

The Ban on Long-Term Natural Gas Contracts for the European Union: A Double-Edged Sword?

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Key Points

Long-term natural gas contracts are necessary market instruments that provide supply security for customers and demand security for producers. Nevertheless, the European Commission recently announced a plan to ban long-term contracts for unabated fossil gas after 2049. This study shows that this plan may destabilize the market due to the lack of supply security for customers and demand security for producers. We find the following main results.

To better understand the consequences of the proposed regulation, this study explores several relevant factors. We consider the conditions of the existing contracts, relations with the main supplier and the role of long-term contracts in negotiations with possible exporters. We aim to determine the potential impacts of the framework on the European market.

Even if Europe's natural gas demand decreases by 24% by 2050 (as the BP New Momentum scenario predicts), the absolute volume demanded will remain substantial.

The proposed regulation is seen as a measure to foster energy transition. Thus, it may push producers to become more climate responsible by, for example, abating flaring emissions.

However, the legislation may also have a chain of negative implications. Underinvestment may create a global shortage of natural gas and a further rise in prices. Unclear rules, such as what will be considered proper abatement of emissions and who will pay for this abatement, may further disincentivize producers.

As a result, the energy transition in Europe may be uncertain. High prices may encourage demand for dirtier fuels, such as coal, as occurred in 2021. In this case, the proposed framework may become a double-edged sword, hurting its holder.

Introduction

At the end of 2021, the European Commission proposed a ban on long-term contracts of natural gas with unabated emissions. This ban related to gas imported into the European Union (EU) from non-EU countries and was intended to start after 2049 (Krukowska and Nardelli 2021). The proposed new legislative framework was published on December 15, 2021 (European Commission 2021a). However, the “Directive of The European Parliament and of the Council on Common Rules for the Internal Markets in Renewable and Natural Gases and in Hydrogen” provides unclear guidance. It states, “No long-term contracts for the supply of unabated fossil gas shall be concluded with a duration beyond the end of the year 2049.” (European Commission 2021c). However, this document, which is part of the legislative framework, does not specify which gas will be considered “unabated.” This lack of clarity may create problems for future contracts.

The ban was positioned as a way to achieve Europe’s previously announced environmental targets. In 2020, the European Commission approved the European Green Deal, the main goal of which was achieving climate neutrality within the EU by 2050. Six months later, on July 14, 2021, the Commission unveiled a detailed plan to achieve a 55% emissions reduction target by 2030. This plan, the Fit for 55 Package, included legislative proposals and policy initiatives. These proposed policies related to the EU Emissions Trading System, renewable energy, energy efficiency and a carbon border adjustment mechanism, among others. Thus, the proposed ban on long-term natural gas contracts is a logical continuation of Europe’s progress toward energy transition.

However, the proposed legislation may have unintended consequences for the European natural gas market and, thus, the whole energy system. These consequences may include the following outcomes.

Gas prices may surge owing to low-carbon gas imports and a potential shortage of conventional natural gas.

- First, long-term contracts traditionally provide both supply security for customers and demand security for natural gas producers. In the absence of long-term commitments from customers, producers may be disincentivized to invest in production. In turn, the global market may experience a shortage of natural gas, driving prices higher.
- Second, Europe is also working to replace Russian pipeline gas with gas from other countries. These countries need to invest in either expanding existing production facilities (Qatar) or creating them from scratch (Israel and some African countries). The absence of future long-term contracts guaranteeing returns on these investments will inevitably be a stumbling block in negotiations with these potential alternative suppliers.
- Third, the abatement of natural gas emissions is expensive. It involves deploying capital-intensive technologies, such as direct air capture and carbon capture, utilization and storage, or purchasing carbon offsets from projects reducing emissions elsewhere. As a result, carbon-neutral hydrocarbon products should trade at a premium compared to conventional products. When substantial investments in decarbonization measures are required, long-term contracts are necessary to persuade investors that the demand for the product is guaranteed. However, the lack of a clear definition of “unabated fossil gas” creates further uncertainty for investors.

Foregone government revenues will offset the rise in prices. For instance, Spain, Italy and France spent over €5 billion in total to support their customers when gas prices rose sharply in 2021 (Sergeeva and Fedorov 2022).

Gas producers will be compelled to explore new markets and alternatives to market their gas. Gas exporters are likely to move to the Asian market, where gas demand is projected to grow, driven by increased demand from developing countries. Exporters may also offset their emissions from natural gas to keep their contracts with the EU in force. However, if this plan fails, they will need to sell gas on the spot market, which is less predictable than long-term sales. Spot market volatility and a lack of demand security may disincentivize traditional natural gas producers from investing in new projects. These factors may also discourage potential producers from entering the gas market unless other financial tools are developed and widely used.

The use of other fossil fuels, such as coal, for power generation will increase. This outcome already occurred in 2021. The United Kingdom had to start its West Burton A coal plant owing to the poor performance of renewable energy sources and soaring gas prices (Sergeeva and Fedorov 2022). This outcome will delay the energy transition, calling its future into question.

