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POLAND ON THE GLOBAL LNG MARKET: FOREIGN AND ENERGY POLICY IMPACT ASSESSMENT

ABSTRACT

This article throws a spotlight on the key developments of the global LNG market, explores the role and main features of the European market for LNG, and then – based on this context – offers a set of arguments that help with conceptualizing the importance of LNG imports for Poland’s foreign and energy policies. The analysis shows that the “LNG impact” can be traced to three distinct yet interconnected dimensions – national, regional and global. The article argues that if handled with adequate understanding of the tendencies affecting this sector, Poland’s status as a player on the LNG market can be turned into an asset and boost its international standing vis-a-vis other LNG importing states and exporters alike. Over time, “LNG diplomacy” could become one of the defining features of its international engagement.

Key words

natural gas, energy, LNG, trade, market, Poland

The global market for liquefied natural gas (LNG) is undergoing substantial quantitative and qualitative changes. No single figure or statistic could adequately summarize these developments. However, it is possible to track key indicators which, collectively, point to an industry that is experiencing nothing short of a boom. Against the backdrop of this boom, countries such as Poland – dependent on gas imports and well positioned to take advantage of the options created by the growing availability of sea-borne deliveries of natural gas – are weighing the costs and benefits of entering the global LNG supply chain.

1. LNG Gone Global

In early 2019, world-wide liquefaction capacity – the key factor on the supply side – stood at 393 million tons per annum (MTPA)¹. According to cautious estimates by industry representatives, 2019 could be a record year as far as new additions to liquefaction potential is concerned – terminals with a combined capacity of 40 MTPA have either come on line or are expected to become operational this year (Pulsinelli & Corso, 2019). In 2018 global LNG trade reached 316 MTPA, thus recording a fifth consecutive year of incremental growth, and a rise in volume of traded gas of 28 million tons compared with 2017, which meant growth of 9.8%. McKinsey Energy Insight estimated the revenue from LNG trade in 2018 at \$150 billion. Between 2007 and 2017, worldwide LNG trade grew at an average rate of 5.4%. Thus, unlike other segments of the fossil-fuel industry which have been under increased pressure since the Paris climate agreement in 2015, as well as other initiatives on regional or national levels aimed at curbing GHG emissions², the LNG sector has experienced uninterrupted growth. Qatar led the pack of exporters – an unquestionable pole position owing to the massive expansion of liquefaction capacity between 2008 and 2010, and an annual growth rate of exports between 2007 and 2017 standing at 10% – followed by

¹ 1 million tons of LNG equals 1.36 billion cubic meters (bcm) of natural gas. One million tons of oil equivalent (mtoe) equals 0.82 million tons of LNG.

² Liquefied natural gas owes its lower GHG footprint to the process leading up to liquefaction itself. Even before the feedstock enters the facility, it is separated from water. Next, it undergoes so-called sweetening, or removal of two especially potent greenhouse gases: hydrogen sulphide (H₂S) and carbon dioxide (CO₂).

Australia which tripled exports between 2013 and 2018. In relative terms, the United States was definitely the most dynamic new exporting market, going from near-zero exports in 2013 (mostly re-exports of cargoes originally destined for the domestic market, but made redundant as a result of the shale revolution and the transformation of the natural gas-hungry North American market into a self-sufficient one) to over 21 MT of exports in 2018, earning it a 6.7% of global share in LNG exports. In real terms, Australia added 20 MTPA in 2018, followed by the United States with 15 MTPA and Russia with 12 MTPA. Over 100 MTPA of additional liquefaction capacity – both through the expansion of existing terminals and erection of new facilities – was either under construction or awaiting the commencement of the construction phase after having received the necessary licenses and go-aheads. In addition, the International Gas Union (IGU) estimated that well over 800 MTPA was under consideration, leading to the conclusion that the supply of LNG would outstrip demand until 2035 (Deloitte, 2017; International Gas Union, 2019). The global LNG fleet, including both carriers and floating storage units, grew by over 11%, totaling 525 vessels in the end of 2018. The growing ability to deliver LNG to the market translated into an increase in its share in global gas supply, rising to 10.7%. Between 2000 and 2018, seaborne deliveries of natural gas tripled, rising from 576 million ton-miles to 1.77 billion ton-miles. LNG is now shipped in greater volumes and over greater distances³. One of the more important developments for the LNG trade in the recent years was the enlargement of the Panama Canal. Starting from 2016, it has been capable of accepting Neopanamax class vessels – the largest LNG carriers currently in service – thus cutting the length of journey between the Gulf of Mexico and ports in East Asia by 7000 nautical miles and three weeks (Bernard, 2017). This is quite important given that charter rates (calculated on a daily basis) and fuel consumption comprise a significant part of the overall cost of delivered LNG, thus directly impacting the competitiveness of seaborne deliveries vis-a-vis pipeline gas.

Thus, it is not just “how much” LNG is available, but also how it is being delivered and traded. Thanks to additions to the LNG fleet and a growth in the number of both exporting and importing nations, the share of so-called non- long-term LNG trade – either in the form of spot transactions or shorter contracts – reached 31% (ca. 97 MT), and was some 50% higher than a decade

³ The main constraint on the size of LNG carriers is the capacity of ports, and not the ability to design bigger vessels. The majority of carriers in service have a capacity of 135,000–170,000 thousand cubic meters.

ago. Perhaps crucially from the point of view of prospects for turning LNG into a globally traded commodity (see below), four out of five non- long-term contracts involved transactions to be carried out in less than 90 days. To put this into perspective, back in 2000 just six spot exporters delivered LNG to eight import markets. In 2018, these figures stood at 30 and 35, respectively. As the fleet of LNG carriers expands, the average charter period contracts. In addition, more and more LNG carriers are ordered without any accompanying specific project which was standard during the early days of the industry. LNG trade accelerated in the late 1990s and early 2000s largely because of decisions to implement large investment projects, which in turn had been made possible thanks to borrowed capital, tied to long-term sales and purchase agreements. Meanwhile, only around 52% of newbuilds are tied to a specific project (route, client), meaning that the availability for spot transactions is on the rise. Major LNG importers are already taking advantage of this situation. For example, China – already world’s second-biggest LNG importer, with almost 55 MT imported in 2018 – added nearly 16 MT of new imports in 2018, almost entirely on a non- long-term basis. It is estimated that as much as 40% of Chinese LNG demand, or 22 MT, is “un-contracted”, i.e. satisfied by spot or shorter-term deals. This, in turn, translates into confidence among investors that even ambitious, capital-intensive projects can make ends meet without being fully backed with long-term contracts.

