

Future Semisphere

BI-WEEKLY EDITION 4 | AUGUST 2026



Technology



Investment



Supply Chain



Policy



Innovation





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SUPPLY CHAIN

Raw Materials & Substrates Security

China's materials squeeze: Helium and Tungsten become the chip supply chain's chokepoints

China's export controls on two important materials linked to semiconductor manufacturing because-

Helium - China relies heavily on Qatar for its helium supply producing less than 15% locally escalating conflict in the Middle East has created severe supply chain fluctuations. To safeguard its domestic semiconductor and high-tech industries from these global shortages, Beijing has temporarily banned helium exports to ensure its own needs are met first.

Tungsten - By choking off raw tungsten to Japan which supplies roughly 25% of the world's semiconductor-grade tungsten hexafluoride (WF₆) gas China has triggered a major global supply shock. Top chipmakers like TSMC, Samsung, and SK Hynix face severe chemical deficits, disrupting the production of advanced logic chips, high-bandwidth memory (HBM), and 3D NAND flash, this chokepoint is driving up production costs and creating global shortages across consumer electronics, automotive OEMs, and defense manufacturing.

For India's growing semiconductor ecosystem, this highlights the need to reduce dependence on a small number of suppliers and countries. As new fabs and semiconductor packaging facilities are developed, ensuring a reliable supply of specialty gases, metals and other critical materials will become increasingly important.

What This Means For You



For Startups

Hardware and semiconductor startups should assess their dependence on materials such as helium and tungsten and, where possible, develop relationships with multiple suppliers.



For Ecosystem Partners

Investors and suppliers should consider critical semiconductor materials a strategic supply-chain risk, as changes in export policies can affect material availability, costs and production timelines.

Read more [1](#) [2](#) [3](#)

SUPPLY CHAIN / POLICY & GEOPOLITICS

Capacity Expansion & Fab Construction · Industrial Policy & State Subsidies

India's semiconductor ecosystem expands beyond chipmaking into OSAT and ancillary infrastructure

India's semiconductor ecosystem is moving from plans to actual production. The CG SEMI OSAT facility in Sanand, Gujarat, has commenced commercial production, where it assembles, tests and packages semiconductor chips. The facility has started commercial production and currently has a capacity of 20 crore units annually.

At the same time, Kurita and Membrane Group India have started Kurita Membrane India to provide water-treatment solutions, including ultrapure water, wastewater recycling and water analysis for the electronics and semiconductor industry.

Together, these developments show India's semiconductor ecosystem growing beyond chip manufacturing, with more local capabilities for packaging and essential fab-support services.

What This Means For You



For Startups

Local assembly and testing options can reduce dependence on overseas facilities and related logistics.



For Ecosystem Partners

Companies providing water-treatment, packaging and other semiconductor support solutions can find new opportunities as India's semiconductor ecosystem expands.

[Read more 1 2](#)

POLICY & GEOPOLITICS

Industrial Policy & State Subsidies · Trade Barriers, Tariffs & Market Access

India courts foreign silicon: the Japan partnership and Mitsubishi's West Bengal plan

India strengthened its semiconductor partnership with Japan, focusing on chip technology and economic security. Japan has strong capabilities across semiconductor materials, equipment and manufacturing, making the partnership relevant to India's efforts to strengthen these areas.

Separately, Mitsubishi has expressed interest in setting up a semiconductor unit in West Bengal. This adds another state to India's growing list of locations attracting semiconductor investments and shows that more global companies are looking to build a presence in India.

Together, these developments show how international partnerships and foreign investment are becoming an important part of India's semiconductor growth.

What This Means For You



For Startups

Startups can watch for new state incentives, partnerships and technology opportunities as more global companies enter India.



For Ecosystem Partners

Foreign investments can help identify emerging semiconductor hubs and guide decisions on locations, suppliers and infrastructure.

[Read more 1 2](#)

TECHNOLOGY DIRECTION

Architecture Shifts & Compute Paradigm · New Materials & Substrates

Beyond shrinking: a new chip design and KAIST's fix for the electrical bottleneck

For decades, improving chip performance largely meant making transistors smaller. New research points to other ways to improve performance. Researchers have developed a chip design that can deliver higher performance without reducing transistor size, showing how smarter design can get more from existing manufacturing processes.

Separately, researchers at KAIST have identified a possible way to address an electrical bottleneck that can restrict charge flow in semiconductor devices.

Together, these developments show that chip innovation is not only about moving to smaller process nodes. Smarter chip design and advances in charge transport could help companies improve performance even without access to the most advanced fabs.

What This Means For You



For Startups

Startups can explore design and architecture innovations that improve chip performance without requiring access to the most advanced fabs.



For Ecosystem Partners

Research institutions and investors can look beyond smaller nodes and track opportunities in chip design, charge-transport technologies and other technologies that improve performance.

[Read more 1 2](#)

TECHNOLOGY DIRECTION / INNOVATION

Process Nodes & Scaling · Sensors, MEMS & Photonic Sensing · Chip Design Services

Silicon's new frontiers: photonic production, a space-grade SoC, quantum on 300mm CMOS and Smarter Sensing

Three developments show how the role of chips is expanding beyond traditional computing. UMC has started photonic chip production in Singapore, using light instead of electricity to move data. This could support the high-speed connections needed by large AI systems.

