

# The swing in Dutch gas: From autonomy to full dependence

**The role of long-term contracts**

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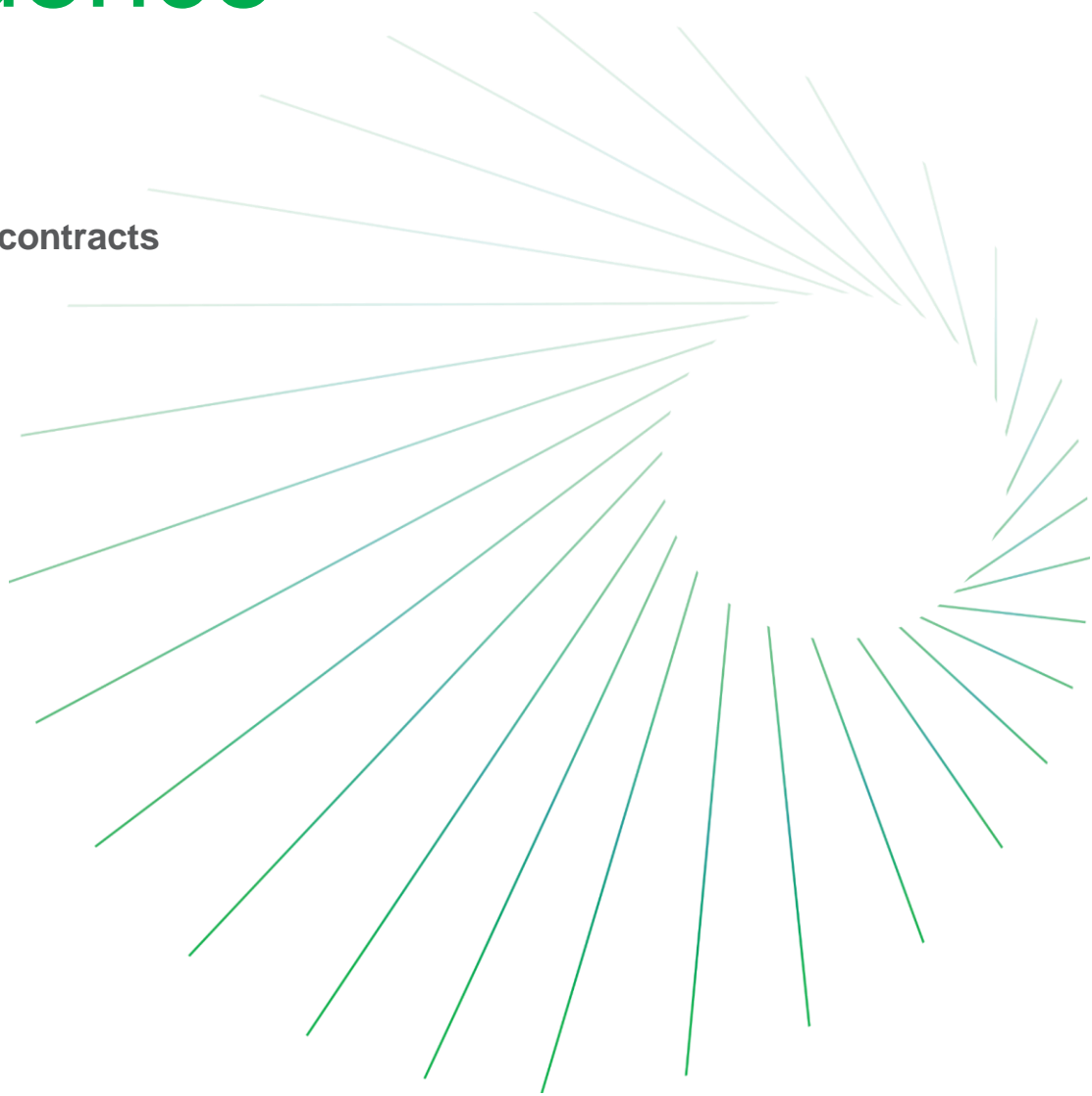
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# The swing in Dutch gas: From autonomy to full dependence

## Report on Dutch and European security of gas supply

Are long-term contracts needed to help assure supply security?

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### Executive summary

The Dutch government has decided first to lower and then stop production of natural gas from the Groningen field as early as possible. The decision implies that the European Union's largest exporter of natural gas will become a large importer of gas within four years. As early as 2022, existing export obligations will absorb all domestic production of gas—as well as existing contracted imports—and force the Netherlands to source the full amount of its own domestic consumption with new imports. In this study, we compare the Netherlands to neighboring large gas importers and their handling of their gas supply security. An important context is that few other EU countries have such a large dependence on natural gas as the Netherlands, particularly in the residential sector. Despite efforts by the Dutch government to lower gas demand (a result of the so-called “van gas los” campaign and the new Climate Agreement), we expect natural gas to remain the second-largest source in Dutch energy supply for the foreseeable future.

The growing scale and liquidity of traded spot markets for gas in Europe—led by the Netherlands' own Title Transfer Facility (TTF)—decrease the importance for the security of supply of the long-term contracts (LTCs) that have for many years been a key element of the European gas market. A key strategic policy question for the Dutch government is the extent to which it will be possible to achieve a sufficient level of security of supply for gas consumers by relying on the functioning of the TTF market, or whether companies operating on the domestic market should be encouraged to engage in new LTCs with external suppliers. Arguably, this is the key energy question the government faces, and it is urgent.

The increasing availability of global LNG in the hands of global aggregators, who themselves hold portfolios of LTCs, may support a strategy that relies on spot markets. Nevertheless, it should be taken into account that Europe is in competition over these potential supplies with buyers from all over the world, particularly Asia.

The Netherlands is currently well-placed to rely on the TTF spot market to attract volumes of gas that Dutch customers will need. However, a policy of relying fully on the spot market to ensure the security of supply is not advisable for two reasons:

1. It would require full confidence in the unwavering reliability and liquidity of the TTF hub since all Dutch domestic consumption needs to be sourced from the TTF in a context of a changing gas market in Northwest Europe where indigenous production is decreasing sharply.

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2. There is an imminent prospect of future shifts in Gazprom’s commercial strategy, in part thanks to pressure from European authorities, which are likely to push it toward a greater reliance on spot sales in the Netherlands (and away from current arrangements in which volumes are nominated by buyers), potentially giving it a greater role in shaping TTF hub prices.

Given these uncertainties, IHS Markit believes that a pure “market-related” approach may represent a step too far. It would make sense for LTCs to maintain some role in Dutch gas supply for the foreseeable future. No other country in Europe is planning a complete disappearance of LTCs during the same period in which its domestic gas production goes into sharp decline—and with good reason (see Table ES-1).

The analysis of six other large EU consumers (Germany, the United Kingdom, France, Italy, Belgium, and Spain) illustrates this point. Companies in these countries have aggregated gas volumes (pipeline and LNG) from different sources, or countries, under LTCs to meet domestic demand. In 2018, LTCs held by these companies covered almost 80% of the domestic needs of the countries they are active in. Furthermore, they already committed to volumes much further in the future—some well into the 2030s—and it is expected that this coverage will to a large extent persist in the future. This situation contrasts with the Netherlands, where no such future coverage exists.

**Table ES-1**

Share of demand covered by committed LTCs and available domestic production		
Country	Ranking	Coverage in 2023
Spain	1	94%
Italy	2	74%
Germany	3	64%
France	4	63%
United Kingdom	5	48%
Belgium	6	36%
Netherlands	7	0.4%

Source: IHS Markit, GasTerra © 2018 IHS Markit

## Introduction

The security of the gas supply that heats Dutch and European homes and businesses through even the coldest winters is easily taken for granted, by public and politicians alike.

This is not because there is something special or magic about gas supply. It is because the architecture of the institutions (political and commercial) that have governed the supply of gas and the professional dedication of the people who work to supply it have made it secure. Public policy in the Netherlands created these institutions: first the *gasgebouw*, with its unique mix of public interest and commercial incentives, and then the “gas roundabout,” which has enabled wide diversity of supply while preserving the value both of human skills and the material hardware of the Dutch gas infrastructure. These policies and the people who have put them into effect have assured continuous, universal secure supply for more than sixty years. It is a remarkable record.

However, a new approach is now needed for the Netherlands to continue to enjoy comparable security in the future given the sharp reduction in domestic gas output following recent decisions about production from the Groningen field due to induced seismicity. Groningen will cease to produce gas much earlier than had been previously expected or planned and before the depletion of the field. Most remaining gas production in the Netherlands will be committed to export contracts by 2022.

There are also other changes at work. For many years, LTCs have been a key building block for supply security in countries that import gas—as the Netherlands will increasingly have to do. With the development of spot markets in gas traded at hubs like the Dutch TTF and the British National Balancing Point (NBP), there are now questions as to what role LTCs should play, today and in the future. This IHS Markit report examines these questions. The analysis and resulting report were commissioned by GasTerra. The content of the report reflects the professional opinion of IHS Markit.

### **The structure of this report**

Section 1 will begin the report by describing the security of gas supply concept. Supply security requires both infrastructure (the capacity to deliver gas) and supply (the actual delivery of gas), and both are vital. Gas supply is only secure if (i) the peak demand in the coldest weather can reliably be met both by having enough gas available and enough capacity in the pipelines to deliver it to everybody who needs it, and (ii) if there is going to be enough gas available for customers’ needs from the various supply sources for as long into the future as customers are going to want it. This section will explain that the legal and regulatory rules that govern supply security—at the European and national levels—focus on the former. Ensuring that gas can be obtained in sufficient volumes is a matter for market operators—hence the relevance of these operators’ commercial purchasing strategy and the mix of long- and short-term gas.

Section 2 of the report will then explain the particular challenge the Dutch gas industry now faces, as imports and exports over the next 10–12 years relate to declining production and a consumption path that is consistent with the country’s energy transition ambitions. This section will then describe the existing scope of the Dutch gas security of supply policy, how it has evolved, in what areas it is prepared for tomorrow’s world, and what choices it needs to make in areas where it is not yet prepared. On this latter point, the report highlights the government’s responsibility to take a policy position on the commercial purchasing strategy that Dutch gas companies should follow: LTCs, short-term markets, or a mix of the two?

