



**“SHAKTI” SEMICONDUCTOR PLANT A
KEY (FIRST) STEP US-INDIA
COOPERATION**

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The deal with the US to set up India's first-ever national security semiconductor fabrication plant, announced after the Quad summit in late September, is poised to project India into the big leagues of the semiconductor value chain by producing chips for use in military hardware, critical telecommunication networks, and electronics for both countries.

The joint initiative by Bharat Semi, 3rdiTech, and US Space Force to set up the “Shakti” semiconductor fabrication plant marks a shift in the Indo-US bilateral relationship. The project—focused on manufacturing infrared, gallium nitride, and silicon carbide semiconductors—brings India into an elite group of nations that can manufacture compound semiconductors critical for modern warfare technologies such as advanced sensing, communication systems, and high-voltage power electronics. They will also be instrumental in next-generation telecommunications and green energy solutions.

Once operational, the Shakti fab would reduce the country's dependency on imports from China, Taiwan, and South Korea at a time when India continues to import 95% of its advanced semiconductors—at a cost of over \$1 billion annually—just for national security purposes. By

fabricating these high-value technologies in-house, India would not only address a critical security vulnerability, but also secure its position in global supply chains.

Strategic shift

The partnership with the US represents a fundamental shift in India's status as an electronics assembly hub, to a key player in semiconductor manufacturing. Historically, India's electronics production, which has grown from Rs 18,000 crore (\$ 2.12 billion) in FY2016 to Rs 39,363 crore in FY2023, has been heavily concentrated in consumer products like mobile phones. Strategic electronics, including military systems, radars, and electronic warfare technologies have accounted for just a small fraction of the growth.

The Shakti fab would be the latest in a series of bets on semiconductor technologies, which will hopefully feed into India's renewed focus on developing its own semiconductor supply chain. In February, the government greenlighted three semiconductor plants worth over \$15 billion. Several other projects have been announced since then. In this sense, the Shakti fab is well-timed, as it serves dual interests—it furthers India's semiconductor ambitions, while the focus on producing advanced semiconductors for military applications will directly feed into India's broader efforts to modernize its defense forces and indigenize production.

India's challenges

Despite the potential for enormous benefits, India faces several challenges. Our regulatory framework and underdeveloped infrastructure for high-tech manufacturing may slow down the implementation of the project. Current estimates project that the plant should be set up by 2025, but there is no official statement on commencement of production. Moreover, India faces a stiff competition from established giants like China and South Korea, with well-developed ecosystems and strong R&D capacities.

There is also a critical skills gap in advanced semiconductor manufacturing that India needs to

address. Although the country boasts a large pool of engineering talent, the highly specialized nature of semiconductor production will require focused training initiatives. While the Indo-US partnership is off to a promising start, its long-term success will depend on how quickly India can scale up its capabilities to meet the demands of this high-stakes industry. A comprehensive semiconductor strategy that addresses R&D, talent acquisition, retention, and training, are vital next steps for India's semiconductor mission.

Nevertheless, the long-term potential of the Shakti fab is transformative. An investment of capital and resources of this size, as India looks to establish itself in the semiconductor value chain, could turn the tide in its favor. While there have been previous collaborations on semiconductor chips, they focused on assembly and testing, not manufacture. This collaboration will allow India to enter the most advanced sector of the semiconductor value chain, while also paving the way for future US-India collaborations in emerging technologies like AI and quantum computing.

Eye on tech sovereignty

The alliance highlights a shifting narrative around semiconductors in India. Once viewed primarily as essential components for consumer electronics, they are now increasingly acknowledged globally as critical to national security, with nations prioritizing local manufacture to secure their defense and strategic technology ecosystems. India's partnership on the Shakti fab exemplifies this shift, signaling that semiconductors are no longer just about powering smartphones and computers, but a cornerstone of military hardware, advanced communication systems and emerging technologies like AI. This evolving understanding of the strategic importance of chips is driving new government policies and investments aimed at reducing supply chain vulnerabilities and enhancing technological sovereignty.

By positioning the country as a viable player in a fiercely competitive industry, this move is poised to be a game-changer for India in the emerging global chip war. With the right policies, investments, and

international partnerships, India could emerge as a key player in shaping the future of global semiconductor manufacturing — one vital not just for consumer markets, but also for national security and geopolitical stability.

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