



# External Communications

## Summary of Initiatives

October 2024

prepared by



# HIGHLIGHTS

**Strategic imperatives for October 2024: aligning communication efforts to the marketing calendar.**

1. A total of 30+ initiatives were communicated through the period, using IESA’s social handles and earned media channels, resulting in:
  - a. News stories published between Print and Online media
  - b. Generated an ROI of ₹ 3,33,187 Lac AVE achieved, translating to ₹ 16, 65,935 Lac PR value
  - c. An exclusive interaction featuring Dr. Veerappan was initiated with the Editor of ET Government Anoop Verma
  - d. An exclusive interaction featuring Ashok was initiated through a relationship-building meeting with Ashmith Kumar from CNBC TV
  - e. Industry Story was initiated and coordinated with Ashok & Dr Veerappan and Nidhi Snigal from Fortune .
  - f. A face-to-face meeting will also be coordinated with Aihik Sur (Money Control), Debangana Gosh (Money Control) along with a Zoom meeting with Ashmith Kumar (CNBC TV) and Anoop Verma (ET Government). To update on further meetings.

1. Traditional PR Data for October

	October
Online	8
Print	1
Total Stories	10 (including 1 RBM)
Total AVS	3,33,187

## Social Media

### Strategic imperatives for October 2024: aligning social media communication efforts to the marketing calendar

In the month of October, IESA's social media communications strategically positioned the organisation as the leading voice for the semiconductor industry and its stakeholders. Our messaging was laser-focused, spotlighting IESA's initiatives to propel the Electronics System Design and Manufacturing (ESDM) sector into a global leadership role. We emphasized key themes such as industry growth, strategic alliances, ecosystem highlights, and stakeholder recognition.

Additionally, our communications underscored IESA's vital role as a bridge connecting industry, academia, and government. This narrative was consistently and effectively conveyed across both LinkedIn and Twitter handles.

- A total of 23 posts have been posted on LinkedIn and Twitter handles separately, resulting in the performance as highlighted below.



Performance Indicators	Performance Numbers
Impressions	62,652
Clicks	4,927
Reactions	1,032
Comments	41
Reposts	8
Avg. Per Post Engagement	9.5

Besides the above, we have also witnessed an increase in LinkedIn followers by 2,589. Having started at 19,010 followers, we are now 23,024 strong, with the average engagement rate being 19.7% (which is 3.5X of the previous 3 months' time frame).

- Our X handle also witnessed a total of 1,279 Impressions, 59 Engagement and 15+ new followers



- Posts on social media such as

Startup Mitra, Start Up Meet, New Members, ET Government - Dr. Veerappan, Signal Chip Congratulatory, Global Foundaries Round Table, Ved's Participation in Mangaluru Technovanza 2024, Dr. Veerappan at Mangaluru Technovanza 2024 and Festive posts have performed exceptionally well.

- Top – Two Posts





**Design Linked Incentive (DLI)**  
invites project proposals from Chip Designers  
across the country for the following categories:



**Semiconductor Products (Chips)**

- Mobile SoC
- Wearable SoC
- Tiny Microcontroller
- Micro Controller
- Mid-Range Microprocessor
- High End Microprocessor
- Server Processor
- AI Accelerator Chip
- GPU Chip
- Image/Video Proc with AI
- Neuromorphic AI Chip
- Audio Processor Chip
- WiFi Chip 6E
- 4G/5G/6G Modem (Consumer)
- BT/LE 5.0/6.0
- NBloT Chip
- NFC Chip
- GPS/NAVIC Chip
- 5G RF Chip
- Radar RF Chip
- Lidar Chip
- Radar Chip for Automotive
- Radar Chip for Radar
- ONT Chip with x-GPON
- Network Processor
- LED Driver Chip
- GaN Power Chip
- SiC Power Chip
- DSP Chip
- Sensors of Various types

