Analysis of the proposed gas directive amendment

White paper

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Content

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Executive summary

This report reviews the recently proposed amendment to the Gas Directive, as put forward by the European Commission, which has been submitted to the European Parliament and the Council of the EU in November of 2017.

The proposed amendment suggests the extension of the Third Energy Package, to include gas import pipelines from third countries.

This would mean that these import pipelines would also become subject to the four key principles of

i. Third Party Access,
ii. Unbundling,
iii. Transparency, and
iv. Tariff Regulation.

It seems that the amendment will only have a practical impact on pipelines entering the EU by sea, though clarification on this issue is needed.

The stated purpose of the amendment is to "complete" the Gas Directive and ensure that key objectives such as increasing supply competition and boosting security of supply are met.

Many market participants have voiced concerns about the implications of the amendment, questioning whether it is necessary and whether, indeed, it might even have detrimental effects, leading to higher gas prices than would otherwise be the case.

This report examines these questions, against the backdrop of how the market is functioning today, what the practical consequences of the amendment would be and what other measures could be taken to improve gas market functioning, given the remaining market imperfections that can be observed.

We first examine the process of liberalization, and the extent of progress in the market to date.

We find that, although liberalization has taken some time to develop, requiring several legislative revisions, judicial decisions and multilateral co-operative and co-ordinatory efforts to take effect, the market is now beginning to work very well. This view is shared by many observers and relevant regulatory bodies. For example, in its recent report, ACER in addition to concluding that liberalization, integration and competition are progressing well, lists a number of recommended actions to be taken to improve internal gas market functioning further. None of these recommendations include the extension of EU regulations onto third country import pipelines.

Some exceptions still remain however, with some individual Member States still lagging behind in adopting the Gas Directive into national legislation and regulations.[1]

1 Agency for the Cooperation of Energy Regulators, Council of European Energy Regulators. (2017, October 6). Annual Report on the Results of Monitoring the Internal Electricity and Gas Markets in 2016. p. 10-12. Retrieved from https://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/ACER%20Market%20Monitoring%20Report%202016%20-%20GAS.pdf

Among these remaining market imperfections we note there is potential for further improvement through:

- Ensuring full and unequivocal enforcement of the Gas Directive and Network Codes in all Member States across the EU, to complete the single gas market and European energy union as intended.
- Encouraging continued internal improvement and integration via cooperation and expansion of cross-border links.
- Removing regulatory barriers, which can result in inadequate security of supply, to ensure efficient use of gas storage capacity.

The proposed amendment claims to seek the following benefits:

- Ensuring that competition is not distorted and that gas can flow freely and efficiently to wherever it is needed within the European Union.
- Ensuring that competition increases among suppliers importing gas to the European Union.
- Improving security of supply.

However, the proposed amendment seems to have a number of practical implications and consequences which make it most unlikely that it can be effective in achieving its stated objectives relating to the four key principles, given that:

- Third Party Access can have no practical effect on supplies whatsoever, as there are no alternative shippers. The Gas Directive does not impact on the market structures selected by the supply countries.
- Transparency at EU import entry-points has already been achieved via the Network Codes; and has no practical value upstream from those points.
- Unbundling may be superfluous, given that the affected underwater stretches of pipeline are already owned and operated by separate legal entities (often in joint venture entities).
- Tariff Regulation may be effective in disclosing the transport element of the delivered price of gas, but since the gas has to compete against market prices anyway, once delivered into the EU, this is unlikely to bring any actual consumer benefits.

Key concerns about the practical implications of the proposed amendment include:

- Enforcing the amendment's terms onto infrastructure owned and operated by foreign, often state-owned entities will mean that Inter-Governmental Agreements will have to be negotiated, by individual Member States (or by the EU), with all the respective countries affected. This will be time-consuming, may add costs and risks leading to various different agreements, all having different terms and conditions. This may distort competition, especially given that the proposed amendment is not clear as to what conditions to apply. It may also add to project uncertainty, thus increasing capital costs.
- The lack of specified terms for granting exemptions and derogation also adds uncertainty and risk. The number of individual Member States and supplier nations involved means that, in all likelihood, terms and conditions would vary between agreements, leading to market distortions

and unequal competition. There is also a risk that other, non-gas market considerations could influence negotiations, leading to further distortions.

- Existing supply contracts using affected pipelines will also have to be renegotiated, also potentially creating additional costs.
- It seems that the amendment is intended only to have an impact on underwater stretches of pipeline entering the EU, but this is unclear. If so, it only applies to a small subset of the infrastructure used to import gas to the European Union. This means that subsea pipelines may have a competitive disadvantage, by comparison to overland pipelines and LNG, for no discernible, logical reason.
- The amendment fails entirely to meet the objective of increasing competition among suppliers, as this is beyond the jurisdiction of the EU, and also determined by the constraints of geography and geology.
- There is a risk that, if the amendment increases uncertainty regarding new projects, new gas supplies that would otherwise be cost-competitive might be sold into non-European markets.
- There is no clarity about what would happen if Member States or the EU failed to reach agreement with the affected export and transit nations. It seems highly unlikely that the EU would be able to impose requirements for internal asset and supply fragmentation onto foreign state-owned entities.
- The fact that the amendment only applies to pipelines (not to LNG), and apparently only to subsea pipelines, is particularly troublesome, as some modes of transport may be treated preferentially to others. This creates competitive distortion and is not in line with free market principles.
- The issue of whether the amendment leads to an improvement in security of supply is a matter of perspective. We argue that security of supply in a competitive market is a matter of multiple access routes to many diverse sources. Additional infrastructural elements can only add to such access and thus can never make an adverse impact on security of supply, as long as the developer bears all the costs and all risk of under-utilization, which will be the case for almost all new EU pipeline projects. Regardless of the presence of infrastructure, buyers are always free to choose to buy from whomever they wish, at the lowest price, at the highest quality, or any other relevant criteria. To the extent that the amendment might seek to find ways to halt certain import projects in preference to others, it is in direct conflict with its own security of supply objectives.

The feedback responses received by the European Commission to the amendment are a further matter of considerable concern. They show that a large majority of respondents, including market participants, trade associations and other relevant institutions from many different EU Member States, are negatively inclined towards the proposed amendment. It is true that a significant minority of respondents are positive towards the amendment, but they all appear to come from one Member State – Poland. This begs the question of whether the amendment may risk favouring one Member State at the expense of others. This issue, in combination with all the others raised above, prompts us to advise in favour of carrying out a deep and well thought through impact analysis before a decision is made by the Council of the EU and of the EU Parliament.

1. Introduction

Liberalisation of the EU gas market started in the 1990s with the adoption of the First Gas Directive, and has since progressed to a relatively advanced stage, in particular since the introduction of the Third Energy Package ("TEP") in 2009. It has reached a state where many market participants and market observers now agree that the market is working very effectively.

There are certainly some exceptions to this general rule. A few Member States, for various reasons, still lag behind in the full adoption of EU regulations and network codes into national legislation and regulation. In addition, there are considerable variations in market maturity across the EU. These result from the fact that some countries in Eastern and Central Europe, relatively late in joining the EU, have had to go through major economic and structural transformations before being able to join the path towards a single, fully integrated and competitive gas market. Apart from these exceptions, it is often observed that progress towards a fully competitive market is progressive and rapidly developing, as evidenced by the fact that:

- Gas is increasingly traded at hubs, in competition with other gas sources.
- The previously universal link of gas prices to oil prices has now been broken for most contracts.
- Gas prices are converging across Europe, when adjusted for transport cost differentials.
- The various EU national network codes have introduced effective regulated access to gas transmission, both internally and across borders.
- Joint initiatives and Projects of Common Interest are leading to greater market integration and removal of barriers to competition.

Notwithstanding this progress, the European Commission has recently suggested an amendment to the Gas Directive, which aims to extend EU regulation also to cover external gas supply pipelines that connect to the single EU gas market and supply it with gas import volumes from third party countries. This change is to include both existing pipelines and new-build facilities. The claimed rationale for this proposal is the need to:

- Complete the Gas Directive.
- Clarify core principles of EU energy legislation i.e.

i) Third Party Access ("TPA")

ii) Tariff Regulation

iii) Unbundled Ownership and

iv) Transparency

and apply these to import pipelines from third countries.

- Meet the goals of the EU single gas market, including increasing competition between gas suppliers and thereby boosting energy security[2].

This proposed amendment has not, as yet, been subjected to any impact analysis or substantive stakeholder review, and many market participants are concerned that the wider implications have not yet been fully investigated or understood. In particular, a range of prominent stakeholders have questioned whether:

a) The amendment is necessary from a liberalization perspective, and whether it would really bring the benefits it claims to seek[3]. It has been suggested that the benefits sought may, in fact, already have been achieved or will eventually result from the full implementation of the Third Energy Package for gas across the European Union.

2 European Commission. (2017, November 8). Energy Union: Commission takes steps to extend common EU gas rules to import pipelines [Press release]. Retrieved from http://europa.eu/rapid/press-release_IP-17-4401_en.htm

3 OMV Aktiengesellschaft. (2018, January 24). OMV Position - Proposal for an amendment of the Directive 2009/73/EC concerning common rules for the internal market in natural gas. Retrieved from https://ec.europa.eu/info/law/better-regulation/initiatives/com-2017-660/feedback/F9085_en; Austrian Federal Economic Chamber. (2018, January 30). Feedback on the Proposal for a Directive of the European Parliament and the Council amending Directive 2009/73/EC concerning common rules for the internal market in natural gas. Retrieved from https://ec.europa.eu/info/law/better-regulation/initiatives/com-2017-660/feedback/F9140_en; Czech Gas Association. (2018, January 22). Czech Gas Association Reply to the proposal for a directive of the EP and of the Council amending Directive 2009/73/EC concerning common rules for the internal market in natural gas. Retrieved from https://ec.europa.eu/info/law/better-regulation/initiatives/com-2017-660/feedback/F9073_en; Vereinigung der Fernleitungsnetzbetreiber Gas (FNB Gas). (2018, January 29). Position Paper on the proposal for an amendment of the Gas Directive. Retrieved from https://ec.europa.eu/info/law/better-regulation/initiatives/com-2017-660/feedback/F9071_en; European Federation of Energy Traders. (2018, January 30). EFET response to the Gas Directive amendment proposal. Retrieved from https://ec.europa.eu/info/law/better-regulation/initiatives/com-2017-660/feedback/F9092_en

b) The provisions of the amendment may, indeed, have a detrimental impact.[4] They may introduce greater complexity and higher transaction costs to the market, leading to more adverse market conditions for European consumers.

c) The amendment is, in reality, a means by which to promote some new infrastructure projects in preference to others, leading to a distortion of market conditions that could ultimately lead to higher gas prices than is otherwise necessary.[5]

Accordingly, to provide perspective to these matters, we will seek, in this report, to answer the following questions:

a) whether the proposed amendment is likely to lead to any benefits, from a gas market liberalization point of view.

b) whether the amendment is necessary, given the current status and progress of EU market liberalization, and

c) whether there are other means to improve market functioning that should be put in place first, given currently recognized imperfections.

To assess these points, we will first review, in **Chapter Three** of this report, the **status of EU gas market liberalization to date**. We will then discuss the progress made and examine the extent to which there remains a priority problem that needs to be addressed.

Chapter Four puts the European gas market into a **global context**, explaining how different supply sources currently compete to sell gas into the European market, which sources are likely to set the marginal price and how this is likely to influence gas prices and security of supply concerns into the future.

In **Chapter Five**, we then will **review the details of the proposed amendment** against the background of our findings, and examine the nature of its **practical implications**. Specifically, will it **produce the benefits** it sets out to obtain and will it lead to any **adverse effects** that would leave European consumers less well off than they would have been had the amendment not been instituted.

Finally in **Chapter Six**, we will discuss **what other means are available** to improve levels of gas market competition and security of gas supply, given the various market inadequacies and imperfections that can be observed at present.

It should be noted that we will undertake this review purely from a commercial and market perspective, leaving aside any and all legal and/or political considerations.

4 OMV Aktiengesellschaft. (2018, January 24). OMV Position - Proposal for an amendment of the Directive 2009/73/EC concerning common rules for the internal market in natural gas. Retrieved from https://ec.europa.eu/info/law/better-regulation/initiatives/com-2017-660/feedback/F9085_en; Nederlandse Gasunie. (2018, January 31). Feedback to the EU Commission proposal amending Directive 2009/73/EC. Retrieved from https://ec.europa.eu/info/law/better-regulation/initiatives/com-2017-660/feedback/F9158_en; Czech Gas Association Reply to the proposal for a directive of the EP and of the Council amending Directive 2009/73/EC concerning common rules for the internal market in natural gas. Retrieved from https://ec.europa.eu/info/law/better-regulation/initiatives/com-2017-660/feedback/F9073_en; Shell Companies, EU Liaison Office. (2018, January 31). Feedback on Commission proposal for a Directive amending Directive 2009/73/EC. Retrieved from https://ec.europa.eu/info/law/better-regulation/initiatives/com-2017-660/feedback/F9136_en; Uniper, EU Representative Office Brussels. (2018, January 30). Feedback on the European Commission's proposal for a Directive amending Directive 2009/73/EC. Retrieved from https://ec.europa.eu/info/law/better-regulation/initiatives/com-2017-660/feedback/F9106_en; European Federation of Energy Traders. (2018, January 30). EFET response to the Gas Directive amendment proposal. Retrieved from https://ec.europa.eu/info/law/better-regulation/initiatives/com-2017-660/feedback/F9092_en; Vereinigung der Fernleitungsnetzbetreiber Gas (FNB Gas). (2018, January 29). Position Paper on the proposal for an amendment of the Gas Directive. Retrieved from https://ec.europa.eu/info/law/better-regulation/initiatives/com-2017-660/feedback/F9071_en; Wintershall Holding. (2018, January 29). Feedback to the European Commission on the planned extension of the scope of application of Directive 2009/73/EC. Retrieved from https://ec.europa.eu/info/law/better-regulation/initiatives/com-2017-660/feedback/F9079_en

5 OMV Aktiengesellschaft. (2018, January 24). OMV Position - Proposal for an amendment of the Directive 2009/73/EC concerning common rules for the internal market in natural gas. Retrieved from https://ec.europa.eu/info/law/better-regulation/initiatives/com-2017-660/feedback/F9085_en; Austrian Federal Economic Chamber. (2018, January 30). Feedback on the Proposal for a Directive of the European Parliament and the Council amending Directive 2009/73/EC concerning common rules for the internal market in natural gas. Retrieved from https://ec.europa.eu/info/law/better-regulation/initiatives/com-2017-660/feedback/F9140_en; Czech Gas Association. (2018, January 22). Czech Gas Association Reply to the proposal for a directive of the EP and of the Council amending Directive 2009/73/EC concerning common rules for the internal market in natural gas. Retrieved from https://ec.europa.eu/info/law/better-regulation/initiatives/com-2017-660/feedback/F9073_en

2. The current status of the EU gas market

2.1 Historical development of the EU gas market

Because natural gas is gaseous at normal temperatures, it requires transportation facilities such as pipelines or liquefaction plants and tankers to supply and distribute it to consumers. This infrastructure is very capital intensive, showing substantial economies of scale but having only relatively low operating costs. In consequence, such facilities constitute natural monopolies and, if they are not utilized at full capacity, it makes no economic sense to duplicate them. Accordingly, it is not possible to develop a competitive gas supply market unless such infrastructure capacity is made freely available to all potential competitors.

Prior to liberalization, the European gas market was in the hands of a few, vertically integrated companies that had a monopoly on the supply of gas in their respective national or regional markets. They bought gas from producers, owned the transportation and distribution networks and sold the gas in captive markets where consumers had no choice of supplier. This made sense in the early days of the gas industry, while the infrastructure was still being developed.

These de-facto monopolies were able to recover their investments without risk. They were able to price gas competitively against competing oil products and they optimized gas flows within their own, generally isolated networks. In many markets, gas prices were regulated, in one way or another, to prevent these suppliers from over-charging their customers. In any event, given that gas was in competition with oil products, oil prices formed a cap on the prices that could be charged for gas without losing market share.

The producers sold their gas to these monopoly suppliers under long-term bilateral contracts, with prices being set and indexed in reference to oil products. This contractual relationship ensured that the gas would always be priced competitively with oil. It also meant that both producers and suppliers would always be able to minimize market risk, i.e. the risk of not being able to sell all the produced or contracted gas, which had to be paid for under so-called "back-to-back" contracts with "take-or-pay" provisions.

The creation of a single, interlinked and competitive European market for energy was stipulated already in the Treaty of Rome (1958). By the early 1990s, the EU had concluded that it was time to introduce competition into the various national gas markets and to start dismantling gas supply monopolies.[6] These views were also influenced by the developments in the US gas market, where deregulation at that time had led to a significant fall in consumer gas prices.

The objectives of the liberalization steps that were set in motion in the EU can be summarized as:[7]

- Introduction of a competitive market framework, with gas-to-gas competition
- Increased economic efficiency
- Reduced costs and better service for final consumers
- Strengthened system resilience to supply disruptions

It was recognized early on that, for competition to develop, some important changes were required:

1) **Third Party Access ("TPA")**; Pipelines and other relevant infrastructure needed to be made available to anyone willing to supply gas, not just those who happened to own the pipelines. Most pipelines had been in place for quite a long time, so capital costs had already been recovered, removing the rationale for retaining exclusive use. Hence, the principle of mandatory TPA was introduced, including non-discriminatory capacity allocation mechanisms and congestion management measures to prevent capacity bookings that were left unutilized just to prevent others from using it (hoarding)
2) **Unbundling:** However even with TPA in place, it was recognized that incumbent suppliers who also owned

6 Cronshaw, I., Marstrand, J., Pirovska, M., Simmons, D., Wempe, J. (2008, May). Development of Competitive Gas Trading In Continental Europe [IEA Information Paper]. International Energy Agency. Retrieved from https://www.iea.org/publications/freepublications/publication/gas_trading.pdf; The treaty of Rome was signed in 1957 and came into force on January 1, 1958.

