Energy security is a key priority of the EU’s Energy Union, alongside the promotion of renewable energy, energy efficiency, the full physical and regulatory integration of the European energy market and the development of clean energy technologies. Diversity in the sources of energy we use contributes to increased competition and security of supply and in the EU, it is pursued:

1. through the promotion of the cheapest source of energy - the one we do not consume - energy efficiency;
2. by focusing on the production of indigenous sources of energy, especially renewables;
3. by improving the diversification of gas supply sources and routes, which means the implementation of new corridors – Southern Gas Corridor, Black Sea and East-Mediterranean – and taking advantage of the opportunities provided by a growing and ever more flexible global LNG market;
4. by thorough implementation of the EU gas market framework in specific Network Codes – as infrastructures without EU market rules cannot deliver itself on the Energy Union objectives.

As part of the Energy Union Strategy and the newly adopted Long Term Strategy “A Clean Planet for All”, gases need to contribute to the decarbonisation of the energy sector. The Commission is currently analysing the potential of the decarbonised gases.
including hydrogen, and the new technologies such as power to gas to seek for a regulatory framework that promotes most economically efficient decarbonisation in a technologically neutral way, allowing for a level playing field in the gas market.

With the increasing importance of sustainability aspects and long-term decarbonisation objectives, actions to reduce methane emissions and the issue of flaring and venting in the gas/LNG supply chain are becoming ever more important.

To further improve energy security, the EU is particularly focusing on the most vulnerable regions where, due to historical reasons, there has been an overdependence upon a single external gas supplier. Dedicated initiatives such as the Baltic Energy Market Interconnection Plan (BEMIP) and the Central and South-Eastern Europe Energy Connectivity (CESEC) High-Level Groups are designed to accelerate the integration of the energy market of these regions. In addition, a key objective, as set out in our LNG Strategy, is to ensure that all of our Member States have direct or indirect access to LNG.

LNG offers access to a global gas market, and the EU has a strong interest in ensuring that this market is open, flexible and transparent. It connects regional gas markets across the globe, which can quickly react to sudden changes in demand by following price signals and improves the overall global security of supply.

Today, natural gas plays a crucial role in the EU energy mix including in the context of the clean energy transition, accounting for 23% of energy demand. During the transition, natural gas can continue to have an important role, for example, in replacing more polluting fuels like coal in the power sector and in heating, and oil in transport where it can be used as fuel in maritime and heavy-duty vehicles or in providing a flexible source as key to integrating variable renewables production. However, in the longer-term natural gas will also need to decarbonise, for example by the use of CCS and CCU technologies.

Our diversification strategy is paying off: LNG imports to the EU increased by 20% between 2016 and 2017. The share of LNG in total EU gas imports increased from 10% of total EU gas imports in 2014 to 14% in 2017 and 2018, reaching around 56 billion cubic meters. In particular, since the meeting between President Juncker and President Trump in July 2018, the EU-US LNG trade relation has intensified and cumulative EU imports of US LNG are up by 181% at 7.9 billion cubic meters as of March 2019.

The EU infrastructure is ready to receive more LNG. The EU has well developed liquefied natural gas import capacities, allowing in theory to cover over 40% of the EU’s gas demand. New capacities are being developed – some with EU support – in the Adriatic Sea (Krk Island in Croatia), in the Baltic Sea, notably in Poland (in addition to the existing terminals such as Klaipeda in Lithuania) and in the Mediterranean Sea in Greece. Germany recently also announced its plans for constructing at least 2 LNG terminals. It is important now that the existing LNG terminals are utilised and accessible to all suppliers willing to use them on clear third-party access terms.

Small scale LNG solutions and services are also gaining ground across the EU by contributing to improving the utilization of LNG terminals and contributing to the increasing share of LNG in transport.

It is in this context that we are jointly organising (with the U.S. Department of Energy in collaboration with CEEP, Polskie LNG and LNG Allies) the first High-Level Business to Business Energy Forum on 2nd May 2019. Under the heading “Towards large scale U.S. LNG exports to the EU’s gas market: competitive pricing, infrastructure investments and technological innovation,” this event will bring together the key market players and decision makers in the transatlantic LNG business.

Dominique Ristori, Director General, DG Energy
Fred H. Hutchison: A Great Year Ahead for U.S. LNG Exports

Although we are just barely one quarter into 2019, the year is already shaping up to be one of the most momentous in the history of the nascent U.S. LNG export industry: three new projects are expected to enter into service, up to eight more are likely to be approved by U.S. regulatory authorities, and several that have all of their government permits are expected to reach a final investment decision (FID).

As a result of the shale energy revolution, the United States has gone from a natural gas importing nation to a major natural gas exporter in less than a decade. There are now three major U.S. LNG export facilities in operation: five “trains” at Cheniere Energy’s Sabine Pass liquefaction project in Louisiana, one train at Dominion Energy Cove Point in Maryland, and one at Cheniere’s Corpus Christi facility in Texas.

Two more trains at Corpus are expected to enter commercial service in 2019 and these will be joined by the first phase of Kinder Morgan’s medium-scale liquefaction project in Savannah, Georgia, and at least one (possibly two) trains at the Cameron LNG facility that Sempra Energy is building in Louisiana (with affiliates of Total, Mitsubishi, and Mitsui). Rounding out this first “wave” of LNG projects is the Freeport project in Texas that is expected to see one train begin LNG production this year.

By the end of 2019, LNG production in the United States will have reached 65 million tons per annum, and this will have been achieved without harming U.S. domestic natural gas consumers because U.S. gas production will inevitably expand to meet demand and thereby keep prices in check.

Beyond, the six projects which are now being built, one other facility will soon begin construction. That is the Golden Pass project that is being converted from an LNG import terminal to an export facility by subsidiaries of Qatar Petroleum and ExxonMobil. (First exports from Golden Pass are expected to occur sometime in 2024.)

While all of this news is incredibly exciting, a second and potentially larger wave of U.S. LNG export facilities is waiting in the wings. This wave includes expansions for the Sabine Pass, Corpus Christi, Cameron, and Freeport facilities and new projects planned in Louisiana, Texas, Mississippi, Florida, and Oregon. Of the new projects, four have already received all necessary permits from U.S. regulators. These are the Magnolia LNG, Lake Charles, and Calcasieu Pass projects in Louisiana, and the offshore (floating) liquefaction project proposed by Delfin LNG.

Besides these projects which are fully permitted, ten more projects are pending before the Federal Energy Regulatory Commission (FERC) and the U.S. Department of Energy (DOE). FERC has set an ambitious schedule for these ten projects and up to eight of them could be approved by the end of the year (presuming the agency sticks to its schedule). Once FERC has acted to approve the construction of each facility it is up to DOE to issue a license to export the gas molecules, and under the leadership of DOE Secretary Rick Perry, the department has been doing so within days of the final FERC order.

After a company has secured its federal (and state/local permits), it must secure binding offtake agreements with customers, arrange equity and debt financing, and then proceed to a final investment decision (FID).

Several companies have stated their intent to take FID on their projects in 2019, including Tellurian’s Driftwood, LNG Ltd.’s Magnolia, and Venture Global’s Calcasieu Pass liquefaction projects. Sempra Energy is targeting two LNG projects for a FID in 2019, its Port Arthur facility and the Costa Azul Energia project in Ensenada, Mexico (just south of the U.S. border), which will liquefy U.S. natural gas.

In addition to these projects, several others could move towards FID in 2019 if they can secure long-term (15 to 20 year) contracts with creditworthy offtakers.

All in all, 2019 is shaping up to be a terrific year for U.S. LNG exports. Several new projects will come online, at least one more will break ground, and many others could soon follow suit. Stay tuned for developments!

Fred H. Hutchison, President & CEO of LNG Allies, the U.S. LNG Association
Nemunas Biknius, Arūnas Molis:
New option to secure gas supply in the frame of North-South corridor

Just a couple of years after the Baltic countries ended a historical dependence on monopoly gas supply from the East by bringing in a floating liquid gas terminal symbolically named Independence to Klaipėda port, now Lithuania, Latvia and Estonia stand among a few European Union countries that are no longer reliant on long-term gas supply contracts. Thanks to efficient cooperation. With Polish and Finnish partners, these countries look increasingly well positioned to fill in the region’s gas needs based on market terms ahead.

Looking North, the natural gas transmission system operators are developing the Balticconnector transnational gas pipeline to interconnect the Estonian and Finnish gas transmission networks. Heading South, Lithuania is in the works with Polish partners to build gas interconnection GIPL. Adding liquid-gas terminal in Klaipėda, Latvia’s underground gas storage facility, as well as de facto Baltic trading floor, get Baltic into the equation. The new North-South route is set to open a diverse and flexible gas supply option on competitive terms to market participants along the lines.

BEYOND NATIONAL BORDERS’ MINDSET AND COOPERATION

Lithuanian and Polish gas transmission system operators Amber Grid and GAZ-SYSTEM S.A. have already linked a connection agreement to invest into Gas Interconnection Poland-Lithuania (GIPL).

Following the procurement process, the construction of the GIPL pipeline will start within the next few months. The project, when brought to life in late 2021, will integrate gas markets of the Baltic States and Finland into common EU market via Poland and eliminate the barriers in the formation of a gas market in this part of Europe.

In addition, it will add to the reliability and flexibility of gas supply in the BEMIP region and create possibilities to align the mechanisms of solidarity in the possible adverse situation.