\*Most of the chips should be design as standalone or in Chiplet form





**Submit Your Proposals**

chips-dli.gov.in | pmudli@cdac.in | 8920175458

**Impressions – 5,133**  
**Clicks - 213**  
**CTR – 4.15%**  
**Reactions - 52**  
**Comments - 3**



**Impressions – 4,980**  
**Clicks - 376**  
**CTR – 7.55%**  
**Reactions - 107**  
**Comments - 2**  
**Repost - 3**

- **Performance Growth: Comparative Data for LinkedIn**

<b>LinkedIn</b>	<b>May</b>	<b>June</b>	<b>July</b>	<b>August</b>	<b>September</b>	<b>October</b>
Followers	NA	NA	19481	20,362	22,471	23,024
Impressions	56585	59585	86746	1,29,196	2,09,440	62,652
Post Clicks	3187	3499	16345	20,914	54,548	4,927
Reactions	1076	1295	2071	2,296	3,617	1,032

# Annexure

## Media Visibility

SL	Date	Publication	Headline	Page No.	Link	AVE	Quote by
<b>EXCLUSIVE INTERVIEW</b>							
1	16th October	ET Government	Digital India Leadership Series: Dr. V Veerappan, Chairperson, India Electronics & Semiconductor Association, Co-founder, Tessolve Semiconductor Pvt Ltd	N/A	<a href="#">Online</a>	70,000	Dr Verappan
<b>INDUSTRY STORY</b>							
<b>PRINT</b>							
1	17th October 2024	Free Press Journal	India Semiconductor Market Projected to Surpass 100-Billion In Revenues By 2030	12	N/A	28,187	-
<b>ONLINE</b>							
1	23rd October, 2024	Fortune	India Ranks 3rd in Global Semicon Backend Index	N/A	<a href="#">Online</a>	46,000	Ashok Chandak
2	17th October 2024	ET Telecom	India Semiconductor Market Projected to Surpass 100-Billion In Revenues By 2030	N/A	<a href="#">Online</a>	60,000	Ved Prakash
3	17th October 2024	Daiji World	India Semiconductor Market Projected to Surpass 100-Billion In Revenues By 2030	N/A	<a href="#">Online</a>	20,000	Ved Prakash
4	17th October 2024	Tele Net	India Semiconductor Market Projected to Surpass 100-Billion In Revenues By 2030	N/A	<a href="#">Online</a>	20,000	Ved Prakash
5	17th October 2024	Lastely	India Semiconductor Market Projected to Surpass 100-Billion In	N/A	<a href="#">Online</a>	21,000	Ved Prakash

			Revenues By 2030				
6	17th October 2024	Investing.com	India Semiconductor Market Projected to Surpass 100-Billion In Revenues By 2030	N/A	<a href="#">Online</a>	22,000	Ved Prakash
7	3rd October, 2024	Fortune	Semiconductor Dream Gets Real	N/A	<a href="#">Online</a>	46,000	Dr Verappan

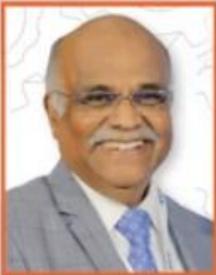
**EXCLUSIVE INTERVIEW**

**ONLINE**

<b>Date</b>	16th October, 2024
<b>Publication</b>	ET Government
<b>Quote</b>	Dr V Verappan



**ET Government.com**  
**Digital India**  
**Leadership Series**



**Dr. V Veerapan**  
*Chairperson, India Electronics & Semiconductor Association*  
*Co-founder, Tessolve Semiconductor Pvt Ltd*



**Anoop Verma**  
*Editor - News*  
*ET Government*

**[Music]**



**INDUSTRY STORY**

**PRINT**

<b>Date</b>	17 <sup>th</sup> October, 2024
<b>Publication</b>	Free Press Journal
<b>Quote</b>	-

# Chip market to surpass \$100 bn in revenues by 2030

**PTI**

NEW DELHI

India's semiconductor market is set to cross \$100 billion in revenues by 2030, driven by government initiatives like PLI scheme amid robust demand to build digital infrastructure across industries, according to a report on Wednesday. Mobile handset, IT and telecom segments are leading the chip industry, contributing more than 75 per cent of its revenues, according to a report by the IESA and Counterpoint Research.