7 Cronshaw, I., Marstrand, J., Pirovska, M., Simmons, D., Wempe, J. (2008, May). Development of Competitive Gas Trading In Continental Europe [IEA Information Paper]. International Energy Agency. Retrieved from https://www.iea.org/publications/freepublications/publication/gas_trading.pdf

infrastructure had an incentive to engage in activities and behaviours that prevented others from accessing the market, making it more difficult for them to compete. For example, pipeline owners might make it easier for their sister supply companies to book capacity compared to competitors. There would not be a level playing field for new entrants to the market. Unbundling of production and supply activities from network operating activities was thus another key prerequisite.

3) **Transparency:** Even with mandatory TPA and unbundling of activities, it would still be difficult for competing suppliers to access capacity without information being available about where they could find it. Hence, Transparency of flows and capacity availability, ensured by independent authorities, were required.

4) **Tariff Regulation:** In addition, unless the terms under which capacity was to be made available were absolutely and unequivocally equal for all potential shippers of gas, there was a risk of unfair competition. Hence tariff regulation was necessary, to ensure both cost recovery for network owners and equal terms of use for shippers.

To achieve these goals, a Gas Transit Directive was first introduced, in 1991, followed by the First Gas Directive in 1998. However, given the diverse nature of European gas markets and the resistance of incumbents, progress was initially slow, partly because asset owners perceived that these changes infringed on property rights. The current, more complete enactment of the Single Gas Market vision was only enabled by the subsequent Second Gas Directive (2003), and the Third Energy Package (proposed 2007, passed in 2009). The detailed steps are summarized in Figure 1 below.

Figure 1: Chronology of EU liberalization

1998	First Gas Directive	■ Regulated or negotiated TPA ■ Gradual market opening ■ Accounting unbundling ■ Independent regulation
2000 & 2003	Lisbon and Barcelona Councils	■ Acceleration of liberalization ■ Several markets already open to competition ■ New legislation launched ■ Full market opening scheduled for 2005
2003	Second Gas Directive	■ Gas and electricity treated equally ■ Regulated TPA ■ Market opening for all industrial customers decided for 2004 ■ Legal unbundling ■ Transit and transport treated equally; TPA exemption for new infrastructure
2004 & 2005	4th and 5th benchmarking reports	■ Lack of customer switching ■ Industry concentration ■ Insufficient market integration ■ Prices haven't fallen as expected
2005 - 2007	Directorate-General for Competition: sector inquiry 2005 and final report	■ Cross-border sales do not exert any significant competitive pressure. ■ Lack of liquidity and limited access to infrastructure prevent new entrant suppliers from offering their services to the consumer ■ Lack of reliable and timely information on the markets ■ More effective and transparent price formation is needed
2007 & 2009	6th benchmarking report and 3rd energy package;	■ Integration of environmental and energy measures ■ Ownership unbundling ■ European agency of energy regulators to monitor cross-border issues ■ Energy security and market integration left to Member States

Source: Cronshaw, I., Marstrand, J., Pirovska, M., Simmons, D., Wempe, J. (2008, May). Development of Competitive Gas Trading in Continental Europe [IEA Information Paper]. International Energy Agency; Arthur D. Little analysis

7 Cronshaw, I., Marstrand, J., Pirovska, M., Simmons, D., Wempe, J. (2008, May). Development of Competitive Gas Trading In Continental Europe [IEA Information Paper]. International Energy Agency. Retrieved from https://www.iea.org/publications/freepublications/publication/gas_trading.pdf

2.1.1 Enabling competitors to use existing infrastructure – Third Party Access

As explained above, critical to the development of competition in the gas market therefore was the ability of any competing gas supplier to gain access to capacity in existing pipelines in order to ship their gas to a buyer. The Third Party Access ("TPA") provision is the means by which such a supplier can request access in relevant pipelines, provided spare capacity is available.

In the early days of liberalization, it was possible for Member States implementing the Directive to choose between regulated TPA, where the terms of transportation were stipulated and transparent, and negotiated TPA, where the terms for capacity access were determined privately between buyer and seller. It soon became clear that negotiated TPA would not provide the desired outcome of promoting competition, and that TPA with regulated tariffs must be enforced everywhere.[8]

2.1.2 Ensuring transparency of gas flows through unbundling

It was clear from very early on, that competition could only thrive if there was full transparency regarding gas flows in existing pipelines. Without this, competitors would be unable to determine whether it was possible or not to ship gas. This transparency was also difficult to achieve satisfactorily however, as long as the original monopoly gas incumbents remained vertically integrated.

The protection of property rights, which prevented the mandatory breakups required to ensure full transparency, was therefore a significant early obstacle impeding gas market development. Early attempts were made to introduce different forms of unbundling, which required varying degrees of separation between activities: for example separation, and therefore unbundling of accounts and management. Utilities were required to separate out all activities related to the transport of gas, within their organization, and make separate accounts for these activities externally available. These measures all proved to be inadequate however, as they failed to break the incentives of vertically integrated companies to treat competitors in a discriminatory way. Certainly, they did not produce the required transparency of gas flows. Full transparency was not achieved until the delivery of full unbundling, which required companies to split activities into separate, independent legal entities.

2.1.3 Ending destination clauses and market sharing practices

Before liberalization, many producers selling gas into European markets used "destination clauses" in their contracts to prevent their buyers from re-selling the gas elsewhere in Europe, outside their own, local market area, potentially at a higher price.[9] This clearly provided a further, very strong limitation on the ability of parties to trade gas freely. There were also cases of gas importers agreeing not to compete with each other.[10] These

8 Directive 2003/55/EC of the European Parliament and of the Council of 26 June 2003 concerning common rules for the internal market in natural gas and repealing Directive 98/30/EC. Retrieved from http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32003L0055&from=EN

9 European Commission. (2003, October 6). Commission reaches breakthrough with Gazprom and ENI on territorial restriction clauses [Press release]. Retrieved from: http://europa.eu/rapid/press-release_IP-03-1345_en.htm?locale=en; European Commission. (2005, June 10). Competition: Commission secures changes to gas supply contracts between E.ON Ruhrgas and Gazprom [Press Release]. Retrieved from: http://europa.eu/rapid/press-release_IP-05-710_en.htm; European Commission. (2002, December 12). Commission settles investigation into territorial sales restrictions with Nigerian gas company NLNG [Press Release]. Retrieved from: http://europa.eu/rapid/press-release_IP-02-1869_en.htm?locale=FR; European Commission. (2007, July 11). Commission and Algeria reach agreement on territorial restrictions and alternative clauses in gas supply contracts [Press Release]. Retrieved from: http://europa.eu/rapid/press-release_IP-07-1074_en.htm?locale=fr; European Commission. (2004, October 26). Commission confirms that territorial restriction clauses in the gas sector restrict competition [Press Release]. Retrieved from: http://europa.eu/rapid/press-release_IP-04-1310_en.htm; Talus, K., (2011, September 1). Long-term natural gas contracts and antitrust law in the European Union and the United States. The Journal of World Energy Law & Business, Volume 4, Issue 3. Oxford: Oxford University Press. pp. 260-315: "Various anti-competitive effects are further highlighted when combined with other anti-competitive clauses regularly used in gas supply contracts: destination clauses, use restrictions, profit-sharing clauses and other similar clauses intended to separate markets." […]"Destination clauses and territorial sales restriction clauses prohibit the buyer from reselling the gas into other countries or other areas than those for which it is intended. These clauses enable a supplier to charge different clients different prices at the same delivery point. The roots of these territorial restriction clauses are the historical segmentation, both horizontal and vertical, of the EU energy markets. Large producers sold the gas to national incumbent suppliers but not directly to end-customers. The sales were limited to the area where the integrated incumbent supplier controlled the pipelines, typically their immediate home state. By limiting the freedom of the buyer to resell the gas outside a certain area, these clauses enable a supplier to maintain different price areas for the same product. In addition to price maintenance, destination clauses also reduce liquidity in the energy markets, making it easier to identify individual transactions and facilitating collusion between market players."

10 One such example is the joint venture between Gaz de France (now Engie) and Ruhrgas (now Uniper) to jointly build the MEGAL pipeline bringing Russian gas to Germany and further on to France. As part of this agreement, the two companies agreed not to sell gas in each other's home markets. The deal remained in use after the adoption of the First Gas Amendment, a clear violation of competition law. The European Commission was made aware of the relevant side letters and fined both companies Forrester I.S., MacLennan. J.F., Dawes, A., (2010, January 1). EC Competition Law 2007-2009. E.ON-GdF collusion. E.ON-GdF collusion. Yearbook of European Law 2010, volume 29. New York: Oxford University Press. p 431 "In July 2009, the Commission fined E.On and GdF €553 million each for having maintained in force between August 2000 and September 2005 a market sharing agreement first entered into in 1975, despite the European gas markets having been opened to competition as of 10 August 2000 by the First Gas Directive, and despite both parties being aware that the 1975 agreement violated competition law. The infringement stems from a decision by Ruhrgas and GdF in 1975 jointly to build the MEGAL pipeline to transport Russian gas into Germany and France. As part of the that agreement, the two companies had agreed not to supply gas to the other's home market as at that time, GdF had a monopoly on the importation of gas into France and Ruhrgas was protected by so-called demarcation contracts in its business area against competitors."

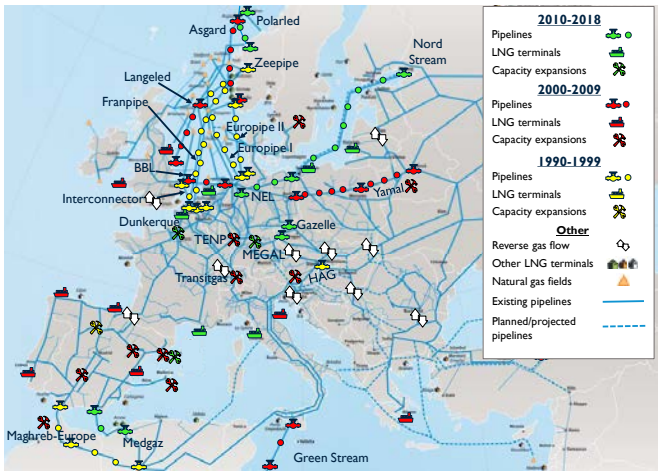
obstacles have all been successfully removed by EU and national legislation, regulation and judicial decisions.

2.1.4 Improving integration between markets

Further barriers to competition were presented by both the weak integration between national gas markets and the application of point-to-point gas transportation bookings. This impeded gas buyers and sellers from trading with each other where they had no direct physical connection, thus limiting their trading options. Weak integration between markets, and the lack of effective pricing mechanisms that incentivized a growth in cross–border capacity, meant that markets remained isolated from potentially better trading opportunities outside their national borders.

The map in Figure 2 illustrates the development of infrastructure between the early-1990's and 2016, showing the substantial recent improvements in inter-connectedness within and between countries and the introduction of many more Liquefied Natural Gas ("LNG") terminals.

Figure 2: Gas infrastructure development 1990 to 2018



Source: ENTSOG; Eurogas; Arthur D. Little analysis

2.1.5 The Third Energy Package

Full transition towards a liberalized gas market finally began in earnest with the adoption of the Third Energy Package in 2009.[11] These amendments introduced changes to the gas market that resulted, amongst other changes, in gas prices increasingly being set at balancing points or trading hubs.[12] Gas trading liquidity has steadily increased at these hubs and the old take-or-pay contracts and barriers to competition have been very greatly reduced. The provisions of the Third Energy Package included:[13]

- Full ownership unbundling of energy suppliers and producers from network operators or, as a minimum, strict separation of pipeline and production or supply activities.
- Strengthened regulatory independence, giving national regulators effective powers to deal with non-compliant incumbents.
- Establishment of the Agency for the Cooperation of Energy Regulators ("ACER").[14] This paved the way for the widespread introduction of the network codes required for regulation of common rules for network interoperability, capacity allocation, balancing, congestion management and tariffication.
- Adoption of an "entry-exit" model for capacity bookings rather than the previous "point-to-point" approach that had earlier impeded gas trading.
- Establishment of cross-border cooperation between Transmission System Operators (pipeline operators, or TSOs) via the European Network for Gas TSOs ("ENTSOG"), allowing TSOs to coordinate network expansion and reinforcement, including cross-border capacities and interconnectors[15].
- Increased transparency in retail markets.

This third attempt to enforce competition has led to a complete transformation of the European gas market. It is widely viewed as having been very successful in introducing market liberalization, as discussed below.

11 Directive 2009/73/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in natural gas and repealing Directive 2003/55/EC. Retrieved from http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32009L0073&from=EN

12 In an entry-exit trading regime, virtual points in the system at which pricing of gas takes place. For example, NBP in the UK or TTF in the Netherlands

13 Costescu, A., Manistas, E., Szikszai, A. (2018). State of implementation of the Third Energy Package in the gas sector. European Commission, Joint Research Centre. Luxembourg: Publications Office of the European Union. Retrieved from: http://publications.jrc.ec.europa.eu/repository/bitstream/JRC110507/jrc110507_jrc110507_state_of_implementation_3rd_energy_package_revised_by_ipo_(30.1.18)_v3.pdf; Directive 2009/73/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in natural gas and repealing Directive 2003/55/EC. Retrieved from http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32009L0073&from=EN

14 Regulation (EC) No 713/2009 of the European Parliament and of the Council of 13 July 2009 establishing an Agency for the Cooperation of Energy Regulators. Retrieved from http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:211:0001:0014:EN:PDF

15 Regulation (EC) No 715/2009 of the European Parliament and of the council of 13 July 2009 on conditions for access to the natural gas transmission networks and repealing Regulation (EC) No 1775/2005. Retrieved from http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:211:0036:0054:en:PDF

2.2 Current implementation status

The joint EU regulatory agency, ACER, produces annual reports that document progress towards full liberalization across European gas markets.[16] Due to various differences between EU Member States, their market maturity and date of entry into the EU, there are considerable variations in status of implementation between markets. In general, however, the market is developing rapidly towards increased liquidity, market efficiency and competition, with security of supply and diversification improving in the same manner. In this section, we examine the current status of market development, as compared with its objectives. Information in this section is drawn in large part from the ACER Gas Market Monitoring Report of 2016.[17]

> "The aim of the Energy Union is to ensure that European consumers – both households and businesses – have secure, affordable and clean energy. The Energy Union strategy consists of five closely related and mutually reinforcing dimensions (security, solidarity and trust; a fully-integrated internal energy market; energy efficiency; climate action – decarbonizing the economy; research, innovation and competitiveness)."[18]

2.2.1 Network codes and the entry-exit model

All European transmission systems are now owned and operated by unbundled Transmission System Owners (pipeline operators, or TSOs). These TSOs are required to make capacity available on request via regular capacity auctions to shippers (a shipper is anyone - either a seller or buyer - with a quantity of gas to move through the network) and to expand the network where required, cooperating with other TSOs to build links between markets. The TSOs develop Ten Year Development Plans that outline how the network is likely to be used (given expected supply / demand developments) and where network reinforcements will be needed. They work together under ENTSOG coordination (ENTSOG is the joint umbrella organization for all European TSOs).

Another key change introduced with Third Energy Package was the development of Network Codes by the European Commission in cooperation with joint regulatory bodies ACER and ENTSOG.[19]

> "A fully functioning and interconnected internal energy market is crucial for maintaining security of energy supply, increasing competitiveness and ensuring that all consumers can purchase energy at affordable prices. Europe's cross-border gas networks operate according to rules that regulate who can use them and under what conditions. […] These rules, known as network codes or guidelines, are legally binding European Commission implementing Regulations".[20]

These Network Codes set out common guidelines for ways to organize and regulate access to gas transport in the TSO networks. They ensure that the application of different national rules does not create barriers to competition. The Network Codes comprise regulations for:

- Interoperability
- Balancing
- Capacity Allocation Mechanisms
- Congestion Management Procedures; and
- Tariffication.

The Network codes also stipulate the introduction of a so-called entry-exit model for capacity bookings and tariffs. Entry-exit replaces the previous models of point to point bookings. Entry-exit means that once a supplier has booked entry capacity to a market area they can move gas anywhere within the relevant gas network and access any customer within it. It also means suppliers can easily access neighbouring market areas by booking the relevant exit capacity. It makes it much easier for suppliers to reach customers within the EU internal gas market and to compete with each other.

With network unbundling, and the introduction of an entry-exit transportation model, all trading of gas volumes is now completely separate from arrangements for gas transportation capacity. As a result:

- Physical gas flows are not necessarily equivalent to any contractual or financial arrangements between market participants. The gas market can increasingly be compared to a single, giant, gas-filled "balloon", within which all gas volumes that have entered the system are completely

16 Regulation (EC) No 713/2009 of the European Parliament and of the Council of 13 July 2009 establishing an Agency for the Cooperation of Energy Regulators. Article 11. Retrieved from http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:211:0001:0014:EN:PDF

17 Agency for the Cooperation of Energy Regulators, Council of European Energy Regulators. (2017, October 6). Annual Report on the Results of Monitoring the Internal Electricity and Gas Markets in 2016. Retrieved from: https://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/ACER%20Market%20Monitoring%20Report%202016%20-%20GAS.pdf

18 European Commission. Energy Union Indicators. Retrieved from https://ec.europa.eu/energy/en/data-analysis/energy-union-indicators

19 European Commission. Gas Network codes. Retrieved from https://ec.europa.eu/energy/en/topics/markets-and-consumers/wholesale-market/gas-network-codes

20 European Commission. Gas Network codes. Retrieved from https://ec.europa.eu/energy/en/topics/markets-and-consumers/wholesale-market/gas-network-codes

intermixed. It makes no difference how far any individual gas molecules might travel within the system. Suppliers pay a charge to put gas into this "balloon" at an entry point (such as a national or regional market), and pay a further tariff to withdraw gas at an exit location – such as a large industrial consumer, a power plant, the grid of a distributor (DSO) supplying gas to a local market, or an interconnection point to a neighbouring market.

