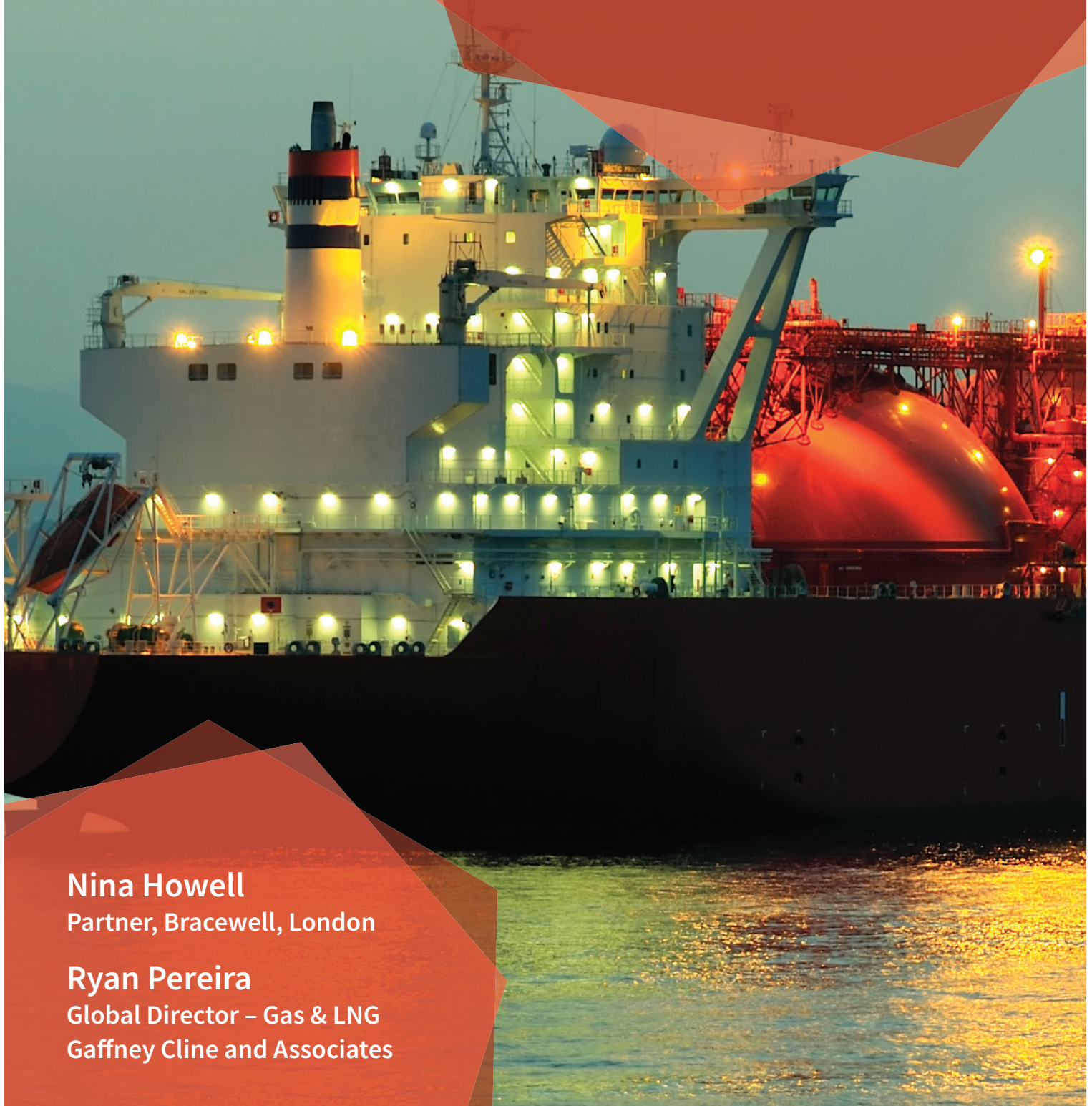


# LNG in Europe

Current Trends, the European LNG  
Landscape and Country Focus



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# Overview

This article provides an overview of current trends in the European LNG market, describes the status of the pan-Europe LNG landscape, and looks at recent activities in individual European LNG-importing countries.