Section 3 will explore the ways in which LTCs for gas supply form part of the energy picture in the other European countries that are major users of natural gas. Germany, Italy, France, the United Kingdom, Spain, and Belgium together, with the Netherlands itself, account for more than 80% of the European market for gas. Companies that supply gas in these markets also make LTCs for gas supply, and this section of the report will show the current status of these contracts.

Section 4 of the report will look closely at the role of the global LNG market in supplying gas to Europe and the Netherlands and the increasing importance of companies that act as LNG portfolio aggregators that operate across the LNG value chain and supply LNG not only to Europe but also globally. This will include a discussion of the volumes of gas that these aggregators have available in their own long-term portfolios.

Finally, in Section 5, we will draw conclusions about what the Netherlands can learn from the practices of its neighbors, given the challenge of designing a gas policy that is fit for the energy transition, that ensures that customers will be kept warm and offices and factories continue to function, and that adapts to the end of an era of 60 or 70 years of Dutch national gas production.

## Section 1

# Security of gas supply—What is it?

Policymakers and commercial actors easily agree on the importance of a secure gas supply. Yet it is not so easy to find a good definition of exactly what is meant by security of supply. It includes the assurance that there will be sufficient *infrastructure* to deliver gas in extreme winter conditions, at least to customers who have no alternative sources of energy available, and that there will be enough *gas* owned or under the control of those customers' gas supply companies to make sure they can be supplied through the infrastructure.

In recent years, the European Union has established rules and procedures for the security of supply. The EU Security of Gas Supply Regulation provides the legal framework for gas supply security in member states, effective since 1 November 2017.<sup>1</sup>

- For the most part, these rules and procedures attempt to deal with extreme conditions of weather or to minimize the impact or prospect of interruptions in supply for political or nonmarket reasons. They are summarized in requirements that European national governments prepare “Preventive Action Plans” and “Emergency Response” measures.
- The new regulation includes references to LTCs. It includes a requirement (Article 14, paragraphs 6 through 12, and Article 15) for companies to notify their national authorities, and through them, the European Commission of the nature of new (and existing) LTCs. The concern here is clearly not that companies should *have* such contracts to enhance their security of supply, but that they should not have too much *concentration* in contracting, which would impair supply security.

Gas companies are strongly aware that it is equally important to make sure that the commodity itself is available—preferably in conditions where the buyer can specify how much gas should be delivered on a particular day (“buyer nomination”). Most gas buyers feel more secure in those conditions when they have title to the gas and can nominate daily deliveries from a portfolio of such supplies than they do when the seller chooses whether to offer gas on the spot market. The ideal of supply security for most buyers is to have a mix of gas to which they have title and a well-functioning spot market. They recognize that robust infrastructure and diverse sources of supply, as specified in regulations, are a necessary but not sufficient condition for secure gas supply. Many of the national plans prepared under the Security of Gas Supply Regulation make this point clear.

In the Netherlands, for example, security for the peak supply of gas—defined by law as that which customers need when the daily temperature drops to a level between -9°C and -17°C at De Bilt weather station—is the responsibility of Gasunie Transport Services (GTS), the transmission operator, which is also responsible for the ability of the infrastructure to deliver gas.

GTS itself points out in the official document under the Security of Supply Regulation:

“Although GTS can assure the ability of shippers to deliver gas to their customers through the infrastructure, and proposes to invest to enable shippers to have a wide choice of supply sources, GTS is not in a position to assess whether in aggregate the shippers will always be able to obtain sufficient gas to assure the gas

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<sup>1</sup> Regulation (EU) 2017/1938.



supply itself. **That is a matter for the market, and will depend on global market conditions that are outside GTS control.**<sup>2</sup> (Emphasis added).

In Italy, the Preventive Action Plan (PAP) expresses concern about spot market and economic risks:

“The increase of spot volume could represent a risk for security of supply caused by the lack of a minimum guaranteed flux of gas as provided by long-term contract...”

and the PAP draws attention to a preventative measure against “gas price volatility, market instability,” by means of “contractual clauses aimed at preventing the interruption of supply due to variation of market and economic conditions.”

Clearly, these are commercial, contractual issues relating to continuous, stable gas supply.

And in Germany, reference is made to

“The diversification of supply source and transmission routes;

Stable relationships with supplier countries;

Long-term gas supply contracts;

Highly reliable supply infrastructure which includes underground storage facilities”

Public service obligations are imposed on gas supply companies that must have contracts in place with transmission system operators (the various German counterparts of GTS in the Netherlands) to ensure that customers in the category of “protected customers” are supplied at all times.

This “availability of the commodity” at all times to protected customers (customers with no other option but to use gas for heat) is the type of security that is a “matter for the market.” It depends on the capability of the gas supply or trading companies to buy enough gas to satisfy all the customers’ needs. Gas companies do this either by making LTCs to buy gas (for anything from 3, 5, or even up to 25 years) or by trading in short-term markets to buy what they need for the coming days, weeks, or months.

This is the context for needing to understand the balance between the short and long term. As short-term markets have become better developed in recent years, the dependence on LTCs has diminished.

However, it has not disappeared.

The next sections of this report look at how—today and for the next 10–15 years—LTCs fit into the supply-demand balance of the Netherlands (Section 2) and its six major neighboring gas-consuming European countries in Western Europe (Section 3) and what role they play in the security of gas supply.

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<sup>2</sup> GTS, *Netwerk Ontwikkelings Plan 2017* (NOP2017), p. 70.

## Section 2

# Long-term contracts in the changing Dutch gas industry

## The Netherlands on the threshold of a new era for gas

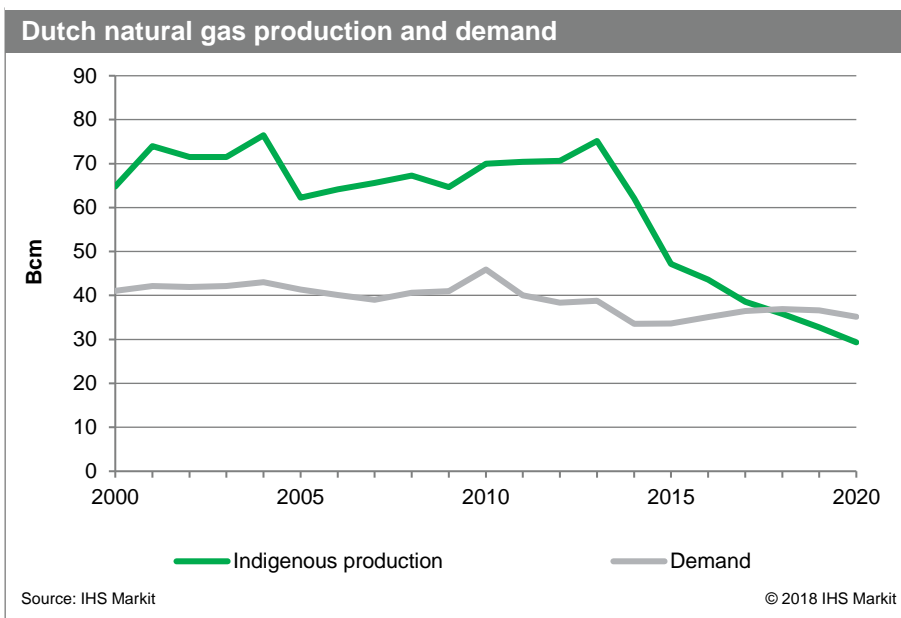
The Netherlands both exports and imports gas under LTCs. Although Dutch production has substantially exceeded national gas demand for more than 50 years, import contracts have been signed since the 1970s for reasons both of long-term national supply security (slowing the production rate and prolonging the life of the Groningen field for future generations) and of a commercial strategy that maximized the value of the different quality of Groningen gas and the special flexibility of the field.

Figure 2-1 shows that the Netherlands is at a moment of fundamental change.<sup>3</sup> After many decades of surplus, 2018 may be the first year in which Dutch gas consumption exceeds Dutch gas production. Although it has long been known that this day will come—indeed the policy of the gas roundabout was developed and has been implemented in anticipation—today's situation is marked by the fact that the transformation of surplus to shortage of production is not gradual, as had been anticipated, but very sudden.

The consequence for the Dutch gas balance is even more dramatic than the sharp decline in Figure 2-1 implies.

This result is because the obligations to supply gas committed to export in the time frame allotted are, for all intents and purposes, absolute. Each of the neighboring countries supplies gas to households whose equipment can only safely be used with the quality of gas they buy from the Netherlands. Belgium, Germany, and France all have programs under way to convert every one of their (several million) homes that are so equipped to be able to switch to other sources of gas or other sources of heating. However, these programs, simply because of the numbers involved, will take time. GasTerra is under contract to continue these supplies in line with these programs (which have already been accelerated).

Figure 2-1



<sup>3</sup> The units used in this report, although quoted as *volumes* (billion cubic meters) are all expressed in terms of a standard *energy content* that is close to the average of most natural gas used in Europe. This has a calorific value that is higher than Groningen gas—which is the customary reference point for gas statistics in the Netherlands. Accordingly, to convert from billion cubic meters in this report to billion cubic meters quoted in Dutch official sources, it is necessary to multiply by 1.13, which is the ratio of the two heating contents.

As a consequence, most gas production in the Netherlands will be committed to export contracts by 2022. Figure 2-2 shows a best estimate of how this will work out, year by year.

The top line (production) only just exceeds the export obligation (lower line) in 2018. The small bar at the bottom shows that what remains—about 4 or 5 Bcm—will be available for Dutch consumers from this year’s Dutch production. By 2020, there will be effectively no surplus left, and, for at least three years from 2022 onward, the export commitments will have to be met not only from Dutch production, but also from some imported gas as well.

As the conversion programs in neighboring countries proceed and the contractually committed volumes decline, some small quantities of Dutch gas are again likely to become available to contribute to the overall Dutch supply and demand balance.