- All shippers have equal access to gas commodity volumes and to gas transportation capacity, on equal terms, at any entry or exit point, within capacity constraints that are known to all.
- Shippers may swap gas between locations, enabling them to access gas volumes from locations to which they have no direct physical connection, avoiding the need to book, pay for or use unnecessary capacity. For example, a shipper with gas in the north of Germany can agree with another shipper with gas in northern Italy to switch volumes with each other, assuming they both wish to move gas to these respective two places, or somewhere in close vicinity. No gas then actually travels through the system and the two suppliers can save on transportation costs. Without entry-exit and transparency of flows, such arrangements would be much more difficult.
- Pipeline network owners/operators may not buy and sell gas; they rely on capacity bookings to deliver revenues, selling transport, storage and LNG terminal services.
- The existence of a pipeline or terminal, as such, is no guarantee for its utilization. Someone other than the owner/operator has to be willing to pay for having gas sent through it.
- TSOs within the EU can recover all costs associated with entry-exit in relation to their respective Regulated Asset Bases ("RAB"). Total system costs are allocated to all entry and exit points so that, in total, given expected utilization, all pipeline owners will recover their full costs. These costs are either approved or set by the regulators. New investment within the EU can only go ahead if it is approved by regulators on the basis that there is an economic need for it, or if it is required to meet security of supply legal obligations.
- For infrastructure connecting to the EU, such as new pipelines from producing regions, or LNG ships, it is not possible for owners to recover costs if the infrastructure is used less than expected. This is because the EU gas market price is set in competition between gas suppliers and it is not possible to pass through costs if the market is unwilling to pay for them.

All Member States have their own rules for entry-exit system operation, but these must comply with the EU-wide Network Codes for Balancing, Interoperability, Capacity Allocation Mechanisms ("CAM"), Capacity Management Procedures ("CMP"), and Transmission Tariff Structures. Some countries work together to establish regional entry-exit systems (e.g. the Baltic countries and Finland). Elsewhere they are purely national or sub-national. The tariffs that are set enable the TSOs not only to recover costs; they also to provide price signals for expansion, and thus, via the auctioning mechanism, to avoid congestion.

Shippers are able to see what capacities are available, and where, from the interactive gas flow data map on the ENTSOG Transparency platform.[21] Shippers can book gas flow capacity separately into the system at entry points and withdrawal from the system exit points, for longer or shorter periods (daily, monthly, annually). They are however responsible for keeping their flows in balance (entry flows / supply must match exit flows / customers' demand).

Capacity is auctioned by TSOs to shippers, providing price signals to the TSO that capacity needs to be expanded.

If a shipper has booked capacity for long periods but leaves it unutilized, perhaps in order to prevent other shippers from using it, the TSO can take control of such unutilized capacity and release it for others to use under the so-called Use-It-Or-Lose-It principle ("UIOLI"). This is set out in the Congestion Management Procedures[22], which like the other Network Codes, is part of EU legislation. The mechanism prevents the hoarding of spare capacity in pipelines or other infrastructure.

The network codes have also been able to remedy the challenges of dealing with gas balancing, tariffication and short term capacity constraints. If shippers want more capacity than is planned for in the Ten Year National Development Plan, they can book for additional capacity expansion, which the TSO will provide if and when it is economically feasible to do so, i.e. when enough volumes have been booked for the extension to make sense. It is possible, by committing to bid for capacity in advance, to provide price signals and to give incentives to TSOs

21 ENTSOG, Transparency platform. Retrieved from https://transparency.entsog.eu/

22 Commission Decision of 24 August 2012 on amending Annex I to Regulation (EC) No 715/2009 of the European Parliament and of the Council on conditions for access to the natural gas transmission networks. Point 2.2.5. Retrieved from http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32012D0490&from=EN

that prompt the construction of new pipeline capacity or the expansion of existing capacity[23]. Two examples illustrating this are the EUGAL[24] pipeline and the Baltic Pipe.[25]

2.2.2 Market integration and interconnection

In addition to these changes in network regulation, investments have also been made in recent years in both new pipeline infrastructure and additional LNG terminals, with the aim of unlocking the isolation of markets that had previously been connected to only one gas supplier.[26, 27] This has both increased their diversity of supply and improved their security of supply. The Security of Supply Regulation (2010; amended 2017) requires all EU Member States to have sufficient capacity to cope with the failure of their single largest supplier and to ensure that gas can flow in both directions on pipeline connections between countries.

Many sectors of the intra-European pipeline network have been strategically reinforced, or opened for reverse flow, allowing more cross-border trades to take place. Reverse-flow means that some pipelines, which previously could only carry gas in one direction (for example north to south, or east to west), have now been technically modified to enable flow in both directions. Often, this will mean that volumes at one end of the pipe can be swapped with volumes at the other end to optimize the operating costs of the system. There are, nevertheless, areas where further interconnectivity is still needed.[28]

> "The fact that gas flow fluctuations are accommodated smoothly proves to what extent market participants and consumers in many market areas are flexible in responding to (or anticipating) changing market fundamentals."[29]

> "The development of gas interconnectors has allowed for reverse gas flows from Western Europe to [Slovakia, Czech Republic and Hungary]. This means that Gazprom's customers [in these countries] could get access to Western European liquid and competitive gas hubs. The emergence of this alternative source of supply forced Gazprom to adjust its prices by introducing references to hub prices, bringing them back into line with competitive Western European prices."[30]

Because the gas grids were, in general, built for the previously self-contained national gas markets, the rate of integration towards this model will vary by Member State. Nevertheless, the ultimate objective of the Gas Target Model ("GTM") formulated by ACER is eventually to have one single integrated gas market across Europe, with one single entry-exit system.

It is expected that, with increased interconnection and redundancy, there will be incentives for TSOs and gas market participants to gradually evolve in this direction, starting first with regional market connections and subsequently merging into a single regional market. Important advantages of this GTM model will be better diversification and security of supply for all interconnected market participants, and the ability to source gas

23 Commission Regulation (EU) 2017/459 of 16 March 2017 establishing a network code on capacity allocation mechanisms in gas transmission systems and repealing Regulation (EU) No 984/2013. Chapter V. Retrieved from http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32017R0459&from=EN

24 More capacity. (2017, March 7). Successful auctions for new transport capacities [Press Release]. Retrieved from https://www.more-capacity.eu/en/news/press-release/news/successful-auctions-for-new-transport-capacities/

25 Gaz System. (2018, January 30). Baltic Pipe: Signing of Capacity Agreements completes the 2017 Open Season procedure for the Baltic Pipe project. [Press Release]. Retrieved from http://en.gaz-system.pl/centrum-prasowe/aktualnosci/informacja/artykul/202684/

26 European Commission. (2016, October 21). Ending energy isolation of the Eastern Baltic Sea region: how the Balticconnector – gas pipeline between Estonia and Finland – works. [Fact Sheet]. Retrieved from http://europa.eu/rapid/press-release_MEMO-16-3476_en.htm: "The project will integrate the Finnish gas system with the rest of the internal EU gas market in line with the European Commission's Energy Security Strategy to ensure that no region in Europe remains isolated. It is the result of a close regional cooperation facilitated by the Commission under the Baltic Energy Market Interconnection Plan (BEMIP)" […] "Other important energy projects in the Baltic Sea region In addition to Balticconnector, several other gas projects have obtained the PCI status in the region, including the Gas Interconnector Poland – Lithuania (GIPL) and the Karksi project – the Estonia – Latvia interconnector – to which the Commission allocated in 2016 a grant of €18.6 million. Other projects include the strengthening of the transmission network between Lithuania and Latvia, the interconnector between Poland and Denmark (BalticPipe) and the expansion of the LNG terminal in Świnoujście, Poland. These projects are central to establishing a well operating gas market in the Baltic Sea region."

27 European Commission. (2017, November 23). Third Report on the State of the Energy Union. Retrieved from https://ec.europa.eu/commission/sites/beta-political/files/third-report-state-energy-union_en.pdf: "The construction on the Southern Gas Corridor pipeline has progressed. This project remains of strategic importance for the diversification efforts of the EU, bringing new sources of gas via a new route."

28 Agency for the Cooperation of Energy Regulators, Council of European Energy Regulators. (2017, October 6). Annual Report on the Results of Monitoring the Internal Electricity and Gas Markets in 2016. p. 17, paragraph 48. Retrieved from https://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/ACER%20Market%20Monitoring%20Report%202016%20-%20GAS.pdf

29 Agency for the Cooperation of Energy Regulators, Council of European Energy Regulators. (2017, October 6). Annual Report on the Results of Monitoring the Internal Electricity and Gas Markets in 2016. p. 5, paragraph 2. Retrieved from https://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/ACER%20Market%20Monitoring%20Report%202016%20-%20GAS.pdf

30 European Commission. (2017, March 13). Antitrust: Commission invites comments on Gazprom commitments concerning Central and Eastern European gas markets – Benefits for the Slovak gas market [Fact Sheets]. Retrieved from http://europa.eu/rapid/press-release_MEMO-17-548_en.htm

at any point of consumption from the lowest cost gas source available anywhere in the market.

For this to happen, it will be necessary for TSOs and National Regulatory Agencies ("NRAs") to continue working together to facilitate cross-border trading and to create and reinforce physical interlinkages, wherever necessary. This is especially necessary where markets are small and dependent on a single source of supply. These efforts will help end isolation and increase market attractiveness for competing suppliers. They are being facilitated by the European Commission through the Projects of Common Interest ("PCIs") program that has provided financial support for a number of such necessary network reinforcements. Several future projects are also planned.[31]

2.2.3 System Transparency

Information on capacity availability, flows and expected temporary constraints is posted at all times on the Transparency Platform of ENTSOG, for all entry and exit points across the European Union. National regulators also, all have their own rules for publication of data on capacity and flows. This enables all market participants to assess what capacity is available and where it is, at any one time. In addition, the Regulation on wholesale Energy Market Integrity ("REMIT") governs and prevents any insider trading and market manipulation by mandating immediate disclosure of any market sensitive information that could affect flows and capacities.[32] The volumes of all import flows that enter the Single Gas Market are thus clearly visible at their respective entry points.

Another relevant aspect of transparency is the progress that has been made in ensuring gas price visibility. Prior to liberalization and unbundling, wholesale gas prices were protected by contract confidentiality clauses which made it very hard to compare the prices and terms offered by different suppliers and exporters. Today, the hub prices at established trading hubs such as TTF and NBP are openly available to all, making them effective and reliable price reference points for other hubs and gas contracts widely across Europe.

2.2.4 Development of wholesale gas trading hubs

Since the Third Energy Package, wholesale gas prices are increasingly formed on the basis of traded, short-term gas market fundamentals, rather than the previous base prices and oil-product indexation formulae of the old, long-term, pre-liberalisation gas contracts.[33] Short-term gas volumes are now extensively traded at trading hubs. Prices are set daily, for the day, the next day or for the months ahead, according to supply and demand. Gas is also bought under longer term, bilateral contracts whose prices are becoming increasingly linked, in part or in full, to hub gas prices, such as TTF. In recent years, the lengths of these contracts have also shortened from usually 20 years or longer in the past, to generally 10 years or so, and often shorter.[34]

> "Price formation is more and more the result of shorter term gas-to-gas market fundamentals, while the role of traditional long-term contracts continues to lose ground in many market areas. Price developments exhibited similar trends across the main global gas regions of North America, Europe and East Asia. On the whole, differentials between gas prices seem to be more and more converging towards LNG variable transport costs. Europe is playing a reference role in setting international LNG prices as for worldwide LNG producers, the presence of a couple of liquid EU hubs constitute a key benchmark when setting the price of their exports."[35]

31 There are many recent examples of such reinforcement interconnection pipelines. One is the interconnection of the Finnish, Baltic and Polish markets, where EU funding has or is being provided for building an interconnector pipeline between Finland and Estonia, for several reinforcing links between the Baltic markets, for a link between Poland and Lithuania, and for liquefaction terminals in Lithuania and Poland, providing access to alternative supplies. In addition, steps are being take to introduce an entry exit system across the region. Another example is the construction of a pipeline between Norway, Denmark and Poland. This pipeline has the dual purpose of bringing Norwegian gas to Denmark, which has a declining indigenous supply base, and to Poland, diversifying its import portfolio. The result will be to connect the Polish market with those of Denmark and Sweden; Baltic Pipe Project. Project of Common Interest (PCI). Retrieved from https://www.baltic-pipe.eu/about/project-of-common-interest/; European Commission. Project of Common Interest: The Baltic connector Corridor: Baltic Energy Market Interconnection Plan in gas (BEMIP). Retrieved from https://ec.europa.eu/energy/sites/ener/files/documents/pci_factsheet_balticonnector_2017.pdf; European Commission. Project of Common Interest: Greece-Bulgaria Gas interconnector. Corridor: North - South gas interconnections in Central Eastern and South Eastern Europe. Retrieved from https://ec.europa.eu/energy/sites/ener/files/documents/pci_factsheet_igb_2017.pdf

32 Regulation (EU) No 1227/2011 of the European Parliament and of the Council of 25 October 2011 on wholesale energy market integrity and transparency. Retrieved from http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32011R1227&from=en

33 Agency for the Cooperation of Energy Regulators, Council of European Energy Regulators. (2017, October 6). Annual Report on the Results of Monitoring the Internal Electricity and Gas Markets in 2016. p. 15, paragraph 43. Retrieved from https://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/ACER%20Market%20Monitoring%20Report%202016%20-%20GAS.pdf

34 LNG World News. (2018, February 13). Poten: collapse in LNG contract lengths raises future supply concerns. Retrieved from https://www.lngworldnews.com/poten-collapse-in-lng-contract-lengths-raises-future-supply-concerns/?utm_source=emark&utm_medium=email&utm_campaign=daily-update-lng-world-news-2018-02-14&uid=40776

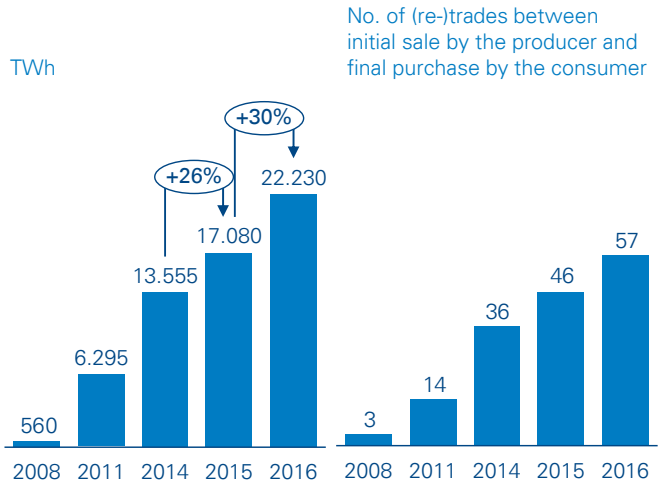
35 Agency for the Cooperation of Energy Regulators, Council of European Energy Regulators. (2017, October 6). Annual Report on the Results of Monitoring the Internal Electricity and Gas Markets in 2016. p. 5, paragraph 3. Retrieved from https://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/ACER%20Market%20Monitoring%20Report%202016%20-%20GAS.pdf

"The level of sophistication of hubs in the North West Europe ("NWE") region is evident, inter alia, from a higher number of market participants active at these hubs and from the sizeable traded volumes of longer dated products."[36]

The TTF is the largest hub in Europe by volume, and the one that is most likely to remain as a common reference for gas prices, with all other hubs increasingly linking their prices to it, after allowing for transport cost differentials, capacity constraints and local supply/demand fundamentals.[37] This situation has the benefit that it is increasingly possible to know whether gas is priced competitively, at any one location, in relation to other supplies.

The fast-growing gas volumes traded at the TTF hub, and the equivalent rapid growth in churn rate for this hub (the multiple of traded to actual delivered volumes) are highlighted in Figure 3.

Figure 3: Total traded volumes and churn rates for TTF: 2008-2016



Source: Heather, P., Petrovich, B. (2017, May). European traded gas hubs: an updated analysis on liquidity, maturity and barriers to market integration. The Oxford Institute for Energy Studies, University of Oxford

Both the TTF (Netherlands) and NBP (UK) trade more than 20,000 TWh (ca 2,000 bcm) of gas per year at present, (compared with total EU-28 demand of 18,000 TWh in 2016, down from 21,000 TWh in 2010)[38]. The NCG and GPL hubs (both Germany) currently trade at 10% or less of that volume. The other, even less well developed hubs elsewhere in the EU, such as PSV, PEG nord, ZEE and ZTP, VOB, etc., all trade at an even lower level.

As well as hub-traded volumes having increased significantly in recent years, the number of market participants at established hubs has also grown substantially, with TTF, NBP, NCG and GPL hubs now having a total of 30-40 or more active, regularly trading participants, from across the EU.[39] Whilst other hubs may have only 10-15 participants, or fewer, these numbers have also been growing in recent years. Buyers in countries with less liquid hubs or without their own hubs, can buy gas based on NBP or TTF-based prices.

In the same manner, whilst TTF and NBP now have churn multiple levels of more than 50 and 20 respectively (churn indicates the number of times a particular contract is traded, an indicator of liquidity), the other, smaller hubs have a churn multiple of 5 or less, though these levels have also been growing recently. Churn is an important indicator, since it leads to better price formation, which in turn is key for traders to be able to trust the prices formed as being representative for what the market is willing to pay and hence rely on them for price risk management.

Further, many more products are now traded on the more mature hubs. Products with a longer term and sometimes derivatives are traded, enabling market participants to hedge against price risk and signal expected future price developments.[40] This confirms the confidence of market participants in the stability and resilience of these markets and in the representativeness of the gas prices presented at these hubs.

