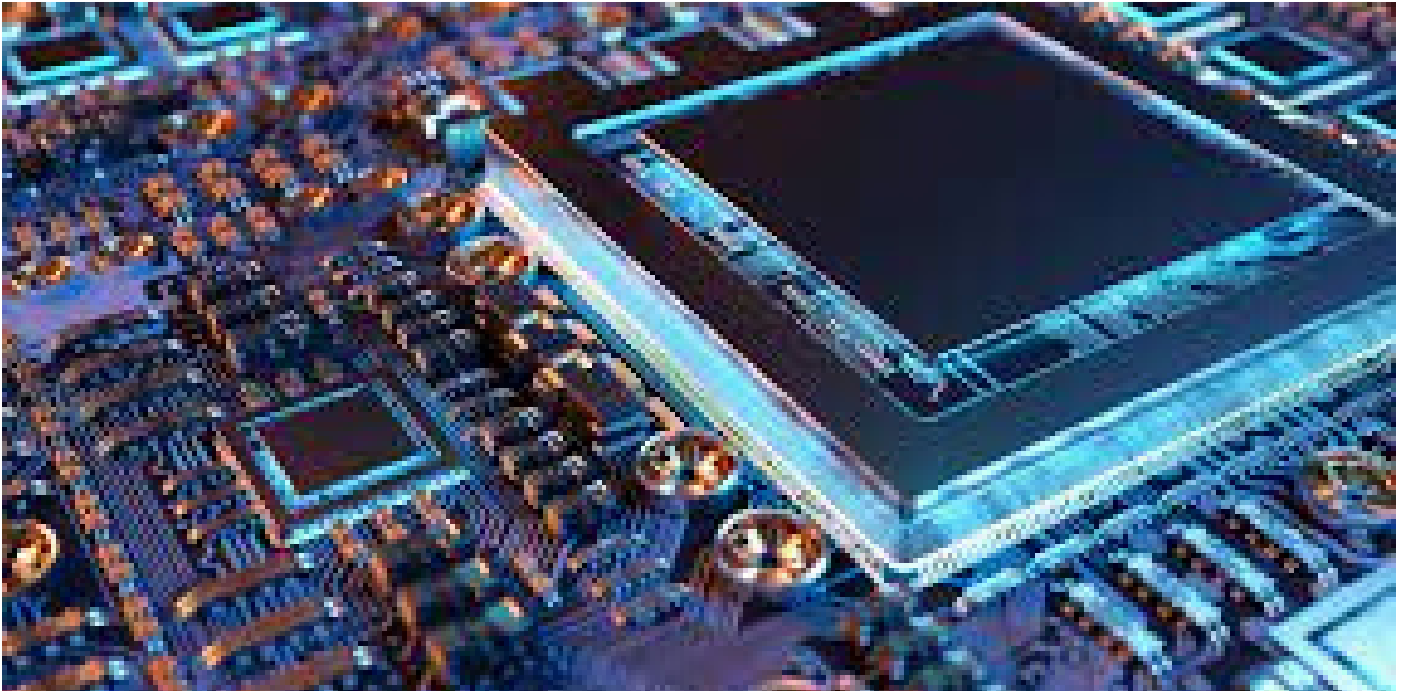


INDIA FUTURE FOUNDATION

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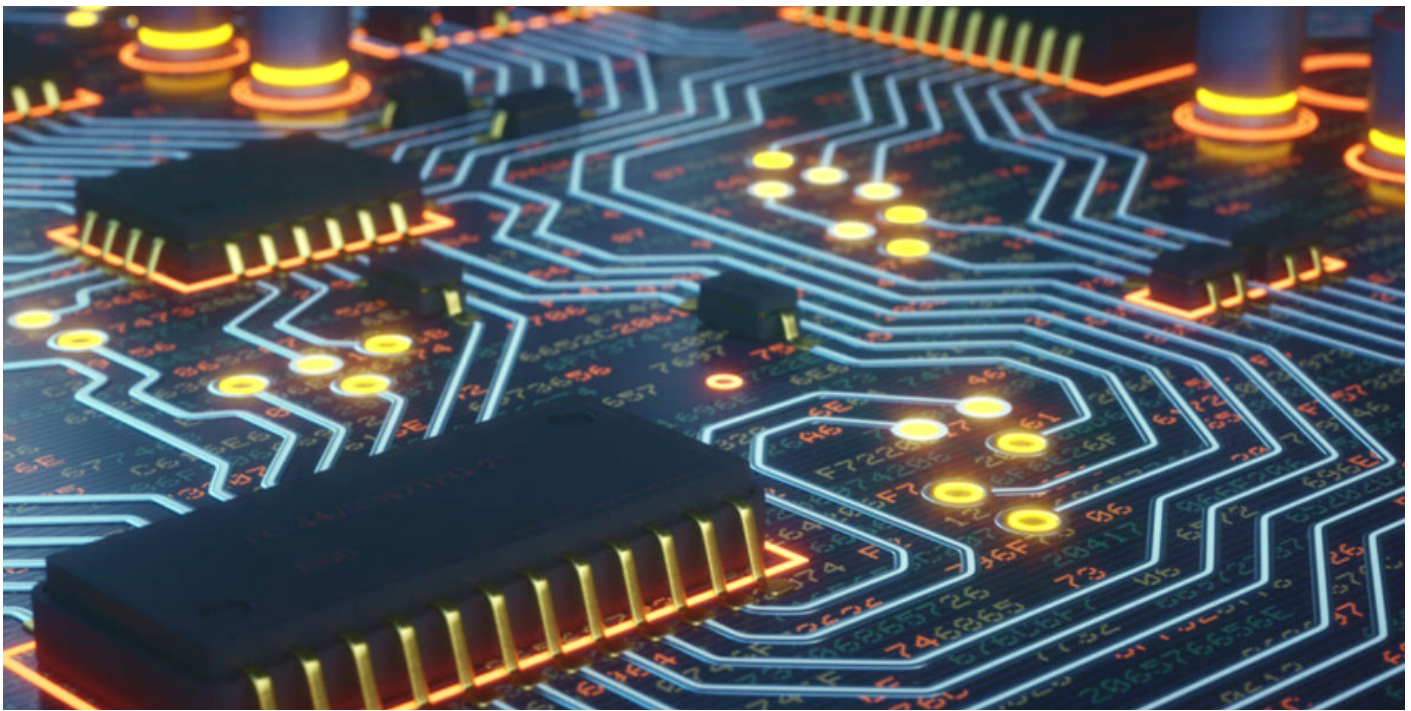
INDIA'S SEMICONDUCTOR INDUSTRY PROFILE

Semiconductors or chipsets are used in all modern electronic devices and technologies, with a range of applications that range from electronic products and IT hardware to defense technology, industrial electronics, medical electronics, automation (workplace, healthcare, manufacturing etc.), and the Internet of Things (IoT).

Semiconductors are essential elements in electronic devices in a number of sectors including healthcare and medical devices, communication, computing, defense, transportation, clean energy, and key emerging technologies like artificial intelligence and quantum computing

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- 01 - India's semiconductor industry profile
- 02 - Investment trends in the industry
- 02 - Initiatives of the government
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- 04 - Reasons for growth in semiconductor industry
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INVESTMENT TRENDS IN THE INDUSTRY

Between April 2000 and December 2020, India's electronics sector received FDI worth US\$3 billion, and the Indian government has allowed 100 percent FDI under the automatic route for the electronics sector.

According to the Indian government, India's semiconductor market was worth US\$15 billion in 2020, and projected to reach US\$63 billion by 2026 and India's display panel market is estimated to be worth around US\$7 billion and expected to grow to US\$15 billion by 2025.

