Consultation on an EU strategy for liquefied natural gas and gas storage

1. Introduction

1.1. Gas plays a key role in the EU energy system, accounting for around a quarter of final energy consumption, and will continue to be of major importance as we make the transition to a low carbon future. The security, affordability and sustainability of the EU gas system are therefore critical to success of the Energy Union.

1.2. As the Commission's stress test communication of October last year made clear, levels of gas security and resilience vary widely across the EU, with several Member States heavily dependent on a single supplier. A prolonged interruption to Russian supplies could therefore have a substantial impact, with Baltic and South-Eastern Member States and the Energy Community countries being most affected. Lack of supply diversity driven largely by lack of infrastructure also has a significant impact on the competitiveness of market prices, either in a crisis or under normal market conditions.

1.3. There are multiple potential ways of addressing such deficiencies: gas demand reduction (through energy efficiency or low carbon alternatives), an efficient internal market, close cooperation between Member States, new pipeline supplies, targeted gas network investments, domestic gas or biogas production and, alongside these, the options highlighted in the recent Energy Union Communication and that are covered by this consultation: liquefied natural gas (LNG) and storage.

1.4. **LNG** already plays a key role to play in ensuring the diversity, reliability and competitiveness of the gas system – one that is likely to grow in importance as domestic EU production of gas declines. Changes in the global LNG market mean that this is an opportune moment to re-examine the opportunities that LNG presents, and its potential to support diversification of EU supply sources to include a wide range of countries, including new suppliers such as the US, Canada, East Africa and Australia. Developments in international LNG markets also have the potential to increase the competitiveness of gas supplies to the EU market, and to drive down prices for business and household consumers.

1.5. To this end, and to complement work on the Projects of Common Interest (PCIs) and the revision of the gas Security of Supply Regulation, the Commission has committed to producing a comprehensive strategy for LNG. This will look at the long term role of LNG in ensuring a secure, affordable and sustainable EU energy system and will seek to identify what action may be needed to enable all Member States to benefit from access to the international LNG market – including action to remove infrastructure or other barriers across the EU. How much LNG comes to the EU will ultimately depend on global gas prices. But there may be steps that the EU can take to improve the functioning of international markets or to ensure that all Member States have access to LNG as an option, either directly or via other Member States.

1.6. Gas **storage** is another crucial component of security and resilience of supply, and this will also be considered closely as part of the strategy. The key question to be addressed is related to the strategic role of storage in ensuring gas security and resilience and providing the necessary commercial tool to facilitate market operations. The ongoing review of the Regulation of Security of Gas Supply already targets the need for and specifics of storage-related security of supply measures. This analysis will complement that to assess the long-term role and business case for storage (including its various forms) in a competitive and resilient EU internal gas market. Analysis may include areas as market mechanisms

determining the availability of or need for storage capacity, as well as factors determining an optimal regulatory environment, the relationship between storage and other supply sources such as LNG to find the best mix of measures ensuring a reliable and economically feasible supply of gas in the future.

1.7. LNG and storage are meant to contribute to a reliable supply of gas at all times at competitive prices. Accordingly, a strategy, that may imply further policy initiatives at a later stage, may need to take into account the overall situation of gas markets (please see additional information as background in the Annex), and the energy mix at the European, regional and Member State level.

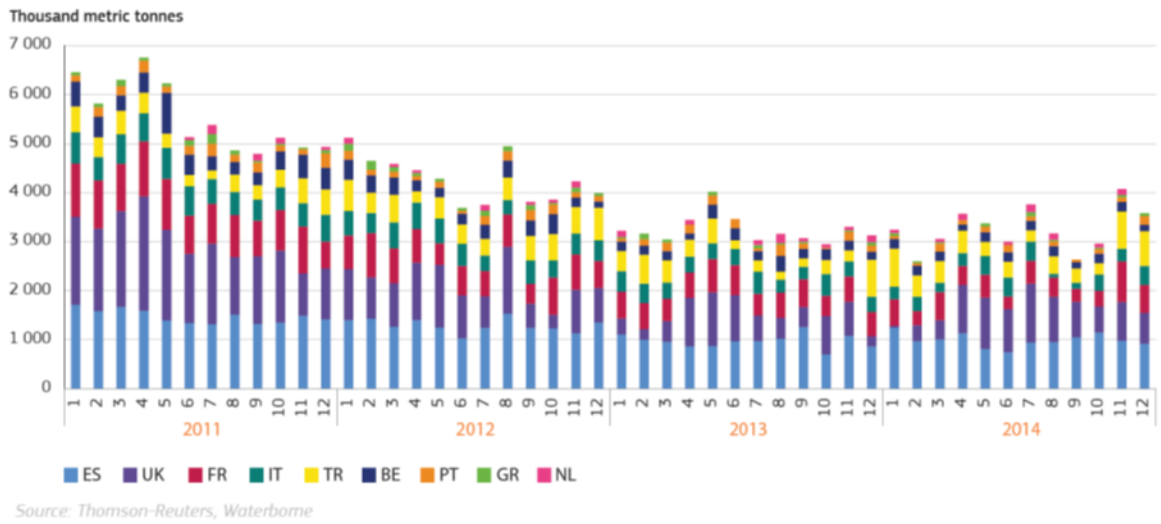
1.8. As part of developing the LNG and storage strategy, the Commission invites views from Member States, industry, NGOs and other stakeholders. To this effect, in addition to summarising the overall supply and demand context, this consultation document sets out a number of questions, on which respondents are encouraged to contribute their views as well as further evidence and data. Further details on how to respond to the consultation are provided at the end of the document.