36 Agency for the Cooperation of Energy Regulators, Council of European Energy Regulators. (2017, October 6). Annual Report on the Results of Monitoring the Internal Electricity and Gas Markets in 2016. p. 5, paragraph 5. Retrieved from https://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/ACER%20Market%20Monitoring%20Report%202016%20-%20GAS.pdf

37 Costescu, A., Manistas, E., Szikszai, A. (2018). State of implementation of the Third Energy Package in the gas sector. European Commission, Joint Research Centre. Luxembourg: Publications Office of the European Union. p. 3: "by far, the most developed (also called mature or established) hubs are the National Balancing Point (NBP) in the UK and the Title Transfer Facility (TTF) in NL. In 2016 TTF became the dominant European gas hub in terms of traded volumes and other criteria." Retrieved from: http://publications.jrc.ec.europa.eu/repository/bitstream/JRC110507/jrc110507_jrc110507_state_of_implementation_3rd_energy_package_revised_by_ipo_(30.1.18)_v3.pdf

38 Eurostat. (2017, July 20). Gross inland consumption of natural gas in EU-28, in thousand terajoules (Gross Calorific Value). Retrieved from http://ec.europa.eu/eurostat/statistics-explained/index.php/File:Gross_inland_consumption_of_natural_gas_in_EU-28,_in_thousand_terajoules_(Gross_Calorific_Value)_figure_1.png

39 Costescu, A., Manistas, E., Szikszai, A. (2018). State of implementation of the Third Energy Package in the gas sector. European Commission, Joint Research Centre. Luxembourg: Publications Office of the European Union. Retrieved from: http://publications.jrc.ec.europa.eu/repository/bitstream/JRC110507/jrc110507_jrc110507_state_of_implementation_3rd_energy_package_revised_by_ipo_(30.1.18)_v3.pdf

40 Heather, P., Petrovich, B. (2017, May). European traded gas hubs: an updated analysis on liquidity, maturity and barriers to market integration. The Oxford Institute for Energy Studies, University of Oxford. Retrieved from https://www.oxfordenergy.org/wpcms/wp-content/uploads/2017/05/European-traded-gas-hubs-an-updated-analysis-on-liquidity-maturity-and-barriers-to-market-integration-OIES-Energy-Insight.pdf

2.2.5 Convergence of gas wholesale prices

Gas prices are converging across Europe, with more than half of all markets now showing a price difference of less than €1/MWh, relative to prices at the TTF trading hub. This increasing price convergence is shown in Figure 4 that indicates relative gas sourcing costs by market. It shows that prices in 2014 were higher, relative to TTF, in markets with less competitive market frameworks, less well developed hubs and weaker connections. It also shows that prices in 2015 showed further improved price convergence, due to the impact of reverse gas flows in some markets, the improved competitiveness of LNG and the impact of lower oil prices.

"In general, declining sourcing price differentials across EU markets suggest that most regions are progressively benefitting from more robust supply side competition, which also compels midstreamers to optimize supply and demand portfolios more efficiently."[41]

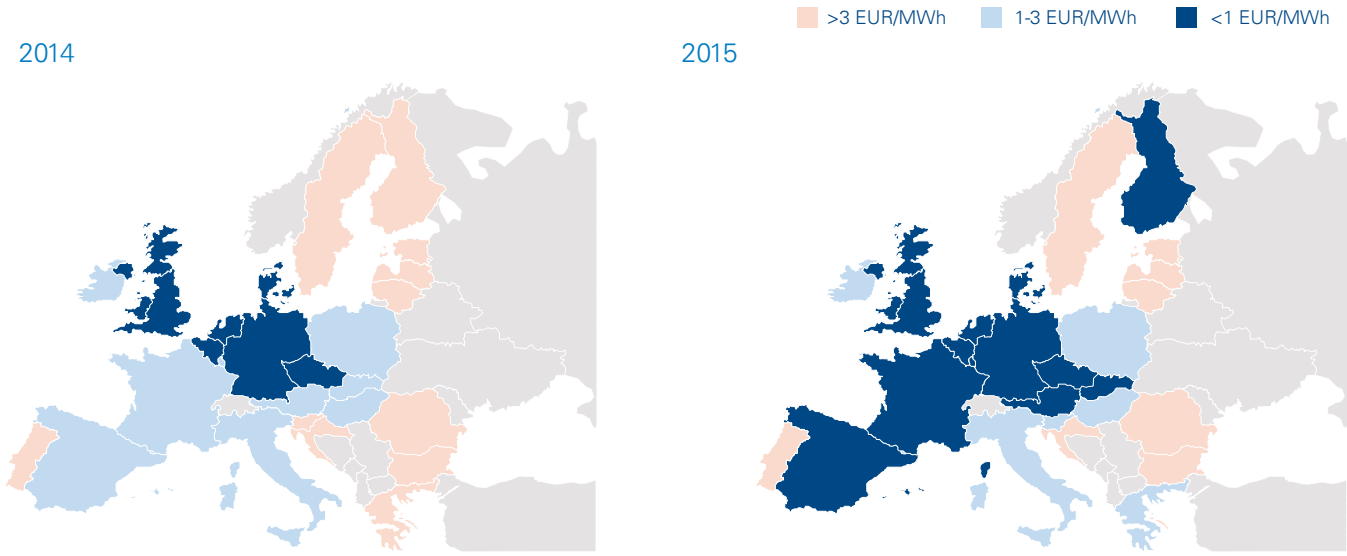
Figure 4 also illustrates the extent of gas market integration across the EU, showing the degree to which coherent trading hub growth over the last few years, in conjunction with low oil prices and low LNG prices, have acted to introduce lower and more coherent wholesale gas prices across the continent.

"The International Gas Union (IGU) appraises that hub price-linked long term gas contracts, together with volumes directly purchased via hubs, account at present for 66% of supplies across Europe. Differences exist between regions and producers. Statoil, Gasterra and UK producers shifted to hub orientation earlier and in a more pronounced way. Gazprom, Sonatrach other key producers and several LNG exporting companies tend to prefer long-term bilateral contracting with a higher presence of oil-price indexation. Nevertheless, Gazprom's actual pricing is the result of a system of formulaic adjustment and rebates granted where hub pricing constitutes an essential reference. This adaptation to the new market reality is the result of enhanced upstream competition, the development of hubs, improved interconnection and legal actions."[42]

2.2.6 Security of gas supply

The Security of Gas Supply Regulation of 2017 instituted further changes to improve security of supply.[43] This mandated greater attention to, and closer assessment of, the common gas supply risks faced across the EU and issues of solidarity between markets in times of gas supply crises. It followed adoption

Figure 4: Gas sourcing costs in Europe relative to TTF in 2014 (=23.7 EUR/MWh) and 2015 (21.0 EUR/MWh)



Source: Hesseling, D., (2016, April 26). EU gas hub development and a comparison with US Henry Hub [EU - US Energy Regulatory Round table Madrid]. Agency for the Cooperation of Energy Regulators

41 Agency for the Cooperation of Energy Regulators, Council of European Energy Regulators. (2017, October 6). Annual Report on the Results of Monitoring the Internal Electricity and Gas Markets in 2016. p. 35, paragraph 113. Retrieved from https://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/ACER%20Market%20Monitoring%20Report%202016%20-%20GAS.pdf

42 Agency for the Cooperation of Energy Regulators, Council of European Energy Regulators. (2017, October 6). Annual Report on the Results of Monitoring the Internal Electricity and Gas Markets in 2016., p. 16, paragraph 44. Retrieved from https://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/ACER%20Market%20Monitoring%20Report%202016%20-%20GAS.pdf

43 Regulation (EU) 2017/1938 of the European Parliament and of the Council of 25 October 2017 concerning measures to safeguard the security of gas supply and repealing Regulation (EU) No 994/2010. Retrieved from http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32017R1938&from=EN; Eu`ropean Commission. (2017, April 27). Agreement reached on new Security of Gas Supply Regulation [News]. Retrieved from https://ec.europa.eu/energy/en/news/agreement-reached-new-security-gas-supply-regulation-0

of the Regulation on Security of Supply from 2010 and the European Energy Security Strategy in 2014. The key points of the regulations are:[44]

- Requirement that Member States have sufficient infrastructure to cope with disruption of their largest source of supply.
- Requirement that pipelines connecting Member States be able to flow gas in both directions.
- Requirement of EU-wide gas supply and infrastructure disruption simulation for ENTSOG.
- Requirement of common risk assessment and development of joint preventive and emergency measures for EU countries.
- Solidarity principle for EU countries: gas supply guarantees for the most vulnerable European consumers.
- Increased transparency via notification of national authorities by natural gas companies about their relevant long-term contracts.

Improved interconnectivity has substantially reduced security of supply risks across the market as a whole.

> "The CEE region has significantly advanced its supply adequacy in recent years, following the entry into force of Regulation 994/2010 on the security of gas supply measures, as well as the commissioning of Nordstream."[45]

However, it is recognized that those Member States that are still wholly or largely physically dependent on one supplier remain particularly vulnerable to supply shocks and clearly have legitimate security of supply concerns. This is particularly true of markets in Eastern Europe that rely heavily on Russian gas. For example, Estonia, Finland, and Latvia, all still have limited physical connections to the rest of the EU network, preventing them from importing gas from more than one source.[46] The recent installing of reverse flow capacity on key transit pipelines and addition of LNG import facilities has begun to address this problem, but more reinforcements may still be necessary.

2.2.7 Gas storage and security of supply

Gas storage facilities can play a very significant role in enhancing and ensuring gas security of supply, in particular during periods of peak seasonal demand and in the event of temporary technical outages. However, gas storage capacity is widely under-utilized at present, in many markets around the EU, including those with well-established hubs such as the UK, France and Germany.[47] As observed by ACER:

> "40% of EU UGS capacity remained unused during the storage year of 2016/17, as compared to an average of 35% during the last five storage years."

There are various reasons for the current under-utilisation of gas storage facilities in the EU; as follows:

- The changing nature of the European gas pipeline system – an integrated gas pipeline network does not need as much storage capacity.
- More flexible pipeline import contracts – in recent years, buyers have gained greater flexibility in contracts including from Russia, Norway and Algeria, and can rely on this contractual flexibility rather than book storage capacity.
- Increased LNG imports to Europe – giving surplus regasification capacity.
- Regulation – including obligations imposed on market participants, by many Member States, related to security of supply objectives. These measures distort market dynamics, leading to some market participants being excluded from storage access, or being unduly burdened by costs and making booking storage too expensive. Rules for storage utilization can be so inflexible that they can create a barrier to effective market access for new entrants.[48] In some markets, there are long-term storage capacity bookings, which lock capacity holders into unprofitable positions.[49]

44 European Commission. (2014, May 28). Communication from the Commission to the European Parliament and the Council - European Energy Security Strategy. Retrieved from http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52014DC0330&from=EN

45 Agency for the Cooperation of Energy Regulators, Council of European Energy Regulators. (2017, October 6). Annual Report on the Results of Monitoring the Internal Electricity and Gas Markets in 2016. p. 17, footnote 29. Retrieved from https://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/ACER%20Market%20Monitoring%20Report%202016%20-%20GAS.pdf

46 Though Estonia and Latvia can now import LNG from Lithuania

47 Agency for the Cooperation of Energy Regulators, Council of European Energy Regulators. (2017, October 6). Annual Report on the Results of Monitoring the Internal Electricity and Gas Markets in 2016. p. 18, paragraph 53 ff. Retrieved from https://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/ACER%20Market%20Monitoring%20Report%202016%20-%20GAS.pdf

48 Agency for the Cooperation of Energy Regulators, Council of European Energy Regulators. (2017, October 6). Annual Report on the Results of Monitoring the Internal Electricity and Gas Markets in 2016. p. 18, paragraph 53. Retrieved from https://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/ACER%20Market%20Monitoring%20Report%202016%20-%20GAS.pdf

49 Agency for the Cooperation of Energy Regulators, Council of European Energy Regulators. (2017, October 6). Annual Report on the Results of Monitoring the Internal Electricity and Gas Markets in 2016. p. 18, paragraphs 54-56. Retrieved from https://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/ACER%20Market%20Monitoring%20Report%202016%20-%20GAS.pdf

The net effect of the above points is that price differentials between summer and winter gas are currently insufficient to incentivize putting gas into storage in summer for winter take-out, with storage facilities across Europe now struggling to remain commercially viable.

2.3 Conclusions – what gas market problems still need to be fixed?

The objectives of liberalization were to introduce competition to the gas market, leading to higher efficiency and lower gas prices for consumers, in an integrated European gas market where gas flows from the lowest marginal cost source to wherever it is needed.

It has taken some years for the market to change but, as has been observed in this Chapter, in general, liberalization is progressing well and competition among suppliers, both foreign and domestic, is well established. This has been commented upon publicly by senior European Commission representatives:

> "I understand all those honourable Members who have reminded us of the importance of energy security. You know that we are dealing with that very seriously, and I think this is strongly reflected in our report: 22 out of 28 countries are actually better off; having better infrastructure and interconnectors with reverse flows is giving us much more confidence; the European market is much more liquid than it ever was before; we are open to LNG and to Caspian gas; and we are ready to develop the East Med gas reserve with its huge potential, probably as big as that of the Norwegian reserve."[50]
>
> Maroš Šefčovič, Vice President of the European Commission

Third-Party capacity access and a transparency of gas flows in the market is fully in place and certain anti-competitive behaviors have been eliminated. Networks are increasingly physically interconnected and there has been a large increase in the amount of available LNG reception capacity across Member States. Pricing signals are adequate and reliable, leading to efficient responses, both in the short and long term, and prices are converging across Europe.

> "Gazprom's (and other producers') strategy - to defend market share by offering competitive prices and reviewing contractual supply mechanisms in market areas with competitive pressure […] boosted EU gas buyers' offtakes."[51]

Various agencies and academic institutes monitor the development of the European gas markets, including the IEA, ACER, EFET, ENTSOG, Oxford Institute for Energy Studies and Florence School of Regulation[52]. All testify that the market transition has been successful and is functioning well, though indicating that there is still room for improvement in a number of areas.

A recent market summary from ACER regarding remaining barriers to competition, following a survey among market participants, agencies and Member State authorities, concludes that where markets are functioning well and hubs are well established the focus should now be on further market improvement:

> "In conclusion, despite some specific challenges in the sector - i.e. the slack in the gas system both in terms of volumes contracted and long-term booked cross-border capacity and the uncertainty around the future role of gas – the functioning of the gas wholesale markets continued to progress in 2016. This is mainly evident from the market-driven development of gas hubs, the gradual advances in supply-side competition, the improved price convergence across market areas, the enhanced interconnection between markets and the overall better integration of national markets. However, while most Member States ("MSs") advance, a few seem to have continued challenges in catching up."[53]

ACER also refers however to the fact that some Member States still have some way to go before achieving full implementation of the Third Energy Package. The gas market in these Member

50 European Parliament (2017, February 1). State of the Energy Union debate. Retrieved from http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//TEXT+CRE+20170201+ITEM-013+DOC+XML+V0//EN

51 Agency for the Cooperation of Energy Regulators, Council of European Energy Regulators. (2017, October 6). Annual Report on the Results of Monitoring the Internal Electricity and Gas Markets in 2016; p. 15 paragraph 40. Retrieved from https://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/ACER%20Market%20Monitoring%20Report%202016%20-%20GAS.pdf

52 Agency for the Cooperation of Energy Regulators, Council of European Energy Regulators. (2017, October). Annual Report on the Results of Monitoring the Internal Electricity and Gas Markets in 2016; Heather, P., Petrovich, B. (2017, May). European traded gas hubs: an updated analysis on liquidity, maturity and barriers to market integration. The Oxford Institute for Energy Studies, University of Oxford; Cronshaw, I., Marstrand, J., Pirovska, M., Simmons, D., Wempe, J. (2008, May). Development of Competitive Gas Trading In Continental Europe [IEA Information Paper]. International Energy Agency; ENTSOG, Transmission Capacity Map. https://www.entsog.eu/maps/transmission-capacity-map/2017; European Federation of Energy Traders. (2018). http://www.efet.org/; Cervigni, G., Conti, I., Glachant, J.M. (2017, December). Towards Efficient and Sustainable Cost-Recovery for the European Gas Transmission Network. Florence: Robert Schuman Centre for Advanced Studies, Florence School of Regulation, European University Institute

53 Agency for the Cooperation of Energy Regulators, Council of European Energy Regulators. (2017, October 6). Annual Report on the Results of Monitoring the Internal Electricity and Gas Markets in 2016. p. 9, paragraph 24. Retrieved from https://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/ACER%20Market%20Monitoring%20Report%202016%20-%20GAS.pdf

States has remained un-liberalized until only very recently, mainly for reasons of isolation. Examples of this include the Baltic countries, Finland, Romania and Bulgaria. Progress is now being made, but these countries still have some way to go until they conform to the Gas Target Model objectives.[54]

In these markets, the more appropriate stated solution is to kick-start competition by the more complete implementation of regulation and network codes, whilst also making sure that the necessary measures and capital investments are put in place to provide the right behavioral incentives.

ACER thus concludes that what the European single gas market needs most is to continue to improve internally. Notably, and in line with our own observations, ACER draws no conclusions regarding the need for exerting more influence over external gas suppliers to the European Union[55]. Certainly, as will be discussed in Chapter 5, it is our view that the dominance of the EU's gas import sources by often state-owned export monopolies is most unlikely to be changed by the proposed Directive amendment.

In conclusion, therefore, from the perspective of a single European energy market in which gas volumes flow freely to where they are needed to deliver the greatest economic efficiency, it appears that there are still some imperfections that need to be addressed:

- The Third Energy Package and Network Codes need to be implemented and enforced in full across all Member States[56].
- Infrastructure bottlenecks, such as poor cross-border links between markets, inadequate or un-harmonized tariffication schemes or contractual impediments preventing a free flow of gas must be dealt with via appropriate priority capacity expansion and support schemes[57].
- Existing gas storage capacity can play a key role in providing internal security of supply. Such capacity is at present heavily under-utilised, due to Member State policies designed to control storage use (e.g. priority status for incumbents to book capacity, mandatory booking requirements and inflexible utilization rules. These either prevent efficient utilization or distort market fundamentals. The resulting current non-viability of much storage capacity is counter-productive to underlying security of supply aims[58].

In Chapter 6, we will discuss what measures could be taken to remedy these shortcomings.

In general though, as ACER states:

> "The current regulatory model should be allowed time to deliver its positive results and regulatory stability should be encouraged. A sound problem identification (e.g. Quo Vadis project of the European Commission) is needed before proposing regulatory amendments that would alter the current market design."[59]

54 Finland, Energy Authority. (2017, July 12), National Report 2017 to the Agency for the Cooperation of Energy Regulators and to the European Commission: National Report 2017 to the Agency for the Cooperation of Energy Regulators and to the European Commission, 2017: "Finland has availed itself of the possibility of a derogation allowed by the Natural Gas Market Directive. Following this, the natural gas market has not been opened in the manner specified in the directives. This exemption is effective as long as Finland does not have a direct connection to the natural gas network of any other EU Member State and as long as Finland has only one main natural gas supplier" and "The new Natural Gas Market Act will come into force on 1 January 2018. Based on the new Act, Finnish gas markets will be opened for competition in the beginning of 2020. Timetable of opening of Finnish gas markets is synchronised with the commissioning of the new Balticconnector -pipeline, which will connect Finnish and Baltic gas transmission networks."

