

SEMICONDUCTOR INDUSTRY IN INDIA

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Introduction

The Indian semiconductor industry offers high growth potential areas as the industries which source semiconductors as inputs are themselves witnessing high demand. The end-use industries such as mobile devices, telecommunication equipment, information technology, office automation (IT & OA), industrial machinery, automobiles and several other industries have applications for computing in some form or other and thereby necessarily have growing demand for semiconductors. Now with the concept of Internet of Things (IoT) picking up momentum, the next generation of interconnected devices would further increase the demand for intelligent computing, thereby creating sustainable demand for semiconductors.

India has a very fast growing electronics system design manufacturing (ESDM) industry. India also has a strong design base with more than 120 units. According to the Department of Electronics and Information Technology (DeitY), nearly 2,000 chips are being designed every year in India and more than 20,000 engineers are working on various aspects of chip design and verification. The government has a strong focus in developing the ESDM ecosystem in India. Several subsidies and other incentives are on offer for setting up electronics manufacturing units in India.

Market size

According to a study by The Associated Chambers of Commerce of India (ASSOCHAM) and EY, the Indian electronics and hardware industry is expected to reach US\$ 112-130 billion by 2018 as electronics and hardware manufacturers are looking to increase their manufacturing base in India to cater to the domestic market as well as the Middle East, Africa and SAARC countries.

According to the India Electronics & Semiconductor Association, the Indian Electronic System Design and Manufacturing (ESDM) market will grow from US\$ 76 billion in 2013 to US\$ 400 billion by 2020. Consumption of semiconductors, in the meantime, has also steadily climbed. According to a report by NOVONOUS, the semiconductor industry is estimated to grow from US\$ 10.02 billion in 2013 to US\$ 52.58 billion in 2020 at a Compound Annual Growth Rate (CAGR) of 26.72 per cent.

The research report expects that mobile devices are expected to grow at a high CAGR of 33.4 per cent between 2013 and 2020. Consequently the share of mobile devices in semiconductor

revenue is expected to grow from 35.4 per cent in 2013 to 50.7 per cent in 2020. Further, the telecommunication segment is also expected to grow at a high CAGR of 26.8 per cent between 2013 and 2020. The IT&OA segment is estimated to grow at a CAGR of 18.2 per cent over the next seven years. Although consumer electronics segment is expected to grow at a CAGR of 18.8 per cent, its contribution to the total semiconductor revenue is expected to lower to 3.5 per cent in 2020 from 5.6 per cent in 2013. Automotive electronics segment is expected to grow at a fast clip of 30.5 per cent CAGR from 2013 to 2020. Consequently, its revenue contribution is set to rise to 3.9 per cent in 2020 from 3.2 per cent in 2013.

Investments

Mr Ravi Shankar Prasad, Union Minister of Information Technology, announced that the Foreign Direct Investment (FDI) in electronic manufacturing has reached an all-time high of Rs 123,000 crore (US\$ 18.34 billion) in 2016 from around Rs 11,000 crore (US\$ 1.64 billion) in 2014, primarily due to government reforms and its Make in India initiative.

The Government of India expects investment proposals in electronics manufacturing to increase two times in the two years to 2017-18, giving a push to the government's 'Make in India' initiative. Of the 54 proposals received, the Centre has approved 30 requests entailing investments of Rs 6,000 crore (US\$ 894.7 million), while 24 are in an advanced stage.

The Government of India has allowed 100 per cent Foreign Direct Investment (FDI) under the automatic route in Electronics Systems Design & Manufacturing sector. According to the data released by the Department of Industrial Policy and Promotion (DIPP), the electronics sector attracted foreign direct investment (FDI) worth US\$ 1.64 billion between April 2000 and March 2016.

Some of the notable developments in this sector are as follows:

- Next Orbit Ventures, a growth-stage investor, plans to invest US\$ 100 million in Gujarat-based semiconductor fabrication project, through its fund focused on Electronic System Design and Manufacturing (ESDM) sector.
- India's first Centre of Excellence for Internet of Things (CoE-IoT) has been launched in Bengaluru with five start-ups, which will provide demonstration and concept labs for building IoT solutions for applications like agriculture, automobile, telecommunications, healthcare and consumer goods.
- Dow Corning, one of the leading global players in silicones, silicon-based technology and innovation, opened its Sahayog Building Solutions Centre in New Delhi, which will provide project support, technical training and skill-building workshop to construction industry professionals.
- The Department of Electronics and Information Technology (DeitY) has approved proposals

worth Rs 6,155 crore (US\$ 917.8 million) under the Modified Special Incentive Package Scheme (M-SIPS), which aims to provide financial incentives to private companies for setting up electronics manufacturing units.

- Department of Electronics & Information Technology and M/s Canbank Venture Capital Fund Ltd plan to launch an Electronics Development Fund (EDF), which will be a 'Fund of Funds' to invest in 'Daughter Funds' which would provide risk capital to companies developing new technologies in the area of electronics, nano-electronics and Information Technology (IT).
- Infineon Technologies, a German semiconductor firm has partnered with National Skill Development Corporation (NSDC) to impart training to youth on semiconductor or chip technology, aimed at boosting the electronic manufacturing ecosystem in India.
- US-based semiconductor company Freescale which has R&D facility in India, said that it is enabling its partners to bring smart products to facilitate the government's Rs 1.13 trillion (US\$ 16.85 billion) Digital India initiative.
- Aricent, a US-based product engineering firm has acquired Bengaluru-based chip design services company SmartPlay for Rs 1,100 crore (US\$ 163.06 million), making it one of the biggest acquisitions in the semiconductor space in India
- Invecas Technologies Pvt. Ltd, a startup working on outsourced chip design plans to invest US\$15-20 million over the next couple of years in setting up design centers in Hyderabad and Bengaluru.
- IESA has signed a MoU with Singapore Semiconductor Industry Association (SSIA) to establish and develop trade and technical cooperation between the electronics and semiconductor industries of both the countries.

Semiconductor design market in India (US\$ billion)



Source: Department of Electronics & Information Technology; Indian Semiconductor Association; E-Estimated; CAGR - Compounded Annual Growth rate

Government Initiatives

Mr Ravi Shankar Prasad, Union Minister of Electronics and Information Technology, inaugurated an Electropreneur Park at University of Delhi's South Campus, which would incubate

50 early stage start-ups and create at least five global companies over a period of five years.

The ESDM industry will benefit from the government's "Make in India" campaign and is projected to see investment proposals worth Rs 10,000 crore (US\$ 1.5 billion) over the next two years, according to the India Electronics and Semiconductor Association (IESA), an industry body.

The Government of Telangana plans to launch T-Works in Hyderabad, which will act as a prototyping centre for electronics, semiconductors and hardware start-ups on the lines of California State's Innovation Hub or iHub.

The Government of India has taken several steps to boost domestic production of electronic items and reduce dependence on imports. Some of these steps include imposition of basic customs duty on certain items falling outside the purview of IT Agreement, exemption from SAD on inputs/components for PC manufacturing, imposition of education cess on imported electronic products for parity, etc.

Gujarat government is planning to set up an electronics products manufacturing hub in the state, through its newly announced Electronics Policy 2016, which will generate about 500,000 jobs in the electronics sector in the next five years.

The government also plans to invest US\$10 billion in two computer chip manufacturing facilities with a view to create an ecosystem that lays the focus on high-end innovation.

The Union Cabinet has reconstituted an empowered committee on setting up semiconductor wafer fabrication manufacturing facilities in the country.

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