a href="#">(GoI (Ministry of Information and Broadcasting))</a>	To ensure min. wages and social security to 500mn workers  Uniform definition of wages thus, reducing confusion from earlier nearly 12 definitions Include new age working models providing wider coverage  The code on occupational safety to regulate health and safety conditions of workers in all mines, and establishments with 10 or more workers  Faster F&F settlements upon exit initiation of an employee  142nd (2014) to 63rd (2019) in 'World Bank's EoDB Ranking 2020  <a href="#">(GoI (Ministry of Information and Broadcasting); Maji)</a>

Table 17: Labour Laws Initiative and Impact

## Summary

Industrial ecosystems include various stakeholders functioning across the value chain. The stakeholders are Government organizations, Startups to Large-scale firms, Customers, Supply Chain players, Academia, and Research Organizations. With the waves of change shaping the economic landscape and related policies, the linked ecosystems can function efficiently and effectively towards the common objective of enhancing the growth of the nation, only when all the stakeholders operate together in a collaborative manner.

In this chapter, we discussed various ecosystems associated with success of Make in India initiative. We elaborated on the various initiatives such as Skill India & Employment, Startup India, Digital India, Tax & Regulatory Framework, Ease of Doing Business, and Infrastructure broadly covering Logistics & Power sectors.

The direction adopted by the government in terms of building a manufacturing ecosystem while connecting the various linked ecosystems is a positive and progressive approach which is evident with the development of consumer electronics sector. The sector is also inclined



towards technology adoption under Make in India initiative. The market size for appliances and consumer electronics is currently at 75 lakh crore and is expected to reach 1.48 lakh crore by 2023. The consumer electronics sector is thriving with the policy support from the government, PLI scheme, high competition, economies of scale, increased FDI investments, value addition from Startups and proximity to global markets ([Gaurav, Economic Times](#), “Indian Appliances & Consumer Electronic industry”).

The effort towards an initiative starts with strategic clarity, and then it requires consistent efforts while addressing the existing and new challenges. India continues to face the unemployment challenges at the same time the country also faces shortage of skilled manpower. To tap the advantage of demographic dividend at the right time, it is important to anticipate the needs of an evolving market while matching the supply with the demand in the current market scenario ([Misra](#)).

Some of the supply chain issues concerning the manufacturing industry are limited adoption of technology such as artificial intelligence, block chain, IoT (which are linked to other initiatives such as Skill India, Startup India, and Digital India), Need for improvement in quality of infrastructure such as cold-storage facilities, national highway network, and logistics networks ([Maitra et al.](#)). In this context, GoI announced various initiatives including the multi-modal transport network under the GatiShakti plan to create the enabling conditions required for the growth of the manufacturing industry. Achieving a seamless and efficient multi-modal network requires close collaboration and coordination between various stakeholders in the linked ecosystems.

In this next chapter, we will discuss some of the next steps to be considered to achieve the objectives of the Make in India initiative. Further, we will also discuss the key metrics which would help the initiative in tracking the performance and identifying the right strategies going forward.

## Going Forward

From Bombay Plan in 1944 to Make in India initiative in 2014 to the current phase of Production Linked Incentives, India traversed different phases of economic growth. To achieve an inclusive and sustainable economic growth, GoI is striving in every possible way with a changed economic vision, with the implementation of various reforms, the ability to adapt in times of crisis, and with shift in mindset towards global leadership. One of the very important initiatives in this direction is Make in India which is making India a destination of choice for global manufacturing. With an intention to boost the domestic manufacturing capabilities and supply chains, and to enable the complete ecosystem while enhancing efficiencies and cost competitiveness, GoI launched the PLI schemes in the champion sectors. These PLI schemes are expected to provide multiple benefits from contribution to GDP, large-scale employment generation, enhancing global value chain participation, more resilient supply chains, and improving overall competitiveness of the ecosystem ([Deloitte](#), “Manufacturing- The key to growth and innovation”).

The strategic roadmap of any nation is an ongoing journey and there will be achievements and challenges with the changing manufacturing landscape. In the next section we will touch upon some of the next steps for India.

