

Step Up When the Chips are Down

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The digital revolution, which governs our lives nowadays, is driven by the relentless engine of semi-conductor technology. From mobile phones to cars to advanced circuits in renewable energy solutions to critical defence equipment, semi-conductors can be found everywhere. They are the foundation for almost every technological intervention around us; they are the brain of modern-day electronics.

Notwithstanding the ubiquitous nature of semi-conductors, their global distribution is extremely skewed. It is estimated that over 85% of the world's semi-conductors come from Taiwan, South Korea, and China. The industry, which was growing roughly at about 5%, suffered massively due to the pandemic. Even as growth plummeted, the demand for electronics shot up, which widened the demand–supply gap.

India too has been severely impacted by this shortage. Indian consumer electronics manufacturers, product and technology developers, and even automobile manufacturers have been hit hard. The Consumer Electronics and Appliances Manufacturers Association has indicated that the chip shortage has led to price increases with medium and small manufacturers reporting price hikes ranging from 30–50% and increases in lead time to nearly 6 months. ICRA estimates show that the automotive industry could lose 500,000 to 600,000 units in sale as a result of this shortage.

India aspires to be a global champion in several crucial sectors. To achieve this, two things are of essence. First, India must become adequately self-reliant so that such shocks do not hinder our progress and development, and second, we must integrate ourselves deeply with the global supply chains. This means that we should not just produce for ourselves, but for the world.

India already has a well-developed electronics manufacturing ecosystem and an unparalleled market with an immense appetite. The World Bank reports that there are 84 mobiles for every 100 people—this number is slated to cross 100 by 2030. The missing piece is semi-conductor manufacturing, which requires extremely high infrastructure and capital costs. To fill the gap, the Indian government reached out to the global industry and formulated a plan. As a consequence of this proactive participatory approach to governance, the government has announced a Rs-76,000-crore programme that aims to transform India into a global hub for electronics manufacturing.

The largest chunk of the new programme is earmarked for two schemes that are focused on established semi-conductor and display fab units in India. The government shall extend fiscal support for setting up at least two greenfield semi-conductor fabs and two display fabs. It will work with the states to establish high-tech clusters with the requisite infrastructure and a research ecosystem.

The other schemes under the same programme complete the value chain in India. The first will offer similar support for setting up at least 15 compound semi-conductor and semi-conductor assembly, testing, marking, and packaging units. The second will offer design-linked incentives to 100 domestic companies of semi-conductor design for integrated circuits (ICs), chipsets, system on chips (SoCs), systems and IP cores. These schemes, coupled with the Production-Linked Incentive (PLI) initiative, to the quantum of Rs 98,000 crore, for large-scale electronics manufacturing and IT hardware, will help India soar.

The pandemic has shown the effectiveness of a “mission mode” approach in achieving the desired outcomes. The government wants to replicate this success by establishing a specialized and independent ‘India Semi-Conductor Mission’ led by global experts to drive long-term strategies for developing a sustainable ecosystem. In addition to this, the

programme has also earmarked funds to propel innovation and build domestic capacities to ensure the digital sovereignty of India.

It is well-established that the development of the semi-conductor and display ecosystem will have a multiplier effect across different sectors of the economy with deeper integration to the global value chain. The programme will promote higher domestic value addition in electronics manufacturing and will contribute significantly to achieving a USD 5 trillion GDP by 2025. In the long term, the semi-conductor industry will make advanced communication technologies like 5G, massive IoT, and Industry 4.0 more accessible and affordable. It will also spur innovation in upcoming technologies like quantum computing, health electronics and next-gen mobility.

Climate change has become a focal point in the global discourse, and India has shown exemplary climate leadership at COP26. In order to reduce the carbon intensity of the economy and facilitate the shift to renewables, the availability of semi-conductors would play a key role in powering the technology that would aid this shift, including the evolution of renewables and green hydrogen.

The Government of India's USD 30 billion push would help build domestic capabilities for the manufacturing of semi-conductors. It would spur innovation, boost employment opportunities and position India as a global hub for electronics manufacturing. It is clear that the demand for semi-conductors will continue to grow and innovations will keep fueling the digital future. This initiative, along with the PLI for advanced chemistry cell manufacturing, integrated solar and green hydrogen and EV automobile manufacturing, has the potential to make India a champion in sunrise areas of growth.

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