COLUMBIA | SIPA
Center on Global Energy Policy

A CHANGING GLOBAL GAS ORDER 2.0

BY TIM BOERSMA, TATIANA MITROVA, AND AKOS LOSZ
APRIL 2018

A year has passed since we published "A Changing Global Gas Order,"[1] our perspective on the unfolding changes in the global gas market. In this commentary, we take a fresh look at emerging gas market trends in light of some of the momentous developments over the past 12 months.

Recent Developments on the Supply Side

Last year confirmed once again that natural gas faces no real resource constraints. The primary challenge is to monetize vast deposits of natural gas molecules in the face of a challenging investment environment, an increasingly stringent carbon agenda, and a growing public impatience with the pace of the transition to a low-carbon economy. The monetization challenge is perhaps nowhere more visible than in the low number of final investment decisions (FIDs) on new LNG liquefaction projects. The relatively small (3.4 mtpa) Coral FLNG project in Mozambique was the only project to reach FID in 2017, marking the second consecutive year of subdued investment activity. No major international pipeline projects reached FID in 2017, although Gazprom's TurkStream started construction last year with no clear FID and some permits still missing for the onshore section of the pipeline on the Turkish side.

Slowly but surely the current wave of new liquefaction projects—mostly from the United States and Australia—is coming to the market. Shell inaugurated the Prelude FLNG project in Australia, and the Wheatstone and Ichthys projects are continuing to ramp up production. Cove Point in the United States started operations in early 2018, and Russia's Yamal LNG entered service in late 2017, on schedule and on budget, to the surprise of many initial skeptics in the industry.

Amid a continued standoff between Qatar and some of its neighbors, Qatar Petroleum doubled down on its earlier expansion plans, and it is now looking to increase export capacity to 100 mtpa (from 77 mtpa today) with the addition of three megatrains. The expansion will cement Qatar's position as the world's largest LNG exporter throughout much of the next decade and will likely involve supermajor partners, with Shell, Total, and Exxon Mobil

The authors would like to thank Robin Mills, Mike Fulwood, Jonathan Elkind, Megan Burak and Matthew Robinson for their careful reviews, comments and assistance on previous verisons of this draft.

rumored to be among the likely candidates. It is worth noting that Qatar's decision to lift the moratorium on the development of the North Field, which had been in place since 2005, came months before the diplomatic rift with Saudi Arabia, the UAE, Bahrain, and Egypt. Therefore, we believe that Qatar's initial expansion plan was chiefly motivated by commercial considerations and a desire to discourage higher-cost suppliers from reaching FID. But the imposition of the embargo in June 2017 most likely played a role in Qatar's decision to put forward a more ambitious expansion plan in July, and—as Qatar Petroleum CEO Saad Sherida al-Kaabi put it in a recent interview—to "go full-fledged LNG."[2]

Several conventional gas projects have moved forward in addition to LNG. The development of the Zohr field in Egypt has progressed rapidly, and—together with other resources in the Mediterranean—it could soon enable Egypt to become a net exporter of LNG once again. Russia's Gazprom continued to export record volumes of gas to the European market, thanks largely to growing output from the new Yamal producing region, the recovery of the European economy, more stringent environmental regulations in the European Union (EU), and the rise of global coal prices. Gazprom has a vast low-cost resource base, and as a forthcoming Columbia paper will show,[3] the company is well positioned to further increase production, should market conditions (and the political climate) enable additional exports to Europe. Chinese natural gas production continues to grow apace, mainly driven by conventional gas for the moment. Shale gas production could also see a material increase in the near future, even though initial estimates of China's shale gas potential were overly optimistic. In anticipation of more material production volumes, Sinopec is now looking to build liquefaction plants to turn domestic shale gas into LNG for regional transport.

Will the Demand Surprise Continue?

Demand for natural gas, and especially for LNG, has surprised most analysts on the upside, as a November 2017 CGEP study titled "They Might Be Giants: How New and Emerging LNG Importers Are Reshaping the Waterborne Gas Market" clearly demonstrated.[4] An important question is to what extent this strong demand growth can continue.

China is perhaps the most closely watched driver of demand at the moment, following a remarkable year of booming natural gas consumption and LNG imports in 2017. The outlook seems rather bullish for the next few years, as the Chinese government remains determined to clean up the air and has ambitious goals to increase the share of gas in the energy mix to 10 percent by 2020 from around 7 percent today. By one estimate, every percentage point increase is roughly equivalent to 25 mtpa of additional LNG imports to China, more than India's entire 20 mtpa LNG demand in 2017.[5] However, we should note that China's efforts to replace coal with gas have mainly concentrated on the residential and industrial sectors, while in power generation, China is switching from subcritical coal to higher-efficiency and lower-emissions coal rather than from coal to gas. China is adding substantial regas and pipeline capacity to accommodate growing LNG imports, but the continued expansion of the distribution grid further downstream depends largely on continued state subsidies for connecting millions of households to the gas transmission network each year. Domestic production and pipeline imports are also competing with LNG. China's domestic production—including from shale gas basins—can accelerate further in the coming years. Meanwhile, China is adding substantial cross-border pipeline capacities from Russia and Central Asia, and it has some unused capacity on its existing import pipelines as well. With all these other supply options at hand, it is far from guaranteed that all (or even most) of China's incremental gas demand will be met with imported LNG in the longer term.

