

As Nations Look to Rebuild Domestic Manufacturing Bases, the Push for Technological Independence Is Accelerating Helium Demand

Recent developments surrounding [Chinese technology giant Huawei and its reported semiconductor design breakthrough](#) have once again highlighted the intensifying global race toward technological independence.

Against a backdrop of worsening geopolitical fragmentation, export controls and ongoing instability across the Middle East, countries worldwide are increasingly moving to secure greater control over their own industrial futures, particularly across advanced manufacturing, AI and other critical technologies.

As nations race to expand domestic industrial capacity, helium is rapidly emerging as a strategically important resource due to its critical role in advanced manufacturing, semiconductor fabrication, AI infrastructure, medical technologies and quantum computing research.

In many respects, the global economy is now undergoing a structural transition away from decades of aggressive offshoring and hyper-globalised supply chains. Governments and industrial leaders are instead prioritising “onshoring” and “nearshoring” strategies designed to reduce exposure to geopolitical disruption while strengthening domestic manufacturing resilience.

As countries push to establish greater sovereignty over semiconductor production and next-generation computing capability, secure access to helium is becoming increasingly important. As recently highlighted by David Pan, Moody’s Director and AI Industry Practice Lead, in a recent Fortune insight: [The AI Economy Runs on Helium](#): *“Helium doesn’t get much attention in the AI supply chain, but it should. Not only is it essential for cooling wafers during chip etching, there is no viable substitute at scale.”*

The semiconductor industry, upon which much of the AI supply chain relies, remains one of the largest and most strategically sensitive drivers of helium demand. As AI workloads continue to intensify and chipmakers push silicon to ever-higher performance thresholds, helium’s role within advanced computing infrastructure is integral. The gas is critical throughout semiconductor manufacturing due to its unique thermal conductivity, inert properties and ability to operate in extreme low-temperature environments where few practical substitutes exist.

Helium is firmly intertwined with both the production of advanced electronics and the research and development underpinning next-generation technologies. As demand for AI infrastructure, semiconductors and advanced computing systems accelerates, the strategic importance of helium within the global technology ecosystem is becoming increasingly difficult to ignore.

Taiwan offers a particularly important example of this dynamic in action. The island's helium demand is heavily concentrated within the semiconductor sector, where uninterrupted access to helium remains essential to maintaining fabrication operations.

Highlighting helium's critical importance within the semiconductor supply chain, for manufacturers, paying elevated prices for helium is far less costly than experiencing a shutdown at a major fabrication facility. This dynamic became particularly visible during recent Middle East-related supply disruptions, where reductions in Qatari helium exports coincided with increased U.S. shipments into Asia, widely interpreted as efforts to help ensure strategically important Taiwanese semiconductor facilities remained operational amid tightening global supply conditions.

Elsewhere, Europe is aggressively investing in semiconductor sovereignty initiatives aimed at reducing dependence on external suppliers. [The European Commission recently approved approximately €288 million \(US\\$335 million\)](#) in German State aid supporting semiconductor supply chain projects involving Carl Zeiss and Zadiant Materials Europe. The majority of the funding is expected to support the expansion of advanced semiconductor equipment manufacturing capabilities. As semiconductor manufacturing capacity continues to expand across Europe, demand for helium used throughout chip fabrication and advanced industrial processes is also expected to increase.

Meanwhile in Australia, recent Federal Budget documents acknowledged that helium shortages linked to Middle East instability had materially impacted industries including semiconductor manufacturing and medical supplies. The Australian government also anticipates downstream price increases as helium's strategic importance within critical industrial supply chains becomes increasingly pronounced.

The strategic importance of secure supply chains is rapidly reshaping industrial policy worldwide. As governments continue investing billions into advanced manufacturing capability, semiconductor independence and domestic industrial resilience, long-term helium demand appears positioned to strengthen alongside it.

In the emerging era of technological sovereignty, supply chain security, and where possible, domestic control over critical inputs, is increasingly becoming the foundation upon which next-generation innovation, industrial competitiveness and geopolitical standing will be built.

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