Analysis of Existing Long-term Contracts

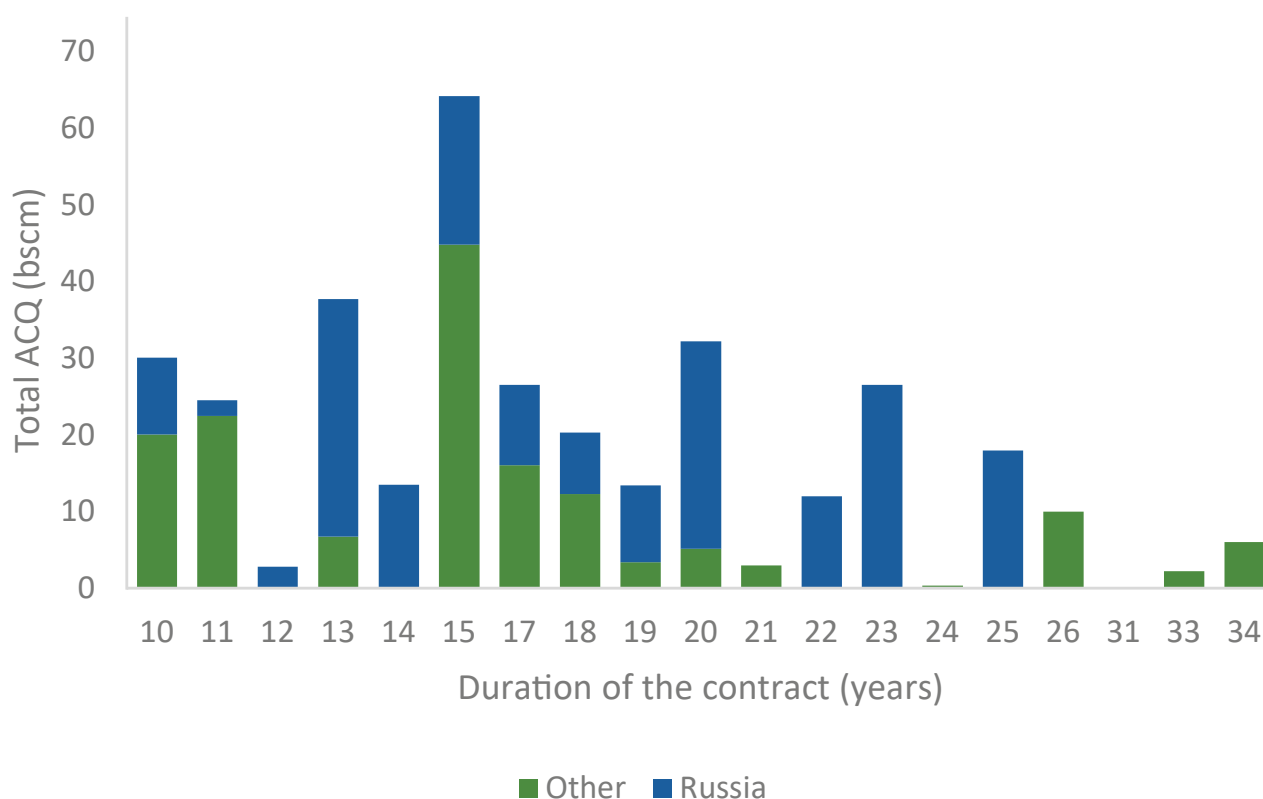
To better understand the far-reaching consequences of Europe's proposed ban on long-term gas contracts, this study explores the conditions of the existing contracts. As of December 2021, 70 long-term contracts¹ for the delivery of pipeline gas to EU countries were active. The total annual contract quantity (ACQ) exceeded 340 billion cubic meters (bcm). By comparison, total EU gas consumption in 2020 and 2019 was 394 bcm and 406 bcm, respectively.

As this section shows, most of these contracts will expire as scheduled by 2050. More importantly, some of them will expire within the next 10 to 15 years. Thus, importers can still extend these contracts one more time before the regulation,

if approved, comes into force. However, the working documents of the European Commission provide an additional suggestion that limits the extension of the contracts well before 2050. These documents state, "contracts for supply of unabated gas signed as of 2030 could not exceed 10 years duration, unless abatement takes place" (European Commission 2021b).

Figure 1 shows the durations of the currently active long-term contracts for natural gas delivered to the EU by pipeline from all countries. These durations range from 10 to 34 years, with the largest volume of gas under a 15-year contract. The durations of contracts between the EU and Russia range from 10 to 25 years.

Figure 1. Durations of the EU's long-term pipeline contracts by source and off-take volume.

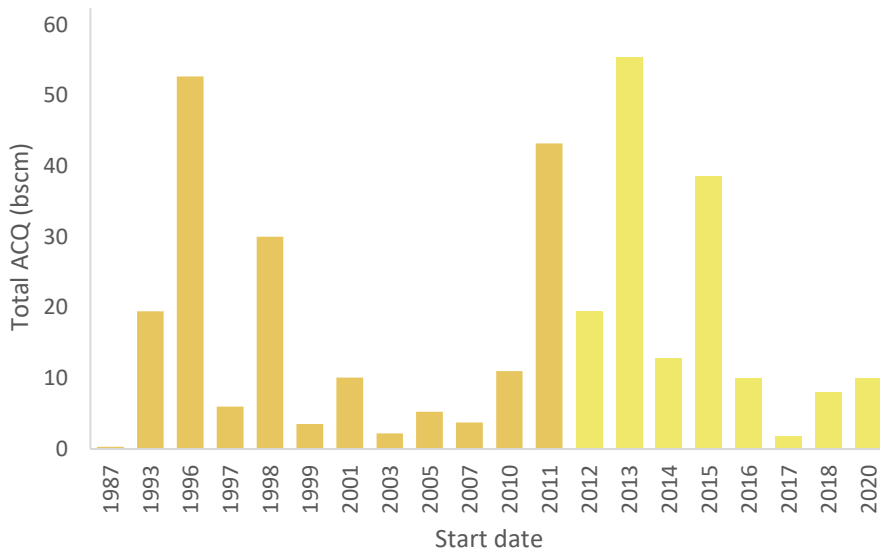


Source: World Gas Model by Nexant.

Roughly 55% of the active contracts (or 181.5 bcm) with delivery to EU countries were concluded before 2012 (Figure 2). Of all active contracts, 85% are scheduled to expire by 2035 (Figure 3). The most common current contract duration is 15 years (18%

of the total ACQ is contracted for 15 years). Thus, the proposed framework leaves room for one more round of extensions that should, by regulation, terminate by 2049.