2. LNG in the EU today

2.1. In 2014, pipeline import capacity to the EU stood at 490 bcm/a and **LNG import capacity** at 197 bcm/a. This would in theory be sufficient to cover all gas import projections by 2040. However, most of this LNG import capacity is located in Spain, Portugal, France and the UK. In addition, specific infrastructure bottlenecks inside the EU in North/South and West/East directions still prevent the optimal usage of existing LNG infrastructure and limit arbitration possibilities.

At the same time, in spite of the abundant regasification capacity, the volume of LNG imports stood at only 45 bcm in 2013, i.e. utilisation factor of 24%. The three main countries from where imports are sourced are Qatar, Algeria and Nigeria. The specific situation with regards to existing LNG capacity and planned projects, however, varies widely within the EU. The current level of LNG's share in consumption can vary between around 50% in Spain and Portugal to 3% in the Netherlands[1] with many countries, especially in Central-Eastern Europe, having no access at all to this source of supply.

LNG imports to Europe by country



[1] Rough calculation based on GIE and eurostat data for 2013 (LNG import/gross consumption)

2.2. At this stage, the most vulnerable countries which are mainly dependent on one supplier with no or insufficient access to LNG as a potential diversification source either directly or through neighbouring countries include Bulgaria, Croatia, Czech Republic, Estonia, Finland, Hungary, Latvia, Romania, Slovakia and Slovenia. These Member States may require particular attention when developing LNG as an additional source of gas supply, notably by improving access to LNG through enhanced regional cooperation ensuring better access through interconnections, if missing, to existing LNG terminals and/or the removal of possible regulatory or technical barriers to access.

2.3. **North-South Interconnections in Western Europe:** Most LNG regasification capacity is found in Western-Europe, with varying degrees of utilisation: highest in Italy (35% in 2013), lowest in the Netherlands (4% in 2013[2]). At the same time, there is an abundance of services offered at these terminals, including reloading, transhipment, loading of bunkering ships and truck and rail loading services, showing how active market players can become in a functioning market. Of particular interest in this region is the LNG capacity in the Iberian Peninsula which is significant with 8 LNG terminals in total, out of which, however, currently only one is operational. There are four further LNG terminals operating in France and one is planned. The LNG capacity available in the Iberian Peninsula cannot reach the rest of the EU because of bottlenecks and network constraints between Spain and France and within the French network (mainly south to north). The current PCIs are addressing the internal South to North bottlenecks in France.

2.4. **North-South Interconnections in Central- and South Eastern Europe:** Access to LNG in the region is currently limited to the LNG terminal in Revithoussa (EL). The existing LNG terminal is being upgraded and new terminals are being developed in Greece: the Independent Natural Gas System LNG Greece and the Aegean LNG import terminal. The LNG terminal on the island of Krk (HR), also on the list of PCIs, would open a North-South corridor in Central Eastern Europe and it represents an important security of supply asset for the region. The construction of a LNG terminal in Constanta (PCI) would improve the situation of access to gas sources for Romania, which has currently access to only two sources. In order to bring the benefits of LNG to landlocked countries in Eastern Europe, it is essential to develop the necessary gas transmission infrastructure, including reverse flow capacities, in a timely manner.

2.5. The challenges and opportunities in Central- and South-Eastern Europe cannot be treated without also looking at the **Energy Community** countries. The Energy Community is geographically embedded in this region and it faces the same security of gas supply challenges and provides potential solutions: it shares the same one-source dependency issue and at the same time, it is well positioned to serve as a corridor for new sources of gas, including LNG. The Energy Community is committed to implement the EU energy acquis and it forms an integral part of Europe's gas future.

