Statoil's response to the European Commission consultation on an EU strategy for liquefied natural gas and gas storage

September 2015

Executive summary

- Statoil agrees with the Commission that gas plays a key role in the EU energy system and will continue to be of major importance in the future.
- In particular, gas-fired power plants can play an important role in achieving the EU's 2030 climate targets because natural gas is the most carbon-efficient fossil fuel and also offers substantial flexibility to support increasing quantities of variable renewables in the power mix.
- LNG is simply a means of transportation of natural gas and, therefore, should not be assessed separately from the overall framework for natural gas.
- Diversification of supply is the most important tool to enhance competition and achieve gas security of supply in European markets. A fully functioning Internal Energy Market would help the EU to attract further supply sources, including LNG. The current focus should therefore be on properly implementing the existing legislation (e.g. Third Energy Package and European Network Codes).
- In parallel, it is however fundamental that the EU also provides clear and strong security of demand signals in its policy and regulatory framework. A framework that recognizes to natural gas a central role in the future energy mix, that currently is lacking, would provide investors the necessary predictability of future demand to trigger investments to supply Europe.
- Storage should be provided with a level playing-field such that it can compete with other flexibility sources to address demand volatility and possible supply disruptions.
- Storage operators should have the freedom and commercial incentive to develop storage products that reflect market demand for flexibility services, as this is not always the case today.
- The booking and use of storage capacities should be promoted by making storage products attractive to commercial players, rather than focusing on mandatory reserves/storage obligations. As such, non-market measures, should be avoided.
- Assessments on the need for additional infrastructures (e.g. new LNG plants or new storage facilities) should be made at the regional level in order to share the costs and avoid unnecessary duplication of infrastructures.

LNG in the EU today

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

Diversification of supply is the most important tool to enhance competition and achieve security of supply in European markets. LNG is a means of transportation for natural gas and it is not a separate product in itself. Discussions should therefore be focused on the European gas market and not only on LNG.

In this framework, the policy and regulatory framework shall ensure that every national market has access to a variety of gas sources. It is irrelevant whether the sources supply the market via pipeline or via LNG as long as the market can benefit from a high level of diversification of supply. For this reason, any minimum or optimal share of LNG in a region or Member State could be misleading and not representing the actual level of diversification of supply.

Moreover, access to LNG is not *per se* an objective to be achieved in order to enhance competition and security of supply. In some cases, especially in the well-diversified North-Western European markets, a cost-benefit analysis of having access to new LNG terminals might provide a negative outcome since the costs would be higher than the benefits for the system both in terms of competition/market liquidity and security of supply. At the same time we reckon that other markets, as for example Eastern European systems would significantly benefit from access to a new LNG (or pipe) source. In these cases, an assessment should firstly be made at the regional level in order to share the costs and avoid unnecessary duplication of infrastructures.

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?

On a general note, demand reduction and energy efficiency are an important contribution to the transition towards a more competitive, secure and sustainable European energy system. To unlock the full potential of energy savings, the use of natural gas will be essential.

Natural gas is today the most efficient fuel for power plant technology available and, therefore, switching from coal to gas, as recommended by the Intergovernmental Panel on Climate Change[1], would result in energy savings throughout the EU.

[1] IPPC, "Climate Change 2014: Mitigation of Climate Change" (link: http://mitigation2014.org/)

In addition, gas would enable greenhouse gas reduction in the heating market in the most cost effective way, for example through the replacement of old boilers with modern natural gas condensation boilers, as showed in a study carried out by the German research institute EWI[2].

Measures only addressing and reducing gas demand do not set out such a path. We understand the desire to reduce gas demand is primarily driven by energy security concerns. However, if energy security is the main concern, the focus should instead be on diversification of supply (see answer to question 1) and on continuing towards developing a well-functioning Internal Energy Market, further building on EU's successes of market liberalisation and removal of internal bottlenecks to energy trade. In order to attract natural gas from a diverse range of suppliers and thereby strengthen its energy security, EU should communicate security of demand and ensure effective price signals through the continued development of liquid and transparent markets.

Actions aimed at significantly reducing gas consumption will chiefly affect supply at the margin, crowding out potential new suppliers looking to establish new (expensive) infrastructures to reach the European market. Moreover, such actions do little to provide the right signals and confidence to suppliers to invest in new production capacity.

A secure and globally competitive European energy system is best delivered by a policy framework focused on an open, well-functioning Internal Energy Market.