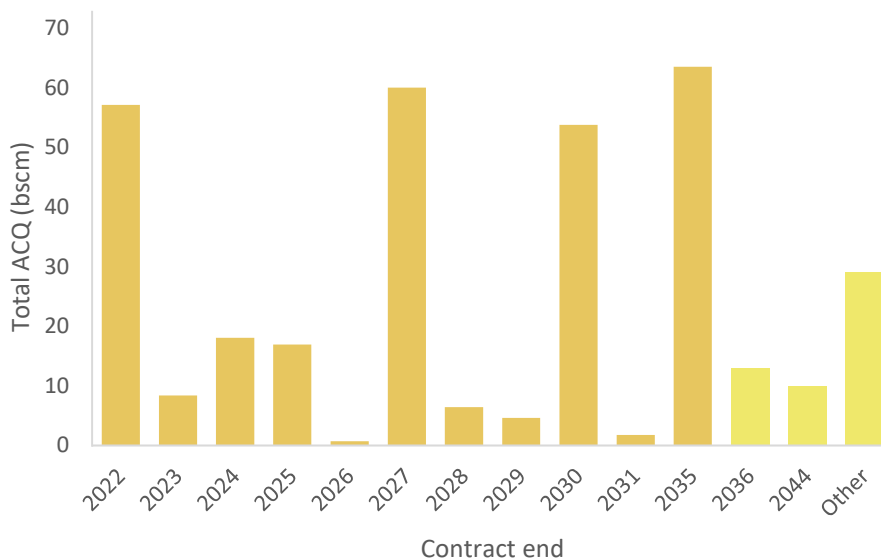
Figure 2. Pipeline contracts by start date and off-take volume.



Note: Orange indicates contracts concluded over 10 years ago.

Source: World Gas Model by Nexant.

Figure 3. Long-term pipeline contracts by end date.



Note: Orange indicates contracts expiring within the next 15 years. "Other" refers to contracts with unknown end dates, including extended contracts.

Source: World Gas Model by Nexant.

Analysis of Existing Long-term Contracts

The European Commission's proposed ban on long-term contracts looks like an attempt to satisfy a wide range of stakeholders. These stakeholders may include supporters of ambitious environmental targets and operators in other traditional industries that are adjusting to new climate policies. Although the proposed framework seems strict, the regulation comes into force in 2050. Thus, suppliers will be able to extend their existing long-term contracts for 10 to 15 years after they expire. In their attempts to find a replacement for Russian gas, European officials explored other traditional suppliers as well as emerging exporters. In March 2022, Germany announced a deal with Qatar for the supply of liquefied natural gas (LNG). However, the duration of the contract was a stumbling block. Qatar planned to expand its liquefaction capacity from 106 bcm in 2019 to over 170 bcm by 2027. It is therefore insisting on contracting with Germany for at least 20 years (Rashad, Mills and Steltz 2022). Constructing additional infrastructure requires significant investment, and the two-phased expansion of the Qatari giant North Field is expected to cost \$50 billion (Ugal 2022). Qatar wants to ensure demand security to justify this costly project.

Germany's talks with other countries also entail long-term agreements. With the United States, it envisages supplies of an additional 15 bcm of LNG in 2022 and about 50 bcm annually until 2030. The trilateral memorandum between the EU, Egypt and Israel also identifies a possible supply route (Krukowska 2022). Israel has just discovered another commercially exploitable deposit with recoverable gas volumes of 8 bcm. It aims to establish long-term energy relations with the EU, as its officials have underscored (Brambilla 2022; Cavcic 2022).

Azerbaijan agreed to increase its exports of gas to the EU to 10 bcm in 2022. However, it has also emphasized its need for long-term commitments from the EU. Later in 2022, it is expected to decide whether to double the capacity of its sole export pipeline to 20 bcm a year. Elnur Soltanov, Azerbaijan's Deputy Energy Minister, stated, "In case of a large volume gas supply increase, buyers should be determined and agreements should be signed" (O'Byrne 2022).

Similar infrastructure challenges exist within African countries, which the EU has also started to seriously consider as potential alternatives to Gazprom. Algeria, Niger and Nigeria revived a plan to construct the multibillion-dollar Trans-Saharan Gas Pipeline, which could transport 30 bcm per year to Europe (Ayodeji 2022; Fox 2022). Nigeria, which is currently building its seventh train, has struggled to increase its output to support Europe. As the company stated, the output of the Nigeria LNG (NLNG) plant was about 70% of its potential capacity. This output left the plant unable to "meet both domestic and international gas obligations" (Clowes 2022).

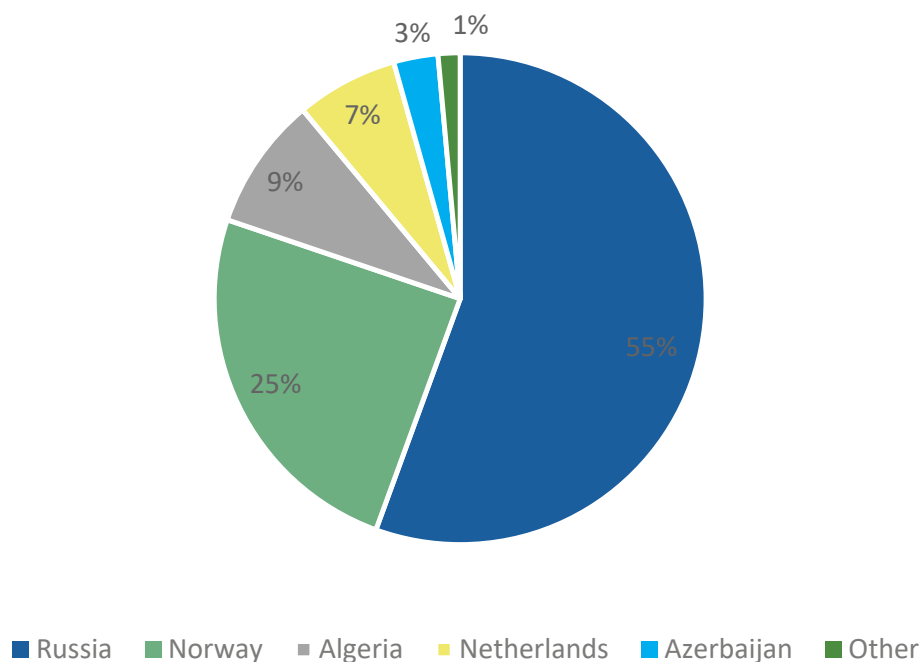
Suppliers' need to conclude long-term contracts is dictated by the economics of the projects. To boost production, all of these suppliers will need to expand their infrastructure by building additional liquefaction plants and terminals or constructing pipelines. Any additional infrastructure requires considerable investment. Moreover, such projects are typically financed by banks. Banks provide loans only when the developers can prove that a project will generate enough revenue to repay them (O'Byrne 2022). Thus, long-term offtake agreements are necessary for these projects to move forward.

