

\Orchestrating a brighter world

NEC

ELECTRICALS & ELECTRONICS MANUFACTURING IN INDIA

Messages



Shri Sandeep Jajodia
President, ASSOCHAM

Electronics Industry, valued at USD 1.75 trillion, is the largest and fastest growing industry in the world. At present, the electronic industry in India accounts for a meagre share of the global electronic industry, representing a huge opportunity for growth in the sector and keeping in view the conducive policies of government to promote local industry, this sector is poised to grow more than double to USD 228 billion in three more years from over USD 100 billion in fiscal 2016-17.

India has been showing progressive reforms in the field of strategic electronics wherein, some of the latest technologies being promoted includes electro-magnetic wave application, intelligent sensor, RFID, micro-robotic, intelligent material, micro-electronic systems, intelligent secure data communication, millimeter wave, and microwave device. In the electronic component segment, India has been an exporter of components such as cables, speakers and cathode ray tubes among others.

The demand of electronic products is expected to grow at a CAGR of 41% during 2016-2020 to reach USD 400 billion by 2020. This surge in demand is huge which shows a positive outlook for the industry.

We congratulate the government for placing electronics manufacturing on high priority with major focus on initiatives such as Digital India, Make in India, Electronic Manufacturing Clusters and supportive FDI policies to bolster electronic manufacturing.

These initiatives will not only provide quantifiable benefits but will also bring about intangible benefits, in terms of changed mindset of foreign investors towards India, wherein, they will start treating India as a true partner which can add significant value in the production cycle rather than being just a low cost manufacturing destination.

Apart from progressive government policies and reforms, the growing demand is also another major reason for increase in electronics production. The growing demand coupled with government support for the sector has encouraged domestic players to invest in the sector.

I congratulate ASSOCHAM for organising this timely and meaningful conference which will benefit all the stakeholders in a meaningful way.

Shri Sandeep Jajodia



Alok Ohrie
President & MD,
DellEMC India &
Chairman, ASSOCHAM
National Council on
Electronics and Hardware

I wish to extend my heartfelt gratitude to all who attended the 7th International Conference & B2B Electricals & Electronics Manufacturing. This was the 7th year of this conference and you would all agree, this conference has gone from strength to strength over the years, capturing the excitement, concerns of the Electronics & Electricals industry.

The growth of India's electronics sector is critical for its next stage of socio-economic development. It is amongst the top five economic sectors in India and is projected to grow at a CAGR of 24% to USD 400 billion by 2020. The government has initiated multiple policies and taken initiatives to push for digitization and there is a general sense of excitement from the citizens to adopt technology, even for day to day needs. The Union Budget 2017-2018 is a step in that direction aimed at accelerating India's transformation into a digitally empowered society.

This has generated significant demand in the sector, a case in point being that there are more than 108 crores mobile phone users in India today. The industry has also responded positively to this demand, by significantly increasing their investments in domestic production. If one looks at the data, investments in electronic manufacturing which was just INR 11,000 crores in June 2014, has increased exponentially to INR 1,27,880 crores in 2016. This is also due to the government's efforts to create an enabling policy ecosystem in the sector by bringing through initiatives like Make in India and Digital India and providing special focus to schemes like the Modified Special Incentive Package Scheme (M-SIPS) and Electronic Development Fund (EDF).

However, even though there are signs of promising growth, the local production of electronic products has to be increased significantly to meet the domestic demand. The industry would need the government's support around areas like:

- There are considerable supply side challenges that the government needs to focus on both infrastructural as well as at the policy level
- Increased emphasis has to be provided for increasing the percentage of local component manufacturing in India
- Simplifying the complex regulatory structure for making compliance easier for new entrants
- Developing a participatory approach, where all the stakeholders are involved in the policy making process.

These measures will provide further impetus to the entire ecosystem and also help the government achieve its objective of net zero imports.

On behalf of ASSOCHAM, I once again thank you for your participation and involvement in the conference and I am confident that with your support and representation, we will take strides in achieving the ambition laid out by the Government of India for the industry.

Alok Ohrie

Messages



D. S. RAWAT

(Secretary General, ASSOCHAM)

ASSOCHAM lauds the Hon'ble Prime Ministers vision of "Make in India" fully support to work towards zero import of electronics by 2020

Demand for electronic products in India is poised for significant growth in the next few years, driven by a strong economic outlook. The Indian electronics and hardware market grew by 8.6% YoY to reach USD 75 billion in 2015, driven by rising local demand. The worldwide electronics industry was valued at around USD 1.86 trillion in 2015

India's total electronics hardware production in 2014-15 is estimated at USD 32.46 billion. This represents a share of about 1.5 per cent in world electronic hardware production. The domestic consumption of electronic hardware in 2014-15 was USD 63.6 billion out of which 58% was fulfilled with imports. With demonetization adding to the demand for POS devices and mobile phones, this demand is going to increase manifolds.

The Government of India has treated the electronics sector as a priority under its "Make in India" program and also announced several policy initiatives (such as EDF, skill development and MEIS) and incentives (such as MSIPS) which will act as drivers to boost domestic supply. The Government of India has also taken several steps towards increasing the ease of doing business, which has resulted in increased manufacturing setups by multiple foreign manufacturers in the country.

To further discuss and formulate the strategy to make India a "Manufacturing Hub", ASSOCHAM, India' Apex Chamber for Commerce and Industry, is organizing the 7th National Conference on Electricals & Electronics Manufacturing themed as "Inspiring Confidence"

On behalf of ASSOCHAM I would like to thank the team at NEC Technologies India for preparing a comprehensive white paper on this subject.

We hope that this paper will be read by all the stakeholders and will benefit from it.

D. S. Rawat



Anil Gupta

CEO and MD,
NEC Technologies India

NEC Technologies India (NTI), in association with the Associated Chambers of Commerce of India (ASSOCHAM), is pleased to present the report- **Electricals & Electronics Manufacturing in India**

India represents one of the largest growing electronics market in the world and by 2020 this market is expected to reach USD 400 billion. The positive demand variables are attributed to the growing middle class population with rising disposable incomes and adoption of newer and more modern technologies. These demographic advantages that India possesses make it an overall attractive destination for both local and foreign electronic manufacturers.

On the supply side, domestic electronic production is forecasted to have a significant growth reaching USD 104 billion by 2020. With a supportive policy environment and several government initiatives like Make in India, Digital India and FDI relaxations, India is poised to become a global hub for electronic manufacturing.

The positive impact has already started reflecting with several foreign companies looking at India as a prospective manufacturing destination. Apple is starting its manufacturing facility in Bengaluru and many other foreign smartphone manufacturers like Gionee, OPPO Mobiles and Xiamo looking at expanding their manufacturing base in India are just some of the real time cases of how perception of India is changing in the minds of the foreign manufacturers.

We at NEC Technologies India, are committed towards "Make in India" initiative of the government. The DMICDC Logistics Data Services Ltd. a joint venture between Delhi Mumbai Industrial Corridor (DMIC) Trust and NEC Corporation was established to overcome the existing logistics challenges across ports using Information Technology. Such an initiative would help improve the overall transport infrastructure of the country and positively impact the manufacturing sector.

This report attempts to give an overview of the Electronic Manufacturing Ecosystem of India, the various government initiatives that have been launched to boost electronic manufacturing, some challenges India still faces and how India as a nation can learn from successful manufacturing giants like Taiwan and China.

We hope that this report would serve informative and give some knowledgeable insights in the field of Electronic Manufacturing.

