ELECTRONICS SYSTEM DESIGN & MANUFACTURING (ESDM) AS A CATALYST FOR ‘MAKE IN INDIA’ FOR THE WORLD

April 2020
India Electronics and Semiconductor Association (IESA) is the premier Industry Body committed to the development of a vibrant Indian Electronics System Design and Manufacturing (ESDM) ecosystem and evangelizing the dream of establishing “Brand India” that is recognized worldwide as a go-to destination for electronic products.

As a voice of the industry, IESA has been in the forefront of raising concerns regarding the heavy import bills in the ESDM sector and building strength in the domestic manufacturing value chain – with the focus to develop scale of domestic design and manufacturing companies.

IESA and Frost & Sullivan collaborated on the engagement to assess ESDM industry and provide strategic advise to accelerate growth and local value addition.

Frost & Sullivan with its rich experience of thought leadership and engagements with industry players has prepared the report with details on current manufacturing and future scenario, detailing on top 8 products by value and recommendations for achieving – ‘Make in India for the world’.

PROJECT BACKGROUND

GEOGRAPHICAL SCOPE

Current: FY19

Future: FY20 to FY25
INDUSTRY & SEGMENTS COVERED

- Electronics Product Market
- Electronics Component Market
- Electronics Design Market
- Electronics Manufacturing Services Market
- Electronic System Market
- Electronic Design Market

KEY ELECTRONICS PRODUCTS COVERED

- Mobile phones
- Engine Control Unit
- Led Lighting
- Notebooks
- Gigabit Passive Optical Networks (GPON)
- CCTVs
- Energy Meters/Smart Meters
- FPD TVs
In FY19, India’s Electronics production represents only 3.3% of the Global Electronics market.

India’s digital economy generates about US$ 200 Bn of economic value annually. The country can create over US$ 1 Tn of economic value from the digital economy in 2025. Electronics Production Market (TAM) will contribute US $ 300 Bn (30%) to Digital economy in 2025.

Electronics Production (TAM) is 40% of Electronics Market (TM) in FY19. With impressive growth rate of 23.4%, it is expected to reach 56% of market demand in FY25.

India is positioned as a destination for quality design work and not just an option for lower cost. Many global companies have opened and up-scaled their captive centres in the country. Although it helped the economy by providing jobs but since the Intellectual Property rights were with the global headquarters, it did not contribute significantly towards domestic revenues.

The start-up ecosystem in India is still evolving and the promise shown by Indian start-ups is an immense opportunity for the country. A total of 1,300 tech start-ups were added in the year 2019, taking the count from total tech start-ups in India to 9,300.

With the existing sectors like Consumer Electronics, Telecommunications, Industrial, IT&BA and Automobile, the advent of disruptive technologies like Electric Vehicles, 5G, Medical Technology, Agriculture Technology, Defense and Space among others are preparing the market for further and faster innovation.
India’s business environment can be improved by simplifying procedures involved in setting up and conducting business. To position India as an attractive business destination, the government must reduce the burden of additional taxes on start-ups, strengthen the IP protection framework. India is evolving as an innovation-driven R&D destination for global companies. The government, academia, industry players and industry associations need to make concerted and coordinated efforts to help the industry reach its potential.

- Current contribution of Electronic’s production (TAM) to Indian economy stands at 3.3%
- Under realistic scenario, with the anticipated growth rate of 23.4%, the Electronics Production (TAM) industry will reach a size of US$ 300 Bn, which will be 6.0% of US$ 5 Tn GDP target of Government of India
- Under optimistic scenario, with a growth rate of 30.0%, the Electronics Production (TAM) industry will reach a size of US$ 410 Bn, which will be 8.2% of US$ 5 Tn GDP target of Government of India

* Optimistic scenario is based on the assessment that if recommendations are implemented, then the TAM will be at 75% of TM in place of 56% under realistic scenario in FY25.