For these reasons, the focus should be on infrastructure development and use rather than demand reduction. As described in answer to question 1, the most cost efficient option to enhance diversification and security of supply should always be preferred. This means that where the development of new or additional interconnection capacity provides access to an existing LNG terminal in a more cost-efficient way than developing a new LNG regasification plant, the first should be preferred.

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

For the sake of clarity and market predictability, the TEN-E Regulation (347/2013), together with the Connecting Europe Facility Regulation, should be the only European tools to be used to promote and support infrastructure development. At this stage there are no further EU actions needed in this regard.

In addition, the current focus should be on implementing the existing legislation. Before considering any new legislation to improve the use of LNG gas and existing LNG infrastructure, the Third Energy Package, the Security of Supply Regulation and the European Gas Network Codes should be fully implemented in every Member State.

[2] Energiewirtschaftliches Institut an der Universität zu Köln (EWI): „Potentiale von Erdgas als CO2-Vermeidungsoption", June 2014

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?

LNG terminals utilization rate depends on several factors. Competitiveness of LNG global prices vs gas pipeline imports is most probably the main one. The EU sits in a privileged situation of having access to many sources of supply reachable via pipeline. This element gives European buyers the possibility to choose and maximize the imports via pipeline or via LNG depending on the competitiveness of their prices.

In addition to this, it has to be noted that given the peculiarities of the LNG global dynamics, the utilization rate of the regasification terminals cannot be compared with the one of pipeline. In fact, LNG chain requires regasification capacity levels in excess of liquefaction capacity levels in order to provide the optionality required to allow international LNG flows to be able to respond to price signals. Targeting a 100% utilization rate for LNG infrastructures is therefore today unrealistic.

With regards to the second part of the question, the available forecasts show a stable (or increased) gas demand in Europe in the coming years and decades. In particular, the International Energy Agency expects, in its Energy Outlook 2014, gas demand in Europe to increase from 531 bcm in 2020 to 610 bcm in 2040. Considering the decrease of indigenous production this means that the main challenge Europe is facing is to attract more sources of supply, from existing and new suppliers, in order to enhance diversification and consequently security of supply. This requires new investment decisions to be taken in these years by investors in order to be able to supply Europe in the coming decades. Rather than on stranded assets, the risk is therefore that necessary production projects to continue to supply Europe are not triggered. Europe should therefore provide in its policy and regulatory framework strong security of demand signals by recognising to natural gas a central role in the future energy mix. Such a framework, that currently is lacking, would provide investors the necessary predictability of future demand to trigger investments.

At the same time, there is a risk of stranded assets in the field of infrastructure development. Whenever an infrastructure investment decision is taken without being driven by the market, the risk of significant underutilization is concrete. On this point, there is a distinction to be drawn between exempted infrastructures and those subject to regulated third party access and funded via regulated tariffs. In the case of the latter, the risks and costs of stranded assets are with system users and, ultimately, consumers rather than terminal developers. For this reason, the development of regulated infrastructures should preferably be market-based. When this is not possible (e.g. security of supply investments in infrastructures mainly used in emergency situations) a cost benefit analysis should always be carried out in order to avoid that unnecessary or unjustified costs have to be borne by the system and by end consumers.

On a final note, investing in gas production and infrastructures should not be seen as diverting investments from low carbon technologies such as renewables and delaying a true change in energy systems. This might be true with regards to other fuels, but not for gas. Natural gas is in fact a good partner for the development of intermittent renewables, which are becoming more dominant in the power grid. A mix of renewable energy sources and natural gas in power generation is the most cost-efficient way to achieve the European climate targets.

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)?

See answer to question 2.

Potential entry barriers for LNG

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.

Statoil is not aware of any major regulatory barriers to the access to LNG. Some improvements may however be introduced:

- Available and contracted volumes of regasification capacity should be disclosed at the different terminals
- Transparent and forward looking publication of provisional expected flows into the grid should be provided
- The possible introduction of agreements for secondary access to LNG terminals via use it or lose it (UIOLI) slots should be assessed

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?

As pointed out in answer to question 4, the underutilization of European LNG regasification terminals that has characterized the recent years has not been caused by any commercial or financial barrier to the optimal use or access to the terminals. In fact, such underutilization has been mainly driven by the strong LNG demand from buyers in Asia and South America. Such demand has also created arbitrage

opportunities for LNG sellers and buyers that have led to large number of European re-loads (LNG exports) cargos sent both to Asia and South America.

There are no major commercial national or regional barriers to access LNG. On a general note, it has to be noted that in a global market as the LNG one, buyers should have the flexibility rights for the contracted volume and, therefore, be able to divert cargoes if they want. Erratic regulations and government interference in market design could restrict interest in accessing the European market for new entrants.

