# Up in the air

## War in Middle East shakes helium supply chain

After the recent shutdown and missile strikes at Qatar's Ras Laffan industrial complex, helium looks likely to swing from a two-year oversupply to its fifth global shortage in 20 years. Meanwhile, despite electronics investment ramping up, industrial gases' role as a key enabler for semiconductors is challenged by geopolitical strife, shifting energy landscapes and trade uncertainty.

Jameson Croteau

After two years of oversupply and soft prices, the helium market was shocked by the US-Israeli attack on Iran and Iran's subsequent drone and missile strikes that halted production at the Ras Laffan industrial complex in Qatar and effectively closed the Strait of Hormuz. Almost a third of the globe's helium supply is a byproduct of QatarEnergy's Ras Laffan LNG facilities.

Currently, Ras Laffan has three helium plants and accounts for roughly 2.4 billion cubic feet of annual helium production. One of the helium plants was shut down for a pipeline repair before the strikes, and its restart is expected to be delayed by the war.

All the helium plants at Ras Laffan are majority-owned by QatarEnergy, and the liquid helium produced is sold in contracts with Linde PLC, Air Liquide SA, Messer SE & Co., Iwatani Corp. and several other gases companies.

According to the latest S&P Global Energy Chemical Economics Handbook (CEH) on helium, Qatar is the largest exporter of helium, accounting for more than 34% of worldwide exports in 2025. The Middle East accounts for 20.9% of global helium capacity but 31.3% of helium supply, according to CEH.

Helium is key for industrial and scientific uses. In liquid form, it is used to cool superconducting magnets in imaging devices, cryostats and spectrometers. The Ras Laffan facility is one of the few plants in the world whose helium output has been qualified to supply semiconductor wafer fabs.

Due to the market's privately negotiated, long-term offtake agreements, which generate poor market dynamic opacity, shocks to the helium supply chain are often exacerbated, CEH said.

On March 4, QatarEnergy declared *force majeure* and stopped production and shipment of LNG and associated products — including helium — at its Ras Laffan and Mesaieed Industrial City facilities. The two

sites had been hit by drone attacks.

"Depending on how long the Strait of Hormuz is shut down, this could be a very serious black swan event," Phil Kornbluth, president of Kornbluth Helium Consulting LLC, said. "If you take 30% of supply out of the market, that's a big hit. If you take that out of the market for a long time, that's a huge disruption."

On March 18 and 19, Ras Laffan was again hit by Iranian missile strikes, in possible retaliation for the Israeli attack on Iran's South Pars gas field. QatarEnergy said there was "extensive damage" at Ras Laffan.

The attacks on Ras Laffan have knocked out 17% of Qatar's LNG and 14% of its helium export capacity, causing an estimated $20 billion in lost annual revenue, said QatarEnergy CEO Saad al-Kaabi to Reuters March 19.

### 'Helium Shortage 5.0'

If the shutdown is extended, the helium market will swing from a surplus to a shortage, Kornbluth said. The lost supply from Ras Laffan can be partially mitigated, Kornbluth noted: PJSC Gazprom's Amur-2 plant in Russia, which started up in January, has roughly 600 million cubic feet of annual helium capacity; Air Liquide's storage facility in Germany could add about 300 MMcf of capacity; and Air Products & Chemicals Inc.'s and Linde's storage caverns in Texas could bring additional supply to the market — however, that helium would have to be purified and liquefied at those companies' respective liquefaction plants in Kansas before being exported.

"The helium market has become much more volatile in the last few years since [the US Bureau of Land Management went away]. And because helium is a byproduct from natural gas, we don't control the sources," said Air Products CEO Eduardo Menezes during a J.P. Morgan Industrials conference March 18. Menezes said that Air Products established its helium storage cavern in Texas to help mitigate potential volatility.

Although the market has been in surplus for more than two years, there is not enough extra capacity to offset the 2.4 Bcf loss of Ras Laffan, Kornbluth said. "If [the shutdown] lasts more than six months, we'll be in 'Helium Shortage 5.0'," Kornbluth said.

Helium Shortage 4.0 started in 2022 and lasted until the first quarter of 2024, when Gazprom's Amur-1 facility in Russia came online and demand eased due to a slump in the semiconductor industry and demand destruction caused by the extended shortage. Helium prices almost doubled during the shortage, leaping from a post-COVID low of $126/thousand cubic feet to a peak of $473/Mcf. Since 2019, helium prices have more than tripled.