India, which is sometimes seen as the next China when it comes to LNG demand, has even more ambitious goals than China, targeting a 15 percent share for natural gas in the primary energy mix by 2022. However, India has a much patchier track record in achieving ambitious government goals than China, so we would interpret the current targets to be aspirational rather than taking them literally. There is no shortage of pent-up gas demand in India, but downstream connectivity is a real problem, caused largely by bureaucracy, regulatory conflicts between state and central governments, opposition to pipeline construction by farmers, and a scarcity of capital at cash-poor gas utilities. While the recently announced government plan to build 11 new regasification terminals over the next seven years sounds impressive, it is worth keeping in mind that two of India's four existing LNG import facilities operate substantially below capacity as a result of infrastructure bottlenecks. India's gas and LNG demand is also believed to be extremely price sensitive, so the evolution of imported LNG prices could fundamentally alter the demand outlook in India in short order.

One of the remarkable developments of the past few years has been the rapid LNG demand growth in a group of new and emerging LNG importing countries led by Pakistan, Egypt, and Jordan, among many others. New and emerging importers will most likely remain important drivers of LNG demand growth going forward, and FSRUs have proven to be a real game-changing technology for opening up new markets for LNG. The outlook is most promising in countries that already have a well-developed gas market and downstream natural gas infrastructure in place, like most countries in the Middle East and in South and Southeast Asia. Pakistan and Bangladesh, alongside new importers like Myanmar, Vietnam, Sri Lanka, and the Philippines, as well as some established ones like Thailand, Indonesia, Malaysia, and Singapore, will most likely see substantial growth in coming years. At the same time, opening up new markets has been much more challenging in places where the downstream infrastructure is missing (like in sub-Saharan Africa), or the pockets of demand are small and fragmented (like in the Caribbean). LNG-to-power projects, which provide downstream demand in complement to the import facility, can help resolve issues around missing downstream infrastructure, and small-scale LNG distribution can help open small and fragmented markets for LNG, without the need to build capital-intensive pipeline networks in the process. The Klaipeda LNG import facility in Lithuania also illustrates that small-scale distribution can extend the supply radius of existing import terminals beyond national borders. LNG distribution by trucks and small vessels currently serves demand across the three Baltic states as well as in northern Poland. With additional infrastructure, Finland and Sweden will also be able to tap into LNG, thanks to a single import facility in Lithuania.

While the industry has been focusing on China, India, and emerging importers as the primary growth drivers for LNG, we believe that Europe could also see substantial structural growth in natural gas imports over the next decade and emerge as an unlikely growth market for LNG. This dynamic is partly driven by sharply declining domestic production, which will be further accelerated by the Dutch government's decision to completely phase out production at the Groningen gas field in the Netherlands. At its peak in 2013, the Groningen field produced 54 bcm (5.2 Bcf/d), and it was the largest gas field in the European Union by a large margin. Since then, a series of earthquakes prompted the Dutch government to introduce progressively tightening caps on production, which currently stand at 21.6 bcm (2.1 Bcf/d). At the beginning of this year, the Dutch regulator recommended lowering the cap to 12 bcm (1.2 Bcf/d) "as quickly as possible,"[6] and in March 2018 the minister of economic affairs decided to completely halt production from the field by 2030.[7] Meanwhile, several European countries (including the UK, France, and Italy) have committed to phase out coal from power generation in the first half of the next decade, and more countries (including Germany) are considering similar steps on a longer-term horizon. Germany's nuclear phaseout will also conclude by the end of 2022. These measures could create substantial room for natural gas (besides renewables) in electricity generation. Meanwhile, the chilly political relations with Russia, the unresolved fate of Nord Stream 2 and the uncertainty around Russian gas transit through Ukraine post-2019 make it exceedingly difficult to predict how much of the incremental import demand will be met with Russian pipeline gas, if any at all. These uncertainties could create opportunities for LNG—and possibly for other pipeline gas suppliers—to capture additional market share in Europe in the first half of the 2020s.

The marine transportation sector is also considered a potentially important growth driver for LNG once the IMO's new sulfur emission standards enter into force from 2020.[8] However, we believe that this demand potential is only material in the long term, as it could take several years before LNG makes significant inroads as a bunker fuel due to the slow turnover rate of the global shipping fleet. In the meantime, the IMO rules can not only help but also hurt LNG demand outside the marine transportation sector. If the IMO standards leave significant amounts of dirt-cheap high-sulfur fuel oil on the market after 2020, then some countries that would otherwise be incentivized to switch from oil to LNG in electricity generation could decide to use cheap fuel oil instead of LNG for some time—at least until refineries worldwide can adapt to the new market requirements. These could include countries in the Caribbean, as well as Saudi Arabia, where the primary reason for importing LNG would be to displace dirty and expensive oil in the power generation sector.

While most analyses on gas demand dynamics tend to focus on the electricity sector, which accounted for the vast bulk of gas demand growth over the past two decades, we note an important shift of future gas demand growth away from power generation and toward industry in the coming decades. Both the IEA and BP highlighted this trend in their latest energy outlooks, predicting that the industrial sector will be the primary driver of global gas demand growth through 2040, especially in the period between 2016 and 2025.[9] Industrial gas demand is fueled by continuing industrialization in developing Asia, the expansion of gas-based petrochemical industries in North America and the Middle East, and policy-driven fuel switching in many parts of the world. At the same time, further gas demand growth is held back by competition from both coal and renewables in the power generation sector, at least in the medium term. This shift of gas consumption growth from power to industry could have important implications for the flexibility and price sensitivity of gas demand, as natural gas use in industry tends to be less exposed to substitution and price-based competition than in the electricity sector.