Thus, projections about the expansion of the global export and import infrastructure are the primary driver of investors’ confidence in continued integration and interconnectivity of the LNG market. Another has to do with flexibility of supplies embedded in the contracts for US LNG. Destination-free, FOB-based contracts⁴ mean that suppliers can take advantage of the arbitrage opportunities arising from differences in prices between different markets. Here, the outage of Japan’s nuclear power plants in 2011, following the Fukushima disaster, and a rapid near overnight increase in power utilities’ demand for natural gas, offered one of the first glimpses into the future. The sign of things to come was visible in the “uptick” of volume of LNG delivered under short-term transactions between 2010 and 2011. At that time, this increase was possible thanks to Qatar

⁴ The Free On Board formula is restricted to goods transported by sea or inland waterway. According to it, the seller delivers goods (in this case: LNG), cleared for export, loaded on board the vessel at the named port. Once the goods have been loaded on board, risk transfers to the buyer, who bears all costs thereafter, i.e. freight and accompanying insurance, as well as subsequent regasification and any other fees at the terminal. In another words, the price for the flexibility awarded by an FOB contract is the risk that the buyer agrees to carry once the LNG shipment had been prepared.

and its ability to redirect some of its surplus supplies without significantly affecting the contractual structure of the market, dominated by long-term contracts (Abreu, 2019). It was not until 2016, i.e. first deliveries from the United States, that cargoes delivered within 90 days were sent, quickly becoming the dominant category among short-term transactions⁵.

As for new entrants to the market, they might not impress in terms of volumes – five new markets which opened for business between 2016 and 2018 added just 1.3 MT of demand, and thus far behind the more established importers. Still, two caveats need to be taken into account. First, once the path has been cleared, new import markets had shown the ability to quickly and substantially ramp up demand. For example, in 2015 Pakistan added just 2.4 MT, but already in 2018, imports to this market totaled 7.1 MT⁶. Second, entry to the market has become easier thanks to the rise in the number of floating storage and regasification units, or FSRUs. While a clear majority (85%) of regasification facilities are still located onshore – out of seven terminals that began operations in 2018, five were developed onshore – the popularity of offshore terminals is indisputable. Already 16 out of 35 import markets use FSRUs, and multiple others are expected to come on-line in 2020–2021 and beyond both in existing and new markets. In general, FSRUs offer greater flexibility. They can be chartered to satisfy short- to mid-term demand spikes, or provide a “bridging capability” until a more permanent solution to meeting supply needs, i.e. an onshore terminal, which can take several years to complete, is made available. Admittedly, FSRUs are not cheap to operate compared with “permanent” LNG import facilities. On the upside, they usually do not require as elaborate a permitting and licensing process as onshore terminals and thanks to their “scalability” have proven to be interesting

⁵ Already by 2018 the ratio between 90-day deliveries and other non- long-term deliveries (shorter than four years) stood at 1:5.

⁶ Pakistan is expected to expand imports to as much as 30 MTPA by 2030. It is rapidly expanding the pool of consumers of natural gas – in the period of 2016–2017 alone, half a million households were added to the distribution network; the power sector – already over 30% of consumption – is planning to expand natural gas’ role as the key feedstock, willing to wean itself from expensive oil imports; and the fertilizer industry already accounts for over one fifth of total demand. All this while domestic production is steadily petering out. As a result, apart from two import facilities already in operation (the second one was commissioned in November 2017), six further projects have been proposed, with potential involvement from Shell, Total, and ExxonMobil. All in all, Pakistan is a good example of how a relatively cautious entry to the market can initiate a rapid expansion of consumption and business opportunities.

solutions in new markets. FSRUs are also an attractive solution in the case of small-scale LNG applications, e.g. in the power generation sector. Indonesia is a much-given example. Many of its 7,000 islands are in need of electricity supply with LNG offering an interesting, cleaner alternative to coal-fired installations, while at the same time having an additional advantage as a transportation fuel (LNG Condensed, 2019; Guttulsrød, 2019).

2. Global LNG Market: Onwards and Upwards

What tendencies are likely to be the key driving forces behind the global LNG market to the 2025–2030 horizon and beyond? Again, a handful of indicators and developments help to chart the trajectory of this industry. Demographics alone helps understand a continued increase in demand for natural gas – and for LNG. The United Nations estimates that the global population could grow to around 8.5 billion in 2030. By 2040, the world population will have surpassed the 9 billion mark, and in 2050 could reach 9.7 billion (United Nations, 2019). When coupled with the ambition to deliver economic development and raise living standards, which is closely aligned with electricity use (consumption), as well as a general uptick in the level of global disposable income, including the huge populations of China and India, it is clear that the world economy will need more and more energy, in spite of probable savings thanks to efficiency-inducing measures. The energy industry expects the global energy mix to shift to lower-carbon fuels (ExxonMobil, 2019). Renewable energy sources (RES) and nuclear will absorb most of the incremental growth in demand for energy, but by 2040, natural gas would grow the most of any energy source, rising to 25% of demand. As electricity use is expected to increase by 70%, it will happen amid the growing significance of policies to address climate change and public demands for better air quality. A predilection for lower carbon sources would push natural gas demand up, alongside RES and nuclear. And even as RES would probably add more to the overall power generation capacity, natural gas – because of its versatility as a feedstock for the agricultural sector, as well as transportation fuel – would grow even more. In light of these tendencies, the International Energy Agency forecasts that the demand for natural gas – regardless of the mode of delivery, pipeline or maritime – will rise by more than 10% to reach 4.3 trillion cubic meters in 2024. If LNG trade were to expand in this time frame at an annual pace of 5% – the medium rate at which it has been growing between 2007 and 2017 – it would reach some 423 MT, or 575 bcm, thus equaling 13% of global natural gas trade.