Anil Gupta

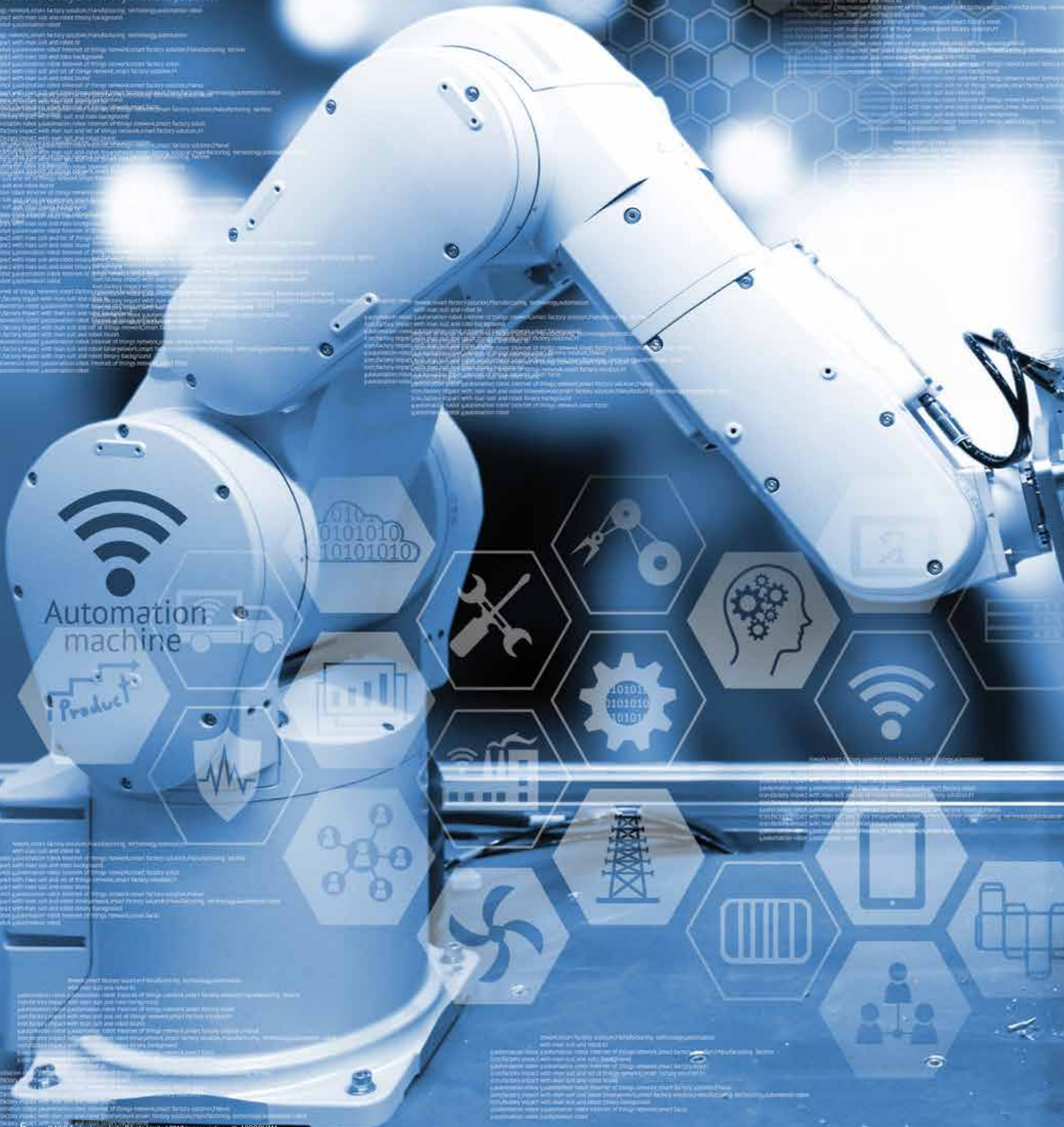


TABLE OF CONTENTS

1. Industry Overview	8
1.1. Industry Definition	10
1.2. Indian Electronics - Demand & Production	11
2. Government Initiatives to Boost Demand & Manufacturing	16
2.1. Initiatives & investments to boost manufacturing	16
2.2. Economic conditions and initiatives to boost demand	23
3. Policies and Regulations	24
3.1. Foreign investment policies	24
3.2. Export and Import policies	24
3.3. Taxation	25
3.4. Exit policies	26
4. Impact of Initiatives	28
4.1. Building a manufacturing hub: Impact on demand & production	28
4.2. Focus Areas	29
5. Way Forward	30
5.1. Best practices: Lessons from Asian Countries	30
5.2. Recommendations	31
References	32
About ASSOCHAM	33
About NTI	34

Manufacturing as a % of GDP is approximately 16%.
With government initiatives like Make in India, it is forecasted to reach **25% by 2022**

Manufacturing labour cost in India (estimated at US \$1.72/hour in 2015) is among the **lowest in the world**

India ranked **11 out of 40 countries** in the 2016 Global Manufacturing Competitiveness Index and is predicted to move to **position 5 by 2020**

Total Electronic Manufacturing reached around **USD 31 billion in 2015** and is expected to increase to **USD 104 billion in 2020**

Electronics Manufacturing in India is concentrated in 3 main regions Northern Region around Delhi accounts for about 37% of output. Western Region around Mumbai and Pune account for 25%. Southern Region around Bengaluru, Hyderabad and Chennai account for 32%

India ranks **130 out of 190 countries** in the ease of doing business, 2017. **The move up by 8 places from 2015** is accredited to government initiatives in upgrading infrastructure, increasing foreign-investment limits and digitization of approvals and registrations.

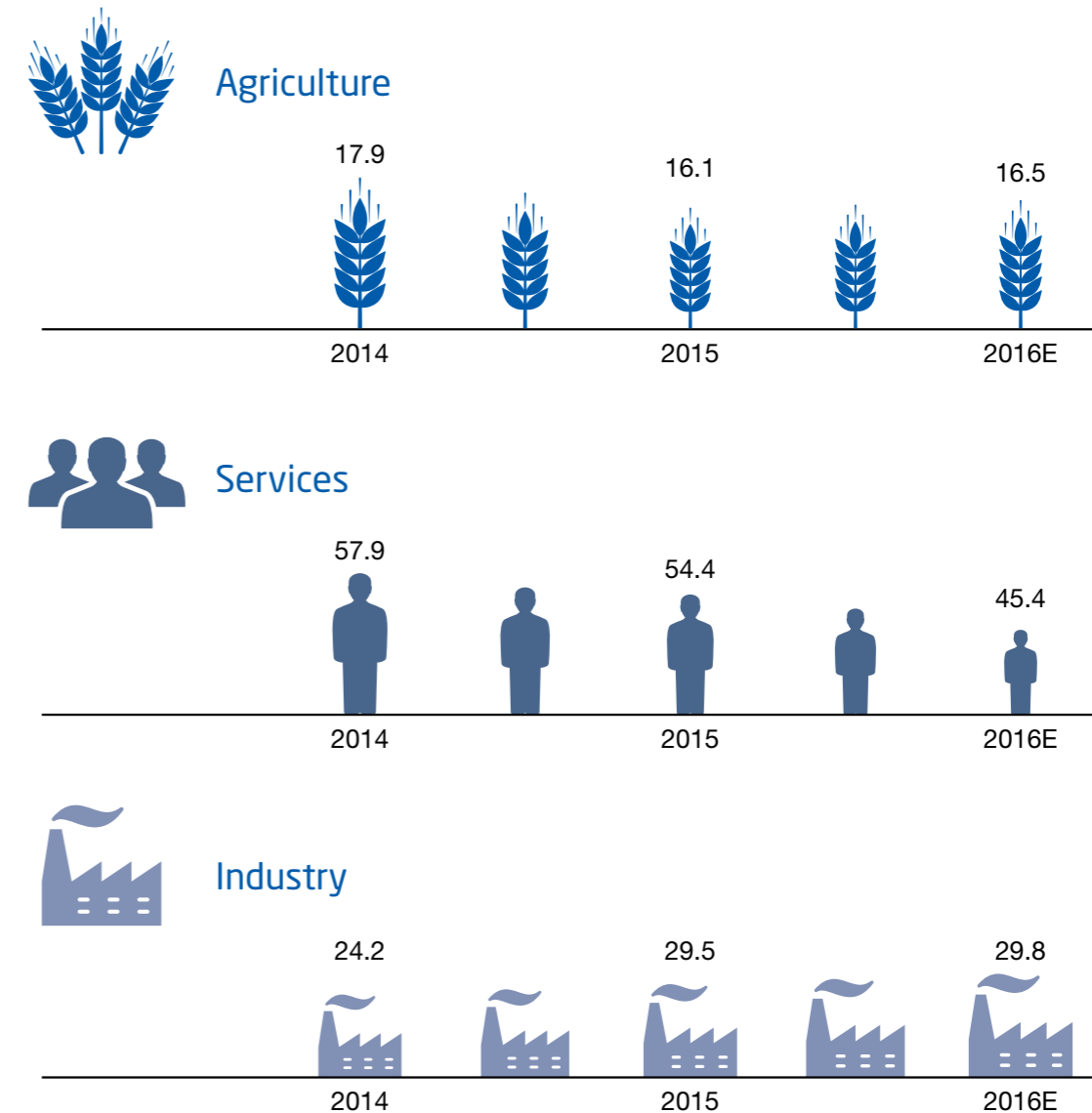
Reasons to Invest/Sector Advantage
– Low Labour Cost, Progressive Government Reforms, Huge Demand, 3rd largest pool of scientists and technicians, Skilled Manpower, Strong Design & R&D capabilities

India's evolution towards manufacturing

With an increasing population of 1.3 billion, India presents a wealth of opportunities to the world. The growing population is creating huge demand in all the sectors thereby, driving the supply side to be ever more competitive to address the demand.

An agrarian economy in the past, a service economy at present and transitioning towards a manufacturing hub, India is poised to become a manufacturing economy in the future. The Indian government intends to increase the contribution of manufacturing sector to GDP to **25% by 2025 from current 16%**, with its import substitution and export friendly policies and initiatives to boost manufacturing sector.

According to the global manufacturing competitiveness index (prepared by US council on competitiveness and Deloitte) 2016, India ranks 11th in global manufacturing. By 2020, India is projected to be in the top 5 with manufacturing hubs like China, Japan, Germany and U.S.