Growing Competition from Renewables

For many years, natural gas was considered a natural ally to renewables in the transition to a low-carbon economy. This natural alliance between gas and renewables in the power generation sector is increasingly tenuous, as renewable cost declines continue at a rapid pace, and utility-scale renewables now regularly beat gas-fired projects in competitive power auctions in many parts of the world. An upcoming CGEP study, for example, will examine why natural gas demand can turn out to be much lower than expected in the Middle East. Among the most important factors that can slow demand growth is the rapid deployment of renewable energy sources across the region (alongside slower GDP growth and continuing subsidy reforms).

Flexible gas-fired power plants are uniquely well suited to balancing the daily intermittency of wind and solar PV in particular. But grid-scale battery storage, whose costs are also declining rapidly, and proliferating electric vehicles, whose batteries can also be used as a grid asset, can soon erode the cost advantages of gas-fired backup generators around the world. The role of gas in balancing the seasonal variability (as opposed to the daily intermittency) of renewable energy sources is much less threatened by cheap battery storage. But this requirement can also be met with other fuel sources, including coal and nuclear plants, and it is only substantial in geographies where the winters are significantly colder and darker than the summers, such as in Northern Europe, North America, and Northeast Asia. Several countries in these regions are important early adopters of renewables and remain future growth markets for wind and solar. But a significant share of future renewable deployment will take place in regions where this seasonal variability is much less pronounced, including in Southeast Asia and the Middle East. California and South Australia—also reasonably sunny places all year round—have already drawn up plans to shift to a predominantly renewables-based electricity system in the not too distant future, though both plans have suffered some setbacks in recent months. California's 100 percent renewable electricity target (by 2045) has stalled in the legislative process,[10] while South Australia's 75 percent renewable generation goal (by 2025) is now in limbo, following the election of a new state government in March 2018.[11]

This does not mean that gas-fired backup generation will disappear anytime soon. In fact, gas-fired power could very well gain popularity for its flexibility in a future electricity system that is dominated by renewables. But this supporting role alone does not guarantee long running hours and growing consumption for natural gas in electricity. Actual gas burn in the power sector will mostly depend on the fate of coal and nuclear generation rather than on any kind of "support" that renewable sources can provide to gas-fired generators in the future.

The New Industry Structure Continues to Evolve

In our commentary last year, we talked extensively about the traditional business model in the market for liquefied natural gas and how market forces (with a regulatory push here and there) are changing this model—for instance, by gradually eliminating so-called destination restrictions that have often prohibited buyers from reselling LNG cargoes at their discretion. This rigid model was dealt another blow by the Japanese competition authority in 2017, when the Japan Fair Trade Commission ruled that new gas contracts are no longer allowed to have destination clauses. Though the decision left some uncertainties around existing contracts, Japanese buyers made it clear that they wish to get rid of destination restrictions sooner rather than later. Korea is widely expected to follow suit by ruling destination clauses illegal. The gradual removal of destination restrictions from Asian LNG contracts would boost trade and substantially increase market liquidity over time.

We also discussed the emergence of new players last year, with trading houses and portfolio players gaining a more prominent role on the supply side. Over the past year or so, something similar has started to unfold on the demand side as the Japanese JERA, the world's largest LNG buyer, announced a cooperation deal on LNG trading with the French EDF. This will allow JERA to access the European natural gas market and play a more active role in LNG trading in the future, much like a traditional portfolio player. Governments are also stepping up their support for demand creation. JBIC, the Japanese export credit agency, has recently announced that it will support natural gas infrastructure—including LNG import terminals and gas-fired power plants—to the tune of $10 billion across Southeast Asia.[12] The rationale for this move might be opportunistic—namely, to sell excess volumes that were contracted by Japanese firms. But the result, if successful, will be more future trade and opportunities to back out polluting fuel sources like coal and fuel oil in the power generation sectors across Southeast Asia. It is worth noting, though, that Japanese financial institutions (together with Chinese and Korean ones) are also actively bankrolling coal-fired power projects in Southeast Asia,[13] a worrisome trend in terms of GHG emissions and directly at odds with the aforementioned initiative to help develop downstream gas markets in the region.

As the uncertainties and risks are rising, and obtaining project financing with shorter and smaller contracts is increasingly difficult for the producers, the traditional portfolio players are also strengthening their position. They have two major advantages: access to low-cost capital and the ability to optimize sales (and manage risk) across vast portfolios of supply positions and downstream customers. The lack of buyer appetite for new long-term contracts has also inspired some business model innovation, with Tellurian leading the way in the United States. The company's strategy is one of vertical integration: besides developing a large-scale liquefaction plant, it is also buying into upstream acreage, developing its own pipelines to supply the facility, and offering equity in the whole integrated operation to interested buyers. As it controls more of the value chain, the company plans to optimize costs and offer LNG at a more competitive price. It is too early to tell whether this model will succeed, but it offers one possible way to break the deadlock around LNG contracts and final investment decisions.

Fundamentally new business models, such as integrated LNG-to-power projects and "demand creation" by the suppliers via investments in downstream infrastructure (like JBIC's investment in Asian import terminals or Trafigura's and Gunvor's investments in FSRU projects in Pakistan) are evolving in order to manage the enormous uncertainties and to find new market niches. LNG suppliers are beginning to realize that they should not simply sell gas, for which new buyers have little appetite, but provide supply solutions to their customers that can help solve complex energy challenges and allow gas to be competitive with the alternatives, including oil products, renewable energy sources, and even coal. Similarly, the uncertain outlook is forcing companies to keep project costs low, making future investments most likely in cost-advantaged geographies, such as Qatar, Russia, and the US Gulf Coast.