2.6. **Baltic Sea Region:** In the Baltic Sea Region (Baltic Energy Market Interconnection Plan - BEMIP), the energy security stress tests carried out by the Commission between August and October 2014 showed that two energy infrastructure projects are crucial for the Baltic States in addressing the issue of the possible disruption of gas supply from Russia: the Klaipeda LNG terminal in Lithuania and the Incukalns underground gas storage (UGS) in Latvia (which has PCI status). The Incukalns UGS is currently the only functioning gas-storage facility in the Baltic States. The Klaipeda LNG terminal, which was put into operation in December 2014, is the first one of this kind being operational in the Eastern side of the Baltic States region. The onshore LNG terminal in Swinoujscie (PL) and the development of the connecting pipeline

[2] Source: gle

after some delay are expected to be completed in 2015. Other key projects being currently under way are: the Regional Baltic LNG terminal, to be built in Finland, and a smaller gas distribution terminal mainly for bunkering planned to be built in Estonia; for both the work is set to start in 2015 and should be completed in 2019, as well as the related BalticConnector. In Sweden, a LNG terminal is currently being built in Gothenburg and will contribute to increased security of supply and flexibility for the Swedish market.

2.7. Stronger **regional cooperation** is key to identifying and implementing key actions. In this regard, the BEMIP initiative identifies the need for one regional LNG terminal in the region; the Central east South Gas Connectivity initiative (CESEC) is targeted at identifying the minimum "no-regret" infrastructure needs, including LNG terminals in order to diversify sources and eliminate one sided supplier dependency in South-East Europe. CESEC is of particular importance as it targets the most vulnerable region from a security of supply perspective and it also involves Energy Community countries. The High-Level Group for South-West Europe looks at bottlenecks and infrastructure options to allow the substantial LNG regasification capacity in the Iberian Peninsula to be made available for the rest of the EU.

2.8. **LNG in the East-Mediterranean:** The East-Mediterranean gas fields have the potential to be a new supply source for the EU and one of the options is for the gas to be transported in the form of LNG. A liquefaction terminal project planned on Cyprus merits being looked at, especially so, as LNG export terminals do not fall under the scope of the TEN-E Regulation and thus cannot become a project of common interest (PCI). The LNG and storage strategy could be the right tool to explore this opportunity further.

Question 1: Do you agree with the assessment for the above regions in terms of infrastructure development challenges and needs to allow potential access for all Member States, in particular the most vulnerable ones, to LNG supplies either directly or through neighbouring countries? Do you have any analysis or view on what an optimal level/share of LNG in a region or Member State would be from a diversification / security of supply perspective? Please answer by Member state / region

Question 2: Do you have any analysis (cost/benefit) that helps identify the most cost-efficient options for demand reduction or infrastructure development and use, either through better interconnections to existing LNG terminals and/or new LNG infrastructure for the most vulnerable Member States? What, in your view, are reasons, circumstances to (dis)favour new LNG investments in new locations as opposed to pipeline investments to connect existing LNG terminals to those new markets?

Question 3: Do you think, in addition to the already existing TEN-E Regulation, any further EU action is needed in this regard? Do you think the use of LNG gas and existing LNG infrastructure could be improved e.g. by better storage possibilities, better network cooperation of TSOs or other measures? Please give examples

Question 4: What in your view explains the low use rates in some regions? Given uncertainties over future gas demand, how would you assess the risk of stranded assets and lock-in effects (and the risk of diverting investments from low carbon technologies such as renewables and delaying a true change in energy systems) and weigh those against risks to gas security and resilience? What options exist in your view to reduce and/or address the risk of stranded assets?

Question 5: The Energy Union commits the EU to meeting ambitious targets on greenhouse gas emissions, renewable energy and energy efficiency, and also to reducing its dependency on imported fossil fuels and hence exposure to price spikes. Moderating energy demand and fuel-switching to low carbon sources such as renewables, particularly in the heating and cooling sector, can be highly cost-effective solutions to such challenges, and ones that Member States will wish to consider carefully alongside decisions on LNG infrastructure. In this context, do you have any evidence on the most cost-efficient balance between these different options in different areas, including over the long term (i.e. up to 2050)?

3. Potential entry barriers for LNG

3.1. While the need for further source diversification in the most vulnerable regions is recognised and the potential solutions in most cases include LNG and related infrastructure, energy infrastructure projects are frequently not built or are seriously delayed. Often these delays are due to lack of public acceptance, lengthy permit granting procedures or lack of adequate financing. While many of these issues can be addressed through the TEN-E Regulation, many of the remaining difficulties derive from the incomplete implementation of the 3rd Energy Package and other regulatory barriers generally applicable to the gas market. Even if the necessary infrastructure exists to enable LNG to reach a given market, if the rules are not in place that enable importers effectively to compete and sell on the market, or the existing rules are not applied properly, the additional supply diversity and resulting improvement to security of supply and competition will not materialise.