Proposed Regulation and Complicated Relationship with Russia, the Main Supplier

Over the last decade, Russia has provided about one-third of the EU's gas consumption via its pipelines, and this share has gradually increased. In the first quarter of 2021, Russia's share of EU pipeline imports was 45%, and it was 42% in the second quarter (European Commission 2021d, 2021e). Most pipeline gas is delivered under long-term contracts between European companies and the Russian company Gazprom.

Additionally, most of the volume under the EU's 70 existing long-term agreements are contracted to come from Russia. These 27 long-term contracts cover 55% of all EU contracted volumes, amounting to about 190 bcm. Less than half as much volume is contracted to come from Norway (19 contracts covering 25% of volume, or about 85 bcm) (Figure 4).

Figure 4. Distribution of the ACQs of long-term natural gas pipeline contracts by supplier.



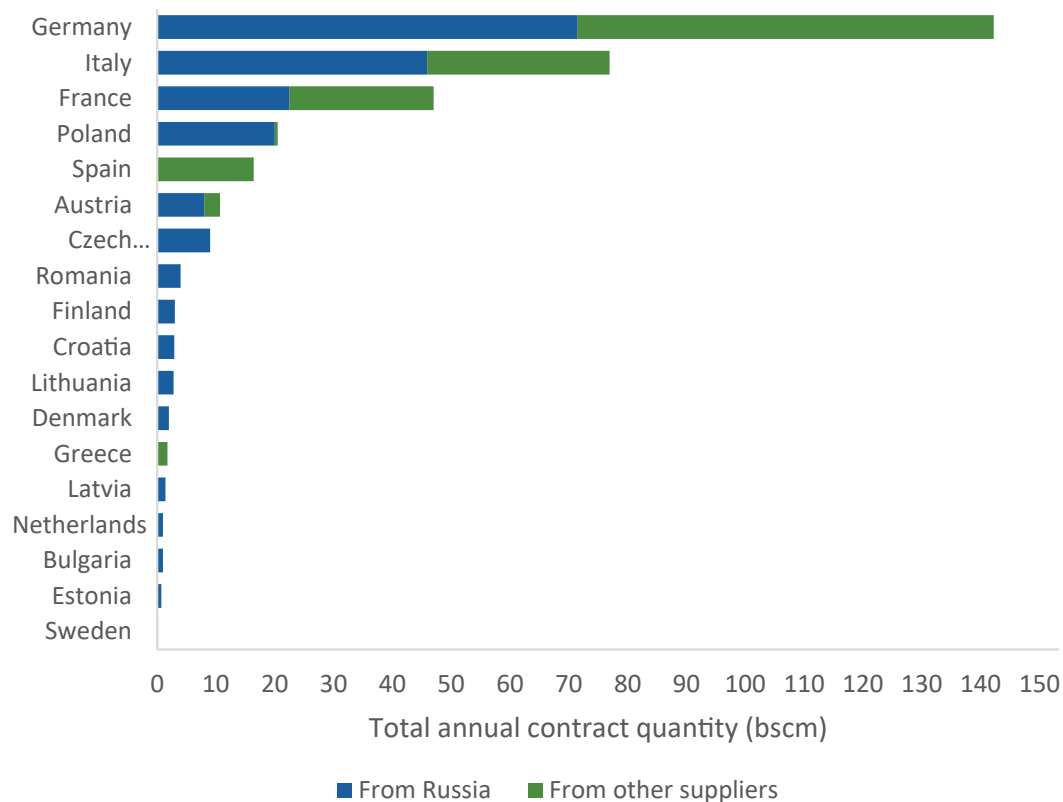
Source: World Gas Model by Nexant.

Proposed Regulation and Complicated Relationship with Russia, the Main Supplier

Figure 5 shows the ACQs of long-term pipeline contracts by country along with their ACQs with Russia. Germany's total ACQ exceeds 140 bcm, and about 50% of this total stems from a dozen contracts

with Gazprom. Germany is followed by Italy and France, with 60% and 48% of their ACQs coming from Russia, respectively.

Figure 5. Total ACQs of long-term pipeline contracts by EU country and gas supplier.