It will help to achieve sufficient interconnection capacity between the Baltic States and the rest of the EU countries, providing an alternative gas supply source and route for the countries in the region. This combination will not only enhance the security of gas supply in the region but will also serve well for the formation of regional energy market competition, thus higher price convergence.

The pipeline will connect the gas transmission systems of Poland and Lithuania. The 700mm diameter pipeline will be 508 km-long, with 343 km in Poland and 165 km in Lithuania.

When the bi-directional pipeline will be put into operation, new capacities will be created, allowing to transport gas up to 27 TWh a year to the Baltic States and up to 21 TWh a year to Poland, making the gas market of Baltic States a part of common EU gas market.

The GIPL project has been included in the list of projects of common interest of the European Union, the ten-year development plan of the European Network of Transmission System Operators for Gas (ENTSOG), the Baltic Region’s Transmission System Operators Gas Regional Investment Plan (BEMIP).
LNG TERMINAL ADDS LUSTRE
The new gas interconnection with Poland, Lithuania’s strategic partner, creates new possibilities for the operation of LNG terminal and an option for even more competitive gas prices.

The LNG terminal in Klaipėda has a regasification capacity of up to 44 TWh a year, which can fully meet the natural gas needs of Lithuanian consumers. It also contributes greatly to the security of energy supply as it could be used even in case of disruption of gas supply from the East.

It also opens options for gas deliveries to any other market connected to Lithuania’s transmission system via pipeline interconnection. LNG import enables natural gas to come from diverse sources. During the period of LNG terminal operations in Lithuania, there have been LNG cargoes imported from four different continents. The opportunity to source natural gas from any of the large numbers of LNG suppliers worldwide can be used by any natural gas supplier in the region due to transparent third-party access model implemented at Klaipėda LNG terminal.

EFFICIENT LEVERAGE TOOL
LNG terminal in Klaipėda is to play the role of effective leverage over gas prices.

After Independence, FSRU vessel’s operations were launched, the natural gas market in Lithuania saw a significant decrease in the price difference between the average price of the natural gas imported to Lithuania and the European gas hub prices.

LNG terminal also gave the market players an opportunity to arbitrage the Russian gas supply against attractive LNG spot cargoes – there have been periods of a high level of LNG terminal utilisation during the attractive LNG price periods when the Russian gas supply was low and vice-versa. Opportunistic use of LNG terminal ensures attractive natural gas prices for market consumers throughout the year.

“The LNG terminal effectively ensures gas supply competition in the region and enables offering consumers the best gas prices currently available in the world market. Since 2015, a gas price in line with the EU average, has been ensured in Lithuania, and this is one of the most important achievements of the terminal’s operation,” says Mindaugas Jusius, CEO of Klaipėdos Nafta (KN), the operator of the oil and liquefied natural gas (LNG) terminal.

On the other hand, the failure to secure long-term LNG supply would pose a risk of failing to ensure sufficient competition between suppliers and competitive pressure on the prices of gas sold by the dominant supplier.

The LNG terminal reduces risks related to the possibilities of Gazprom, the dominant supplier in the region, to abuse its dominant position in the market and to increase gas import prices to consumers beyond reasonable limits.

It was estimated by independent consultants that if not for the LNG terminal in Lithuania, Gazprom could potentially charge a price premium, resulting from market dominance on gas sold in the region in a likely range between 11 to 20 percent.

Lithuanian parliament has recently approved the proposal regarding long-term LNG import by acquiring the FSRU vessel after 2024. While there are still important decisions to be discussed in order to find most economically beneficial proposal regarding the purchase of an FSRU vessel, it is important to the natural gas market that the security of supply and positive benefits of LNG import possibilities will remain in the future.

OPTIONS TO BENEFIT
KN, the operator of Klaipėda LNG terminal, also launched a small scale LNG reloading station in the port of Klaipėda. The LNG reloading station already provides opportunities to use LNG transported by LNG truck to locations that are not connected to a natural gas pipeline.

KN also sees the big potential in LNG as a cleaner fuel in the field of vessel bunkering and fueling heavy transport in the region.

Since the year 2019, KN also has an opportunity to employ the world’s largest LNG bunker vessel Kairos, which is chartered by KN together with a partner LNG supplier Nauticor.

It will enhance the LNG logistic chain for KN in the Baltic Sea region and will assure more competitive service prices as well as smooth and prompt service provision for users of the LNG reloading station.

Nemunas Biknius is a strategy director of EPSO-G and Arūnas Molis is a Director of Klaipėda LNG terminal.
Anna Mikulska: Try Harder, Gazprom. Why Poland Could Choose LNG.

High prices that Poland and the CEE region paid in the past can make the switch to LNG and other non-Russian gas supplies easier. Historically high prices can make paying such a premium more economically and politically palatable.

PGNiG, the Polish state-owned energy company signed this year yet another long-term contract for delivery of U.S. LNG in early 2020s. The contracts have been part of Poland’s move away from Russian gas – a move predicated upon geopolitical considerations and comparatively high prices that Russia has charged Poland as the dominant market supplier.

Now those high prices may come back to haunt Russia. The European natural gas market has become more liquid and diversified thanks to the advent of large-scale LNG exports. High prices that Poland and the CEE region paid in the past can make the switch to LNG and other non-Russian gas supplies easier.

Under the Yamal Contract, signed with Gazprom for the period of 1996 to 2022, Poland has been buying Russian gas on the basis of a generally disadvantageous formula indexed to price of crude. As a result, Poland paid on average $13.6 per million Btu in the period between 2002 and 2009 and in excess of $9 per million Btu between 2010 and 2014 (Table 1). Even in 2017, when crude prices were low, Russia charged Poland $7.99 per million Btu. This is a sizable markup over Russia’s reported cost of approximately $3.5 per million Btu, which includes production, transport, and export duties.

Thanks to its dominant position, Gazprom has also charged Poland higher gas prices compared to customers with a more diverse pool of suppliers. Reportedly, in 2012 Poland paid $1.64 more per million Btu of gas than Western European countries paid on average. When compared to its immediate neighbor, Germany, this difference was $1.77 per million Btu in 2010, $1.36 in 2013, and $1.53 in 2014. As oil prices fell, the spread became significantly smaller but has not disappeared completely (in 2017 Poland still paid $0.20 more per million Btu than Germany).

Once the Yamal contract expires, given a more liquid natural gas market and Poland’s diversification efforts, the price differential with Western Europe and high prices unrelated to market conditions should disappear. Gazprom will then need to compete. With the low cost of its gas, Gazprom is more than likely to win any price war with more expensive LNG.

But since geopolitical concerns have been at the forefront of Poland’s natural gas policy, the country is also likely to prefer to pay a certain premium for non-Russian gas over the hypothetical price that Gazprom would offer post-2022. Historically high prices can make paying such a premium more economically and politically palatable. In a way, the premium could be “invisible,” i.e. generate no price increases, since the price of LNG would be similar if not lower than the high prices of natural gas that Poland is accustomed to.

Take for example the Henry Hub (HH), the main pricing point in the United States for natural gas and the basis for U.S. LNG prices. Even if the price at HH rises to the upper bond of EIA predicted levels (approx. $5 per million Btu), U.S. LNG could still compete with prices that Gazprom charged Poland through most of the 2010s (see Table 1). Precisely this line of argumentation employed PGNiG’s CEO, Piotr Wozniak when he stated this October that U.S. LNG contracts for delivery in the early 2020s come at a 20% discount, relative to current prices of Russian gas.

Of course, this does not mean that Gazprom will disappear from CEE markets altogether. After all, it is the lowest cost supplier on the European market and it can effectively compete for the market if it offers lower prices. However, all else equal, countries like Poland that had to pay higher prices for Russian gas in the past are somewhat less economically and politically constrained in factoring geopolitical benefits into their decision. As a result, as long as alternative supplies are readily available, Gazprom would have to compete much harder for those markets than what a simple economic calculus would suggest.

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Recapitulation of 2018 for Polskie LNG – a breakthrough in business

The past year was a period of increased work in Polskie LNG. It contributed to excellent results of President Lech Kaczyński’s LNG Terminal in Świnoujście and the timely implementation of the LNG Terminal Expansion Program. As part of the latter initiative, in late 2018, the company launched two tender procedures, for the development of the so-called onshore part (additional regasification installation, third LNG storage tank and LNG-to-rail transhipment system) and the offshore part (i.e. additional jetty).

POLSKIE LNG – FACTS AND FIGURES

In 2018, the LNG Terminal in Świnoujście successfully pursued its technological processes achieving the following results:

• Nearly 2 million tonnes equivalent to 4.4 million m³ of natural gas was unloaded at the LNG terminal.
• 23 methane carriers (14 vessels in 2017) were unloaded.
• 1794 tank trucks (1523 in 2017) were loaded with LNG at the Terminal in Świnoujście. In 2018, Polskie LNG also set its new record of loadings in a single day – 24 tank trucks.
• Last year at the LNG Terminal, the first ISO-container was loaded with liquefied gas; this means of LNG transport is becoming increasingly popular.

IMPLEMENTATION OF DEVELOPMENT PLANS

A very important step towards the implementation of the LNG Terminal Expansion Program - two tender procedures were launched by Polskie LNG at the turn of 2018 and 2019.