3.2. There can be several barriers to entry for new LNG suppliers that are present all along the LNG supply chain: in the upstream in relation to supply contracts, but also downstream at the level of LNG terminals themselves, or when it comes to the availability of and access to the transmission network and storage facilities. These barriers can range from simple administrative burden issues (language restrictions, overcomplicated and lengthy licensing provisions) through non-market regulatory measures introduced to solve real or perceived market failures in other sectors (such as strict storage obligations on importers with restricted storage capacity available on the market) to commercial, financial as well as technical entry barriers.

3.3. The revision of the **Gas Security of Supply Regulation** may address some security of supply measures related to LNG. Work under specific **regional cooperation initiatives**, such as BEMIP and CESEC, is tackling several issues related to infrastructure, internal market functioning and competition, through the definition of action plans and a support to implement 3rd energy package obligations, taking into account the specificities of the region. These initiatives, among others, identify the main infrastructure components and address associated and general regulatory barriers.

Question 6: What in your view are the most critical regulatory barriers by Member State to the optimal use of and access to LNG, and what policy options do you see to overcome those barriers? Have you encountered or are you aware of any problems in accessing existing LNG terminal infrastructure, either because of regulatory provisions or as a result of company behaviour? Please describe in detail.

Question 7: What do you think are the most critical commercial, including territorial restrictions and financial barriers at national and regional level to the optimal use and access to LNG?

Question 8: More specifically, do you consider that ongoing EU policy initiatives and/or existing legislation can adequately tackle the outstanding issues, or there is more the EU should do?

4. International LNG markets

4.1. In 2014 global LNG deliveries rose to around 240 million tonnes, from liquefaction plant (in 19 countries) with a total maximum technical capacity of nearly 300 million tonnes per annum[3]. The international LNG market is expected to show significant growth over the short to medium term, with substantial increases in liquefaction capacity globally, particularly in Australia (set to overtake Qatar as the world's biggest supplier) and the US. As regards LNG transport, the number of LNG tankers has been increasingly steadily[4].

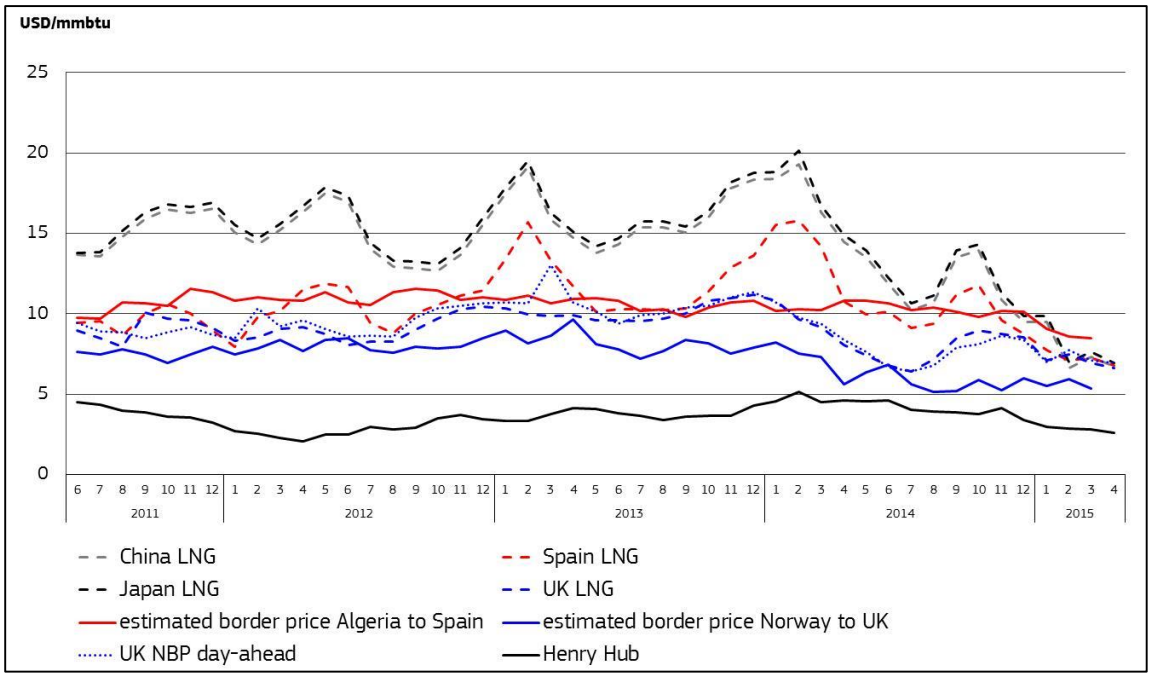
4.2. On the demand side the number of LNG importing countries is growing steadily (around 30 in 2014), but overall demand growth seems likely to be weak, with factors such as the return of nuclear power generation in Japan and slower economic growth in China widely cited as potential downsides. On this basis most analysts expect the impending surge in production capacity to lead to oversupply and depressed prices over the medium term, with the EU continuing to play the role of residual market, getting what Asian countries do not need or cannot afford. This in turn could increase competitive pressures on EU gas markets and drive down prices for end consumers. Access to US LNG supplies is of particular importance for the EU due to its geographical location and the low risk profile.

