



India Semiconductor Mission

For Prelims: Semiconductors and Related Schemes

For mains: Significance of semiconducting device in Indian economy, Need of promoting electronic and semiconductor industry, role of electronic industry in making India self-reliant

Why in News?

Recently, **Ministry of Electronics & Information Technology** has inaugurated the first ever **Semicon India 2022 Conference** under [India Semiconductor Mission](#) in Bengaluru.

- Semicon India - 2022 has been organized to take forward the vision of the Prime Minister to make India **a leader in the electronics manufacturing, semiconductor design, manufacturing & innovation.**
- **Theme of the Conference:** Catalyzing India's Semiconductor Ecosystem.

What are Semiconductors?

- Any of a class of crystalline solids intermediate in electrical conductivity between a conductor and an insulator.
- Semiconductors are employed in the manufacture of various kinds of electronic devices, including diodes, transistors, and integrated circuits. Such devices have found wide application because of their compactness, reliability, power efficiency, and low cost.
- As discrete components, they have found use in power devices, optical sensors, and light emitters, including solid-state lasers.

What is the India Semiconductor Mission?

- **About:**
 - The ISM was launched in 2021 with a total financial outlay of Rs76,000 crore under the aegis of the Ministry of Electronics and IT (MeitY).
 - It is part of the [comprehensive program for the development of sustainable semiconductor and display ecosystem](#) in the country.
 - The programme **aims to provide financial support to companies investing in semiconductors, display manufacturing and design ecosystem.**
 - Envisioned to be led by **global experts in the Semiconductor and Display industry, ISM will serve as the nodal agency** for efficient, coherent and smooth implementation of the schemes.
- **Components:**
 - **Scheme for setting up of Semiconductor Fabs in India:**
 - It provides fiscal support to eligible applicants for setting up of Semiconductor Fabs

which is aimed at attracting large investments for setting up **semiconductor wafer fabrication facilities** in the country.

- **Scheme for setting up of Display Fabs in India:**
 - It provides fiscal support to eligible applicants for setting up of Display Fabs which is aimed at attracting large investments for **setting up TFT LCD / AMOLED based display fabrication facilities** in the country.
 - **Scheme for setting up of Compound Semiconductors / Silicon Photonics / Sensors Fab and Semiconductor Assembly, Testing, Marking and Packaging (ATMP) / OSAT facilities in India:**
 - The Scheme provides a **fiscal support of 30% of the Capital Expenditure to the eligible applicants for setting up** of Compound Semiconductors / Silicon Photonics (SiPh) / Sensors (including MEMS) Fab and Semiconductor ATMP / OSAT(Outsourced Semiconductor Assembly and Test) facilities in India.
 - **Design Linked Incentive (DLI) Scheme:**
 - It offers financial incentives, design infrastructure support across various stages of development and deployment of semiconductor design for Integrated Circuits (ICs), Chipsets, System on Chips (SoCs), Systems & IP Cores and semiconductor linked design.
- **Vision:**
- To build a vibrant semiconductor and display design and innovation ecosystem to enable India's emergence as a global hub for electronics manufacturing and design.
- **Significance:**
- ISM is of paramount importance to organize efforts for promoting semiconductors and display industry in a more structured, focused, and comprehensive manner.
 - It will formulate a comprehensive long-term strategy for developing semiconductors & display manufacturing facilities and semiconductor design ecosystem in the country.
 - It will **facilitate the adoption of trusted electronics** through secure semiconductors and display supply chains, including raw materials, specialty chemicals, gasses, and manufacturing equipment.
 - It will **enable a multi-fold growth of Indian semiconductor design** industry by providing requisite support in the form of Electronic Design Automation (EDA) tools, foundry services and other suitable mechanisms for early-stage startups.
 - It will **also promote and facilitate indigenous [Intellectual Property \(IP\)](#) generation** and encourage, enable and incentivize Transfer of Technologies (ToT).
 - ISM will **enable collaborations and partnership programs with national and international agencies**, industries and institutions for catalyzing collaborative research, commercialization and skill development.

Why is the need of Promoting Semiconductor Industry So Much?

- Semiconductor is **the heart of modern economics**.
- In today's world of technology, **when almost everything revolves around electronic gadgets, one cannot overstate the importance** these microchips hold. Also known as Integrated Circuits (ICs), **these chips are primarily made out of silicon and germanium**.
- Without these chips, **there would be no smartphones, radios, TVs, laptops, computers or even advanced medical equipment**.
- They are used **to fabricate electronic devices**. Also, with the **emergence of e-vehicles, the demand for semiconductors is expected to see a big boom**.
- The Covid-19 pandemic has shown that the **demand for electronic gadgets will only go uphill from here**.
- In all this, **the industry seems to be an attractive place to make early inroads into**.
 - India's own consumption of semiconductors is expected to cross USD 80 billion by 2026 and to USD 110 billion by 2030.
- There are **not many countries in the world that manufacture these chips**.
 - The industry is dominated by the **United States of America, Taiwan, South Korea, Japan and the Netherlands**.
 - Germany is also an emerging producer of ICs.
- In all this, **it might actually be a good idea for India to get on the bus early**.

What are the Initiatives related to Semiconductors?

- **Semi-conductor Laboratory (SCL):**
 - MeitY will take requisite steps for modernization and commercialization of Semi-conductor Laboratory (SCL).
- **For Compound Semiconductors:**
 - Government will support fiscal support of 30% of capital expenditure to approved Compound Semiconductors units.
- **Production Linked Incentives:**
 - Incentive support to the tune of Rs.55,392 crore (7.5 billion USD) have been approved under **Product Linked Incentive (PLI)** for Largest Scale Electronics Manufacturing, PLI for IT Hardware, SPECS Scheme and Modified **Electronics Manufacturing Clusters** (EMC 2.0) Scheme.

Way Forward

- Semiconductors and displays are the foundation of modern electronics driving the next phase of digital transformation under **Industry 4.0**.
- India's PSEs such as **Bharat Electronics Ltd or Hindustan Aeronautics Ltd can be used to set up a semiconductor fab** foundry with the help of a global major.
- India needs to **drop the dream of swadeshi semiconductors**. Instead, **it should aim to become a key player in a trusted, plurilateral semiconductor ecosystem** that keeps key adversaries out.
 - Favourable trade policies are critical for building a plurilateral semiconductor ecosystem.

Source: PIB

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