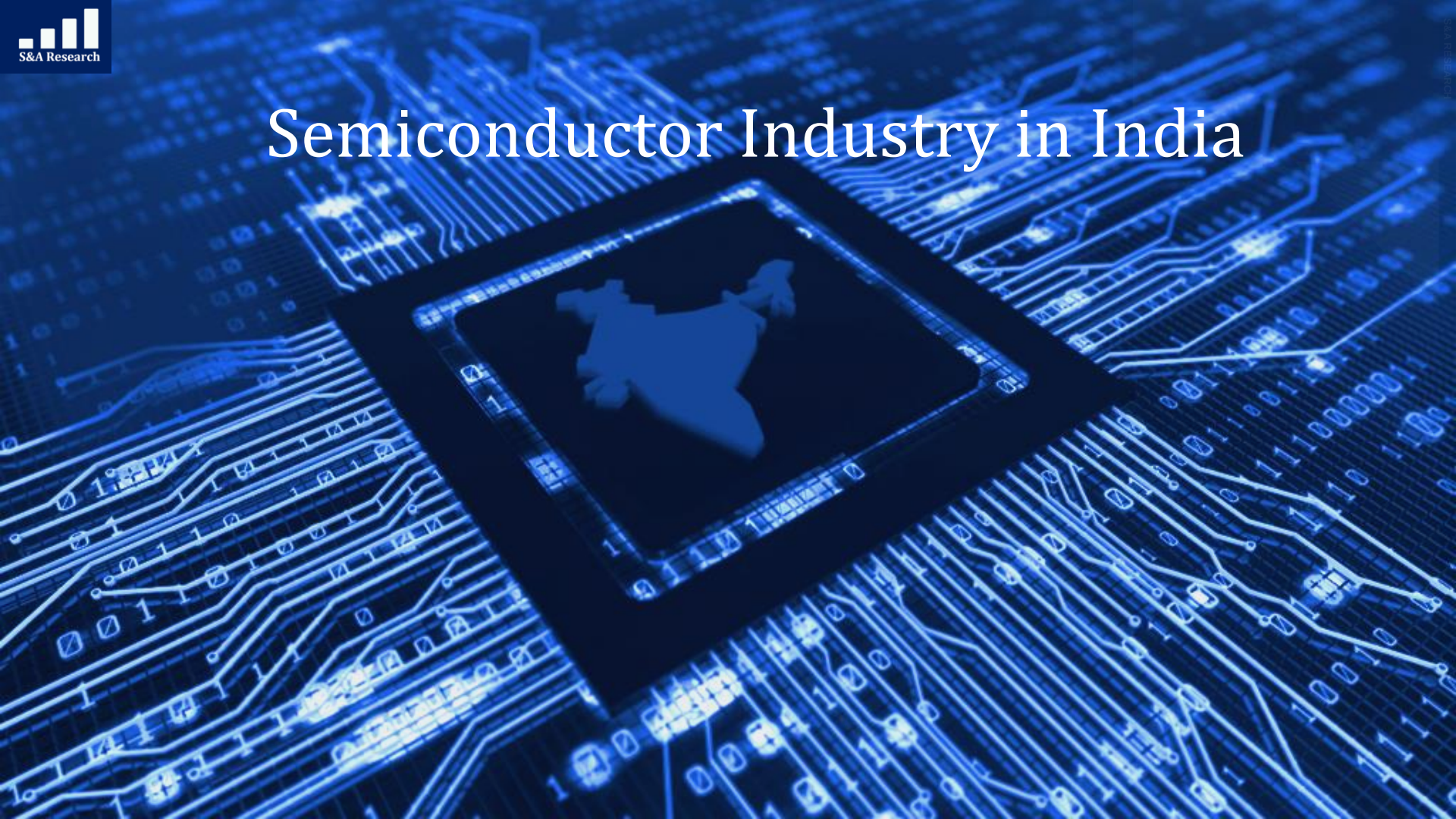
S&A Research

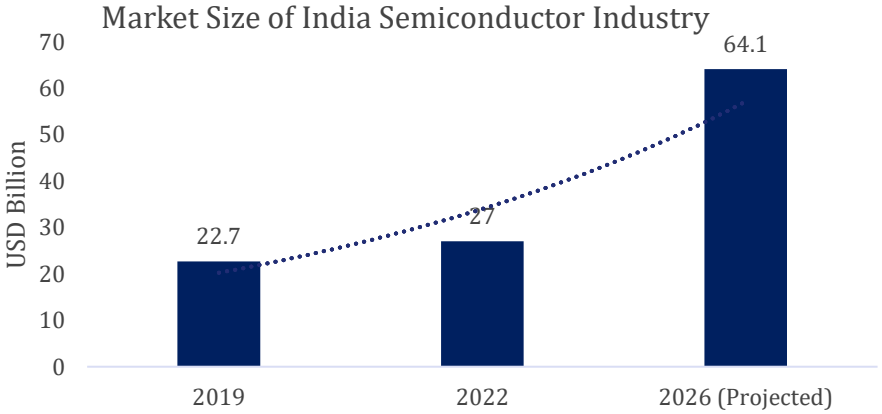
Semiconductor Industry in India

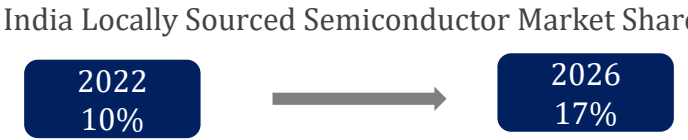


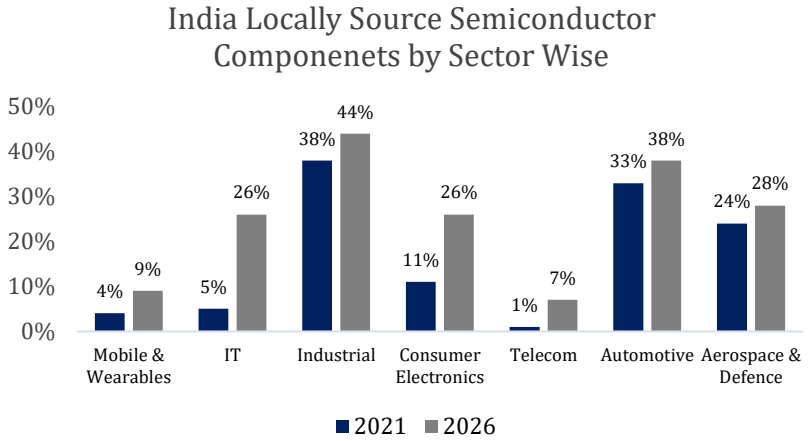
India Semiconductor Industry Overview

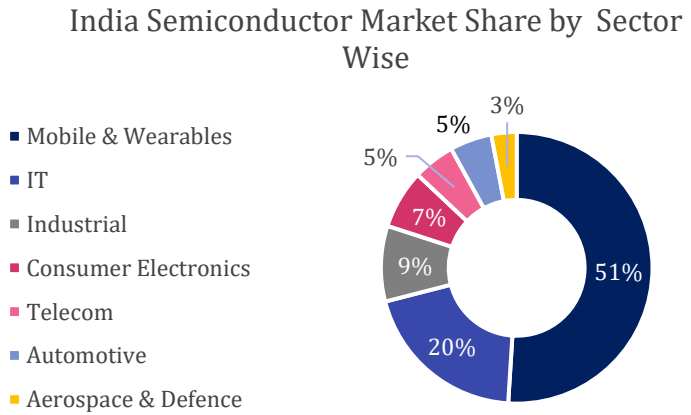
India Semiconductor market in FY22, valued at USD 27 Bn, and is expected to grow to approximately 24% by FY26, valued at USD 64 Bn. Semiconductor Segments include - Discrete Semiconductors, Optoelectronics, Sensors and Integrated Circuits (Analog, Micro, Logic & Memory).

The technology that we count on every day - Computers, Phones and Mobile devices, Cars and planes, Medical equipment, Military systems and Electronic gadgets depend on semiconductors to function. .