55 Agency for the Cooperation of Energy Regulators, Council of European Energy Regulators. (2017, October 6). Annual Report on the Results of Monitoring the Internal Electricity and Gas Markets in 2016. p. 9, paragraphs 22 and 23. Retrieved from https://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/ACER%20Market%20Monitoring%20Report%202016%20-%20GAS.pdf

56 Agency for the Cooperation of Energy Regulators, Council of European Energy Regulators. (2017, October 6). Annual Report on the Results of Monitoring the Internal Electricity and Gas Markets in 2016. p. 62, paragraphs 228-230. Retrieved from https://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/ACER%20Market%20Monitoring%20Report%202016%20-%20GAS.pdf

57 Agency for the Cooperation of Energy Regulators, Council of European Energy Regulators. (2017, October 6). Annual Report on the Results of Monitoring the Internal Electricity and Gas Markets in 2016. p. 10, paragraph 26. Retrieved from https://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/ACER%20Market%20Monitoring%20Report%202016%20-%20GAS.pdf

58 Agency for the Cooperation of Energy Regulators, Council of European Energy Regulators. (2017, October 6). Annual Report on the Results of Monitoring the Internal Electricity and Gas Markets in 2016. p. 18, paragraphs 53-56. Retrieved from https://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/ACER%20Market%20Monitoring%20Report%202016%20-%20GAS.pdf

59 Agency for the Cooperation of Energy Regulators, Council of European Energy Regulators. (2017, October 6). Annual Report on the Results of Monitoring the Internal Electricity and Gas Markets in 2016. p. 10, paragraph 25. Retrieved from https://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/ACER%20Market%20Monitoring%20Report%202016%20-%20GAS.pdf

3. European gas supply in a global context

3.1 European gas supplies

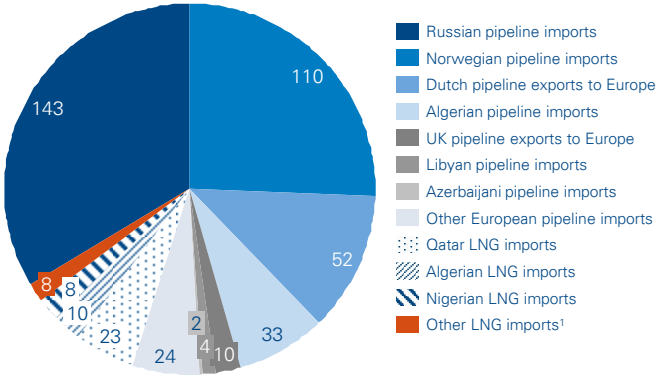
Progress in the developing liberalization of the European gas market can only be understood in the context of the dramatic recent changes in the global LNG market, which has fundamentally changed the way in which European buyers see their purchase choices and pricing options.

The European gas market is now supplied by many different sources, including indigenous gas from the UK, the Netherlands, Denmark, and Germany. The nations exporting gas to the EU include Algeria, Iran, Libya, Nigeria, Norway, Qatar, Russia, the United States and others. Together, these exporting nations bring a mixture of both pipeline gas and LNG to Europe.

LNG is simply ordinary natural gas that has been liquefied, at very low temperatures. It is generally then transported, usually over long distances, in dedicated, specialist tankers. This mode of gas transport is more flexible than pipelines, in the sense that LNG tankers can be sent from the source of the gas to anywhere in the world that has suitable reception, storage and re-gasification facilities, not just to one single destination.

In total, there were 15 countries supplying gas to Europe in 2016, with Russia and Norway having the largest market share, in volume terms, at 33% and 26% respectively. These 2016 supply volumes are shown below.

Figure 5: European gas supply portfolio by origin in 2016 (in bcma)



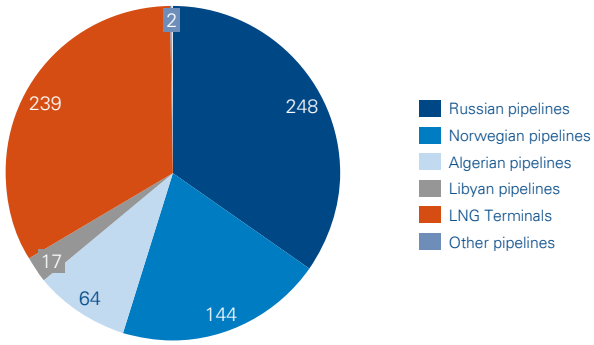
Source: BP. (2017). Statistical Review of World Energy
[1] Other LNG imports include US, Peru, Trinidad and Tobago, Norway, UAE and Angola

Figure 6 shows the European import capacity for both pipelines and LNG regasification terminals. Russia and LNG facilities both account for around 34% each of European capacity. Note that capacity means the potential volume of gas that might flow to Europe, as opposed to what actually flowed, as shown in Figure 5. For supplying countries, whether LNG or pipeline gas, it is important they have sufficient capacity to get their gas to market and to compete with other suppliers. This means that overall import capacity is greater than that required enabling European buyers to play off different suppliers against each other. European buyers decide how much gas they buy from different suppliers and thereby determine the utilization of such import infrastructure.

The LNG regasification terminals are currently operating at around 20% of their total available capacity (comparing the LNG regasification volumes in Figure 5 with the LNG regasification capacity shown in Figure 6). There is also always some level of spare capacity in a gas pipeline network, as gas does not flow at a constant rate every day of the year (more gas flows in the winter when demand is higher).

European indigenous production is falling, meaning more gas will have to be imported in future, so the utilization of existing import infrastructure will increase. New capacity is already under construction, including the TANAP/TAP project bringing gas from Azerbaijan to Turkey and on to Europe by 2020. At present, and in the mid-term, there is plenty of spare European import capacity, which is ensuring continued downward pressure on prices as suppliers compete amongst themselves for market share.

Figure 6: EU import capacities for pipelines and LNG regasification terminals (in bcma)



Source: ENTSOG, Transmission Capacity Map

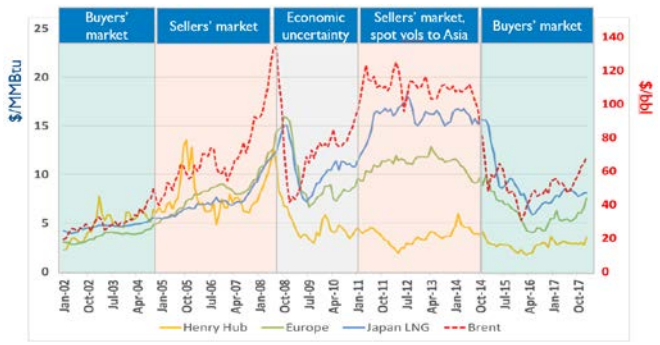
3.2 Recent developments in global LNG markets

Over the past decade, since the economic crisis in 2008, gas demand in European markets has declined, with too much gas having been contracted. Market players reacted to this situation in various ways, including:

1. Exercising their contractual rights in long term contracts to reduce their volume offtake, and
2. for those players with LNG contracts, cargoes were diverted to markets offering higher prices (noticeably to Asia following the Fukushima nuclear disaster in Japan in 2011). From 2011 to 2014 therefore, there was a profitable business model for some European buyers in re-selling, diverting and re-loading LNG originally destined for Europe to Asia.

The decline in oil prices and softening demand in Asia from 2014 onwards has meant that lower price differentials between European and Asian markets now reduced the incentive to divert LNG cargoes in this way. More recently however higher than expected demand elsewhere in the world (e.g. China) meant less LNG came to Europe than expected.[60] The global LNG market has transitioned from extreme tightness characterized by high prices, to one of oversupply and low prices.

Figure 7: Comparison of gas prices (Henry Hub, Europe, Asia) and Brent prices – 2002 to 2017



Source: World Bank "pink sheets"; Arthur D. Little analysis

This buyers' market remains in place today, giving European consumers attractive price opportunities, with more sell-side competition from both LNG and pipeline gas than ever before. Many European gas buyers have been successful in renegotiating their long-term contracts with the major gas suppliers to Europe. These renegotiations have resulted in more flexible volume terms, shorter contract lengths and prices indexed to hubs rather than purely oil-indexation.

> "Abundant supplies of LNG lead to strong competition among producers: ample spare regasification capacity allows both Europe and China to arbitrage between pipeline gas and LNG based on pricing."
>
> "Oversupply in global LNG markets will lead to fierce competition, with flexible US and Qatari volumes set to fight hard to gain access to European consumers… Gazprom will need to adopt a more competitive pricing mechanism than in the past."[61]

3.3 New global liquefaction capacity

This oversupply situation has been exacerbated by US market conditions. In recent years, the US has moved from being a net importer of gas to becoming the world's largest natural gas producer. The development of its shale gas resources has radically changed the global gas markets, as US based players seek to export their LNG volumes to both Europe and Asia, via flexible, hub-indexed contracts.

One liquefaction facility (Sabine Pass) came on-stream in 2016. This facility now has a capacity of 24 bcm per year, of which around 8 bcm has been contracted to European focused buyers[62]. Global portfolio players have contracted for a further 10 bcm of the available capacity, meaning that if market conditions and prices are favourable, up to 18 bcm of this LNG could be sent to Europe.

2018 and 2019 will also see the start of operations at a further six liquefaction plants in the US which are currently under construction, plus the expansion of Sabine Pass. Liquefaction facilities at Cove Point, Elba Island, Cameron LNG and Freeport LNG are all scheduled to come on-stream by the end of 2019, with a total capacity of 67 bcm. In addition to existing liquefaction capacity, this means that an additional 91 bcm will be available for export from the US by the end of 2019.

Clearly not all this gas will come to Europe, and much is destined for Asian markets. However, the contracts that have been signed for these volumes do not have destination clauses, and global players such as BP and Shell will be looking to sell their LNG to those markets which offer the highest prices, meaning that more gas volume will be available for European gas markets if attractive prices are available to sellers.

60 Walker, A. (2018, January 23). How is the Rest of the World's LNG Interfacing with Europe. [European Gas Conference – Vienna]. Cheniere Energy, Inc.

61 International Energy Agency. (2016). Medium-Term Market Report 2016. Page 12. Retrieved from https://www.iea.org/publications/freepublications/publication/MTGMR2016.pdf

62 GIIGNL. (2017). The LNG industry. GIGNL annual report 2017. Retrieved from http://www.giignl.org/sites/default/files/PUBLIC_AREA/Publications/giignl_2017_report_0.pdf

In addition to the liquefaction capacity that currently exists, or is under construction, a further 300 bcm of liquefaction capacity is currently proposed to be built in the US. Not all of this will be built, but it shows the clear ambition of many US players to capitalize on the shale gas production boom that has occurred over the past decade or so in North America. The second wave of US LNG developers is currently active in the market looking to secure anchor customers to underpin Final Investment Decisions (FIDs) of their proposed liquefaction plants.

> "US LNG will be a catalyst for change in the international gas market, diversifying supply, challenging traditional business models and suppliers, and transforming global gas security."
>
> "A new wave of liquefaction capacity is coming online at a time when the LNG market is already well supplied. This LNG glut is already affecting price formation and traditional business models."
>
> "At the same time, this ample availability of LNG is also creating new competition with pipeline gas supplies, which could benefit consumers. This intense competition is loosening pricing and contractual rigidities that have traditionally characterised long-distance gas trade. The change will be accelerated by the expansion of US exports, which are not tied to any particular destination and will play a major role in increasing the liquidity and flexibility of LNG trade."[63]

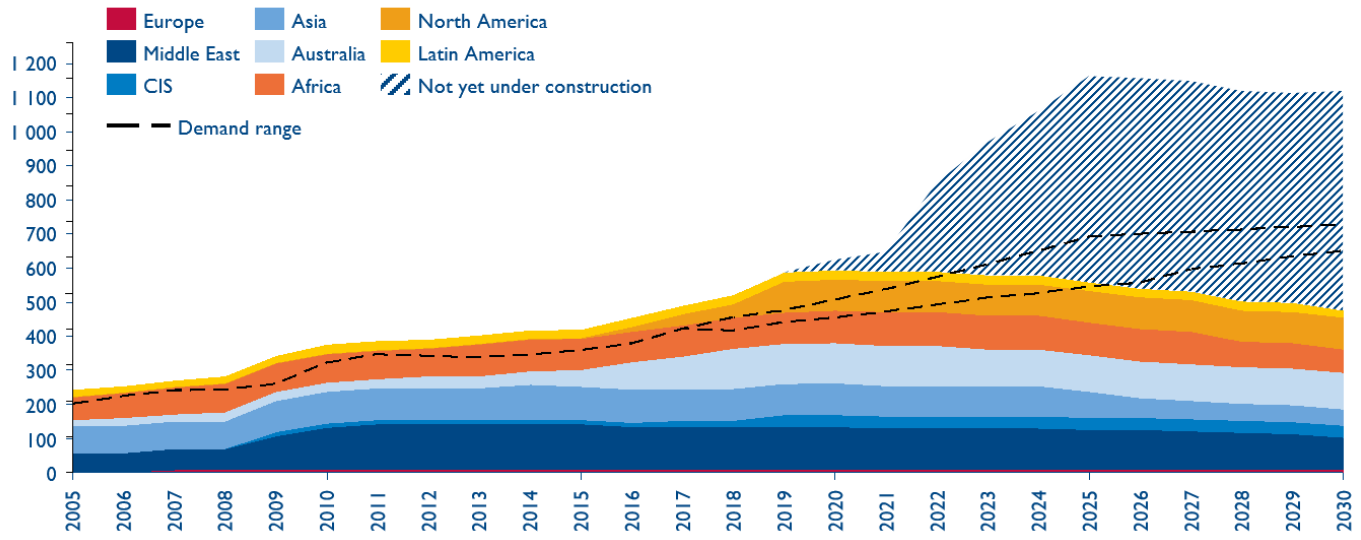
It is also noticeable that it is not just the US which hopes to bring new LNG supplies to the global gas market. A total of 600 bcm of capacity is currently proposed, but not yet under construction, from countries including the US, Qatar, Canada, Iran, UAE, Mexico and Russia, as shown in Figure 8. Qatar in particular has said that it wants to increase its capacity by as much as 30% by 2024, potentially adding an additional 30 bcm of supply to the market.

Clearly, during this period of oversupply and low prices, many proposed plants will be delayed or cancelled, especially the higher cost facilities. Suppliers are competing against each other for access to customers and it is the lower cost plant, and those who move quickly, that are likely to succeed. It is the timing of the construction of new plant that will determine when the current supply glut ends, and when the market eventually tightens. At that point, prices will rise again to signal the need for new capacity to the market.

3.4 Conclusions

There is currently plenty of spare capacity for European gas imports in some existing infrastructure, such as LNG regasification terminals, and other new infrastructure being built (TAP/TANAP and Nord Stream 2). The combination of relatively low oil prices compared with four years ago, a contractually over-supplied European market and global overcapacity of LNG means that European buyers are currently enjoying a highly oversupplied market, with strong downward pressure on prices.

Figure 8: Global LNG supply/demand balance to 2030



Source: GIIGNL. (2017). The LNG industry. GIGNL annual report 2017; Arthur D. Little analysis

63 International Energy Agency. (2017). Gas 2017. Analysis and Forecast to 2022. Pages 11 to 14. Retrieved from https://www.iea.org/Textbase/npsum/gas2017MRSsum.pdf

The timing of the eventual switch from a buyers' to a sellers' market is uncertain but will not be soon.

Longer term capacity development in Europe, and the source of the marginal supply of gas, will in our opinion depend on the relationship between Henry Hub gas prices and Brent oil prices. In a low oil price environment (e.g. $40/bbl), those suppliers which prefer to sell gas indexed to oil prices will be most favoured for new capacity (e.g. new Russian gas supplies) because their prices will be relatively low. Conversely, if oil prices are high (e.g. $100/bbl), but US Henry Hub prices remain low, then suppliers indexing to HH related prices will likely be more successful in signing new European supply contracts (e.g. new US LNG). In either event, the market will choose the lowest cost and most reliable options for European consumers.

4. The proposed Gas Directive amendment – a solution in search of a problem?

4.1 The implications of the amendment

In this section, we will discuss the practical implications of implementing the proposed Gas Directive amendment. We will examine the potential for risks and uncertainties associated with its adoption, the extent to which it meets the stated objectives of gas market liberalization, and the degree to which it will be effective in what it tries to achieve.

The relevant source documents that we rely on are (1) the press release of the European Commission[64], (2) the proposed amendment to the Gas Directive[65], (3) the Staff Working Document, which explains some of the details[66] and (4) the Q&A document[67].

4.1.1 What does the proposed amendment set out to do?

The amendment aims to introduce the four core liberalization principles of a) ownership unbundling, b) third party access, c) tariff regulation, and d) transparency to the major gas import pipelines entering the European Union from third party countries. This would mean:

a) **Unbundling:** The pipelines would have to be "ownership unbundled", completely separating all gas sales, marketing and trading activities from pipeline operating activities into distinct and fully independent legal entities. In most cases, this will probably mean that a separate independent pipeline operating company is set up (to the extent this is not already the case), whereas the gas sales activities remain with the original gas supplier.

b) **Transparency:** The expected and actual flows of gas through the pipeline would have to be disclosed at all times.

c) **Third Party Access:** The pipeline operating company would have to offer capacity to all shippers requesting access, on an equal, non-discriminatory basis. If booked capacity is not used, it must be offered to others under the "Use-It-Or-Lose-It" ("UIOLI") principle.

d) **Tariff regulation:** Transport of gas through the pipeline would need to be based on regulated tariffs and conditions known to all.