From Oversupply to a Balanced LNG Market?

Despite the recent physical tightness and the "conspicuous absence" of a long-predicted oversupply in the global LNG market,[14] a period of structural—or, at a minimum, seasonal—surplus is still more likely than not in the next few years. Continuing demand growth can cause the surplus period to be shorter than expected, however. Most new demand will probably come from China, India, and Southeast Asia, but existing and emerging LNG buyers in other parts of the world can absorb additional supplies as well. It is relatively easy to see where supply will come from over the next three to five years, given the long lead times of new projects. The demand side is much harder to predict, as LNG importers can respond more quickly to favorable market conditions. This is in part because many existing importers have substantial unused import capacities, in part because new importers can now enter the market relatively quickly thanks to FSRUs and small-scale LNG distribution (at least where downstream demand is readily available), and in part because government policies provide an extra boost to gas demand creation in some key LNG growth markets, most notably in China and India.

An ongoing expansion of demand coupled with a lack of final investment decisions on the supply side could very well lead to a tight market by the early 2020s. But because there is so much gas waiting on the sidelines ready to be tapped, the LNG market may be undergoing a fundamental change that could smooth out supply waves and cycles of tightness and oversupply. Historically, the LNG market by its very nature was bound to be highly cyclical, given the long time lag between investment and production. This made the LNG market susceptible to supply waves followed by periods of a sharp drop in FIDs. But we may have reached a point where there are enough incremental growth opportunities in the system—including backfill opportunities, expansion trains, and smaller FLNG projects—that the expansion of supply no longer has to be so sharply cyclical. If competing next-wave projects can be brought to the market in a more or less gradual fashion, then we might see something we haven't seen for a while: a more or less balanced LNG market for some time in the 2020s, without too much capacity coming online at once (in the form of another supply wave) but always enough new supply available before the market would become too tight. If this comes to pass, then the next supply wave might not be a wave at all but a more or less gradual expansion of export capacity, in line with anticipated (and flexibly evolving) demand growth. The alternative is another boom-and-bust cycle and a lose-lose situation for buyers and sellers alike. In the absence of timely investments in new capacity, a supply gap could emerge by the early 2020s, and high prices would temporarily destroy demand before suppliers can respond to the shortfall. Some analysts suggest that the global LNG industry has already run out of time to ramp up investment in new liquefaction capacity, and a supply crunch is all but inevitable in the early 2020s.[14]

Russia Looms Large in the New Global Gas Order

With the onset of the current wave of LNG supply—and the start of US LNG exports in particular—many expected Russia's market position to weaken in the global gas market. Yet while the country was unquestionably late to the LNG game,[16] it is now belatedly emerging as a major LNG exporter, its position in its traditional European markets is stronger than commonly appreciated, and its eastern strategy (with the Power of Siberia pipeline at its center) is now back on track after years of equivocation and delays on both sides.

Until last year, Russia, the largest pipeline exporter in the world by a large margin, had only one operational LNG terminal, the Sakhalin 2 project in the country's far east. In 2016, Russia accounted for less than 5 percent of global LNG trade and was only the seventh-largest LNG exporter in the world, one place behind Trinidad and Tobago. Russia's LNG fortunes started to change at the end of 2017, however, when the Yamal LNG terminal started commercial operations in the Russian Arctic. Thanks to the combination of Chinese financing and European technology, Novatek managed to complete the project on time and on budget, despite the harsh operating environment in the Yamal Peninsula and tough US sanctions against the company. Novatek is already planning a second LNG megaproject (Arctic LNG 2) in the vicinity of its first plant with the ultimate aim of creating a "major LNG production center in the Russian Arctic zone that will rival Qatar, Australia and the United States," according to the company's CFO.[17] Gazprom has its own list of LNG projects, with Baltic LNG and a third liquefaction train at Sakhalin 2 being the most likely candidates for eventual completion, but the company has a mixed record in converting lofty plans into actual LNG projects. Nevertheless, Yamal LNG will already cement Russia's position as the fourth-biggest LNG producer in the world (after Qatar, Australia, and the US) over the coming years. With all the additional plans, Russia could even challenge America for the number three spot sometime in the latter half of the next decade, though this is more of a distant possibility rather than our baseline expectation at the moment. After a late start, Russia may yet emerge as an LNG behemoth.

Meanwhile, Russia's position in the European pipeline gas market is strong, at least for the moment. While there has been a great deal of discussion about a potential price war for market share between Gazprom and US LNG in the European market, the truth is that Gazprom has what it views as a comfortably high share of its future exports locked up in long-term take-or-pay contracts, which will guarantee it a minimum delivery of 130 bcm (12.6 Bcf/d) until at least the early 2020s.[18] Similar long-term commitments to Europe's other traditional pipeline and LNG suppliers leave little room for flexible LNG to contest in the very near future, although structural demand growth (thanks largely to coal and nuclear plant closures) and declining production (especially after the phaseout of production at the Groningen gas field) will boost import requirements and create ample room for competition between Russian gas and LNG in Europe over the longer term. Gazprom could seek to tap into its huge spare capacity and capture further market share in Europe at the expense of higher-cost flexible sources like LNG. But Gazprom has little appetite to sacrifice profitability, and waging a price war in pursuit of greater market share seems unlikely at the moment. It is worth noting that even though Gazprom's exported volumes reached record highs in 2017, its revenues remained subdued as a result of low oil and gas prices. Domestically, Gazprom faces stiff competition from "independent" companies like Rosneft and Novatek, which are also eager to challenge Gazprom in the export market. Nevertheless, we do not anticipate Gazprom's monopoly on pipeline gas exports to Europe to be lifted in the foreseeable future.

