Unleashing the Potential of Electronics Manufacturing

This editorial is based on **"Electronic manufacturing in India needs rapid charging"** which was published in Financial Express on 28/06/2023. It talks about the scope of India becoming self-reliant and export-oriented in the electronics manufacturing sector and the challenges associated.

For Prelims: PLI Schemes for **Large Scale Electronics Manufacturing** and **IT Hardware**, **Scheme for Promotion of Manufacturing of Electronic Components and Semiconductors (SPECS)**, **Modified Electronics Manufacturing Clusters Scheme (EMC 2.0)**, **India's Semiconductor Mission**, **Make in India**

For Mains: India as an electronics manufacturing hub - scope and challenges, Make in India programme and electronics sector.

India has mobilised itself to become **one of the fastest-developing economies in the world**. The **electronic manufacturing** narrative, in this context, is of particular significance. Companies over the world are beginning to look at the **Indian market as their next electronics manufacturing destination** to cater to the burgeoning domestic demand for electronic goods.

Realising the sector's potential for growth and its capability to provide large-scale employment, the **Indian government is enthusiastically pursuing the** 'Make in India' **program** as a core policy initiative to support and speed up the country's manufacturing sector including electronics.

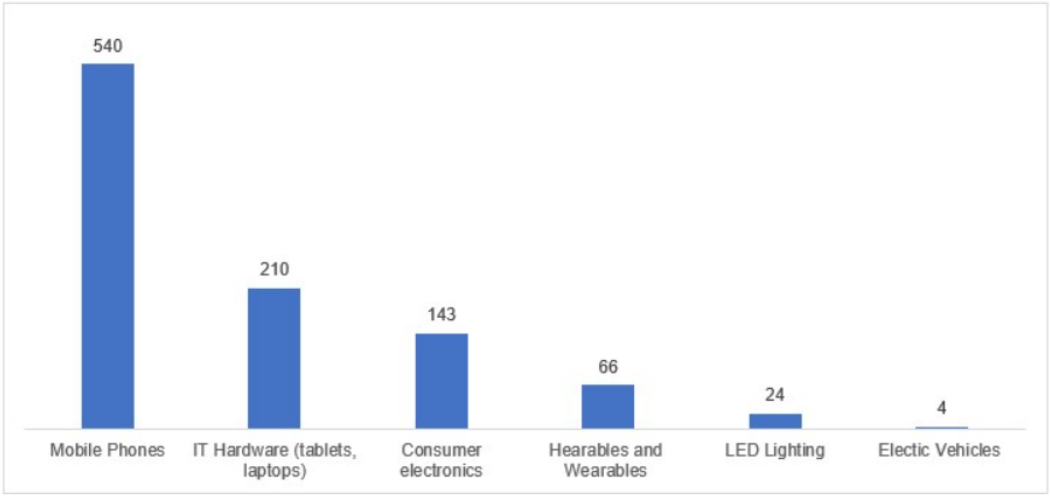
What is the Current Scenario of Electronics Production in India?

- **Opening Opportunities for India:**
  - **Electronics is the largest manufactured and traded category globally,** valued at over USD 2 trillion. Out of this, **China supplies almost over 50%.**
    - However, the **rising wage cost in China is pushing buyers to diversify and de-risk their supply chains**, presenting a unique opportunity for India.
  - **India is one of the leading contenders for alternate solutions** for global electronics companies and the electronics sector has the potential to become one of the top exports of India in the next 3-5 years.
  - **India is expected to become a USD 1 Trillion digital economy by FY26.**
- India's Production Scenario: The electronics manufacturing industry grew from USD 37.1 billion in 2015-16 to **USD 67.3 billion in 2020-21** and **India targets to make it USD 300 billion by 2026 (domestic production).**
  - As per **MeitY's Vision Document 2.0** - India can reach this target provided, specific product segments with high potential for scale are shortlisted and catered to by way of incentives and policy measures.
  - **Exports of USD 120-140 billion** are critical to reach the USD 300 billion mark for

electronics manufacturing.

- **Schemes for Electronics Manufacturing:**
  - In order to position India as a global hub for **Electronics System Design and Manufacturing (ESDM)**, following schemes have been introduced:
    - The **PLI Schemes for** (a) **Large Scale Electronics Manufacturing** and (b) **IT Hardware**
    - **Scheme for Promotion of Manufacturing of Electronic Components and Semiconductors (SPECS)** and
    - **Modified Electronics Manufacturing Clusters Scheme (EMC 2.0)**
  - Additionally, **India's Semiconductor Mission** with an incentive outlay of ~USD 10 bn was launched with the vision to develop a sustainable semiconductor and display ecosystem in the country.
  - **100% FDI is allowed** for electronics under the automatic route, however, **in the case of defence electronics, FDI up to 49% is allowed** through automatic route (beyond 49% govt approval is required).

Global market share of key product segments in 2020-21 (US$ billion)



What are the Challenges in Making India an Electronics Hub?