Currently, the provisions of the Third Gas Directive only apply to pipelines within the internal market and do not affect pipelines from third countries which connect to the internal market[68]. The EU Commission previously argued that the current situation creates a "legal void" but this argument has been contradicted by the Council of the EU Legal Services in its statement on the Recommendation from the Commission for a Council Decision authorizing the opening of negotiations of an agreement between the European Union and the Russian Federation on the operation of the Nord Stream 2 pipeline[69]:

64 European Commission. (2017, November 8). Energy Union: Commission takes steps to extend common EU gas rules to import pipelines [Press release]. Retrieved from http://europa.eu/rapid/press-release_IP-17-4401_en.htm

65 European Commission. (2017, November 8). Proposal for a Directive of the European Parliament and of the Council amending Directive 2009/73/EC concerning common rules for the internal market in natural gas. Retrieved from http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52017PC0660&from=EN

66 European Commission. (2017, November 8). Commission Staff Working Document: Assessing the amendments to Directive 2009/73/EC setting out rules for gas pipelines connecting the European Union with third countries. Retrieved from https://ec.europa.eu/energy/sites/ener/files/documents/annex_swd_gas_dir_adopted.pdf

67 European Commission. (2017, November 8). Questions and Answers on the Commission proposal to amend the Gas Directive (2009/73/EC) [Fact Sheet]. Retrieved from http://europa.eu/rapid/press-release_MEMO-17-4422_en.htm

68 European Commission, Vice President of the European Commission M. Šefčovič and Member of the European Commission M. A. Cañete. (2017, September 12). Request pursuant to the Framework agreement – Nord Stream 2. Retrieved from http://www.politico.eu/wp-content/uploads/2017/09/NS2-SPOLITICO-17091912000.pdf

69 Council of the European Union. (2017, September 27). Opinion of the Legal service. Retrieved from http://www.politico.eu/wp-content/uploads/2017/09/SPOLITICO-17092812480.pdf

"In its explanatory memorandum, the Commission explains the need to establish a specific regime by the need to avoid a "legal void" or, alternatively a "conflict of laws" on the pipeline or parts thereof. […] In this respect, the Legal Services observes that the offshore parts of the pipeline would in any event be subject to the relevant rules of international law, including the law of the sea. […] Crucially, the third state on the one hand, and the Member State concerned and the Union, on the other hand, would in any event have jurisdiction to regulate the operation of the pipeline at the respective points of departure and arrival of the pipeline on their territory, and there is no third point of entry or exit along the pipeline. Therefore it is not the case that the limited jurisdiction of the EU and its Member States, on the one hand, and a third country, on the other hand, would lead to a "legal void" as regards the operation of the offshore pipeline that would have to be filled by agreed principles."

The EU Commission has therefore aimed to clarify matters by extending application of the Third Gas Directive to pipelines from third countries where they cross the Exclusive Economic Zone and / or the territorial waters of EU Member States. However this raises questions of potential conflicts between the proposed amendment and other international law such as the UN Convention on the Law of the Sea. (UNCLOS)[70] as well as between EU and third country law. The Legal services of the Council of the EU has indeed recently concluded that "the application of the Gas Directive to the EEZ would be contrary to Articles 56 and 58 of UNCLOS as interpreted by the Court of Justice."[71]

Regardless, the stated purpose of the proposed amendment is to ensure that the principles of the Gas Directive also apply to import pipelines from third countries. It is thus supposed to:

- Ensure that competition is not distorted and that gas can flow freely and efficiently to where ever it is needed within the European Union (assuming that it cannot do so at present).
- Ensure that competition increases between suppliers importing gas to the EU (assuming this is possible, and that this is an issue that needs to be addressed), as well as
- Improve security of supply (assuming security may be under threat).

It remains to be seen, however, whether it is capable of achieving any of these objectives.[72] In addition, there is the potential conflict between the proposed amendment and international law such as UNCLOS. There is also the problem of how to reconcile two potentially conflicting regulatory regimes, namely that of the EU at one end of the pipeline, and that of the third country at the other end of the pipeline, as well as the regulatory regimes of any transit countries in between.

4.1.2 What are the consequences of applying the four key principles to the affected pipelines?

The consequences of applying the four principles to an import trunk line can perhaps best be illustrated by an example. Consider the case of Greenstream[73], a major import trunk pipeline from Libya to Sicily.

a) **Unbundling** – The underwater stretch of the Greenstream pipeline is owned and operated by Greenstream BV, a company owned jointly by Libyan NOC and Italian Eni. Greenstream BV does not buy or sell gas. Accordingly, it is already unbundled and technically independent of both the Libyan gas exporter and the Italian gas importer. Under existing regulations, Greenstream BV controls both capacity and commodity flows through the pipeline. Technically, this would be different after the amendment; Greenstream BV would have to offer transportation capacity to anyone willing to book it. However, in practice, only one shipper (NOC) would either want to, or be able to do so.

b) **Transparency** – Under the amendment, Greenstream would have to disclose all relevant market sensitive

70 Talus (2017) European Commission Crusade Against a Pipeline: Act Three – Lex Nord Stream 2" Oil, Gas & Energy Law Intelligence November 2017 https://www.ogel.org/journal-advance-publication-article.asp?key=560

71 Council of the European Union. (2018, March 1). Opinion of the Legal Service. Retrieved from https://www.politico.eu/wp-content/uploads/2018/03/NS2-Gas-Legal-Opinion-March-2018.pdf

72 European Commission. (2017, November 8). Proposal for a Directive of the European Parliament and of the Council amending Directive 2009/73/EC concerning common rules for the internal market in natural gas. 1. Context of the Proposal. Retrieved from http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52017PC0660&from=EN

73 GreenStream BV. (2010). http://www.greenstreambv.com/en/pages/company/company.shtml: "**GreenStream BV** and **its relevant Branches** were established in order to transport natural gas from the Libyan coast (Mellitah, at approximately 80 KM west of Tripoli) to the Italian coast (Gela, in Sicily), connecting physically Libya and Italy through the Mediterranean Sea. Main activities include the construction, the ownership, the management and the maintenance of its own assets and the interconnection with the operators upstream and downstream its own system. Main assets are composed of Mellitah Gas Compression Station (MGCS), an underwater gas pipeline 510 Km long and deep down to more than 1127 m (OPL – Offshore Pipeline) and a Receiving Terminal in Gela (SRT – Sicily Receiving Terminal). GreenStream B.V. has its legal seat at Strawinskylaan 1743, 1077 XX Amsterdam, the Netherlands. The shareholders of the Company are Eni North Africa BV which owns 50% and NOC (National Oil Corporation) which owns 50%. The Company has a branch in Libya named "**GreenStream BV - Libyan Branch**" and a branch in Italy named "**GreenStream BV - Gela Branch**".

information about gas flows, planned capacity downtime, etc. However, as a supplier to an EU gas market entry point, Greenstream is in any event already obliged to do this, so such a regulatory change would make no actual difference whatever[74].

c) TPA – under the amendment, Greenstream would be obligated to allow other shippers to transport gas through the pipeline, if capacity is available. The gas flowing through the pipeline comes from the Libyan Bahr, Essalam, Bouri and Wafa fields, all owned and operated by NOC, the Libyan national oil and gas company, which has a gas export monopoly, awarded to it by the Libyan state. There are no competing suppliers in Libya, with nearby Algerian producer Sonatrach using its own infrastructure to transport gas to Italy and Spain. In practical terms, the amendment by itself would thus make no actual difference to supply costs, prices or volumes. It is also most unlikely that this situation will change in the near future, as Libya benefits from optimizing gas export revenues to Europe and will wish to avoid internal gas price competition on and from its own soil, a situation that could only lead to price erosion. Exactly the same fundamental issue applies for other key exporting nations such as Algeria, Russia, and Iran. In Table 1 below, we have illustrated the relevant gas industry structure in each of these countries, showing that gas exports in all cases are firmly under national monopoly control.

d) Tariff Regulation – Greenstream BV would have to apply regulated tariffs and disclose the value of its asset base and operating costs. Transport costs would need to be visible and separate from the gas commodity price. However, since Greenstream is already, to some degree, independent of NOC, the exporter, and since there is only one potential shipper, the practical consequences of this information would be of very little value. The price at the import entry point would consist of the (presumably revised) gas contract price, plus the regulated transport tariff.

The conclusion therefore is that application of these four principles to Greenstream would appear to have little if any practical or commercial benefit to European gas consumers. The same is true for other subsea pipelines to Europe – Nord Stream, Maghreb, Transmed and Medgaz. If anything, the amendment could lead to higher costs, through greater administrative complexity and higher transportation tariff charges.

4.1.3 Which pipelines would be affected?

The amended Gas Directive would apply to all pipelines from third countries, both existing and new. Since these EU regulations would aim to be applied to pipelines beginning on foreign soil and often continuing through international waters, a number of Inter-Governmental Agreements ("IGAs") would likely need to be negotiated with the respective governments of the export countries. These will be necessary to agree, for example, on which EU legislation and regulations shall apply, and from where.

For example, for the existing Maghreb pipeline from Algeria to Spain via Morocco, the Spanish Government, or the EU (the proposed amendment appears to transfer exclusive competence to the EU, but this is not entirely clear[75]), might potentially need to negotiate compatible rules for the operation of the pipeline with the Governments of both Morocco and Algeria. This might potentially end up with separate agreements containing different conditions for different pipelines. Further clarification of which body has the competence to negotiate such IGAs would be welcome.

A statement in the Commission's Fact Sheet Q&A document seems to suggest that the amendment would in practice only have an impact on pipelines entering the European Union from the sea:

> "In principle, the proposal renders the Gas Directive applicable to all pipelines to and from third countries. In practice, a change in the legal situation will currently only be experienced by pipelines crossing into the EU jurisdiction across a sea border. Existing gas pipelines impacted by this proposal enter the Union from Norway, Algeria, Libya, Tunisia, Morocco and Russia. The proposal may also have an impact – post-Brexit – on pipelines connecting the UK with EU Member States."[76]

74 See for example: enipedia. REMIT Regulations. Retrieved from https://www.eni.com/enipedia/en_IT/financial-corporate-reporting/operating-activities/remit-regulation.page

75 European Commission. (2017, November 8). Commission Staff Working Document: Assessing the amendments to Directive 2009/73/EC setting out rules for gas pipelines connecting the European Union with third countries., pp 8 and 9 Retrieved from https://ec.europa.eu/energy/sites/ener/files/documents/annex_swd_gas_dir_adopted.pdf

76 European Commission. (2017, November 8). Questions and Answers on the Commission proposal to amend the Gas Directive (2009/73/EC) [Fact Sheet]. Retrieved from http://europa.eu/rapid/press-release_MEMO-17-4422_en.htm

Table 1: Import gas pipelines entering the EU gas mark

Pipeline name	Marine / overland / Combination	Country of origin / Ultimate gas Source	Landfall / Entry country	Capacity (bcma)	Year commissioned
Existing pipelines:					
Ukraine Corridor	Overland	Russia	Slovakia / Hungary / Romania	170	1967
Nord Stream	Marine	Russia	Germany	55	2011, 2012
Yamal	Overland	Russia	Poland	33	1999, 2006
Transmed	Combination	Algeria	Italy	33	1983
Europipe II	Marine	Norway	Germany	25	1999
Langeled	Marine	Norway	UK	25	2007
Franpipe	Marine	Norway	France	19	1998
Europipe	Marine	Norway	Germany	16	1995
Zeepipe	Marine	Norway	Belgium	15	1996, 1997
Vesterled	Marine	Norway	UK	13	2001
Green Stream	Marine	Libya	Italy	12	2004
Maghreb–Europe pipeline	Combination	Algeria	Spain	12	1996
Interconnector Turkey-Greece	Combination	Turkey	Greece	11,5	2007
Norpipe	Marine	Norway	Germany	11	1977
Medgaz	Combination	Algeria	Spain	8	2010
Minsk-Kaunas-Kaliningrad	Overland	Russia	Lithuania	n/a	
Russian pipeline to Latvia	Overland	Russia	Latvia	n/a	
Russian pipeline to Estonia	Overland	Russia	Estonia	n/a	
Russian pipeline to Finland	Overland	Russia	Finland	n/a	
Trans-Balkan Pipelines	Overland	Russia	Romania	n/a	
Pipeline projects:					
Nord Stream 2	Marine	Russia	Germany	55	
Trans-Anatolian gas pipeline	Combination	Azerbaijan	Greece	16	
White Stream	Combination	Azerbaijan	Romania	8	
Galsi	Marine	Algeria	Italy	8	

Source: ENTSOG, Transparency platform; Arthur D. Little analysis

In the case of Maghreb, that might mean the section of pipe crossing the straits of Gibraltar, a 45 km link owned and operated by Spanish Enagas, Transgas, and the Moroccan State.[77] Such a limitation would completely defeat one of the stated key objectives of implementing the amendment, namely to have an impact on the diversity and cost of competing suppliers, since all the gas in the pipeline is supplied from Algeria, and not from Morocco.

Similar problems are also present for other import pipelines from third party countries, as indicated in Table 1 above which lists the existing gas import pipelines that could be affected. As stated above, it is not yet entirely clear whether the amendment only applies to subsea lines or overland lines as well. Pipelines directly from offshore producing fields (within the EU or EEA) are already subject to their own sets of regulations. Please note that the table above lists all import pipelines that could be affected. As said, overland pipelines might be excluded from any practical impacts, and pipelines from Norway are subject to EU energy regulation since they (i) are located within the EEA and (ii) fall under separate rules for upstream pipelines[78].

4.1.4 Would TPA promote increased competition between the EU's gas suppliers and lead to a break-up of export monopolies? Would gas volumes be turned away from the EU?

The Gas Directive amendment proposes the introduction of TPA and the application of the Network Code / UIOLI principle to existing and new pipelines from third countries to the EU including the EEZ or territorial waters of EU Member States. Application of these principles to subsea pipelines in this way

77 Mott MacDonald. (2010, November). Supplying the EU Natural Gas Market, Final report. Croydon: Mott MacDonald. Retrieved from https://ec.europa.eu/energy/sites/ener/files/documents/2010_11_supplying_eu_gas_market.pdf

78 Directive 2009/73/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in natural gas and repealing Directive 2003/55/EC. Article 34. Retrieved from http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32009L0073&from=EN

would be wholly unproductive in fostering supply competition since there is no subsea access to the pipeline from other gas sources and the amendment does not influence in any way the monopoly status of existing producer/suppliers within the non-EU gas exporting country.

Competition between the EU's main gas suppliers would not increase, as they themselves are not affected by the amendment, it is only their pipelines that are impacted by it. The amendment would only potentially make any difference if there were several suppliers in an exporting market, all wishing to export gas and wanting access to spare capacity. Even in that event they would need to be technically able and permitted by local law to make such exports. As discussed above, we are not aware of any such case among any of the exporting countries, and there are no signs that this might change in the near future.

The affected existing export suppliers are Algeria, Libya, and Russia. Intermediary transit countries such as Morocco and Tunisia may also be affected if the revenues they receive from the transit of gas are impacted. They could of course in the future be joined by others. Other pipeline exporters appear not to be relevant, as their exports enter the EU either via land, or from within the European Economic Area (EEA). In Table 2, we list the relevant current export countries, and the respective companies responsible for gas production and exports.

These gas exporting nations all benefit from maximizing the revenues from their gas exports to Europe and have nothing to gain by introducing competition on their own soil that would cause price and hence overall revenue erosion. In any case, if the government of a gas exporting third country wished to prevent competing suppliers from using a pipeline, whatever the rules and regulations imposed by the European Commission might be, it could easily deploy legislation which, in one way or another, would effectively prevent such use.

A break-up of the existing export monopolies in any of the countries supplying gas to the EU is thus profoundly unlikely to result from the implementation of this amendment, given that it applies only to pipelines and transportation services and not to gas producers or gas supplies.

There is also a risk that, as a result of the amended Directive, low-cost gas supplies which might otherwise be made available to the EU could be turned away from Europe and sold elsewhere, as most producers have the option to sell gas as LNG on a number of different world-wide markets that could offer better terms.

The precise impact of the amendment on existing and future pipelines cannot be known in advance as it depends on the outcome of the IGA discussions of the governments along the route of the pipeline. In addition, the proposal offers the opportunity for existing pipelines to benefit from a derogation of the application of the Gas Directive rules. However, no details of such derogations are given, nor of how to apply for a derogation. Future pipelines can apply for an exemption from certain Gas Directive rules under Article 36, but as with derogations, there is no certainty in advance. Where a pipeline would apply for an exemption or derogation, the precise conditions of such a derogation or exemption would vary from pipeline to pipeline. The amendment therefore adds uncertainty and thus increases investment risk and capital costs.

These issues could make new pipeline projects unattractive (depending on their individual circumstances), with the result that they may not be developed. Accordingly, the amendment may make new infrastructure more costly and, if the resulting margin is too low to provide attractive returns for the supplier, the supplier will look for alternative destinations for their gas.

Table 2: Gas production and export ownership in the major gas exporting countries

Country	Gas production	Gas exports	Ownership of export monopoly	Sub-Sea Pipelines to EU
Algeria	Sonatrach[1] plus various IOCs in partnership/under PSA with Sonatrach (e.g. Cepsa, BP, Eni, Engie, Total, Repsol, Statoil, Anadarko)	Sonatrach	100% Algerian state	Transmed (Italy), Medgas (Spain), Maghreb (Spain)
Libya	NOC plus various IOCs in partnership/under PSA (e.g. Eni)	NOC	100 % state of Libya	Greenstream (Italy)
Russia	Gazprom (2/3 of production); Rosneft, Lukoil, Surgutneftegas, PSA operators	Gazprom	50,23% Russian state controlled (directly / indirectly); rest publicly traded and in "private" hands[2]	Nord Stream (Germany)

Source: Cronshaw, I., Marstrand, J., Pirovska, M., Simmons, D., Wempe, J. (2008, May). Development of Competitive Gas Trading in Continental Europe [IEA Information Paper]. International Energy Agency, company websites
1 By law owns majority stake in all hydrocarbon projects, controlling 80% of all reserves
2 According to Gazprom website

4.1.5 How would existing supply contracts and end-user gas prices be affected?

Gas bought under import contract from a third country is currently often delivered by pipeline at the EU border and is sold on arrival, often at a specified, single price. This single sales price comprises a bundled price for gas, covering both supply and transport, consisting of both a gas commodity element and an element to cover the transportation in the relevant pipeline.