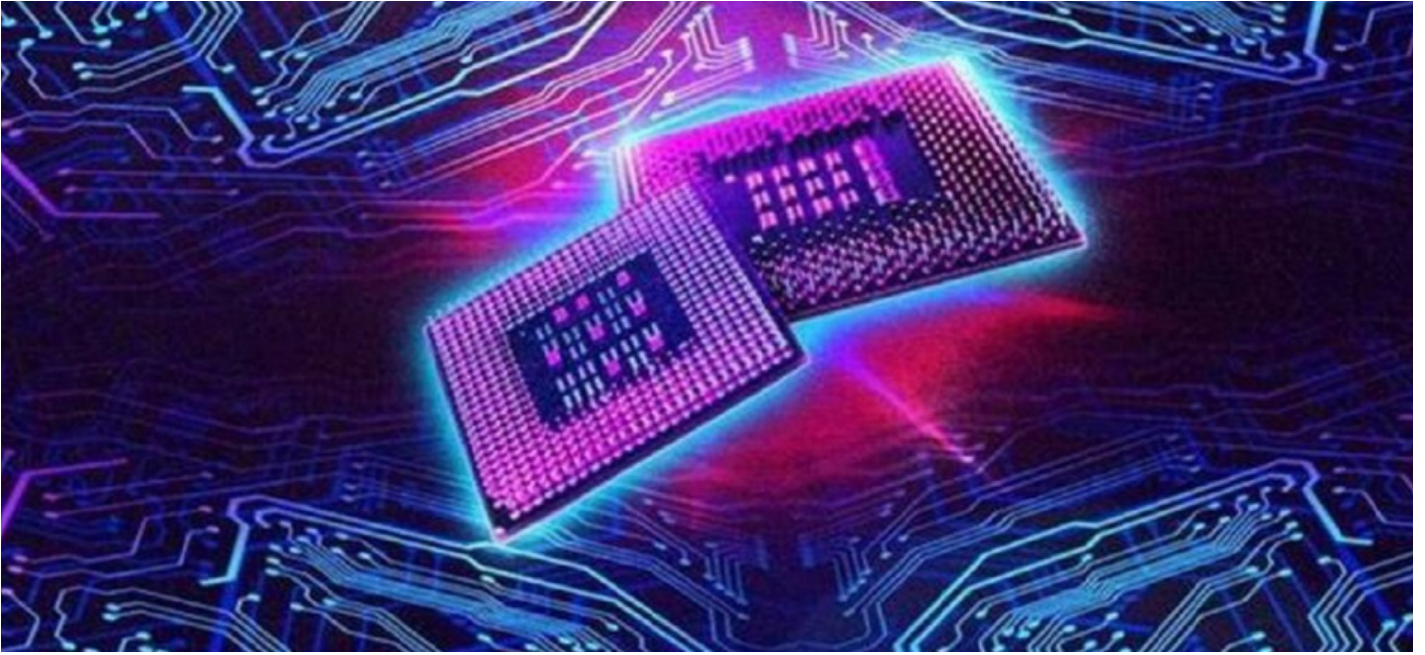
INITIATIVES OF THE GOVERNMENT

On December 15, 2021, the Program for Development of Semiconductors and Display Manufacturing Ecosystem in India was announced, with an outlay of INR 760 billion (>US\$10 billion) for the development of a sustainable semiconductor and display manufacturing ecosystem in India.

On December 30, 2021, the Indian government announced it would start receiving proposals from companies for semiconductor and display manufacturing from January 1, 2022.

So far, 5 firms have applied under the Rs 76,000 crore semiconductor promotion scheme and the government expects more global firms to participate.