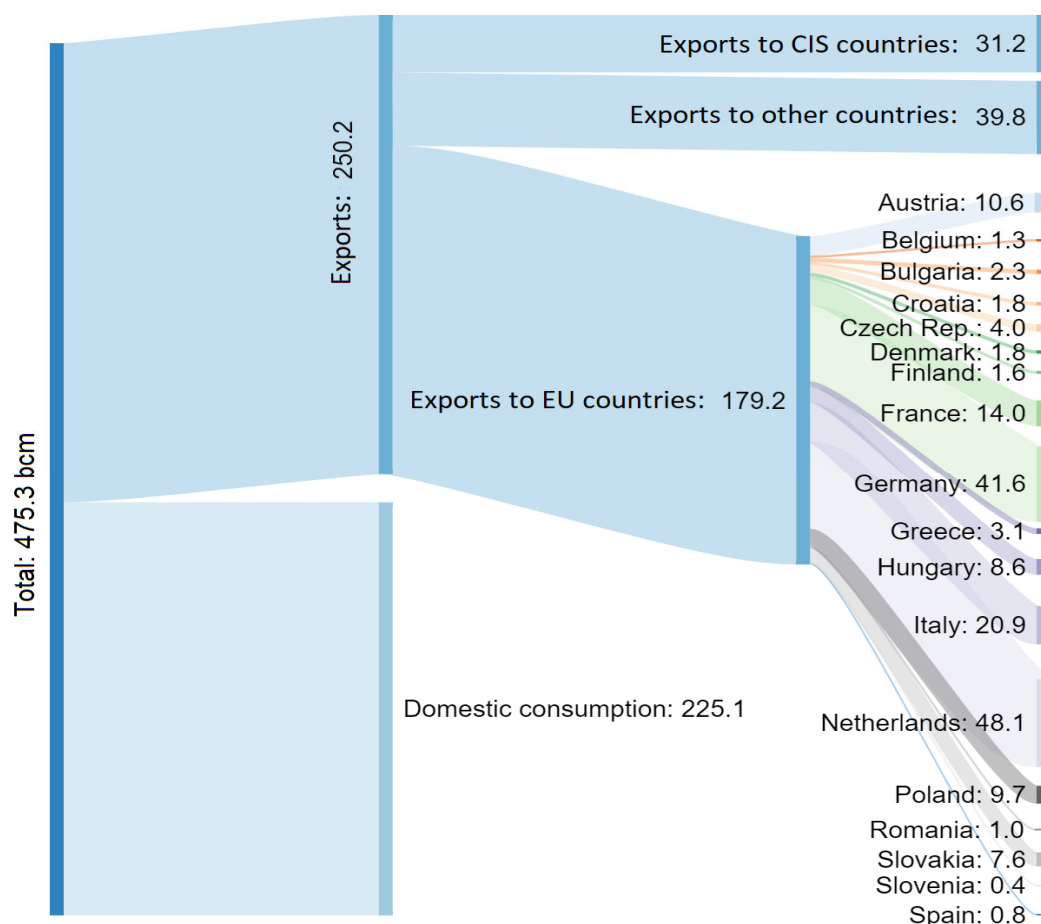
Source: World Gas Model by Nexant.

According to World Bank estimates, Russia is the leader in gas flaring. In 2021, its flared volumes exceeded 25,000 bcm, about 20% more than the flared volumes from Iraq, which ranks second (World Bank 2022). This finding suggests that the proposed regulation partially aims to address the problem of gas flaring, which disproportionately affects the EU's main supplier.

Russia is also highly dependent on its supply to the European market. Hydrocarbon revenues play an important role in the Russian government's budget. In 2021, Russia's share of revenue from hydrocarbons increased to 36% of its budget, or

about \$127 billion (Sokolova 2022). According to expert estimates, about 20% to 25% of Russia's hydrocarbon revenues come from natural gas (Mingazov 2021). High oil and gas prices in 2021 generated about \$40 billion more revenue for the Russian budget than was expected (Mingazov 2021). As of 2020, Russian pipeline supplies to non-Commonwealth of Independent States (CIS) countries amounted to 219 bcm. Of them, 179.2 bcm (or almost 82%) were sent to EU countries, as Figure 6 shows. Additionally, Figure 7 shows major importers in the EU.

Figure 6. Pipeline natural gas flows from Russia in 2020 (bcm).



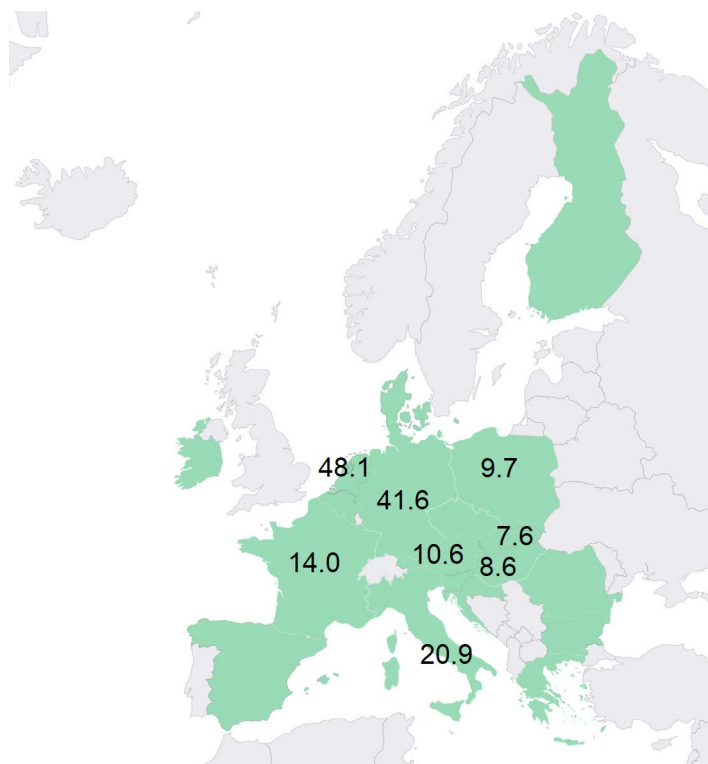
Source: KAPSARC analysis based on Gazprom (2020b).

Proposed Regulation and Complicated Relationship with Russia, the Main Supplier

Energy relations between Russia and its European partners significantly deteriorated at the end of February 2022, when Russia sent troops into neighboring Ukraine. Russia called the action “a special military operation” (United Nations 2022). The EU, the United States and other jurisdictions imposed several rounds of sanctions against Russia. Russia then adopted a law compelling its customers to pay for pipeline gas in rubles. Several customers refused, and on April 27, 2022, Gazprom cut its supplies to Poland and Bulgaria. However, other traders and companies, including the German utility Uniper SE, agreed to the new conditions (Reuters 2022). Nevertheless, the European Commission proposed an outline of a plan “to make Europe independent from Russian fossil fuels well before 2030, starting with gas” (European Commission 2022). This plan was called REPowerEU.

