

# ASG ANALYSIS: 2023 A Key Year For India's Semiconductor Industry Strategy

Significant Progress Likely,  
Challenges Remain

## Key takeaways

- After a year of establishing policy structures and frameworks, India's government-driven incentives programs under the India Semiconductor Mission (ISM) will launch into higher gear in early 2023, as India seeks to develop an overall industry ecosystem capable of supporting advanced manufacturing.
- At the same time, officials in Delhi are developing longer-term initiatives to boost domestic demand for semiconductors at more mature nodes. This step will ensure that manufacturing facilities currently under consideration will be commercially viable and is a prerequisite for attracting more companies to consider building facilities in India.
- The Indian government is actively pursuing partnerships with major semiconductor companies, with decisions on current proposals due between February and May this year.
- Last year, it recruited IMEC, a major Belgian semiconductor R&D organization, as a technology partner for likely at least one and possibly two of the three projects that will be launched in 2023. IMEC's involvement gives the project instant credibility and could prove to be a significant catalyst for attracting investment. More recently, a Taiwan-based foundry company confirmed it will enter into an agreement with the Indian government to set up a fab and train local talent.
- Although significant challenges remain, including addressing documented problems with water and power infrastructure and doubts over the business climate, intensifying U.S.-China technology competition means that companies looking for alternatives to diversify supply chains may increasingly turn to India, particularly in areas such as packaging and testing, as well as contract assembly.

## India kicks its semiconductor ambitions into high gear

Heading into 2023, the Indian government has revamped its \$10 billion Semicon India Program, which is designed to encourage companies to establish chip manufacturing and design facilities in the country. **Under a new incentive structure, the government will provide up to 50 percent of project costs across technology nodes, as well as additional funding for infrastructure and R&D.**

*“We are committed towards the acceleration and growth of the chip design and manufacturing ecosystem in the country – an ecosystem that is built on the principle of high tech, high quality and high reliability.” – Indian Prime Minister Narendra Modi*

The scheme strengthens the Semicon India Program launched in 2021, which aims to position India as a trusted partner in the technology supply chain. India's ambition to join the global semiconductor race comes on the heels of Washington's latest efforts to decouple from China last October amid rising bilateral tensions over the past several years. Discussions about integrating India into semiconductor supply chains have taken place at the leader level of the Quad, a democratic coalition consisting of Australia, India, Japan, and the United States.

Previous attempts by India to attract major global semiconductor investments, in 2005 and 2017, faltered due to bureaucratic hurdles; an uncertain business, tax, and trade environment; and high capital costs. Today, however, perceptions about India's ability to become a globally competitive high-tech manufacturer have begun to shift. **The country boasts one of the largest semiconductor markets, projected to be valued at \$70 billion by 2026. More importantly, it possesses a growing pool of design talent in microprocessors, memory subsystems, and analog chip design.** Prime Minister Narendra Modi's Semicon India Program is therefore seen as a welcome step toward enhancing India's position in the global semiconductor manufacturing industry.

At the state level, local governments have already started laying out plans to attract private investment. **States are now competing to offer additional subsidies in the form of cheaper public utilities, while also streamlining and strengthening regulatory frameworks.** These moves are bearing some fruit: One Singapore-based technology investor recently signed a Memorandum of Understanding (MoU) with the government of Tamil Nadu to develop a wafer factory, while an Israeli firm signed a letter of intent with the government of Karnataka to build a \$3 billion fab in Bangalore. Other large global and domestic Indian technology companies have also submitted initial proposals for Semicon India funding.

Despite the early momentum, however, challenges remain. **Along with bureaucratic barriers, there are significant concerns about India's water, electricity supply, and air purity.** Global companies operating in India have long struggled with power cuts, public utility inefficiencies, and customs bottlenecks. Given the importance of reliable supplies of power and water to semiconductor manufacturing, states with more reliable infrastructure and navigable business climate will have a major advantage in attracting new investment.