INDIA'S FIRST SEMICON CONFERENCE



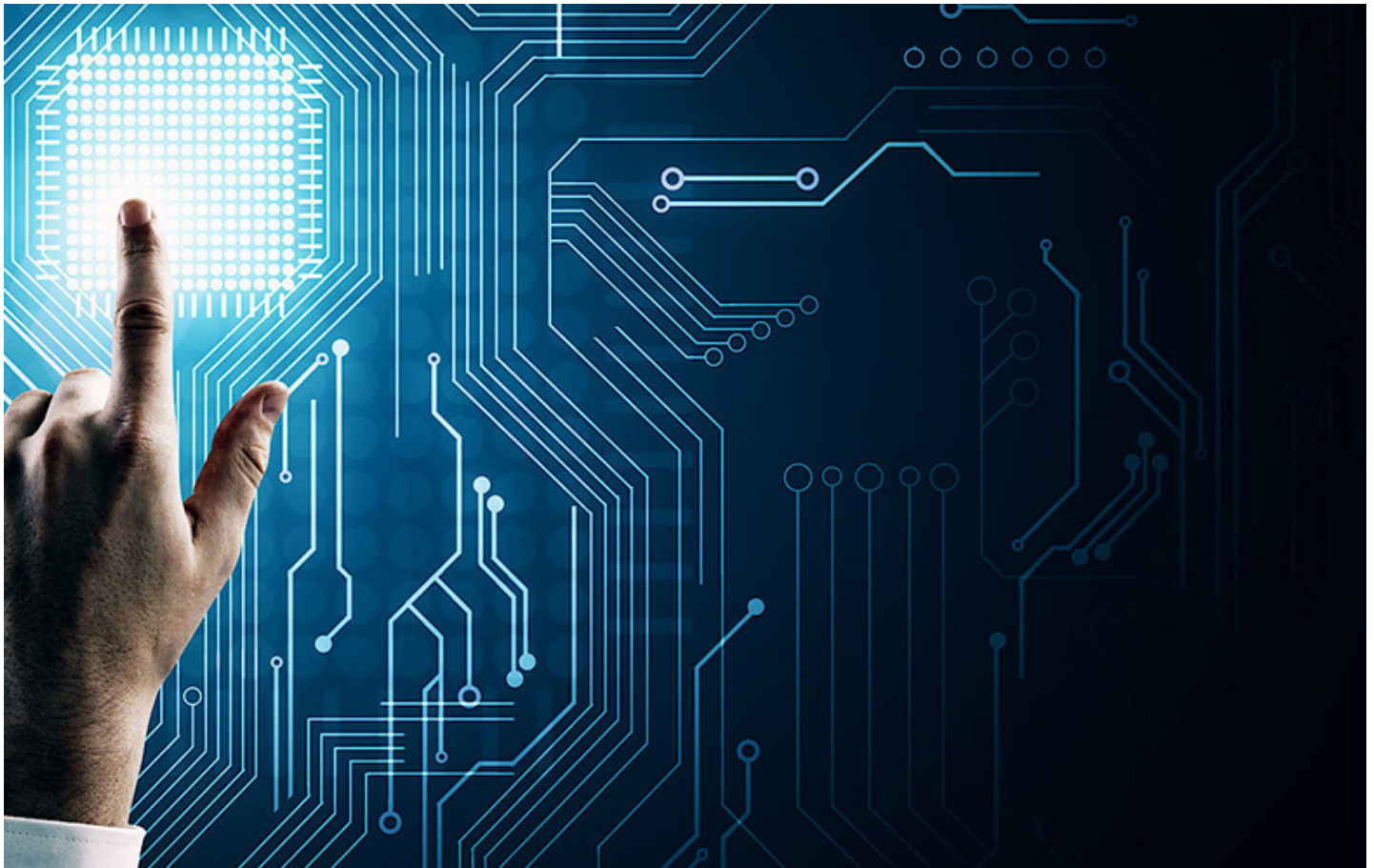
Prime Minister Narendra Modi, on 29 April 2022, virtually inaugurated India's first Semicon conference in Bengaluru, saying that the country has a "vibrant semiconductor ecosystem."

During the program, the prime minister underlined six reasons for India being an attractive investment destination for semiconductor technologies.

- Firstly, India is building a digital infrastructure to connect over 1.3 billion Indians. India uses digital technology to transform lives in all governance sectors, from health and welfare to inclusion and empowerment.
- Secondly, with steps like connecting six hundred thousand villages with broadband investment in developing capabilities in 5G, IoT, and clean energy technologies, India is paving the way to lead the next technology revolution.
- Thirdly, India is headed for robust economic growth with the world's fastest growing Start-up Ecosystem. India's semiconductor consumption is expected to cross 80 Billion Dollars by 2026 and 110 Billion Dollars by 2030.
- As the fourth point, India has undertaken wide-ranging reforms to improve the Ease of Doing Business in India.
- Fifthly, India has made heavy investments in skilling and training young Indians for the needs of the 21st century.
- Lastly, Prime Minister said that India has undertaken several measures towards transforming the Indian manufacturing sector.