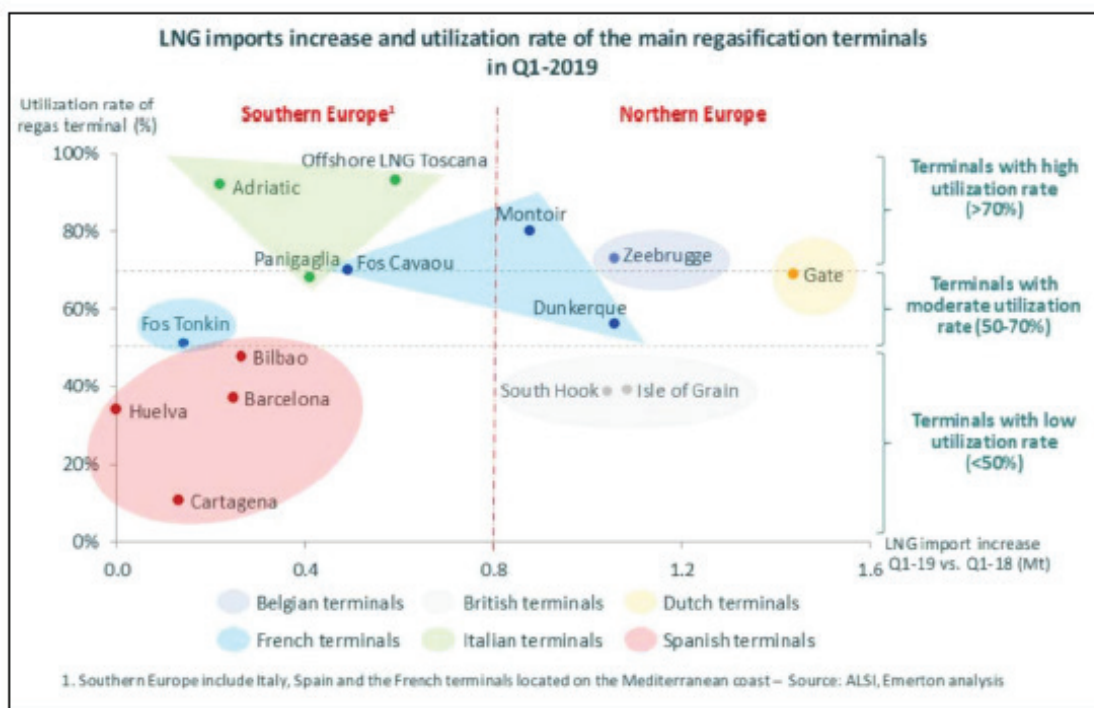
# Current Trends In The European LNG Market

## Growth of LNG Supply to Europe

Global LNG trade is buoyant due to a wave of new sources of LNG supply. What were historically distinct, regional LNG markets are becoming increasingly interconnected as the global LNG market evolves and diversifies. Against this background, Europe's LNG import terminals are gaining momentum and prominence in the global LNG market.

LNG is playing an increasingly important role in Europe's energy (and specifically gas) supply mix. After a period of low utilisation of Europe's LNG import terminals between late 2012 and early 2017 (mainly due to higher Asian demand and prices attracting LNG supplies away from Europe), LNG imports to Europe grew steadily in 2018 and surged in the first half of 2019. The rise in LNG imports to Europe is primarily due to the reversal of a multi-year trend of higher Asian LNG prices over European wholesale gas market prices. Europe's 15 LNG-importing countries imported 48.91 million tonnes (MMt) of LNG in 2018 (net of re-exports) – representing 15.6% of the global LNG share and an increase of 6.4% on import levels in 2017<sup>1</sup> – and 17.5 MMt in the first quarter of 2019 (compared to 7.8 MMt in the first quarter of 2018)<sup>2</sup>. A significant amount of the increased LNG deliveries into Europe were LNG spot cargos, evidencing a trend away from long term LNG supply contracts which were the foundations of the European LNG market.

The Northern European LNG import terminals have, on balance, absorbed higher levels of additional LNG volumes than the Southern European LNG import terminals. The highest increase in LNG imports (and therefore terminal utilisation rates) in 2018 was in the Netherlands (Gate), followed by Belgium (Zeebrugge), Turkey, Poland, and France. 2018 saw only moderate increases in LNG imports into the UK where utilisation rates remain relatively low. LNG imports into Spain – which has the largest regasification capacity in Europe – decreased slightly in 2018, in part due to Spain's relatively illiquid gas wholesale market (compared to some of its North European neighbours).