The transport sector merits closer attention. A 35% increase in Chinese demand for natural gas between 2017 and 2018 was driven in no small part by the recognition of economic and environmental benefits of LNG. China already has over 2,500 LNG fuel stations and has been steadily expanding its bus and heavy-duty truck fleets. Road transport in China consumed 6.7 MT of LNG in 2018 (8% of consumption). Interestingly, some experts point out that India has an even larger potential for growth in freight transport than China, given expectations about its urban development, industrialization, challenges facing its railway system and underdeveloped inland shipping routes, whose modernization would require massive capital expenditure (KAPSARC, 2018). In Europe, the number of LNG trucks has increased from ca. 1500 to ca. 5500 between 2016 and 2018. By 2030, some 280,000 LNG trucks will be in service. Admittedly, not impressive when compared with the global number of medium and heavy commercial vehicles in whole of the EU – in 2015, there were over 6,200,000 vehicles of this type registered in the European Union⁷ – but the dynamics will be indisputable.

Maritime transport will be a source of demand growth in its own right. LNG as a fuel is one of the options as the shipping industry is bracing for the introduction of a global sulphur cap on maritime fuels starting from 2020, as mandated by the International Maritime Organization. Under the regulation, maritime oil with sulphur content higher than 0.5% would be banned, unless a ship would be fitted out with the necessary purification devices (Hand, 2018). LNG-fueled vessels emit fairly little sulphur oxides – below 0.1%, and thus well within the new standards. Of course, switching from petroleum-derived fuels to LNG is not cost-free. Apart from installing an LNG-powered engine (in the case of an existing vessel), another factor is training the crew to operate the equipment (regardless of whether the vessel is a newbuild or retrofitted). Ultimately, however, LNG could offer savings—depending on the price spread compared with diesel or the costs of adapting ships fueled by heavy oils (with a sulphur content in excess of 0.5%) to comply with new, more stringent standards. Predictions about the potential for growth of the LNG-powered fleet vary. In mid-2018, there were ca. 120 vessels in operation, and some 130 more ordered or under construction. Orders

⁷ According to the European Automobile Manufacturers Association's (ACEA), in 2015 the largest number of medium and heavy commercial vehicles (over 500,000 per member state of the EU) were registered in Poland (ca. 980,000), Italy (ca. 918,000), Germany (ca. 902,000), the United Kingdom (ca. 580,000), France (ca. 567,000) and Spain (ca. 526,000). Only 0.3% of these vehicles ran on LPG or natural gas, which usually indicates CNG as a fuel. LNG was thus a marginal fuel at best, indicating vast growth potential.

for LNG-fueled vessels were on the rise, with cruise ships and large container ships comprising the majority of the backlog (Shell, 2019). This is unsurprising given that the refueling (bunkering) infrastructure is still rather scarce, thus favoring bigger vessels that travel along predictable (set) routes in relatively short time-spans. All in all, it is expected that by 2030 the maritime sector alone will demand 20 MTPA, and by 2035 this figure would rise to 35 MTPA. According to some estimates, in the decade between 2025 and 2035, marine application of LNG would increase more than threefold (Parfomak, Frittelli, Lattanzio & Ratter, 2019).

Barring some extraordinary event of the order of magnitude of the Fukushima disaster, these factors' impact will be felt gradually. Currently marginal or emerging sources of LNG demand will take time to build up. In any case, the growth in demand for LNG will be driven primarily by Asia. China will overtake Japan as the biggest importer in 2023 considering both policy decisions and infrastructure expansion. Under the 13th five-year plan, by 2020 China wants to raise the share of natural gas among primary energy sources to 10%, as more and more coal-fired power plants are shut down and both industry and agriculture modernizes. Some of this demand will be fed by an expanded ability to bring piped gas from Russia via the Power of Siberia project. Principally, however, China expects to add 20 MT of yearly import capacity by 2022. If all proposed capacity additions were to come on-line, China could well double (sic!) its regasification capacity by this time. Such a scenario should not be ruled out entirely. Firstly, the utilization rate of China's import terminals is already nearing 80%. Secondly, China has a lot of room for expanding natural gas consumption in the power sector. Here, the utilization rate in 2018 did not reach 30%. Given the success of coal-to-gas switching, as well as the expanded use of natural gas in the transportation sector and among households – over the past five years, the winter air quality in Beijing, famously plagued by smog, has improved by almost 80% – this figure is likely to grow. Another Asian economy bent on a rapid expansion of LNG import capacity is India whose terminals have already reached their limit of 27 MT of annual capacity (Shell, 2019).

Supply options will expand as well. Qatar alone will add 100 LNG carriers and in excess of 30 MT of annual liquefaction capacity. Earlier in this decade, Qatar's market share exceeded 25%, but has since then contracted to ca. 25% as new suppliers entered the market. This trend is likely to continue. By 2023–2025, when the projects currently under construction, or nearing the final investment decision, will have come on line, overall supply will reach 400 MTPA. The global LNG oversupply is expected to peak in 2020 and then to gradually peter out.