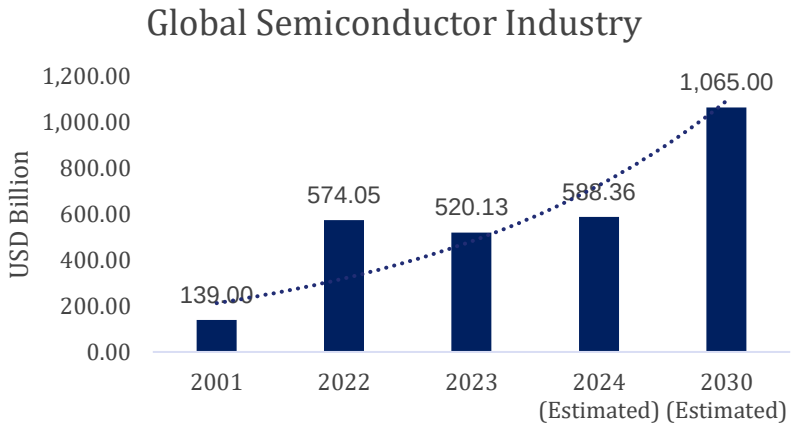


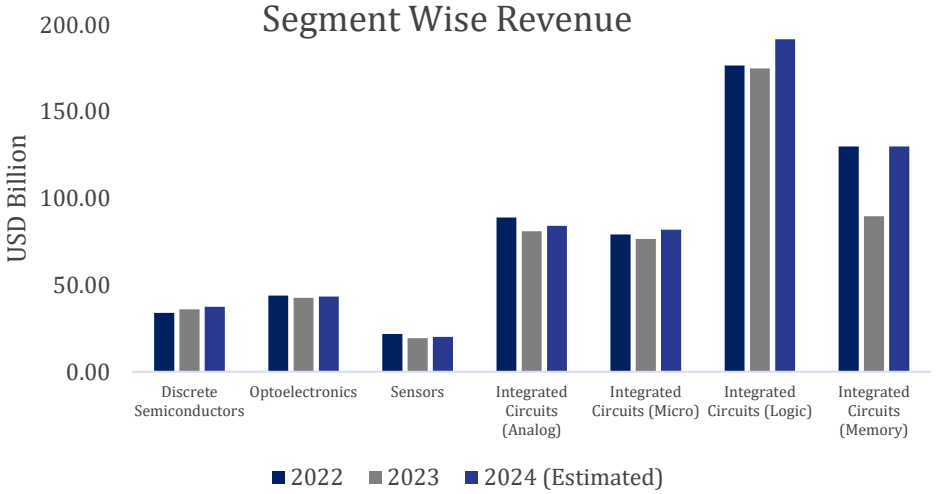


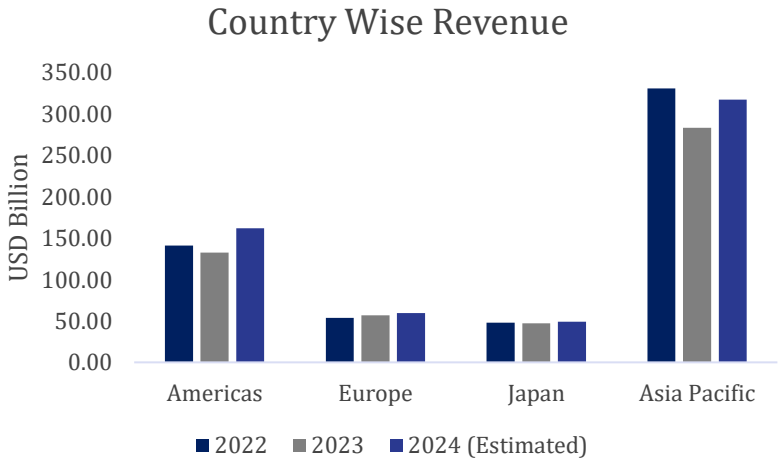


Global Semiconductor Industry Overview

The global semiconductor industry experienced substantial growth, with revenues soaring from USD 139 billion in 2001 to USD 574 billion in 2022, reflecting a commendable CAGR of 6.67%, according to World Semiconductor Trade Statistics (WSTS) in 2023, the industry faced a decline, reaching USD 520.13 billion and Projections indicate a resurgence in 2024, with an estimated increase to USD 588.36 billion, showcasing a robust CAGR of 13.1% and is estimated to reach USD 1 trillion by 2030.