Intel also introduced Starfire, a space-grade chip based on its Panther Lake design for the US government. The chip is designed to handle the harsh conditions of space, opening new applications for advanced semiconductor technology.

imec and Diraq demonstrated eight silicon spin qubits made using a 300mm CMOS-compatible manufacturing process. This is an early step toward producing quantum devices using manufacturing methods similar to those used for conventional chips.

Temperchip has introduced a smart temperature sensor designed to improve precision in CNC machining. The development highlights how better sensing and process control are becoming increasingly important as manufacturing becomes more precise.

Together, these developments show new opportunities across photonics, space, quantum computing and smart sensing, while bringing advanced technologies closer to established semiconductor manufacturing.

What This Means For You



For Startups

Startups working in photonics, advanced computing, sensing and industrial technology can track these developments for new applications and opportunities.



For Ecosystem Partners

Investors and research partners can track opportunities across advanced semiconductor technologies, sensing and precision manufacturing.

[Read more 1 2 3 4](#)

INVESTMENT & MARKET / SUPPLY CHAIN

Capacity Expansion & Fab Construction

Memory doubles down: Micron's \$9.3bn Hiroshima expansion for the HBM era

Micron has started work on a \$9.3 billion expansion of its Hiroshima facility in Japan, focused on high-bandwidth memory (HBM) and advanced DRAM. HBM is a high-speed memory used with AI processors, and demand has increased as AI systems become more powerful. The project shows how strongly memory companies expect AI demand to grow. Equipment is expected to be installed from the second half of 2028.

The expansion also highlights the growing importance of memory supply in the AI semiconductor ecosystem. As more companies build AI hardware, access to advanced memory will become an increasingly important part of planning and sourcing.

What This Means For You



For Startups

Teams building memory-intensive hardware should consider HBM availability, pricing and long lead times when planning sourcing.



For Ecosystem Partners

The large investment in HBM capacity signals sustained AI-driven demand and potential opportunities for suppliers across the memory ecosystem.

[Read more 1](#)

INNOVATION, INVESTMENT & MARKET

SFAL Flagship Event (Ecosystem & Community)

SFAL Day 2026: Semiconductor ecosystem comes together in Bengaluru

SFAL Day 2026, held on **7 August** at The Chancery Pavilion, **Bengaluru**, brought together key stakeholders from across the semiconductor ecosystem for an afternoon of insights, collaboration and industry engagement.

The event was graced by the special guest **Dr. N. Manjula, IAS**, Secretary to the Government, Department of Electronics, IT, BT & S&T, Government of Karnataka who shared the insights on GoK programs highlighting the importance of strengthening Karnataka's semiconductor and technology ecosystem. The event featured an SFAL progress presentation by the CEO, Mr. Sridhar Kaip.

A key highlight was the keynote, "From Idea to Silicon: How Semiconductor Startups Become Successful," delivered by **Himanshu Rawal, Synopsys**, offering perspectives on the journey from innovation to successful semiconductor products.

The event also included key announcements, MoU exchanges, panel discussion and showcase from selected startups. The investor connect sub-event during SFAL day, facilitated connections between investors and SFAL startups.

SFAL Day 2026 reaffirmed SFAL's commitment to building a stronger, more connected and innovation-driven semiconductor ecosystem.



150+
Invitees



21
Ecosystem Partners



21
SFAL Startups



10+
Investors



1
Government official

SFAL DAY 2026

EVENT GLIMPSES



Mr. Sridhar Kaip

CEO, SFAL

Welcome Address & SFAL Presentation

The session covered SFAL's key milestones, progress and ongoing efforts to strengthen the semiconductor startup ecosystem and drive innovation-led growth.



Dr. N. Manjula, IAS

Secretary to the Government, Department of Electronics, IT, BT & S&T, Government of Karnataka
Special Address

Talks included valuable insights on strengthening Karnataka's semiconductor and technology ecosystem, emphasising innovation, collaboration and support for emerging enterprises.



Mr. Devendranath A. M.

CEO, Feedback Advisory

Special Session: India's Moment: Building for Viksit Bharat 2047

Enlightened on how investors and corporates can leverage key government initiatives and emerging opportunities to contribute to India's growth towards Viksit Bharat 2047.



Himanshu Rawal

Sales Manager, Synopsys

Keynote: From Idea to Silicon: How Semiconductor Startups Become Successful

The session included perspectives on the journey of semiconductor startups from concept to silicon, highlighting the key factors that help startups overcome challenges and build successful products.



OUR PERSPECTIVE

This edition highlights how semiconductor growth is being shaped by both supply-chain security and new technology opportunities. Critical materials, advance memory and fab-support systems remain areas where supply can be concentrated among a small number of countries and companies, while India is steadily building its own capabilities through new facilities, international partnerships and investments.

For the SFAL ecosystem, the opportunity is expanding beyond semiconductor fabs. Packaging, materials, fab-support services, chip design, photonics, quantum, advanced memory and smart sensing are all becoming important areas of the broader technology ecosystem. As countries secure critical resources and technologies for their own industries, India will need to balance international partnerships with stronger domestic capabilities, diversified sourcing and greater supply-chain resilience. Understanding where supply-chain risks exist and where new technologies are emerging can help startups, investors and ecosystem partners prepare for India's next phase of semiconductor and advanced manufacturing growth.



Future Semisphere

India and Global Semiconductor Intelligence | BI-WEEKLY EDITION 4

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