Exactly how quickly it will happen, and whether the oversupply will give way to supply shortages is unclear – a lot will depend on the bullishness and confidence of investors, but also on the ability of natural gas to compete (or coexist) with other energy sources. This is of course true mostly for the power sector and is closely related with the rate at which the costs of RES will go down in the coming years. In addition, as some experts caution, natural gas is not guaranteed to supplant coal, even though it is universally acknowledged for its lower GHG footprint. Affordability and reliability will also be taken to consideration, alongside improvements with “clean coal” technologies (Ineson, 2018).

These uncertainties notwithstanding, the contractual fabric of the global LNG market will change. As noted above, it is already undergoing a shift towards a greater share of non- long-term transactions. By 2025, almost 20% existing long-term contracts will have expired. The market will grow even more diverse and complex, with two groups of participants in particular introducing new, innovative business strategies and expanding options for end-users, such as energy utilities and other large consumers, e.g. in the petrochemical sector – commodity traders and so-called portfolio players, or aggregators. Commodity traders such as Vitol or Trafigura deal with many different products, mostly raw materials. Their rise was closely associated with the emergence of the crude oil business in the 1970s, away from long-term contracts and towards the short-term transactions of the large producers. LNG has become a part of their business fairly recently – for example, Vitol had set up a dedicated trading desk for LNG in 2005, followed by Gunvor in 2009, whereas in 2013 Glencore, a Switzerland-based natural resource company, which initially specialized in marketing of both ferrous and non-ferrous metals, simply took over the team responsible for the LNG market from Morgan Stanley, itself a leading investment bank, and entered the physical LNG trading business – thus reflecting the growing attractiveness of this sector. Over the past few years, commodity traders managed to carve out a sizeable share of global LNG trade. Between 2015 and 2017, three largest commodity traders managed to triple the volume delivered to customers. By 2018, they had a 9% stake in the market. Their business decisions indicate that they expect both to grow their LNG business and a further expansion of the sector. Trafigura signed deals for LNG storage in Singapore, one of the natural gas trading hubs, and India; Vitol was said to be developing an LNG import facility in Sardinia; Trafigura and Gunvor were competing for a tender in Bangladesh to deliver two floating import terminals. In addition to infrastructure deals, commodity traders engaged in a flurry of sales and supply transactions (Vukmanovic, 2017). Gradually, then, these players have assumed

the roles of portfolio players: they are present in all parts of the global value chain, or at least in most of them. They have access to supplies from different regions and hold various shipping, storage and regasification assets. This multiplicity serves two purposes. First, it allows portfolio players to take advantage of market opportunities, such as the seasonality of LNG demand in different markets (regions), and expand their margins thanks to arbitrage. Second, because an increasing number of sales and purchase agreements no longer specify either supply sources or hold any destination restrictions, portfolio players can act towards increasing the reliability of supply.

On the whole, increasing activity from commodity traders and portfolio players will further increase market transparency, competition and enforce a crucial feature for any mature, functioning market – standardization, aimed at the simplification of trade, spot trade in particular. Current, elaborate trading arrangements are a legacy of the early stage of LNG trade development. In today's circumstances, with a growing number of one-off transactions and elimination of such hurdles as destination clauses, they reduce efficiency and increase legal risks, especially if – as is already becoming commonplace – a cargo is traded more than once. Indeed, out of some 316 MT of LNG traded in 2018, some cargoes were bought under term contracts, only to be resold on a spot basis – and vice versa. Arbitrage opportunities cause big players and buyers with extensive supply options under long-term deals to act as portfolio players and make secondary sales (Hashimoto, 2018).

As a result, pressure will mount to adhere to a set of commonly agreed general terms and conditions, most likely to go hand in hand with International Commercial Terms, or Incoterms, which already serve as the principal source of rules for allocating risk between buyers and sellers of LNG. The first such proposals have already been tabled, with an intent to cut trading costs, save time and, ultimately, lower the entry barriers onto the market for lesser players. Earlier this year, BP – one of the leading producers and traders of LNG worldwide – unveiled a template for transactions, based on its extensive experience in this sector (International Shipping News, 2019).

The direction to which all of these indicators are pointing, at least according to industry representatives, is growing commoditization of LNG. New liquefaction capacity—in Australia, Qatar, Russia, the United States, but also in a handful of smaller natural gas producing markets – coupled with growing availability and accessibility of sea-borne supplies, as well as demand for LNG, makes it “inevitable”. As already indicated, it will be a gradual process, albeit subject to disruptions with a potential to hasten it. For example, trade tensions

between United States and China forced portfolio players to seek alternatives to LNG cargoes from the United States after the Chinese imposed tariffs on U.S. LNG – at first setting them at 10%, and subsequently increasing them to 35% (DiSavino, 2019). American exporters had already taken a hit in 2017, a year after first LNG shipments departed, China accounted for some 15% of exports – but the market adapted to new circumstances. The fact that it was able to react in the face of uncertainty caused by political factors must have strengthened trust in the robustness of the spot market. Indeed, it is the maturity of the non- long-term segment of the market that will be central to commoditization of LNG. To this end, as experts point out, spot market needs to be characterized by: transparency; sufficient supply and trading volumes (or so-called churn rate of contracts); diversity, with numerous participants on both demand and supply sides; a price benchmark, widely recognized and instilling confidence that prices would react to market signals. In this context, it is worth underlining the significance of supplies from two directions in particular: Australia and the United States. Both are set to further expand their export capacity and challenge the Qatari primacy among suppliers. Some 70% of liquefaction capacity to be commissioned until 2022 will be located in these two countries⁸. Australia is especially favorably positioned to win market share in East Asia (Wiśniewski, 2017), i.e. among traditional large importers, but the industry sees significant potential for more LNG volumes in emerging markets as well (Thailand, Pakistan, Bangladesh). In the case of the United States, 2018 seems to have been a sample of things to come. LNG trade is seasonal: a mild autumn and winter in Asia translated into decreased demand and diversion of supplies to Europe, where the prevailing benchmarks based on liquid trading hubs offered higher “netback” on a ton of LNG. As a result, in December of 2018 and parts of the first quarter of 2019 Europe absorbed more than 40% of total U.S. exports – a significant development given that since 2016, Europe has been a tertiary destination for deliveries from the United States⁹. It would not have been possible without full destination flexibility which allowed as much as 60%–80% of total volume

⁸ In May 2019, a total of seven projects were fully permitted and either under construction or past the crucially important final investment decision. In the medium term (until 2025), the United States will likely be a leader as far as adding new export capacity is concerned.