**INDUSTRY STORY**

**ONLINE**

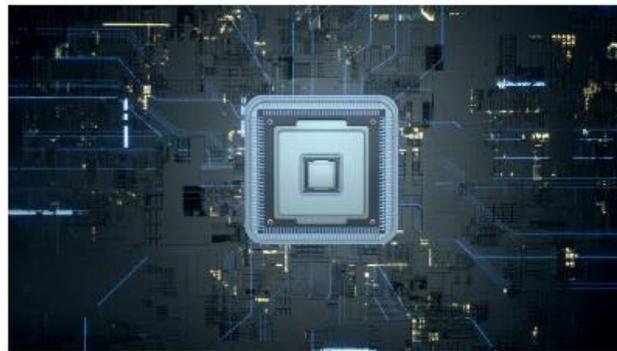
<b>Date</b>	23rd October, 2024
<b>Publication</b>	Fortune
<b>Quote</b>	Ashok Chandak

MACRO

## India ranks 3rd in global semicon backend index

While Taiwan leads the index, followed by Malaysia, Mainland China ranks fourth, Korea ninth, Vietnam tenth, Singapore 12th, and Japan 13th.

By NIDHI SINGAL, Oct 23, 2024 | 8 min read



Thirty countries and regions were evaluated on the attractiveness of locations for back-end semiconductor manufacturing.



Advertisement

Barely three years after the Government of India announced the semiconductor and display manufacturing scheme with a financial outlay of ₹76,000 crore, India has been ranked third in the Backend Semiconductor Manufacturing Attractiveness Index by the US-based management consulting firm Kearney. While Taiwan leads the index, followed by Malaysia, Mainland China ranks fourth, Korea ninth, Vietnam tenth, Singapore 12th, and Japan 13th.

“The semiconductor making process is broadly classified into two – frontend and backend. Frontend specifically means making of wafers and engraving circuits on them. Backend processes refer to testing and packaging. Frontend comprises CMOS or Complementary Metal-Oxide-Semiconductor making, while back-end processes include testing of wafer, packaging of wafer and the package testing,” explains Faisal Kawoosa, Chief Analyst & Founder, Techarc. These processes are performed either by an Integrated Device Manufacturer (such as Intel, Micron) as a step in their manufacturing value chain or by Outsourced Semiconductor Assembly and Testing (OSAT) providers (such as ASE)

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Thirty countries and regions were evaluated on the attractiveness of locations for back-end semiconductor manufacturing, based on 28 parameters across business environment (30%), capital incentives (20%), and operational costs and incentives (50%), generating a standardised score for each country. “The primary factors driving India’s ranking include the Comprehensive incentive package and favourable policies (e.g., \$10 Billion incentive corpus, income tax holidays for five years, import duty exemption, 25% incentive on equipment spending), low labour costs (and ample availability of skilled labour) and low utility costs (water and electricity). These make India very competitive vs. other nations,” explains P.S. Subramaniam, partner in the Strategic Operations and Performance, Kearney. Leading the index, Taiwan scored 6.0, followed by Malaysia at 5.7, with India closing the gap at 5.5, and Mainland China just a few points behind with 5.5.

“India’s strong ranking is driven by factors such as ease of doing business, government incentives, supportive labour laws, a growing talent pool and the availability of willing Indian JV partners. Additionally, India’s rapidly increasing demand for semiconductors also enhances its attractiveness as a key player in the global market,” says Ashok Chandak, President, India Electronics & Semiconductor Association (IESA).

Contributing 20% to the overall score, the capital/capex incentives include land cost incentives, construction and facility cost incentives, equipment cost incentives, and semiconductor-specific incentive budgets. In India, the central government is offering a 50% incentive on the project value on a pari-passu basis, and state governments such as Gujarat, Uttar Pradesh, and Odisha, among others, are offering an additional 20-25% incentive over the central government's incentive. "India sports overall 70% capex (land, construction, facilities, equipment etc.) incentives while Taiwan from a capex incentive point of view does not even come close to India Semiconductor Mission policy. Hands down, in the 7 decades long history of the Semiconductor industry, India is by far the best world region for subsidising Assembly-Test-Packaging (ATP)/ Assembly, Testing, Marking, and Packaging (ATMP)/ OSAT units. When we combine India's central government supported Capex Linked Incentives scheme incentives with individual state incentives for ATP/ATMP/OSAT units we are looking at around 70% subsidy for all capex cost structures involved in OSAT/ATMP site economics based on the TCO (Total Cost of Ownership) metrics," explains Danish Faruqi, CEO of Fab Economics - a boutique semiconductor Fab/OSAT Greenfield Projects advisory and implementation practice firm.