According to CEH, the severe helium shortages from 2018–23 caused permanent demand reduction as hydrogen partially substituted for helium in certain applications, such as semiconductor and fiber optics manufacturing, and recycling capability was installed at facilities that produce superconducting magnets for magnetic resonance imaging (MRI) scanners and optical fiber.

For a potential Helium Shortage 5.0, Kornbluth expects that the gas industry playbook will be similar to previous shortages. The impacted industrial gases players will likely declare *force majeure* and implement allocations to their contract customers. Any non-contract customers will not be supplied, and prices will climb. "Allocation percentages will depend on what industry you're in and how critical that industry is," he said.

Medical MRI systems and aerospace applications would most likely receive 100% of their needs, with semiconductor manufacturers also receiving high-percentage allocations. Lower-priority applications such as welding and party balloons will receive much steeper cuts, Kornbluth said.

"At the end of the day, the focus is finding ways to keep the most critical customers supplied in the next few months as the conflict goes forward," Menezes said.

Since the war in the Middle East began, spot prices had doubled by *CW* press time March 19, Kornbluth said. Although most helium is sold through long-term offtake agreements, during Helium Shortage 4.0, spot prices reached as high as $2,000/Mcf, and some analysts believe a prolonged disruption could raise contract prices back toward that level.

### Inflexible supply chains

Helium's long shipping supply chain creates additional obstacles to maintaining supply continuity, Kornbluth said. Even if Ras Laffan's lost capacity can be partially offset, there are still issues with transportation and containers.

Containers that can ship helium are in limited supply, with only a couple of thousand available worldwide, Kornbluth said. "And there's a whole bunch of containers sitting full in Qatar, empty in Qatar and on ships headed to Qatar right now. So, the inflexible supply chain is an obstacle that impedes the industry's ability to react to the shutdown in Qatar," he said.

To avoid the effectively closed Strait of Hormuz and reenter the supply chain, containers — full or empty — would have to be trucked overland to Jeddah on the west coast of Saudi Arabia or down to Salalah, Oman, for shipment via cargo vessels.

Even in the best-case scenario where hostilities cease as soon as possible and the Strait of Hormuz reopens, the LNG facilities at Ras Laffan are expected to take about a month to come back to full production and potentially another week for helium production to reach full capacity. Depending on the damage at the facility, this process could take much longer.

If the facility is quickly returned to full capacity, Kornbluth expects the helium market to take a couple of additional months to get back to pre-crisis plentiful supply due to the time required to reposition containers.

### Regional fallout

Some industry experts have said that the war in the Middle East and another shortage could prompt industrial gases players to shift helium production out of geopolitically sensitive areas and exit large contracts leveraged from one regional source.

North American Helium Inc. (Calgary, Alberta), which produces almost 8% of all North American helium, said the industry needs to diversify from its dependence on a few large-scale projects.

"This is a wake-up call. As helium's importance grows for semiconductor manufacturing, space exploration and other vital national-security priorities around the globe, the industry needs to reevaluate the dependence and concentration of supply in just a few large projects. Only a gradual diversification of the supply chain, a shift back to more geopolitically stable regions and a rebuilding of deliverable storage around the globe can bring stability," said Nicholas Snyder, North American Helium chairman and CEO.

However, current forecasts have helium capacity leaving North America and heading toward the Middle East as the decade closes.

In 2025, 56.6% of global installed helium production capacity was in North America, followed by the Middle East at 20.9% and Africa and Eurasia at 9.8% each, according to CEH. By 2030, the North American share will decline to 42.9%. With capacity increases in

the Middle East, Eurasia and Africa, these regions will significantly gain capacity share, contributing 28.9%, 14.5% and 11.0%, respectively, to total global installed helium production capacity by 2030, CEH said.