This is not quite the whole story. GasTerra, the long-functioning purchaser of national production volumes, also has import contracts that mean it has reliable sources of gas from foreign supplies—mostly Norwegian and Russian. Between now and 2022, these contracts go some way to covering Dutch gas demand, as shown in Figure 2-3.

Figure 2-3 shows how, together, the available Dutch gas and the committed import contracts can cover about 30% of this year’s (2018) expected annual demand. However, this figure declines very rapidly to 14% in 2020 and just a few percent in 2023 and 2024. In 2022, the visible coverage actually goes negative. Under the current contractual situation, the balance of supplies—70% in 2018, 86% in 2020, and the whole market in 2022—will need to be purchased in the spot markets on a short-term basis.

The actual outcome can be more dramatic if the forecast for the track of Dutch domestic demand should turn out to be wrong (as happens with forecasts). The forecast in this chart takes into account steadily increasing energy efficiency in numerous sectors, especially in regard to (i) the expected impact of the Dutch “Climate Agreement concept” on the building sector,

Figure 2-2

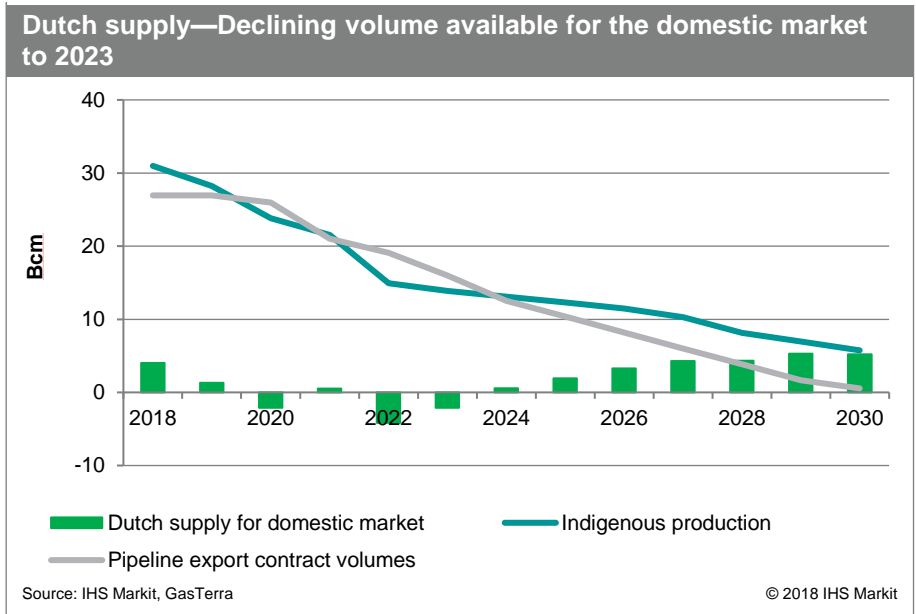
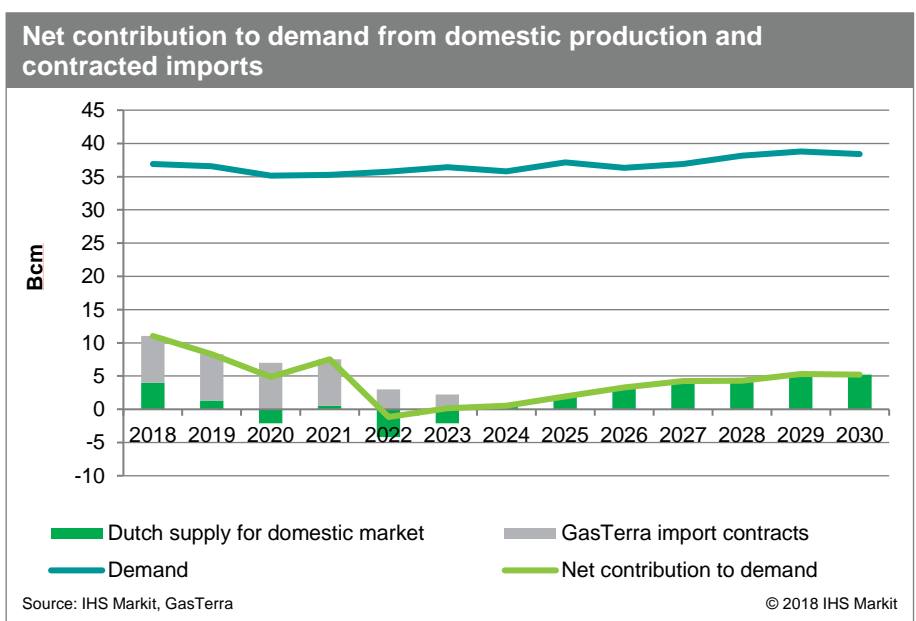


Figure 2-3



(ii) the national policy to ban coal use for electricity generation (thus increasing gas demand), and (iii) the proposal to implement a national price for carbon dioxide—which the Dutch government has been advised will lead to lower gas demand. IHS Markit considers that these assessments may be optimistic in terms of the rate at which effective energy efficiency measures can be introduced and sustained and may underestimate the call on Dutch electricity (and thus Dutch gas) as Germany also moves to diminish coal use without adequate national replacement. Furthermore, a large part of the volumes supplied to the Netherlands in the period beyond 2025 is based on expected future production reported by Dutch producers. These figures normally have a large uncertainty range.

### **New policies for the security of supply**

The Dutch gas industry is divided between companies that own the pipes—GTS and seven regional distribution operators—and companies that produce, or buy, and resell gas to customers. By European law, the same company is not allowed to own both the pipes and the gas in the pipes. This so-called “unbundling” has been perceived as necessary to ensure effective competition to benefit consumers.

As evident in Section 1, GTS has certain obligations to make sure there is enough infrastructure and enough “extra gas” to maintain supply security in extreme conditions—the gas that is needed to keep protected customers warm and supplied for the coldest temperatures that occur only once every 50 years. GTS will do this, but insists clearly on this extra point:

“GTS can assure the ability of shippers to deliver gas to their customers through the infrastructure ... (but) is not in a position to assess whether in aggregate the shippers will always be able to obtain sufficient gas to assure the gas supply itself. That ... will depend on global market conditions that are outside GTS control.”<sup>4</sup>

Dutch government policy has been careful of supply security from the beginning. The prudent management of the Groningen field, incentives to develop small fields onshore and offshore, and the architecture and taxation structure of the *gasgebouw* itself have all been designed to this end. When it became clear that one day the Netherlands’ own supply of gas would begin to drop below the level of the country’s needs, the established policies were supplemented with the *gas roundabout* policy.

The roundabout was conceived, developed, and implemented to deal with the decline of domestic Dutch production. As a result, today, there are international pipelines and LNG receiving terminals in place that make gas supply possible from many sources. They place Dutch infrastructure at the center of a wide European supply market—preserving an ongoing role for the high-quality skills and material in which the country has invested, even for when the gas would no longer be there.

The roundabout contributes to assure the security of supply in a different way from the earlier reliance on domestic gas production.

However, the roundabout covers only the “hardware” and the people skills. What guarantees are there that gas will in fact be available to cover Dutch consumers’ needs? As we have seen, this “will depend on global market conditions” that are outside the control of the system operator. It is also outside the scope of what the government can command.

<sup>4</sup> GTS, *Netwerk Ontwikkelings Plan 2017* (NOP2017).

This is where the commercial approach to be taken by gas companies comes into play. Should they seek multiyear contractual commitments from gas suppliers that guarantee to them, as buyers, the ownership of gas reserves that the supplier will produce on their behalf (LTCs)? Or should they leave their purchasing decisions until there is clear market visibility in the traded markets, trusting that suppliers will come forward with offers that fully cover their customers' demands, if the price is right? Should they even withdraw from the business, leaving purchasing decisions in their customers' hands, in direct trade with gas producers?

The Dutch government, in line with its long-standing care about the security of supply, needs now—faced with a changed world—to clearly signal which of these commercial policies should be the preferred approach. If a mixed approach is the best option, then it needs to support the development of suitable corporate structures and missions to enable such an approach to be effective—a revised *gasgebouw* that will outlive the “exit strategy” referred to in the October 2014 ministerial letter to the Second Chamber.<sup>5</sup> Public-private partnership is a traditional strength of the Dutch approach, harnessing the market to contribute effectively to public goals.

The next section of this report will examine the present position of LTCs in six other European countries—Germany, Italy, the United Kingdom, France, Spain, and Belgium. Together with the Netherlands, these six countries account for more than 80% of European gas demand. These countries have long practice in importing gas and different experiences of market liberalization over the past two decades. There are insights and lessons for the Netherlands from the country's experience and current exposure to LTCs in the increasingly liberalized and global gas markets.

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<sup>5</sup> Letter of 7 October 2014 from Minister of Economic Affairs to Second Chamber of Parliament, pp. 4–5 “Verder wordt geadviseerd om, gegeven de teruglopende gasreserves in het Groningenveld, na te denken over de termijnen en de voorwaarden waaronder alle partijen uiteindelijk het Gasgebouw kunnen verlaten (de ‘exit strategie’)... Aangezien aanpassing van de governance van GasTerra mogelijk een wijziging van de in het verleden met Shell en ExxonMobil gesloten overeenkomsten noodzakelijk maakt, acht ik het wenselijk eerst deze exit strategie te ontwikkelen alvorens op dat vlak definitieve stappen te nemen.”

### Section 3

## Long-term contracts in other European countries

Long-term contracts (15–30 years) have been the backbone in secure gas supplies for Northwest European countries for more than 50 years now. They created the foundation for massive upstream and infrastructure investment: starting with the development of the Groningen field, the creation of an international network—intra-European as well as supply from the East and the South—of tens of thousands of kilometers of pipelines and the development of the North Sea gas deposits. The rise of marketplaces to trade excess/noncommitted volumes (both from overcontracted aggregators as well as producers) offered buyers an opportunity to replace part of their sourcing away from long-term commitments, providing additional flexibility in the sourcing. With the bulk of infrastructure in place, the role of LTCs in providing investment security has substantially decreased in the Northwest European market. Hence, parties are increasingly seeking medium-term contracts (5–10 years), giving them more predictability about their supply-demand balance during the time span of the contract. Furthermore, purchasers started to diversify away from traditional pipeline sources by including LNG import contracts in their portfolios. These contracts can roughly be divided into “buyers-nominated” (fixed) and “sellers-nominated” (flexible) contracts.