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?

As stated in the answer to question 3, the current focus should be on implementing the existing legislation. Before considering any new legislation to improve the use of LNG gas and existing LNG infrastructure, the Third Energy Package, the Security of Supply Regulation and the European Gas Network Codes should be fully implemented in every Member State.

International LNG markets

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?

Response to this question is confidential and will be submitted separately to DG ENER.

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?

As described in previous answers, there are no specific actions that the EU needs to take in order to improve the functioning of its LNG market. LNG is a means of transportation for natural gas and it is not a separate product in itself. Discussions should therefore be focused on the European gas market and not only on LNG.

The current focus should be on the full national implementation of the Third Energy Package, the Security of Supply Regulation and the European Gas Network Codes. Only once these pieces of legislation are fully implemented it will be possible to assess the functioning of the Internal Energy Market and the potential need of further actions.

A fully functioning Internal Energy Market would also help the EU to attract further supply sources, including LNG. On this point it is however fundamental that the EU provides clear and strong security of demand signals. Any action or policy that supports and further promotes the role of natural gas in the

European energy mix would create a higher level of security for investors and project developers. On this, please see also answer to Question 2.

With regards to the last point of the question, voluntary demand aggregation should be a choice of market participants, subject to any relevant legal considerations. Such measures being agreed at governmental level would add complexity and challenge commercial principles, undermining market confidence. As described above, buyers' purchasing power is better served by a fully integrated, well-functioning internal market with transparent and liquid trading hubs.

LNG technology issues including LNG use in transport

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?

The main technological development for LNG over the medium term is that an increased share of ships will be using LNG as fuel in the future. This means both, fully LNG-fuelled ships and hybrid solutions (i.e. LNG and electricity).

Norway has successfully been implementing LNG as fuel for ships since 1998, and the number of LNG ships will soon pass 100. This includes a large variety of ships, such as ferries, offshore supply vessels, coastguard vessels and container ships. The main reason for this positive development in Norway is the financial support for NOx-reducing measures administered through the Business Sector's NOx Fund. The EU's LNG strategy could include a reference to the Norwegian support program and an assessment of whether similar solutions could be explored in the EU in order to mobilise the necessary investment support for increasing the share of LNG in shipping.

Regarding the parallel development of LNG in road transport, this is mainly driven by the availability of LNG filling stations, which will not be cost-effective before there is a significant volume of LNG vehicles in the market. Hence, investment support would be needed for filling stations in the initial phase. Building on the framework set out by the Alternative Fuels Directive the EU LNG strategy should include an assessment of financial support options for LNG filling stations for road transport.

LNG sustainability issues

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.

LNG has a higher processing degree (need to be liquefied and regasified) and consequently higher energy consumption and emissions compared to pipe gas. In addition there are emissions related to shipping activity.

At the same time, however, LNG gives natural gas access to areas where this would not be possible via pipeline. In these areas, a higher share of gas in the energy mix at the expenses of other high-emitting fuels (e.g. coal) significantly helps reducing the overall emissions and decarbonising the energy system. In fact, one of the ways to reduce energy emissions without slowing economic growth is for the power sector to use more natural gas and less coal, wherever possible. On average, gas emits around half the carbon dioxide emissions of coal when burned for power generation, and yet globally more than twice as much power is produced by coal. If all existing coal-fired power stations were switched to state-of-the-art gas-fired plants tomorrow, we could avoid around 10% of total worldwide greenhouse gas emissions. That is not sufficient on its own, but it makes natural gas an important part of the solution. Gas-fired power plants can also serve as a good partner for intermittent renewables, which are becoming more dominant in the power grid. Gas plants can also be brought online quickly to meet frequently fluctuating power demands

Storage

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?

Recent market developments have shown an increasing demand for flexibility services, mainly driven by the integration of renewable energy sources in the power generation sector and the need for back-up solutions upon short notice. Given that storage is one of the most important flexibility tools, this recent development represents an opportunity for it.

At the same time, the main challenge for storage is the competition from other supply sources and demand-side response with regards to its position in the broader flexibility market, especially under the current market dynamics where Summer-Winter spreads are much lower than in the past. It is important that storage should be provided with a level playing-field such that it can compete with other flexibility sources to address demand volatility and possible supply disruptions. For this reason, storage operators should have the freedom and commercial incentive to develop storage products that reflect market demand for flexibility services, as this is not always the case today.

Storage products that are able to better meet market participants' needs would increase the demand and the booking for storage capacities. This would help addressing the concerns to security of supply linked to the combination of the low ongoing investments in new storage facilities and the mothballing of existing facilities.