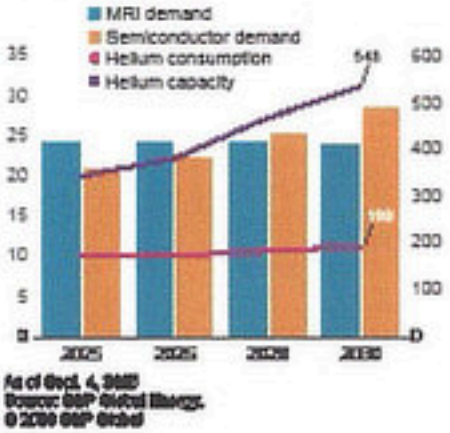
### Helium headwinds

Prior to the US-Israeli attack on Iran, global helium demand was expected to grow by 2.4% per year through 2030, according to CEH. Most of that growth will be driven by the surging electronics, semiconductors, liquid crystal displays and fiber optic industries, which are mostly centered in mainland China, India, South Korea and Taiwan.

In 2025, semiconductors accounted for roughly 18% of helium consumption, according to CEH. The CEH report expects helium demand from semiconductors to have a compound annual growth rate (CAGR) of 6.2% in 2025–30. "It won't double demand like the headlines are saying," Kornbluth said. "But it's the best growth driver out there."

For decades, MRIs have been helium's largest application, accounting for 14.0% of

**Key helium application demand under oversupply**
(millions of cubic meters)




As of Oct. 4, 2025
Source: S&P Global Energy
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total consumption in 2025, but helium consumption for MRIs is expected to shrink by 0.2% annually between 2025 and 2030.

However, for most of the major industrial gases players, helium accounts for only a fraction of revenue. Air Liquide CEO François Jackow said that helium makes up only 3%-4% of the company's sales, and that 80% of its helium sales are in long-term contracts in the electronics end market. Prior to the war in the Middle East, Air Products CFO Melissa Schaeffer said during the company's first-quarter earnings call Jan. 30 that it "continues to see helium as a headwind, both to volume and price," especially in Asia.

Air Products counted helium as a 16-cent loss on its adjusted earnings per share of $3.16 for its fiscal first quarter ended Dec. 31. The company expected helium headwinds for its full fiscal year 2026 to be about 4%.

### More helium on the horizon

Before the war, helium supply looked likely to remain plentiful, with capacity growth exceeding demand growth, according to CEH. By 2030, helium consumption was expected to reach almost 200 million cubic meters and helium capacity was forecast to be 547.9 MMcm, growing at a CAGR of 9.2%.

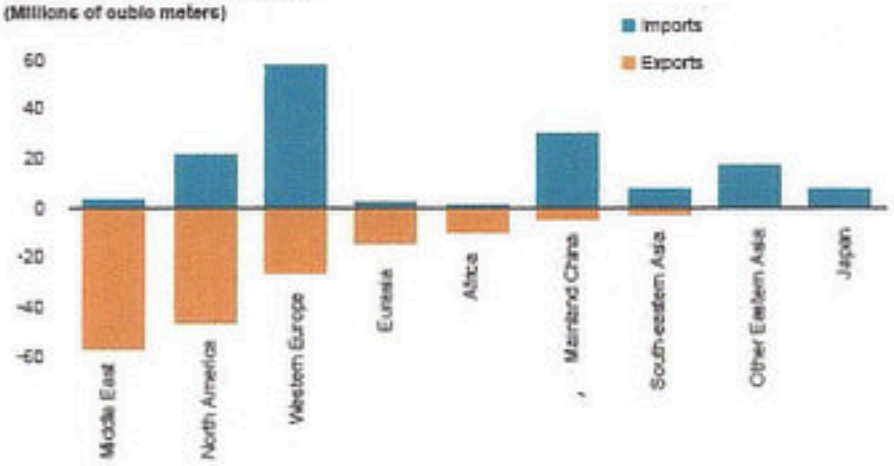
Notable helium projects expected online in the late 2020s include Gazprom's third helium plant, Amur-3, which is scheduled to

start up by 2027, reaching a full capacity of up to 59.8 MMcm per year by 2028, and QatarEnergy's fourth helium plant at Ras Laffan, which was expected online in 2028 and would bring the facility's total helium production capacity to 4.1 Bcf annually.

Meanwhile, in 2025, Linde commissioned a helium storage facility in Beaumont, Texas, with more than 3 Bcf of capacity. The company said it would help balance the supply-and-demand cycles that have plagued the industry for the past 20 years.

However, owing to the surplus, many of the announced projects will be postponed or canceled, or average global operating rates will drop significantly, said CEH.