Source:<https://www.devdiscourse.com/article/business/2019997-pm-modi-underlines-six-reasons-for-india-being-attractive-investment-destination-for-semiconductor-technologies>

REASON FOR GROWTH IN SEMICONDUCTOR INDUSTRY



The semiconductor designs requirements of such verticals provide an opportunity for multinational companies to come to India and tap the potential.

1. Significant export potential for this industry.
2. Growth in the chip design industry.
3. Increased semiconductor content in the electronic industry.
4. Unprecedented growth in domestic consumption of electronic goods.

\$ 15 billion

Size of Indian Semiconductor market in 2020; estimated to reach \$63 billion by 2026

\$ 13.6 billion

Expected investment by Vedanta Foxconn JV, IGSS Ventures and ISMC on electronic chip manufacturing plants

Source: <https://economictimes.indiatimes.com/industry/cons-products/electronics/five-companies-submit-proposals-to-set-up-semiconductor-and-display-facilities/articleshow/89696083.cms?from=mdr>

TAIWANESE INVESTMENT IN INDIA

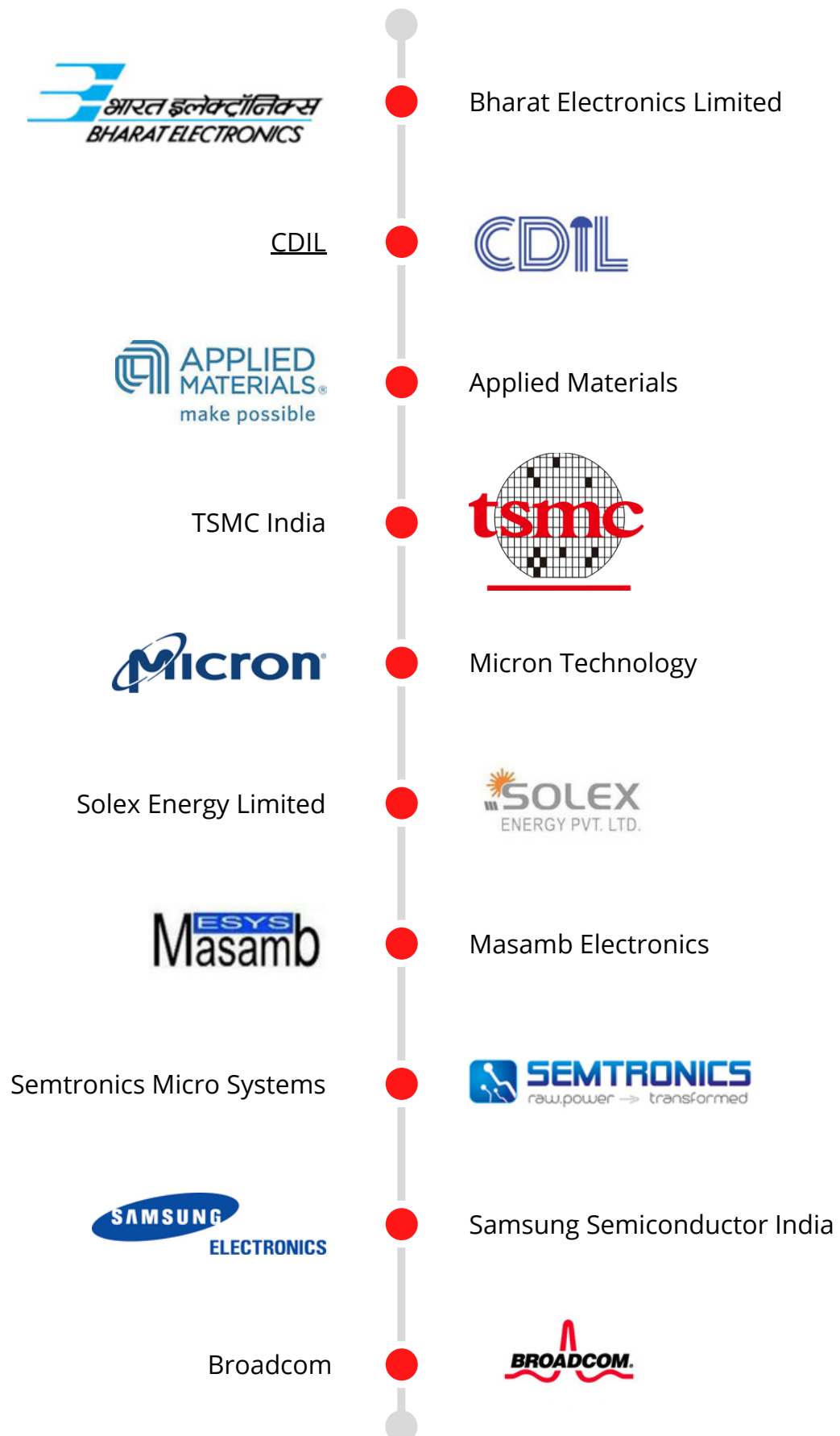


Facts and Figures: Semi-conductor market

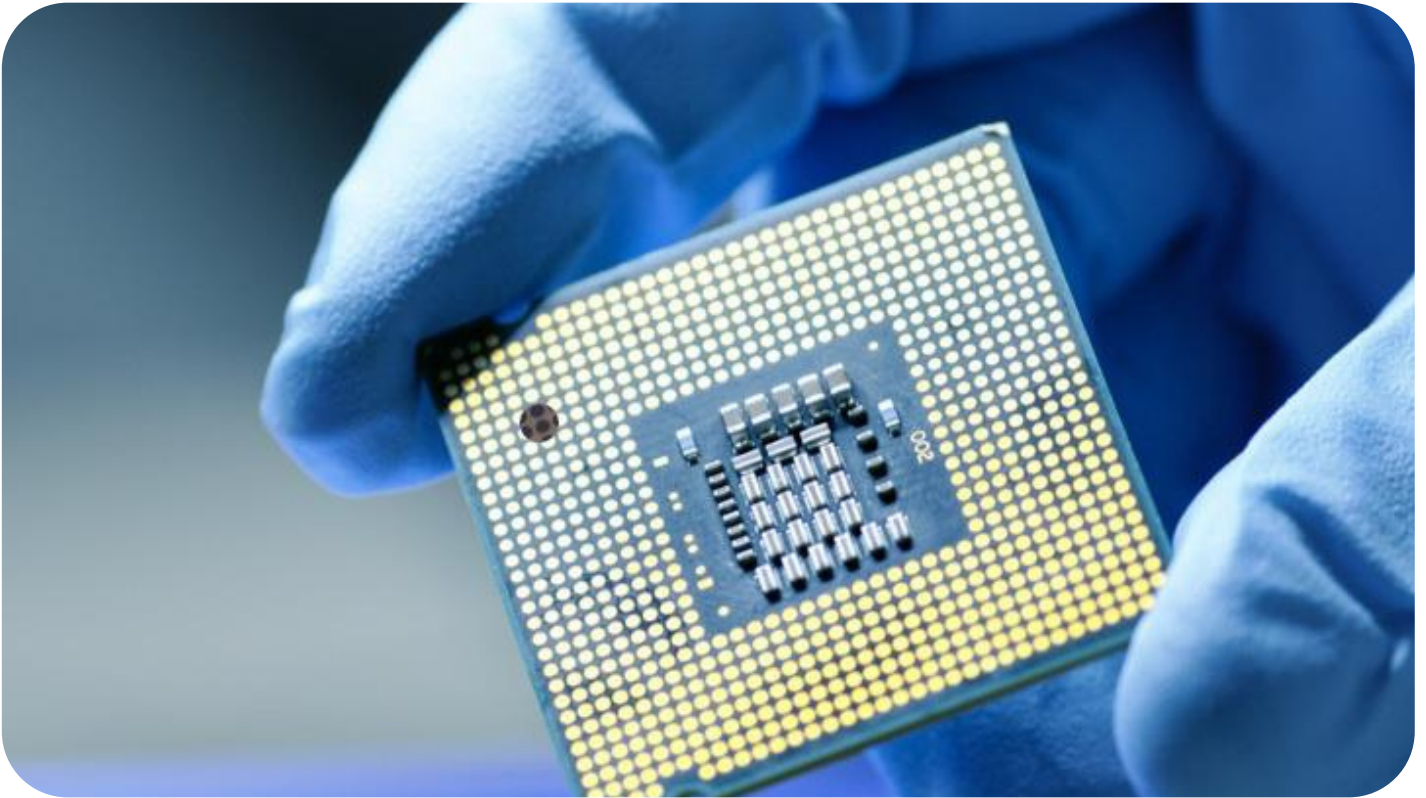
- India's First Chip Plant to be built in Karnataka with ISMC'S \$3B Investment.
- Vedanta – Foxconn (JV), IGSS Ventures and ISMC propose to set up electronic chip manufacturing plants with \$13.6 billion investment
- Vedanta and Elest have sought approvals for setting up generations 8.6 TFT LCD display Fab as well as 6th generation display FAB for the manufacture of Amoled display panels that are used in smartphones
- SPEL Semiconductor, HCL, Syrma Technology and Ruttonsha International Rectifier has registered for compound semiconductors.
- Three companies- Terminus Circuits, Trispace Technologies, and Curie Microelectronics have submitted applications under the Design Linked Incentives schemes.
- Government of India is in talks with Taiwan Semiconductor Manufacturing Corporation(TSMC) to set up a plant in India.