In these circumstances, Russia may maintain its gas supply security by rerouting gas exports to more predictable markets with growing gas demand, such as Asia. Signs of this rerouting appeared long before the Ukrainian crisis. On December 19, 2021, the Russian President Vladimir Putin and the President of China, Xi Jinping, discussed a proposed second pipeline from Russia to China. This pipeline is to be called Power of Siberia 2 and will have a capacity of 50 bcm a year (Simes 2022). This capacity is almost equal to that of the well-known 55-bcm Nord Stream 2 pipeline from Russia to Europe. As of May 2022, this pipeline is yet to be certified (Elliott 2022). Even if the Power of Siberia 2 is launched soon and operates at full capacity, it will not replace the EU export market. It can only carry slightly more than a quarter of the gas that Russia supplies to the EU.

Figure 7. EU importers of Gazprom pipeline gas.



Source: KAPSARC analysis based on data from Gazprom (2020b).

Note: Numbers shown are major imports of pipeline gas in 2022 (bcm).

Long-term Contracts and Alternatives to Russian Gas

In their attempts to find a replacement for Russian gas, European officials explored other traditional suppliers as well as emerging exporters. In March 2022, Germany announced a deal with Qatar for the supply of liquefied natural gas (LNG). However, the duration of the contract was a stumbling block. Qatar planned to expand its liquefaction capacity from 106 bcm in 2019 to over 170 bcm by 2027. It is therefore insisting on contracting with Germany for at least 20 years (Rashad, Mills and Steltz 2022). Constructing additional infrastructure requires significant investment, and the two-phased expansion of the Qatari giant North Field is expected to cost \$50 billion (Ugal 2022). Qatar wants to ensure demand security to justify this costly project.

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The Regulation's Far-Reaching Consequences for the European Market

In the previous sections, we discussed how the proposed legislation may affect European countries externally through changes in their relations with existing and potential suppliers. In this section, we analyze potential impacts of the proposed framework on the internal market. We aim to answer three questions:

How is Europe's natural gas demand projected to change?

How might the proposed legislation affect spot trades of natural gas?

How will the proposed legislation influence security of supply and demand?

Natural Gas Demand in Europe

According to various forecasts, demand for natural gas in Europe may decline significantly by the middle of the century. For instance, in all three future scenarios developed by BP, the demand for gas is expected to fall by 2050. The scenarios only differ in terms of the amount of this decline. Moreover, BP revises its scenarios every year, and each revision predicts a more significant decline in Europe's demand for fossil fuels. The 2020 BP Rapid Scenario assumes an increase in carbon prices and the management of sectoral emissions. In this scenario, natural gas consumption falls from 474 bcm in 2018 to 199 bcm (-58%) in 2050. The more ambitious 2020 BP Net Zero Scenario assumes an additional shift in societal behavior and preferences. In this scenario, gas consumption is expected to decrease even more, to 104 bcm (-78%) in 2050. In the 2020 BP Business-as-Usual Scenario, governmental and industrial measures are expected to continue evolving along their current paths. This

scenario predicts that gas consumption will fall to 360 bcm (-24%) by 2050.²

The declines in natural gas consumption are even larger in the revised scenarios provided by the BP Energy Outlook 2022. The Accelerated Scenario, a revised version of the 2020 BP Rapid Scenario, and the Net Zero Scenario are largely aligned with the Paris Agreement's climate targets. Under these scenarios, gas demand in the EU is expected to fall to 72 bcm or 48 bcm (-85% and -90%) (BP 2022). The decrease in Europe's natural gas demand predicted by BP is substantial even in less ambitious scenarios. In the 2022 New Momentum Scenario, a more ambitious version of the 2020 Business-as-usual Scenario, consumption is predicted to fall to 344 bcm (-29%).³ In this scenario, however, natural gas still accounts for 19% of total primary energy consumption in 2050, compared to 21% in 2019 (BP 2022).

Implications for Spot Trades of Natural Gas

Given these demand projections for natural gas, one may ask to what extent the proposed legislation will affect existing spot trades. If natural gas producers fail to properly manage their emissions, they will no longer be able to form long-term contracts as of 2050. Instead, they will have to set short- or medium-term contracts or sell to the spot market. In this section, we consider whether the volumes traded through exchange platforms will increase relative to current volumes as a result.

The Dutch Title Transfer Facility (TTF) accounts for 74% of European traded volumes (European Commission 2020a). In 2019, the total amount of gas traded on the TTF was equal to about 4,779