**World trade in helium–2025**
(Millions of cubic meters)




As of Sept. 4, 2025.
Source: S&P Global Energy.
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## Resilient gases

Despite the geopolitical tangles of 2025 — shifting energy landscapes and trade uncertainty spawned by US tariffs — the industrial gases core industry was resilient throughout the year. Much of the resilience is due to the industry's long-term contracts and producers' ability to pass on fluctuating energy costs, as well as the increased volume of chemicals, steel and iron needed for emerging economies in Asia, the Middle East and South America, which buoyed industrial gas merchant demand.

The industry's three major players — Linde, Air Liquide and Air Products, which together supply over 60% of the more than $110 billion/year industrial gases market — all posted revenue growth in 2025, with increases of 2.97%, 4.05% and 1.44%, respectively.

Air Products, following its reorganization, posted a marginal net loss of $395.0 million. The loss swung from a profit of $3.83 billion in 2024 as the company refocused on its core gas businesses and moved away from large, first-mover clean hydrogen projects.

Linde and Air Liquide posted income gains of 5.07% and 11.18%, respectively, in 2025.

Across the three major regions for industrial gases, the US remained resilient headed into 2026; Chinese markets are largely bottoming out, with the rest of Asia-Pacific mostly remaining stable; and the EMEA market continues to see broad-based weakness, with a few bright spots in the Scandinavian countries, Linde CEO and chairman Sanjiv Lamba said.

In the past decade, the major industrial gases companies have been shifting away from cyclical markets and investing more in healthcare, food and beverage, and electronic end markets, according to the latest CEH report on air-separated gases.

CEH projects the global nitrogen market to grow 2.2% per year over the next five years, driven by electronics and healthcare growth. It also expects the global oxygen market to expand by 2.8% per year in the same time frame, driven by chemical and steel growth.

As of June 2025, Linde owned 28.2% of capacity for liquid oxygen and nitrogen in the US; Air Liquide owned 20.2%; Messer, 20.1%; and Air Products, 19.3%.

In Western Europe, Air Liquide owned 75 air separation units (ASU), with a total daily capacity of 112,122 thousand cubic meters; Linde also owned 75 ASUs, with a total daily capacity of 74,557 Mcm; and Air Products owned 20 ASUs, with a total daily capacity of 22,878 Mcm.

However, the war in the Middle East will send ripples through the air-separated gases industry. The cost of natural gas in Northwest Europe jumped to $20.73/million British thermal units by *CW* press time March 19. "When you have the natural gas price going up, energy prices go up. That affects our air separation side of the business more than anything," Menezes said. "In some cases, we will have to do surcharges. We try to pass that to the customers as fast as we can."

## Electronics-charged growth sector

The electronics sector, relying on the artificial intelligence boom, remains the standout growth driver for industrial gases. "My expectation is we'll see a lot more investment in that space. On one hand, exuberant investment in AI and digital infrastructure drove unprecedented activity. On the other hand, traditional industrial markets like manufacturing, metals, chemicals and energy faced continued retrenchment," Lamba said during Linde's fourth quarter earnings call Feb. 5.

Jackow said during Air Liquide's fourth-quarter earnings call Feb. 20 that more than 40% of the company's 12-month investment opportunities are in the electronics sector, with a high concentration in Asia and the US.

Menezes expects electronics market growth to accelerate. "Electronics is the star segment of the market nowadays.... More projects are coming online, and the projects are increasing in size." Air Products is looking to invest up to $1 billion in capital expenditure for new projects that support the electronics industry.

Linde expects 2026 adjusted earnings in the range of $17.40-$17.90 per share, up 6%-9%. Air Liquide expects to "very confidently" increase its operating margin by 100 basis points. Air Products expects fiscal-year 2026 adjusted earnings per share to be $12.85-$13.15, up 7%-9%.

"Our manufacturing sector is undergoing multiple transformations: the rise of China in the global economy; the reshoring movement aimed at strengthening sovereignties, particularly in the US; the wave of AI; and the indispensable energy transition," Jackow said in Air Liquide's 2025 annual report published March 13, 2026. "Even if the immediate outlook appears marked by moderate growth, we remain convinced that new development avenues are emerging.... It is up to us to seize them whenever they arise."

Air Liquide aims to meet this momentum by investing in semiconductor, battery, smart energy system and space technologies. "Innovation is the best antidote to uncertainty," Jackow said.