### Next Steps

*“Sustainable and inclusive growth can be a dynamic, self-reinforcing combination, but achieving it will require addressing counteracting forces ([Sternfels et al.](#)).”*

To achieve that sustainable and inclusive growth, it is important to trace the challenges, or the counteracting forces faced by different sectors and address them with changing economic landscape. In the next section, we will discuss the key steps to be considered by India going forward.

1. Joint coordination action by central and state governments to improve ease of doing business and an integrated platform to track PLI schemes

While national level policies and reforms are important, it is equally important to understand the differences and strengths of each sector in combination with the differences and strengths of each of the states. Further, while promoting the champion sectors in each state, any sector in a state can slowly be converted into a champion sector ([McKinsey Global Institute](#), “India’s turning point”). In order for the manufacturing system to function efficiently and effectively it is important for joint coordination actions by the central and state governments. An integrated platform not just to avoid any information asymmetry but also a platform that integrates and serves all the stakeholders in tracking the actions of key nodal departments and the effectiveness of the PLI schemes across the sectors is necessary.

2. An ecosystem-oriented approach in implementing the initiatives

Manufacturing ecosystems including Indian manufacturing ecosystem deal with various stakeholders involved in linked ecosystems. With changing competitive landscape, manufacturing firms produce products that generate complex functionality involving the

value contributions from various stakeholders. For the ecosystem with these stakeholders to function appropriately, while it is important for the firms to understand the generic and their unique know-how, technology and organization, a critical feature of how an ecosystem deals with both competition and cooperation is the aspect of governance ([Sminia et al.](#)). While the government is on track with respect to establishing a strong manufacturing ecosystem, it is the right time to strengthen the inter-organizational relationships within the linked ecosystems to enhance the speed of implementation in a coordinated approach, and to enhance the effectiveness of the initiatives announced.

3. To prioritize differentiated skill building activities as per the market needs

It is a positive sign that Indian young employable talent moves from 46.2% to 50.3%. The India Skills report 2023 further highlights the need to improve the female participation in Science, Technology, Engineering, and Mathematics (STEM) areas ([Economic Times](#), “India Skills Report 2023”). However, the country continues to face skill gap. In a survey conducted by a global IT governance firm, it is observed that there is a presence of skill gap with respect to cyber security talent acquisition ([Business Today](#)). With rampant digitization, and the need to adopt new-age technologies, it becomes important to develop a much stronger skill development programmes with the support of all stakeholders in the ecosystem. It is furthermore important to address the grassroots of the problem right at the school level in identifying and encouraging the natural abilities of students to reap the benefits of diverse talent pool at a later stage ([Cheema](#)).

With changing technological landscape in the manufacturing industry, there is a shift from machine-reliant assembly lines to highly automated factories at the global level. In order to position ourselves in the global value chain, it is important that we move towards the global trends that are transforming the manufacturing industry such as Industrial Internet of Things (IIOT), 5G & Edge computing, Artificial intelligence related to machinery and components, Digital twin technology, Extended reality and Metaverse, and Automation and Dark Factories, 3D printing and Block chain technology ([Marr](#)) Having skilled workforce that can deliver competitive products and contribute towards R&D intense activity is an important contributor to over health and growth of the ecosystem ([McKinsey Global Institute](#), “How to Compete and Grow: A Sector Guide to Policy”).

4. To improve the pace of implementing the initiatives and improved investments in the following linked ecosystems:

- a) Continuous and improved investments in infrastructure and emerging technologies
- b) Improving Indian R&D setup

Some of the barriers to competitiveness faced by Indian manufacturing ecosystem are: a logistical model mix with heavy dependence on roads is a root cause for high contribution of logistics cost that amounts to almost 6 percent of the GDP, limited adoption of latest technologies, and fragmented logistics network. Some of the reforms such as PM GatiShakti Plan is in the direction of creating a multi-modal network which has the potential of enforcing multiplier effect. A more focused approach in optimizing the logistics network while considering the aspects of adopting new-age technologies (such as logistics maps with smart routing etc.) would be helpful ([Maitra et al.](#)).