Russia's eastern strategy also appears to be back on track. After years of slow progress and widely anticipated delays, the Power of Siberia pipeline, which will connect Russia's largely untapped gas reserves in Eastern Siberia with the Chinese market, is now expected to begin deliveries by the end of 2019. This is in line with the original schedule, though the ramp-up to full capacity could still be stretched out into the 2020s. China's record-breaking gas demand growth last year probably played a role in CNPC's decision to speed up construction on the Chinese side of the border.[19] Russian pipeline gas, which must have seemed an expensive proposition for China throughout much of the past three years, now suddenly appears in high demand again, especially after the northern and central parts of China experienced severe natural gas shortages earlier this winter.[20]

Oil and Gas Prices Could Diverge Again

There are very few certainties around global gas markets these days. But Henry Hub prices anchored firmly around $3 per MMBtu for a very long time come as close as it gets to a near-universal consensus in an otherwise highly uncertain market. Remarkably, the EIA's Annual Energy Outlook now projects Henry Hub prices staying within a very narrow range around $3 per MMBtu (in real terms) through 2050 in the high oil and gas resource scenario, which has historically been a better predictor of gas supply dynamics than the agency's reference case.

These low US prices can increasingly feed into global LNG pricing, especially at times of seasonal or structural surplus, as a substantial volume of "homeless" LNG from US terminals can be economically sold for Henry Hub plus the variable cost of delivery.[21] Near-term LNG price expectations are accordingly subdued, as well-supplied LNG markets can keep spot prices in check for the next couple of years, though seasonal upswings remain a distinct possibility even in well-supplied markets, as was vividly demonstrated this winter. In the longer term, US LNG will likely be the marginal source of new supply, and the full cost of bringing additional American LNG capacity to the global market—at around $7–8 per MMBtu—should temper global LNG price expectations even on a longer-term horizon.

At the same time, oil prices have taken a marked upward turn since 2016 (especially since mid-2017), and expectations of a "lower for longer" oil price environment have given way to skepticism[22] about the ability of US shale to keep global oil prices capped at relatively low levels in the face of sustained OPEC and non-OPEC production cuts, booming global demand, and a looming production collapse in Venezuela. While we make no attempt here to predict the future trajectory of oil and gas prices, we wish to point out that near-term fundamentals are already pushing global oil and LNG spot prices in the opposite direction, and this trend seems more likely than not to persist over the coming years.

If oil and gas prices markedly diverge, then oil-linked gas and LNG contracts could once again come under pressure, especially in Asia, where oil-indexation remains the predominant gas-pricing mechanism. India's state-controlled LNG buyers (Petronet and GAIL) are already leading the charge in renegotiating long-term oil-indexed LNG contracts with the blessing of the Indian government.[23] Over the past two years, these companies have successfully extracted price concessions from three of India's main LNG suppliers—RasGas (now Qatargas), ExxonMobil, and Gazprom. Korea's KOGAS has recently made some headlines by taking Woodside to arbitration over pricing terms in a medium-term LNG contract with Australia's North West Shelf project. Korean, Chinese, and Japanese buyers could push for further adjustments of pricing terms in their oil-indexed LNG contracts—if not through arbitration, then through normal price review procedures or when a host of legacy contracts come up for renewal in the near future.

Diverging crude and Henry Hub prices could also bring back the appeal of Henry Hub-linked LNG contracts at a fortuitous time for second-wave US LNG projects. New long-term LNG contracts were few and far between in the last three years, and buyer interest in long-term Henry Hub-indexed offtake volumes from US liquefaction projects has all but dried up completely. The first months of 2018, however, have seen renewed buyer appetite for long-term Henry Hub-based contracts, as Cheniere first signed a 15-year contract with Trafigura in January and then a 25-year deal with CNPC only a few weeks later. Confidence in persistently cheap US gas—and deep uncertainties around the medium-term oil price trajectory—could facilitate similar deals in the near future. New Henry Hub-indexed contracts could come at a particularly opportune time for new US liquefaction projects, as their sponsors would need to reach final investment decisions within the next 24 months or so, if they want to hit the next anticipated market window around 2022–2023.

Diverging oil and gas prices could also trigger additional fuel switching between oil and gas, particularly in the power generation sector. Despite decades of environmental regulations and poor economics, about 100 countries still use oil or petroleum products for power generation today. Of these countries, at least a few dozen have large enough demand to displace oil with regular LNG cargoes, and now-ubiquitous FSRUs have substantially lowered the barrier for oil-to-gas switching in these places. No country has bigger potential to displace oil with gas than Saudi Arabia, which burns about 0.8 million barrels per day of crude oil and petroleum products in its electricity sector, an environmentally harmful and economically wasteful practice that has persisted for decades. After years of resisting the idea of natural gas imports, Saudi Aramco is now gearing up to import LNG and shopping around for so-called gas-development-and-import deals in Russia, East Africa, and the United States.[24]

Future Risk: Will LNG Become a Four-Letter Word?

The LNG industry has so far managed to steer clear of the public backlash, environmental opposition, and divestment campaigns that have targeted upstream oil and gas operations—particularly those associated with hydraulic fracturing, methane emissions, and induced earthquakes—as well as the coal industry. But a handful of recent developments indicate that the LNG sector should not rest comfortably on its exceptional safety record and relatively uncontroversial position (between upstream production and final combustion) in the natural gas supply chain. Two possible areas of concern for the industry should be operational safety and backlash against certain types of LNG projects in the financing community.