(Zimmer, 2019)

The recent increase in LNG deliveries to Europe has fuelled a boom in wholesale gas trading, with the Dutch (virtual) Title Transfer Facility (TTF) trading hub posting a rise of 28% in 2018. Some 80% of European gas trades occur on either the TTF or the UK's (virtual) National Balancing Point (NBP) - the latter which is seeing a steady migration of trade to Continental Europe as more LNG is delivered to the Continent. In 2019 gas trading volumes are expected to reach another record high, following that of 2018 which turned over 1.19 billion Euros in wholesale gas trades.<sup>3</sup> The increase in LNG imports into Europe has also contributed to higher storage levels in Europe's gas storage facilities, providing security of supply and market optimisation opportunities.

<sup>1</sup>GIIGNL Annual Report 2019

<sup>2</sup>Emerton Market Insights May 2019

<sup>3</sup><https://www.reuters.com/article/us-gas-trading-prosper/europe-gas-trade-volume-on-track-for-another-record-in-2019-idUSKCN1U71K3>



## New Players in the European LNG Market

Historically, the global LNG market has been dominated by the oil and gas majors and NOCs (on the supply side), and large utilities and power producers (on the buyer side). The growth of the LNG spot market, and new opportunities to take short-term positions, has created an environment in which smaller players can take a position in the LNG market without being exposed to long-term take-or-pay commitments or significant capital expenditure. Recent years have witnessed the global LNG market start to open up to new types of entrants, nowhere more so than in the US, where the growth of the LNG export sector has largely been driven by a range of independent gas companies and private equity outfits (such as Cheniere and Freeport).

The European LNG market is also starting to open up to new players. A number of LNG commodity traders (who do not own the gas at source) are becoming increasingly active in the European LNG spot market – such as Vitol and Trafigura. There are also signs that private equity firms are dipping their toes into more long-term positions – as seen by Ancala Partners' recent acquisition of a 50% interest in Dragon LNG (an LNG import terminal in Milford Haven, Wales) from Petronas LNG. In fact, as the European LNG sector diversifies and expands, new entrants are emerging at every stage of the LNG supply chain, all the way down the line to LNG-fuelled cruise ships.

## Greater Flexibility and Optionality

In today's evolving global LNG market, LNG shippers and traders are seeking more flexibility in order to optimize their short-term, and in some cases longer term, positions. Import terminals that offer services (on a flexible basis) in addition to conventional regasification (e.g. large and small scale reloads, trans-shipment and truck loading) are therefore attractive because they give LNG shippers and traders the ability to choose the service which optimises their position in the market.

The European import terminals are reacting to the demands from LNG market players to provide greater flexibility and optionality. Many of the traditional European regasification terminals have adapted to provide additional services, and planned terminals are being developed to offer a range of incremental LNG services from the outset. Large-scale reloading services are now available at the majority of Europe's onshore LNG import terminals, and almost half of them offer small-scale reloading services. Trans-shipment services are currently available at 7 terminals - Zeebrugge, Montoir de Bretagne, Fos Cavaou, Gate, Barcelona, Cartagena and Grain. Truck loading services are already available at 14 European terminals and will be available at two more terminals – Fos Cavaou and Dunkerque – by the end of 2019. At the time of writing, none of the European terminals provide LNG rail loading services, however, a number of terminals have signalled their intention to offer rail loading services in the foreseeable future<sup>4</sup>.

These emerging small-scale LNG solutions have made a very significant contribution to improving the (traditionally low) utilisation rates across Europe's LNG terminals, and encouraged the entrance of new and varied players into the European LNG market. The rapidly expanding LNG small-scale industry is set to continue to be one of the major growth drivers in the European LNG market driven by the quest to use gas as a more environmentally friendly fuel than oil and diesel.

## EU Funding of New LNG Terminals in Europe

The European Commission (the EU's executive body) has often stated that the importation of LNG is essential to diversify sources of energy supply to its member states. One of the Commission's key objectives is to ensure that all of the EU's (currently 28) member states<sup>5</sup> have direct or indirect access to LNG. A number of LNG import projects – in more isolated European markets – have been designated by the Commission as "Projects of Common Interest" (PCIs) thereby being eligible for EU funding.