The parameters within the operational costs and incentives, which contribute 50% to the overall index score, include factors such as labour costs and incentives, utilities (electricity and water prices), and taxes and duties. States are also contributing to areas such as utilities, taxes, duties, and incentives. For instance, Uttar Pradesh is offering a 100% exemption on electricity duty for 10 years with a dual grid network, a 50% exemption on intrastate power purchase, transmission, and wheeling charges for 25 years, among other incentives.

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The business environment, which contributes 30% to the index, includes factors such as ease of doing business and government support, country infrastructure and innovation focus, as well as the availability and skills of the workforce, including graduates in science and engineering, PISA scores in reading, mathematics, and science, and research talent. For instance, on the skills and talent front, Parv Sharma, Senior Analyst, Counterpoint Research explains, “In terms of STEM India has >2.5 million graduates after China. This is key for the semiconductor industry; with proper skill this enables semiconductor sector growth. The government is also running many training programs to prepare students for the industry. One such program is the “Chips to Startup” initiative, which aims to train approximately 85,000 qualified and high-quality engineers in the fields of Very Large-Scale Integration and Embedded System Design over the next five years. This program will be a significant step forward in instilling chip and system-level design skills in engineering and technical students. This type of government’s support on infrastructure and skill development is critical in creating a comprehensive ecosystem that supports innovation and growth in the country.”

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## The global play

Currently, from a geographic distribution perspective, the global top 10 OSAT vendors by their headquarter location are distributed across Taiwan, China and US with a total market share of 84.6 % per Fab Economics R&A across these three nations alone. ASE, PTI, KYEC, Chipbond, ChipMOS, and Sigurd are in Taiwan, JCET, TFME, and Hua Tian in China, and Amkor in the US. However, if one were to look at the geographical location of OSAT's then 98% of global OSAT capacity is located in Asia region, and within Asia its concentrated mostly in China.

"The 2023 exit OSAT capacity in China is 47.39% of global capacity as both Taiwan and US OSAT's also have multiple sites in China apart from Chinese players. Clearly, China understands OSAT's strategic importance both from the point of key product performance enabler competitive moat and gate for security of supply. China also has 3 OSAT players in the Next Generation

Advanced Packaging, 11 players in the commercial or current age Advanced Packaging and 5 players in the legacy playing architectures – a portfolio unmatched in any geography. And China based OSAT facilities raked annual revenue of \$14.68 billion in 2023, which is set to become 4x by the end of decade based on demand boost and capacity expansion within China alone," adds Faruqi.

While India is emerging as a very close alternative to China for a OSAT hub, but India based OSAT ecosystem build up requires strategic planning informed with China OSAT portfolio. Else, legacy OSAT being a cost-sensitive play, Indian players may face trouble commercially in the longer term, say experts. Packaging architecture portfolio selection for Indian OSATs also needs to be informed with Asia-Pacific OSAT players competitive positioning and the corresponding equipment capex need to be informed for packaging site resiliency based on India and Global decadal demand.

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## **Raining Incentives**

Given Asia's dominance in semiconductor backend manufacturing, recently more countries are starting to offer incentives to attract back-end semiconductor manufacturing to their shores. The latest being the US under the CHIPS ACT, the country has recently announced \$1.6 billion in funding innovation across Advanced Packaging R&D areas, as outlined in the vision for the National Advanced Packaging Manufacturing Program (NAPMP).

Other countries have also made strides in enacting ATP specific semiconductor policy.

Malaysia, which per Fab Economics R&A houses ~16% of worldwide Legacy Packaging ATP capacity, has recently upped the ante by its National Semiconductor Strategy that is targeted to attract \$100 billion in semiconductor investments with a starting fiscal support of \$5.3 billion for semiconductor projects. Even Hungary is offering up to 34% grants for labour and capex investments.