A recent leak and the subsequent shutdown of two storage tanks at the Sabine Pass terminal in Louisiana—the first US export terminal in the lower 48 states to enter service—is a reminder that LNG is a hazardous material. Though the two tanks at Sabine Pass were safely taken out of service in February 2018, a more serious future incident involving an LNG tanker, a liquefaction plant, or a regasification terminal could not only damage the reputation of the entire industry but also mobilize environmental opposition to LNG developments around the world, particularly in areas where public opposition to energy infrastructure is already strong, such as British Columbia or the US West Coast. It is nearly forgotten now, but the great Cleveland fireball—the last major LNG-related[25] accident on American soil, which killed 128 people in 1944—set back commercial LNG developments for nearly 20 years in the early days of natural gas liquefaction.[26] More recently, the natural gas leak from the Aliso Canyon storage facility in Southern California between October 2015 and February 2016—the biggest methane leak in US history—prompted California to look more aggressively for alternatives to natural gas-fired generation, including battery storage, distributed energy resources, and a greater share of renewables in the state's electricity mix.[27]

Thus far fossil fuel divestment campaigns have largely spared the global LNG industry. But in October 2017, BNP Paribas, a major French project finance lender, announced that it would no longer provide financing for LNG projects that "predominantly liquefy and export gas from shale." The bank will also cease financing Arctic exploration and production projects and stop doing business with shale and oil sands-focused companies altogether. These measures appear to target American, Canadian, and potentially Russian LNG liquefaction projects in particular. Though the withdrawal of BNP, a midsized player ranking number 15 in the LNG project finance league table in 2017,[28] will not mean that LNG projects in these areas will remain without financing, it is nonetheless significant for a number of reasons. Western European and Japanese banks have traditionally played a dominant role in LNG project financing. If the French government's recent—largely symbolic—decision to ban all oil and gas production on its territories by 2040 is any indication of the mood in Western Europe, then other large project finance banks with large customer-facing retail operations might very well follow BNP's lead and abandon LNG projects with undesirable sustainability characteristics. (The Dutch ING and ABN Amro banks are similarly large project finance players, and attitudes toward hydrocarbons in the Netherlands are hardly more supportive than in France). If lenders started differentiating between projects based on geography or the source of feed gas, for example, then the competitive landscape for the next wave of liquefaction projects could be redrawn, and US projects in particular could find themselves at a relative disadvantage. Cleaning up the environmental footprint (and the public image) of shale gas could turn out to be more important for LNG developers than to upstream operators in America, as the former group depends more heavily on the moral proclivities of overseas lenders for its financing than the latter.

Geopolitics Is Alive and Well in Natural Gas Trade

Analysts have long argued that the maturing of the global gas market will make natural gas trade less prone to monopolistic behavior, pipeline politics, and geopolitical blackmail. This does not mean, however, that geopolitics is disappearing from natural gas dealings altogether. If the events of the past 12 months are any guide, then geopolitics is here to stay when it comes to natural gas trade.

Nord Stream 2 in Europe is one of the most heavily politicized gas pipeline projects of all times, with the EU Commission, certain EU member states, and the US State Department lined up against Gazprom, the Russian government, and certain other EU member states led by Germany. Poland seems determined to end its own Russian pipeline gas imports from 2022, despite the higher cost of alternatives like gas imported through the Baltic Pipe, an undersea pipeline project linking Poland with gas fields in the North Sea via Denmark. Relations between Russia and Ukraine remain tense, and it is not clear what will follow the current gas transit agreement once it expires in 2019.

Qatar, the world's largest LNG exporter, has been under an economic blockade by its GCC neighbors since June 2017. The planned addition of three megatrains in Qatar will likely involve supermajor partners, and political considerations might very well play into the selection process, as Qatargas will likely be looking for partners who can act as "flag carriers" in capitals around Europe and the United States amid the difficult geopolitical situation in the region.[29] Should Saudi Aramco eventually commit to LNG imports, its choice of LNG suppliers and project participation—be it in the United States, Russia, or elsewhere (all of those suppliers far more distant than its blockaded neighbor Qatar)—could signal important geopolitical shifts and new strategic priorities. Meanwhile, Iran's vast natural gas export potential may well remain largely unrealized due to the looming threat of US sanctions. Drillships along the coast of Cyprus are threatened by Turkish gunboats, and Israel and Egypt have recently underpinned their newfound strategic alignment with a $15 billion natural gas supply deal from Israel's Tamar and Leviathan fields in the Eastern Mediterranean.

The natural gas trade between the United States and Mexico is now interlaced with geopolitical risk, at least from the Mexican perspective,[30] and the Trump administration's energy dominance agenda has brought a geopolitical dimension to US natural gas exports. Non-energy policies like sanctions and trade restrictions could be especially potent tools to continue to politicize natural gas trade in the months and years ahead. Overall, it does not seem to us that the experts who have dedicated their professional careers to studying the geopolitics of natural gas will be out of a job anytime soon, regardless of the development of a more integrated global gas market.