In 2018, the six countries under review in this chapter on average had close to 80% of their domestic consumption covered by medium-term contracts and LTCs (pipeline and fixed LNG). This proportion declines to about 30% that is currently committed for 2030. As will become apparent from the analysis below, purchasers continue to assess their demand coverage. They appear to seek to extend or renew contracts when coverage drops, often aligning with national energy policies. In this chapter, we will assess the different strategies pursued in the six countries.

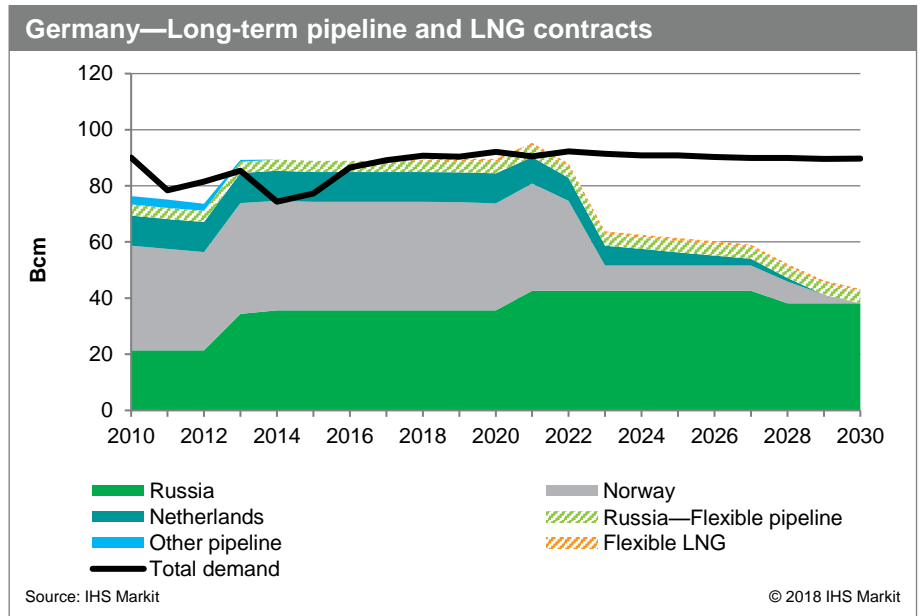
- Germany
- Italy
- United Kingdom
- France
- Spain
- Belgium

## A. Germany

### *Current supply situation and historical background*

The amount of gas bought by German companies under LTCs is still almost sufficient to supply the current and forecast annual needs of the whole country for the next few years (Figure 3-1). Up to 2022, between 85% and 100% of Germany's expected demand can be met from existing contracts—mainly with Russia (green shading) and Norway (gray shading). Moreover, the chart shows that about half of Germany's expected demand can be met throughout the 2020s from existing contracts and that large volumes of gas are still expected to be available from Russia's Gazprom to German buyers beyond 2030—some contracts in fact stretch as far as 2035, 2038, and 2043.

Figure 3-1



This result reflects the fact that German companies in the early 2000s were still willing to negotiate 30-year contracts—and indeed they considered these necessary both for commercial and strategic reasons. Norwegian gas is delivered to Germany under the Troll Gas Sales Agreements (TGSAs). These began deliveries in 1992, building up to full (or “plateau”) volumes by 2002, and the contracts expire in 2022. If they are renewed or extended in the form of LTCs with effect from that date, then Germany will continue to see 75% or more of its expected demand for gas to be covered by LTCs through 2030 and beyond.

### *Future coverage*

IHS Markit expects that, for reasons both of commercial strategy and political balance, the German side is likely to look for such an extension. On the Norwegian side, the question of security of demand for the Troll field (which is expected to remain in production until the 2060s) is also likely to persuade the sellers to negotiate an extension. Since there is no need to underwrite significant new infrastructure and given there are uncertainties about the long-term level of total demand for gas as the energy transition proceeds, contract extensions are more likely to be for perhaps 10 or 15 years than for the original 20 to 30 years.<sup>6</sup>

Note that Figure 3-1 also shows that in some years of low demand, the amount of gas available to German buyers under LTCs exceeded the amount that their customers needed. LTCs have “flexibility terms” so that buyers can take less (or more) than the average annual quantity if they cannot resell the full quantity contracted. Typically,

<sup>6</sup> It should be remembered that LTCs always include “renegotiation clauses,” which allow flexible responses by both sellers and buyers to unanticipated changes in market conditions.



these terms will have a minimum annual quantity of 10% below the average (the flexibility varies by contract), but below that buyers become liable to make payments even for gas that they cannot resell—“take-or-pay” conditions.<sup>7</sup>

Some German companies—notably E.ON (gas contracts now held by Uniper) and RWE—incur very serious costs because of these take-or-pay conditions during 2008–10 and again during 2012–14.

The surpluses of gas above demand for these companies were in some years more serious than Figure 3-1 implies. This result was because alongside these “classical” LTCs held by German companies, one of their competitors had a different arrangement with its Russian supplier.

- In the context of a joint venture (JV) between Wintershall and Gazprom, there was an assurance of gas supply from the Russian partner to make available as much gas as the marketing company (WINGAS) needed, (initially this was “up to 13 Bcm per year”), depending on how many customers it could win. This gas—not a traditional LTC but a guaranteed supply—is in addition to the volumes shown as “from Russia” in the early years in Figure 3-1. A portion of this was converted to a more traditional LTC as WINGAS played its part in underwriting the financial risks of the Nord Stream 1 pipeline. This upturn in LTC commitments, by WINGAS and Uniper, is evident in the chart in the years 2012 and 2013.
- Against this, there is also an offset that needs to be taken into account. Uniper, RWE, and WINGAS (along with other German midstream companies) market their gas outside Germany as well as in the German market. In that sense, some of the gas in “German” LTCs will also in effect be available in each company’s wider portfolio that combines short-term traded gas *and* LTC gas to other countries. In this regard, deliveries to a particular border point are important. As European law evolved to outlaw “destination clauses” in contracts from the early 2000s onward and as the trading (or swapping) of capacity rights in pipelines became more common, so delivery to a border point became part of the landscape of contracts. This fact allows buyers to ship gas to neighboring markets or swap it for gas deliveries to another destination.
- Finally, from a commercial point of view, the buyers of gas who were overcontracted and facing take-or-pay penalties were able eventually to renegotiate the terms of their LTCs, adjusting prices, volumes, and, crucially, retrospective payments that may have been due.

The ability to renegotiate and market gas more widely than to a particular destination explain why the major German buyers of gas are still willing to base their business on LTCs—in spite of some difficult experiences in recent years. The assurance of volumes of supply remains important to them, and to their customers, as long as the commercial terms can be negotiated to be consistent with developments in the market.<sup>8</sup>

German companies have commitments to import only small amounts of LNG, shown in Figure 3-1 as the shaded blue area “Flexible LNG.”

<sup>7</sup> Take-or-pay conditions are frequently not quite as onerous as this narrow range of flexibility seems to imply. Often there are ways of spreading the risk of under- or overlifting by having multiyear “roll forward” and “makeup” provisions.

<sup>8</sup> All LTCs include clauses that allow the basic price terms to be renegotiated if market conditions change. Much argument can be (and is) had over precisely what constitutes a sufficient change in market conditions and by how much a previously agreed upon price must be adjusted. However, the risk protection that these clauses provide is considered robust enough under accounting rules for German companies to be able to record their potential liabilities under LTCs simply with a note in their accounts rather than an actual financial charge.



## B. Italy

### *Current supply situation and historical background*

Italy's LTCs are primarily held by the three long-established gas marketers: Eni (the former monopoly supplier), Enel, and Edison. Five other active gas marketers also buy gas with LTCs as part of their portfolio—Sorgenia, Sinergie, ENGIE, A2A/Iride, and Sonatrach (although the latter two buy from their parent upstream companies, Gazprom and Sonatrach, respectively). With the opening of the gas market in 2003, some major municipalities opted for contracting gas directly with producers, and these contracts partly reflect these changes.

Figure 3-2 shows the evolution of LTCs plotted against historical and expected demand for gas in Italy. As with Germany, there has been a period of significant surplus of contracted supply over demand. Also, as with Germany, the existing pipeline LTCs currently cover about 80% of Italian market needs and will continue to cover more than half of expected Italian demand until 2030. Some existing contracts run beyond this date.

The sharp switch from apparent excess of LTC gas above annual demand to a level of supply that is below the demand line from 2017 onward is a function of

the changing terms of the major Algerian-Italian LTC. Under this contract, Eni bought gas from Sonatrach from the 1970s until 2016. The contract used to account for 24 Bcm per year—or about one-third of all Italian gas supply. Since 2016, Eni has contracted on a short-to-medium-term basis with Sonatrach for a lower average annual contract quantity. The question arises as to whether Italian buyers will at some point seek to renew a longer-term contractual arrangement with Sonatrach in Algeria, which for many decades has supplied the largest share of Italy's gas imports.