Another essential step in improving the competitiveness of the manufacturing ecosystem is having a balanced R&D setup. While Make in India helped boosting exports, improving FDI investments, simplifying ease of doing business along with various other

reforms including PLIs related to various sectors helping the growth of manufacturing industry, the unemployment rate of most educated workers is around 19.1%. It is important to push high-skill workers' employment in labor intensive industries by making India a global R&D hub. There is need to specifically focus on patent rights regime, strengthening industry-academia linkages (*Intermediate Research organizations (IROs) – intermediaries between academic institutions and industries catalyzing break-throughs*) and further provide research-linked-incentives that can support the PLIs and also improve the research capacities of the nation ([Roshan and Mukherjee](#); [Onkar](#), “How Intermediate Research Institutions Can Bolster Semiconductor Manufacturing In India”).

## Key Metrics

So far, we discussed the aspects related to strategic vision for manufacturing industry, roadmap, implementation, challenges, and way forward. It is equally important to bring our focus to performance management which is essential for any business and for a sector to assess its growth and align the stakeholders, and system towards the objectives of the mission. While announcing initiatives is important, execution and reaping the benefits is more important. We list most potential ways to track the success of the Make in India initiatives:

- 1) *Turnaround time for projects*: it is imperative for projects sanctioned PLI initiatives be completed in time and within budget. In this measure though the PLI strictures will motivate the various organizations to be on time.
- 2) *Time from announcement to actual disbursement of funds*: while firms availing the benefits are expected to adhere to time commitments, it is also expected that benefits are disbursed when they become due. This measure would help in tracking the administrative delay, if any. This is an important measure since some of the global electronics and hardware manufacturers have expressed that there is a delay in payouts related to PLI schemes, and this delay is leading to uncertainty in future investment plans ([Aryan](#)).
- 3) *Centre to State implementation time*: it is very important to have minimum time lapses for respective states to implement reforms or policies framed by the central government, eg. we consider the implementation of four labour codes formed from the simplification of 29 labor laws. The central government pre-published the draft rules and is waiting for the states to frame regulations so that the central government can implement all four labor codes at both centre and state level at once to have a seamless transit ([PTI](#), “Almost all states prepared draft rules on labour codes; implementation at an appropriate time: Bhupender Yadav”).
- 4) *Predicted Employment rate, Actual employment rate, Gain/Loss in jobs*: The difference between predicted employment rate and actual employment rate will indicate the gain or loss in jobs. This is a direct eIt is important to have this as a measure because unemployment is a huge concern in India with the latest data indicating a highest joblessness rate of 8.30% in December, 2022 ([Anand](#)).
- 5) *GDP growth and Current contribution of Manufacturing to GDP (as a percentage)*: Gross Domestic Product (GDP) is an important measure to capture the value added from production of goods and services in a certain period ([OECD Data](#), “Gross domestic product (GDP)”). It indicates the current (typically one year or quarter) health of the economy and it measures the domestic production. A growth in the value of GDP can indicate that the economy is productive and a decrease in value indicates that the economy is less productive. GDP includes “*a nation’s level of consumption, investment, government spending on goods and services, and the difference in profit between exports*”

and imports”. For various stakeholders it is a measure to understand the emerging markets and impact of policy ([Stobierski](#)). Currently, the manufacturing share of GDP is 15% and the government would want to take it to 25% through global trade, encouraging participation of MSMEs, domestic manufacturing, and by becoming a global leader in technology ([PTI](#), “Goyal Asks Industry to raise manufacturing contribution to 25% of GDP”)