Reduce Costs, at All Cost

In parallel with a broader energy transition toward cleaner sources of energy, the global gas market is undergoing its own transition—from a rigid, largely regional model to a more flexible and more competitive global market structure. Growing demand and healthy seasonal prices should not mislead anyone: what lies ahead is a disruptive, highly competitive, and deeply uncertain future for the gas sector, as well as for the rest of the global energy industry. Further market transformations and even deeper shifts are likely to follow, and many of these will be impossible to foresee (just as most analysts failed to predict China's booming demand growth last year or the amazing rise of new LNG importers in the years before). The only thing that seems certain is that gas will have to compete fiercely with other energy sources for both market share and financing. The only way to survive in this competition is to become as adaptable, flexible, and environmentally acceptable as possible; look for new business models and creative solutions to structure major infrastructure projects; work hard to gain—and sustain—public support for greater natural gas use; and ultimately offer a competitive product to consumers around the world. Welcome to the new global gas order!

Notes

[1] Tim Boersma and Tatiana Mitrova, "A Changing Global Gas Order," Center on Global Energy Policy, March 21, 2017, http://energypolicy.columbia.edu/sites/default/files/A%20changing%20global%20gas%20order%20032117.pdf.

[2] "Building on Resilience: QP Chief Talks Embargo & LNG Plans with MEES," MEES, vol. 60, no. 49 (2017): https://www.mees.com/2017/12/8/corporate/building-on-resilience-qp-chief-talks-embargo-lng-plans-with-mees/e65e3720-dc35-11e7-9683-8d527bb0bebe.

[3] Tatiana Mitrova, "The Impact of the US LNG on Russian Natural Gas Export Policy," Center on Global Energy Policy, forthcoming in spring 2018.

[4] Teddy Kott and Akos Losz, "They Might Be Giants: How New and Emerging LNG Importers Are Reshaping the Waterborne Gas Market," Center on Global Energy Policy, November 2017, http://energypolicy.columbia.edu/sites/default/files/pictures/CGEPTheMightBeGiantsLNG1017_1.pdf.

[5] Credit Suisse Equity Research, "China LNG Demand: Be Bullish (But Maybe Not a MEGA Bull)," February 9, 2018: 2.

[6] Bart H. Meijer, "Dutch Aim for Major Cut in Gas Production at Earthquake-Prone Groningen Field," Reuters, February 1, 2018, https://www.reuters.com/article/netherlands-gas-groningen/update-3-dutch-aim-for-major-cut-in-gas-production-at-earthquake-prone-groningen-field-idUSL8N1PR2JO.

[7] Stephanie van den Berg, "Netherlands to Halt Gas Production at Groningen by 2030," Reuters, March 29, 2018, https://www.reuters.com/article/us-netherlands-groningen-gas/netherlands-to-halt-gas-production-at-groningen-by-2030-idUSKBN1H51PN.

[8] For an in-depth analysis of the fuel market impacts of the upcoming IMO standards, see Antoine Halff, "Slow Steaming to 2020: Innovation and Inertia in Marine Transport and Fuels," Center on Global Energy Policy, August 2017, http://energypolicy.columbia.edu/sites/default/files/SlowSteamingto2020InnovationandInertiainMarineTransportandFuels817.pdf.

[9] See International Energy Agency, World Energy Outlook 2017: 333, 343–345; also see BP Energy Outlook 2018: 82–85, https://www.bp.com/content/dam/bp/en/corporate/pdf/energy-economics/energy-outlook/bp-energy-outlook-2018.pdf.

[10] John Weaver, "California's 100% Renewable Energy Initiative Gains Steam," PV Magazine, March 27, 2018, https://pv-magazine-usa.com/2018/03/27/ca100-org-launched-to-support-californias-sb-100-100-renewables-by-2045/.

[11] Max Opray, "Does a New Government in South Australia Spell Doom for Renewables?," Guardian, March 19, 2018, https://www.theguardian.com/australia-news/2018/mar/20/does-a-new-government-in-south-australia-spell-doom-for-renewables.

[12] Osamu Tsukimori, "Japan to Offer $10 Billion to Back Asia LNG Infrastructure Push: Media,"

Reuters, October 15, 2017, https://www.reuters.com/article/us-lng-japan/japan-to-offer-10-billion-to-back-asia-lng-infrastructure-push-media-idUSKBN1CL03W.

[13] Thin Lei Win, "Japan, China, S. Korea Bankroll Indonesia's Coal despite Paris Pledge," Reuters, July 19, 2017, https://af.reuters.com/article/africaTech/idAFL5N1KA0J8.

[14] The phrase comes from a recent speech by Ben van Beurden, CEO of Shell. See Stuart Elliott, "Shell CEO Dismisses Prospect of Global LNG Glut; Industry Players Agree," S&P Global Platts, February 1, 2018, https://www.platts.com/latest-news/natural-gas/london/shell-ceo-dismisses-prospect-of-global-lng-glut-26882946.

[15] Stuart Elliott, "Global LNG Market Avoids 'Glut,' Now Supply Crunch Nears: HSBC," S&P Global Platts, March 27, 2018, https://www.platts.com/latest-news/natural-gas/london/global-lng-market-avoids-glut-now-supply-crunch-26923669.

[16] Bordoff and Losz, "The Benign Energy Superpower? The United States Turns On the Gas," Foreign Affairs, March 4, 2016, https://www.foreignaffairs.com/articles/2016-03-04/united-states-turns-gas.

[17] Henry Foy, "Novatek Commits up to $47.6bn on Arctic LNG Projects," Financial Times, December 12, 2017, https://www.ft.com/content/929c676c-df25-11e7-a8a4-0a1e63a52f9c.