The first contract notice (regarding the so-called onshore part) started the tender procedure with a view to selecting the contractor for three onshore components of the LNG Terminal expansion program:

• Additional regasification installations – increasing the nominal regasification capacity of the terminal to 7.5 billion Nm³ / year,
• The third LNG process storage tank – increasing the flexibility of performance and ensuring the optimum process storage capacity,
• LNG-to-rail transhipment installation – extending the scope of services to include the loading of ISO-containers and tank cars and reaching new potential customers.

The second tender procedure refers to the so-called offshore part (fourth component of the expansion program) which will involve:

• Additional jetty, for loading and unloading vessels, LNG transhipment and loading of LNG bunker vessels and bunkering service.

The new jetty will be built in cooperation with the Szczecin and Świnoujście Seaports authority as part of the development of the so-called Small Scale LNG infrastructure. It will provide additional services to the LNG Terminal owing to which the LNG Terminal in Świnoujście will be able to satisfy the growing market demand in the Baltic Sea region as well as to respond to a number of European regulations including climate and environmental laws which stimulate the transition towards low-emission fuels.

– The past year has been intense but also very satisfying. We are very well prepared for new business challenges, said Paweł Jakubowski, president of the Polskie LNG company.

GOOD TIMES FOR LNG

In the past year, the company has also implemented a number of development initiatives including:

• Joining the Baltic Ports Organization (BPO)
• LNG Terminal roadshows in the USA, Norway, Australia and France
• organisation of the visit of Rick Perry, Secretary of the US Department of Energy in Poland in collaboration with the State Administration
• Establishing cooperation and signing a letter of intent with the University of Western Australia
• Establishing cooperation with the the Main School of Fire Service including joint research and academic projects as well as access to specialist equipment.

The past year was a period of increased work in Polskie LNG. It contributed to excellent results of President Lech Kaczyński’s LNG Terminal in Świnoujście and the timely implementation of the LNG Terminal Expansion Program. As part of the latter initiative, in late 2018, the company launched two tender procedures, for the development of the so-called onshore part (additional regasification installation, third LNG storage tank and LNG-to-rail transhipment system) and the offshore part (i.e. additional jetty).
Dr. Frank Umbach:
New Prospects for EU-LNG-Imports from the U.S. and Other Global LNG Suppliers

Contrary to previous self-reassuring statements of being always the cheapest option for European gas imports and doesn’t have to be concerned about any “expensive U.S. liquefied natural gas (LNG) exports”, Gazprom has warned and now expect that U.S. exports of LNG to Europe will be its main competitor this year.

The argument of “cheap Russian gas” has often uncritically been accepted in Europe in context of the controversial Nord Stream 2 debates, without analysing how Russian can be so cheap as it comes from the 4,200 km long of new Yamal gas fields (in a permafrost region with temperatures of up to minus 50°C) and much higher production costs compared to the old, amortised Russian gas fields. Similarly, these debates have often overlooked Russia’s huge investment costs for its 3,000 km long of new connecting pipelines and gas compressors from Yamal to St. Petersburg, where the offshore Nord Stream 1 and 2 pipelines begin. By granting those huge subsidies as part of a geo-economic and political strategy in order to preserve both Russia’s gas market share as well as geopolitical influence in Europe - officially confirmed by a Russian state Sberbank report in April 2018 - a real fair competition with much less subsidized U.S. and other LNG exports to Europe is being presented on the European gas market. Against this background, it is hardly surprising that even high representatives of Gazprom are already discussing to build a Nord Stream 3 gas pipeline in Germany.

The debate of “cheap Russian gas” versus “expensive U.S. LNG” has also disregarded the rapidly changing dynamics of the global LNG markets as well as the Asian supply and demand balance. The U.S. is now already supplying LNG to 34 countries since it began exporting in February 2016. Until last autumn, most of these exports went to Northeast Asia, India and South America rather than to Europe as the Asian LNG gas import prices and therewith, profits were much higher than those in Europe. But since November 2018, the situation has completely changed and is still rather overlooked in regards to the wider geo-economic and geopolitical implications. Thus, it is useful to differentiate between a shorter and mid- as well as longer-term view on the global LNG developments.

**SHORT-TERM VIEW: EUROPE RISING TO THE LARGEST LNG EXPORT MARKET IN THE U.S.**

At present, Europe is importing 70% of its gas demand as the world’s second-largest gas market behind the U.S. Natural gas, and this accounts for around 23% of the EU’s energy demand. The share of LNG accounted for just 14% of the EU’s overall natural gas imports in 2018. With some postpone-ment, a new wave of big LNG capacity is arriving on the global gas market this year. The prospect of a gas price war in Europe between Russian pipeline gas and U.S. LNG, as experts already discussed in 2016/17, has not materialized yet to a higher LNG import demand development in Asia (particularly in China) than originally expected and due to delays of completing some new LNG projects (Australia). But the new LNG wave will intensify the competition between Russian pipeline gas and US LNG exports to Europe – at a time when the Asian LNG import demand growth is decreasing simultaneously. Even in Germany, four LNG import infrastructures are currently being planned. Although final investment decisions (FIDs) have not been made, they are expected in the second half of this year. It is in line with the worldwide trend as the number of LNG-importing countries has continuously increased, reaching 42 in 2018 (compared to 34 countries in 2015 and just 9 countries in the 1990s).

After a US$200 billion decade-long investment boom in Australia might overtake Qatar as the world’s largest LNG exporter this year, the U.S. is already the world’s largest gas producer since 2012 and will replace Malaysia as the world’s third-largest LNG exporter this year. The U.S. shale gas revolution and the technology innovation in the worldwide LNG-market have been a “game changer” on the global gas markets. They have cut Russian gas revenues and forced Gazprom to renegotiate its commercial contracts with much more shorter and flexible terms for spot markets in Europe.

Last January, by reversing a multi-year trend of higher Asian gas prices over Europe, the Asian LNG spot prices have already fallen below the UK spot gas price under the critical US$5 per million British thermal units (mmBtu) for the first time after a peak of more than US$11 mmBtu in the 4th Quarter of 2018. At the end of March, they have further declined to US$4.40 mmBtu - the lowest gas price since April 2016. Due to a slowing LNG import demand growth and an unseasonably warm winter in Asia, it prompted LNG traders to redirect the cargoes from Asia to Europe. Since July 2018, U.S. exports to Europe have increased dramatically by 181 percent up to almost 8 bcm in early March, whilst the U.S. overall supplies to Europe were just 3.3 bcm in 2018. The U.S. has already become the third largest LNG supplier for Europe (after Qatar and Nigeria). The share of U.S. exports to the EU, with overall LNG exports, increased from 11% in 2018 (and just 5% in 2016) up to 32% in January 2019 – long before the majority of Poland’s long-term contracted U.S. LNG imports will be delivered around 2022-2023. On the EU-side, U.S. LNG imports have risen from just 5% in 2018 to 16% of its entire LNG-imports last January. They also help to increase the commerciality of Europe’s 200 bcm LNG import capacity, whose utilisation rate was just 26 percent in 2018. By the end of the year, U.S. export capacity might have almost tripled of the amount being exported at the beginning of 2019.
The worldwide liquefaction capacity will increase this year by another 10% up to 434 mt/a. Between 2017 and 2023, the worldwide LNG trade is expected to increase by more than 100 bcm (from 391 bcm to 505 bcm). When the Golden Pass project will become fully operational, the US will have a combined LNG export capacity of 94 mt/a. But another 52 mt/a have already been approved and an additional 110 mt/a have been submitted for approval.

LOOKING BEYOND 2025

According to BP, the U.S. might even become the world’s largest LNG exporter by increasing its exports dramatically from 17 bcm/a in 2017 to 207 bcm/a by 2040. In the US this year alone, FIDs have more than 16 LNG export projects that might be taken, all of which aim to begin exporting before the middle of the next decade. While from 2020, the worldwide-added new LNG capacities will temporarily decline. The FIDs of new LNG export projects of at least 82 bcm/a are expected to be made this year, and this could even extend up to 291 bcm/a (211 mt/a – see below) - intensifying the worldwide competition.

Moreover, the US has made an official upward revision of its total gas reserves at the end of November last year after it found another new “monster” shale gas and oil field belonging to the Permian Basin, whose gas production has already doubled in just two years and is now second only to the Appalachia region. The estimates of this new giant field run up to more than 280 trillion cubic feet of technically recoverable natural gas, 20 billion barrels of natural gas liquids and 46 billion barrels of oil. It represents a more than 100% and a 65% increase in US oil and gas reserves respectively!

Worldwide, the expected FIDs in 2019 will increase large amounts of new export capacities from the mid-2020s. Qatar and Iran (having the worldwide second-largest gas reserves), as well as Canada and Argentina, might further lead the global gas production growth. But China remains the biggest wildcard in regard to Asia’s future LNG import demand growth and the global demand and supply balance.

STRATEGIC PERSPECTIVES

Despite all European gas import diversification efforts and an undeniable enhanced energy security by creating a Southern Gas Corridor, building bilateral gas interconnectors and implementing reverse-flow capabilities due to impressive investments and adopting new European-wide regulations, 11 EU-member states still relied on Russia for more than 75% of their total national imports of natural gas in 2018. In contrast to Poland and the Baltic states, many other EU governments still prefer “cheap Russian gas” prices over a more diversified and resilient energy security posture.