The Commission's commitment to growing Europe's LNG sector has been tangible in 2018 and 2019, including (most significantly) a grant of €124 million from the EU's Connecting Europe Facility (CEF)<sup>6</sup> for the Krk Island LNG terminal and evacuation pipeline in Croatia, and €116 million for the proposed Cyprus LNG terminal<sup>7</sup>.

Interestingly, at the same time as the European Commission follows through on its commitment to reduce the dependency of a number of EU countries on Russian pipeline gas, Russia has significantly increased its LNG deliveries into Europe. During the first half of 2019, some of the LNG from Russia's Yamal LNG plant which was intended to be trans-shipped in Europe and ultimately exported to Asian markets, was finally regasified in Europe's LNG terminals. In fact, in February 2019 Russia was the biggest LNG supplier to Europe, overtaking Qatar as the usual holder of that title.

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<sup>4</sup>"Gas Infrastructure Europe's New Service Inventory (August 2019)" provides further details of the different services offered or planned at Europe's LNG import terminals.

<sup>5</sup>The UK is set to leave the European Union.

<sup>6</sup>€108 million for the terminal and €16 for the evacuation pipeline

<sup>7</sup>€101.3 million + €4.5 million (= €105.8 million) from CEF and €10 million from the European Energy Programme for Recovery (EEPR)

## Increased US LNG Exports to Europe

The significant increase in volumes of US LNG being unloaded at European LNG import terminals since the EU's Jean-Claude Juncker's and President Trump's July 2018 joint understanding on the benefits of expanding exports of US LNG into the EU has garnered a huge amount of attention. Between July 2018 and March 2019, US LNG imports into the EU rose by 181%. 2019 has seen a number of further initiatives to encourage US-to-Europe LNG trade, including the 1st EU-US Energy Council B2B Energy Forum in Brussels on 2 May 2019, and US Deputy Secretary of Energy Dan Brouillette's participation in a German LNG Conference in Berlin earlier this year (hosted by the German Federal Minister of Economic Affairs and Energy).

At the time of writing, the US is the third largest supplier of LNG to Europe (after Qatar and Nigeria). In January 2019, 32% of US LNG exports went to the EU. Much of the supply of US LNG into Europe to date has been on a spot basis. Today's TTF and NBP prices (in Northern Europe) are challenging for US LNG suppliers as the actual unbundled US business model forces them to buy US feed gas at prices linked to the Henry Hub price index. Uncertainty about the spread between the HH index and TTF/NBP prices presents an obstacle to selling US LNG into Europe on a long-term basis, but, nevertheless, US LNG suppliers have concluded long-term LNG sales agreements with both Polish and Spanish companies. In June 2019, Poland's state-owned PGNiG announced that it had struck a deal with Venture Global to increase the amount of LNG it buys from the US group by 1.5 million tonnes per year (mtpa); and Spain's Naturgy is contracted to buy 5 mtpa of LNG from US terminals on a long-term basis.

## Impact of New Regulations

When the EU Regulation on Energy Market Integrity and Transparency (REMIT) was implemented in 2014, thereby introducing mandatory registration, disclosure and reporting obligations on LNG suppliers and buyers as well as LNG facilities and operators within the EU, compliance by those players subject to REMIT proved to be challenging. Fast forward 5 years and there is still some confusion about what needs to be reported, to whom and by whom, despite a number of clarifications issued by the EU's Agency for the Cooperation of Energy Regulators (ACER) - the EU's monitoring body. In a nutshell, as LNG trades with a delivery point within the EU (i.e. on DAT terms) are done on a bilateral basis, they need to be reported to the relevant National Regulatory Authority. Although the overall REMIT framework is now widely considered to be functioning well, in late 2018 ACER stated that the next step is to adapt the legislative framework, partly with a view to making it more user-friendly due to its broad application to the EU LNG market.