Union Budget 2017-18

Union Budget 2017-18

INR 7.45 billion

The government has announced INR 7.45 billion incentives for electronic manufacturing which is expected to benefit the domestic manufacturers

INR 1260 billion

The government has received over 250 investment proposals worth INR 1260 billion for manufacturing phones and television sets in India

1 Industry Overview

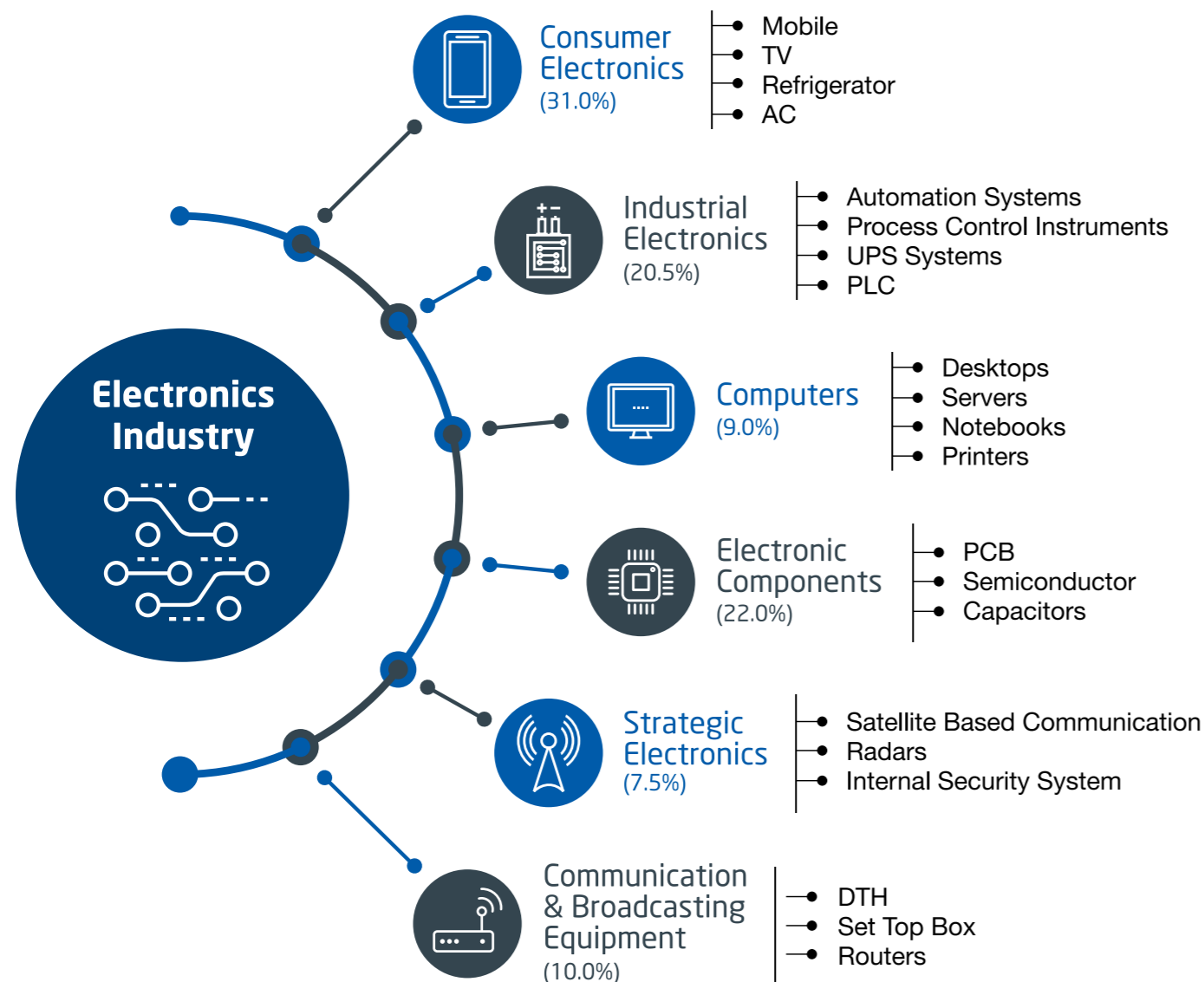
Electronics manufacturing contributes to approximately 10% of the manufacturing sector

Electronics Industry, valued at USD 1.75 trillion, is the largest and fastest growing industry in the world. At present, the electronic industry in India accounts for a miniscule share of the global electronic industry which represents huge opportunity for growth in the sector.

1.1. Industry Definition

India has come a long way in the electronics industry from the 1960s wherein, defence and space technologies were primary focus segments followed by the advent of consumer electronics and office equipment.

At present, the industry is broadly classified into six major categories.



Consumer electronics is the fastest growing sub-sector which is characterized with a huge manufacturing base, large consumer set and intense competition owing to the presence of global players. There has been a steep rise in demand due to a growing and aspirational market in India. Along with consumer electronics, another segment which has been one of the fastest growing is computers & peripherals.

The performance of industrial electronics sub-sector is closely linked with investments and demand patterns in other industries as these electronic products are consumed by other industries.

India has been showing progressive reforms in the field of strategic electronics wherein, some of the latest technologies being promoted includes electro-magnetic wave application, intelligent sensor, RFID, micro-robotic, intelligent material, micro-electronic systems, intelligent secure data communication, millimeter wave and microwave devices.

In the electronic component segment, India has been an exporter of components such as cables, speakers, and cathode ray tubes among others.

1.2. Indian Electronics: Demand & Production

India is becoming home to a growing middle class population. Increasing disposable income has led to increased consumer demand for electronics products specially advanced TV's, mobile phones and computers.

The demand of electronic products is expected to grow at a CAGR of 41% during 2016-2020 to reach USD 400 billion by 2020. This surge in demand is huge which shows a positive outlook for the industry. However, what needs to be addressed to meet government's vision of turning India into a manufacturing hub is the domestic production.

From the supply side, The government has placed electronics manufacturing on high priority with major focus on initiatives such as Digital India, Make in India and supportive FDI policies to bolster electronic manufacturing. As a result, domestic production is expected to grow at a CAGR of 27% during 2016-2020 to reach USD 104 billion in 2020, as compared to the CAGR of 9.6% during 2010-2016.

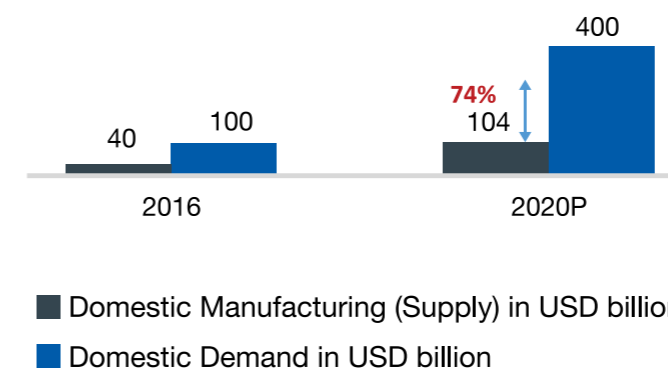
Although there is a huge leap in the projected production figures for 2020, the domestic production is projected to meet only 26% of the domestic demand.

Government intends to squeeze this demand-supply gap so that the "Make in India" dream becomes a reality. Looking at several initiatives and policy reforms that have been put in place to bolster domestic manufacturing, we think that this proportion of 26% is bound to increase.

Apart from progressive government policies and reforms, the growing demand is also another major reason for increase in domestic production. The growing demand coupled with government support for the sector has encouraged domestic players to invest in the sector.

Initiatives such as Make in India, Digital India will not only provide quantifiable benefits but will also bring about intangible benefits, in terms of changed mindset of foreign investors towards India, wherein, they will start treating India as a true partner which can add significant value in the production cycle rather than being just a low cost manufacturing destination.

Demand - Supply Gap



Source: IBEF, MeitY Reports, NTI Analysis

1. Consumer Electronics:

Overall production of Consumer Electronics has been on a growth reaching approximately USD 12 billion in FY2016. By 2020, overall production of consumer electronics is expected to reach USD 29 billion. The production growth in this segment has been accompanied with rise in imports over the years for certain items like LCD/LED TVs.

Mobile Phones: After a slump in mobile phone production during FY2014-15 due to close down of Nokia's Manufacturing facility, the production has recovered again registering a YOY growth of around 186% in FY2015-16 manufacturing over 100 million mobile phone units with worth of around INR 540 billion. The rise in production statistics is attributed to several government initiatives like Make in India, Digital India and enhancing duty differential benefits to favour local manufacturers among others. Around fifteen new mobile plants entered India market in FY2015.



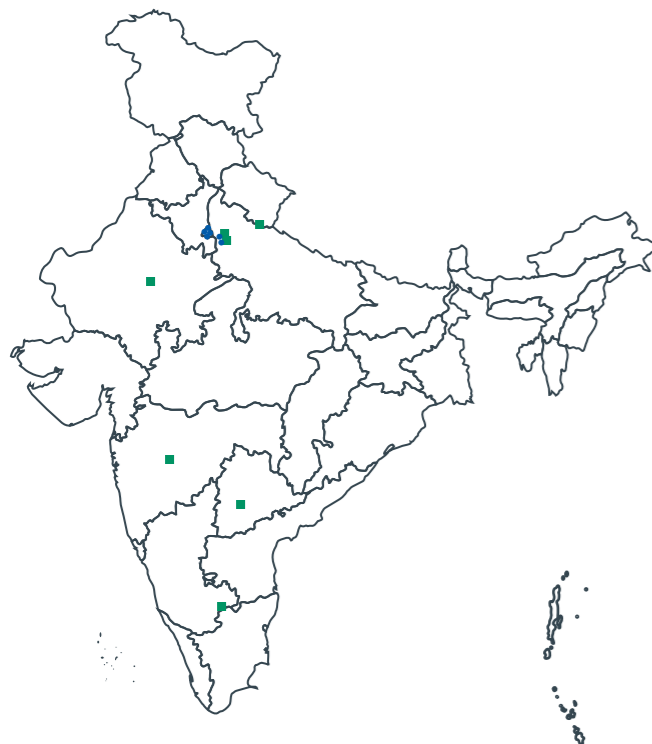
Demand Drivers

- Growth in disposable income
- Tech savvy urban youth
- Growing and untapped rural market which accounts for almost 69% of Indian households. Rural electrification will increase demand for electronic appliances. The rural consumer durables market is growing at a CAGR of 25%
- Availability of low cost smartphones – India has surpassed U.S. to become the world's 2nd largest global smartphone market in 2016
- Easy availability of credit services to purchase high value electronics