Confronted with rapidly rising U.S. LNG exports to Europe, Russia might even be willing to reduce and subsidize its gas export prices, though it will come at some heavy economic burden at a time when its economy is stagnating and suffering from Western sanctions. Russia might also expand LNG exports to Europe due to the rising commercial pressures of its high investments in the Arctic region. Nonetheless, with the rising U.S. LNG export capacities as part of a third global wave of LNG supplies over the next decade, the U.S. will increasingly challenge Russian pipeline gas on the European market and also compete with shorter distance Russian LNG exports to Europe before and after 2025. It offers new perspectives for balancing Europe’s gas pipeline dependency on Russia and enhancing the EU’s gas import diversification. In this light, the European Commission and the EU member states need to adopt the right policies and regulations for facilitating LNG-Imports from the U.S. as well as other LNG suppliers, enhancing their price competitiveness to guarantee a real fair competition on the European gas market.
EUROPE'S LNG REALITY

Europe has 28 large scale LNG terminals, all of which are import terminals (regasification). Only Russia and Norway have export terminals (liquefaction) while twelve countries in Europe have import LNG terminals: Belgium, France, Greece, Italy, Lithuania, Malta, the Netherlands, Poland, Portugal, Spain, Turkey and the UK. Of these 28 large scale terminals, 24 are located in EU countries and 4 are in Turkey. Moreover, of these 28 LNG terminals, 23 are land-based, 4 are floating storage and regasification units (FSRUs) and one (in Malta) has both a Floating Storage Unit (FSU) and onshore regasification facilities. There is a substantial imbalance in the way these LNG terminals are distributed in Europe, which is in favour of Western Europe. Thus, the biggest regasification capacity belongs to Spain (61.9 Bcm/year in 6 operational terminals), followed by the UK (42.7 Bcm in 3 operational terminals), and France (34.65 Bcm/year in 4 terminals). In South East Europe (SEE), we only have an operational Greek LNG terminal at Revithoussa, and two planned: one at Alexandroupolis (in Greece) and another at Krk (in Croatia).

In North Eastern Europe, Lithuania opened its LNG terminal (Klaipeda) in 2014 and Poland inaugurated Swinoujscie LNG in 2016. Estonia (who currently has no LNG terminal) plans to build two: Padalski LNG (2.5 Bcm) and Muuga/Tallinn LNG (4 Bcm). Latvia also plans to build an import LNG terminal – Riga LNG (5 Bcm) and so does Russia (Kaliningrad LNG).

To date, the Black Sea has no LNG (Liquefied Natural Gas) terminal. Romania and Ukraine each harboured plans to build the first LNG terminal in the Black Sea: Romania at Constanta (land-based) and Ukraine at Odessa (FSRU). However, there has been little progress in practice since these plans were first announced. Romania’s project (Constanta/AGRI LNG) has a potential start-up date in 2026, at best, since Romania’s priority is to complete the BRUA corridor and kick-start its own gas production in the Black Sea. Paradoxically, Romanian officials still say that AGRI is on the table, although it is all but officially declared dead. Ukraine’s project is not under any development, having been frozen five years ago with no expected date in sight for its possible start. In essence, both LNG projects have quietly faded into oblivion. The supercharged Black Sea geopolitical climate, as well as Turkey’s refusal to allow LNG tanks to pass through the Bosphorus Strait, make the prospect of building an LNG project in the Black Sea a very distant one.

Source: King & Spalding (2018)
At the far Eastern end of Europe, in the Black Sea, we have no LNG terminals at all. Turkey (a Black Sea country) has 4 LNG terminals (2 onshore, 2 FSRUs), but none of them are located in the Black Sea. The closest – Marmara Ereğli, is located in the Marmara Sea – which connects the Black Sea with the Aegean Sea. Back in 2010, Romania dreamt to build the first LNG project in the Black Sea at Constanța, but the plan has yet to see the light of day. The AGRI LNG project is considered by ENTSO-G as “delayed” and its maturity “less advanced”, with a potential date for construction starting in 2022 and commissioning in 2026 (optimistic scenario). Back in 2011, Ukraine also has announced its plan to build a 10 Bcm LNG terminal in Odessa (5 Bcm in stage 1, and an additional 5 Bcm in stage 2), but those plans were completely derailed by subsequent developments in Ukraine, right from 2014 and by Turkey’s opposition to an increased traffic through the already congested Strait of Bosphorus. Both LNG terminal projects (Odessa and Constanța) were, therefore, viewing Azerbaijan as a potential source of gas.

The low utilisation rates of the existing LNG terminals is another issue worth taking into account. Europe’s existing LNG capacity is underutilised. Of the total European LNG import capacity (200 Bcm), only a quarter (50 Bcm) was utilised in 2014. A follow-up study conducted by the European Commission in 2017 re-confirmed the “low utilisation rate of LNG terminals (0-36% in 2016),” with LNG having a “significant role in the Northern route (provides cca. 18% of missing volumes)” and helping “mitigate the risk of African pipeline route disruption (38% of missing volumes),” but with a “limited contribution in SEE Europe.”[3] EU’s LNG Strategy presented in 2016 called for more efficient use of existing LNG infrastructure and gas storage, before building new regasification terminals. Nevertheless, the EU has co-financed or committed to co-finance new LNG infrastructure projects worth over €638 million for 14 LNG projects, which will increase capacity by another 15 Bcm by 2021, in addition to the 150 Bcm of spare capacity that currently exists. [4] However, all these 14 projects are located mostly in the Baltic, Mediterranean and Adriatic Seas, with not even one of them present in the Black Sea.

**ROMANIA’S LNG DREAM**

Azerbaijan-Georgia-Romania Interconnector (AGRI) was supposed to build the first LNG project in the Black Sea and diversify gas supply by creating an alternative route for Azeri gas to Europe. First proposed in 2010, it would have transported Azeri natural gas by pipeline from Azerbaijan to the Georgian port of Kulevi (in Georgia) – and from there (as LNG) – across the Black Sea to the port of Constanța (in Romania), where it would be regasified and shipped via the Romanian gas transport system to European markets (via Hungary). British consulting company Penspen completed the feasibility study for the project back in 2014 and provided 3 scenarios to consider for AGRI LNG development: 2 Bcm (at a cost of €1.2 billion), 5 Bcm (€2.8 billion), and 8 Bcm (€4.5 billion).

The first edition of the EU’s Project of Common Interest (PCI) list in 2013 included the Romanian project in section 6.22 – AGRI (with the LNG terminal in Constanța as subproject 6.22.2), but also in the Priority Corridor Southern Gas Corridor (7.2) with a minimum of 8 Bcm/year from the Caspian (Azerbaijan or Turkmenistan). This is in exclusion with LNG, but the “submarine solution” – a pipeline linking Georgia and Romania (White Stream).[4] If the AGRI project could be found on the first Project of Common Interest in 2013, it was nowhere to be found on the latest – 3rd PCI list (November 2017).[5] In fact, it has already vanished from the second PCI list (November 2015), where both projects (6.22 - AGRI LNG solution and 7.2 - AGRI submarine pipeline solution) appeared as “No longer considered a PCI”. This could mean any of the following reasons:

- either that “according to the new data, the project does not satisfy the eligibility criteria;”
- or “a promoter has not re-submitted it in the selection process for this Union list;”
- or “it has already been commissioned or is to be commissioned in the near future;”
- or “it was ranked lower than other candidates’ PCs in the selection process.”

Since construction did not start and the project was eligible before, a possible reason is that either it was not re-submitted (promoter lost interest in it) or it was ranked lower than other projects (not considered commercially viable). The fact that it has not re-surfaced on the 3rd PCI list (in either form - LNG or submarine pipeline) confirms the lack of commercial attractiveness or signal difficulties related to transport across the Black Sea. These challenges can relate to the liquefaction part. As rightfully observed by British energy security expert John Roberts, countries that possess gas resources (in this case, Azerbaijan) never build LNG terminals in other countries (for example, Georgia).[5] The challenge also has to do with the deteriorating geopolitical climate in the Black Sea after 2014. In either case, it adds an extra layer of complexity to the AGRI LNG project. Friendship among countries (Azerbaijan, Georgia and Romania) is not enough to make a gas infrastructure project a reality. A commercial project has to be underpinned by sales contracts. In AGRI’s case, we have seen only political statements, Memorandum of Understanding, feasibility studies and discussions among the SPV shareholders. No sales contracts. Without a firm purchase commitment, who will put money in building the infrastructure? Especially, when LNG remains more expensive than pipeline gas; especially in an oversupplied European gas market; and especially in a place where the geopolitical climate has worsened. Since the annexation of Crimea by Russia in 2014, the geopolitical risk in the Black Sea went up. Such a project could face harassment/sabotage from Russia since the LNG ships/underwater pipeline would have to pass by Ukrainian waters that are controlled by Russia. This could already further strain tense relations between Black Sea countries. In the post-2014 climate, such a project carries a higher geopolitical risk, making the securing of finances and related insurance costs more expensive than in a business, as the case may be.