- 6) *MSME Density in a Cluster, and Number of Clusters*: MSME sector is a very important sector contributing 30% to India’s GDP, and providing employment to almost 100 million people. Thus, the growth of MSME sector plays a crucial role in the inclusive and sustainable growth of India ([Manohar](#)). MSME density in a country is defined as the number of formal MSMEs per 1000 adults and is related to the macroeconomic factors. Further, it is highlighted that a “streamlined business environment, competitive landscapes, well-functioning institutional frameworks, along with high per capita income of a country” relate to higher MSME densities ([SME Finance, World Bank Group, International Finance Corporation](#)). The earlier definition is with respect to population. A more appropriate measure could be MSME density in a cluster defined by geographical area which is an important measure that can help the government assess the needs of infrastructure or labour force for that cluster. Further, it will be beneficial to understand number of such clusters and distance between them for more targeted measures. For example, West Bengal government initiates GIS mapping of 570 MSME clusters to assess and improve their infrastructure, skill of workforce, and ease of doing business ([PTI](#), “Bengal Govt. starts GIS mapping of 570 MSME clusters to boost ease of doing business”). In this context MSME density in a cluster will be a very helpful feature.
- 7) *Gross Fixed Capital Formation (Investments)*: Gross Fixed Capital Formation also called as Investments is defined as “the acquisition of produced assets (including purchases of second-hand assets), including the production of such assets by producers for their own use, minus disposals. The relevant assets relate to assets that are intended for use in the production of other goods and services for a period of more than a year” ([OECD Data](#), “Investment (GFCF)”). GFCF is a measure of the level of domestic investments and a rise in GFCF is a precursor to sustainable growth. While currently the government is contributing a major share to GFCF, it becomes important to address the investment challenges at the state level to enforce the multiplier effect and further, a proactive investment approach by both public and private sectors is essential ([Livemint](#)).
- 8) *Collective R&D Spend and Patent Applications*: R&D spend is an important measure and one of the key contributors to the growth of the economy. There is impact of R&D spend on productivity, exports, employment, and capital formation ([Press Information Bureau](#), “Release of R&D expenditure ecosystem report”). A low R&D spend is a main factor for a low patent regime in India along with other factors such as procedural delays and complexity of process ([ET Online](#)). In advanced economies, private funding contributes more to scientific progress than government spending ([Waghmare](#)). Therefore, it is essential for a collective R&D spend at a firm, state, and central level to enhance the growth of the manufacturing ecosystem. Further, it is important to consider the impact of R&D spend on the patent applications.
- 9) *AatmaNirbharta Index*: AatmaNirbharta Index is about assessing the impact of technology transfer. “Technology is transfer about how systemic rational knowledge of one group or institution is embodied by another group”. In this context, AatmaNirbharta Index assesses the impact of technology transfer on how the technology met the goals of employment generation, self-reliance, income distribution and any second-order spillover effects ([Onkar](#), “Indian Semiconductor Expertise”). Further, the impact on R&D spend, generation of skilled workforce and import substitution can also be looked at.

10) *Purchasing Managers Index (PMI)*: PMI is an indicator of both manufacturing and service sectors and is based on a series of qualitative questions to the purchasing managers and supply executives related to key indicators such as output, new orders, supply deliveries, inventories, prices, business expectations, and employment. A PMI above 50 indicates expansion in business activity and a PMI below 50 indicates contraction and thus, helps various stakeholders in assessing the health of the manufacturing ecosystem or investment related decisions ([ET Bureau](#); [Srivats](#)).

Summing up, clearly a very bold and ambitious step has been taken by the government since 2014. This was further magnified with the introduction of the PLI and the successive addition of newer sectors and budgets to it. These investments are expected to, besides increasing manufacturing contribution to GDP, increase tax revenues, and creating jobs, bring manufacturing of newer technology products to India. Thus it is very important to understand the above metrics that have been identified for tracking the success of the Make in India initiatives.

Finally, today most products are a result of complex manufacturing processes which are multi-staged and with extended value chains. Most PLI initiatives, save a few like formulations, API, semiconductors, etc., are targeted towards finished products, i.e. products that will be of use at the hands of the end customer. An added value contribution of the PLI scheme will be when such beneficiaries work towards creating their upstream value chains in India to support their India manufacturing efforts. As more such manufacturing efforts take place in India, it will be a natural inducement for the beneficiary companies and their suppliers to set up research and development centers (providing opportunity for closer experimentation). Though not near term, we clearly see this leading to comprehensive eco systems around research, design, development, and manufacturing developing in India. We look forward to this then creating true ideated to make in India products succeeding world over.

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