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Growth Drivers

1. Large Consumer Base in Electronic Goods

India Domestic production of electronic items has increased from 3,17,331 crore (USD 49 billion) in 2016-17 to 6,40,810 crore (USD 87.1 billion) in 2021-22, growing at a CAGR of 15% and is expected to USD 300 Bn in 2025- 2026.

2.
Electric Vehicle penetration is 5% (from Oct 22-Sep 23) and is expected to reach 40% by 2030. Semiconductor enhance battery life & needed for touch-screen interactivity features.

3.
Emerging technologies including AI, autonomous systems and 5G communications

4.
India and USA sign Memorandum of Understanding on establishing Semiconductor Supply Chain and Innovation Partnership and on Enhancing Innovation Ecosystems through an Innovation Handshake. USA has large dependency on China & Taiwan for semiconductor.

Electronic Items Wise Domestic Production

USD Bn.

Electronic Items	FY 20-21	FY 20-22	FY 25-26(Estimated)
Mobile Phones	30	38	126
IT Hardware (laptops, tablets)	3	4	25
Industrial electronics	10.5	11	25
Auto electronics	6	7	23
Consumer electronics (TV and audio)	9.5	10	23
Electronic components	9	9.5	18
LED Lighting	2.2	2.5	16
Strategic electronics	4	4.25	12
PCBA	0.5	0.6	12
Telecom equipment	-	-	12
Wearables and hearables	-	0.25	8

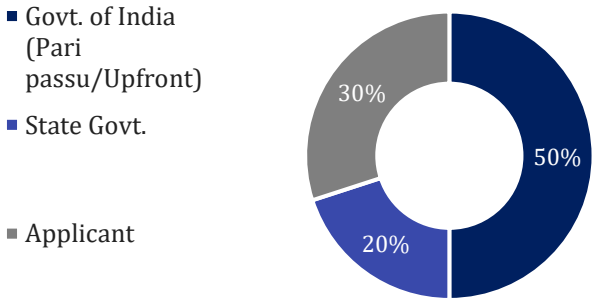
Government Incentives

Support for Semiconductor and Display Ecosystem Incentive Outlay ~$10 Bn (INR 76,000 Crore)

1. Semiconductor Fabs and Display Fabs in India

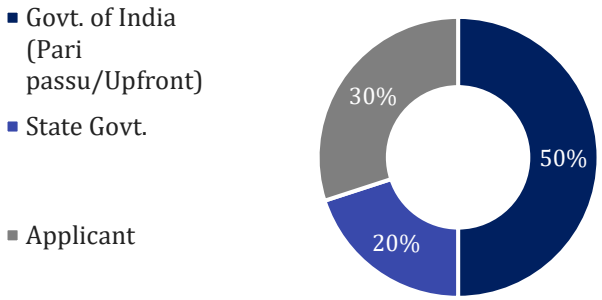
Fiscal support of 50% of Project Cost on pari-passu basis under Scheme for Setting up of Semiconductor fabs and Display Fabs.

Semiconductor Fab
(All Technology nodes including Legacy)



Wafer Size: 300 mm,
Capacity: 40K WSPM
Investment> INR 20,000 Crore,
Minimum Revenue: INR 7,500 Crore

Display Fab



Investment> INR 10,000 Crore,
Minimum Revenue: INR 7,500 Crore

Technology
Generation 8 or above for TFT LCD
or
Generation 6 or above for AMOLED

Capacity
60,000 Panels / month or more for TFT LCD
30,000 Panels / month or more for AMOLED

Government Incentives

Support for Semiconductor and Display Ecosystem Incentive Outlay ~$10 Bn (INR 76,000 Crore)

2. Scheme for setting up of Compound Semiconductors / Silicon Photonics / Sensors Fab / Discrete Semiconductor Fabs and Semiconductor Assembly, Testing, Marking and Packaging (ATMP) / OSAT facilities in India