* Number in () indicate contribution of Electronics to Indian GDP
* Electronics Production’s contribution to GDP is considered

Source: Frost & Sullivan
ESDM MARKET SEGMENTATION (TM) SEGMENTATION

**Figure 2.5: ESDM Segmentation, Value (US$ Bn), India, FY2019-FY2025**

- Electronics System Market will grow to 2.3 times of its current size to reach US$ 160 Bn by FY25
- Assembly Test Mark & Pack (ATMP) operations in the country are small, with only one participant (SPEL) offering full-fledged ATMP services
- Component ecosystem has been underdeveloped in the past but government is making policy changes by introducing preferable duty structures to develop domestic component industry in a phase wise manner
- Electronics design market, growing at 20.1%, is 10% of ESDM Market size in FY19; it will be 12% of ESDM Market size in FY25
- Electronics Manufacturing Services market showcases highest growth rate and its contribution to Electronics industry will grow from current 2% to 8% in FY25

**Figure 2.6: Electronics Manufacturing Services Market, Value (US$ Bn), India, FY2019-FY2025**

**Figure 2.7: Electronics Component Market, Value (US$ Bn), India, FY2019-FY2025**

India has done well in Electronics design and has established itself as design hub of the world. The next phase of growth in the design sector is characterised by growth of indigenous design companies creating their own IPs as against the erstwhile growth of outsourced captive design services companies. This, together with impressive expected growth in EMS market, presents an opportunity for Design-led manufacturing.
ASSESSMENT OF TOP 8 ELECTRONICS PRODUCTS

Fig 2.8: Electronics System Market Size and Forecast for Top 8 Products, Value (US$ Bn), India, FY2019-FY2025

<table>
<thead>
<tr>
<th>Product</th>
<th>FY19</th>
<th>FY25</th>
<th>CAGR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile Phones</td>
<td>30.15</td>
<td>66.29</td>
<td>14.03</td>
</tr>
<tr>
<td>Engine Control Unit</td>
<td>0.86</td>
<td>1.13</td>
<td>4.66</td>
</tr>
<tr>
<td>LED Lighting</td>
<td>1.79</td>
<td>4.32</td>
<td>15.82</td>
</tr>
<tr>
<td>Notebooks</td>
<td>2.27</td>
<td>4.37</td>
<td>11.53</td>
</tr>
<tr>
<td>GPON</td>
<td>0.24</td>
<td>1.05</td>
<td>27.89</td>
</tr>
<tr>
<td>CCTV</td>
<td>0.26</td>
<td>1.27</td>
<td>30.26</td>
</tr>
<tr>
<td>Energy Meter/Smart Meter</td>
<td>0.28</td>
<td>0.55</td>
<td>11.91</td>
</tr>
<tr>
<td>FPD TV</td>
<td>1.4</td>
<td>2.62</td>
<td>11.01</td>
</tr>
</tbody>
</table>

FY25, these 8 products will occupy 68% of total TAM in the Electronics System market.

Source: Frost & Sullivan

Fig 2.9: Top 8 Products, India, FY2019-FY2025

<table>
<thead>
<tr>
<th>Product</th>
<th>FY19</th>
<th>FY25</th>
</tr>
</thead>
</table>
| LVM                           | • CCTV Cameras
• Mobile Phones
• LED Lighting
• FPD TVs
• Notebooks                    |       |       |
| HVM                           | • Engine Control Unit
• GPON
• Smart Meters/Energy Meters   |       |       |

If Mobile phones move from LVM to HVM, the ratio of HVM in top 8 products can jump to 86%.

Source: Frost & Sullivan

Government needs to work on below mentioned initiatives to increase HVM in the country:

- Focus on Phased Manufacturing Programme (PMP)
- Provide tax relief and other incentives on the components and accessories used for the devices
- The government needs to maintain a similar duty differential under GST regime via tax refunds that can be proportional to the local value addition
- Government should provide incentives to develop LED manufacturing unit
- Differential duty rebate should be extended to OEMs exporting from India with a higher contribution of local value addition
- Greater investments in industrial design, PCB design and SMT line assembly
SUMMARY: MAKE IN INDIA FOR THE WORLD

IMPORT SUBSTITUTION
- Imports account for US$ 75 Billion; this is 35% of the Electronics Market (TM) demand.
- Top products contributing to highest electronics imports are Engine Control Unit, FPD TV, Refrigerator, Set Top Box, Machine Tools, CCTV Cameras, Notebooks, Servers, Storage Devices, Home Automation Modules, Mobile Phones, Media Gateways, Enterprise Routers, Defense, Medical Devices and Smart Card & Reader
- By FY25, the imports are likely to be US$ 68 Billion; 12.6% of total Electronics Market (TM) demand.