## Revamped Semicon India Program

In December 2021, India's Union Cabinet approved the \$10 billion Semicon India Program for the development of a sustainable domestic semiconductor and display manufacturing ecosystem. In

December 2022, following a successful Semicon India conference in May and significant input from the global semiconductor industry, **Modi's cabinet announced an increase in incentives to a uniform 50 percent across all technology nodes.** It also removed a ceiling on maximum permitted investment for display manufacturing that uses semiconductor technology. This was a significant shift from the original proposal of subsidies from 30 to 50 percent, based on semiconductor node size. The revised incentives are likely to be more attractive to companies considering investments in facilities capable of producing at more mature technology nodes used in the power, telecommunications, and automotive sectors.

**Local governments have responded to the central government's incentives in a bid to capitalize on national subsidies.** Over the past year, four states have drafted plans to offer additional incentives to semiconductor manufacturers. Gujarat, for instance, plans to develop a "Semicon City" in the Dholera Special Investment Region, promising land and air connectivity, as well as access to ports in the region. Gujarat has likewise promised substantial subsidies for public utilities like land and water.

The importance of local governments to the success of Semicon India cannot be overstated, especially given the need for strong business and regulatory environments for semiconductor investment. The central government has pledged to work closely with states to establish high-tech clusters with the requisite infrastructure in terms of land, semiconductor-grade water, reliable electricity, logistics, and research ecosystems.

### Implementation will be key to getting off ground early in 2023

The Ministry of Electronics and Information Technology (MeitY), which oversees Semicon India, has set up three sub-committees to evaluate proposals based on the financial viability, technical expertise, and financing capabilities of partners. The committees began accepting applications in January 2022 and have already received five proposals valued at \$20 billion.

**Decisions from the sub-committees will be submitted for final Cabinet approval. The first set of approvals is due to be announced between February and May,** in time for the government's flagship Semicon India conference, in which Prime Minister Modi almost certainly will participate. Decisions on proposals for display fabs, packaging and testing facilities, and compound approvals are likely to come first, followed by more capital-intensive proposals. The timing of these announcements aligns well with the start of India's fiscal year in March.

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## Stiff global competition

Beyond revamping its semiconductor incentives scheme, the Indian government also has plans to expand R&D and invest in workforce development and upskilling – critical investments for strengthening India's overall industry ecosystem. The government has committed to training over 85,000 skilled engineers across research, design, manufacturing, and supply chain capabilities over the coming years. Indian universities have sought partnerships with universities in Taiwan to offer Indian graduates opportunities to study and work. The Indian government views partnerships with Taiwanese companies as crucial to advancing India's semiconductor agenda.

The \$10 billion incentive is likely merely the first tranche of the Modi government's commitment to building a semiconductor ecosystem in India. In fact, it is likely that the government would be willing to put in more money should they receive the right proposals. New Delhi will likely need to up the ante as other major players, including the governments of the U.S., Japan, the European Union, South Korea, Taiwan, and China are all stepping up their own industrial policies targeting advanced and legacy semiconductor manufacturing and broader supply chains.

India has some advantages in this global competition, in terms of STEM education and a deep pool of English-speaking engineers. However, it also has relatively less mature infrastructure and logistics systems, a less developed semiconductor ecosystem in some key areas, continuing concerns about bureaucratic capacity and the ease of doing business, and has historically faced challenges related to follow through on incentives. Offering a long-term vision that is attractive to more established players in the industry who are also considering U.S. and European alternatives will be important for the success of India's new policy.

Outside observers, including key U.S. national security decisionmakers, will be watching closely for signs of a breakthrough on the manufacturing front. The launch of the India-U.S. Initiative on Critical and Emerging Technology (iCET) led by National Security Advisors Ajit Doval and Jake Sullivan on January 31 will present an early opportunity to reassess India's progress in realizing its grand semiconductor ambitions.

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