Source:<https://economictimes.indiatimes.com/industry/cons-products/electronics/five-companies-submit-proposals-to-set-up-semiconductor-and-display-facilities/articleshow/89696083.cms?from=mdr>

SEMICONDUCTORS FIRMS IN INDIA



INVESTORS AND CURRENT PRESENCE



VEDANATA and ELEST

Vedanta and Elest have submitted applications to set up display fab projects with an investment of US\$6.7 billion and seek support worth around US\$2.7 billion

FOXCONN

Taiwanese electronics giant Foxconn has stated that it plans on investing \$118.7 million to set up a joint venture firm with Vedanta

CURRENT PRESENCE

India has a reasonably small semiconductor presence, which is meant for strategic applications alone. India's current facilities are the Semi-Conductor Laboratory (SCL) Mohali; Gallium Arsenide Enabling Technology Centre (GAETEC), Hyderabad; and Society for Integrated Circuit Technology and Applied Research (SITAR), Bengaluru.

CRITICAL ANALYSIS FOR SEMICONDUCTOR MANUFACTURES IN INDIA

STRENGTH

- Large mobile-phone manufacturing hub.
- Abundant human capital in the IT, design, R&D, and engineering sectors.
- Zero customs duty on imported parts and machinery for semiconductor facilities

THREAT

- Weak environmental ecosystem and infrastructure for semiconductor manufacturing e.g. (water shortages).
- Competition with other manufacturing hubs that offer greater cost efficiencies and have a first-mover advantage.

OPPORTUNITY

- Government offers incentives to establish new fabrication plants.
- Foreign investment focused on expanding existing facilities in India.
- Demand for connected devices as India rolls out 5G technology.

WEAKNESS

- Heavy reliance on imported semiconductors for manufacturing consumer electronics.
- Investment limited to design function and very large-scale integration.
- Manufacturing capability focused on the final assembly of printed circuit boards.

LOCATIONS FOR SETUP FABRICATIONS



GREATER NOIDA
(Uttar Pradesh)

PRANTIJ
(Gujarat)

GOVERNMENT RESPONSE

1. To make India a hub for electronics, the government plans to grant Rs 76,000 crore for setting up over 20 semiconductor design components manufacturing and display fabrication (fab) units over the next six years.