4.3. As regards global market integration, recent months have seen increased convergence in LNG spot prices between Pacific and Atlantic markets (see graph below), a trend that seems likely to continue with the growth in global LNG production and increased market integration. The fall in global LNG prices has also contributed to a narrowing of the gap between the prices of pipeline and LNG imports in the EU, as can be seen by comparing spot LNG prices in the UK and Spain with estimated border prices for pipeline imports from Norway and Algeria, which account for the major part of pipeline imports into the UK and Spain, respectively.

4.4. Overall therefore the picture seems to be of an international LNG market that is becoming progressively deeper, more liquid and more integrated, and more similar to mature markets for commodities such as oil. However there remain concerns amongst some stakeholders about trade barriers and market transparency and volatility, and whether more should be done to ensure that the market can function effectively in times of stress. As set out in the Energy Union Strategy, the European Union intends to work towards an improved global governance system for energy, together with its major partners, leading to more competitive and transparent global energy markets. The EU will use all its foreign policy instruments and its strategic energy partnerships in support of this aim, to ensure that the EU has full access to the benefits of the growing global market in LNG.

[3] Various sources, notably GIIGNL
[4] Data based on GIIGNL reports

Gas prices on various markets (data from Eurostat, Thompson Reuters and Platts)



Question 9: How do you see worldwide LNG markets evolving over the next decade and what effects do you expect this to have on EU gas markets? Do you expect a shift away from oil-indexed LNG contracts, and if so under what conditions?

Question 10: What problems if any do you see with the functioning of the international LNG market, particularly at times of stress? Are there specific actions the EU should take, in dialogue with our international partners, including in trade negotiations, to improve its functioning and/or to make the EU market more attractive as a destination for LNG? Could voluntary demand aggregation be helpful in some way?

5. LNG technology issues including LNG use in transport

5.1. The performance of large scale LNG infrastructure has improved steadily over recent decades, with more efficient liquefaction trains, tankers and terminals. There have also been recent developments in floating – and hence movable – infrastructure, with shipboard regasification and storage emerging as a fast, low-cost alternative to land-based import terminals, and the development of floating liquefaction facilities offering the possibility of exploiting otherwise stranded gas fields. Capital investment costs nevertheless remain substantial, particularly for liquefaction plant, making all new LNG production projects a challenging proposition.

5.2. On the downstream side, LNG (produced from natural gas, synthetic gas or biomethane) can be used in buses, lorries, boats, ships and trains, and can provide an attractive alternative to existing fuels. LNG has for example been identified as a means for new vessels to meet the requirements for decreasing the sulphur content in marine fuels in the SO_x Emission Control Areas, which affect half of the ships sailing in European short sea shipping. LNG also offers significant environmental benefits in terms of reduction of CO_2 and pollutant emissions, in particular when it is blended with liquid bio-methane. LNG vehicles are based on mature technology, using conventional internal combustion engines.

5.3. There are currently several hundred LNG lorries operating in the EU and around 100 refuelling stations, compared with 250,000 LNG lorries and 2,500 stations in China, and more than 20,000 lorries in the US. The main growth areas in the EU are currently the United

Kingdom, the Netherlands, Spain and Sweden. As regards shipping, LNG-powered ship engines are now widely available in the market. However with the exception of Norway, the take-up of LNG as ship fuel in Europe is still in an early stage, with Sweden, Finland, Belgium, the Netherlands and the UK being the only EU Member States to have LNG refuelling facilities at present.

5.4. Stakeholders typically identify three main barriers to the greater use of LNG in shipping: the lack of adequate bunker facilities, the gaps in the legislative or regulatory framework, and the lack of harmonised standards at various points in the chain. The EU is taking action on a number of fronts to facilitate the use of LNG in transport. Current initiatives or activities include:

- The recently adopted Directive on the deployment of alternative fuels infrastructure 2014/94/EU, which requires Member States to ensure that an appropriate number of LNG refuelling points (that meet common standards) be provided for maritime and inland waterway transport and heavy duty vehicles across the TEN-T Core Network
- The Sustainable Transport Forum (STF), an expert group tasked with assisting the Commission in implementing the Union's activities and programmes aimed at fostering the deployment of alternative fuels infrastructure;
- Projects under the Horizon 2020 programme, and (under its predecessor) the LNG BLUE corridors project;
- Projects on alternative fuels funded under the Connecting Europe Facility (CEF);
- The European Sustainable Shipping Forum (ESSF), a group of experts established by the Commission in 2013 to assist it in implementing the Union's activities in the area of maritime transport sustainability, including on the development of standards or rules for marine LNG as ship fuel, covering technical, operational, safety, security, training and environmental aspects of LNG bunkering and use;
- A study launched by the Commission in 2014 on the completion of an EU framework on LNG-fuelled ships and relevant fuel provision infrastructure (preliminary findings confirm the importance of issues such as development of EU-wide guidance for LNG bunkering procedures, harmonisation of standards and penalty policies and increased knowledge and exchange of experience amongst permitting authorities – full results will be published shortly[5]); and
- A Committee for the Creation of Technical Standards (CESTE), established to deal with the technical standards in the field of inland navigation.

