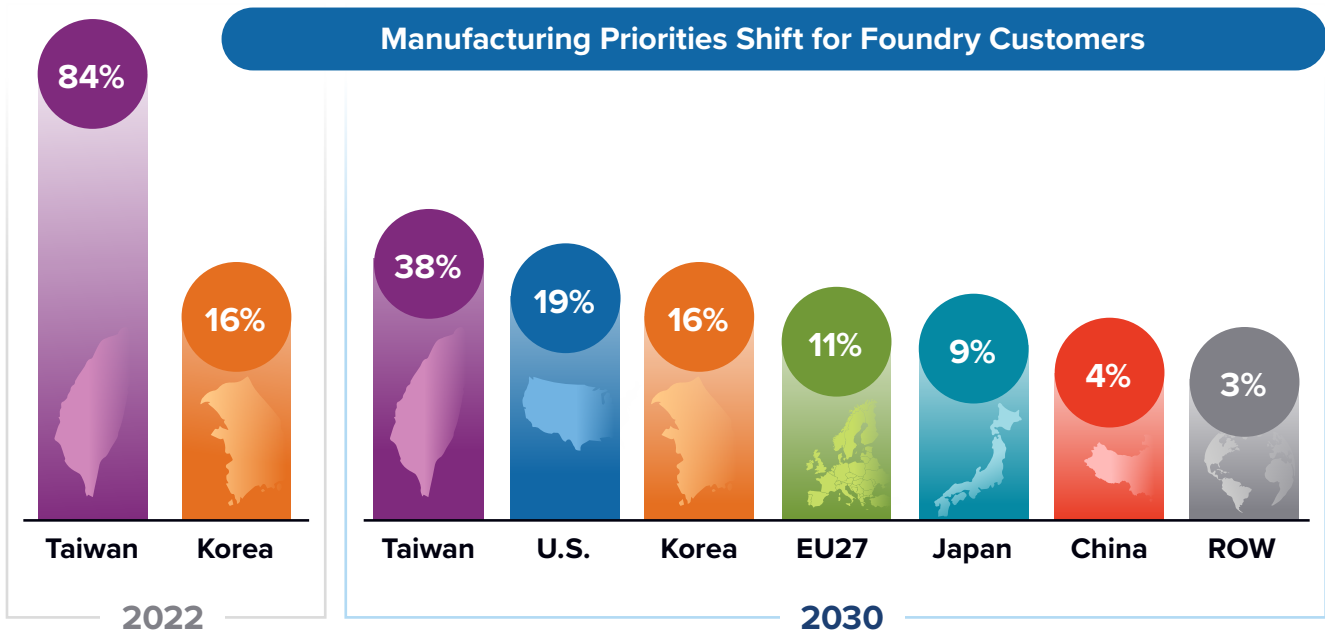# Geopolitics, Chips Acts, and Splintering Supply Chains Lead Organizations to Reconsider Foundry Partnerships

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Manufacturing Priorities Shift for Foundry Customers

2022
- Taiwan: 84%
- Korea: 16%

2030
- Taiwan: 38%
- U.S.: 19%
- Korea: 16%
- EU27: 11%
- Japan: 9%
- China: 4%
- ROW: 3%

Note: Chart illustrates 12-inch wafer starts per month for leading-edge technology by region; estimates are based on investment and facility announcements by semiconductor suppliers and the U.S., European Union (EU), Korea, China, and Japan chips acts.
Source: IDC's *Worldwide Semiconductor Technology Supply Chain Intelligence,* November 2023

Why the Location of Leading-edge Manufacturing Matters

With the pandemic's lessons firmly in mind, companies continue to leverage technology to underpin processes, prioritize key business initiatives, and stabilize their supply chains. Organizations in private and the public sectors have earmarked capital for revitalizing business models, establishing best practices, and supporting technology suppliers to reinvest in their supply chains.

Today, the semiconductor supply chain is concentrated in Asia. In fact, 100% of the global leading-edge chip capacity (5nm and below) is only available in Taiwan and Korea. This will change dramatically over the next decade as leading-edge manufacturing is reestablished in the western hemisphere and in Japan.

For the semiconductor supply chain, the shift in manufacturing locations will be significant. Fabless companies, systems vendors, and service providers designing their own chips will need to extend their sourcing from Asia to the United States, the EU, and Japan to better serve customers, maintain business continuity, abide by U.S. export controls, and support environmental sustainability.

Organizations will want to reevaluate their existing manufacturing partnerships to ensure business continuity and supply chain resilience over the next five years. They will also require access to partners that offer leading technology, a global manufacturing footprint, advanced packaging, computing architecture cores, chiplets, tools, and software to support the tremendous momentum for AI and to thrive competitively.

The systems foundry becomes the right choice in this environment as supply becomes equally balanced at a regional level. It provides a comprehensive suite of wafers, packaging, IP, chiplets, and software/firmware to enable next-level integration and bring together a full-stack solution for fabless companies, systems vendors, and large cloud service providers.

A Shifting Global Manufacturing Footprint

The semiconductor industry is attracting tremendous investment as the desire for technology sovereignty surges among nations. The next three years will see 83 new semiconductor fabrication plants, or "fabs", announced and built. In the United States., 15 new fabs have been announced, including three mega fabs now in construction.

Mega fabs can produce 20,000 wafers per month and support leading-edge process technology (starting at 5nm production and moving to 3nm and below). IDC expects these mega fabs and smaller ones to be operational in 2025. These facilities will create specific U.S. technology hubs and R&D pools. System foundries will help customers gain access to technology hubs, projects, and R&D initiatives.

By 2030, IDC expects a significant regional shift in leading-edge semiconductor manufacturing capacity. The U.S. capacity will increase to 19% of the worldwide availability, and the EU's share will grow to 11%. Japan will represent 9% of the leading-edge semiconductor manufacturing capacity worldwide.

This shift will require semiconductor foundry manufacturers to build and sustain a global footprint of fab capacity and advanced packaging capabilities to meet the requirement to site leading-edge technology at home and establish a stable supply chain that meets customer needs and adheres to government regulation.

Supply chain resilience is now essential for semiconductor foundry manufacturers to provide. IDC sees an opportunity for systems foundry suppliers to invest on a global level to support and enable a $1 trillion worldwide semiconductor industry by the start of the new decade. During this period, the foundry industry will account for one fourth of the total semiconductor industry as it supports the leading fabless and systems customers in the United States and Europe. Now is the time to reevaluate and reengage as a customer with systems foundry suppliers to leverage the global investment in manufacturing and packaging.

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Intel Foundry is a global systems foundry for the AI era dedicated to delivering cutting-edge silicon process and packaging technology through an operationally resilient and globally balanced manufacturing supply chain. We project that the industry will exceed current forecasts and will have at least 50% of the world's advanced semiconductors produced in the United States and Europe by the end of this decade.

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