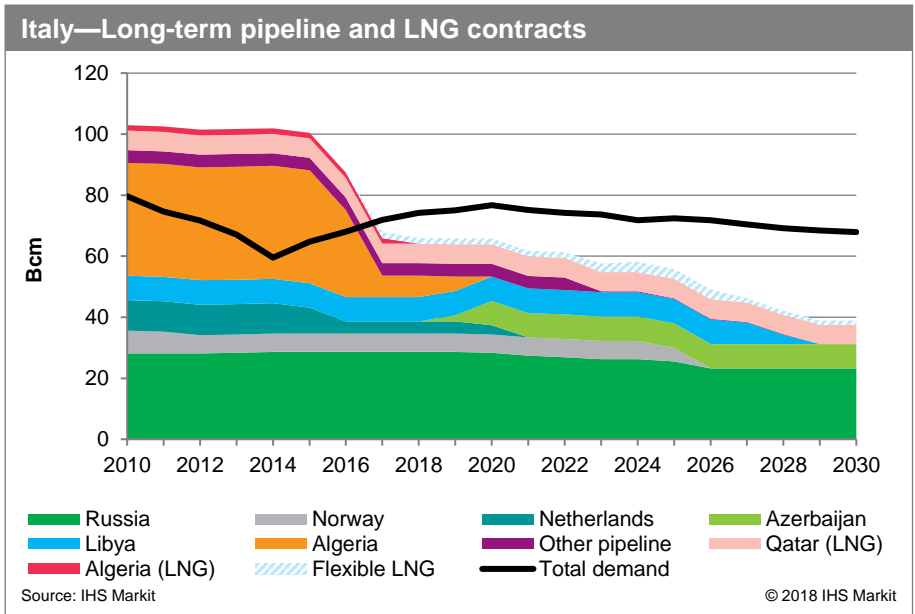
### *Future coverage*

Some pointers to the likelihood of this are included in the Italian PAP. After explaining that “the gas market is more and more far away from the contractual schemes that have been used and that built up the security of supply in the past” a key paragraph concludes:

“The increase of spot volume could represent a risk for security of supply caused by the lack of a minimum guaranteed flux of gas as provided by long term contract (take or pay clauses).”

The PAP also points out the particular circumstances that have led to the steep decline in Algerian gas supply, as shown in Figure 3-2. After contrasting successful renegotiations of LTC price terms with Gazprom with “very difficult” renegotiations with Sonatrach, the PAP points out

Figure 3-2



“Sonatrach has no interest in closing such negotiations, because in the meantime it is using its production to supply LNG that can be offered at higher prices in the international markets”.

This is a vital indicator not just for Italian gas supply, but also for the future of all European gas supply security: the importance of the interface with the rest of the world’s LNG markets. Recognizing this, Eni, which continues to take some responsibility for assuring Italian gas security (despite having no legal obligation to do so) is making strategic moves to increase its own position in LNG, building a portfolio of supplies—without making any specific commitment to point-to-point deliveries to Italy.

Eni also as the major gas *producer* in Libya (the blue area in Figure 3-2) is a major seller of gas under LTCs—to ENGIE, Sorgenia, and Edison—as well as a major buyer of gas from Norway, the Netherlands, and Russia. Enel buys gas primarily for its own power stations and has indicated that strategically it will phase down its gas generation and therefore its gas purchases in the future. The projected decline in demand from 2020 to 2030 reflects this decision, as well as expected increases in end-use efficiency in other sectors.

A new LTC is about to begin for supplies of Azeri gas (light green in the chart). This LTC provides the necessary underwriting for the commercial debt that supports investment in the major new infrastructure (the Trans Adriatic Pipeline and Trans-Anatolian Natural Gas Pipeline) required to bring gas from Azerbaijan to Italy.

In addition to the pipeline gas shown in Figure 3-2, Italy imports LNG, both under an LTC and on a spot basis. Edison imports LNG from Qatar under an LTC that runs to 2034—in 2017, Edison’s 6.8 Bcm LNG accounted for about 80% of Italy’s total LNG imports (shaded pink in Figure 3-2). Edison has contracted for 80% of the largest LNG receiving terminal in Italy (the Adriatic terminal), which is a JV owned by ExxonMobil, Qatar Petroleum, and Snam. The remaining 20% of capacity is reserved for third parties, out of which BP maintains a medium-term contract for 12%, enabling it to market LNG on a short-term basis into Italy. This gas, shown as “flexible LNG” in the chart, will come from BP’s global portfolio as an “aggregator” of LNG—grouping together a portfolio of multiple-sourced supplies that enable it to deliver to multiple markets, depending on demand needs and relative prices.

Finally, Enel buys LNG from Nigeria under an LTC. However, this deal predated the construction of large-scale LNG receiving capacity in Italy, and an arrangement was made with ENGIE in France to deliver the LNG to Montoir, in exchange for which Enel would bring pipeline gas that ENGIE purchased from Russia into Italy, through spare capacity in the TAG or TENP lines. This gas (shaded purple) is included in the “Other pipeline” category in Figure 3-2. The Nigerian LNG sellers are likely to look to renew or extend this contract, either with Enel or with other Italian buyers, when it expires in 2023, this time with direct delivery to Italy.

The engagement of major players with LTCs is not surprising. It is, however, striking that the smaller gas marketers in Italy have also considered acquiring gas under LTCs to be a necessary part of entering the gas business. The Italian trading hub, the PSV, is a less liquid hub than those of Northern Europe—which is consistent both with the need for marketers to contract directly for long-term supplies and with the impact that a surplus of LTC gas can have on slowing the emergence of an active trading hub.

## C. United Kingdom

### *Current supply situation and historical background*

The United Kingdom's LTCs are primarily held by Centrica. SSE and EDF also buy gas under LTCs for their distribution businesses, and Gazprom Marketing & Trading has gas available guaranteed by its parent company (similar to WINGAS in Germany). The bulk of pipeline supply is from Norway. However, pipeline LTCs today provide only a small part of the United Kingdom's gas supply and, as shown in Figure 3-3, would disappear completely by 2026 without renewal.

However, Figure 3-3 tells only part

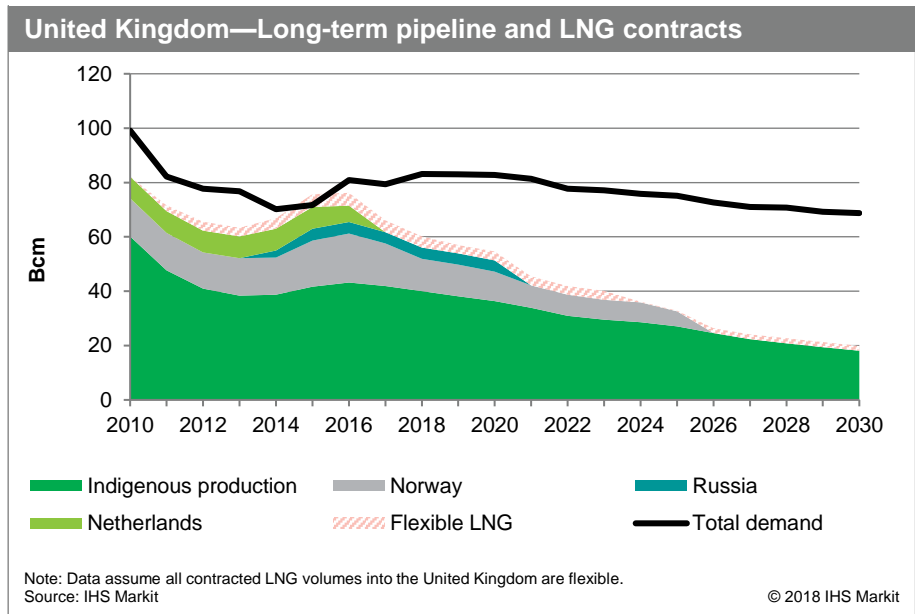
of the story, as buyers in the United Kingdom have access to large volumes of LNG, whose owners, including international oil companies that have aggregated wide portfolios of LNG, have significant flexibility on volume and destination. Centrica has signed LTCs with various sellers, including repurchases from major Asian buyers, but these contracts also have flexibility when or if the volumes arrive in the United Kingdom. Although Centrica is the buyer, frequently the LNG supplier has the decision power on whether the gas is supplied to the United Kingdom, responding to pricing signals at the NBP. These indicate if the market is tight, triggering greater deliveries of LNG.

Imports of LNG arrive via three regasification terminals (Isle of Grain, Dragon, and South Hook), which have a combined capacity of 48.1 Bcm per year.

The United Kingdom resumed importing LNG from 2005 to cope with decreased domestic production, reaching a peak of 25.7 Bcm in 2011, nearly half of the United Kingdom's total gas imports that year. LNG imports decreased sharply in 2012–14 following the Fukushima accident in Japan, which resulted in a significant call on spot LNG cargoes from the Japanese power sector, effectively pulling Qatari LNG supplies away from European markets.<sup>9</sup>

The Interconnector and BBL pipelines from Belgium and the Netherlands provide infrastructure that adds to the United Kingdom's security of gas supply. For example, in winters 2016/17 and 2017/18, imports from Belgium increased owing to reduced deliverability from the United Kingdom's Rough storage facility and strong gas demand in the United Kingdom caused by power and residential demand. Given that Rough no longer functions as a storage facility, this trend is likely to be repeated in the future.

Figure 3-3



<sup>9</sup> First commercial LNG imports were in 1964 to the now closed Canvey Island terminal.

*Future coverage*

The United Kingdom offers one model for supply security for the Netherlands. The gas markets of the two countries have much in common—historically high indigenous production that met domestic needs that have been in decline since the late 1990s, a well-functioning trading hub, and well-developed, diverse infrastructure that connects domestic customers to a wide range of foreign suppliers.

- The British NBP is the second-most liquid hub in Europe (after the TTF), and all the LTCs are priced around this hub. This liquidity allows hedging strategies to be heavily used by UK companies.
- A period of constructing sufficient import capacity in the United Kingdom—both pipeline and LNG—for receiving a diverse set of supplies coincided with the Dutch roundabout strategy for infrastructure.

The UK authorities have had a high degree of confidence in the functioning of the liquid gas market, trusting that participants are sufficiently engaged to assure supply from world markets at all times. The fact that the market survived and thrived even after the scandal-washed failure of Enron, which at the time was the major market-maker, reinforced this confidence. Their perspective on LTCs was that other people's LTCs might lock out or withdraw volumes of gas that might otherwise be available to the British market.