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2 Follow-up study to the LNG and storage strategy written by REKK, Tractebel, Energy Markets Global (2017).
4 https://ec.europa.eu/energy/sites/ener/files/documents/memberstatespci_list_2017.pdf, see pg. 21-22 (Romania’s PCIs)
In addition to this, Romania strives to develop its own Black Sea resources to undermine the urgency of an LNG project. To put things in context, the talks related to the AGRI LNG project started in 2010 (2 years before the discovery of the Neptune gas field in Romania’s offshore waters), which changed the optics and calculations in Bucharest. Since 2012, the priority in Romania has been the development of its Black Sea gas and related gas infrastructure (to bring this gas onshore, to export it to Moldova or further on to Austria). Romania is not particularly great at promoting several projects simultaneously. Also, it has learnt that being on a PCI list is not in itself a guarantee to success since the project promoters have to be very active in lobbying for the project, securing finance, conclude pre-sales contracts, etc.

Moreover, Romania’s haphazard policymaking in the past 2 years raises a big question mark regarding its Black Sea gas developments, with only one company (Black Sea Oil and Gas) taking an FID in early 2019, meanwhile the two other big players (OMV Petrom and Exxon) adopted a “wait and see” strategy.

Finally, it is clear that Azerbaijan’s priority investment destination is Turkey, not Romania. Azerbaijan does have the resource base to supply the Constanta LNG project, but in the near future, its number one priority is gas supply through the TANAP/TAP system. Should its capacity be expanded (from the current 16 Bcm to 32 Bcm in stage two), this would allow Azerbaijan to sell more gas to Europe (20 Bcm instead of the current 10 Bcm via TAP) than the volume it would sell across the Black Sea as LNG to Romania (8 Bcm).

Romania’s efforts in early 2019 to explore new cooperation possibilities with Azerbaijan by involving SOCAR in Romania’s Black Sea gas development (through a partnership with Romgaz), signals the attempt to secure Caspian gas for transport through the Eastring pipeline - a project which, although equally distant in time (2023-2028), seems to have better prospects than AGRI LNG does at the moment. In addition, the fact that there will be four elections held in Romania in the next two years: European parliamentary and Romanian presidential elections taking place this year, and Romanian local and parliamentary elections in 2020. In effect, judging by how fast Romania has been moving on its priority projects so far (Black Sea gas development, BRUA, interconnectors), and for all the reasons explained above, I am very sceptical about the chances of Constanta LNG project happening anytime soon.

Eugenia Gusilev is a director of ROEC.

Many shipping companies and bunker suppliers have already been adapted their strategies and making their preparations years in advance to meet the new law obligations. LNG, as an alternative marine fuel, is the only mature solution that can meet both existing and future emission standards and be economically viable at the same time. LNG will become increasingly popular also due to the adoption of the Sulphur Directive. The European Commission plans to completely eliminate emissions from maritime transport by 2050. The means that Central and Eastern European countries will have to meet more stringent standards than those binding in other parts of the world. The Sulphur Directive requires shipping companies whose vessels sail in Sulphur Emission Control Areas (SECAs), e.g. the Baltic Sea and the North Sea, to use fuels with sulphur content not exceeding 0.1%.
“Grupa LOTOS readily engages in projects involving alternative fuels, which is consistent with our Group’s growth strategy for 2017–2022. LOTOS’s ambition is to win leadership in promoting new generation alternative fuels, such as LNG. It is a clean and safe fuel. The key to further enhancing its popularity is development of LNG logistics and bunkering infrastructure. To this end, Grupa LOTOS have become involved in conducting a feasibility study for the construction of a small-scale LNG handling terminal in Gdańsk, which is partly financed by the European Union (CEF),” said Patryk Demski, Vice President of the Management Board of Grupa LOTOS S.A., Chief Investment and Innovation Officer.

LNG bunkering of ships is yet another of the many possible applications of gas imported by PGNiG to Poland from Qatar, Norway and the United States via the Lech Kaczyński LNG Terminal in Świnoujście. On March 13th 2019, 54 tonnes (c. 120 m3) of LNG were pumped into the tanks of Fure Valo, a vessel owned by a Swedish shipping company which plans to increase its LNG-powered fleet to six such vessels by the end of the year. The second bunkering operation was performed on March 18th, when 18 tonnes (c. 40 m3) of LNG were loaded into the tanks of the ‘Ireland’ vessel, from a single container.

“Grupa LOTOS and PGNiG have worked together for many years. PGNiG supplies natural gas to Grupa LOTOS, and Grupa LOTOS uses this fuel in oil refining. The collaboration has been very successful. Each company can draw on the experience of the other: LOTOS’s knowledge of the marine fuel market and PGNiG’s expertise in LNG,” added Cezary Godziuk, President of the Management Board of LOTOS Asfalt.

EXPANDING THE INFRASTRUCTURE

In line with Directive on the deployment of alternative fuels infrastructure, an appropriate number of refuelling points for LNG should be available at maritime ports by the end of 2025 at the latest. In Poland, such facilities are to be available in Gdańsk, Gdynia, Szczecin, and Świnoujście. From now on, LNG bunkering services are a fixed component of PGNiG’s and LOTOS’s offering and may be provided both at the Port of Gdańsk and the Port of Gdynia.

Further development plans for bunkering will be aimed at expanding the infrastructure. In January 2018, Grupa LOTOS and Remontowa LNG Systems signed a letter of intent regarding the construction of a pilot system for LNG distribution. The agreement provides for the design, construction and testing of a pilot LNG docking station. Remontowa LNG Systems has developed a concept for using LNG containers to bunker ships through a complex system of valves and pumps set in a frame the size of a 40 ft container. Thanks to it, LNG fuel can be delivered to the ship with higher efficiency – much faster than it is in the case of bunkering from road tankers. The project will also receive funding under the CEF programme.

But the final bunkering method that is most sought after in the market will be the ship-to-ship method, where LNG is transferred to an LNG-powered ship from another sea vessel, for instance a bunkering vessel. In this scenario, LOTOS is considering several options. The method would also require appropriate infrastructure because LNG is complementary to other bunker fuels already sold by LOTOS, like low-sulphur diesel oil.

It has been assumed that LNG would be carried by rail from the Świnoujście terminal in cryogenic containers on intermodal platforms.

The project of LOTOS Kolej provides for the purchase of 324 modern intermodal platform carriages and two electric locomotives for PLN 183m. Almost half of that amount will be secured by LOTOS Kolej through participation in the ‘Development of maritime transport, inland waterways and multimodal connections’ competition (under the ‘Infrastructure and Environment 2013–2020’ programme). Rail transport would therefore play an important role in the project.

THE FUTURE OF ALTERNATIVE FUELS

The development of the alternative fuels market, supported by Grupa LOTOS, is vital for Poland, primarily because it offers the chance to gain a competitive edge in a new area of the European economy. This is a great opportunity and also a chance to create a new branch of economy and a sector of sub-suppliers of key components. Grupa LOTOS sees the scientific potential of Polish universities and businesses, which are already supplying many components to global majors. At the governmental level, this opportunity has been recognized and highlighted in the Sustainable Development Strategy prepared by Prime Minister Mateusz Morawiecki as well as in the National Policy Framework for the Development of Alternative Fuels Infrastructure and the Development Directions of Energy Innovations, a document prepared by the Ministry of Energy.

Under the Strategy, Grupa LOTOS will strive to become a leader in new generation fuels. In order to turn these plans into reality, in September 2018 representatives of Grupa LOTOS and LOTOS Lab, which is the entity responsible for initiating, coordinating, financing and implementing R&D projects at the LOTOS Group, signed documents initiating a joint R&D project with the Warsaw University of Technology. The project will be to prepare the prototypes of selected equipment for low emission transport and energy storage. Similar agreements were signed with Gdańsk University of Technology in March this year.

In December 2018 Grupa LOTOS received a decision granting it EU funding for its Pure H2 project, comprising the construction of hydrogen purification and distribution units as well as two hydrogen fuelling points. The project financing agreement was signed during the COP24 in Katowice, allowing Grupa LOTOS to build the first two pure hydrogen filling stations. The objective of the project is to launch the sale of ultra-high purity hydrogen (99.999%) which could be used primarily as a fuel in public transport vehicles. Hydrogen allows vehicles to cover the distance of as much as 450 km without the need for additional charging. The use of hydrogen also makes it possible to spend less on additional power grid infrastructure. The project envisages the construction of a hydrogen purification unit at the Gdańsk refinery and a hydrogen sale and distribution station in the immediate vicinity of the LOTOS Group’s plant, as well as two refuelling points (in Gdańsk and Warsaw). ■
Between 2011 and 2018, Gazprom’s market share in Europe grew from 27% to 37%[1] and Gazprom’s strategy is to maintain its number one position in Europe with a “35%+”[2] market share for the period of 2018-2035. This means that other sources of supply will be required. As Norway is not forecasting any growth above its actual 120 bcm/y and African pipe supply will continue to be constrained by local demand, it leaves only Azeri pipe gas and LNG to fill in the gap for the coming years. By post-2020, 10 bcm/y of Azeri gas via the Southern Corridor could be expected, as long as there is no transit issue in Turkey. It could even be argued that this long transit pipe could be the last one to be built in a world where LNG definitively avoids transit risks. This explains why 40% of the investments in upstream gas is dedicated to LNG. In short, the EU will require more LNG, whatever the demand growth will cost.