"India faces competition from Asian countries that offer robust ecosystems and business-friendly environments for OSATs. The US also attracts ATMPs, especially with over half of chip companies headquartered there and strong government support. However, India still holds a competitive edge," adds Chandak of IESA.

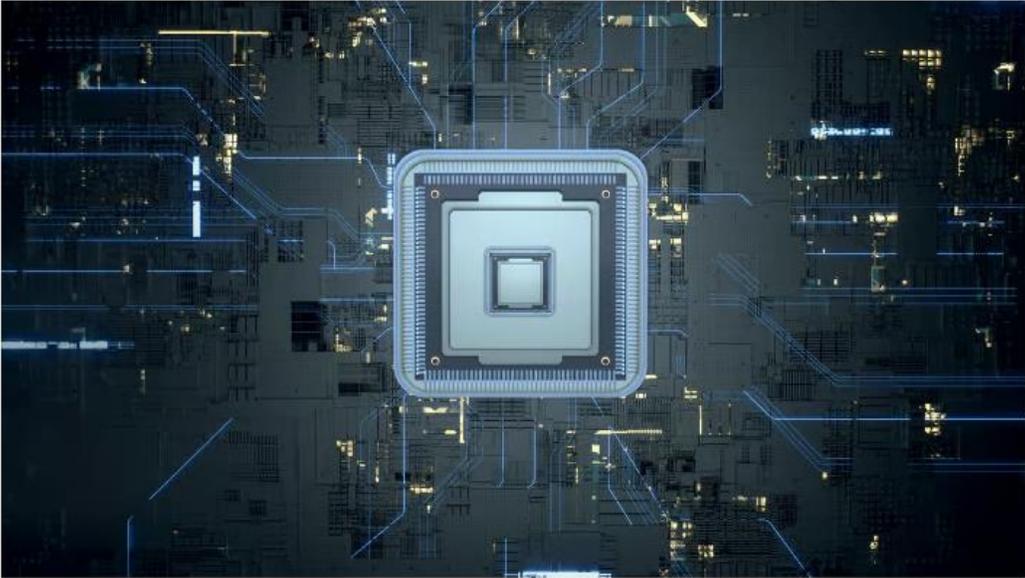
## Changing dynamics

Within a short timeframe, the government of India has approved four semiconductor backend projects under Semiconductor India Programme's first phase offering ₹76,000 crore. The approved projects include US-chip maker Micron's ATMP plant worth \$2.75 billion (approved in June 2023) in Sanand, Gujarat. This was followed by Tata Electronics testing and packing plant with the investment worth ₹27,000 crores in Assam, CG Power's ₹7,600 crore OSAT plant in a joint venture with Japan's Renesas Electronics Corporation and Thailand's Stars Microelectronics, and ₹3,307 crores Kaynes Semicon OSAT. There are many more in the pipeline, waiting for the government's approval.

However, experts say that the government might lower the incentives for backend manufacturing in the second phase of the scheme, expected to be announced later this year. P.S. Subramaniam of Kearney expresses, "In case these incentives are lowered, it will impact India's ranking since manufacturing incentives are one of the top 5 drivers of our assessment's ranking. However, India will still be an attractive option driven by low operating expenses (labour, utilities), and strong labour market." Kawoosa of Techarc says that incentives is a very big enabler helping global players to quickly decide about India as these incentives take care of a lot many disabilities that they see when comparing several other locations. He believes at least for next 10 years these incentives are crucial.

Going forward, while India's ranking for the backend semiconductor attractiveness index would depend on various factors including the incentives offering going forward, Sumit Sadana, Chief Business Officer at Micron Technology, the only global chip player that has come to India to set up an ATMP as of now believes "all eyes are on some of these projects and it is super critical for India to make these projects successful in terms of on-time execution, efficient cost structure, high quality, very well planned and well executed ramp of output. I think to the extent that these early projects can be made successful, they can become a beacon of what is possible to be done in India and by India to the rest of the semiconductor industry. And then it could be off to the races from that point on."

<b>Date</b>	7th October, 2024
<b>Publication</b>	Fortune
<b>Quote</b>	Dr V Verappan



LONG READS

# Semiconductor Dream Gets Real

India's top companies are making bold moves in the semiconductor space, seizing the momentum of the global "chip gold rush."