Question 11: What technological developments do you anticipate over the medium term in the field of LNG and how do you see the market for LNG in transport developing? Is there a need for additional EU action in this area to reduce barriers to uptake, for example on technology or standards, including for quality and safety?

6. LNG sustainability issues

6.1. It is beyond the scope of this consultation to consider the role of natural gas in general in the EU energy system, or the sustainability of natural gas relative to other sources of energy. It is appropriate however to consider whether there are any issues specific to LNG, as compared to other forms of gas, that should be taken into account when developing future policies or

[5] Please see the web-site developed for the purpose of this study: http://lngforshipping.eu/ to find more information about the preliminary results of the study.

initiatives. Examples might include any differences in emissions profile for liquefaction and shipping as compared with traditional pipeline transport, or the fact that LNG technology may enable gas to replace more polluting fuels, either in certain forms of transport (see above) or in heat and power generation in isolated locations.

Question 12: Do you think there are any sustainability issues specific to LNG that should be explored as part of this strategy? What would be the environmental costs and benefits of alternative solutions to LNG? Please provide evidence in support your views.

7. Storage

Internal market constraints and challenges for storage

7.1. Total EU gas storage capacities have been growing strongly over the last 10 years but growth has slowed down lately. Storage filling levels are good both before and after the winter when on average storage facilities are still 30% full. However, the operating costs for storing gas either under high pressure or in a liquefied form are well beyond of those of oil storage.

7.2. Storage plays an important role in providing flexibility and reliability: balancing seasonal demand and supply and supporting the significant cross-border trade that takes place in the EU, in particular when it comes to large volumes of transit through neighbouring countries. Winter/summer spreads - the price difference between the low summer price and the higher winter price - are a key price signal of the value of seasonal flexibility; this has been declining since 2007. Analysis however suggests that this has not impacted storage utilisation levels considerably.

7.3. Increasing interconnection of national markets also contributes to the availability of other flexibility sources across borders, such as domestic production, low carbon indigenous sources, pipeline swing and LNG, which in a liberalised market compete with storage. At the same time, major new (pipeline) import infrastructure - increasing dependence on imports, notably on farther sources - may require further storage capacity to optimise the network's operation as the flexibility is easier to provide closer to consumption than at the point of production. Increased supply of LNG in Europe may also have an impact on hub traded gas and thereby on the need for and role of storage.

7.4. At the same time, the current willingness to pay for gas storage is in some cases barely sufficient to cover the marginal cost of storage operations. These unfavourable market conditions might not only put a burden on the realisation of future planned investments but might also impact the storage capacity currently made available if this persists for the long run. Despite reduced growth in gas demand and gas prices in the last two years, gas storage is a valuable and vital European industry, as other reasons than the price incentive, like insurance value of storages towards unexpected events, the risk of reputation loss or lack of cheaper alternative flexibility tools, may drive suppliers to store gas.

7.5. Emergency gas stocks are defined as physical stockpiles of natural gas that are not available to the market under normal conditions. As in the case of oil, these stocks can be either owned by the government or consist of stocks held by the industry, based on government imposed stockholding obligations. These stocks are held to protect consumers against non-market risks, meaning risks that the market cannot cover under normal conditions and which accordingly fall outside the reliability standards of the gas market.

Question 13: What opportunities or challenges do the supply projections for different sources, in particular LNG and pipeline gas and low carbon indigenous sources, present for the use of gas storage / for gas storage operators?

Question 14: Are, in your view, current market and regulatory conditions adequate to ensure that storages can fully play their role in addressing supply disruptions or other unforeseen events (e.g. extreme cold spells)?

Question 15: As an alternative to mandatory reserves, how could market based instruments ensure adequate minimum reserves?

Storage Infrastructure

7.6. Available storage capacity compared to average winter demand – in countries with storage - varies between 10% and over 100% in the EU. Eight of the member countries could meet 50% or more of their peak demand by means of a theoretical maximum drawdown on their storages. Two countries - Austria and Germany - could cover all of their peak demand in this way. In Central- and South-East Europe as a whole, according to analyses, sufficient storage capacity is available but with uneven distribution across countries. This leads to the question whether more interconnectivity and regional cooperation may be the solution to better use of storages. This, however, does not exclude the need for some specific investments. While in Western-Europe overall storage capacity is lower than in the East, markets are more interconnected and the availability of other flexibility sources is higher.