On 1 January 2020 the International Maritime Organisation (IMO) will implement a new regulation for a 0.50% global sulphur cap for marine fuels – "IMO 2020". LNG produces negligible sulphur emissions when used as a fuel, as well as significantly lower nitrogen emissions than oil-based fuels. Both "IMO 2020" and the European Commission's Sulphur Directive are predicted to increase the use of LNG as a marine fuel for ships in Europe and beyond. The marine industry is (very) slowly starting to embrace LNG-fuelled ships, although according to the latest data from the classification society DNV GL, just 125 LNG-fuelled ships are in operation and another 136 are on order. Despite a slow uptake of LNG-fuelled vessels, it is expected that over time the LNG industry will gain from IMO 2020 and the Sulphur Directive, with European LNG import terminals seeing increased LNG bunkering (i.e. small-scale loading) activity.

## Current European LNG Landscape

### Europe's Existing Regasification Capacity

The vast majority of Europe's LNG terminals are import facilities, with the only exceptions being in (non-EU) Norway and Russia which export LNG. There are currently 28 large-scale LNG import terminals in Europe (including non-EU Turkey). There are also 8 small-scale LNG facilities in Europe (in Finland, Sweden, Germany, Norway and Gibraltar). Of the 28 large-scale LNG import terminals, 24 are in EU countries (and therefore subject to EU regulation) and 4 are in Turkey, 23 are land-based import terminals, 4 are floating storage and regasification units (FSRUs), and the one import facility in Malta comprises a floating storage unit (FSU) and onshore regasification facilities. Six of Europe's LNG terminals – South Hook, Dragon, Isle of Grain, Gate, Rovigo and Dunkerque – have been granted exemptions from EU rules on regulated third party access.

The current LNG receiving countries in Europe are Belgium (1 terminal), France (4 terminals), Greece (1 terminal), Italy (3 terminals), Lithuania (1 terminal), Malta (1 terminal), the Netherlands (1 terminal), Poland (1 terminal), Portugal (1 terminal), Spain (7 terminals), Turkey (4 terminals) and the UK (3 terminals). Collectively, their overall LNG capacity is significant – by the end of 2018 total regasification capacity in Europe's 28 large-scale LNG terminals was 227 billion cubic metres (of gas) (bcm), which is sufficient to cover approximately 40% of Europe's gas demand.

## Planned LNG Terminals in Europe

There are currently in the region of 22 large-scale LNG import terminals being considered or planned in Europe, all of which would be located within the EU, except the planned terminals in Ukraine (Odessa FSRU LNG), Russia (Kaliningrad LNG), Albania (Eagle LNG) and Turkey (FSRU Iskenderun and FSRU Gulf of Saros).

Many of these planned import terminals are in countries with existing regasification capacity, including Greece (where one additional import terminal is planned – Alexandroupolis), Italy (which is planning two additional terminals in Sicily and Calabria), Poland (FSRU Polish Baltic Sea Coast), Turkey (two FSRUs) and the UK (which is planning the Port Meridian FSRU LNG project, and Trafigura Teesside LNG which was previously operated by Excelebrate Energy but decommissioned in 2015).

Thirteen of the planned terminals will represent the first large-scale LNG import terminal for the host country: Albania (Eagle LNG), Croatia (Krk Island), Cyprus (Vassiliko FSRU), Estonia (Muuga (Tallinn) LNG and Padalski LNG), Germany (Brunsbüttel LNG and Wilmshaven LNG), Ireland (Shannon LNG and Cork LNG), Latvia (Riga LNG), Romania (Constanta LNG), Russia (Kaliningrad LNG) and Ukraine (Odessa).

Ten of the planned terminals are FSRUs in: Albania, Croatia, Cyprus, Germany (Wilmshaven), Greece, Ireland, Poland, Russia, Ukraine and the UK. In addition, there are numerous plans for expansion of existing terminals or terminals currently under construction, including in Belgium, France, Greece, Italy, the Netherlands, Poland, Spain, Turkey and the UK.

## Country Focus

This section highlights some of the recent activities in individual European LNG importing countries.