Major Investments during FY2015-16:

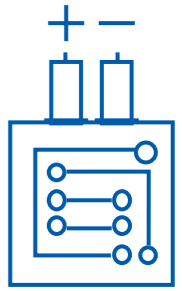
- Indian Players: Micromax, Lava, Spice and Karbonn
- Foreign Players: Samsung, Gionee, OPPO Mobiles, Foxconn, Apple iPhone SE, LeECo and Zopo mobile

- Lava and Spice mobility have invested around INR 500 million and INR 5 billion respectively to build facility in Noida
- Karbonn is investing approximately INR 2 billion in two plants at Noida and Bangaluru
- Samsung spent more than INR 5 billion to add capacity to its Noida Plant
- Gionee, the chinese mobile phone manufacturer has plans to invest INR 3 billion by 2019 establishing a factory
- OPPO Mobiles, Chinese mobile phone manufacturer, is also looking at investment opportunity in India and planning to invest INR 1 billion for the setup in Noida
- LeECo and Zopo mobile are among other Chinese companies that have made investment of around USD 7 million and USD 15 million respectively for smartphone manufacturing in India



2. Industrial Electronics:

This sector is expected to grow in future as investments take place in infrastructure and industry including power. Most of the local demand is met by domestic manufacturing and only around 10% of sophisticated products are imported. Amongst the recent trends in this segment is application of new technologies like Artificial Intelligence, Nanoscale Assemblies and Decision Analysis among others.



Demand Drivers

- Government focus on infrastructure development projects such as: smart cities, modernization of airports, metro etc.
- Government led initiatives on energy conversion technologies such as LED lighting, smart grid deployment and etc.
- Growth of other industries

3. Computers:

India represents one of the fastest growing market of IT systems and computer hardware in Asia Pacific. In FY2014-15, production of Notebooks, Tablet PCs and Monitors registered a positive YOY growth while Desktop PCs encountered negative growth.

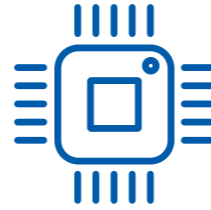


Demand Drivers

- Increasing corporate spend in IT
- Government initiatives in e-governance programs
- Increasing penetration of internet and broadband services - The number of tablets is estimated to reach more than 18 million users by 2019 in India

4. Electronic Components:

The growth of this segment is crucial in supporting the overall growth of electronic manufacturing. India witnessed a YOY production growth **of around 33% in FY16 reaching approximately 8.8 USD billion.**



Demand Drivers

- Products and sectors like LED, automotive electronics, IT products, solar energy and so on are driving demand in the electronic components industry
- Growth in segments such as telecommunications and consumer electronics are also driving domestic demand

5. Strategic Electronics:

Production in this sector has reached almost USD 3 billion in FY 2016. This segment is dominated by Bharat Electronics Limited with some contribution from Defense PSU's such as Hindustan Aeronautics Limited, Bharat Dynamics Limited. Recently small and medium scale companies are also entering this space.

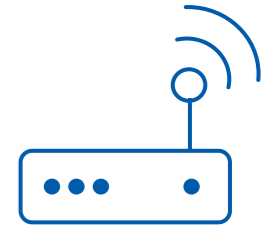


Demand Drivers

- Budget allocation in sectors such as: defence, aerospace, homeland security
- Indian security market is growing at 35% against 7% globally
- India's share in global expenditure in homeland security sector is also expected to rise to 6% by 2020 from 3.6%
- Government initiatives such as Defence Offsets and Defence Procurement Policy (DPP)

6. Communication & Broadcasting Equipment:

Production of communication & broadcasting equipment has undergone a YOY growth of 29% to reach USD 4 billion in FY2016.



Demand Drivers

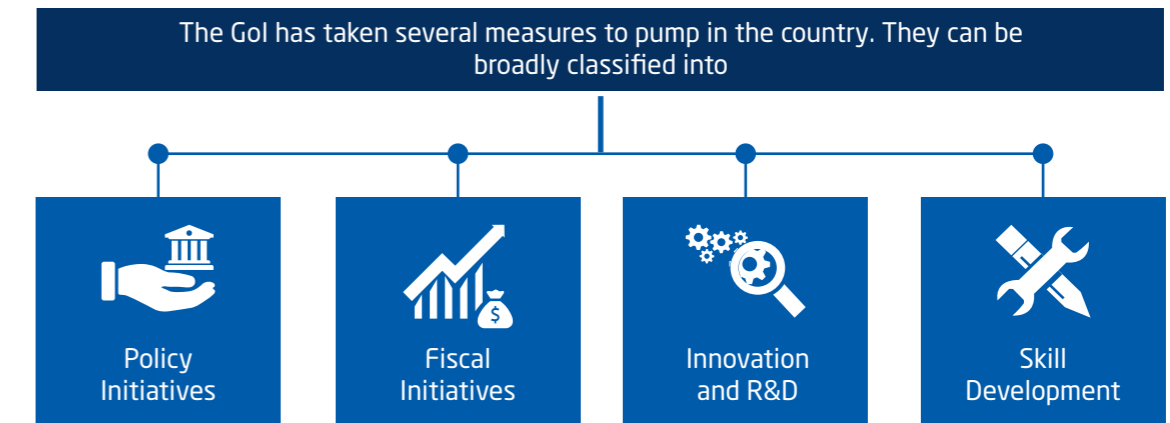
- Government initiatives such as National Knowledge Network (NKN) and National Optical Fibre Network (NOFN)
- Growth in demand from rural market owing to government's rural electrification program
- Expanding media sector in the country
- Growth in broadband subscriber base. DTH subscriber base in India reached 84.80 million in 2015 and is expected to reach 200 million by 2018 making India one of the world's largest DTH market. The penetration to increase from 7% currently to 20% by 2020
- Cable digitization mandate from the government will lead to an increase in demand of DTH equipments

2 Government Initiatives to Boost Demand & Manufacturing

2.1 Initiatives to boost manufacturing

The total electronic industry demand is projected to reach USD 400 billion by 2020, however the rate at which production is growing it will only be able to meet the demand of about USD 100 billion by that time. To reduce this supply-demand gap, boost domestic electronic manufacturing thereby substituting imports and improving export variables, the Government of India has placed the electronics sector on a high priority and envisioned various initiatives like Make in India, Digital India, FDI relaxations and so on.

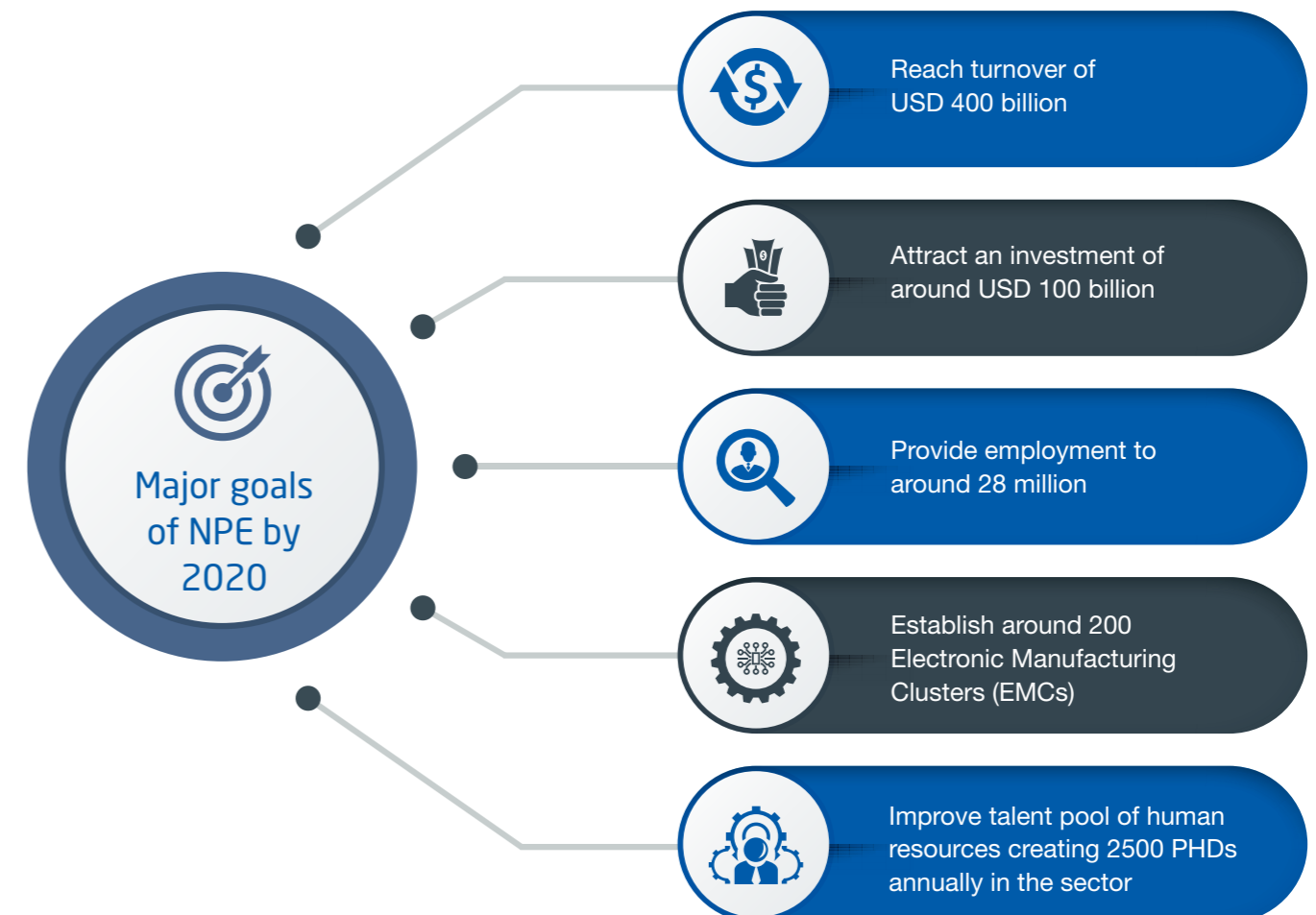
The Government of India under the aegis of PM Narendra Modi is focused on making India a manufacturing hub and has taken various steps in this direction many of which have a direct and indirect bearing on the electronics sector.