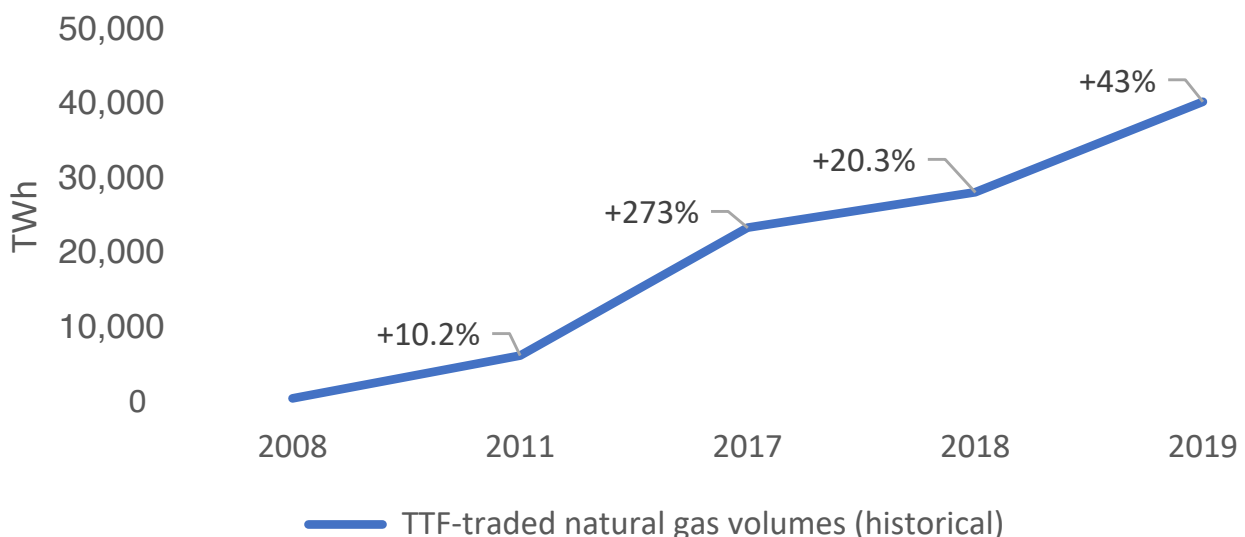
bcm (Heather 2021).⁴ However, the TTF’s net churn rate⁵ is estimated to be 97.1 bcm (Heather 2020). Thus, the physical amount of gas bought from the TTF and consumed in 2020 was equal to about 49 bcm, or one-sixth of the EU’s total consumption in 2020 (European Commission 2020b).

The EU’s gas demand in 2050 is projected to be much higher than current trading levels on the TTF. Even in the most ambitious climate scenario, the BP Net Zero 2020 scenario, gas demand in the EU will be 104.3 bcm in 2050. This level is twice the amount of gas consumed from the TTF in 2020 (49 bcm). In the least ambitious 2020 BP scenario, the Business-as-usual Scenario, gas demand in the EU in 2050 will be about 360 bcm. This projection is similar to that of BP’s 2022 New Momentum Scenario (344 bcm), and are more than seven times the volume consumed from the TTF in 2020.

Theoretically, the gas exchange trade in the EU may reach these levels by 2050 based on the speed of its development in previous years. According to historical data (Heather 2020), volumes traded on the TTF have grown at double-digit rates in recent years (Figure 8). However, the volumes traded via the TTF are still about 10 times lower than those traded via Henry Hub (IEA 2020). Experts therefore say that the European hubs are yet to attain “the characteristics of the cheaper, more liquid, and more active U.S. gas hubs” (Grigas 2017).

Europe’s proposed ban on long-term gas contracts may increase the volumes traded on the TTF and other European exchange platforms many times over. For this reason, the legislation may be regarded as an attempt to increase the liquidity and attractiveness of the European natural gas hubs. However, the extent to which market liquidity can be developed by coercive measures is unclear.

Figure 8. TTF natural gas trade volumes.



Source: KAPSARC, based on data from Heather (2020).

Note: TWh= terrawatthours.

The Regulation's Far-Reaching Consequences for the European Market

Aggressive promotions of spot markets have resulted in negative outcomes for both consumers and the industry in the past. For instance, after a 1996 reform in California, utilities were required to

purchase electricity from the spot market. The state ultimately faced an energy crisis, with a tenfold increase in wholesale spot prices, supply shortages and bankruptcies of the largest utilities (Joskow 2001).

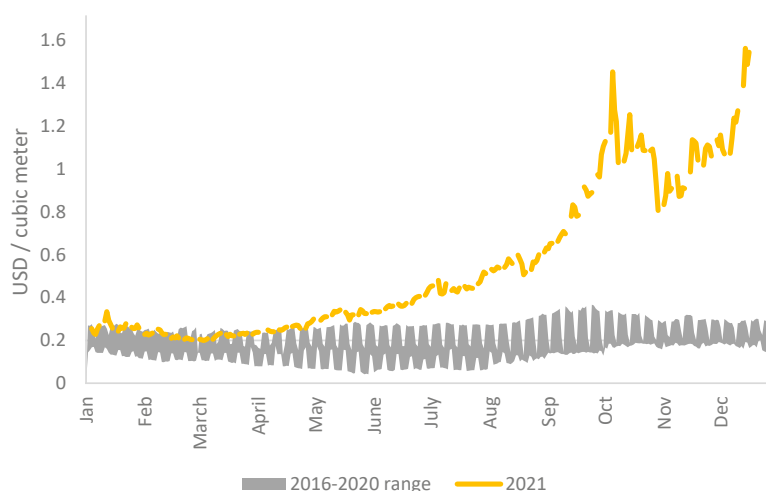
Proposed Legislation and Supply and Demand Security

The ban on long-term natural gas contracts after 2050 may have costly consequences for European customers. The proposed legislation may jeopardize supply security for customers and demand security for natural gas producers. New rules may push producers to increasingly rely on future contracts to hedge risk. However, such contracts remain unlikely to incentivize new projects requiring large capital investments, as discussed above. The security of natural gas demand is essential for traditional producers, such as Russia, and potential producers, such as Israel, Saudi Arabia and African countries. This security can incentivize investments in production facilities and infrastructure. Even for LNG, which is often mistakenly perceived as a commodity without long-term contracts, off-take agreements are necessary to secure financing (Hartley 2015; Rashad 2022; Wolter 2016). Producers will be less interested in providing natural gas to a market that cannot guarantee demand security. In turn, this outcome will create supply security risks for European off-takers. Thus, the proposed legislation will affect gas markets long before 2050.

It is too simple to say that spot markets are good or bad for consumers. The EU gas market is cyclical, and gas often trades much more cheaply on the spot market than through long-term contracts. However, as the experience in autumn 2021 showed, spot prices are unpredictable and are not always beneficial for customers. In contrast, long-term contracts provide more price stability (Asche et al. 2007; Baatz, Barrett and Stickles 2018; Hartley 2015; Neuhoff 2005).