⁹ The first exporting facility located on the east coast of the United States, Cove Point LNG, began operations in March 2018. It is located closer to European customers and has a capacity of 5.25 MTPA.

of LNG exported from the United States to be either swapped or sold on a spot basis. In another words, flexible North American supply already demonstrated the ability to balance global markets. What is more, U.S. exporters allow for the cancellation of supplies if the customer decides that their cost makes imports (either for their own consumption or for “swaps”) uneconomical. Excess natural gas can be absorbed by the U.S. power market, thus preventing a “safety valve” for global prices and a pathway to commoditization of LNG. On top of this, both the United States and Australia stand out among other natural gas producers in one crucial respect. A quick glance at the list of top producers and exporters of both crude oil and natural gas makes it clear that energy opulence tends to be situated in countries either openly inimical towards the West (Russia), or at least in an uneasy relationship with the values and guiding principles to which liberal democracies adhere (Arab autocracies around the Persian Gulf). The expansion of LNG stands in direct opposition to this. If anything were to disrupt exports from terminals in Louisiana or Texas, it would most likely be a hurricane—not a decision to use energy supplies as a means to pressure an importer into obedience, to protect market share, or due to a military stand-off. In another words, the Gulf of Mexico is not as volatile as the Persian Gulf, and access to natural resources is not considered a “political weapon” by the authorities. In addition, neither the United States nor Australia are dependent on energy exports when it comes to the well-being of their economies (although deliveries of raw materials – iron ore and coal – weigh quite substantially on their trade balances). Subjecting world market access to strategically vital energy resources to administrative (regulatory) processes, as opposed to political (and therefore often arbitrary) decisions, reduces uncertainty for both sides of the business equation. The Trump administration has hailed deliveries of U.S. LNG to customers across the globe as “molecules of U.S. freedom”, or simply “freedom gas” (Rueb, 2019). While it might sound pompous, it is in fact quite practical, too; in the end, it signals the growing ability of the United States to provide an alternative source of natural gas and a pathway to diversity of supply. Indeed, the fact that deliveries are free from destination clauses or re-export limitations is perhaps the most forceful manifestation of this fact. Thus in political and strategic terms, the direction in which the LNG market is evolving tilts the scales of the global energy balance more favorably towards the more developed, liberal-democratic West, and if not removing, then at least potentially mitigating one of its key vulnerabilities – dependency on imports from non-democratic, politically unstable or hostile countries and regions. This will be the political dimension of the “second wave” of U.S. LNG which has already begun to gain momentum in 2019 (Tsafos, 2019).

3. Europe: Hello LNG My Old Friend

In 2018, the European Union's overall import dependency with respect to natural gas stood at 76% (European Commission, 2019b), EU member states imported ca. 363 bcm. Compared with 2008, the volume of natural gas imports to the EU has increased by 11%, but the dependency ratio has increased by 15%. Interestingly, the EU consumes less natural gas than a decade ago – a combined effect of slow economic growth and, to a lesser extent, efficiency measures – but the production contracted at an even faster pace. Between 2008 and 2018, production fell from 206 bcm to 110 bcm. This nearly twofold decrease was driven mostly by declining productivity of the gas fields belonging to the United Kingdom and the Netherlands¹⁰.

Potentially, with the existing regasification capacity at ca. 210 bcm, LNG could cover as much as 40% of Europe's demand for natural gas. However, out of more than 360 bcm of natural gas imported in 2018, LNG deliveries were responsible for ca. 16%, which translated into 44.4 MT, or ca. 12% of all consumption. LNG imports increased compared with 2008, albeit slowly, and certainly not as dynamically as pipeline imports. Still, compared with what could be described as the heyday of LNG imports to the EU in the period between 2010 and 2011 (60–61 MT, and 23–26% of overall import volumes, respectively) maritime deliveries have still not recovered (BP Statistical Review, 2019).

Today, the average utilisation rate of European LNG import facilities stands at 25% – lower than the global figure, according to the IGU, and well below the utilization rate in China (80% in 2018). During the slump in LNG imports post-2011, in some cases the utilization rate declined to less than 20%. Recovery of LNG trade in Europe will be gradual in no small part because of the availability of alternatives, i.e. a well-developed pipeline infrastructure. Still, two new terminals are under construction, several existing ones are undergoing expansion or enhancing their functionality, and a total of seventeen large-scale import facilities are being planned or considered, seven of which would be FSRUs. By 2030, the installed annual regasification capacity could reach 230 bcm (LNG in Europe 2018), while overall demand for natural gas is expected to remain flat. Although most new projects in the EU will be located in countries with no prior record of LNG imports, the majority of import capacity will still be located in the well-established, liquid markets, predominantly in Western Europe

¹⁰ Figures and/or calculations based on *BP Statistical Review of World Energy 2019*.

