



## General Studies-3; Topic: Science and Technology- developments and their applications and effects in everyday life.

### Domestic Semiconductor Industry in India

#### Introduction

- The Union Cabinet's decision to set aside ₹76,000 crore for supporting the development of a 'semiconductors and display manufacturing ecosystem' is a welcome acknowledgment of the strategic significance of semiconductors to a modern economy.
- To simultaneously establish an **India Semiconductor Mission** is a step in the right direction.

#### Importance of Semiconductors

- Semiconductor chips play a critical part in making life easier, stimulating digital disruption, and advancing economy.
- Semiconductors are the foundation of modern electronics driving the next phase of digital transformation under Industry 4.0.
- The ubiquitous chips are now an integral part of contemporary automobiles, household gadgets such as refrigerators, and essential medical devices such as ECG machines.
- Scarcity of chips can cause production to suffer in almost every industry, underlining the necessity to diversify chip supply.

#### Recent initiatives

- **India Semiconductor Mission (ISM)**
  - For developing a sustainable semiconductors and display ecosystem, a **specialised and independent India Semiconductor Mission (ISM)** is set up.
  - ISM is led by global experts in the semiconductor and display industry.
- **Production Linked Incentives**

- Incentive support have been approved under **PLI** for Largest Scale Electronics Manufacturing, PLI for IT Hardware, SPECS Scheme and **Modified Electronics Manufacturing Clusters (EMC 2.0) Scheme**.
- **Semiconductor Fabs and Display Fabs**
  - It would provide **fiscal support of up to 50% of the project cost** for setting up semiconductor and display fabrication units.
  - The Union government will work with the States to **set up high-tech clusters with the required infrastructure** such as land and semiconductor-grade water.
- **Semi-conductor Laboratory (SCL)**
  - MeitY is undertaking **requisite steps for modernization and commercialization of Semi-conductor Laboratory (SCL)**.
- **Semiconductor Design Companies**
  - The **Design Linked Incentive (DLI) Scheme shall extend product design linked incentive of up to 50%** of eligible expenditure and product deployment linked incentive of 6% – 4% on net sales for five years.
- India and Taiwan have started negotiations for a **free-trade agreement and setting up a semiconductor manufacturing hub in an Indian city**.

## Way Forward

- Given the long gestation periods and rapid technology changes, **India must out-strategize on design and functionality** as the end product will be out only after three-four years from the moment work begins.
- Apart from incentivising more FDI in electronics, we need to focus on **encouraging Indian manufacturers and start-ups to enter and master complex R&D** and manufacturing verticals.
- The semiconductor industry is changing fast as new-age technologies require **innovation at the design, material, and process levels**.
- Indian engineers have contributed immensely to this area in multinational companies. We must encourage them to set up their start-ups with government grants and tax incentives.
- Premier research institutions such as the Indian Institute of Science should also be asked to work aggressively on R&D in chip designing and manufacturing.
- By working aggressively in new cutting-edge technologies, India can ensure that it becomes Aatmanirbhar.
- This industry promotes **higher domestic value addition in electronics manufacturing** and will contribute significantly to achieving a **USD 1 Trillion digital economy and a USD 5 Trillion GDP by 2025**.
- Just like South Korea, India too can create a massive industrial chain with every semiconductor factory being surrounded by a variety of supporting enterprises.
- The will not only boost semiconductor manufacturing but will also help India achieve self-sufficiency, improve data security, and gain digital independence.