Over the past decade, the EU has increased its security of gas supply by moving away from oil-indexation to hub pricing, significantly expanding its LNG infrastructure by building additional storage capacities, implementing pipeline reverse flow capabilities and eliminating destination clauses. It is on its way to achieving a highly competitive, liquid, and transparent internal gas market with the new gas directive that will implement internal EU market regulations in pipelines to and from non-EU countries. As the price is now set by the hub, it doesn’t make any difference for the customers to access pipe gas or LNG. But each supplier must make sure it stays competitive, whatever the spot price is. This means that LNG producers will need to find a business model, allowing them to be competitive in Europe.

Today’s TTF prices are challenging for holders of US liquefaction capacity as the actual unbundled business model forces them to buy gas in the US at the HH index. This is why the second wave of North American LNG will have to innovate again. The actual projects that reached Final Investment Decision (FID) – LNG Canada and Golden Pass – so far, are allowing the equity owners to access their share of LNG FOB on water. At Tellurian, we believe that this is the part of the way forward but to truly achieve a low-cost LNG business model, we need not only equity partners in the liquefaction plants but to re-integrate the complete LNG chain in the US from upstream to the plant via pipes.

With the assumption of LNG supply growing strongly in the coming years, the EU will benefit from increased competition, diversification and security of supply. It is also important to underline that if the consequence of an increase in spare capacity is to reduce prices as we are witnessing, it is more in the interest of consumers than producers to make sure that new projects are put on the line ahead of demand growth and not vice-versa. This is in line with a 2018 KAPSARC study, which found that OPEC’s spare capacity reduces oil price volatility and generates between $170 and $200 billion of annual economic benefits for the global economy. A ‘wait-and-see’ attitude from the consumer side is the perfect recipe for a boom and bust commodity! This means that in an energy transition world, the EU should not underestimate the great advantages of a fast-switch away from coal to gas. An underestimation of future gas demand growth could limit the consensus view of additional projects required to balance the market ahead of 2025.

In 2019, additional FID is required to balance the market ahead of 2023. The opportunities and challenges for 2019 are for both producers and consumers to select the right LNG projects for FID. At Tellurian, we are working to achieve this milestone in 2019.

Thierry Bros:
The future role of US LNG in the European gas market: Challenges and opportunities


Dr. Thierry Bros VP Research, Tellurian
Global LNG market in 2018

LNG continues to be the fastest-growing gas supply source, with an expected annual growth rate of 4% per year between now and 2035.

LNG provides flexible supply to meet the seasonal and short-term demand requirements of an importer, providing greater security of supply. It is also a reliable partner for renewables because it can quickly compensate for changes in solar or wind power supply and rapidly respond to a sudden increase in demand. From an environmental point of view, switching from coal to gas helps to decrease GHG emissions and limit local pollution and smog. Such considerations are driving an increase in demand on LNG in China, which, in turn, influences the development of global market.

In 2018, global LNG imports reached approximately 319 million tons (MT), an increase of 23.9 MT or 8.3% compared to the previous year, the third largest annual increase between 2010 and 2017. One new country (Cameroon) started exporting LNG in 2018, the number of exporting countries is now 20. Two new countries imported LNG for the first time (Bangladesh and Panama), bringing the total number of importing countries to 42 compared to only 18 available ten years ago.

In 2018, Asia retained its position of leading importing region with a 76% share of global LNG imports, from 73% in 2017. Asian LNG imports grew by 13% to 238.6 MT. Japan remained the leading importing country, with 82.5 MT or a 26.3% market share, followed by China (54 MT). As was the case in 2017, global LNG import growth in 2018 was led by China and South Korea, the world’s second and third largest LNG importers, which together received 21 MT more LNG than in 2017.

In Europe, LNG imports were up by 2.9 MT (+6.4%), reaching 48.9 MT. Imports into Belgium (+1.0 MT) and the Netherlands (+1.3 MT) rose strongly due to the decline in domestic production in the Netherlands and to the narrowing of price differentials between Northwest Europe and Asia. On the contrary, LNG volumes imported into Spain decreased (-1.4 MT) partly due to stronger pipeline imports. With 8.3 MT of imports in 2018, Turkey is now Europe’s second largest LNG importer behind Spain (10.8 MT).

More than 70% of the current wave of LNG capacity additions online

Important decisions concerning the import of LNG have been taken in Poland. The European Commission accepted state aid support for the expansions of regasification of Swinoujscie LNG terminal to 7.5 bcm of capacity per year. Currently, its capacity utilisation rate is at the level of 60%, second best Zeebrugge is at 26-28%. The main Polish buyer of LNG, PGNiG, also declared that the existing portfolio of contracts will be maintained and extended in order to reach 8 bcm of import by 2023.

Whereas the share of spot and short-term volumes had tended to stabilize around 27% of total imports in recent years, the share jumped in 2018 to 32%. Spot and short-term volumes accounted in 2018 for 99.3 MT (+ 21.7 MT or a 28% increase over 2017). This expansion was supported by the ramp-up of flexible volumes from the United States and from Russia and by the rise of LNG volumes handled by aggregators and traders, who are able to optimise their portfolios by purchasing and selling LNG on different contract durations.

Perspective for 2019 remains optimistic, where LNG demand might be driven by new sectors like: long distance road tracking or development of LNG bunkering infrastructure for shipping. In 2018 were taken also important investment decisions with 3 FID signed, which will vastly increase export capacity of the U.S (LNG Canada, Corpus Christi Train 3 U.S. and Tortue LNG U.S.).

LNG as the fuel of choice for road and maritime transportation: the case for (Small-Scale) LNG in Europe[1]

The transport sector amounts to almost one quarter of greenhouse gas emissions (GHG) in the European Union (EU). Natural gas has a 15[2] - 25%[3] GHG emissions-reduction potential for heavy-duty vehicles and shipping. The technology of gas engines is mature and supported by major industry players like Wartsila, Iveco and Volvo. Feedstock for LNG is traditionally natural gas. However, renewable power and biogas produced out of waste can be used as feedstock and are key to producing renewable bioLNG. Additionally, bioLNG offers a compatible mix with, or in some cases a replacement to, LNG and may exhibit in excellent environmental credentials. Biomethane and bioLNG offer almost 100% GHG emissions reduction. These are therefore important components in achieving the emission targets in the EU to meet the Paris Agreement.

Liquified natural gas (LNG) in transportation is a proven and available solution for a lower carbon economy. It is the cleanest fuel available today for shipping and heavy-duty road transportation. The use of LNG as a fuel eliminates the emission of sulphur oxides (SOx), hardly any particle emissions, and reduces by an order of magnitude emissions of nitrogen oxides (NOx) compared to diesel, marine gas oil (MGO) or heavy fuel oil (HFO).[4]

Gas engines, gas turbines and LNG storage and processing systems have been available for land installations for decades. LNG sea transport by LNG carriers also has a history going back to the middle of the last century. Today, the LNG market is already well supplied with mature technology currently under deployment. While conventional oil-based fuels will likely remain the main fuel option for most existing vessels in the near future, the commercial opportunities of LNG are interesting especially for newbuild projects.

(SMALL SCALE) LNG BENEFITS AS AN ALTERNATIVE FUEL FOR TRANSPORTATION

There are several factors that underpin the choice of LNG over other transportation fuels for the road and maritime industry. The critical considerations are economic and environmental factors, the availability and momentum of LNG and the maturity of the market.

THE KEY DRIVERS FOR (SS)LNG DEVELOPMENTS ARE:

ECONOMICS

LNG contributes to achieving the Paris Agreement goals in an affordable way. Fuel pricing depends on a number of factors, including market conditions, which are difficult or impossible to predict. For international shipping it should be noted that subsidies for preferred fuels do not exist because ship fuels are tax-free already. It remains to be seen whether this will change, for example through the introduction of a CO2 fee scheme. The restrictions illustrated in Figure 2 reveal a qualitative trend based on price history.

In Europe, LNG competes directly with the price of pipeline gas. LNG that is fed into the grid can only be marginally more expensive than pipeline gas. The calculations for the diagram use the gas price on the European spot market as a basis for LNG price predictions. The natural gas price in Japan is always an LNG price because the country imports all of its natural gas as LNG. Today, the gas prices in Japan and Europe are gradually aligning. The European and Japanese LNG price can be regarded as an indicator for the worldwide LNG prices regardless of major local deviations. It should be noted that these diagrams do not account for LNG distribution costs.

The diagram demonstrates that only LNG and, to some extent, LPG can currently compete with HFO in terms of market price. Methanol and biofuels may eventually be able to compete with MGO to some extent. Hydrogen is not price-competitive at this moment.

ENVIRONMENTAL

LNG brings attractive environmental benefits both to gas production as well as end-customer use (LNG for transport / power & heating generation) compared to alternative fossil fuels. This includes CO2, SOx, NOx, particles and noise emissions reduction and even elimination. Based on the MARCOGAZ’ position paper “CH4 emissions in the European Natural Gas midstream sectors” and the data provided by GIE members, the total amount of methane emitted from LNG terminals in 2015 is estimated to be 0.002% of the total gas sales in EU 28. LNG terminal operators are already. It remains to be seen whether.

1 Published Position Paper is a shortened and edited version of the original one. You may find it on the Gas Infrastructure Europe website.
3 European Commission Staff Working Document: Actions towards a comprehensive EU framework on LNG for shipping, 24 - 1 - 2013, pg. 6
4 DNV GL, Assessment of selected alternative fuels and technologies, June 2018
and maintenance activities and are implementing the best available techniques to achieve this goal. A common methodology (including the reporting methodology) and a set of recommendations related to the methane emissions are needed. For this reason, the gas industry is involved in several initiatives[5].