(the UK and Dutch gas hubs – NBP and TTF – are already crucial for price determination in the majority of contracts; Spanish PVB and Italian PSV hubs are comparatively less liquid and therefore not as prominent). Some of them, like Italy, Poland, Spain or the United Kingdom are both expanding existing facilities and planning additional ones. What is more, with the exception of Germany, the EU's largest natural gas consumer and importer, all the other markets expected to join the LNG club are relatively small in terms of demand. In other words, the LNG importing infrastructure will continue to be unevenly spread across the EU, will continue to rely mainly on on-shore facilities, and will be only an addition to Europe's import "toolbox". Regardless, the EU would both follow and amplify tendencies affecting the LNG market globally.

The key to understanding European market's role for this industry is its natural gas storage capacity which in 2018, totaled 100 bcm. In periods of lower demand in leading import markets – Japan and China – this potential helps portfolio players to ship excess supply to Europe. It can absorb and disperse, thanks to the existence of liquid hubs, or if necessary, save surpluses of LNG in anticipation of higher margins. In this sense, Europe serves as both a physical and a financial balancer for the global LNG industry (Rowlands, 2019)¹¹.

In the future, two factors could contribute to a rise in Europe's LNG demand (and help explain seemingly unmitigated interest in expanding the European regasification capacity at the same time). Aside from the decline in domestic production, it is the "long goodbye" to coal in the power sector, and tightening GHG emission goals in the sectors which fall out of the EU's European Trading Scheme, or the so-called non-ETS. These sectors include transport, buildings, agriculture, non-ETS industry and waste. They account for almost 60% of the EU's total domestic emissions. In 2016, transport alone contributed more than a third of the EU's carbon dioxide emissions. Prior to 2019, heavy-duty vehicles – responsible for a quarter of CO₂ emissions of the road transport sector and ca. 5% of total EU emissions – were not covered by any emission standards. Given LNG's proven applicability as a fuel for large vehicle fleets, its utilization is likely to expand in the years ahead.

In early 2016, the European Commission (EC) expected that LNG "will increasingly be used as an alternative to marine fuels in shipping and to diesel

¹¹ As a clear sign of confidence in the role that the European market will play for the global LNG supply chain in the years to come, world's largest producer of liquefied natural gas – Qatar – booked the whole regasification capacity at one of Europe's largest import terminals, Zeebrugge in Belgium.

in heavy duty vehicles such as lorries. Small scale LNG may also play a role in reducing environmental impacts in the supply of heat and power”, and that natural gas would become more accessible to hitherto remote consumers and end-users. Beyond greater environmental sustainability, the EC pointed to LNG’s positive impact on energy security and competitiveness. Specifically, the EC recognized that “the availability of LNG could make a major contribution in this regard, alongside existing pipeline sources, gas storage, the development of both the Southern Gas Corridor and of liquid gas hubs in the Mediterranean”. To make the most of the opportunity offered by greater availability of LNG – the EC gave information about the “dramatic” expansion in global supply, expecting LNG prices “to be lower than in the recent past” – member states were called upon to develop a network of LNG refueling points across pan-European transport corridors and at maritime and inland ports. For its part, the EC signaled that it would work closely with both major exporting countries and other major importers in order to promote “liquid LNG markets resilient to external shocks” (European Commission, 2016). Interestingly, the EC acknowledged that considering market circumstances – higher Asian prices – and infrastructural realities – the availability of a cost-competitive alternative to pipeline gas – the utilization rate of import terminals was “relatively low”. What is more, the Commission pointed out that, even though a sound economic “calculus” should precede any investment decisions about new infrastructure, in some circumstances the commercial viability of LNG terminals could be augmented via European Investment Bank loans or via mechanisms such as the European Fund for Strategic Investments (established as part of the so-called Juncker Plan). The EC has already supported the construction of terminals in Croatia, Cyprus and Ireland, as well as the capacity expansion of the facility in Świnoujście (Poland).

All this indicates that the EU has thrown its weight behind LNG – bureaucratically, financially and politically – to make good on its intention to make the EU a more attractive destination for LNG. Aside from market changes, three powerful factors seem to have contributed to this tendency. First, security of supply concerns and growing awareness of the political implications of dependency on natural gas, especially on deliveries from Russia in light of the 2014 invasion of Ukraine – and the role played by the latter country for gas transit to Europe. Indeed, upon completing so-called stress tests to measure EU’s preparedness to cope with gas supply disruptions, the EC concluded that, if a need arose to find alternatives to Russian deliveries, LNG would “clearly [be] the import source with the biggest potential” (European Commission, 2014). Second, the aforementioned Paris agreement, the subsequent tightening of the EU’s climate policy,

and the growing recognition of the advantages of natural gas over other fossil fuels—at least until the technology of winning energy from renewable sources has developed to a point at which they could be eliminated entirely (International Energy Agency, 2019). The European Union is now on an irreversible, if bumpy, path towards a less hydrocarbon-dependent energy mix. Finally, LNG has become a hot topic on the transatlantic agenda: the first shipment of U.S. LNG was dispatched in early 2016, i.e. during Barack Obama’s presidency, but it was the Trump administration that pushed the exports of hydrocarbons to the top of the list. Donald Trump famously announced the “new era of American energy dominance”, with natural gas exports as one of its pillars (Trump, 2017). Then, during the launch of a new LNG export facility in Louisiana, Trump declared that the United States was now an “energy superpower” (Industry Europe, 2019). However, this political narrative would have little practical importance without the engagement of the business sector. Recognizing how important the export of hydrocarbons has become for the United States, and sparing no effort to exploit opportunities to underline the commonality of interests on both sides of the Atlantic amid mounting challenges (differences over climate policy, regional issues such as Iran policy, or approach to international trade), the European Commission agreed to co-host the first ever high-level, business-to-business conference focused on LNG trade under the auspices of the EU-U.S. Energy Council (European Commission, 2019).