By NIDHI SINGAL, Oct 7, 2024 | 10 min read



**SITUATED 124 KILOMETRES** away from Ahmedabad's Sardar Vallabhbhai Patel International Airport, the town of Dholera began attracting real estate developers in March this year. At that time, the landscape was mostly barren, marked by a few structures such as the Dholera office and the ReNew solar cell plant. Despite the sparse surroundings, developers were travelling from Ahmedabad with potential buyers, drawn by the promise of future townships complete with schools, hospitals, and even an airport.

What sparked this sudden wave of interest? The catalyst was Tata Electronics' plan to build a mega semiconductor fabrication plant with an investment of ₹91,000 crore, expected to create over 20,000 direct and indirect jobs in the region. Unlike the verticals Tata Group companies have traditionally operated in, this marks the conglomerate's foray into the global semiconductor ecosystem.

Tata isn't the only Indian company looking to enter the complex semiconductor industry. Over the past three years, leading business houses, including Adani Group, Larsen & Toubro (L&T), Murugappa Group, HCL Group, Hiranandani, and Zoho have had teams working behind the scenes to realise India's vision for the sector, one that remains a largely unfamiliar territory.

functions. According to an Accenture GSA report, a semiconductor product can cross international borders 70 times or more before reaching the end customer. Furthermore, with semiconductors powering everything electronic — from devices on earth to equipment in space — globally the industry is projected to reach \$1 trillion by 2030, from \$600 billion in 2021, according to McKinsey. In India, the semiconductor market is expected to hit \$110 billion by 2030, from \$22 billion in 2019, as per a report by IESA and Counterpoint Research.

Other than the immense growth potential, incentives offered by the government under the 'India Semiconductor Mission' are making the industry even more attractive. "The semiconductor and electronics supply chain is truly global but concentrated in China, Taiwan, and Europe. However, post-Covid, there has been a dramatic shift where semiconductor players are diversifying their supply chains from being Taiwan-centric to different regions. The India opportunity is seen as a reflection of this shift, and Indian companies will essentially be participants in the global semiconductor electronics value chain," says Rajeev Chandrasekhar, former minister of state for electronics & IT, under whose tenure the scheme was introduced.

However, it is easier said than done. Unlike electronics assembly, the semiconductor manufacturing ecosystem is a complex one, demanding specialised technology, advanced skills, and precise execution.



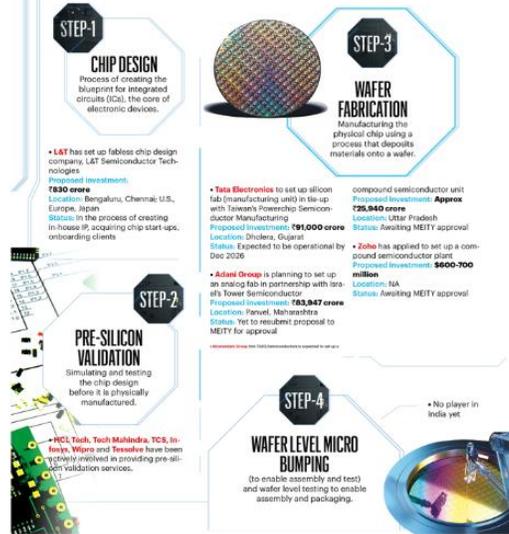
### India Inc. Chips In

Despite being incredibly small, about the size of an adult thumbnail, the process of making semiconductors is highly complex. It involves multiple stages, beginning with design and moving through fabrication, testing, and packaging, and multiple steps in between, before the chip is ready for use in devices. Since it involves more than one company, India Inc. is also focusing on fabless (which solely designs chip but outsource manufacturing), foundry or chip fabrication (which use advanced facilities to produce the chips) and final stage of the semiconductor process, such as packaging the chips and testing them for quality assurance in the form of OSAT (outsourced semiconductor assembly and test) or ATMP (assembly, testing, marking, and packaging) companies.

Under Anil Agarwal's leadership, Vedanta was the first Indian company to express interest in both semiconductor and display fabrication under the government's incentive scheme introduced in December 2021. However, due to challenges in securing a technology partner, the company is focusing primarily on display fabrication.