It is worth noting perhaps that occasional spikes in prices (in winter 2005/2006, for example) have caused a considerable political controversy—but that this has been a relatively infrequent occurrence. Additionally, interest in long-term supply contracts has not disappeared entirely. In 2012, Centrica signed a three-year contract with Gazprom for purchase of 2.4 Bcm per year starting in 2014; in 2015, this deal was extended to 2021 and volumes increased to 4.16 Bcm per year. A similar agreement with Statoil will now see Centrica buying 7.3 Bcm per year from Statoil through 2025. Both of these deals (and a smaller SSE contract with Statoil) feature prices linked to the NBP hub, but they are perceived to offer more certainty and security for the buyers.

The differences between the Dutch and British market prospects over the next 10 years should be taken into account. They warn strongly against a too-simple comparison of the United Kingdom's position with that of the Netherlands. As well as the three common elements—a well-developed, liquid spot market, declining domestic production, and plentiful import infrastructure—there are three important differences.

- UK domestic production remains at about 40 Bcm per year, covering about half of British demand for gas, and essentially all of this is available to support trading and liquidity at the NBP. Some modest increases in production have even occurred in recent years following changes to upstream taxation. By 2030, even without any possible new onshore shale gas production, domestic supply of 20 Bcm is expected to provide the foundation for NBP trading. In the Netherlands, consideration needs to be given to whether the reliability (depth, liquidity, immunity to manipulation) of the TTF hub will remain as robust in tomorrow's market, when there will be much smaller volumes of locally produced gas for delivery at the hub than there are today.
- UK gas companies do not have export obligations. By contrast, GasTerra in the Netherlands has export commitments that will exceed the domestic volume of gas available, notably in a window of three to four years between 2022 and 2026. In other words, Dutch companies are almost certain to be importing gas to reexport it during those years.

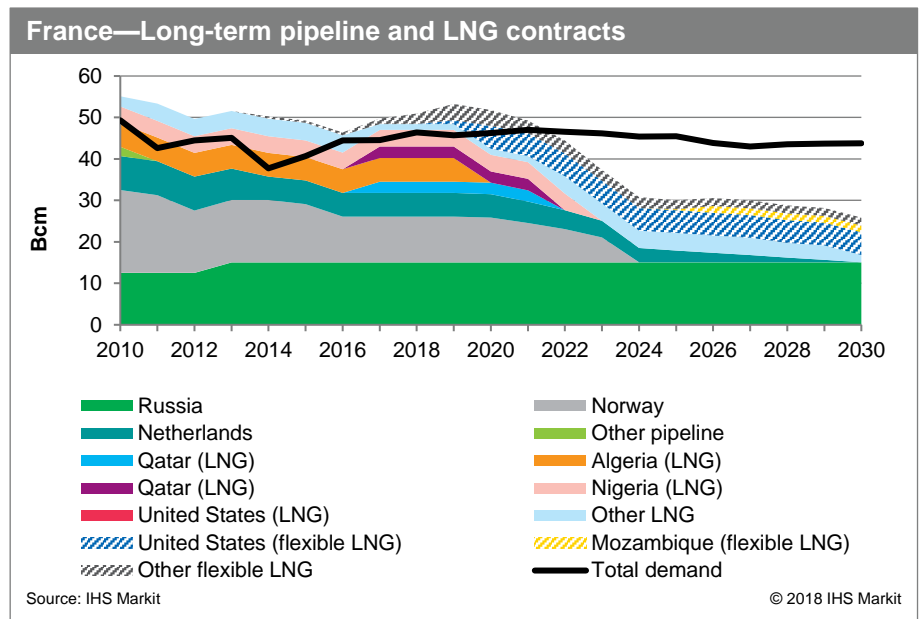
- The British NBP market is less exposed than the Dutch TTF to a potentially market-dominant position by Gazprom in the future, if the Russian buyer-nomination LTCs were to be increasingly replaced by purely seller-option spot sales.<sup>10</sup>

## D. France

### *Current supply situation and historical background*

France's LTCs are primarily held by the long-established gas marketer ENGIE—the company that includes the original gas company, Gaz de France. Three other companies that buy gas under LTCs are EDF, Poweo for power generation, and Yara for feedstock. Russian and Norwegian contracts account for the bulk of pipeline gas supply to France, and these are supplemented by long-standing LTCs with Algeria and Nigeria for LNG supply and, more recently, shorter-term LNG contracts with Qatar. The supply picture of pipeline and LNG contracts is shown in Figure 3-4. As for Germany, the question of the renewal/extension of the TGSAs from Norway after 2022/23 will have an important bearing on the LTC cover of French demand in 2030. In 2020, gas from LTCs will still cover 100% of French demand. By 2030, extension of an LTC from Norway at today's levels will increase the cover from pipeline LTCs from approximately 40% to about 60% of expected demand.

Figure 3-4



However, the French situation differs significantly from Germany regarding LNG, in which Total (and formerly also ENGIE) plays a global role.

The chart shows that with the addition of LNG contracted by ENGIE, 100% LTC cover for demand continues through 2022, and in 2025 (even in the absence of TGSA extensions), two-thirds—66% of French demand—will be covered by LTCs. However, since ENGIE is an aggregator of LNG on a global scale, the destination of these supplies is not necessarily France. Now that ENGIE's LNG business has been purchased by Total, which has an even wider global LNG marketing and trading business, this situation is reinforced.

LTCs for LNG have been important in underwriting the construction of receiving terminals in France, under third-party access exemptions from EU single-market competition rules. However, actual LNG deliveries to France, as

<sup>10</sup> Concerns have been expressed from time to time by some market parties and observers about the size and share of Norwegian exports in the British market. It should be stressed that UK authorities have not shared those concerns to the point where legal or formal proceedings have been considered. The dominant Norwegian exporter is scrupulous about observing the European Regulation on wholesale energy market integrity and transparency (REMIT) rules on the disclosure of market-sensitive information and operational practices. Gazprom or any Russian seller would be equally subject to REMIT.

to the United Kingdom, vary with conditions in the global LNG market—high in times of excess supply, low in times of market tightness.

Together with ENGIE, EDF and Total also hold flexible destination contracts that supply the French market. Together, they amount to roughly 6.8 Bcm from 2015 to 2022. Enel's 3.6 Bcm sale and purchase agreement (SPA) with Nigeria and Total's 2.6 Bcm SPA with Qatar are flexible destination contracts; thus, many of these cargoes have been sent elsewhere. As mentioned in the section on Italy, volumes from the former are delivered to ENGIE under a swap deal whereby ENGIE delivers pipeline volumes to Enel at other points in Europe. Naturgy (formerly Gas Natural Fenosa) holds an SPA with Qatar to supply the Spanish market. Its cargoes can also be delivered to the company's capacity at Montoir.

### *Future coverage*

An important new development is the collaboration between Asian companies and European companies in purchasing LNG, the most visible of which is the JERA-EDF relationship. In December 2017, JERA announced it would be collaborating with EDF in LNG trading, including a possible purchase/takeover of EDF subsidiary EDF Trading. The two companies are already tied up in the JERA-led JERA Trading (67% JERA, 33% EDF Trading), which focuses on coal and freight operations. The collaboration focuses on short-term supply and trading and may not directly include EDF's terminals, regasification capacity, or long-term LTCs.

A clear indication of the link between LTCs and hub pricing has emerged in France in the proposed change to the basis on which the remaining "regulated tariffs" are calculated. In June 2018, the CRE (the regulator) proposed to remove oil indexation from the assessment of ENGIE's long-term supply costs, a determinant of regulated prices. The CRE previously revised this method in June 2017, at which time about 82% of the long-term supply cost was linked to other gas prices, with the remainder based on oil indexation.

## **E. Spain**

### *Current supply situation and historical background*

The diversity of gas supply in Spain—and thus its security—is provided by the large number of LNG receiving terminals and by the country's openness to global gas trade. Regasification far exceeds domestic demand, with nearly 70 Bcm per year, and Spain's relative isolation from the rest of the European gas grid (with only about 7 Bcm per year of pipeline connections with neighboring France) assures a significant surplus of available capacity for short-term contracting.

Pipeline gas is supplied under long-term gas contracts from Algeria and Norway, purchased by Naturgy (formerly known as Gas Natural Fenosa). LNG is supplied under a mixture of LTCs and short-term purchases.

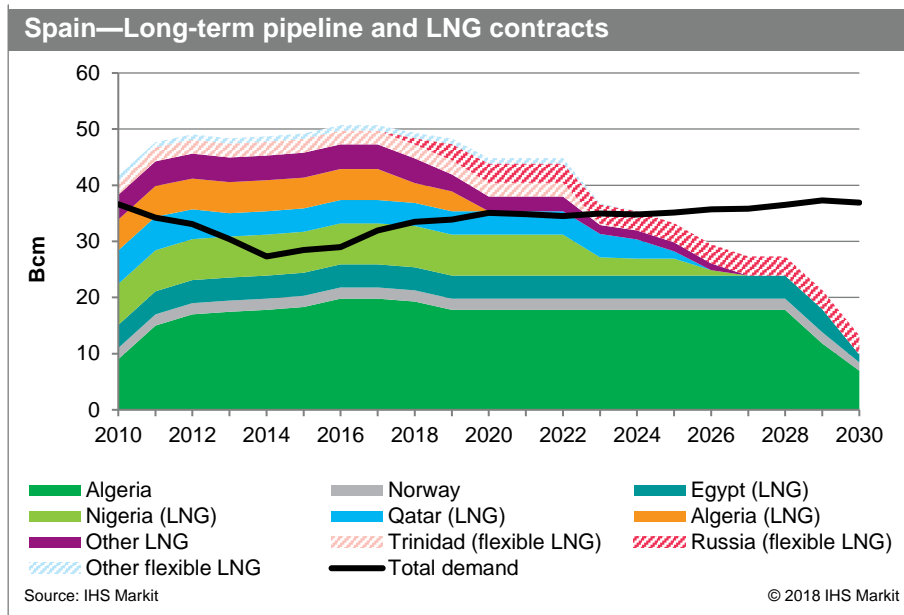


Figure 3-5 shows that the pipeline LTCs alone cover about half of expected demand, further emphasizing the scale of the surplus LNG receiving capacity that is available.