2. India and Taiwan have begun talks on a free trade pact and creating a semiconductor manufacturing hub.

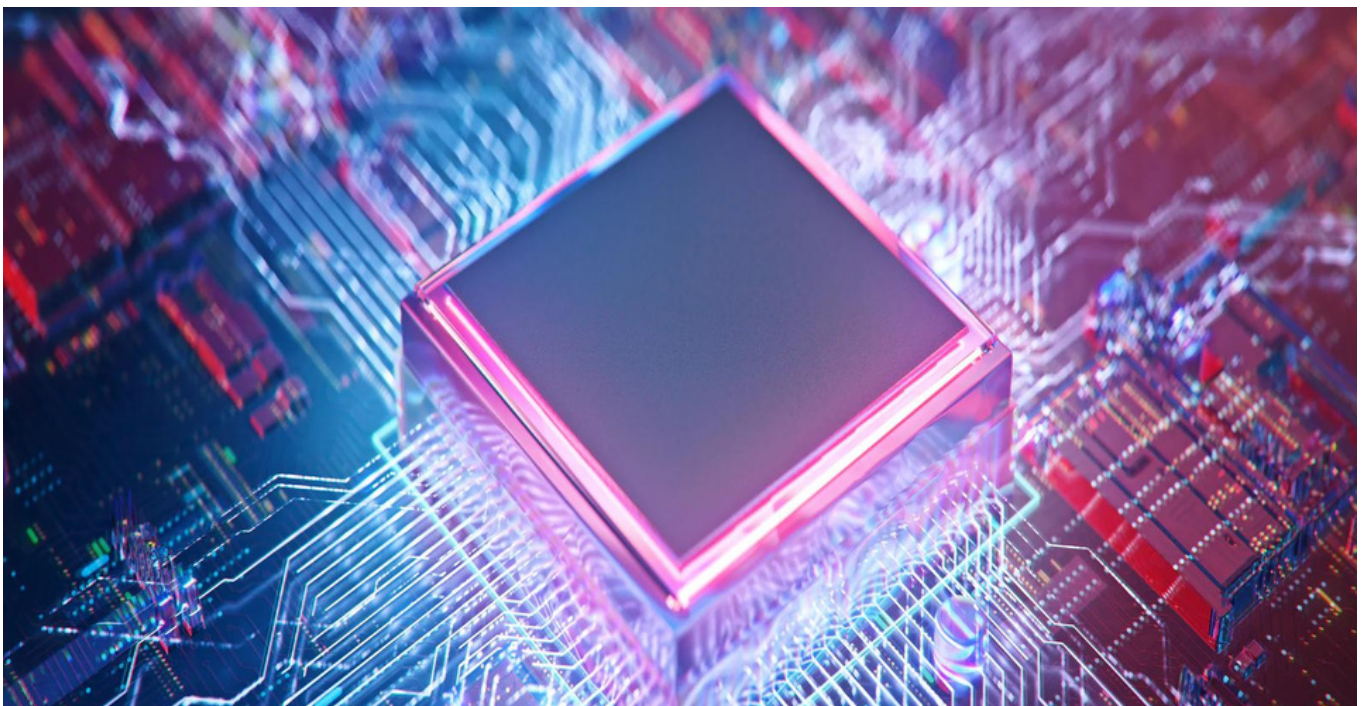
3. The government expects domestic electronics production to move up to \$350-400 billion by 2025, against the estimated \$75 billion now.

4. The Tata Group, Intel and Taiwan's Foxconn have expressed interest in setting up manufacturing plants in India.

5. Indian Ministry said the Indian semiconductor market was worth \$15 billion in 2020 and was estimated to reach \$63 billion by 2026.

FUTURE PLANS

- Semiconductors are an important part of India's manufacturing ambitions for the next five years.



- India's ambitions to be self-reliant in electronics manufacturing, usher in investments, and generate 35,000 specialized jobs apart from indirect employment for one lakh people.
- The Indian government is also in talks with Taiwan Semiconductor Manufacturing Corporation (TSMC) as it rolls out a massive incentive plan to attract semiconductor industry players to its shores. If TSMC ever comes to India then chances are that they will set up a plant in Southern India. As semiconductor manufacturing process needs vast amount of clean water supply and considering shortage of clean water in parts of Tamil Nadu, TSMC may also consider Noida or Prantij (Gujarat) to setup it's plant in India.
- As part of overall efforts to increase trade and investment, Taiwan is also considering the possibility of opening a representative office in Mumbai because of the potential for investments and manufacturing in Maharashtra and Gujarat.

\$118 Million

Foxconn and Vedanta to make semiconductor chips in India.

\$20 Billion

Vedanta to invest in the semiconductor business in India.

\$7.5 Billion

India accelerates talks with Taiwan on chip plant.

Source:<https://www.outlookindia.com/website/story/business-news-it-minister-tweets-intel-welcome-to-india-after-senior-co-exec-lauds-semiconductor-incentives/407117>



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