DNV GL[6] predicts that the LNG powered fleet size[7] will increase by more than a third (35%) by 2050. The vessels operate primarily or exclusively in areas subject to the IMO limit on sulphur of 0.1 per cent – the Emission Control Areas in North America and the Caribbean, and the Baltic and North Sea. Whilst all vessels will be subject to the 0.5% cap from 2020, the existing 0.1% cap will make LNG an even more favorable option as it improves air quality, especially in ports/harbors. Future NOx and PM regulatory limits are still under development.

In particular also with Arctic routes opening up for shipping, a major concern emerges through the deposition of black soot resulting from emissions from heavy-fuel oil by ships taking these routes. The black soot accelerates the decrease of ice caps and contributes to global sea-level rise. This could be avoided through the use of LNG as a fuel.

The combined amount of HFO and MGO consumed by ships accounts for no more than 25% of the global diesel fuel and petrol consumption (2016 figures). This is roughly equivalent to the amount of energy consumed using LNG, respectively 24%. LNG represents only a small portion (approximately 10%) of the overall gas market (Figure 3).

Provided that the IMO regulations are enforced as of 2020, up to 48 million tonnes of ship fuel containing 0.1% or less of sulphur will be consumed annually from that time onwards. Most of the fuel consumed (70-88%) will have a sulphur content between 0.1%-0.5%.

NG powered engines also run more silent than conventionally powered engines. Dutch supermarkets started using LNG trucks to deliver food to the markets at night, because they are more quiet than trucks running on diesel and can therefore meet the strict local regulations on noise.

SECTOR INTEGRATION: SSLNG allows the replacement of the more polluting fossil fuels in the following sectors: transportation, heating and cooling, Industry, (decentralized) power generation and other off-grid destinations/consumers.

AVAILABILITY: LNG is rapidly playing a bigger role in the energy mix. LNG trade increased from 100 million tonnes in 2000 to nearly 300 million tonnes in 2017[8]. LNG is the fastest growing gas supply source. Theoretically, a switchover of the entire global shipping fleet to LNG would be possible today since the current LNG production is higher than the shipping industry’s energy requirement, and the actual share of LNG in the total gas market is only 10%. For all alternative fuels, with the exception of LNG, a rapid rise in demand would require massive investments in production capacity[9].

MOMENTUM: Significant number of first-mover initiatives with an increasing number of ships adopting LNG as a fuel. There are currently 247 confirmed LNG fuelled ships[10] and 110 additional LNG ready ships. By 2020, 500 LNG fuelled ships are expected to be reached[11].

Figure 2. Are alternative fuels for shipping too expensive?
Source: DNV GL, Alternative fuels and technologies for greener shipping
MATURE TECHNOLOGY CURRENTLY UNDER DEPLOYMENT

Gas engines, gas turbines and LNG storage and processing systems have been available for land installations for decades. LNG sea transport by LNG carrier also has a history going back to the middle of the last century. Developments to use LNG fuel in general shipping began early in the current century. Today, the technology required for using LNG as ship fuel is readily available. Piston engines and gas turbines, several LNG storage tank types as well as process equipment are also commercially available[12].

SMALL SCALE LNG – RECENT AND FUTURE INFRASTRUCTURE DEVELOPMENTS

Small-scale LNG is developing as a reliable and effective solution for off-grid energy supply and as the fuel of choice for clean road and maritime transportation. This is confirmed by the 2018 GLE LNG New Services Inventory and List of Services, which include the most actual data from the European LNG terminal operators.

The GLE Small Scale LNG database and map[13] provide the LNG industry and interested parties with an overview of the available, under construction and planned small-scale LNG infrastructure and services in Europe.

Truck loading facilities increased with 37% compared to last year, according to the GLE Small Scale LNG Database (Figure 6). Amongst others, this confirms LNG’s role as a viable solution for remote and off-grid energy supply and cleaner fuels. The use of LNG as a cleaner fuel is also highlighted by the increase in number of the LNG stations across Europe as observed in the 2018 GLE SSLNG map.

The fact that the number bunkership needed to supply LNG powered ships doubled compared to 2017 demonstrate that marine use of LNG is becoming increasingly popular (Figure 6). And this is gaining more and more consideration as many experts recognize its superior performance compared to other types of fuel when faced with increasingly stringent environmental regulatory requirements (SOx, NOx, PM, CO2).

CONCLUSION

Small scale LNG continues to develop as a reliable and effective solution for off-grid energy supply and as the fuel of choice for clean road and maritime transportation. The decision of the International Maritime Organization to limit sulphur content of ship fuel from 1 January 2020 to 0.5% worldwide and the recently adopted ambition to reduce GHG emission by 50% within 2050 have the potential to become game changers. There is an accelerating worldwide trend towards lower emissions of CO2, NOx and particles. Amongst other fuels, LNG is the most promising alternative fuel for shipping and road.

With the LNG fuel infrastructure in place, renewable LNG (from biomass or solar- and wind power) can gradually replace fossil LNG resulting in a fully carbon-neutral solution. LNG presents all the properties typical to top-class alternative fuel for shipping, HDV, transport, and energy production.

In order to deploy the use of LNG on a larger scale, further potential measures should be considered. The proper implementation of DAFI is a key element of LNG uptake. The extension of SECA zone to the whole European coastline with consideration of strengthening of the emissions controls and of sanctions in case of breach will be a driver for the wide use of LNG as a fuel. Further financial support to encourage the transition of LNG as a transportation fuel and the classification of Small Scale LNG infrastructure projects as sustainable will be needed. Bio LNG should be considered as part of the circular economy. A framework ensuring that emission issues are not transferred from air to sea water will be also needed.

This GIE position paper was published in November 2018

Source: GLE Small-Scale LNG Database 2018

12 DNV GL, Assessment of selected alternative fuels and technologies, June 2018
LNG proves to be a reliable solution for Poland and the CEE region’s energy security

In 2018, LNG imports (from Qatar, Norway and the USA) to Poland increased by nearly 1 bcm (+58.2%) and reached over 2.71 bcm (after regasification), compared to 2017, when approximately 1.72 bcm of LNG was imported (after regasification).

Throughout 2018, PGNiG imported approximately 13.53 bcm of natural gas to Poland. According to the forecast, domestic production achieved 3.8 bcm. The share of gas imports from Russia in total import volume fell in 2018 to less than 67%. The share of LNG imports increased to over 20%.

Overall, Poland has received 50 deliveries of LNG cargos with a total volume of 5.7 bcm after regasification, since 2016. Overall, 37 cargoes arrived from Qatar as part of a long-term contract with Qatargas, 9 spot deliveries – from Norway, the USA and Qatar, and one delivery under a medium-term contract with Centrica. The terminal in Świnoujście has the highest annual utilisation rate among all 22 onshore LNG regasification terminals in Europe, which stands at about 60%. It is followed by Zeebrugge terminal in Belgium, which uses about 40% of its capacity.

A vast majority of the LNG imported by PGNiG to Poland is regasified in the Świnoujście terminal and injected into the gas network. But the volumes of gas delivered to end users in the form of liquefied natural gas (small-scale LNG) are on the rise. With this method, natural gas can be supplied to customers with no access to the countrywide network of pipelines. Last year, 1,794 LNG tank trucks filled with LNG left the Świnoujście terminal, compared to 1,523 in 2017. Since the mid-2016 when the LNG terminal became operational, a total of 4,000 tank trucks were loaded with LNG by PGNiG.

The new area of LNG utilisation is ship bunkering. PGNiG and LOTOS conducted two commercial bunkerings of liquefied natural gas (LNG) between 13th and 18th of March 2019. These are the first operations of its kind carried out at seaports in Gdańsk and Gdynia. The companies continue their cooperation in this area – it will strengthen the competitiveness of Polish ports and popularise the LNG’s ecological fuel in the Baltic Sea.

Poland aims to take advantage of the growing global gas market and in the long-term, it plans to increase the share of LNG within the imported volume of gas up to 10 bcm per year. Combined with the construction of the Baltic Pipe allowing to import gas from Norwegian deposits (10 bcm per year), it would considerably improve the diversification of gas supply to Central and Eastern Europe, thanks to the North-South Gas Corridor.

Michał Długosz, CEEP, based on PGNiG press information
The main variables in the analysis are the European gas demand and the LNG supply to Europe. This later factor is dependent on two main drivers, mainly the global LNG supply availability (depending on pending final investment decisions on certain upstream projects and LNG liquefaction facilities) and on the global demand development (mainly the gas demand in Asia). Based on a detailed analysis of uncertainties on these European and global factors five alternative scenarios were assembled, as depicted on Figure 1.

The reference scenario assumes that Russian strategy is to protect the market share at the European gas market. As European gas production is falling, there will be a competition between Russian pipeline supply and LNG for the substitution of the domestic production. The competition of these two sources will put a downward pressure on prices for the benefit of European consumers. On the other hand, the increased import need – depending on European climate goals impact on European gas demand – might put an upward pressure if gas based electricity production is outcompeting coal in the merit order and increases gas demand. Moreover, energy efficiency measures might have a reverse effect and decrease the European demand.

The supply structure in the modelled alternative future scenarios has these uncertainties embedded.