[18] Tatiana Mitrova, "The Impact of the US LNG on Russian Natural Gas Export Policy," Center on Global Energy Policy, forthcoming in spring 2018.

[19] Dominique Patton and Denis Dyomkin, "Gazprom to Start Gas Supplies to China via Siberia in December 2019," Reuters, July 4, 2017, https://www.reuters.com/article/us-russia-china-gas/gazprom-to-start-gas-supplies-to-china-via-siberia-in-december-2019-idUSKBN19Q08P.

[20] Lucy Hornby and Archie Zhang, "China Hit by Gas Shortages as It Moves Away from Coal," Financial Times, December 3, 2017, https://www.ft.com/content/21cb4ed2-d7f9-11e7-a039-c64b1c09b482.

[21] For a detailed overview of the economics of US LNG exports, see Jason Bordoff and Akos Losz, "If You Build It, Will They Come? The Competitiveness of US LNG in Overseas Markets," Center on Global Energy Policy, November 2016, http://energypolicy.columbia.edu/sites/default/files/Competitiveness%20of%20US%20LNG%20in%20Overseas%20Markets.pdf.

[22] See, for example, David Sheppard, "Buoyant Oil Prices Withstand Near-Record US Production," Financial Times, February 1, 2018, https://www.ft.com/content/4bcbe12a-074b-11e8-9650-9c0ad2d7c5b5.

[23] Abache Abreu, "India Masters the Art of Renegotiating Inflexible LNG Deals," S&P Global Platts, January 18, 2018, https://www.platts.com/latest-news/natural-gas/singapore/india-masters-the-art-of-renegotiating-inflexible-26872398.

[24] Javier Blas, Yousef Gamal El-Din, and Vivian Nereim, "Saudi Aramco Embarks on Global Hunt for Natural Gas Supplies," Bloomberg, December 20, 2017, https://www.bloomberg.com/news/articles/2017-12-20/saudi-aramco-embarks-on-global-hunt-for-natural-gas-supplies.

[25] The accident in Cleveland, Ohio, happened before the emergence of the modern LNG industry, as we know it today. At the time of the accident in 1944, natural gas was liquefied for the purpose of storage but not for ocean-borne transport in purpose-built LNG carriers. The waterborne shipment of liquefied natural gas was only commercialized in the 1960s. For a historical overview, see Daniel Yergin, The Quest: Energy, Security, and the Remaking of the Modern World, New York: Penguin Books, 2012, 312–326.

[26] James T. Jensen, "U.S. Reliance on International Liquefied Natural Gas Supply," policy paper prepared for the National Commission on Energy Policy, February 2004, http://www.energyseer.com/natcomtx.pdf: 121–122.

[27] Herman K. Trabish, "As Gas Plants Struggle, California Seeks New Flexible Capacity Strategies," Utility Drive, June 27, 2017, https://www.utilitydive.com/news/as-gas-plants-struggle-california-seeks-new-flexible-capacity-strategies/445760/.

[28] Poten & Partners, "Poten 2017 Ranking: Top LNG Project Finance Lenders," March 2017, http://www.poten.com/wp-content/uploads/2017/03/Poten-2017-Ranking.pdf?submissionGuid=b4165f10-05ba-48e1-998c-1cea66631b8b: 2.

[29] This dynamic was explored and analyzed in a recent Credit Suisse research note: Credit Suisse Equity Research, "Global LNG: Let's Have a Quick Debate on Qatar," March 2, 2018.

[30] Jason Bordoff and Tim Boersma, "For Mexico, US Could Become the New Russia," CNBC, February 6, 2017, https://www.cnbc.com/2017/02/06/for-mexico-us-could-become-the-new-russia-commentary.html.

About the Authors

Tim Boersma is a Senior Research Scholar at the Center on Global Energy Policy. Prior to joining CGEP, Dr. Boersma was a Fellow and Acting Director of the Energy Security and Climate Initiative at the Brookings Institution. From 2011 to 2012, he was a Transatlantic Academy fellow in Washington, D.C.

Tatiana Mitrova is a Fellow at the Center on Global Energy Policy and Director of the SKOLKOVO Energy Centre in Moscow. From 2011-2012 she was Head of Global Energy at the SKOLOKOVO Energy Centre, and from 2006-2011 she was Head of the Center for International Energy Markets Studies in ERI RAS.

Akos Losz is a senior research associate for the Center on Global Energy Policy. Prior to joining Columbia, Losz was senior analyst at Douglas-Westwood. Previously, he worked on the strategy-development team of MOL Group, a Hungary-based international energy company.

The views represented in this commentary represent those of the author.

This work was made possible by support from the Center on Global Energy Policy. More information is available at http://energypolicy.columbia.edu/about/mission.

ABOUT THE CENTER ON GLOBAL ENERGY POLICY

The Center on Global Energy Policy provides independent, balanced, data-driven analysis to help policymakers navigate the complex world of energy. We approach energy as an economic, security, and environmental concern. And we draw on the resources of a world-class institution, faculty with real-world experience, and a location in the world's finance and media capital.

Visit us at www.energypolicy.columbia.edu

@ColumbiaUenergy

ABOUT THE SCHOOL OF INTERNATIONAL AND PUBLIC AFFAIRS

SIPA's mission is to empower people to serve the global public interest. Our goal is to foster economic growth, sustainable development, social progress, and democratic governance by educating public policy professionals, producing policy-related research, and conveying the results to the world. Based in New York City, with a student body that is 50 percent international and educational partners in cities around the world, SIPA is the most global of public policy schools.

For more information, please visit www.sipa.columbia.edu