1. Policy Initiatives



The Government of India launched the National Policy on Electronics (NPE) in 2012 with the aim to make India a globally competitive destination for electronics manufacturing.



1.1 Modified Special Incentive Package Scheme(M-SIPS):

- The scheme provides capital subsidy of 20% in SEZ (25% in non-SEZ) for electronic manufacturing units
- It also provides reimbursements of CVD/ excise for capital equipment in non-SEZ units
- For high capital investment projects like fabrication plants, it provides reimbursement of central taxes and duties. The incentives are available for 10 years from date of approval
- In August 2015, the scheme was amended with a term extension of terms up to 2020 and as well as encompassing more verticals and simplifying the approval process



Through this scheme, the capital burden faced by electronic manufacturers in setting up new projects as well as expanding existing projects would be eased out, thereby giving impetus to electronic manufacturing

1.2 Electronic Manufacturing Clusters (EMCs) & Information Technology Investment Regions (ITIRs)

1.2.1 EMCs:

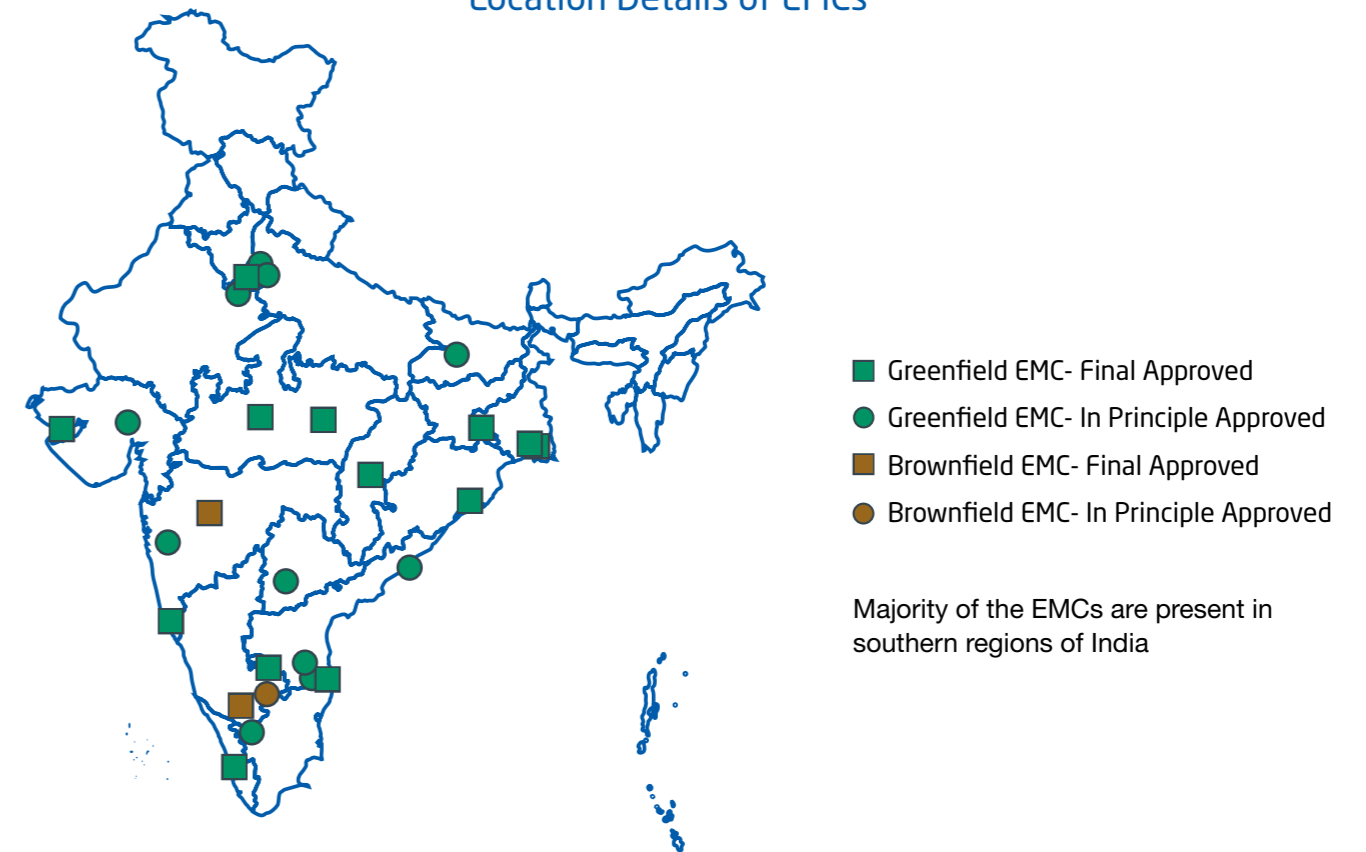
To make India an electronics manufacturing hub, the government is promoting the development of electronic manufacturing clusters throughout the country to provide world class infrastructure and attract investment. The grant assistance offered are as:

- For Greenfield EMCs, grant of 50% of project cost is provided subject to ceiling of INR 500 million for every 100 acres of land. As on date, around 13 Green EMCs have been final approved
- For Brownfield EMCs, grant of 75% of project cost is provided subject to ceiling of INR 500 million. As on date, around 2 Brownfield EMCs have been final approved

1.2.2 ITIRs:

To boost investment in electronic hardware manufacturing (EHM) the government has released a policy, whereby a minimum area of 40 sq. km should be demarcated for Information Technology Investment Regions (ITIRs). The ITIRs would be designed to be a self contained integrated township to accelerate growth of EHM industry. As of date, ITIRs are being set up near Hyderabad and Bengaluru.

Location Details of EMCs



The creation of EMCs and ITIRs would help in overall strengthening of the electronic sector ecosystem, providing cost advantage to units through improved supply chain, consolidation of suppliers, and reduced time to market. It would aid in creation of an entrepreneurial environment driving innovation and propelling economic growth of the region through employment and tax revenue

1.3 Setting up of semiconductor wafer fabrication

The government is focused on setting up wafer fabrication on a commercial basis and has received the applications of two consortia (IBM, Jaypee Group, TowerJazz; ST Microelectronics, HSMC) to establish semiconductor wafer fabrication units in Gujarat and Noida with the aim of reaching a capacity of at least 40,000 wafer starts per month of at least 300 mm size.



The semi conductor wafer fabrication facilities will help stimulate creation of an entire ecosystem for electronics manufacturing paving the way for growth of various sub sectors of the electronic industry including consumer electronics and mobile. Once operational the facilities would enable in meeting the growing semi conductor demand of over 10 billion USD

1.4 Preferential Market Access

PMA is a scheme launched to give preference to Domestically Manufactured Electronic Goods. Under the scheme, for government procurement across all ministries/departments (apart from defense) preference has to be given to electronic products that are manufactured by companies registered in India.



This scheme would help in providing a reliable market to domestic manufacturers thereby eliminating risk of demand fluctuations as well as foreign competition to some extent and indirectly also motivating new players to enter in the sector

1.5 Merchandise Export from India Scheme (MEIS)

The scheme was launched under the Foreign Trade Policy 2015-2020 to boost export of domestic products. Under this scheme specific electronic products (e.g. AC Parts & Compressors, Color TV etc.) when exported to specific countries are offered export subsidy starting at 2% and higher for items that have high domestic content and value addition.



The MEIS scheme would not only lead to improvement of export statistics but also indirectly boost domestic manufacturing as more local manufacturers would want to avail benefits of export subsidy and make their products price competitive in the international market

2. Fiscal Initiatives



The government has brought about several tax and tariff concessions to promote manufacturing of electronics. The latest Union Budget 2017-18 has also announced various incentives to boost electronic manufacturing of specific products. The same has been covered in depth in following section 3 of the report.

3. Innovation and R&D



Various initiatives have been launched to promote innovation in electronics sector:

3.1 Electronic Development Fund (EDF):

Electronic Development Fund functions as fund of funds and participates with "Daughter Funds" which in turn provide risk capital to companies adopting new technologies in area of electronics. The EDF policy enables the attraction of venture funds, angel funds towards R&D and innovation in specific areas.