Other industry leaders, meanwhile, have embarked on semiconductor ventures. Tata Electronics, under Tata Sons chairman N. Chandrasekaran, has secured government approval to establish a semiconductor foundry in Dholera, Gujarat, in partnership

# WHO IS DOING WHAT?



**Also read** [CG Power to set up semiconductor facility, stock up 20%](#)

Murugappa Group's CG Power has also commenced construction of the OSAT plant in Sanand, Gujarat, following project approval. CG Power has established a JV with Japan's Renesas and Thailand's Stars Microelectronics, with each holding equity stakes of 6.8% and 0.9%, respectively. The JV will invest ₹7,600 crore over the next five years.

Several more are in the pipeline. Adani Group plans to set up an analog fabrication plant in Maharashtra at an investment of ₹83,947 crore in tie-up with Israel's Tower Semiconductor. Zoho has applied for a compound silicon fab. Real estate developer Hiranandani Group, via its subsidiary TARQ Semiconductors, has submitted applications for both OSAT and compound silicon fab facilities.

L&T Semiconductor Technologies (LTSTCT), meanwhile, has adopted a fabless approach, concentrating on chip design, with an investment of ₹830 crore. The company plans to enter chip manufacturing only after achieving significant success and scale.

With the current proposals, including Micron's ATMP facility, the government has already approved projects worth ₹1.5 lakh crore. The ₹76,000 crore allocated under the Semicon India Programme incentive has nearly exhausted. Centre will have to announce another round of incentives to attract additional investments and approve the proposals in the pipeline. "We are at a stage where the first phase of the Semicon India programme is practically completed. We are formulating Semicon 2.0, which will be a much-expanded version of Semicon 1.0," says Ashwini Vaishnav, minister of electronics and IT.

### **Seizing The Moment**

The pandemic exposed a major semiconductor supply chain crisis in 2020, affecting numerous industries. For instance, production of \$10,000 cars was halted due to a shortage of a \$2 semiconductor, underscoring the vital role chips play in modern technology and manufacturing, and forcing both governments and businesses to recognise the potential for severe impacts on their operations. For some, it was a strategic move to vertically integrate their businesses, while others saw incentives as a compelling opportunity to invest.

For instance, shortly after the pandemic, L&T encountered the strategic challenge the complete dependence on imported semiconductors created for its defence vertical. Sandeep Kumar, a semiconductor veteran with over 40 years of experience in the industry, received a call from the then head of L&T Defence, who was also Kumar's batch mate at IIT Delhi, suggesting setting up a semiconductor company in India. Within a month, Kumar met L&T's board members and presented his ideas. The result: LTSCT was set up in 2023 with a capital outlay of ₹830 crore for a fabless chip design company. "All of L&T's semiconductors were sourced from abroad. About 80% of the semiconductors we consume in India come from China — though not necessarily Chinese-made, but manufactured there — and if we include Taiwan, nearly all of our semiconductors originate from that region. In defence, there has always been a drive to achieve some level of independence from the global supply chain. That's how L&T's journey with semiconductors began," explains Sandeep Kumar, who assumed the role of LTSCT chief executive in November last year.

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**THE INDIA (CHIP) OPPORTUNITY IS SEEN AS A REFLECTION OF THE SHIFT IN THE SUPPLY CHAIN... INDIAN COMPANIES WILL BE PARTICIPANTS IN THE GLOBAL SEMICONDUCTOR ELECTRONICS VALUE CHAIN."**

RAJEEV CHANDRASEKHAR, FORMER MINISTER OF STATE, ELECTRONICS & IT



Image : Getty Images

**Also Read** [India-Singapore sign 4 MoUs in field of semiconductor, digital tech, health, education](#)

The opportunity is immense, given that the semiconductor industry operates as a truly global ecosystem. On an average, each segment of the semiconductor value chain involves 25 countries in its direct supply chain and 23 in supporting market functions. According to an Accenture GSA report, a semiconductor product can

### **Compelling Incentives**

Establishing a semiconductor manufacturing plant is capital-intensive and has a lengthy payback period, a reason why governments across the world offer incentives to attract such facilities. Under the India Semiconductor Mission, the Centre is offering a 50% fiscal subsidy on a pari-passu basis for fabs, display fabs, compound semiconductors, silicon photonics, sensor fabs, and semiconductor ATMP/OSAT facilities. State governments, too, are providing 20-25% subsidies to attract investments.