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)?

The best and most efficient way to ensure an ongoing supply/demand balance is through the development of a well-functioning internal gas market. Well interconnected national systems would allow the market to flow gas to where it is mostly needed in a timely manner. In such a framework,

storage facilities would be one of the tools that provide the flexibility necessary for market functioning. Better interconnected markets would also allow a regional approach to storage capacities since market participants would be able to use, without any restrictions, storage facilities available in neighboring systems.

It is important that national regulatory systems do not provide any limitations to the use that storage users can make of their booked capacities (e.g. daily or monthly caps on the amount of stored gas that a network user can withdraw). Such limits make the market unable to quickly react to changes in demand.

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

The booking and use of storage capacities should be promoted by making storage products attractive to commercial players, rather than focusing on mandatory reserves/storage obligations. As such, non-market measures, should be avoided. However, where such measures are considered necessary to address specific issues in isolated areas with limited room for market development, the extent of the intervention should:

1. be time-limited and proportionate to the specific issue identified (for example a local or temporary issue should not be used to justify permanent widespread intervention);
2. take into account the costs of mandatory reserves compared to alternative options (for example transport capacity expansion or reverse flow could be a more cost effective way to address a security of supply concern);
3. be structured in a way best designed to isolate its impact on the gas wholesale market or, in any event, minimize any negative impact on the wholesale market or cross-border flows; and
4. not unduly impact the competitiveness of gas compared to other fuels, and in particular fuels that are more carbon-intensive.

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?

The flexibility of a specific gas market is composed by a variety of factors. These include, for example, the availability of cross border capacity, access to diversified sources, access to storage capacity of neighboring systems and availability of other commercial flexibility tools in the market.

In this framework, setting an optimal top-down level/share of storage in Member States or regions would be misleading because it does not take into consideration all the other characteristics of the system. One system might have a very high level/share of storage but still not be able to provide enough flexibility to the market since there is not enough cross-border capacity, it is supplied by only one source and there are no other commercial flexibility tools available. On the contrary, a market with very low level of storage might have a higher flexibility thanks to access to a wider number of supply sources, more cross-border capacity and availability of many other flexibility tools. A regional case-by-case assessment is therefore the best option to assess the flexibility needs of European markets.

The geology of the system is also an important factor to consider in this framework. In some countries it is easy and cheap to build storage facilities while in others it is not the case because of different geological conditions. A European top down optimal level of storage would not take these differences between countries into consideration.

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

For the sake of clarity and market predictability, the TEN-E Regulation (347/2013), together with the Connecting Europe Facility Regulation, should be the only European tools to be used to promote and support infrastructure development. At this stage there are no further EU actions 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?

See answer to Q4.

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

AND

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?

Completion of the Internal Energy Market is crucial and key to help ensure the creation of functioning, integrated gas markets characterised by effective price signals. Integrated national markets will be vital for the efficient use of gas storage facilities in Europe. To this end the strengthening of the EU internal gas market through effective implementation of the Third Energy Package and appropriately drafted associated network codes should be prioritized.

Nevertheless, there may be areas where current arrangements could be improved. In some markets, despite developed third party access rules, access to storage might be undermined by unjustified physical stock obligation. Obligations on suppliers or traders that force certain booking behaviour or restrict certain types of access or usage of storage tend to reduce the value of storage and distort market behaviour. They also act to the detriment of the efficient regional use of storage and hence security of supply. The focus therefore should be on removing such barriers.

Moreover, as stated above, it is important that national regulatory systems do not provide any limitations to the use that storage users can make of their booked capacities (e.g. daily or monthly caps

on the amount of stored gas that a network user can withdraw). Such limits make the market unable to quickly react to demand changes.

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?

Preference is for harmonized European rules aimed at ensuring that when setting transmission tariffs to enter and exit storage facilities the benefits that storage facilities provide to the system are fully considered.

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.

Transportation tariff regimes linked to storages can sometimes create suboptimal use of storage due to high costs of transporting gas to and from the facility.

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.

Statoil is not aware of any difficulties related to feeding LNG gas from the storage site back into the gas network.

We look forward to a continued dialogue with the Commission. If you have any questions please feel free to contact us.

Best regards,

Simone Rossi
Marketing and Trading
Regulatory Affairs Advisor
e: srossi@statoil.com

Laila Buligina
Marketing and Trading
Regulatory Affairs Advisor
e: lailabu@statoil.com

Visitor and postal address: Avenue de Cortenbergh 120, 1000 Brussels, Belgium

www.statoil.com