Electronic Development Fund (EDF) with active industry participation will help in creation of a robust R&D environment thereby helping in the strengthening of domestic electronic manufacturing capabilities

3.2 Center of Excellence

- **National Centre for Flexible Electronics (NCFlexE)**

It has been setup at IIT Kanpur as a resource centre in the emerging area of flexible electronics with an approximate outlay of INR 1.3 billion for 5 years. **Overall objective of NCFlexE is to boost ecosystem development for flexible electronics in the country.**

- **National Centre of Excellence in Technology for Internal Security (NCETIS):**

It has been setup at IIT Bombay with an overall outlay of approximate INR 840 million for 5 years. **The main aim of the centre is to develop state-of-art-technologies vital to national security and for rescue/relief operations.**



These centres that operate via PPP mode through industry collaborations have been mandated to develop technology prototypes and is a positive step to achieve overall goal of India becoming a manufacturing hub in entirety with all expertise available within the domestic space

3.3 Incubators

- **Setting up of Electropreneur Park**

The incubation centre was launched by Ministry of Electronics & IT in August 2016 at an approximate cost of INR 210 million for **development of electronics industry and offering assistance during prototyping and commercialization of products.** It is being implemented by Software Technology Parks of India (STPI), New Delhi in association with Delhi University (DU) and India Electronics & Semiconductor Association (IESA). The total duration for setting up the park is around 5 years over which approximately 50 start ups would be benefitted

- **Incubation centre at IIT Patna for medical electronics**

The incubation centre with an overall estimated cost of around INR 470 million focuses on medical electronics. **It aims to give boost to entrepreneurship and benefit minimum 45 start-ups over 5 year period**



The Incubation Centres would promote the development of product and IP creation in the ESDM industry, benefit around 100 start ups and simultaneously help in boosting entrepreneurship in the sector

4. Skill Development



The government is focused on strengthening the availability of skilled manpower in the electronics sector and has taken several initiatives in this regard:

4.1 Sector skills councils

Electronics and telecom sector skill councils have been developed to accelerate skill development and provide quality human resources for electronics industry. The government funds 75% - 100% of training cost for industry specific skills.

4.2 Schemes for scaling PHDs in electronics & IT (Visvesvaraya PhD Scheme)

This initiative was launched to create 3000 PHDs (1500 in Electronics System Design Manufacturing and 1500 in IT/ITES) per year by 2020 to provide India a competitive advantage in knowledge sectors.

4.3 Financial assistance for electronics & ICT academies

The scheme aims to establish seven electronics & ICT academies. These will be setup as units in IITs, IIITs, NITs etc. with state of art facilities providing specialized training to faculties and improving employability of graduates.

4.4 Schemes for Skill Development in Electronics System Design Manufacturing (ESDM) Sector

4.4.1 Financial Assistance to States/UTs for Skill Development in ESDM Sector

Target of this scheme is to impart skills to 90,000 candidates with grant in aid of approximately INR 1 billion in selected states of Andhra Pradesh, Telangana, Jammu & Kashmir, Karnataka, Kerala, Punjab, Uttrakhand and Uttar Pradesh.

4.4.2 Scheme for "Skill Development in ESDM for Digital India"

The program was launched under Digital India to facilitate development of ESDM sector. It covers all states / UTs and aims at imparting skill development for around 3,28,000 persons at an outlay of approx. INR 4 billion by 2018.



The various skill development initiatives will enable in creation of well trained, well qualified, ready to be employed work force that will help eliminate the challenge of shortage of skilled resources that the Indian electronic industry currently faces. Through these schemes, India would be able to exploit its demographic advantage and along with low labour cost also provide high labour productivity making it an even more attractive investment destination

2.2 Initiatives and economic conditions to boost demand

Government Initiatives to drive demand

The Indian government has been a major consumption driver of this industry. Nationwide programs initiated by the government in other sectors also have an impact on the electronics industry.

Key programmes include the 'Aakash' tablet, the UIDAI project, the National Knowledge Network (NKN) and the National Optic Fiber Network (NOFN).

One such example is the UIDAI program which aims at providing a unique digital identity to all citizens. This project is a revolution at delivering e-governance to such a huge population and it has already been regarded as the largest biometric database in the world. The project has been driving a huge demand for electronic products industry. The biometric devices are now a separate industry. Mobile phone manufacturers are making handsets with in-built fingerprint scanner giving rise to innovations in the industry.

Electronic devices such as mPos, fingerprint scanners are going up in demand.

There has been increased budgetary allocation for rural electrification which will in turn benefit the manufacturing and sale of the electrical appliances.

GST Implementation

The GST which is to be implemented from July, 2017 will bring about innumerable benefits to domestic manufacturers. Manufacturing cost of electronic components will be significantly brought down owing to implementation of GST. The local manufacturers will be able to pass on the tax benefit to consumers in the form of price reduction.

With the implementation of GST, multiple taxes and cascading effects of taxes will be eliminated. Along with these benefits, firms will also be saving expenses incurred in warehousing and logistics which stands approx. 5-8% currently.

The lower taxes, simplified tax structure and technology empowered tax compliance system will provide an ideal ecosystem to improve the current situation of electronics manufacturing in India.

This will give a major boost to the Indian electronics industry thereby, leading to subsequent increase in demand of locally manufactured electronics.

Demonetization

The government's move to revoke the legal tender of INR 500 and INR 1000 will not only help curtail counterfeit currency, tax evasion and enable digital payments but it will also lead to a rise in the number of electronic payment devices.

Post the announcement of demonetization, cards usage on PoS / e-Commerce was around 8 lakh transactions a day compared with a daily average of 4 lakh transactions earlier. The value of transactions almost doubled. The rise in electronic payments will lead to increase in number of PoS/mPoS devices. It is also certain to bring about innovations in the electronic payment industry.

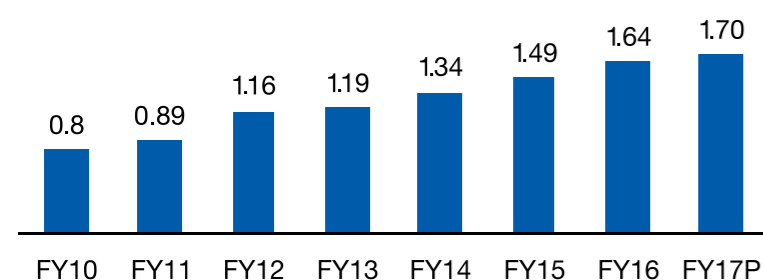
Post demonetization, government has been promoting digital payments by introducing e-payments platforms such as BHIM, Bharat QR. All of these platforms will generate more demand for mobile phone.

3 Policies and Regulation

3.1. Foreign investment policies

The Government of India, which is aiming to become a net zero importer of electronics by 2020 expects investment worth USD 56 billion during FY17-20, ~112x more than previous four year period of FY13-16. **The sector received 2x more investments in 2016 as compared to 2015.**

Cumulative FDI inflow to Electronics Sector (USD billion)



Source: IBEF, NTI Analysis

The Government of India

- Allows 100% Foreign Direct Investment (FDI) through automatic route in Electronics System Design Manufacturing sector and Electrical Equipment sector
- Allows only 49% investment through automatic route for defence electronics and can be increased beyond that level through government route
- Has amended its Modified Special Incentive Package Scheme (M-SIPS) with regard to electronics manufacturing. This will allow foreign investors to claim 25% subsidy on capital expenditure in non-SEZ area and 20% in SEZ area

3.2. Export & Import policies

Incentivizing Exports

The government targets to increase electronics exports by more than 15x by 2020 to USD 80 billion

Scheme	Products covered	Benefits offered
Electronics Hardware Technology Park (EHTP)	The electronics products manufactured in these parks	<ul style="list-style-type: none"> • Duty free import of raw materials required by them for export activities • Reimbursement of Central Sales Tax (CST) • Excise duty exemption on procurement of indigenously available materials
Focus Product Scheme (Under Foreign Trade Policy)	Domestically manufactured set top boxes and other electronic products	2-5% incentives
Scheme for MSME (Under National Policy on Electronics)	800 electronic models (maximum)	Reimbursement of expenses for testing and certification required for export. The total Grant in Advance (GIA) for one model is INR 125,000
Merchandise Export from India Scheme (MEIS) (Under the Foreign Trade policy 2015-2020)	Specific electronic products (includes AC parts and compressors, refrigerating equipment compressors, fully automatic washing machines, color TV and STB for accessing internet)	Offered export subsidy starting at 2% and higher for items that have high domestic content and value addition (when exported to specific countries)

Source: DIPP, MeitY Reports

Incentivizing Imports

Export Promotion Capital Goods (EPCG) scheme allows firms which export its finished goods, importing of electronic capital goods with customs duty completely waived

