

US fossil fuel exports spur growth, climate worries

December 27 2018, by Michael Biesecker And Kim Tong-Hyung



In this Friday, Dec. 7, 2018 photo, construction continues on large-sized liquefied natural gas (LNG) carriers at the Daewoo Shipbuilding and Marine Engineering facility in Geoje Island, South Korea. More than half of the 35 vessels scheduled for delivery in 2018 were LNG carriers. A similar number of vessels are lined up for completion in 2019. (AP Photo/Ahn Young-joon)

In South Korea's largest shipyard, thousands of workers in yellow hard hats move ceaselessly between towering cranes lifting hulks of steel.

They look like a hive of bees scurrying over a massive circuit board as they weld together the latest additions to the rapidly growing fleet of tankers carrying super-chilled liquefied natural gas across the world's oceans.

The boom in fossil-fuel production in the United States has been matched by a rush on the other side of the Pacific to build the infrastructure needed to respond to the seemingly unquenchable thirst for energy among Asia's top economies. When Congress lifted restrictions on shipping [crude oil](#) overseas in 2015, soon after the Obama administration opened the doors for international sales of [natural gas](#), even the most boosterish of Texas oil men wouldn't have predicted the U.S. could become one of the world's biggest fossil-fuel exporters so quickly.

Climate experts say there is little doubt increased American production and exports are contributing to the recent rise in planet-warming carbon emissions by helping keep crude prices low, increasing consumption in developing economies.

Backers of U.S. exports of liquefied natural gas, or LNG, argue that the boom will produce environmental benefits because it will help China and other industrial nations wean themselves from coal and other dirtier fossil fuels.

Environmentalists counter that the massive new supplies unleashed by American advances in extracting natural gas from shale doesn't just make coal-fired power plants less competitive. LNG also competes with such zero-carbon sources of electricity as nuclear, solar and wind—potentially delaying the full adoption of greener sources. That's time climate scientists and researchers say the world doesn't have if humans hope to mitigate the worst-case consequences of our carbon emissions, including catastrophic sea-level rise, stronger storms and

more wildfires.



In this Friday, Dec. 7, 2018 photo, workers board large-sized liquefied natural gas (LNG) carriers under construction at the Daewoo Shipbuilding and Marine Engineering facility in Geoje Island, South Korea. South Korea's big three shipbuilders—Daewoo, Hyundai Heavy Industries and Samsung Heavy Industries—won orders for 53 new LNG carriers in 2018 at about \$200 million each, soaking up the lion's share of the 62 vessels ordered globally, according to numbers compiled by the London-based shipping group Clarkson Research. (AP Photo/Ahn Young-joon)

"Typically, infrastructure has multi-decadal lifespans," said Katharine Hayhoe, a climate scientist and director of the Climate Science Center at Texas Tech University. "So, if we build a natural-gas plant today, that will impact carbon emissions over decades to come. So those are the critical and crucial decisions that are being made today. Do we increase

access to and use of fossil fuels, or do we make decisions that limit and eventually reduce access to fossil fuels?"

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While it is difficult to estimate how much America's rise as major exporter of fossil fuels is contributing to a hotter climate, some of the economic benefits are plain to see in South Korea's shipyards.



In this Friday, Dec. 7, 2018 photo, large-sized liquefied natural gas (LNG) carriers are being constructed at the Daewoo Shipbuilding and Marine Engineering facility in Geoje Island, South Korea. This is South Korea's largest

shipyard. (AP Photo/Ahn Young-joon)

At the sprawling Daewoo Shipbuilding and Marine Engineering facility on the island of Geoje, more than half of the 35 vessels scheduled for delivery in 2018 were LNG carriers. A similar number of vessels are lined up for completion next year.

It's the same story at the two other major Korean yards. The construction of the big gas tankers has been credited with lifting the nation's shipbuilding sector out of the doldrums from a decade ago, when the Great Recession caused a downturn in transoceanic trade.

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"We are getting out of a long tunnel," Song Ha-dong, a senior Daewoo executive, said as he surveyed the company's 1,200-acre yard from above the British Contributor, a gargantuan LNG carrier with a freshly painted deck covered in a maze of pipes. "The U.S.-led shale gas boom is getting fully under way and China, Japan and South Korea are increasing their consumption of natural gas."

During a recent visit by The Associated Press, three of the LNG carriers were being assembled inside a massive dry dock. Another 13, including the British Contributor, had been floated out to nearby berths where workers were putting on finishing touches.



In this Friday, Dec. 7, 2018 photo, workers walk past large-sized liquefied natural gas (LNG) carriers under construction at the Daewoo Shipbuilding and Marine Engineering facility in Geoje Island, South Korea. The boom in U.S. fossil-fuel production has been matched by a rush on the other side of the Pacific to build the tankers needed to help supply the seemingly unquenchable thirst for energy among Asia's top economies. (AP Photo/Ahn Young-joon)

The Korean shipyards have developed a niche in building ships with the complex systems needed to transport natural gas. The gas is compressed and liquefied for storage by keeping it really cold, about -260 Fahrenheit. In this liquid state, natural gas is about 600 times smaller than at room temperature.