4. Poland and LNG: Riders on The Storm

These factors and processes were either at work or gaining momentum as Poland was joining the global LNG market in mid-2016. In less than three years Poland has quickly turned its status as a newcomer to the LNG market into a that of a fully-fledged player. Between June 2016 (the first commercial delivery under a long-term contract with Qatar) and early September 2019, the LNG importing facility in Świnoujście received almost 70 cargoes, displaying a clear upward trend¹². In addition, over 5000 LNG-carrying trucks (1800 in 2016 alone) were sent out to customers not just in Poland, but also in neighboring Germany, thus hinting at the “spill-over” potential of the facility – the ability to deliver natural gas in a liquefied form over larger distances, without the need of regasification.

¹² The breakdown between 2016 and 2019, respectively: 9 cargoes, 14 cargoes, 23 cargoes, 31 cargoes (until September 2019).

By mid-2018 – two years after the first commercial shipment – Świnoujście boasted the highest utilisation rate among all European LNG import terminals, well above the EU average (Duran & Bajic, 2018). Already by 2017, the operator of the terminal announced plans to expand its annual capacity from 5 bcm to 7.5 bcm. With supplemental EU funding and tenders for four specific projects in place, the final investment decision was made in April 2019¹³. At the same time, Poland announced that it would be procuring an additional installation to import LNG – a floating storage and regasification unit. Both projects – the expanded terminal and the FSRU – would be operational in 2023 and 2024–25, respectively (Biznes Polska, 2019). Coupled with domestic production, new interconnectors – chief among them the so-called Baltic Pipe, which will eventually link Poland to gas fields in Norway via Denmark – and commercial activity to secure additional deliveries, LNG would become one of the pillars of Poland’s approach to security of supply of natural gas and a way to reduce import dependence on Russia¹⁴. According to one of the senior executives from Poland’s energy sector, commenting on the rationale behind the expansion of the capabilities to import natural gas from non-Russian sources: “Baltic Pipe [and deliveries from the prolific Norwegian shelf – B.W.] will give us stability – Świnoujście gives us flexibility”.

Indeed, Poland’s security of natural gas supply will need both. In the period between 2015 and 2018, the domestic production was flat, at about 4.5 bcm. Consumption increased slightly, thus leading to higher import dependence¹⁵. Russia remained the principal source of deliveries, but its relative weight has fallen visibly. The structure of import dependence has shifted in favor of LNG – even though it was still playing a secondary role. What mattered, however, was the dynamics, and the outlook for the next 3–5 years, i.e. the period in which the global LNG market would remain oversupplied, and the prominence of natural gas as an energy resource would continue to rise. On both accounts, Poland’s standing merited cautious optimism.

¹³ Decisions about tenders for the construction work are expected by the end of 2019.

¹⁴ Poland’s long-term contract with Gazprom is set to expire in 2022.

¹⁵ Still, Poland was in a relatively advantageous position compared with other CEE countries, see *EU Energy in Figures. Statistical Pocketbook 2018*, Publications Office of the European Union, p. 72.

Table 1. Dynamics and structure of Poland’s natural gas import dependency; source: calculations based on data from Ministry of Energy of Poland, Polish Oil and Gas Company (PGNiG), Poland’s Central Statistical Office (GUS).

	2015		2016		2017		2018	
	bcm	% of imports	bcm	% of imports	bcm	% of imports	bcm	% of imports
Russia	8.1	87	10.2	88	9.6	70	9.0	66.6
LNG (all suppliers)	–	–	0.9	7	1.7	12	2.7	20
Overall import dependency (%)	66		72		75		75	

Of note was Poland’s quest for additional supply contracts. A long-term contract between the Polish Oil and Gas Company (PGNiG) and Qatargas formed the backbone of the portfolio¹⁶ but was soon complemented with short-term deliveries from Norway and the United States. Norwegian supplies were not a precedent – Lithuania was the first country in the CEE to receive a shipment – but it was the June 2017 delivery of U.S. LNG that could have been legitimately described as a “game changer”. Precisely because of its one-off character (over 90% of the capacity of the sole operational export terminal at the time, Sabine Pass in Texas, was booked under long-term contracts, thus leaving only limited opportunities for latecomers), it signaled that maritime deliveries from the United States could be competitive vis-a-vis pipeline gas, offered a path to genuine supply diversity, and because of its built-in flexibility (lack of destination clauses), demonstrated the possibilities of the increasingly global and interconnected LNG market. Already in late August 2017, PGNiG had successfully booked additional regasification capacity at the Świnoujście terminal, raising it to 100% (PGNiG, 2017).

This move was likely made in anticipation of entering into additional contracts. Negotiations of a long-term contract with Cheniere – a pioneer among LNG exporters from the lower 48 states – were ongoing already in the summer of 2017¹⁷. Ultimately, PGNiG entered into a 24-year, scalable agreement in

¹⁶ In March 2017, PGNiG and Qatargas agreed to raise the import volume from the initial 1 MTPA to 2 MTPA as of early 2018. The duration of the contract remained unchanged (in force until 2034). The contract is based on the “Delivered Ex-Ship” formula and contains a delivery clause (Świnoujście).

¹⁷ President Donald Trump’s July 2017 visit to Warsaw gave these considerations an important political boost.

November the following year (PGNiG, 2018). However, it was two additional contracts – with Venture Global and Port Arthur – which pointed to Poland’s growing market awareness as an LNG importer, and to its ability to strategize about its status beyond securing deliveries to satisfy immediate demand. Becoming a stakeholder in two LNG projects – interestingly, even before the final investment decision was made by the developers – meant that Poland was entering the U.S. LNG sector as an investor, not simply a customer.