3.3. Taxation

Affected Duties/Taxes	Products Covered	Benefits Provided
Basic custom duty	All 217 tariff lines covered under the Information Technology Agreement (ITA) of WTO	No duty (0%)
	To promote indigenous manufacturing of Set Top Boxes	Increased to 10%
	All components used in the manufacture of LED lights, LED Lamps and LED Driver	Reduced to 5%
	Machinery, electrical equipment, instrument & parts, thereof (except PCBs) for semiconductor wafer fabrication/LCD fabrication units, and for assembly, test marking & packaging of semi-conductor chips	Waived
	Micro ATMS, fingerprint reader, scanner, POS card reader as well as components used for their manufacture	Exempted
Special Additional Duty of Customs (SAD)	All goods required in the manufacture of ITA items	Has been reduced from 4% to Nil
Excise Duty and Special Additional Duty	Microprocessors, hard disc drives, CD ROM drives, DVD drives/DVD writers, flash memory sticks and combo-drives	Waived
Inverted duty structure (higher import duty for raw material than for finished goods)	Tablets, mobile phones, LED lights, LCD/LED TVs, telecom equipment etc.	Has been rationalized with products
All duties	Parts/components/sub-parts which will be utilized in manufacturing of routers, broadband Modems, Set-top boxes, digital video recorder/network video recorder, CCTV camera/ IP camera, lithium ion battery, other than those for mobile handsets	Waived in Budget 2016-17
All central taxes and duties	In high tech factories such as semi-conductor fabricating units	Levied for period of 10 years
Excise Duty/ Countervailing Duty (CVD)	POS devices and all goods used for its manufacture	Exempted
	Micro ATMs, fingerprint reader, scanner, POS card reader as well as components used for their manufacture	Exempted

Source: DIPP, NTI Analysis

3.4. Exit policies

The Government of India has created a framework for exit mechanism in its *National Manufacturing Policy* with following provisions in order to protect the investors:

- *Exemption from Capital Gain Tax* – The sick firms will be exempt from capital gains tax on sale of plant & machinery if they reinvest proceeds from sale back into the same or another NIMZ within 3 years
- *Job Loss Policy* – In case of closure or mounting losses, this policy enables business units to pay suitable compensation to workers (15 days average pay for every completed service) by insurance which prevents charge on assets
- *Sinking Fund* – This fund can be opted by *Special Purpose Vehicle (SPV)* as an alternative to *Job Loss Policy*. The fund made of contributions and notified by Central/State government maintains certain level of money which would suffice to meet expected liabilities
- The concerned business can also deploy combination of above two policies



4 Impact of Initiatives

4.1. Building a manufacturing hub: Impact on demand & production

The mammoth task undertaken by the government to make India a manufacturing hub has been lauded by not only Indian industries but also the international fraternity. The international community perceives India as a true business partner now.

Initiatives such as Make in India, Digital India, Smart Cities, National Electronics Policy etc. have been able to bring about an attitudinal shift in investors wherein they perceive India not only as a low cost manufacturing destination but as a global hub for manufacturing with significant value add. These initiatives have also helped in making India an attractive FDI destination which will lead to boost in electronics manufacturing.

The economy scorecard post initiatives


- **Ease of doing business** - In 2016, moved up 12 places to reach 130th position
- **Manufacturing** - 6th position amongst the world's leading manufacturers, as per the international yearbook of statistics – UNIDO. **The growth rate of Manufacturing Value Added (MVA) of India was 5.5% in 2014 and 7.6% in 2015**
- **FDI Inflow** - In the 17-month period (October 2014-February 2016) up to February after the launch of 'Make in India', **FDI inflows have increased by 37%**
- **Global Competitiveness Index** - Huge leap of 16 places to reach the 39th rank in 2016, highest jump of any country for the particular year

Impact on electronics sector

- India roped in around **USD 18 billion worth of investments in electronics manufacturing sector**, since the launch of Make in India campaign
- **Huawei** opened a new R&D campus in Bengaluru and has set up a telecom hardware manufacturing plant in Chennai
- **Spice Group** announced an investment of USD 75.2 million to set up a manufacturing unit for budget smartphones in Uttar Pradesh
- **Foxconn** announced to invest USD 5 billion over five years for R&D and will create a hi-tech semiconductor manufacturing facility in Maharashtra.
- **Samsung** announced that it would manufacture the Samsung Z1 in its plant in Noida while **General Motors** declared that it would invest USD 1 billion to manufacture automobiles in the capital state
- **Lenovo** and **Motorola** announced their plans to manufacture smartphones In India
- **Xiaomi** launched local manufacturing in Visakhapatnam in August 2015 under the Make in India program.

4.2. Focus Areas:

Despite various initiatives and reforms, the sector still faces few bottlenecks that need to be addressed. These are focus areas that the government is working on to provide an impetus to the electronics manufacturing sector.

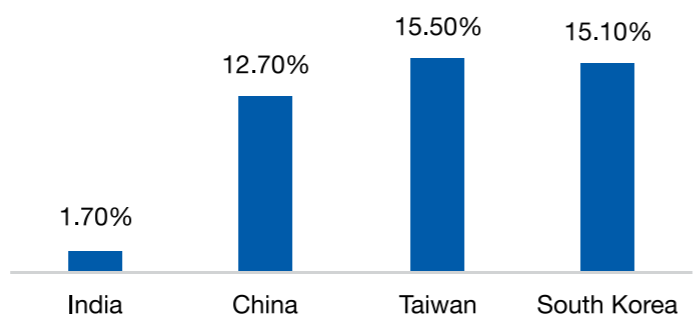
Focus Areas	Focussed Initiatives
 <h3>Infrastructure</h3> <p>Irregular power supply, inefficient logistics, non availability of continuous water supply are some of the major challenges leading to costly delays in the overall manufacturing process.</p> <p>According to a report by the institute for studies in industrial development, logistics costs as a percentage of total value of goods stood at 13-14%, compared with 7-8% in developed nations (2014).</p>	<p>Inspired by Japan's Tokyo–Osaka Industrial corridor, the Government of India has conceptualized the world's largest infrastructure project – DMIC. The project aims to reduce delays in logistics, build manufacturing hubs through the corridor, generate employment and grow manufacturing sector in India.</p> <p>The state governments are also including logistics as a focus area. The Telangana State Government recently signed an MoU with National Highways Authority of India (NHAI) to set up logistics park.</p>
 <h3>Taxation</h3> <p>The base direct tax incidence in India is around 30%, whereas in other Asian countries it is ~ 16% and 25%. India's taxation system is highly complex wherein, Income Tax, Excise and Customs Duty are set by Central government while the states and municipalities also levy their own taxes.</p>	<p>With the implementation of GST, the electronics manufacturers will reap in significant cost savings in warehousing and logistics. Along with that, the government has rationalized number of duties to promote local manufacturing of specific electronics products.</p>
 <h3>Import Incentivisation</h3> <p>Inverted Duty Structure makes domestic manufacturing highly unattractive as several industries depend on imported raw materials and components.</p>	<p>Budget 2015 extended S.A.D exemption on import of certain products used in manufacturing of IT hardware. This needs to be extended to manufacturers of consumer electronics too.</p>
 <h3>Fabrication Plants</h3> <p>There are insufficient semi conductor fabrication centres compelling the electronics manufacturing market to rely on imports. One of the major reasons is that fabrication centres are highly capital intensive.</p> <p>Lack of capital has been a major deterrent to establishments of fab plant in India.</p>	<p>The introduction of M-SIPS scheme, Electronic Development Fund and so on are the incentives to boost electronics manufacturing and provide the much needed capital influx in the sector. the government has also invested in establishing two semiconductor wafer fab facilities in India.</p>
 <h3>Trained Skilled Resources</h3> <p>Even though labour cost is low in India as compared to countries like China, labour productivity is lower than traditional destinations. There is a shortage of "industry ready" talent and with changing technology the labour needs to be constantly trained.</p>	<p>The government has taken several initiatives to boost skill development through various programs. The budget of 2016-17 announced allocation of INR 17 billion to set up 1,500 multi-skill training institutes across the country.</p>

5 Way Forward

5.1. Best practices

Along with the government's progressive reforms and policies, India could also take learnings from the success of its close peers in electronics manufacturing.

Electronics industry contribution to GDP



Source: Make in India Report

Coastal Special Economic Zones

India, like China, could focus on developing Special Economic Zones along its vast coastline. This will facilitate export operations of manufacturers and also make it easier for them to import raw materials.

Infrastructure

According to McKinsey Global Institute, increased investment in port, road, and rail infrastructure sharply reduces supply side barriers. In accordance with it, China during 1992-2011 spent 8.5% of its GDP on infrastructure, while India only spent 4.7%. Also South Korea, to give impetus to its manufacturing sector, has invested in state of the art highways and 'science parks'.

Regulatory and FDI Inflow Barriers

Since 1990s, China has been reducing policy related barriers and also providing easy access to licenses, permits and even tax incentives. South Korea by law provides incentive to technologically intensive companies by providing low interest loans, duty free capital imports and tax incentives.

Skill Development

Post reforms, percentage of China's youth receiving vocational training increased to 45% from 19%, effectively ensuring almost all the young workers joining China's factories were well trained. Also, South Korea as a policy to boost technological capability, provides funding to public and non-profit institutes, universities, and other educational institutions. On the contrary, as of 2010, only 2-7% of India's youth were receiving vocational training.

Research and Development

South Korea established Electronic Display Industrial Research Association of Korea (EDIRAK) and commissioned Highly Advanced National (HAN) program which will spend USD 4.7 billion on broad ranging R&D on strategic technologies. Similar investments in R&D is needed to elevate a country to high end manufacturing from mere last mile assembly operations.

5.2. Recommendations

Targeted initiatives launched by the government have provided the much needed impetus to this industry. In order to make this development self sustainable, there are other factors that need more focus.

Though the production is growing at a significant rate, imports are also growing in order to cater to the exponentially rising demand. India fulfills 60% of its domestic demand through imports. Electronic items are now the second most valued category of imports after petroleum products and if the situation persists, the country's electronics import bill may surpass its oil import expenses by 2020.