Spain’s reliance on global LNG and semi-isolation from the pipeline markets lead to contract pricing still heavily influenced by oil indexation.

Spanish LNG imports are sourced from various countries (12 different countries since 2012); the bulk of cargoes are delivered from Algeria, Nigeria, Trinidad, and Qatar. As confidence in the scale and diversity of global LNG business has grown, Spanish companies will allow their forward LTC purchases to decline through the 2020s.

Figure 3-5



Most of Spain’s contracted LNG volumes today (25.5 Bcm per year) are delivered under binding contracts. There are numerous importers into Spain, and most of Spain’s traded volumes are swaps between LNG in tank at the terminals. Only 4.7 Bcm per year is contracted via equity at the terminals. The largest LNG contract holder is the transmission system operator Enagás, with about 20 Bcm per year of contracted capacity. Enagás cannot supply end users in the wholesale or retail market under EU unbundling rules, so this capacity is in turn contracted out to other shippers.

In the conditions of surplus that the combined pipeline and LNG contracts imply, Spain’s importers have actively reexported LNG cargoes to more lucrative markets since 2011. This activity has slowed since 2015.

Two striking aspects of the Spanish situation are the growth in pipeline LTCs early in this decade—at a time of falling demand—and the signing of new, flexible, LNG contracts even when existing “firm” LNG contracts more than adequately cover the market demand. The explanation for the former is support for infrastructure investment—the Medgaz pipeline, which delivered gas directly from Algeria to Spain, avoiding Moroccan transit—and for the latter the willingness of new suppliers (notably Russian LNG) to find open European markets. The market remains attractive to both pipeline and LNG suppliers because of the now strong commercial and operational experience in reloading to higher-value markets in Latin America, the Middle East, and Asia when the opportunity arises.

## F. Belgium

### *Current supply situation and historical background*

Belgium transports very large quantities of gas across its territory, both as pipeline and LNG, from north to south, and, depending on seasonal and market conditions, either from east to west or from west to east.

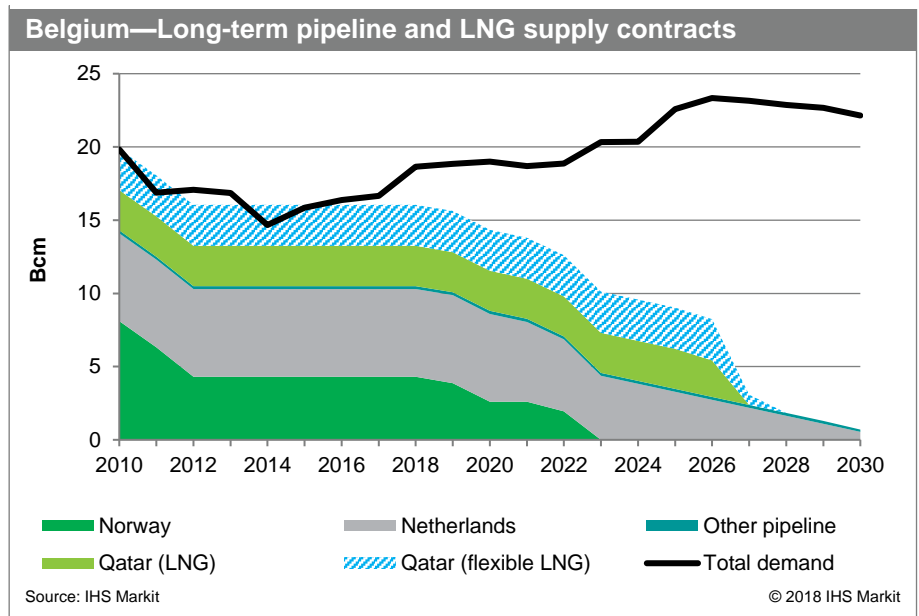
Its main supply company Distrigas, wholly owned by Italy's Eni, has LTCs for pipeline gas purchases from GasTerra in the Netherlands, Statoil in Norway, and for LNG from Sonatrach in Algeria. While these have until recently been able to cover 100% of demand, by 2024, this figure will have dropped to less than half, if gas demand for power increases as expected, and unless the TGSAs are renewed. Figure 3-6 shows that an increasing proportion of Belgian gas demand is expected to be met from short-term purchases, and it implies potentially much higher reliance on purchases of LNG from the global market. However, Eni as a producer

with significant new gas developments under way in the Eastern Mediterranean and Africa may be looking to an “uncovered” Belgian market to offer security of demand.

There are currently two long-term LNG projects delivered to Zeebrugge: an Eni contract with RasGas for 2.9 Bcm and a RasGas-EDF contract for 2.8 Bcm. However, the Eni-Qatar contract has a flexible destination clause and the EDF contract has no guarantee of delivery, so these contracts do not need to deliver nameplate volumes. Only while European hub prices are favorable vis-à-vis prices in the alternative markets do the volumes from these contracts increase.

The LTC for up to 4.6 Bcm with Algeria, which was a pillar of the expansion of the Belgian gas market, began shipments in 1978 and expired in 2007 and notably has not been renewed.

Figure 3-6





## Section 4

# The global aggregators—Building LNG portfolios

A key characteristic of today's European gas market—perhaps the most key characteristic—as seen in the six country reviews in Section 3 is the interplay in each national market between LTCs for gas purchased by the historical national gas company and the price-related availability of LNG from global markets. This LNG is for the most part gas that has already been purchased by an aggregator company. Understanding the role of the global aggregators is crucial to assessing future supply security in European markets.

## The “super aggregators”—International oil companies and other global players

The business model of aggregators is based on building a large portfolio along the value chain to maximize the value that can be created from LNG. An aggregator's portfolio will include both point-to-point contracts and flexible contracts that create the opportunity to capitalize on regional variations in price by delivering cargoes to whichever market happens to be at a premium at any point in time. Access to flexible LNG, shipping, and regasification in multiple regions is key to making this trading strategy work. Sellers receive the assurance of multiyear offtake for the gas they produce, underwritten both by the financial strength of the buyer and by the diverse, worldwide marketing opportunities open to the buyer. For investment in new projects, this can be a significant help in obtaining commercial debt finance, especially where the project promoter, or its sovereign government, does not have a strong credit rating. In other words, **the aggregator offers the security of demand and credit support that a “take-or-pay” final market buyer provided in the past in a point-to-point sale.**

Companies that have traditionally played the role of an aggregator (Shell, BP, Total, etc.) or trader (Vitol, etc.) still make up the majority of contracted LNG portfolio sales (73% in 2018), but other companies are increasingly joining this group. By 2022, only 60% of portfolio sales (based on current contracts) will be tied to traditional aggregators or traders. Traditional point-to-point buyers like KOGAS and JERA (the Chubu Electric/Tokyo Electric Power Company JV) have signed new portfolio contracts as sellers in late 2015 and in 2016. The Dutch authorities should pay attention to this development and could actively consider whether Dutch buyers in international gas markets should be ready to participate in this trend for the sake of the flexibility and optimization it affords.

Companies that have traditionally been associated with selling LNG directly from their liquefaction plants have also recently expanded to portfolio sales. Gazprom, PETRONAS, and Oman Trading International have all signed portfolio supply deals in 2018.

The number of companies selling LNG from their portfolios has grown substantially in recent years; between 2012 and 2018, the number of companies selling LNG not tied to a specific liquefaction plant more than doubled, from 13 to 31.

As a result of this trend, many holders of rights to regasification capacity in Northwest Europe are aggregators or major LNG producers rather than companies with end-use demand in the region. For these companies, regasification in Europe represents a low-cost method of guaranteeing access to Europe's gas hubs and hence European consumers.

Figure 4-1 shows the global scale of this business—today with more than 125 Bcm (90 million metric tons of LNG) per year under contract, and about 25 companies active in the business.

The “super aggregators,” the largest of these companies, are attempting to link the lowest-cost sources of supply with the highest-value markets in the most efficient manner to maximize returns. This strategy and mode of operating means that the LNG volumes that these companies have contracted do not always end up in the same market. In particular, they do not

always land in Europe, although they may frequently do so, and the companies may stand ready to supply a European market whenever an attractive opportunity presents itself and the price is right. The actual economic opportunity may depend on freight rates (for LNG carriers), carrier availability, and seasonal premia or discounts as well as simply on relative gas prices. The contractual picture presented in Section 3 was therefore only part of the gas supply picture for each country.

We cannot say for sure which country will have access to what “pool” of LNG at any time. A one-to-one mapping of contracts and markets for future years is not possible. What we can say is that in aggregate, customers in European countries will always be able to bid for LNG from this global pool, concerned only about price and delivery conditions and with no concern about the source of gas.

European buyers will, however, face intense competition from Asian buyers. It is clear from recent experience that Asian prices tend to be higher, usually significantly higher than European prices, and that global aggregator companies anticipate supplying most of the gas in their portfolios to the Asian market.

Figure 4.2 shows the aggregate volume of the “Flexible LNG” that is available in principle via the portfolio aggregators to European markets through 2030 (light purple–shaded area).