- **Duties as a Double-Edged Sword:**
  - **High import duties and strict localisation norms** are often imposed to promote local manufacturing. While they do succeed to an extent in ensuring local manufacturing, they also **negatively impact a country's global competitiveness.**
    - This is **particularly true in electronics where supply chains are globally intertwined**.
  - Countries like **Vietnam and China have more favourable subsidy structures** than India does **in areas like machinery** used for manufacturing, and research & development.
- **Lack of Component Ecosystem:**
  - Another challenge is **India lacking a robust ecosystem of companies locally manufacturing** components required for electronic products.
  - In the absence of a full-fledged component ecosystem in India, **these components are required to be imported**, resulting in increased costs and lead time for the manufacturers.
    - An active policy support to promote local manufacturing, including through domestic players, appears to be missing at present.
- **Skill Development:**
  - There is a **shortage of skilled labour in the electronics manufacturing sector.** To become a global hub, India needs to **invest in developing a highly skilled workforce** with expertise in areas such as electronics engineering, research and development, and advanced manufacturing technologies.

- **Regulatory Environment:**
  - The regulatory framework and bureaucratic procedures in India can be **complex and time-consuming.**
  - Streamlining regulations and reducing **bureaucratic red tape** would enhance the ease of doing business, attract investments, and foster a conducive environment for electronics manufacturing.
- **Environmental Sustainability:**
  - Electronics manufacturing often generates **electronic waste**, which poses environmental challenges.
  - **Absence of effective implementation of sustainable practices** like e-waste management and promotion of environmentally friendly manufacturing processes can do more harm to the environment than the intended good.

What Steps can be Taken to Improve India's Electronics Sector?

- **Increasing Scalability:**
  - Electronics manufacturing prospers in large clusters which provide requisite economies of scale. However, India hasn't envisaged its manufacturing clusters at requisite scale.
    - **India currently has almost 400** SEZs across the country to drive exports, which even if put together, account for half the exports when compared to the **Shenzen SEZ in China.**
  - **India must double down on creating mega, global scale electronics clusters** in a couple of locations across the country. **UP (Noida), Tamil Nadu, and Telangana are already emerging as front runners** and time has come to bet big to create electronics clusters of global scale.
- **Limiting High Exports Duty:**
  - In order to gain a fair share of the global electronics market, there needs to be a **complete overhaul in our thinking, especially for taxation,** labour laws and worker housing.
    - India is now **shifting from being an import-substitution electronics economy to an export-led economy.**
  - Complex duty structure with high and constantly changing rates serve as major barriers to making India an assembly hub for global OEMs and thus require a revisit.
- **Private-Government Collaboration:**
  - While India has been a leading manufacturer of mobile phones in the past few years, it has largely been in the low technology category. Now, Indian manufacturers can work towards becoming a part of the global value chains.
    - **Public-private collaboration, supportive policies and legal framework are key to driving this growth.**
  - The government's aim to create a **10 million-strong skilled IT workforce in the next three years,** roll out the semiconductor design-linked incentive policy, etc. - all these initiatives work towards building a robust electronic manufacturing ecosystem.
- **Looking for Cooperation amid Tensions:**
  - Some of the biggest electronics companies globally today are Chinese in addition, thousands of Chinese electronics components suppliers.
    - **Difficulties in cooperation arising due to border tensions** between India and China severely limits India's ability to attract large scale manufacturing investment.
  - In this context, the **China-Taiwan example can be emulated where,** despite being on the verge of war, over **4,000 Taiwanese companies operate in China** including Foxconn, one of the biggest employers in China.
    - **Finding a way to do business with China in India's enlightened self-interest** despite political tensions will be critical for success in electronics manufacturing.
- **Increasing Flexibility:**
  - In 2008, Vietnam removed local content requirements on its FDI which encouraged Samsung to move its manufacturing base from South Korea to Vietnam, and **today, 60% of all Samsung smartphones are manufactured in Vietnam.**
    - Other tech giants like LG, Apple, Nintendo, and several others have also transferred large parts of manufacturing to Vietnam.
    - As a result, Vietnam has climbed from the **47th position in global electronics**

exports ranking in 2001 to the 7th position in 2021.

- **Similar incentives regarding flexibility should be provided to Indian manufacturers** to utilise the workforce in line with practices in competing countries.

Conclusion

Emerging technologies such as **AI**, **ML**, **IoT**, **Augmented Reality (AR), Virtual Reality (VR)** and Robotics are transforming the industry while driving up demand for new electronics products. India is already a recognized global player in software development and by strengthening its hardware manufacturing capabilities, **India has the potential to emerge as a leading force in the electronics space as well.**

It is important to note that the **vision of a 'Self-Reliant India'** will only be realised if various **sectors in manufacturing scale up their capabilities and technology adoption**. The need of the hour is to **build an environment that fosters innovation, protects intellectual property, focuses on skill development,** and builds infrastructure that supports the ecosystem.

Drishti Mains Question:

Discuss India's scope and major challenges in becoming a global manufacturing hub in Electronics System Design and Manufacturing (ESDM) sector.

UPSC Civil Services Examination, Previous Year Questions (PYQs)

Prelims:

Q. 'R2 Code of Practices' constitutes a tool available for promoting the adoption of (2020)

(a) environmentally responsible practices in electronics recycling industry

(b) ecological management of Wetlands of International Importance under the Ramsar Convention

(c) sustainable practices in the cultivation of agricultural crops in degraded lands

(d) 'Environmental Impact Assessment' in the exploitation of natural resources

Ans: (a)