

Sansad TV Perspective: Chip'ping in for Industry 4.0

In the series Sansad TV Perspective, we bring you an analysis of the discussion featured on the insightful programme 'Perspective' on Sansad TV, on various important topics affecting India and also the world. This analysis will help you immensely for the <u>IAS exam</u>, especially the mains exam, where a well-rounded understanding of topics is a prerequisite for writing answers that fetch good marks.

In this article, we feature the discussion on the topic: Chip'ping in for Industry 4.0.

Anchor: Vishal Dahiya

Participants:

- 1. Ajay Prakash Sawney, Secretary, Ministry of Electronics and Information Technology, Government of India
- 2. Ajai Chowdhury, Founder Member, HCL
- 3. A K Bhattacharya, Editorial Director, Business Standard

Context:

The current era witnesses an extensive dependence on electronic goods in every sector along with increasing demands. The world is facing a challenge in the supply of semiconductors as an outcome of its shortage. The Union Cabinet of India formulated a comprehensive program for the development of a sustainable semiconductor ecosystem in the country.

What is a semiconductor?

- Semiconductors are integral components of electronic devices which facilitate communications, computing, healthcare, military systems, transportation, clean energy and multiple other applications.
- They are sometimes referred to as integrated circuits (IC) or microchips which are usually made up of silicon or germanium or compounds like gallium arsenide.
- It is often said that semiconductors are considered as a modern marvel with intangible engineering.
- There are two stages involved in the production of semiconductors: Design and Manufacturing. The companies that focus only on design are known as "fabless" firms and the firms that focus only on manufacturing are known as "foundries".
- Semiconductors are used in smartphones, radios, TVs, computers, video games, and advanced medical diagnostic equipment.

Objective of the Government of India's Semiconductor Programme:

https://byjus.com



- The Government of India aims at making the country a global hub for electronics manufacturing, exerting special emphasis on semiconductors.
- The government has committed a support of Rs. 2,30,000 crore to encourage the development of the semiconductor industry.



Image source: https://www.pdsol.com/

Industry 4.0: Important Facts

- Industry 4.0 is the phase that is accompanied by the digital transformation of manufacturing adding a new stage to the industrial value chain.
- This phase is often considered as the fourth industrial revolution and includes the cyber-physical systems like smart machines and modern control systems like the Internet of Things (<u>IoT</u>).
- Industry 4.0 represents the current trends of automation and data exchange in manufacturing technologies that include cloud computing, remote monitoring, cognitive computing and smart factory.



- It involves intelligent networking of machines and processes which is facilitated by Information Communication Technology (ICT).
- Industry 4.0 intends to widen the scope of smart manufacturing and end-to-end digital supply chain.
- This <u>industrial revolution</u> of the present era employs the integration of IT (Information Technology) and OT (Operational Technology).

Industry 4.0 in the Indian Context:

- Industry 4.0 has gathered enormous boost in the past few years due to the transformation of the digital framework of India. The scope of digitization is expanding in India which makes business more resilient to pandemic-like situations.
- It is believed that India is at the turning point of undergoing a paradigm shift to Industry 4.0 through start-ups and organisations adopting new technologies.
- There exists some issues surrounding digitization due to lack of adequate <u>cybersecurity</u> norms and infrastructure.

Effective Government Policies to improve Manufacturing in India:

- Make in India
- National Policy for Advanced Manufacturing
 - The Department for Promotion of Industry and Internal Trade (<u>DPIIT</u>) took an initiative to create a qualitative and quantitative change in the manufacturing sector with an ambitious target of increasing the share of manufacturing in GDP to 25% resulting in job creation.
 - This policy is based on the principle of industrial growth in partnership with states.
 - Read more about <u>National Manufacturing Policy</u> in the linked article.
- The Production Linked Incentive:
 - Scheme offers a massive impetus to encourage the establishment of manufacturing companies and promote indigenous production of semiconductors.
 - This aims to transform India into a global hub for Electronic System Design and Manufacturing (ESDM).
 - Read more about the <u>PLI</u> scheme in the linked article

Challenges:

- India has recently witnessed a chip shortage which is also referred to as chip crunch and this affected the production in the electronics and automobile sector.
- The shortage of chips has reflected the weakness of India in the global supply chain of electronics.



- About 40% of India's demand pertaining to electronic components depends on imports from China and over the past few years India shares geopolitical issues with China. It is a big challenge for India to reduce its dependence on China for electronic components.
- Inadequate Intellectual Property Rights (<u>IPR</u>) and contract enforcement create an obstacle for the foreign companies to collaborate with India.
- The fabrication plants are capital intensive because of the changing innovations in manufacturing. There is a lack of capital flow in the manufacturing of semiconductors.
- Lack of uninterrupted power and water supply.

Ways Suggested: Chip'ping In for Future:

- It is recommended that the companies must adopt 5-7 years' strategies instead of 3-5 years of business plans to have a better roadmap for handling unusual losses as experienced during the pandemic.
- Wider tax breaks, higher budget allocation, corporate incentives are essential for developing the industries and heading towards making India a manufacturing hub.
- Policy reforms in terms of subsidies and other factors that facilitate the <u>Ease of Doing Business</u> are required.
- It is a major area of essence to improve the technical skills of the workforce and increase job opportunities that would result in the increase of production capacities of the industries.
- Experts often suggest that there is a necessity to bridge the gap between the industry and academia by introducing more internship programmes that would pave an opportunity for the students pursuing technical education to interact with the industry experts. This will assist in the generation of skilled workforce and increase the employability of the students.
- The industrial portfolio must extend to cold storages, warehouses, logistics, robotics, edge data centres with a prime focus on state-of-the-art infrastructure and technology usage.
- Telecommunications networks and digital infrastructure can be empowered in order to boost global competitiveness and cost effectiveness which would actually offer a significant leap towards digital transformation and drive the industry 4.0 phase towards progress.