Figure 4-1

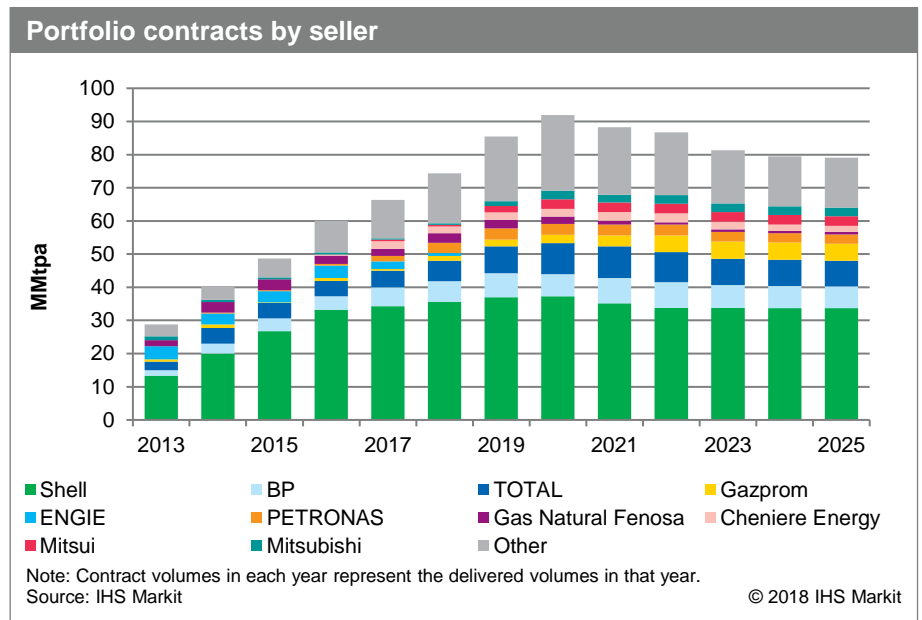


Figure 4-2

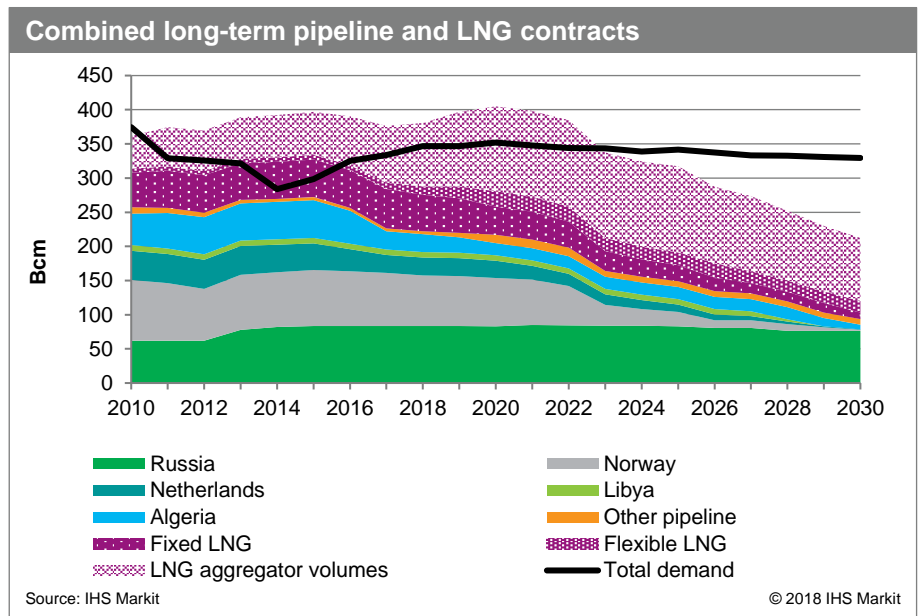


Figure 4-2 overlays this volume of flexible LNG on the long-term pipeline contracts, the long-term LNG contracts, and the nationally directed flexible LNG for the six countries described in Section 3. The demand line is also the sum of the six countries' individual demand forecasts.

One thing is clear from the chart. The firm LTCs (pipeline and LNG) that are operational today already cover about one-third of the expected demand in 2030. The coverage is higher in the preceding years. Added to this will be any extensions or renewal of Norway's TGSAs that are contracted in the 2020s (which we in fact expect to happen). On top of this, the UK market—still one of the largest in Europe—will by 2030 have a residual 20 Bcm of domestic production to set against its uncovered demand.

Also clear is that flexible LNG from gas that is already contracted into aggregators' portfolios offers a significant pool for European buyers throughout the 2020s. As mentioned above, this will only be available in completion with other buyers of gas in the world market. One option for European buyers will be to contract gas from these portfolios; another will be to make or extend contracts from new or existing pipeline suppliers. Either or both of these approaches will likely reduce the apparent “gap” as time moves forward, increasing the contractual “cover” for the demand of the six European countries' take as a whole.

Less visible in the chart—but an important message from it—is the prominent place of the Dutch “gap” in the overall picture, especially in the early years of the 2020s. In 2022, for example, uncovered Dutch demand, at about 36 Bcm, will account for more than 40% of the whole six-country picture—even though the Netherlands represents only about 10% of the six-country demand.

## The new aggregators

However, as well as the “super aggregators,” smaller, nationally focused companies are also entering this field of activity, often in cross-continental partnerships, and their role should not be overlooked.

KOGAS and JERA from Asia Pacific have already been mentioned. The examples of Centrica and EDF are interesting in this context and may be relevant to the Netherlands as the country becomes increasingly linked to and dependent on global import markets.

- In September 2016, Centrica agreed to an extension of its supply agreement with Qatargas. The five-year extension will be for smaller volumes (up to 2.8 Bcm) beginning in January 2019. Delivery of cargoes will be to Centrica's capacity at the Grain LNG terminal.
- Centrica and JERA signed an SPA in 2016 whereby JERA will supply up to six cargoes per year at the Grain receiving terminal starting in April 2019, with prices partially linked to European hub prices.
- Centrica has also signed a memorandum of understanding with Tokyo Gas, which could include the swapping of Pacific Basin cargoes by Centrica for Cove Point volumes from Tokyo Gas.

Under its contracted equity capacity at the Dunkirk terminal, EDF has signed numerous deals to use the capacity.

- Most recently, it agreed to a 2.8 Bcm deal with RasGas to start in 2017 and extend “through the medium term.” Cargoes will be sent to Dunkirk (four were sent during 2017).
- In May 2016, EDF agreed to a limited offtake agreement with PETRONAS, whereby EDF will take two to four cargoes from PETRONAS over three years, beginning in 2016. The cargoes will supplement EDF's global portfolio and are not necessarily destined for European terminals.

- EDF agreed to purchase up to 2.1 Bcm from JERA between June 2018 and December 2020. Cargoes will be sent to Europe, although no specific schedule was announced.
- EDF has signed short-term deals with both Cheniere Energy and Angola LNG, although imports into France from these deals have not yet occurred, despite the originally announced start date for the Cheniere cargoes by end-2016. They are possibly being sent to other locations.

These types of arrangements show that companies whose gas markets are primarily in one or two national markets in Europe (the United Kingdom and Ireland for Centrica and France and Italy for EDF-Edison) are engaging directly with counterparties in other parts of the world, emulating or shadowing the portfolio role of the larger players. The motives are clear: access to a diverse range of gas that is firmly contracted and available to a buyer (supply security) and opportunities for profitable arbitrage between markets in different parts of the world.

The parallels for the Netherlands are perhaps too obvious to mention. The Dutch authorities can look to Shell as a “super aggregator” headquartered in the Netherlands and to GasTerra as a “local” national aggregator and marketing company with a traditionally international European perspective.

The choice as to what degree of emphasis to give to each in the future is less obvious. This will clearly depend on a host of local considerations on which we are not qualified to comment. However, notice should be taken of the fact that all other countries in Europe have some substantial degree of awareness that “their” companies both have long-term gas under contract and engage in global LNG portfolio building. The more they have of one, the less they may need of the other. Both seem to be the normal practice to assure twenty-first century gas supply.

## Section 5

# Conclusions

Based on the IHS Markit analysis of the Dutch gas market in the context of declining output, of the approaches being taken in other major EU countries regarding the security of gas supply, and of trends in the structure of the global LNG market, we reach the following conclusions:

**LTCs have a continuing role.** LTCs continue to play an important role in Europe even as their role has changed. LTCs in Northwest Europe no longer provide diversity in terms of pricing now that they are not generally priced on the basis of an oil linkage. With or without LTCs, gas prices will be set by the market, i.e., by supply and demand at hubs such as the TTF. However, LTCs are still widely perceived to be valuable, in both commercial and security of supply terms, as part of buyers' wider portfolios—portfolios that also include some reliance on spot markets. In this context, different countries have taken different approaches, with Germany and Italy covering much of their expected future demand with LTCs, while LTCs play a more modest role in the United Kingdom.

*The Netherlands faces a unique situation with respect to its LTCs, as the expiry of its existing contracts in the early 2020s will overlap with a sharp decline in production. Also taking export commitments into account, the Netherlands will face particular security of supply exposure for several years in the mid-2020s. It is strongly advisable for the Netherlands to ensure that LTCs are in place to help mitigate its security of supply risks during this period.*

**It is vital that traded hubs continue to function effectively.** The increasing importance of Northwest Europe's gas hubs and their now unchallenged role in setting wholesale gas prices mean that the depth, liquidity, and integrity of these markets are essential to the security of gas supply. The Netherlands is well-placed in this regard given that the TTF is Europe's main reference point for gas pricing, with high short-term liquidity and a level of futures trading activity that is unique within Europe.

*The Netherlands should continue to put the integrity and efficiency of the TTF at the front and center of its energy policy. This will involve effective regulation along with support for the mission of the transmission system operator, GTS. There should be a clear understanding of the challenges—significant but manageable—that will be posed by an emerging future in which domestic gas output plays a declining role in underpinning physical trading at the TTF, while the activities of external players such as Gazprom become more salient.*

**Changes in the global LNG trade point toward new strategies.** The emergence of LNG aggregators with broad and diverse supply portfolios and large volumes of uncontracted LNG for sale means that most European countries can feel confident supplementing gas supplied through LTCs with short-term or spot purchases of LNG. However, this confidence is often based on bilateral arrangements with varying degrees of contractual backing rather than pure reliance on the spot market. It is notable that countries with greater direct access to LNG (thanks to regasification terminals on their territory)—and with a major domiciled LNG aggregator—tend to rely less on LTCs than countries with less direct access to LNG and without a “home” aggregator.

*The Netherlands is well-placed to take advantage of the increasing flexibility in the global LNG market, thanks in part to the presence of the 12 Bcm per year Gate regasification terminal in Rotterdam. A sensible goal for policy would be to encourage and support the commercial strategies for LNG procurement that will be developed by Dutch and global gas importers and LNG aggregators.*

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