7.7. Storage has a key role to play in crisis situations as it can react fast to sudden peaks and also because it is near to the consumption centres. The result of the stress tests also showed that storage, where available, is a key tool to balance the supply-demand situation in all Member States. Nevertheless, a long-lasting crisis or simply a cold winter could empty storage quickly and thereby necessitate a resort to other security of supply measures. Storage appears best suited to meeting short-term peaks in demand.

7.8. LNG terminals also provide a form of storage, usually suitable for peak performances but are mainly for operative purposes. In some countries strategic gas stocks are available, however, these usually represent gas that can be released only in emergency and through special procedures.

Question 16: *Do you have any analysis or view on what an optimal level/share of storage in a Member State or region would be? What kind of initiatives, if any, do you consider necessary in terms of infrastructure development in relation to storage?*

Question 17: Do you think, in addition to the existing TEN-E Regulation, any further EU action is needed in this regard?

Question 18: Given uncertainties over future gas demand, how would you assess the risk of stranded assets (and hence unnecessary costs), lock-in effects, the risk of diverting investments from low carbon technologies such as renewables, delaying a transition in energy systems and how would you and weigh those against risks to gas security and resilience? What options exist in your view to reduce the risk of stranded assets?

Regulatory framework and potential barriers for storage

7.9. The main characteristics of storage markets are their market and ownership structure, tariff setting and the rule for third party access. Markets differ considerably across the EU in all respect. In some countries long term capacity contracts lead to difficulties for new market entrants, in others storage obligations may have the same impact, especially if those are geographically limited to the country in question.

7.10. Storage tariffs vary considerably across the EU. In some cases suppliers need to pay twice: when injecting and when withdrawing gas, thereby potentially decreasing the

attractiveness of storing gas. In other instances special storage tariffs are set which can be lower than transmission tariffs in order to remedy the issue. According to a study[6], the difference between the highest and lowest in the CEE and SEE region is six-fold. There is also a certain level of mistrust when it comes to security of supply being ensured by facilities outside of the territory of a given Member State.

7.11. Access to storage may be limited by regulatory conditions or company behaviour, which can impair exploiting the full potential of storage for securing gas supply. For example, the period of time allowing to store gas in a specific site may be unduly limited. Further difficulties may appear when the process of feeding back stored gas into the grid faces barriers, for example caused by regulatory provisions or technical impediments (e.g. technical limitations for re-gasification, no smooth feed back into the gas network). Additionally, problems with grid connection, e.g. due to problems on network infrastructure caused by company behaviour or unavailable capacities (capacity hoarding), may further downgrade the possibility of efficiently using storage capacity.

7.12. For assessing the role of storage for security of energy supply and the conditions for the efficient operation of the gas transmission system, transportation tariff-related elements may require further attention, including whether there is a need for any initiative for setting specific transmission tariffs provided to storage operators.

7.13. While a certain level of mandatory storage obligations can considerably increase security of supply, there is a risk that it distort market functioning by crowding out commercial stocks and not take into account decreasing demand.

7.14. The revision of the Gas Security of Supply Regulation may also tackle storage related security of supply measures.

7.15. Work under specific regional cooperation initiatives such as BEMIP and CESEC is tackling several issues related to infrastructure, internal market functioning and competition, through the definition of action plans and a support to implement 3rd energy package obligations, taking into account the specificities of the region. These initiatives, among others, identify the main infrastructure components and address associated and general regulatory barriers.

7.16. The completion of the internal energy market through full implementation of the EU energy acquis should be able to solve many of the still outstanding regulatory issues related to storage. Views are that the emphasis needs to be on enforcing implementation before new proposals see the light of day. Some issues may also be tackled as part of the network code development.

Question 19: What do you think are the most critical regulatory barriers to the optimal use of storage in a regional setting?

Question 20: Do you think ongoing initiatives and existing legislation can tackle the remaining outstanding issues or is there more the EU could do? Do initiatives need to include additional issues further to the ones described here?

Question 21: Do you consider EU-level rules necessary to define specific tariff regimes for storage only or should such assessment be made rather on a national level in view of available measures able to meet the objective of secure gas supply?

[6] Natural Gas Storage Analysis in the Danube Region, 2014 by REKK

Question 22: Have you ever encountered, or are you aware of, difficulties in accessing storage facilities? Has this concerned off-site or on-site storage facilities? Please describe the nature of the difficulties in detail.