### Belgium

Belgium's only LNG import terminal – the 6.6 mtpa Zeebrugge terminal – provides storage, regasification, bunkering, cool down, reloading, trans-shipment and truck loading services. A fifth storage tank is currently under construction and due to be completed by end 2019, which will support transshipment of cargos from Russia's Yamal LNG. In 2018 and the first half of 2019, LNG cargos from Yamal that were originally intended for Asian markets via trans-shipment at Zeebrugge were instead regasified at Zeebrugge due to market conditions in Europe being favourable to Asia (taking into account logistic costs required to ship LNG to Asia). On 2 September 2019, Qatar Petroleum signed up for the full capacity of the Zeebrugge LNG terminal from the end of current long-term unloading contracts until 2044, seemingly evidencing Qatar's growing commitment to the European LNG market. With this portfolio approach, Belgium has set an example for adapting infrastructures and services to an evolving LNG market.

### Croatia

The final investment decision on the 2.6 bcm FSRU LNG terminal on Krk Island was taken in January 2019, despite a lack of substantial market demand from the open season procedure to underpin the project. The investment costs for the terminal are being met by: (i) an equity injection of €32.2 million from the LNG terminal company shareholders – LNG Croatia d.o.o (owned by the Croatian state owned oil and gas company) and Plinacro d.o.o (the Croatian transmission system operator (TSO)); (ii) a €108 million grant from the EU's Connecting Europe Facility (CEF); and (iii) €100 million from the Croatian State Budget (which the European Commission approved as being compatible with EU State aid rules).

The EU Commission's support for the Krk Island project stems from its ability to get gas into Central and South-Eastern Europe – areas which have historically been dependent on Russian gas - and as such has been designated as a European PCI since 2013. It will deliver gas into Croatia's national transmission network which is connected to Slovenia, Italy and Hungary, as well as into other EU countries via non-EU Serbia and Montenegro.

### Cyprus

Cyprus provides an interesting LNG paradox. In August 2019, Cyprus selected contractors (led by consortium of JV China Petroleum Pipeline Engineering Co Ltd, AKTOR S.A. and METRON S.A., with Hudong-Zhonghua Shipbuilding Co. Ltd and Wilhelmsen Ship Management Limited) as preferred bidders to develop a 2.5 bcm/y FSRU to be located offshore in Vasilikos Bay, near Limassol, along with jetty mooring and pipeline infrastructure. The c. €300 million investment costs are being met by the EU with grants of €105.8 million (from CEF) and €10m (from the European Energy Programme for

Recovery or EEPR) with the remainder from the participants in the import terminal. A separate Expression of Interest process has been launched for LNG supply to the project, the results of which are expected by the end of 2019. Concurrently, Cyprus has revived discussions around plans to develop an LNG export project (either onshore or floating) to monetise recent gas discoveries in Cyprus' economic exclusion zone – notably the 2011 discovery of the Aphrodite gas field, as well as more recent discoveries named Calypso and Glaucos-1.

## France

France – with 4 LNG import terminals with (currently) a total capacity of 34.65 bcm/y – was Europe's biggest importer of LNG in the first quarter of 2019. The French wholesale market is less liquid than some of the neighbouring North West European gas markets, but France nonetheless managed to attract some of the additional LNG volumes coming to Europe in part because of the long-term trans-shipment deals in place between Yamal LNG's offtakers and France's Montoir de Bretagne terminal which have resulted in LNG volumes destined for Asia actually remaining in France.

## Germany

Two terminals are currently racing to be Germany's first LNG import terminal. The first is an up to 8 bcm/y onshore terminal at Brunsbüttel, near Hamburg which is being developed by German LNG Terminal GmbH – a joint venture between Gasunie, Vopak and Oiltanking. The second is an FSRU to be located near Wilhelmshaven. In February 2019, German Energy Minister, Peter Altmaier, said that the German state will support two LNG terminals, and there is growing support for these projects from federal and regional governments and the market. Final investment decisions are expected on the two projects in late 2019 or early 2020.

## Greece

Greece's only existing LNG terminal at Revithoussa received €50.8 million of EU funding for its expansion project which was completed in November 2018. Facilities to provide large- and small-scale reloading services are under construction at Revithoussa, and the terminal also plans to offer truck loading services by 2022. LNG imports to Revithoussa declined slightly in 2018 compared to 2017. A second terminal – Alexandroupolis FSRU – which is being developed by Gastrade and DEPA, is due to start up in 2021 although FID has been postponed.