With up to 70% capex subsidies offered by governments, the semiconductor sector presents a lucrative investment opportunity, which explains why groups such as Hiranandani are interested in the sector. "It has the capital to invest, and because of the schemes, it's a good time to begin," explains V. Veerappan, chairman, Indian Electronics and Semiconductor Association.

Zoho's CEO and founder, Sridhar Vembu, on the other hand, is committed to creating products in India that serve global markets. Vembu views semiconductors as a crucial technology for the nation and advocates investment in industrial R&D. "Zoho is going for a silicon carbide fab, which requires lower initial investment and is more feasible compared to high-capital logic fabs," says Veerappan.

## PAST ATTEMPTS



**1969: Intel**  
co-founder Robert Noyce visits India to explore setting up a semiconductor fab. The government's restriction of a few hundred thousand chips makes plan unfeasible.



**2005-06: Intel**  
The company puts a multi-billion dollar investment plan on the back burner due to the government's slow response, builds a \$2.5 billion plant in China instead.



**1982: SCL**  
State-owned Semiconductor Complex (SCL) began production in 1984 with 8 micron technology. However, a fire in 1989 caused ₹60 crore in losses. By March 2005, SCL put under the Department of Space's control. It now manufactures chips for ISRO.



**2005-06: SemIndia-AMD**  
The consortium plans an ATMP and semiconductor factory in Hyderabad but faces funding issues by 2008. AMD goes fabless in 2009, and U.S.-based GlobalFoundries takes over fabrication.



**2013-14: HDMC with ST Micro; Jaypee with Tower Semiconductor and IBM**

Two fab proposals receive approval — one from the consortium led by HSMC Technologies India (with ST Microelectronics and Silerra Malaysia as partners) and the other from a consortium led by Jaiprakash Associates (with IBM and Tower Semiconductor as partners). Jaiprakash's proposal withdrawn in 2016. HSMC's letter of intent (LoI) cancelled in 2018 due to lack of documentation.



**2015: Cricket Semiconductor**

The U.S.-based company pledges \$1 billion to build a plant in Madhya Pradesh for analog semiconductors, but withdraws after government delays.

# HIGH STAKES

Type	Investment required	Time to go operational	Expected break-even
Silicon fab (manufacturing unit)	\$3-30 billion, could be higher for leading edge chips	4-5 years	5-10 years
Compound semi fab	\$100 million plus	2-4 years	4-6 years
Testing & packaging	\$100 million plus	2-3 years	4-6 years
Semiconductor design	\$100 million plus	2-4 years from the idea to marketable stage	Depends on success of idea/product

SOURCE: ANALYST (ARUN MAMPZHYZ); FAB ECONOMICS

## High Stakes

In semiconductors, companies have to allocate significant funds towards fabrication and testing and packaging facilities, precision equipment, and R&D to stay competitive. "It requires an investment of \$3-30 billion, and four-five years to construct a silicon fab, and another 5-10 to break-even," says industry analyst Arun Mampazhy. In case of a compound semiconductor fab, investments can vary from a few 100 millions to a few billions with four-six years to break-even after the fab goes operational. Timelines and investments are similar for a testing and packaging plant, he adds.

The initial cost may be high, but the potential for substantial returns is just as compelling. Globally, semiconductor firms typically return 13-15%," says P.S. Easwaran, partner and supply chain leader, Deloitte Asia-Pacific. "But the sector has short technology lifecycles for products and hence the need to refresh the portfolio and capex on an on-going basis. This means unlike in other sectors, firms cannot have a strategy of sweating assets over a long period of time. In addition, most materials, chemicals and equipment need to be imported, the efficiencies of which will be scale dependent, which could be a constraint for smaller companies," he adds.

Semiconductors are the cornerstone of modern technology, offering both immense potential and significant risks. As demand continues to skyrocket, those who can capitalise on the opportunity will not only reap substantial rewards but also shape the future of tech innovation.