

Semicon 2.0: India's Next Leap Towards a Self-Reliant Semiconductor Ecosystem

July 19, 2026 • vajiramandravi.com



Semicon 2.0 Latest News

- Recently, the Union Cabinet cleared the second phase of the **India Semiconductor Mission (ISM)**, along with the **Mobile Phone Manufacturing Scheme (MPMS)**, with outlays of ₹1.27 lakh crore and ₹62,500 crore respectively.
- Together, the schemes aim to expand semiconductor fabrication, assembly, and packaging facilities in India, while boosting phone assembly and component manufacturing.

Targets Under the New Scheme

- Over its five-year tenure, the government expects the scheme to draw:
 - ₹4 lakh crore in investment
 - ₹2 lakh crore in production
 - ₹1 lakh crore in exports

How Is This Different from Phase 1?

- ISM's first phase was approved in **December 2021** with an **outlay** of ₹76,000 crore.
- A 2022 amendment allowed it to offer up to **50% capital subsidy** for large projects, such as Micron's memory chip packaging facility in Sanand, Gujarat.
- Funds were also channelled into the **Electronics Component Manufacturing Scheme**, aimed at incentivising smaller component manufacturing.

Key changes in Phase 2 (Semicon 2.0)

- **Broader scope:** Covers a larger part of the electronics ecosystem, including chip design talent, capital machinery (equipment used in chip-making), semiconductor-grade chemicals and gases, and R&D efforts.
- **Lower subsidies:** Capital subsidies have been trimmed to 30-40%, as officials believe India's semiconductor industry is becoming attractive even with reduced incentives.
- **Reduced land support:** The Union government is less likely to offer land assistance, as State governments have increasingly stepped in with land at token prices and their own additional incentives.
- The precise details of Phase 2 will be laid out in a Gazette notification expected next month.

What Has Phase 1 Achieved So Far?

- 12 manufacturing and packaging units were approved, with a total committed investment of ₹1.64 lakh crore.
- Most of these are semiconductor packaging units, spread across Gujarat, Uttar Pradesh, Punjab, Assam, Odisha, and Andhra Pradesh.
- The list also includes one silicon fabrication unit and one gallium-nitride Micro LED display fabrication unit.
- The Tata Electronics fab is set to begin commercial production in 2028.
- A design-linked incentive programme approved 24 projects.
- The government secured licences for costly semiconductor design software and provided them free to universities and startups.
- The Semiconductor Lab, Mohali, is being revamped to help students and researchers "tape out" (finalise for manufacturing) their chip designs.

Why Is India Focusing on Semiconductor Manufacturing?

- The push stems from lessons learned through recent global disruptions:
 - COVID-19-era supply chain breakdowns exposed India's vulnerabilities.
 - U.S. export controls during its trade tensions with China highlighted the risks of weak integration into global electronics value chains.
- The government maintains that building domestic capacities is essential, even if it takes decades to match countries like the **Netherlands and Taiwan**, whose companies remain critical to global chipmaking.

How Advanced Are the Targeted Chips?

- While the most powerful phones use **“frontier” grade chips** with a process node of 7 nanometres or smaller, India’s current focus is on **28nm chips**, made using what are called “legacy” process nodes.
 - IT Minister Ashwini Vaishnaw noted there is a massive market for these chips, since everyday electronics, where size and computing power are not critical constraints, rely heavily on them.
- As ISM 2.0 progresses, the government hopes to **move the ecosystem toward frontier nodes**, particularly by strengthening domestically-owned intellectual property and research.
- Currently, while India has many semiconductor designers, most work for foreign firms or on their behalf, meaning royalties and expertise largely stay outside the domestic industry.

Why the Mobile Phone Manufacturing Scheme (MPMS)?

- Although a growing share of global iPhone sales come from India-assembled handsets, most components remain imported, and Indian-designed handsets are virtually absent from the market.
- The MPMS seeks to:
 - Expand domestic phone assembly to grow the ancillary component market.
 - Incentivise domestic design and R&D.
- The scheme offers incentives ranging from 2.25% to 5%, depending on the extent of local design involved in the handsets.

Conclusion

- Semicon 2.0 marks India’s shift from simply attracting chip packaging units to building a deeper, more self-reliant electronics ecosystem, spanning design, machinery, and R&D.
- Its success will hinge on whether India can move beyond legacy-node manufacturing toward owning the intellectual property and expertise that define frontier chipmaking.

Source: TH | PIB | ISM

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