In the event of the proposed amended Directive taking effect, delivery would change to a location at the import pipeline's marine entry point. This single gas supply price would then have to be unbundled into separate gas commodity and import pipeline transportation tariff elements.

This change should not necessarily affect end-user gas prices in the EU as these are determined by competition between different gas suppliers; it would probably only transfer costs from one part of the value chain to another. Nevertheless, all such gas supply contracts would need to be re-negotiated, with the producer's sales-price calculation needing to take into account a new, regulated transport tariff for the pipeline in question. This situation means that it is far from certain that the subsequent total gas price at landfall on the EU border, including both elements, would be the exactly the same. If anything, it gives the exporter an additional variable to influence in an attempt to achieve higher revenues. It is certainly possible that there could be potentially adverse cost impacts for gas end-consumers, including any impact of the necessary IGAs and the cost impacts relating to higher uncertainty.

4.1.6 Risks of requiring Inter-Governmental Agreements

As shown above, it is likely that IGAs would need to be negotiated between Member States (or the EU) and supplier countries where the pipelines originate, as well as transit countries en route. Since the proposed amendment leaves a lot of room for Member States to pursue such negotiations based on their own national legislation, preferences and priorities, it must be assumed that the principles applied in these agreements will be varied, with export pipelines facing different conditions. This might therefore lead to competitive distortion between gas import sources.

It also remains unclear what would happen if the Member State/EU and the supplier nation failed to reach an agreement. How would the EU enforce its regulations? Would it indeed be able to do so? What penalties and sanctions could it impose and under what legislation? Would it stop gas imports and hold the supplier nation to ransom? Or vice-versa? To what extent would this be to the detriment of its own consumers? None of these questions have answers that are in the least clear.

4.1.7 Risk that the amendment creates different rules for different pipelines

Under the Gas Directive (as is) all gas infrastructure within the EU must offer third party access to those who wish to access it.[79] However, in certain circumstances, new infrastructure projects may obtain temporary **exemptions** from TPA.[80] Such exemptions may be granted by the European Commission, on a discretionary basis, after the testing of an application against key criteria, as follows:

i. The investment must improve security of supply and boost competition in the gas market.

ii. The investment could not go ahead without the exemption due to the level of risk.

iii. The infrastructure must be owned by an entity that is legally separate from the TSO in whose system it will operate.

iv. The user of the infrastructure must pay for access to it.

v. The exemption does not harm the functioning of the EU's internal gas market or the transmission system to which the infrastructure is linked.[81]

Exemptions have previously been granted on numerous occasions, both for pipelines and LNG terminals. Typically, these investments have been very risky and would not have taken place otherwise.

The proposed amendment also provides for the possibility that **derogations** may be granted against the need to provide TPA for **existing** gas import pipelines. Currently, the Gas Directive makes this possible in two specific cases: (1) if there are contractual take-or-pay obligations that must be met (Article 48), or (II) if the infrastructure serves a market which is emergent, or isolated from other sources of supply (Article 49). For most of the existing import pipelines to the EU, neither of these

79 Directive 2009/73/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in natural gas and repealing Directive 2003/55/EC. (Directive 2009/73/EC). Article 32. Retrieved from http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32009L0073&from=EN

80 Directive 2009/73/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in natural gas and repealing Directive 2003/55/EC. (Directive 2009/73/EC). Article 36. Retrieved from http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32009L0073&from=EN

81 European Commission. Access to infrastructure and exemptions. Retrieved from https://ec.europa.eu/energy/en/topics/markets-and-consumers/wholesale-market/access-infrastructure-and-exemptions

Table 3: List of pipelines and LNG terminals to which Exemptions have been granted[82]

Pipelines			LNG terminals		
Name	Country	Year	Name	Country	Year
BBL	UK/NL	2005	LNG Grain	UK	2005
Poseidon	HE/IT	2007	South Hook	UK	2005
Nabucco	AT	2008	Dragon	UK	2005
Nabucco	AT	2008	LNG Brindisi	IT	2005
Nabucco	RO	2009	Rovigo	IT	2005
Nabucco	BG	2009	LNG Livorno	IT	2009
Nabucco	HU	2009	LNG Porto Empedocle	IT	2012
OPAL	DE/CZ	2009	LNG Toscana (Livorno)	IT	2015
Gazelle	CZ/DE	2011	Gate terminal	NL	2007
Gazelle II	CZ/DE	2011	LNG Shannon	IE	2010
Trans Adriatic Pipeline(TAP)		2013	LNG Dunkerque	FR	2010
Nabucco	AT	2013	National Grid Grain LNG	UK	2013
SK-HU Interconnector	HU	2013	LionGas	NL	2007
TAP prolongation		2015	LNG Eemshaven	NL	2009
OPAL	DE/CZ	2016			
OPAL revision	DE/CZ	Pending			
SL-IT IC prolongation	SL/IT	Pending			

Source: European Commission, Directorate General for Energy. (2017, May 16). Exemption decisions and pending notifications of national exemption decisions for gas and electricity
Note: Nabucco was a pipeline planned to bring gas from Iran via Turkey to Austria, crossing several EU Member States. It was replaced in 2013 as the gas exporters of the Shah Deniz consortium instead chose to route gas via TAP.

conditions apply. Given that the Commission in the amendment has allowed for derogation to be applied to existing pipelines, we thus assume that there may be new conditions, that have not yet been specified, which means that there is a risk that different conditions may be required. The practical effect of this is likely to be that different rules and conditions may apply to different pipelines, leading to a continued or exaggerated distortion in market access conditions, despite the intentions of the amended Directive.

4.1.8 Risks of providing exemptions for new pipelines without specifying conditions for doing so

The proposed amendment allows for time-limited exemptions to be granted by Member States to new pipelines. Presumably, this means the conditions specified in Article 36, but this is not entirely clear. This means that pipeline investors face additional uncertainty, introducing potential delays, increasing the risk of the investment and thus potentially making the pipeline less economically attractive, or perhaps more costly to build. These impacts will all have to be borne by consumers. In some cases, it may mean that gas volumes that would have been competitive under current conditions may not find their way to the European market, with the consequence being higher gas prices for European consumers.[83]

4.1.9 Why is LNG not included, and what does that mean?

The proposed amendment to the Gas Directive is only applicable to EU gas import pipelines from third countries, and in practice only to those pipelines with an offshore component. However, to avoid causing market distortion due to uneven competition between LNG and pipeline gas, it is important that gas transported to the EU via pipeline and gas transported as LNG should be treated equally. Under the current situation, this is the case. However, adoption of the amendment could lead to pressure to extend EU regulations to LNG as well, in order to ensure a level playing field. This would mean applying the four principles of TPA, tariff regulation, unbundling and transparency to LNG terminals and tankers (and their owners/charterers/operators) – even though there is already total transparency associated with flows of LNG gas volumes into the market.

Certainly, any extension of the Directive amendment's principles to LNG tankers, and the related liquefaction and re-gasification

82 European Commission, Directorate General for Energy. (2017, May 16). Exemption decisions and pending notifications of national exemption decisions for gas and electricity. Retrieved from https://ec.europa.eu/energy/sites/ener/files/documents/exemption_decisions2017_0.pdf

83 Eurogas. (2018, January). Eurogas views on the modification of the Gas Directive. Retrieved from http://www.eurogas.org/uploads/media/18PP002_-_Eurogas_views_on_the_modification_of_the_Gas_Directive.pdf

facilities, would present very significant practical and commercial problems.

Firstly, LNG is often sold as part of a specific export project, linking together facilities of gas production with liquefaction and transport. Liquefaction assets are thus generally directly linked to one particular set of gas fields, often with only very limited physical or contractual flexibility. Often (but not always), LNG tankers are part of the specific project set up too. Secondly, there is no direct physical connection between these facilities and the EU market: LNG tankers can be, and in fact frequently are, directed from the supply source to any gas market worldwide, not just to the EU. Finally, LNG tankers are not natural monopolies: they are more flexible than pipelines and such regulation would risk robbing them of a key market advantage (i.e. their flexibility enables them to respond very rapidly to global supply and demand fluctuations).

Further, for logical consistency, these principles should probably also be applied to the liquefaction facilities, which prepare the LNG for transport. However, this is even more implausible, due to the extreme practical, logical and commercial difficulties associated with enforcing such a regulatory change, not to mention the difficulty of enforcing EU law on a third country.

It is clearly preferable to maintain a level playing field between LNG and pipeline gas. There must therefore be concerns about the amendment's proposal to change the regulations governing only import pipelines. Indeed, as we shall see in the following sections, the amendment will create several different categories of import facilities. LNG, land pipelines, marine pipelines and pipelines from offshore production fields will all enjoy increasingly different regulatory status and competitive conditions.

This disruption of the competitive level playing field will not improve the long-term efficiency of gas market operations.

4.1.10 Why are onshore pipelines not included, and what does that mean?

As mentioned above (4.1.2), in its Q&A document related to the proposed amendment, the Commission states that:

> "In principle, the proposal renders the Gas Directive applicable to all pipelines to and from third countries. In practice, a change in the legal situation **will currently only be experienced by pipelines crossing into the EU jurisdiction across a sea border.**"[84]

Presumably, this is because it would be legally and politically difficult, to say the least, to impose European Union jurisdiction directly onto infrastructure that is owned and operated on foreign soil, generally by foreign state entities.

Accordingly, as with the case of ship-bound LNG supplies of gas into the EU, this challenge creates another exception to the Directive amendment's supposed effect. Gas import pipelines entering Europe across a land border comprise 34% of all European natural gas imports.[85] Taken together with LNG, they represent 47% of all European imports.[86] Gas flows from Norway (which are already subject to EU regulation) add another 31%, bringing the total of unaffected imports to 78%. The implication is that the amendment as currently formulated would only apply to a small subset of all European gas imports (22%).

As discussed with LNG, it seems questionable, at best, to apply regulation to one sector of EU gas import infrastructure but not to others, as this risks distorting competition between pipelines entering the EU by land, as opposed to gas entering at a maritime border, either as LNG or in a pipeline.

Given that gas flowing into the EU via a sea-border entry point immediately becomes subject to EU regulation anyway, the imposition of these regulatory amendments can only have a very limited practical impact. All gas flows that enter the EU, whether as pipeline gas or through an LNG terminal, must be disclosed and can be seen via the ENTSOG website.[87] The only exception would be if there were barriers to competition between alternative potential suppliers who are prevented from accessing the market due to a lack of regulation. As we have shown above, the sole-supplier nature of the EU´s major supply sources – the consequences of a combination of geology, geography and politics – means that no such examples exist.

84 European Commission. (2017, November 8). Questions and Answers on the Commission proposal to amend the Gas Directive (2009/73/EC) [Fact Sheet]. Point 4. Retrieved from http://europa.eu/rapid/press-release_MEMO-17-4422_en.htm

85 BP. (2017, June). BP Statistical Review of World Energy 2017. Retrieved from https://www.bp.com/content/dam/bp/en/corporate/pdf/energy-economics/statistical-review-2017/bp-statistical-review-of-world-energy-2017-full-report.pdf;Nord Stream. (2017, January 10). Nord Stream Utilisation Averages 80% in 2016 – 43.8 bcm transported to the European Union [Press Release]. Retrieved from https://www.nord-stream.com/press-info/press-releases/nord-stream-utilisation-averages-80-in-2016-438-bcm-transported-to-the-european-union-490/

86 BP. (2017, June). BP Statistical Review of World Energy 2017. Retrieved from https://www.bp.com/content/dam/bp/en/corporate/pdf/energy-economics/statistical-review-2017/bp-statistical-review-of-world-energy-2017-full-report.pdf

87 ENTSOG, Transparency platform. Retrieved from https://transparency.entsog.eu/

4.1.11 How likely is it that the amendment will lead to lower gas prices for end-users

Unfortunately, this does not seem at all likely. As discussed above, the level of competition among existing gas producers and suppliers into the EU market would inevitably remain absolutely unaffected. Suppliers would apply the same pricing approaches as today, and bear broadly the same cost structures as today; the only difference would be that the transport tariff element of the gas price would be more visible.

The actual flows of gas through the entry pipeline, which in most cases brings gas from a single source of production to one entry point into the European Single Market, are unlikely to be changed significantly just by this amendment alone. No significant overall efficiency gains will therefore be stimulated in this way.

However, any new pipeline from a low-cost gas source may of course become the low-priced, marginal EU gas supplier, putting price pressure on all other import sources, including upon LNG, and thus lead to lower gas prices across Europe. Any discouragement of such new supplies to Europe, resulting from the amended Gas Directive, would clearly have an adverse effect on gas prices to the EU consumer.

4.1.12 Would the amendment improve security of supply? Would import reliability be affected?

Despite suffering from falling indigenous production, Europe is not short of supply sources. Nor should it limit them. The adding of more import pipeline capacity, in itself, does not add more gas to the system, it simply provides more supply options and hence enhances security of supply. The more diverse supply potential infrastructure options that are available, the more that security of supply is increased. From that point of view, all new infrastructure options, whether utilized or not, are beneficial, as long as the investor bears the risks and the costs of any potential under-utilization.

A key point to understand in this respect is that pipeline capacity is not the same as, or equivalent to, the actual supply of commodity gas. This can be a common misconception that relates to the old. pre-liberalisation design of European gas markets in which gas was transported directly from source to demand via a single pipeline system. This concept is no longer relevant.

The presence of a third country export pipeline, any such pipeline, simply increases the options by which gas import to the EU might take place but it does not necessarily lead to more imports from any one specific source. The level of actual gas flows from that pipeline into the single European gas market are instead driven by competitive market prices. Security of supply and diversification concerns regarding one particular supplier with a potentially strong market position should be dealt with by managing the gas volume purchases from that supplier, a decision that is at the discretion of importers and the market. Ultimately, such discretion lies with national governments.

There is certainly no obligation to buy more gas from a specific pipeline outlet just because it is there. The presence of the pipeline does however create a valuable option for more imports, should they be needed, both in the long and the short term, and such an option will always act to increase security of supply.

To illustrate this, consider the parallel example of ports. Just because the port is there, it does not mean that we have to import goods by sea that can be produced or grown locally, or imported overland from other sources. However, we have the option to do so, should imported goods by sea be more available, or have an advantage over other sources. Ports thus compete with other logistical options, and not with sources of supply. They facilitate imports, but do not, by themselves, generate them. Pipelines (and LNG terminals) are exactly the same.

The fundamentals of pipeline ownership and operations, and of gas supply through these pipelines, will not of course change under the proposed amendment. The monopoly supplier positions for each pipeline would be unaffected by this amendment; there will be no increase in the number of suppliers competing with each other for access to the EU gas market. Accordingly, exactly the same underlying security of supply positions would apply after the Directive amendment as before. Applying TPA to pipelines from Russia would not make it easier, for example, for Algerian gas to compete against Russian gas in the market, since they do not compete to use the same infrastructure.

Increased interconnectivity between markets, reverse flow potential and pipeline redundancy would however have the effect of increasing security of supply by providing short term access to a more diverse range of gas sources. The same is true for the addition of over-sized LNG terminal capacity, or any additional gas import pipelines. The more import capacity and grid reinforcement that is added to the network, whether this is utilized or not, the greater that supply security will be. This is why it remains important to continue to improve the internal links within and between markets in order to enable gas to flow freely to where it is most needed across the single market.

The amendment does of course create a structure that treats some infrastructure differently to others, both LNG capacity and pipelines. It provides a political tool by which to differentiate between new infrastructure projects, depending upon whether they may be viewed as desirable or not. Some pipelines (or terminals) may have more (or less) attractive conditions in which to operate than others. Nevertheless, it is difficult to see that import reliability would be affected, either positively or negatively, by the intended Gas Directive amendment.

4.1.13 Does the proposed amendment contribute to meeting the objectives of liberalization?

The objectives of liberalization are to increase economic efficiency by means of competition, leading to lower costs for final consumers and stronger resilience to supply disruption. As has been demonstrated above, the proposed amendment will not contribute to these aims.

- TPA will not attract more gas suppliers, the number of supply sources will be unaffected as no extra shippers are available, and the amendment (or any other EU regulation) cannot change this;
- Competition between potential suppliers cannot be increased (as this is outside the EU's judicial scope), and it is already fully present and in full operation since all potential suppliers are exposed to full competition at trading hubs;
- Unbundling will have no effect, as the number of potential shippers in all cases is anyway limited to only one at each pipeline;
- There are no efficiency gains to be made since only single entry/single exit pipelines are affected;
- Higher prices may be more likely than lower ones due to increased risk, bureaucracy and complexity;
- European buyers can still chose to buy gas wherever they please, at whatever price they deem to be competitive and in line with own strategy and objectives.

4.1.14 If its practical consequences are so limited, why is the amendment suggested at all?

At the beginning of this Chapter, we observed that the stated purpose of the proposed amendment is to ensure that the principles of the Gas Directive also apply to import pipelines from third countries. It is thus supposed to ensure that competition is not distorted and that gas can flow freely and efficiently to wherever it is needed within the European Union (assuming that it cannot do so at present). To this we can add the question – if gas cannot flow freely at present, would enacting the Directive amendment help?

A recent study published by the Florence School of Regulation Energy[88], observes that the current system, with multiple entry-exit zones, may, in the long term, be unsuitable to achieving the objective of a single pan-European gas market, since tariff zones are national and the crossing of several zones results in pancaking effects. The practical implication of this is that gas is currently prevented from flowing freely internally within the European gas market. This problem has very little to do with incoming pipelines from third countries. It seems that the solution to this issue can only lie in the improvement of internal regulations and/or investment incentives, rather than in extending the applicability of EU regulation to external pipelines.

More worryingly, because the proposed amendment only affects a small subset of infrastructure from third party exporters (subsea pipelines) and not others (LNG, and pipelines by land or pipelines that have received derogation or exemptions) the amendment itself constitutes a potential new form of market distortion, and from that perspective it is not only unnecessary, but potentially detrimental.

