



Electronics Manufacturing in India

Why in News

Recently, the Government of India **unveiled three schemes** with an outlay of about Rs. 48,000 crore to **promote electronics manufacturing** in India. **These schemes are:**

- Production Linked Incentive (PLI) Scheme.
- Scheme for Promotion of Manufacturing of Electronic Components and Semiconductors (SPECs).
- **Modified Electronics Manufacturing Clusters (EMC 2.0) Scheme.**

Key Points

- The Indian electronics sector is **tremendously growing** with the **demand expected to cross USD 400 billion by 2023-24.**
- **Domestic production has grown** from USD 29 billion in 2014-15 to nearly USD 70 billion in 2019-20 (**Compounded Annual Growth Rate** of 25%).
- Most of this production takes place in the **final assembly units** (last-mile industries) located in India and **focussing on them** would help **develop deep backward linkages**, thus inducing industrialisation.
 - This was an idea propounded by **economist Albert O Hirschman** in his theory of **'Unbalanced Growth'**.
 - The **Economic Survey 2019-20** also promoted this idea and suggested **"assembly in India for the world"**, especially in **"networked products"**, in a bid to create four crore well-paid jobs by 2025 and eight crore jobs by 2030.
 - This is the **strategy that helped China** become the economic superpower it is today.
 - The recently launched **PLI Scheme** plans to achieve this goal by granting an **incentive of 4-6% for domestic production.**

Challenges

- **Missing Profits:**
 - Despite the impressive growth of electronic production in India, the **net value added by production units is very low.**
 - The net value addition ranges **between 5% and 15%**, as most components are imported rather than locally sourced.
 - It implies that **local value addition is a mere USD 7-10 billion** out of a global market of USD 2.1 trillion.
- **Limited Indigenous Capability in Upstream Industries:**
 - In the era of **global supply chains**, the **value addition at the final stages of production is very low**, especially in electronics because the more complicated processes, involving greater value addition, occur prior to assembly, in **'upstream' industries.**

- These include the **production of processors, display panels, memory chips, cameras, etc.**
- Currently, these **imports nearly constitute 80% of these components**, with approximately **67% of the imports coming from China** alone.
- **Absence of Foundries:**
 - In the absence of **foundries (semiconductor fabrication plants where microchips are produced)**, India has to **rely on foreign contractors to produce microchips**.
 - There are about **170 commercial foundries globally** but India does not have a single one.
 - Chip manufacturers like Intel, TSMC and Samsung choose other countries instead of India **citing uncertain domestic demand and poor cost efficiencies** here.
 - **Challenges in Set-up of Foundries:**
 - It **requires massive capital expenditure** to the tune of USD 2 billion and more.
 - Foundries are also required to **adopt newer technologies and processes** almost every 18 months to ensure competitiveness which means **high capital depreciation** and often accounts for 50-60% of the production cost.
 - **Domestic players** have also shown low interest due to their **inability to compete with tech giants in research and development (R&D) and investment**.
 - Due to this, proposals to develop foundries in Gujarat and Uttar Pradesh in recent years were abandoned.
 - Many industry experts also cite the **lack of a foundry as contributing to low R&D** in this sector in India, which results in **poor talent retention** and eventually **'brain drain'**.
 - The **Indian Space Research Organisation (ISRO)** and the **Defence Research and Development Organisation (DRDO)** have their own foundries but their use is **restricted for space and defence systems**, respectively.
- **National Security Considerations:**
 - Most of the chips, as well as components used in Indian communication and critical systems, **are imported**.
 - This could **hamper national security and sovereignty** as **backdoors could be programmed in chips** during manufacturing, which could **compromise networks and cyber-security**.
 - **Backdoor** refers to any method by which authorized and unauthorized users are able to get around normal security measures and gain high-level user access on a computer system, network or software application.
- **Increasing Imports:**
 - It is expected that **electronics imports will soon overtake crude oil as India's largest import commodity** which will result in assembly units ending up as little more than mere packaging units.

Suggestions

- **Increasing Investments:** The **total outlay of Scheme for Promotion of Manufacturing of Electronic Components and Semiconductors (SPECS) must be increased** from the current Rs. 3300 crore, to attract the microchip giants.
 - The government launched SPECS to provide a **25% incentive on capital expenditure for semiconductor manufacturing** among other core components.
 - The **economic impact of a foundry is immense** and ranges from 6 to 23 times the investment in the plant.
 - According to a recent report, a single foundry can offset imports worth USD 8 billion over a projected period and have a further multiplier effect of USD 15 billion on the

Gross Domestic Product (GDP).

- **Profiting from Anti-Chinese Sentiments:** Due to the [USA's allegations on China](#) for worsening [Covid-19](#) and [India-China conflict](#) and [recent developments as a result of it](#), numerous multinational companies (MNCs) are shifting their production out of China.
 - The **USA** and the **UK** have **blocked China's access to chip making tools** and [designated Chinese telecom giants as national security threats](#).
 - It is a golden **opportunity for India to act fastly on it and attract** this outgoing investment.
- **Pushing Make in India:** There is a need to promote semiconductor manufacturing alongside assembly units in India.
 - This will **induce greater local production of components** and also fuel the growth of the industry as a whole, making [Make in India](#) successful.
 - In 2019, the Union Cabinet gave its approval to the [National Policy on Electronics 2019](#) which envisions positioning India as a **global hub for Electronics System Design and Manufacturing**.

Way Forward

- Today, India is one of the upcoming hubs for microchip designing with hundreds of start-ups making substantial progress in this field. Even some IITs have developed indigenous microchip designs like Shakti and Ajit.
- The schemes to promote electronics manufacturing combined with the Prime Minister's call for an ['Atmanirbhar Bharat'](#), have rejuvenated hopes of a rise of the indigenous electronics industry, allowing India to be truly self-sufficient.
- It is only through such actions, India can hope to realise the dream of being a truly indigenous electronic ecosystem encompassing all aspects of the electronics industry.

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