On the domestic energy front, especially if (when) Poland successfully expands its capacity to receive LNG, it will be able to boost the share of natural gas in the energy mix. Natural gas still plays a limited role in the power sector, yet considering both the tightening of the EU’s climate policy and growing public awareness about the air quality and environmental impact of using coal (lignite in particular) for power generation, puts pressure on the authorities to switch to less harmful combustible fuels. Indeed, in line with Poland’s long-term energy policy strategy (so-called PEP 2040, unveiled in late 2018), no new conventional coal-fired power plants will be built after 2025, and any new units – including the block in Ostrołęka in the north-eastern part of the country – would need to abide by tough EU standards. The expansion of wind and solar power generation capacity in the 2020s in particular, again driven by EU policy (a 27% target in the 2030 horizon) would pave the way for natural gas – while the majority of existing coal-based assets will be withdrawn by 2030, too early for nuclear to step in and ensure adequate baseline capacity. The availability of LNG – not just the fuel but also the downstream infrastructure of refueling stations – will further increase the popularity of natural gas in the transportation sector, especially in larger cities with sizable bus fleets and among operators of commercial and heavy-duty vehicles. Some 45% of the territory of Poland is not covered by the natural gas distribution network – a fact that explains in part why natural gas plays a rather limited role in the heating sector, even though Poland boasts the densest infrastructure in this respect among all EU member states. LNG offers a chance to overcome this obstacle – thanks to the ability to ship the fuel further inland in LNG trucks. The emerging network of so-called satellite regasification stations will increase the penetration of natural gas among end-users and, if embraced by municipalities overseeing the heating sector, could help ease some of the problems with inferior air quality. Polish cities and towns routinely make it to the top of “the most-polluted” list in the European Union, and concerns about air quality emerge as a key social and political problem. In sum, liquefied natural gas is going to be one of the pillars of Poland’s energy transformation.

LNG has an important regional dimension, too. The Baltic/CEE natural gas market, spanning the area from Finland and Sweden, through Estonia, Latvia and Lithuania, down to Poland's neighbors from the Visegrad Group (V4), could add as much as 14% of additional demand until 2025, thus totaling 93 bcm annually. Once expanded, the Swinoujscie terminal will be ideally placed to tap into this opportunity. The terminal's second jetty, along with the third tank – part of the expansion scheme – will allow for so-called transshipments of LNG onto smaller vessels and re-exports to customers along the Baltic coast. Adding a unique feature to the terminal's functionality – the ability to load ISO-containers filled with LNG onto railcars – would further enhance the region's LNG “penetration rate”, or the geographical reach of the terminal, affording the benefits of access to LNG to customers in landlocked countries (Czech Republic, Hungary, Slovakia) or those which, like Ukraine, might prefer to use Swinoujscie over the shipments via the geopolitically volatile Black Sea (not just Russian-occupied Crimea and Russia's extended military reach, but also the Turkey-controlled Bosphorus). As for the Baltic Sea, it is one of the most congested across the globe. With the incoming tightening of emissions standards for the maritime industry, traffic in this area will definitely feel the impact – and adapt. Indeed, part of the region-wide increase in demand for natural gas would come from maritime transport. With enhanced functionalities of the facility in Swinoujscie, Poland would be well placed to respond, either via direct bunkering or thanks to loading LNG onto smaller barges designed to serve larger units. Granted, the outcome of competition over the status of the regional leader among LNG providers is not a foregone conclusion – Russia in particular is unlikely to give up her energy trump card easily – but already the control over import and distribution infrastructure broadens Poland's playing field.

Finally, LNG trade will remodel relationships with countries farther away. As an importer, Poland is less likely to become a portfolio player – most of LNG secured under the long-term contracts will probably end up in Swinoujscie (or the planned FSRU) – but it already has all it can take, and the market is evolving towards the commoditization of natural gas. It is therefore easy to imagine a transaction in which Poland, drawing upon its portfolio of contracts, would act as an intermediary between an LNG-exporting country and an importer, taking advantage of arbitrage opportunities between different markets. In another words, Poland could leverage its access to LNG supply not just for the benefits of its own energy security, but to demonstrate its ability to deliver balance to markets experiencing shortages. Tapping into a multi-billion-dollar market would

be a mere by-product of the potential political inroads that “LNG diplomacy” could help accomplish.

In particular, it could provide an additional layer to Poland’s relations with the United States and thus help with managing this crucially important relationship. Indeed, instead of treating the deliveries of U.S. LNG as yet another manifestation of Poland falling victim to her “romantic” vision of the relationship with the USA, and thus disregarding the economic calculation which should rule out “expensive American gas” – a claim that is analytically shallow at best (Wisniewski, 2018) – a more nuanced, broader approach is warranted. Key to realizing the potential of “LNG diplomacy” vis-a-vis the United States lies in acknowledging that this sector has become an important part of the American economy and a tool of America’s foreign energy policy. Domestically, it is creating jobs, generating tax revenue, and contributing to economic development thanks to the boost it gives to other sectors (LNG Allies, 2018). Internationally, it is an instrument with which America can project its commercial and political interests and values – after all, natural gas will not cease to be a strategically important resource, quite the opposite. Above all, however, Poland is no longer simply a buyer of natural gas, but has joined the ranks of actual developers of one of the most abundant and innovative (both technologically and in the business dimension) LNG sectors across the globe. As a stakeholder, it is in a privileged position to broaden the dialogue with U.S. authorities on both federal and state levels to issues related to energy security, maritime security and the like – a dialogue that would go beyond commercial ties. Eventually, “LNG diplomacy” could help with two distinct, parallel phenomena: firstly, managing the asymmetry that is and will remain the defining feature of Poland-U.S. relations, and secondly with mitigating the effects of United States’ retrenchment from Europe. Granted, a fairly narrow community of interests in the energy sphere will not last without the community of values that has held the transatlantic partnership together – but it can certainly re-energize it.

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