

Placing Semicon Diplomacy at the Heart of India's Foreign Policy

Writer - Sagar Sharma & Urmi Tat (The writers are from the Electronics Systems Design and Manufacturing (ESDM) team at Invest India)

The article is related to
General Studies-Paper-II
(International Relations) & III
(Sci & Tech.)

Indian Express

30 April, 2022

Doing so would make sense, both strategically and economically.

Semiconductor chips are the lifeblood of the modern information age. They enable electronic products to compute and control actions that simplify our lives. The manufacturing cycle of a semiconductor chip from sand to a finished product, sees it change hands approximately 70 times across international borders. It is not difficult to imagine that the chip in the device closest to you was made by a Japanese engineer working on Dutch machinery in an American foundry in Taiwan to produce wafers which were shipped to Malaysia for packaging before being sent to India as a finished product .

There cannot be a better example of peacetime global cooperation than the resolve involved in making the meticulous chip. These semiconductor chips are the drivers for ICT development and one of the key reasons for the current flattening of the world.

The semiconductor is the cornerstone of all electronic products. However, the semiconductor manufacturing capacities are concentrated in a few geographies. Nearly all leading edge (sub 10nm) semiconductor manufacturing capacity is limited to Taiwan and South Korea, with nearly 92 per cent located in the former. Further, 75 per cent of the semiconductor manufacturing capacity is concentrated in East Asia and China. The concentration of capacities poses many challenges, leading several countries to be vulnerable to a few.

The current decade presents a unique opportunity to India. Companies are looking to diversify their supply chain and for alternatives to their bases in China. The chip shortages due to covid-19 have hit automakers with a revenue loss of \$110 bn in 2021. The Russia-Ukraine conflict and its implications for raw material supplies for the semiconductor value chain has also poised chipmakers to invest in strengthening the semicon supply chain. India must seize this opportunity and become an attractive alternative destination for semiconductor manufacturing. The way ahead is conceptualising a semicon diplomacy action plan.

Placing semicon diplomacy at the heart of India's foreign policy is essential both strategically and economically. Semiconductors are used in critical infrastructures such as communication, power transmission etc., that have implications for national security. The establishment of the value chain for semiconductors would ensure a multiplier effect on the entire economy. Further, since electronics items form one of the most imported items after oil and petroleum products, domestic production would be saving forex and reducing the balance of payments, especially vis a vis China.

One of the ways of leveraging semicon diplomacy is increasing multilateral and bilateral cooperation. This should be done across the value chain of semiconductors — design, manufacturing, and packaging. A key institution with immense potential in this regard is the Quad. Australia, being rich in raw materials required for semiconductors, can be an important supplier to fill in India's deficits. The US and Japan can be leveraged for capacity building and their advanced semiconductor technology in logic and memory segments.

Semicon diplomacy is pivotal to India's Act East Policy, which aims to build resilient ties in the Asia Pacific region. Considering that the semiconductor manufacturing and testing bases are heavily concentrated in East Asia, the Act East policy provides an opportunity to connect and strengthen ties with key players in the region. At the same time, keeping an eye on the larger vision, frequent technological exchanges between a regional bloc like ASEAN via tracks in forums like the East Asia Summit and the ASEAN regional forum will be beneficial.

India's neighborhood has always held a special place in its diplomatic outreach. Attaining self-sufficiency in semiconductor manufacturing can mean collective growth of the South Asian region. Considering that the global semiconductor market is projected to be \$1.2 tn by 2030, India needs to be well-positioned to capture it. The recently announced Semicon India program which provides \$10 bn fiscal support and other non-fiscal measures shows strong political will and is a step in the right direction. India needs to harness its strengths, such as the strong presence of global EMS players, diaspora, world-class design ecosystem, demographic dividend, and use it as a pedestal for global partnerships and outreach.

The PM's clarion call for Aatmanirbhar Bharat resonates well with India's drive for self-sufficiency in semiconductors. India's concept of self-reliance is not an individualistic endeavour but one that encourages growth and prosperity of all, in the spirit of Vasudhaiva Kutumbakam, meaning the entire world is one family. Similarly, as the prime minister himself stated, we don't have an option but to be self-reliant in semiconductors.

GS World Team Input

IN THE NEWS

Semicon India-2022 Conference

- Recently, Prime Minister Narendra Modi inaugurated the first Semicon India Conference - 2022 through video conferencing in Bengaluru.
- The conference marked a significant step towards the formal launch of India's semiconductor strategy and policy, which aims to transform the country into a global hub for electronics system design and manufacturing.
- The Semicon India program was approved to showcase the semiconductor's growth and manufacturing ecosystem over a time period of next six years.
- Its theme will be 'Design and Manufacture in India, for the World: Making India a Semiconductor Nation'.
- Semicon India- 2022 aims to make India a significant player in the 'Global Semiconductor Value Chain'.

What is semiconductor chip

- Semiconductor is a special kind of material. It has the properties of good conductor and bad conductor of electricity. They work to control the flow of electricity. They are made of silicon.
- Some special doping is added to it, so that the properties of the conductor can be changed.
- This leads to the development of its desirable properties and the same material is used to make electrical circuit chips.

Importance of Semiconductor Chips

- Processing of data is done through the semiconductor chip itself. For this reason it is also called the brain of the electronic device. Today it is being used in all the best electronic devices from cars.
- Semiconductor chips are needed for the manufacture of home appliances, electronics, medical equipment and automotive.

Committed To Excellence

Expected Question (Prelims Exams)

- Q. Consider the following statements in the context of Semicon India-2022 conference :-**
1. Semicon India – 2022 aims to make India a significant player in the 'Global Semiconductor Value Chain'.
 2. Its theme is 'Design and Manufacture in India, for the World: Making India a Semiconductor Nation'.
 3. The Semicon India-2022 conference has been organized for the third time.
- Which of the above statement(s) is/are correct?
- (a) only 1
(b) 2 and 3
(c) 1 and 2
(d) only 2

Expected Question (Mains Exams)

- Q. What do you understand by semiconductor chips and why is it important? How is Semicon Diplomacy important to India's Act East Policy? Also discuss how India can become self-reliant in this field? (250 Words)**

World

Committed To Excellence

Note: - The question of the main examination given for practice is designed keeping in mind the upcoming UPSC main examination. Therefore, to get an answer to this question, you can take the help of this source as well as other sources related to this topic.