The amendment is also supposed to ensure that competition increases between suppliers importing gas to the EU (assuming this is possible, and that it is an issue that needs to be addressed). As we have seen however, the amendment does not have the power to change the number of suppliers to the European Union, from its major supply regions.

Security of supply is another aspect that the amendment is supposed to address (assuming security may be under threat). We note that the amendment provides powers to Member States, enabling them to grant exemptions to desired pieces of infrastructure while refusing exemptions to others (although it remains unclear who would have the power to gran exemptions - Member States or the EU). However, we observe that security of supply can only be increased by the extra optionality resulting from the installation of additional import capacity.

Other ways in which security of supply may be improved by the amendment are hard to see. It has nothing to do with improving market functionality or creating a level playing field, but appears instead to be an attempt to create a lever by which to selectively hold back politically undesired projects, even though these may be attractive, in economic terms, and from the perspective of investors and consumers.

88 Cervigni, G., Conti, I., Glachant, J.M. (2017, December). Towards Efficient and Sustainable Cost-Recovery for the European Gas Transmission Network. Florence: Robert Schuman Centre for Advanced Studies, Florence School of Regulation, European University Institute

4.1.15 How have stakeholders reacted to the proposed amendment?

By 31 January 2018, the European Commission had received feedback from 33 different stakeholders, as outlined in the table below.[89]

It is clear from this analysis that the respondents of one Member State (Poland) appear to see significant benefits or opportunities arising from the implementation of the proposed amendment to the Directive. The other respondents (from nine other countries) range from being skeptical to being clearly against its adoption, stating multiple reasons for their conclusions. In general, they ask for more time and for a more profound impact analysis to be carried out before a final decision is taken. This suggests that there is a risk that the stakeholders of one Member State (Poland) might be favoured by the amendment at the possible expense of all others.

4.2 Is the amendment a solution in search of a problem?

As discussed and demonstrated in this Chapter, it is far from clear that the proposed amendment brings many of the benefits it sets out to deliver, or indeed any tangible benefits at all.

- The internal EU gas market is already working well, with remaining anomalies and inefficiencies resulting from differences in implementation in Member States;
- The addition of many more expected LNG sources in the next few years, especially from the US, means that security of supply from diverse new low-cost gas supply sources will be assured;
- The gas volumes entering the EU are already fully transparent via the ENTSOG provisions: they will not be made more so by the application of the Directive amendment;
- The gas pipelines entering the EU are already unbundled from the entities providing gas supply, though in most cases they retain ownership links to these supply businesses;
- Most major gas pipelines, from Russia, Libya, Algeria etc., import gas from countries operating a gas pipeline export monopoly – a situation that is unlikely to change in the near future – so instituting TPA on the pipeline will change nothing – there are no other gas volumes available to ship. The amendment will thus not improve competition;
- The construction of additional pipeline capacity does not mean that gas needs be shipped through it, a major value of such capacity is as an option to ensure low cost security of gas supply.

It may, in contrast, create many practical, legal and potentially political problems.

Table 4: Responses received regarding the proposed Gas Directive amendment

In favour		Against	
Central Europe Energy Partners*		Austrian Federal Economic Chamber	AT
Enea S.A.	PL	BDEW	DE
Gaz System	PL	Business Europe[1]	
Groupa Azoty	PL	Confederation of Industry, Czech Republic	CZ
KGHM Polska Miedz	PL	Confindustria	IT
PKN Orlen	PL	Czech Gas Association	CZ
Polish Chamber of Chemical Industry	PL	Ministry of Industry and Trade	CZ
Polish Confederation Lewiatan	PL	EFET[1]	
The Association of Energy Traders (Poland)	PL	Engie	FR
Polish Oil and gas Company (Pgnig)	PL	Eurogas[1]	
Tauron Polska Energia	PL	Belgian Gas Federation	BE
The Warsaw Institute Foundation	PL	NV Nederlandse Gasunie	NL
		GRT Gaz	FR
		Nord Stream AG	CH
		Nord Stream 2 AG	CH
		OMV	AT
		Shell	NL/UK
		Uniper	DE
		Uprigas	FR
		Wintershall	DE
		Vereinigung der Ferngasnetzleitungsbetreiber	DE

Source: European Commission. Feedback received on Commission proposal for a Directive amending Directive 2009/73/EC; Arthur D. Little analysis
1 Representing organisations from several countries

89 European Commission. Feedback received on Commission proposal for a Directive amending Directive 2009/73/EC. Retrieved from https://ec.europa.eu/info/law/better-regulation/initiatives/com-2017-660/feedback_en

- The failure to include onshore pipelines or LNG infrastructure within the remit of the amendment is likely to cause distortions or imbalances in the EU gas market;
- The imposition of the numerous required IGAs will add complexities and costs, with the possibility of different rules being established on different sectors of pipeline routes that cross several countries;
- Renegotiation would be required of many gas import contracts to separate their transportation and commodity components. This may create price exposures for either buyers or sellers;
- Impeding gas supply from any potential supplier, by the amendment, risks increasing gas supply costs for European consumers;
- The lack of specified terms for granting exemptions and derogations adds to uncertainty, to investment risk and thus to the cost of capacity. By contrast, if derogations are available for everything, this contradicts purpose of doing it.
- The lack of certainty regarding what would happen in the case of failure to reach inter-governmental agreements, and what legislation to refer to in such cases, suggests the amendment instead of remedying the assumed existence of a legal void or conflict of laws, is instead creating exactly that.

Few stakeholders, except those in one Member State (Poland), seem to be in favor of adopting the amendment. In addition, we believe that the single European gas market that the amendment is purporting to support is already working well, a consequence of regulations already put in place by the EU. This is despite the fact that import pipelines from third countries have not so far been regulated under the Gas Directives. As such, we are concerned that this amendment may not, in reality have the purpose it claims, and may as a result create more problems than it solves. All in all, the proposed amendment seems ill-advised and likely to result in complexity and added costs, with few if any benefits to European gas consumers.

Having outlined the challenge that this amended Directive presents to the market, and placed its potential objectives into context, we will now discuss what other measures, in our view, could, and should instead be taken to improve market functioning further still.

5. Other options for improving market functioning

5.1 Alternative ways by which EU gas market functioning be improved

As discussed earlier in this document, although the European gas market as a whole is working increasingly well and improving continuously, this does not mean that there is not room for improvement. Not only are there some markets that are less advanced then others and would benefit from speeding up the pace of implementing required legislation and regulations, but the potential for further improvement is also limited by geographical, physical, structural, and political barriers. These need to be addressed and dealt with urgently.

The vision of a single, integrated European gas market where gas flows freely and efficiently to where it is most needed, and where exporting nations and entities must be in compliance with all market regulation and must compete on equal terms, in our view is achievable, but will take time, cooperation, and continuous internal improvement efforts to realise. In line with the principles that govern free markets, the most efficient way to make this happen is by establishing economic incentives that drive market participants and their respective investments in the direction of further integration and compliance.

We have noted that the European Commission has initiated a "next step" in gas market liberalization by launching a study (Quo Vadis) of what still needs to be changed in the regulatory framework of the gas market to maximize overall economic welfare for Europe.

> "The aim of the study is to provide substantiated analysis as to whether the current regulatory framework in the EU gas sector is the most effective in order to maximise overall EU welfare or whether amendments may be necessary, and if so provide recommendations"[90]

The study focuses mostly on how to ensure that markets integrate further by harmonizing tariff structures and merging trading zones (to facilitate the internal movement of gas). To the extent that such a study also allows room for concluding that in some areas it is better to leave things as they are, this seems like a laudable initiative. It would be wise to wait for the conclusions of this study to emerge before launching any intermediate remedial fixes to a system that is already on the way towards delivering the desired results. As also noted by ACER:

> "The current regulatory model should be allowed time to deliver its positive results and regulatory stability should be encouraged. A sound problem identification (e.g. Quo Vadis project of the European Commission) is needed before proposing regulatory amendments that would alter the current market design."[91]

In its recent report, ACER lists a number of recommended actions to be taken to improve internal gas market functioning. None of these recommendations include the extension of EU regulations onto third country import pipelines.[92] It notes that:

> "In market areas that house established, advanced or emerging hubs, the focus is more on how market functioning can be further enhanced, while in markets with illiquid hubs, the most prevalent barriers are centred on how to kick-start market functioning."

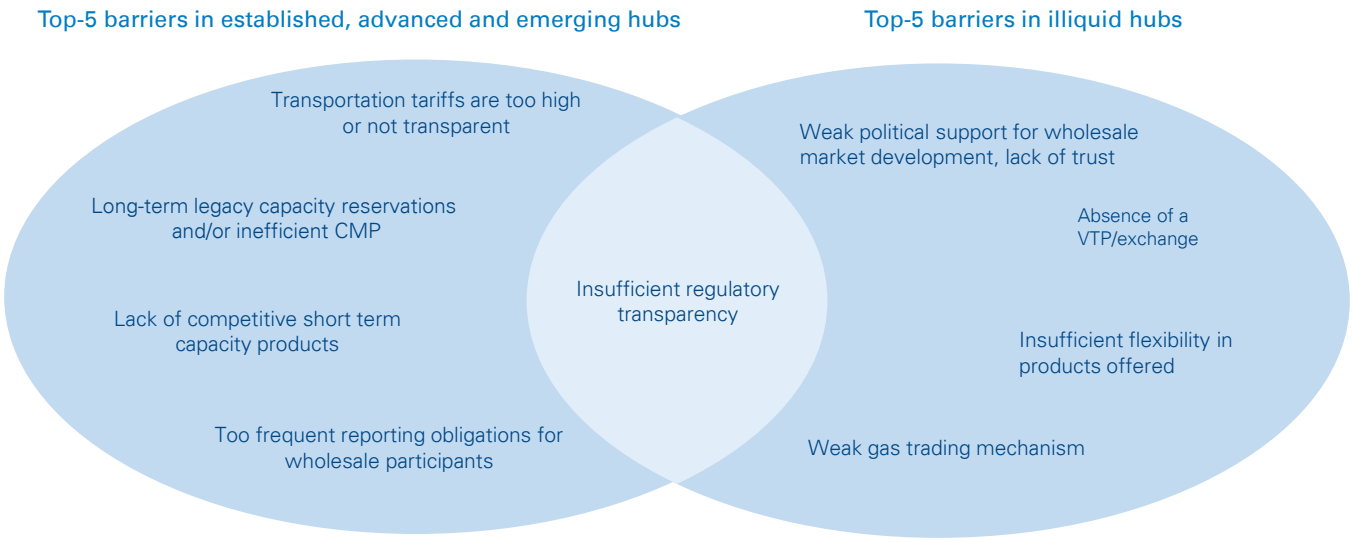
As Figure 10 clearly shows, none of the barriers to market functioning captured by ACER point to import pipelines as being a problem.

90 European Commission. Study on Quo Vadis gas market regulatory framework. Retrieved from https://ec.europa.eu/energy/en/studies/study-quo-vadis-gas-market-regulatory-framework

91 Agency for the Cooperation of Energy Regulators, Council of European Energy Regulators. (2017, October 6). Annual Report on the Results of Monitoring the Internal Electricity and Gas Markets in 2016. p. 10. Retrieved from https://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/ACER%20Market%20Monitoring%20Report%202016%20-%20GAS.pdf

92 Agency for the Cooperation of Energy Regulators, Council of European Energy Regulators. (2017, October 6). Annual Report on the Results of Monitoring the Internal Electricity and Gas Markets in 2016. p. 10-12. Retrieved from https://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/ACER%20Market%20Monitoring%20Report%202016%20-%20GAS.pdf

Figure 10: Gas Market Barriers by hub category



Source: Agency for the Cooperation of Energy Regulators, Council of European Energy Regulators. (2017, October). Annual Report on the Results of Monitoring the Internal Electricity and Gas Markets in 2016

In this Chapter, we will discuss the means by which we believe the functioning of the EU gas market may be further improved, in a more effective manner than by the stipulations of the proposed amendment. These suggestions however need to be seen in the context of the current study, and should not be taken as a proposal to launch regulatory fixes before a full impact assessment has been made.

5.2 Better governance of gas storage capacity and storage capacity access

As noted in earlier Chapters, storage capacity is currently very substantially under-utilised in the European gas market. There is a significant issue relating to ways in which this could be addressed to allow for internal assets to complement external diversification supply to boost overall security of supply.

In the previously national gas markets, each country dealt with its own security of supply issues by, amongst other approaches, mandating that certain amounts of gas had to be kept in storage for strategic or seasonal flexibility purposes. In an integrated gas market, there is no longer a need for these needs to be national; they can just as well be regional if the right economic incentives are put in place for asset owners and suppliers to use gas storage capacity accordingly. For example, if current compensation schemes are inadequate to allow asset owners to provide capacity on economically attractive terms, or for gas owners to benefit from differences in prices between seasons by storing gas, it may be worth studying whether capacity payments or other similar mechanisms could be put in place to deal with this. Alternatively, if the capacity is superfluous and is genuinely not needed for long-term security of supply purposes, it must be possible for asset owners to close down or mothball such capacity.

5.3 Increasing gas network and trading-zone interconnectivity between countries and regions

As noted above, a key objective of the European Energy Union is to achieve a single gas market where gas is able to flow freely and efficiently across borders and between markets. Ideally, there should be one single trading zone and one single reference price to which all local prices can be compared, allowing for differences in transport cost. Alternatively, at the very least, there should be a very limited number of regional, naturally developed trading hubs at which such reference prices can be formed. To achieve this state should be easily possible if the right incentives and mechanisms are put in place, though it may take a while to deliver since the intermediate cost and revenue sharing solutions among TSOs need to be found.

The issue has both a physical and a structural aspect. The physical aspect consists of insufficient transport capacity between individual markets. To the extent that such bottlenecks

are present, these need to be removed by TSO investments in adequate capacity to allow gas to flow freely across borders. The Network Codes have already addressed this problem by allowing for advance firm capacity bookings to provide price signals to TSOs, but this system could perhaps be reinforced further still. In addition, all efforts to improve long term interconnectivity between markets in view of expected long term supply and demand developments should be encouraged, as currently happens within the Ten Year Development Plan coordination by ENTSOG.

The structural aspect has to do with the fact that TSOs still cover national or sub-national market areas, and the cost-recovery via entry-exit is limited to the areas where their assets are located. This creates pancaking effects when gas has to travel across more than one transmission system area. An effective system for cost and revenue sharing between TSOs should be found so that shippers are limited to paying one single entry and one single exit fee for all gas brought to market, no matter where the supply or the consumer. This should not be impossible if all costs can be pooled in some manner and the revenues distributed accordingly. Alternatively, it would seem advisable to create a two-tier transmission system with one transnational level (managed by a common transnational TSO), and underlying national TSOs that take care of national or subnational infrastructure.

5.4 Full implementation of Network Codes

A recent report by Acer on the implementation of the Balancing Network Code highlights some of the problems created by insufficient implementation in some Member States.[93] The report begins by observing that implementation is patchy, and in places, very little is being done about it. This can be due to lack of leadership, local disputes or lack of initiative.

As a result, expected benefits are not delivered: for example, short-term wholesale markets do not develop, restricting access to broader commercial opportunities.

Among the recommendations listed for how to tackle problems ACER suggests that rather than focusing only on compliance, the less developed regimes need to prepare constructive and realistic plans for how to implement the code in their national settings, and then follow through with plans to set this in motion. Also, NRAs and TSOs should work together with market players to progress the implementation of the Code.

93 Agency for the Cooperation of Energy Regulators. (2017, November 16). Report on the implementation of the Balancing Network Code. Second edition, Volume I. Retrieved from https://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/ACER%20Report%20on%20the%20implementation%20of%20the%20Balancing%20Network%20Code%20(Second%20edition)%20Volume%20I.pdfe

6. Conclusions

1. Most market observers, including regulatory authorities, agree that the European natural gas market is working increasingly well and, as a result of the legislation and network codes already put in place, is progressing continuously towards further integration and harmonization. The remaining anomalies and inefficiencies mostly result from differences in implementation in Member States.
2. To impose the four principles of Unbundling, Third Party Access, Transparency and Tariff Regulation (Third Energy Package regulation) on export pipelines from third countries, as suggested by the currently proposed Gas Directive amendment, via Inter-governmental agreements (IGAs) would add an unnecessary layer of complexity, potentially adding to gas prices and costs payable by consumers.
3. The need for IGAs with existing as well as new exporter nations would add uncertainty to investment risks and capacity cost for any new pipeline project, prior to such agreements being reached and exemptions and/or derogations granted.
4. The suggested measures do not deliver on the stated objectives of increasing competition among suppliers or adding to security of supply. The amendment does not have the power to influence the number of competitors able to supply EU gas markets. Adding barriers to building new capacity in fact reduces security of supply rather than enhances it. To increase competition, it is far better to concentrate on enhancing internal cross-border capacities to improve access to gas from the lowest cost gas sources offering supplies to the market.
5. History has shown that most new infrastructure projects (both LNG and pipelines) need derogation from TPA to be economically feasible. The proposed amendment acknowledges this fact by allowing Member States to grant derogation for existing pipelines and exemptions for new ones. It seems illogical to impose regulation that in all cases will cause pipeline owners/developers to seek derogations, or exemptions, and perhaps risk not receiving them.
6. The lack of specified terms for granting exemptions and derogation also adds uncertainty and risk. The number of individual Member States and supplier nations involved means that, in all likelihood, terms and conditions would vary between agreements, leading to market distortions and unequal competition. There is also a risk that other, non-gas market considerations could influence negotiations, leading to further distortions.
7. The regime proposed would create imbalances in competition between LNG and pipeline gas – since LNG transportation or liquefaction would not be subject to the same regulations, probably because the impracticalities of imposing the Gas Directive on LNG suppliers are even greater. As a result, low cost gas could be turned away from the European gas market in favour of higher cost LNG. This could lead to higher gas prices than necessary, and could prevent importers from accessing options for gas from the lowest cost source. In order to avoid distorting competition, it is better not to adopt the proposed amendment.
8. All in all, it appears that the proposed amendment seems ill advised, leads to complexity and added costs, with few if any benefits to European gas consumers.

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Analysis of the Proposed Gas Directive Amendment – White paper

Arthur D. Little

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