The British Contributor is as long as three football fields and can carry enough liquefied gas to fill about 70 Olympic-sized swimming pools—nearly two days' national supply for South Korea. The country used about 1.9 trillion cubic feet of LNG in 2017, finishing third behind

China and Japan as the world's biggest importers, according to data from the U.S. Energy Information Administration.

With no domestic oil and gas resources and an unfriendly neighbor blocking overland shipments from the north, South Korea relies exclusively on oceangoing tankers. Nearly half of South Korea's gas imports come from Qatar and Australia, but the share shipped from the U.S. is growing fast as additional export terminals along the Gulf coast are coming online to handle the glut of gas unleashed by hydraulic fracturing in the Permian Basin of West Texas and southeastern New Mexico.

U.S. LNG exports quadrupled in 2017, with this year on track to see similarly exponential growth. Nearly a fifth of all that gas goes to South Korea.

The British Contributor is the third of six LNG carriers being built by Daewoo for British energy giant BP, which will mainly use them to transport U.S. gas to Asia under a 20-year contract with the Freeport LNG facility south of Houston. Daewoo delivered four similar ships this year to the government-owned Korea Gas Corporation, which has a 20-year deal to buy gas exported from Cheniere Energy's Sabine Pass LNG terminal in Louisiana.



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South Korea has been vying with Mexico for the title of the largest importer of U.S. LNG, and its reliance on gas could further increase under the government of President Moon Jae-in, who has pledged to transition his country away from nuclear power following the Fukushima meltdown in Japan.

Park Moo-hyun, a senior analyst at Hana Financial Investment, predicts shipping companies will need to place orders for around 480 new LNG

carriers over the next decade to match the U.S.-driven increase in global LNG trade—roughly doubling the current worldwide fleet.

"The impact brought by the emergence of shale is not just about an increase in U.S. energy exports—there has been tremendous growth in the production of energy sources that hadn't been used much, such as LNG," Park said. "Once the groundwork is established for the stable use of these new energy sources, industries are pushed to adapt."

Natural gas has the added appeal of producing about half the carbon dioxide when it's burned than coal. Its increased adoption for generating electricity has been pitched by the U.S. and others as a way for nations to make progress toward meeting their emissions reductions goals under the 2015 Paris climate accord. Burning gas also creates less particulate pollution.

In China, the Communist government has declared a "Blue Sky Defense War" to reduce the choking smog in Beijing and two dozen surrounding cities with a program to convert hundreds of thousands of homes and industrial facilities from burning coal to gas. In February, Texas-based Cheniere signed a 25-year deal with the state-controlled China National Petroleum Corporation to export LNG from its export terminal in Corpus Christi.



In this Friday, Dec. 7, 2018 photo, liquefied natural gas (LNG) carriers are being constructed at the Daewoo Shipbuilding and Marine Engineering facility in Geoje Island, South Korea. More than half of the 35 vessels scheduled for delivery in 2018 were LNG carriers. A similar number of vessels are lined up for completion in 2019. (AP Photo/Ahn Young-joon)

But the increased gas exports from the U.S. and other sources hasn't really put much of a dent in Chinese coal consumption, which has remained largely flat in 2018. Overall carbon emissions for China, the globe's biggest emitter, saw a nearly five percent increase in 2018.

Daniel Raimi, a researcher at the Washington-based think tank Resources for the Future, said determining whether U.S. gas exports are a net good or bad for the climate is difficult. When considering China, researchers can't just look at whether coal use or [carbon emissions](#) are falling. They must also try to calculate how much more coal would have been burned had ample supplies of gas not been available.

Another challenge is that the primary component of natural gas is methane, a potent greenhouse gas that traps far more heat in the atmosphere than a comparable amount of carbon dioxide. Studies have shown that a significant amount of natural gas leaks into the air at almost every stage of its production and transport—from wells to pipelines, processing facilities to ships. Raimi said the impact of all that leaking methane on the climate is roughly 84 times more powerful than the same amount of carbon dioxide over a 20-year time frame.



In this Friday, Dec. 7, 2018 photo, Song Ha-dong, a senior official from Daewoo Shipbuilding and Marine Engineering, speaks during an interview on the building of a large-sized liquefied natural gas (LNG) carrier at the Daewoo Shipbuilding and Marine Engineering facility in Geoje Island, South Korea. "The U.S.-led shale gas boom is getting fully under way and China, Japan and South Korea are increasing their consumption of natural gas," he said. (AP Photo/Ahn Young-joon)

As part of its broad rollback of environmental rules, the Trump administration moved in September to weaken Obama-era regulations designed to prevent methane from escaping into the atmosphere during oil and gas operations. The regulatory rollbacks are part of President Donald Trump's pro-industry "Energy Dominance" strategy to ramp up U.S. fossil-fuel production without concern for the corresponding increase in greenhouse-gas emissions. Trump has falsely claimed climate change is a "hoax," and moved in 2017 to pull the United States out of the 2015 Paris accord.

"With or without increased U.S. oil and gas exports, ambitious policy measures are the essential ingredient to achieving long-term climate goals such as those laid out in the 2015 Paris agreement," Raimi said. "For U.S. LNG exports to reduce global emissions, they must primarily displace coal, and methane emissions must be limited both domestically and abroad."

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