BACKGROUNDERS
Press Information Bureau
Government of India

India's Chip Revolution

Ten projects, rising design innovation, and the road to 2 nm technology

September19, 2025

Semiconductors power modern electronics, acting as the "brain" of devices from smartphones to satellites. On September 16, Union Minister Shri Ashwini Vaishnaw inaugurated ARM's new semiconductor design office in Bengaluru, which will focus on next-generation 2 nanometre chip technology, marking a key step in India's semiconductor journey.

Why 2 nm Chips Matter

- Semiconductors are the essential building blocks of modern electronics, acting as the hidden brains that make devices work.
- Semiconductors material are used in the creation of tiny electronic chips that control how modern devices function. The chips can store, process, and transfer information, helping devices perform tasks
- Each chip contains millions or even billions of micro-scale switches called transistors on a fingernail-sized surface, which control electrical signals much like brain cells pass messages
- Thinner chips mean more processing capacity in less space hence lighter products. Smaller transistors enable greater efficiency and reduced power consumption.
- They hold strategic importance for national security, space exploration and defence applications.
- A 2 nm chip is being produced in India for the first time, we are advancing from 7,5,3 to now 2 nm
- This technology will support next-generation devices in AI, mobile computing and high-performance systems.

India's Semiconductor Journey

- Total approved projects under the India Semiconductor Mission now stand at ten across six states with cumulative investments of ₹1.6 lakh crore.
- India Semiconductor Mission has an outlay of ₹76,000 crore to strengthen the ecosystem.
- In May 2025, Union Minister Shri Ashwini Vaishnaw inaugurated two state-of-the-art semiconductor design facilities in Noida and Bengaluru. These are India's first centres focused on advanced 3-nanometer chip design.
- The Minister had then highlighted that while India had earlier achieved 7 nm and 5 nm designs, reaching 3 nm marks a new frontier in innovation.
- India is now going on to 2 nm chip technology
- Electronics manufacturing in India has expanded six-fold in the last eleven years, creating a surge in semiconductor demand.

India's Growing Ecosystem

- Domestic startups supported under the Design Linked Incentive (DLI) Scheme are accelerating chip design.
- 23 chip design projects have been sanctioned and 72 companies now use advanced design tools.
- Student innovation is rising with 28 chips taped out by teams from 25 institutions.
- 278 institutions and universities are engaged in semiconductor design and research, building a large talent pool.

Global Context

- The global semiconductor industry is projected to reach USD 1 trillion by 2030.
- India's domestic market is expected to touch USD 100–110 billion by 2030.
- Taiwan, South Korea, Japan, China and the United States dominate the global industry.
- Taiwan produces over 60 per cent of the world's semiconductors and nearly 90 per cent of the most advanced chips.
- With supply chains concentrated in a few geographies, India is emerging as a trusted and reliable partner in diversifying global manufacturing.
- India was earlier more into chip designing and packaging, but after chip scarcity in Covid 19 times, India decided to go for manufacturing
- Within four years we are on way to building a strong manufacturing ecosystem

Vision Ahead

- India is transitioning from assembly of devices to advanced design and chip manufacturing.
- The focus is on designing and building chips in India for the world.
- The upcoming 2 nm milestone represents a decisive step in technological self-reliance.
- This progress strengthens India's vision of Atmanirbhar Bharat and positions the nation as a leader in the global semiconductor industry.

References:

- https://www.pib.gov.in/PressReleseDetailm.aspx?PRID=2167411
- https://www.pib.gov.in/PressNoteDetails.aspx?NoteId=155130&ModuleId=3
- https://www.pib.gov.in/PressNoteDetails.aspx?NoteId=154968&ModuleId=3
- https://www.pib.gov.in/PressReleasePage.aspx?PRID=2128468