## Italy

Italy has three LNG import terminals. Two of these – the FSRU OLT Toscana Terminal and (onshore) Adriatic LNG – have been running at high levels of utilization in the first half of 2019 (up to 92%). The Italian wholesale gas market has been offering a price premium over NBP and TTF prices, and these two terminals have adopted innovative capacity allocation procedures based on auctions starting from a reserve price lower than previous tariffs and linked to LNG market prices. Historically, LNG spot volumes have been deterred from unloading in Italy due to relatively high regasification tariffs.

## Lithuania

The Independence (Klaipeda) FSRU project received €27.4 million of EU funding for connecting pipelines (from CEF). The terminal continues to play an important geo-political role by reducing Eastern Europe's dependence on gas from Russia since first imports in 2014. The Independence FSRU is currently leased by Klaipedos Nafta from Norway's Höegh LNG until 2024. In December 2018, Lithuania gave the go ahead to state-owned Klaipedos Nafta to purchase an LNG storage vessel by late 2024 with the aim of reducing annual lease and operational costs. In 2018 Klaipedos Nafta launched a €27 million LNG reloading station to pump the gas into LNG-powered vessels and onto road-going trucks. LNG imports into Lithuania declined slightly in 2018 compared to 2017.

## Malta

LNG imports into Malta (Armada LNG Mediterrana FSU) increased by 0.1 MT in 2018 compared to 2017. This is a fairly significant increase for a country with one LNG terminal, which only started up in 2017.

## Netherlands

The Netherlands has one LNG import terminal – the Gate terminal – in the Port of Rotterdam. In 2018, an additional 1.3 MMT of LNG was imported into the Gate terminal, partly to fill a void caused by the decline in domestic gas production from the Groningen field. The increase is also a reflection of the strong liquidity of the Dutch gas wholesale market – the TTF – operated by Gasunie. In September 2019, Gate announced that it had imported 111 cargoes so far this year, already shattering the previous year's full year record of 104 cargoes.

## Poland

Poland's 5 bcm/y Swinoujscie terminal has received €332 million of EU funding – €130 million from EEPR and €202 million from the European Regional Development Fund – showing the EU Commission's commitment to diversifying sources of energy supply in Eastern Europe and to reducing the region's dependency on Russian gas. It is currently executing the Terminal Expansion Program that consists of: (1) additional regasification capacity; (2) a third storage tank; (3) LNG to rail trans-shipment facilities; and (4) a second jetty. In 2018, LNG imports to Poland (from Qatar, Norway and the US) increased by nearly 1 bcm (+58%) compared to 2017, reaching over 2.7 bcm (after regasification), and the terminal had one of the highest utilisation rates in Europe. In March 2019, the Swinoujscie terminal performed its first bunkering operation.

## Portugal

Portugal has one LNG import terminal located at Sines. In 2018, LNG imports into Portugal increased by 0.1 MMt compared to 2017.

## Spain

Spain's six operating LNG terminals account for almost one third of Europe's LNG import capacity. In 2018, LNG volumes imported into Spain decreased by 1.4 MMt, partly due to stronger pipeline imports, as well as the penetration of alternatives sources of energy (including subsidised renewable energy). Over the last ten years, Spain's LNG terminals have only shown small increases in imports maintaining low utilization levels (around 23%). The illiquidity of the Spanish gas market is one of the key reasons for Spain failing to attract a larger share of the additional LNG volumes coming into Europe: the Spanish gas hub has much lower traded volumes than other gas hubs in Western Europe. The range of Pyrenees mountains between Spain and France poses obstacles to building gas pipeline infrastructure which would better connect the Spanish gas market to the rest of Europe.

## Turkey (non-EU)

Turkey has four LNG import terminals: two onshore terminals (Aliaga (Etki) and Dortyol) and two FSRUs (Aliaga (Izmir) and Marmara Ereğlisi). In 2018, Turkey imported 8.3 MMt of LNG – an increase of 1 MMt compared to 2017 – retaining the position it acquired in 2017 as Europe's second largest LNG importer (behind Spain).

## UK:

The UK demonstrated a moderate increase in LNG imports in 2018 followed by a sharper increase in the first part of 2019, which is largely attributable to the liquidity of the UK's gas wholesale market – the NBP. Nonetheless, utilisation rates in the UK's LNG terminals remain relatively low (around 40%) compared to its neighbours in Belgium, France, Italy and the Netherlands.



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