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1 The analysis was part of the “Follow-up study on the LNG and Storage strategy” ordered by the European Commission in 2017 (ENER/B4/ADM/2016-383/SI2.742632)
According to these assumptions LNG inflow to Europe by 2025 varies between 370-1500 TWh (about 38-150 bcm natural gas): a quite wide spectrum. It is important to note that despite these very different supply structures, the EU28 wholesale – volume weighted average – gas price level does not change more than 10% up and down in the different scenarios.

The infrastructure network in Europe allows for price convergence and the price difference between North-West Europe and South East Europe is not exceeding the level of the transmission tariffs. On the whole, the following is expected on the European gas markets:

- Regulation and low EU-28 demand has provided convergence in prices apart from some fringe markets
- Falling European production can be met with increased LNG deliveries or higher supplies from incumbent suppliers
- The role of LNG is crucial: it serves as a competing source for incumbent players and this way induces price competition
- We found no probable extreme scenario in which the stability or price convergence of European markets is threatened considerably.

Table 1: European volume weighted wholesale regional gas prices in €/MWh, 2025

<table>
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<th>High LNG &amp; low demand</th>
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<td>16.72</td>
</tr>
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</table>

Figure 3: Wholesale natural gas prices in Europe in the low LNG-low demand scenario €/MWh, 2025

Figure 4: Wholesale natural gas prices in Europe in the high LNG-high demand scenario €/MWh, 2025

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**LNG TERMINALS IN CENTRAL EUROPE**

**Poland, Świnoujście LNG Terminal**

*Start-up: 2016*

*Large-scale facility onshore*

**NOMINAL ANNUAL CAPACITY:**

- current: 5,00 billion m³ (N)/year by 2021: 7,50 billion m³ (N)/year

**LNG STORAGE CAPACITY:**

- current: 320,000 m³ LNG
- by 2023: 500,000 m³ LNG

**NUMBER OF TANKS:** 2

**MAX. SHIP CLASS SIZE RECEIVABLE:** 216,000 m³ LNG

**NUMBER OF JETTIES:** 1

**TPA REGIME: Regulated**

LNG Terminal in Świnoujście has been in operation since 2016. Polskie LNG launched the construction of the plant in 2010, and the LNG Terminal in Świnoujście has contributed to the energy security in Poland and Central and Eastern Europe, as well as it enables the import of liquefied gas to Poland from any direction in the world.

The technological processes and services currently provided by the LNG Terminal include unloading LNG from a LNG carrier at the unloading jetty, LNG process storage in cryogenic tanks, LNG regasification and send-out of natural gas to the National Transmission System, LNG transhipment onto tanker trucks and ISO containers.

The LNG Terminal’s annual regasification capacity amounts to 5 billion Nm³. The plant also includes two cryogenic tanks for LNG process storage with a capacity of 160,000 m³ each.

The company is currently executing the LNG Terminal Expansion Program, which consists of four elements:

- Additional regasification installation – increasing the nominal regasification capacity of the terminal to 7.5 billion Nm³/year.
- Third LNG process storage tank – increasing the operational flexibility of the LNG terminal installation and ensuring the optimum natural gas process storage capacity.
- LNG-to-Rail transhipment installation – extending the range of services provided with the possibility of natural gas transhipment onto ISO containers and rail tankers and thus reaching new prospective customers.
- The second jetty - for loading and unloading of LNG carriers, LNG transhipment and handling LNG bunker vessels and providing bunkering services.

**Lithuania, Klaipėda, FSRU Independence**

*Start-up: 2014*

**NOMINAL ANNUAL CAPACITY:** 4,00 billion m³ (N)/year

**LNG STORAGE CAPACITY:** 170,000 m³ LNG

**NUMBER OF TANKS:** 4

**MAX. SHIP CLASS SIZE RECEIVABLE:** 160,000 m³ LNG

**NUMBER OF JETTIES:** 1

**TPA REGIME: Regulated**

Put into operation in December 2014, the LNG terminal is one of most important facilities in Lithuania that ensures the national energy security. It has enabled the formation of a natural gas market in Lithuania and opened opportunities for the country to import natural gas from all over the world. Now customers can receive the gas from various suppliers at market prices.

The LNG terminal consists of FSRU named Independence, a berth and a gas pipeline. The FSRU was built by Hyundai Heavy Industries Co., Ltd., a South Korean shipbuilding company, and is owned by Leigh Höegh LNG (Norway). It is permanently moored to a berth in the Klaipėda Seaport. The LNG terminal is connected to the natural gas transmission system.

FSRU Independence is the first terminal that ensures the energy security of the Baltic Sea Region. The Klaipėda Seaport is a non-freezing port, which guarantees smooth navigation and continuous handling all year round. LNG used for process needs is allocated to terminal uses based on actual consumption. Storing the minimum gas quantity on FSRU means that the terminal is always ready for operation. The infrastructure is suitable for both regasification and LNG transfer. The terminal enables the reservation of the spare LNG regasification and transfer capacities depending on the demand and technical capacity of the terminal.

An almost 18 km long pipeline connects the LNG terminal and a natural gas distribution station of Amber Grid AB, Lithuania’s natural gas system operator. The metering of the LNG regasified at the terminal takes place at the terminal’s gas metering station.

**Croatia, Krk Island planned**

*Start-up planned: 2020*

**PLANNED NOMINAL ANNUAL CAPACITY:** 2,6 billion m³ (N)/year

**PLANNED LNG STORAGE CAPACITY:** 180,000 m³ LNG

The LNG terminal will be located in Omišalj county on the Island of Krk in Croatia, North Adriatic. Krk LNG terminal is an important factor in the diversification of natural gas supply as well as the enhancement of security of natural gas supply for Central and South-Eastern Europe.

The project was originally planned to be an onshore regasification facility, but was switched to a FLNG proposal in 2016. In November 2018 LNG Croatia selected Golar Power and its proposal to convert an existing LNG carrier to a FSRU at a cost of 159.6 million EUR. FSRU is planned to be commissioned by 2020 with annual regasification capacity about 2,6 billion m³ and 180,000 m³ storage capacity.

In 2017, the European Commission approved a 102 million EUR grant in the framework of CEF program for the construction of the LNG terminal. The government is to set aside 100 million EUR for the project. The remaining amount of €32.6 million will be provided by the founders of the LNG Croatia company: HEP - national electricity company and Plinacro - gas network operator.

At December 2018 LNG Croatia company has received binding offers for the lease of 520 million m³ of gas from the future LNG terminal on Krk and two conditional offers for the non-binding lease of 300 million m³.

*Source: Based on the information on companies websites*
The 1st EU-US High-Level Business to Business Energy Forum “Towards large-scale U.S. LNG exports to the EU’s gas market: competitive pricing, infrastructure investments and technological innovation,” will take place in Brussels, on the 2nd May.

Following the Joint Statement in July 25, 2018, the U.S. President Donald J. Trump and European Commission (EC) President Jean Claude Junker agreed to strengthen strategic cooperation with respect to energy. They agreed on the benefits of expanded exports of U.S. liquefied natural gas (LNG) for transatlantic energy security and the diversification of European energy supplies. Following up on this agreement, the EU and the United States are pleased to present the 1st EU-U.S. Energy Council High-Level Business to Business Energy Forum on May 2, 2019, with the theme of “Towards large-scale U.S. LNG exports to the EU’s gas market: competitive pricing, infrastructure investments and technological innovation.” American and European businesses are poised to invest in significant transatlantic commercial opportunities that span the entire LNG supply chain; from new infrastructure for upstream development, liquefaction and re-gasification to pipeline network distribution. This forum is designed as a high-level event to capitalise on this opportunity by bringing together the U.S. and European decision-makers from companies in the LNG sector for match-making and deal-making purposes.

This forum will bring together participants from the LNG sector to help accelerate the wider penetration of competitively priced U.S. LNG into the EU market. This will support the EU’s energy diversification strategy and further facilitate the construction of the remaining necessary LNG infrastructure. The forum will also explore new models for public-private project finance and look ahead to innovative usages of LNG in the transportation sector. U.S. Secretary of Energy Rick Perry and Commissioner for Energy and Climate Miguel Arias Cañete will preside over the event with Ministerial-level representation from the EU Member States.

This is an invitation-only event under the auspices of the EU-U.S. Energy Council, organised in collaboration with Central Europe Energy Partners, Polskie LNG and LNG Allies, and is open to EU and U.S. industry leaders, decision-makers and academia. If you wish to participate please send an e-mail to: brussels@ceep.be.
EVENTS ANNOUNCEMENT

SAVE THE DATE!

BUDAPEST LNG SUMMIT
ALL ABOUT NATURAL GAS
2-3 DEC 2019
BUDAPESTLNGSUMMIT.HU

SAVE THE DATE!

GAZTERM 22th
2019 CONFERENCE
The Baltic Gas Summit
Integration of gas markets in the Baltic Sea Region
6th-9th MAY 2019
AMBER BALTIC HOTEL, MIĘDZYZDROJE, POLAND
Central Europe Energy Partners (CEEP) represents the energy and energy-intensive companies from Central Europe, employing over 100,000 workers, with total annual revenue of more than EUR 20 billion.

CEEP is the first major body to represent the energy sector companies from the region at the EU level, in order to promote balanced energy transition in accordance with technological neutrality principle, enhance regional cooperation and strengthen the region’s energy security within the framework of EU energy and climate policy.

CEEP is an international non-profit association with its headquarters in Brussels (Belgium).

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