Question 23: Have you ever encountered, or are you aware of, difficulties related to feeding LNG gas from the storage site back into the gas network? If so please describe the nature of these difficulties (regulatory provisions, company behaviour, technical problems) in detail.

8. Practical details on responding, consultation events etc.

8.1. The questions and reflections in this consultation paper reflect our current thoughts on the challenges and opportunities related to LNG and storage markets. Comments are invited on all questions directly raised, together with any other reflections which respondents may have.

8.2. Based on the responses we receive, and on further reflections and engagement with Member States and stakeholders, we will consider which main policy directions the EU should take in terms of LNG and storage markets.

8.3. Please submit your response to this public consultation by 30 September 2015 at the latest to the following e-mail address: ENER-LNG-STORAGE@ec.europa.eu. The Commission intends to publish all responses on its website.

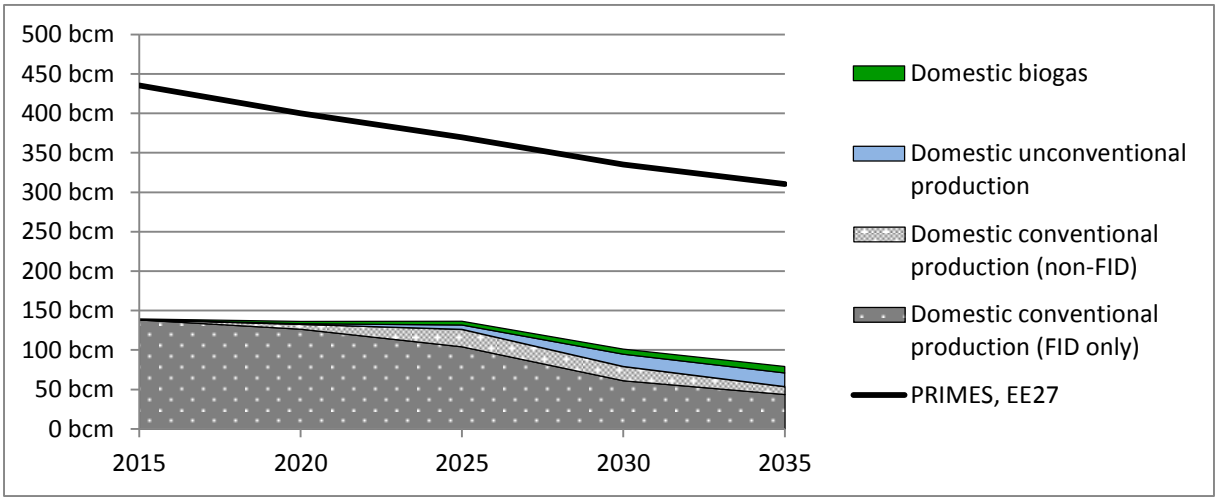
Annex: Background on projected EU gas demand, domestic production and pipeline supply

1. EU gas demand

1.1. Overall EU gas demand is likely to decline over time (see example PRIMES trajectory below). But gas will continue to have a major role for the foreseeable future, even with ambitious action on energy efficiency and significant use of low carbon technologies such as renewables and nuclear. It is likely to remain the dominant source of heat in industry and buildings and will continue to be an important source of power generation, particularly as a complement to renewables and, in the longer term, with CCS. It may also have a growing role as an alternative transport fuel, for example in maritime transport.

1.2. Importantly, demand for *imported gas* is likely to remain stable at least over the next two decades as domestic EU production declines (see below). And while average annual consumption may fall, there may still be a need for high levels of infrastructure capacity to ensure deliverability of gas in periods of peak demand.

Projected EU28 gas demand



Notes: the PRIMES EE27 scenario is based on the 2013 reference scenario, using 2010 Eurostat data, and for the year 2030 involves 40% reduction in GHG relative to 1990, 27.8% renewable energy as a share of final energy consumption and 27.4% energy savings relative to a 2007 baseline. Domestic production based on ENTSOG projections.

2. Domestic production and pipeline supply

2.1. Conventional production in the EU is expected to continue to decline in the coming decades. There remain large uncertainties about the development of unconventional gas in the EU, but on the basis of existing evidence this is unlikely to alter the overall trend, at least in the short to medium term.

2.2. As regards pipeline corridors, supplies from Norway (unless new Barents Sea production is connected to the existing pipeline network) are projected to decline up to 2030 as diminishing reserves limit export potential. Supplies from Russia have the capacity to remain stable (with some two thirds of the Russian supply level in 2030 already contracted today), but account needs to be taken of the emergence of a more diverse supply pattern, as countries currently reliant on Russian supplies diversify. Algeria has high production potential, and important efforts are needed to ensure that this is realised to ensure that it remains an important supplier to the EU. Supply through the Southern Gas Corridor, commencing in 2020, could be very significant in the long term, although additional work is needed to realise this potential