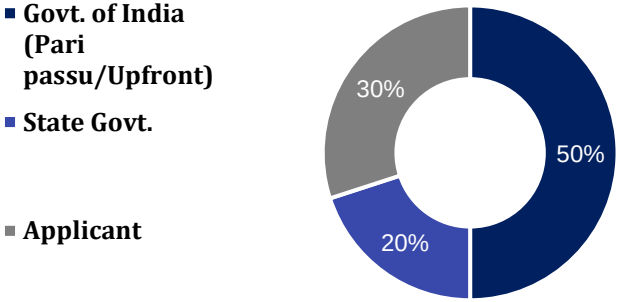
Fiscal Support of 50% of Capital Expenditure

Eligibility Thresholds

~$13Mn Minimum Capital Investment for Compound Semiconductor / Silicon Photonics / Sensors Fab

$6.5Mn Minimum Capital Investment for ATMP / OSAT Facilities

Packaging (OSAT),Compound & Discrete Semiconductor



Technology	Compound Semiconductor /Discrete/ Si Ph / Sensors Fab	ATMP / OSAT Facilities
	Wafer Size: 150 / 200 mm Installed Capacity: > 500 WSPM	Flip-chip, Embedded Die, 2.5D / 3D, Fan-outs Packaging, SiP, Chiplet etc.

3. 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. Support will be provided to 100 domestic companies of semiconductor design for Integrated Circuits (ICs), Chipsets, System on Chips (SoCs), Systems & IP Cores and semiconductor linked design and facilitating the growth of not less than 20 such companies which can achieve turnover of more than Rs.1500 crore in the coming five years.

Investment Update

HCL is engaged in active discussions with the Karnataka state government to establish an OSAT (chip packaging unit) facility. The company is considering making an investment of approximately US$400 million for the setup of a "small-to-medium sized" facility.The government has offered land parcels in two potential locations - near the Bengaluru international airport and in Mysuru.

On 28th November 2023, American multinational semiconductor company AMD inaugurated its largest global design center, the Technostar research and development campus, in Bengaluru. This move is part of a significant US$400 million investment in India over the next five years, as previously announced at Semicon India 2023.

As of the end of October 2023, the government has received a total of 45 applications under its INR 760 billion semiconductor and display manufacturing scheme.

In a filing with stock exchanges, CG Power and Industrial Solutions, a part of the Murugappa Group, has officially applied to the Ministry of Electronics and Information Technology to establish an outsourced semiconductor assembly and test (OSAT) facility. The proposed investment for this venture is substantial, amounting to US$791 million (INR 65.92 billion). This investment is planned to be spread over a five-year period.

In a 60-40 joint venture, Vedanta and Foxconn will be setting up India's first semiconductor production plant, a display fab unit, and a semiconductor assembling and testing unit over 1000 acres in Ahmedabad, Gujarat. The plant, backed by Vedanta's financial support and with Foxconn as the technical partner, is set to begin production in two years. The investment is valued at over INR 1.54 trillion (approx. US$20 billion), and the semiconductor manufacturing will be conducted by the holding company, Volcan Investments Limited.

Larsen & Toubro (L&T) plan to set up a subsidiary in the domain of fabless semiconductor chip design with an investment of INR 8.3 billion. Currently, L&T is focused on the low-investment component of the chip supply chain. The move into fabless semiconductor chip design is considered more practical due to the investment-heavy nature of this sector and the long lead times associated with market changes.

Kaynes Technology has entered the OSAT/ATMP services domain through its subsidiary, Kaynes Semicon. The company is investing INR 28 billion to establish a semiconductor OSAT and compound semiconductor facility near Foxconn's upcoming facility at Kongara Kalan (near Telangana capital Hyderabad).

Micron Technology will contribute US$825 million out of the total US$2.75 billion investment, with the remaining funds coming from the central government (50 percent) and the Gujarat state government (20 percent). The OSAT plant is planned to be established in Sanand, Gujarat, and is projected to commence operations in 2024.

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