ENHANCE HIGH VALUE ADDED MANUFACTURING
- Low Value Added Manufacturing grew by 15% from FY16 to FY19, and the growth in High Value Added Manufacturing was 12% in this period.
- Owing to its volumes, Mobile phones source a sizable portion of electronics components. If they are localised and move from LVM to HVM by FY25, then the proportion of HVM which stands at 9% in FY25, will move up to 58%. Under this scenario, LVM will go down from 91% to 42%.
- Domestic Value addition in FY19 is ~17%; this needs to move it to 40% by FY25. This will enable additional Value creation of US$ 60 Bn in FY25.
- The recently announced PLI Scheme considers incremental investment and sales of manufactured goods. Rather, Value Addition should be an important criteria for evaluation. Also, the scheme should not be restricted to Mobile phones and its components alone. It should extend and should cover other important electronics products and their high value components too.

EMPLOYMENT GENERATION
- Boost in ESDM manufacturing as a result of the massive capacity expansion to manufacture electronics products is capable of generating an additional 1 Cr (10 Mn) jobs in the sector, which currently employs 2 Mn (direct and indirect) across the country.
- Upscale capabilities of work force by incentivizing research, I/P development & product engineering.
India has the potential to be one of the most attractive manufacturing destinations and support the objective of ‘Make in India for the World’. Government and Industry needs to collaborate and drive initiatives to help India move among top 5 countries in ESDM production and among top 3 in ESDM consumption. Many policy level initiatives are desired to be implemented in a fast-track mode. The effect of policies should be measured and evaluated against the desired objectives to re-check and refine at regular intervals.
GLOSSARY: PROJECT METHODOLOGY

SPECTRUM OF ELECTRONICS PRODUCTS
Top ~80 electronics products across all categories

FILTER CRITERIA: MARKET SIZE, GROWTH, LOCALIZATION

TOP 8 ELECTRONICS PRODUCTS

MARKET ASSESSMENT

IMPORT VS. DOMESTIC

COMPONENT LEVEL ANALYSIS

STRATEGIC CONCLUSION

IMPACT OF GOVERNMENT POLICIES AND PROGRAMS
GLOSSARY: MARKET DEFINITIONS

CAGR
The Compound Annual Growth Rate (CAGR) is the measure of growth over multiple time periods.

EBOM
Engineering Bill of Materials (EBOM) is a type of bill of materials (BOM) reflecting the product as designed by engineering. It contains the list of items, parts, components and sub-assemblies in the product designed by engineering.

Electronics Manufacturing Services (EMS)
Companies that contract manufacture products for OEMs. Beyond manufacturing they offer a whole gamut of services from logistics, repair, servicing etc.

Electronics Market (TM)
It includes Electronics Product market (Total Domestic Consumption + Exports) + Electronics Design Market + Electronics Manufacturing Services Market + Electronics Component Market.

Electronics Production Market (TAM)
It includes Total Domestic Production Market + Electronics Manufacturing Services Market

Electronics System Design & Manufacturing (ESDM) Market
It is the subset of Electronics market which includes Electronic System part (the value of electronic parts in the product) + Electronic design market.
**GLOSSARY: MARKET DEFINITIONS**

**FY (Financial Year)**

The financial year in India is defined from April to March. For instance FY19 refers to 1st April 2018 to 31st March 2019.

**High Value Addition (HVA)**

Manufacturing or assembly in which there is >50% of local value recognised in India.

**High Value Addition (LVA)**

Manufacturing or assembly in which there is <50% of local value recognised in India.

**Original Design Manufacturer (ODM)**

Companies that offer product design as a service for other brands.

**Original Equipment (OE) / Original Equipment Market (OEM)**

This refers to the final end-user electronic products across the application segments under the scope of the exercise: Automotive electronics, Consumer electronics, Industrial electronics, IT & BA, Mobile phones, Telecom, and Others.

**Value Addition**

It is defined as the incremental value added at each stage of production that transforms raw materials and various components into the final product for sale to end consumer.
Frost & Sullivan, the Growth Partnership Company, works in collaboration with clients to leverage visionary innovation that addresses the global challenges and related growth opportunities that will make or break today’s market participants. For more than 50 years, we have been developing growth strategies for the Global 1000, emerging businesses, the public sector and the investment community. Is your organization prepared for the next profound wave of industry convergence, disruptive technologies, increasing competitive intensity, Mega Trends, breakthrough best practices, changing customer dynamics and emerging economies?

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