Most of the domestic manufacturers are just involved in last mile assembly owing to challenges such as limited component supplier base, higher duties posed on products with high level of local value addition and so on. India lags behind in component manufacturing which is the most fundamental block in electronic devices. In order to build a robust manufacturing hub, the country should focus on building capabilities across the value chain by reducing component imports and increasing local value addition.

Apart from this, other potential areas of focus are discussed below:

Ease of Doing Business

According to an output-outcome framework document prepared by the government, India wants to reach the 30th position, a move of 100 positions from current rank of 130th, by 2020.

Though it has made a substantial improvement in some areas such as electricity connection, it has underperformed in other areas such as payment of taxes and enforcing contracts. In order to uplift the sector, the regulatory environment needs to be more conducive and favourable for establishment and operations of firms.

Operation Costs

Increasing the rate of interest subvention and reducing the interest rate on borrowed capital will incentivize domestic manufacturers. The cost of capital in India is 12-14% which is much higher than global average of ~5%-7%.

Inverted Duty Structure

Inverted Duty Structure poses a challenge to produce goods domestically at competitive prices and compete with low tariff imported finished commodities. Reforming inverted duty structure on specific components will encourage domestic manufacturing.

Skills Development

According to National Skill Development Corporation (NSDC), the incremental human resource requirement in the electronics and IT hardware sector will be 8.9 million by 2022. However, there is a dearth of industry ready talent who can adapt to this demands of changing technology.. Even though labor cost is low in India as compared to countries like China, labor productivity is lower than traditional destinations.

The lack of sector specific training centres is a serious impediment causing shortage of skilled workforce in this sector. Government initiatives to increase domestic production will not bring about positive results unless the sector boasts of skilled employable workforce. There should be addition in the number of already existing training institutes and the workforce also needs training in soft skills in order to interact with the international community.

References

1. MeitY Annual Reports
2. IBEF Electronics Industry Report – 2017
3. IBEF Manufacturing Sector Report - 2017
4. <http://www.makeinindia.com/sector/electronic-systems>
5. <http://www.elcina.com/industry.asp>
6. Niti Aayog Reports
7. Department of Industrial Policy & Promotion website
8. <http://www.livemint.com/Industry/V7hkauzGzvtvOJ8ugoUnEnL/Govt-okays-tweaks-to-modified-special-incentive-package-plan.html>
9. <http://economictimes.indiatimes.com/news/economy/finance/india-expects-56-billion-investment-in-electronics-sector/articleshow/52548484.cms>
10. <http://www.digitalindia.gov.in/content/national-policy-electronics-npe>
11. <http://www.iesaonline.org/downloads/IESA-FS-report-Indian-ESDM-Market.pdf>
12. <https://www.atkearney.com/consumer-products-retail/global-retail-development-index>
13. Ease of Doing business Report
14. <http://www.livemint.com/Industry/V7hkauzGzvtvOJ8ugoUnEnL/Govt-okays-tweaks-to-modified-special-incentive-package-plan.html>
15. <http://pib.nic.in/newsite/PrintRelease.aspx?relid=137578>

About ASSOCHAM

ASSOCHAM The Knowledge Architect of Corporate India

Evolution of Value Creator

ASSOCHAM initiated its endeavour of value creation for Indian industry in 1920. Having in its fold more than 400 Chambers and Trade Associations, and serving more than 4,50,000 members from all over India. It has witnessed upswings as well as upheavals of Indian Economy, and contributed significantly by playing a catalytic role in shaping up the Trade, Commerce and Industrial environment of the country.

Today, ASSOCHAM has emerged as the fountainhead of knowledge for Indian Industry, which is all set to redefine the dynamics of growth and development in the technology driven cyber age of 'Knowledge Based Economy'.

ASSOCHAM is seen as a forceful, proactive, forward looking institution equipping itself to meet the aspirations of corporate India in the new world of business. ASSOCHAM is working towards creating a conducive environment of India business to compete globally.

ASSOCHAM derives its strength from its Promoter Chambers and other Industry/Regional Chambers/Associations spread all over the country.

Vision

Empower Indian enterprise by inculcating knowledge that will be the catalyst of growth in the barrierless technology driven global market and help them upscale, align and emerge as formidable player in respective business segments.

Mission

As a representative organ of Corporate India, ASSOCHAM articulates the genuine, legitimate needs and interests of its members. Its mission is to impact the policy and legislative environment so as to foster balanced economic, industrial and social development. We believe education, IT, BT, Health, Corporate Social responsibility and environment to be the critical success factors.

Members - Our Strength

ASSOCHAM represents the interests of more than 4,50,000 direct and indirect members across the country. Through its heterogeneous membership, ASSOCHAM combines the entrepreneurial spirit and business acumen of owners with management skills and expertise of professionals to set itself apart as a Chamber with a difference.

Currently, ASSOCHAM has more than 100 National Councils covering the entire gamut of economic activities in India. It

has been especially acknowledged as a significant voice of Indian industry in the field of Corporate Social Responsibility, Environment & Safety, HR & Labour Affairs, Corporate Governance, Information Technology, Biotechnology, Telecom, Banking & Finance, Company Law, Corporate Finance, Economic and International Affairs, Mergers & Acquisitions, Tourism, Civil Aviation, Infrastructure, Energy & Power, Education, Legal Reforms, Real Estate and Rural Development, Competency Building & Skill Development to mention a few.

Insight into 'New Business Models'

ASSOCHAM has been a significant contributory factor in the emergence of new-age Indian Corporates, characterized by a new mindset and global ambition for dominating the international business. The Chamber has addressed itself to the key areas like India as Investment Destination, Achieving International Competitiveness, Promoting International Trade, Corporate Strategies for Enhancing Stakeholders Value, Government Policies in Sustaining India's Development, Infrastructure Development for Enhancing India's Competitiveness, Building Indian MNCs, Role of Financial Sector the Catalyst for India's Transformation.

ASSOCHAM derives its strengths from the following Promoter Chambers: Bombay Chamber of Commerce & Industry, Mumbai; Cochin Chambers of Commerce & Industry, Cochin; Indian Merchant's Chamber, Mumbai; The Madras Chamber of Commerce and Industry, Chennai; PHD Chamber of Commerce and Industry, New Delhi and has over 4 Lakh Direct / Indirect members.

Together, we can make a significant difference to the burden that our nation carries and bring in a bright, new tomorrow for our nation.

D. S. Rawat
Secretary General
d.s.rawat@assochem.com



The Associated Chambers of Commerce and Industry of India
ASSOCHAM Corporate Office:
5, Sardar Patel Marg, Chanakyapuri, New Delhi-110 021
Tel: 011-46550555 (Hunting Line)
Fax: 011-23017008, 23017009
Website: www.assochem.com

About NTI

NEC Technologies India Private Limited (NTI) has been operating in India since October 2005, providing product development, global product maintenance and global business enablement services.

NTI is a 100% subsidiary of NEC Corporation. NTI's vision is to expand the global business of NEC Group and play a vital role in developing products and solutions, providing pre and post sales operations. It focuses on providing solutions for emerging opportunities in Retail, Finance, Biometrics, Logistics, Public Safety, Smart Energy, E-Governance and Infrastructure fields.

NTI has its head office in India – Noida. Its branch offices are located in Bengaluru, Japan, U.S. and Singapore.

The author of the report - Market Research & Consulting Division is a knowledge partner and advisory to NTI and NEC Corporation. The division was established within NTI with the vision of providing competitive edge to NEC Group companies by becoming a knowledge partner to explore global business opportunities.

The team has successfully conducted over 100 market research, strategic consulting & advisory, marketing & business support services across 25 geographies worldwide. Guided by NEC Corp's globalization goal, the team works closely with NEC enabling them to expand their services globally.

Analyst Profile



Ronit Kumar

Ronit Kumar is a graduate in Computer Science (B.E.) and Post Graduate Diploma in International Business from IIFT, Delhi. He has been working as a Consultant having experience in business transformation programs, strategic roadmap creation, business analysis and solution design, with an industry focus on retail, telecom, IT infrastructure and financial services.



Ayushi

An economics graduate from Delhi University and Post Graduate in Marketing & Telecom. She has completed executive program in Strategy Consulting from IIM-Bengaluru. Ayushi is a business enthusiast and consultant by profession responsible for growth and innovation agenda, Go-to-Market strategy, profitability road-map and competitive positioning of client across sectors.



Swaroop Vishnoi

Swaroop has completed his Post Graduate Diploma in Marketing & Finance. He has around five years of experience in the field of research and consulting. He has handled various projects on company analysis, industry analysis, value chain, market entry models.



Bibha Karki

Bibha has completed her MBA from FMS- Delhi University. She has over three years of consulting experience assisting clients across various industries – BFSI, FinTech, retail - in devising market entry, performance improvement, consumer insight and innovation strategies.



Isha Bagga

Isha has an education background of B.Tech in Electronics & Communication, followed by executive MBA in International Business from IIFT, Delhi. She is a Market Research consultant and has executed Strategic Consulting & Advisory projects with extensive experience in telecom domain.



Samir Bajaj

Samir is an experienced strategic research professional who has worked for clients across industries and across geography. Has been involved in design and implementation of studies involving market sizing, Go-to-Market strategy, industry analysis and analytics.



NEC Technologies India Private Limited

12th Floor, Tower A, Advant Navis Business Park, Plot No. 7, Sector 142, Noida-201301

Contact : +91-120-3022700

Email: mr&consulting@nec technologies.in, Website: www.nec technologies.in