Natural gas spot prices on the TTF beat historical records in the second half of 2021. Prices were high for a variety of reasons. These included the underperformance of renewable energy in Europe; the long, cold winter of 2020 to 2021, and high natural gas demand in Asia (Sergeeva and Fedorov 2022). On December 16, 2021, one cubic meter of natural gas traded at \$1.54 (\$1,540/thousand cubic meters), 6.8 times the average December price in 2016 to 2020 (Figure 9). In 2022, similar price movements are occurring due to the geopolitical crisis.

Figure 9. TTF month ahead futures.



Source: KAPSARC, based on data from Bloomberg.

Conclusion

This study has shown that the EU's proposed ban on long-term contracts of natural gas with unabated emissions beyond 2049 is counterproductive for several reasons. First, most current long-term pipeline contracts are scheduled to expire in the mid-2030s. With an average duration of 10 to 15 years, these contracts can still be renewed once more before the proposed legislation comes into effect in 2050.

Second, the ban will disproportionately affect the EU's relations with Russia, its major natural gas supplier. Russia is a well-known leader in gas flaring volumes, which the proposed regulation may be intending to address. However, Russia provides almost half of the EU's pipeline imports. Russia is also dependent on revenues from European countries, whose demand represents almost 82% of its exports. It will be very difficult for either party to survive without the other. At present, no other exporter can substitute the volumes supplied to the EU from Russia. Simultaneously, Russia cannot reroute its production from Europe to another importer. Pipeline routes have historically been built west from Russia, limiting Russia's options.

Third, the EU's unwillingness to conclude long-term contracts may hinder its negotiations with other potential natural gas suppliers that can substitute for Russian natural gas. These suppliers will likely need to secure future revenue before proceeding with capital-intensive projects. The negotiations between Germany and Qatar in 2022 provide an example of how future negotiations may proceed.

Fourth, even if Europe's natural gas demand falls by 2050, as BP's scenarios predict, it may remain substantial in absolute terms. The BP New Momentum scenario projects natural gas demand of 344 bcm in 2050. The proposed EU ban may result in a large share of the natural gas trade moving to

the spot market, which is naturally volatile. The spot market will have to respond by rapidly developing a futures market and hedging. It will also need to create new types of financial instruments, contracts and relationships.

The proposed legislation is intended to foster energy transition, but it may have a chain of negative implications, as follows:

The EU's relations with existing natural gas exporters may become more complicated. Its relationships with new potential exporters that can substitute for Russian gas but need to secure revenue in advance will also become complicated.

It may threaten the security of demand for natural gas. Traditional and potential producers may start rerouting supplies to the Asian market. This rerouting will reduce prices in Asia and increase the region's competitiveness in all industrial segments relative to the more expensive European market. Producers worldwide may underinvest in new gas projects or even choose not to enter the market. These decisions may lead to a global deficiency of natural gas and further increases in prices.

The legislation may also threaten the security of supply. European buyers will be unable to obtain guarantees that the volumes required will be available in the long run.

The ban may make it more difficult for the EU to achieve its climate targets. In the second half of 2021, high natural gas prices led to greater demand for cheaper fuels with higher carbon emissions, such as coal. If prices remain high and the problems with balancing the intermittency of renewables remain unsolved, this issue may persist (Sergeeva and Fedorov 2022).

Natural gas suppliers may undertake measures to mitigate the emissions from their products in response to the ban. According to the regulator, the restrictions will cover “long-term contracts for unabated fossil natural gas” (European Commission 2021a). Thus, the restrictions will not impact carbon-neutral forms of traditional hydrocarbons. The market for such hydrocarbons is already rapidly developing. For instance, Russian gas-producing companies have declared plans to introduce different methods of decreasing emissions. These methods range from energy efficiency measures to carbon-capture and storage technologies (Gazprom

2020a; Novatek 2021; Rosneft 2021). If these proposed plans come to fruition and the European Commission accepts the measures as proper emissions abatement, then the suppliers’ contracts can be extended. However, these contracts are likely to set higher prices to cover the producers’ costs of abatement. Thus, consumers will ultimately pay to realize the proposed framework. Many questions, such as which measures will be considered proper emissions abatement for which supply chain elements, will arise. Until a market-wide standard for carbon-neutral fuel emerges, the abovementioned threats to supply and demand will remain.

Endnotes

¹ In this discussion paper, we define a “long-term” contract as a contract that covers a period of at least 10 years after its signing.

² The decrease is calculated relative to the level in 2018, when gas demand in the EU was equal to 474 bcm (European Commission 2018).

³ The decrease is calculated relative to the level in 2019, when gas demand in the EU was equal to 482 bcm (European Commission 2019).

⁴ According to Heather (2021), the total traded volume on the TTF in 2020 was 46,690 terawatt-hours (TWh). The Gasunie Unit Converter (Gasunie 2022) converted this volume to 4,779.19 bcm.

⁵ The net churn rate is defined as “the total traded volumes at a given hub, divided by its consumption” (Heather 2019).

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Notes

Notes

About the Author



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Zlata Sergeeva is a senior research analyst at KAPSARC focusing on political issues in energy markets, especially the natural gas and carbon-neutral hydrocarbon markets.

About the Project

The project “The Future of Hydrocarbons in a Carbon-Managed World” aims to estimate the consequences of international carbon regulations for hydrocarbon markets. Conventional hydrocarbon producers are starting to respond to regulations with carbon-neutral versions of their products. Currently, the market for carbon-neutral liquefied natural gas is more developed than the market for carbon-neutral oil. This project focuses on accumulating existing experiences in the delivery of carbon-neutral hydrocarbon products. It also analyzes the likely transformation of market fundamentals due to the increasing carbon neutrality requirements. Finally, it aims to propose a pathway to help Saudi Arabia maintain its competitiveness in the evolving hydrocarbons market.



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