

30th September 2015

European Commission
DG Energy – ENER.B.4
Brussels

**Response to “Consultation on an EU strategy for
liquefied natural gas and storage”**

BG Group plc (BG) thanks the DG Energy for the opportunity to respond to the consultation on an EU strategy for liquefied natural gas and gas storage.

BG is an active participant in the both the global LNG market and the UK gas industry. BG has a substantial global LNG supply volume which will increase to over 20 mtpa once the new volumes from QCLNG (Australia) and Sabine Pass (US) are fully ramped up. BG has delivered LNG to 28 countries, including to the Dragon LNG terminal in the UK where we are both shareholder and capacity holder.

Our responses to the consultation's questions can be found on the following pages. We are a member of both O&GUK and EFET and we have contributed to their responses too.

We would welcome the opportunity to meet with you to discuss our responses in more detail.

Yours sincerely,

Steve Surrall

VP Europe & Australia Gas & Power Marketing

1. LNG in 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

We agree that diversity of supply will indeed support security of supply and we would add that LNG is the most flexible source of gas supply. However, as noted in para 1.5, the amount that comes to the EU will depend on global gas prices resulting from the balance of international LNG supply and demand. For example, the period post-Fukushima, when Japan drew significant additional volumes, coincided with a period of lower European demand and resulted in European regas terminals seeing very low levels of utilisation. Conversely, during periods of stress, Europe has seen higher LNG flows, demonstrating that the “market” does work, albeit as part of a globally competitive environment.

It is not practical, nor indeed feasible, for all Member States to have direct access to LNG supplies. Improving indirect access to LNG can be achieved by increasing interconnectivity across the EU so that LNG is able to contribute to diversity/security of supply to the EU as a whole. Implementation of the Third Energy Package and appropriately drafted and implemented EU Network Codes will help connectivity and facilitate flows of LNG-originated gas into, for example, South-Eastern Member States

We should be clear that there is not an “optimal share of LNG in a state or region”. LNG is merely another form of gas supply, alongside pipeline and indigenous production, though we should recognise and cherish the additional flexibility LNG brings, both from the demand and supply perspective.

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?

We are not aware of any such cost/benefit analysis but we do believe that greater connectivity between markets would increase both the efficiency and the robustness of security of supply of the EU gas market.

Evidence does not support the theory that further LNG investments will necessarily result in greater LNG volume being delivered to the EU; having LNG import capacity is not the same as having LNG supply. Greater connectivity will allow more efficient flow of all forms of gas (LNG, pipeline and indigenous) across the EU and between Member States.

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

EU and/or Member State financial support for infrastructure will not necessarily lead to increased utilisation. Market-based investment signals are best placed to drive future investment opportunities. Whilst implementation of the Third Energy Package and appropriately drafted and implemented EU Network Codes will help connectivity and facilitate flows of LNG-originated gas. Poorly targeted regulation can lead to undesirable market distortion and unintended consequences.

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?

The current utilisation of regas terminals does not reflect a problem with access to capacity; rather it is a function of European gas prices relative to the global LNG market. When considering regas capacity utilisation, it is important to recognise that regas capacity is 2.5 times greater than liquefaction capacity on a global basis. Furthermore, LNG projects are typically developed with an expectation of a 20-year or longer lifespan. During that lifespan, substantial relative movements in global gas prices can be expected. Therefore, the variation in EU regas terminal utilisation, which has been observed over the past five years, is not surprising.

We note the view of EU gas demand presented in the annex to the consultation document which shows a fall from approx. 440 bcm to approx. 310 bcm over the period to 2035. By contrast, BG sees a growing demand for gas in the EU fuel mix. This view is shared by other forecasters: for example the IEA projects growth of 15% between 2012 and 2040 and BP's Energy Outlook shows a 15% increase between 2013 and 2035. Such a growing market reduces the risk of stranded assets.

Furthermore, the risk of stranded assets applies where consumers bear the costs of any inefficient investment in price-regulated infrastructure. The development of LNG infrastructure is therefore better left to market-led commercial investments.

The question also seems to assume that, if funds are available which investors are inclined to spend on gas supply and/or infrastructure, then in the event of the gas options being taken off the table, those funds will inevitably be spent on other energy options – possibly renewables. Indeed, apart from the case of companies that invest in hydrocarbons and renewables, in most instances this would be an unlikely transfer. Investments come from different investors with different priorities. Rather than excluding renewables investments, our view is that there is a pressing need to ensure there is sufficient natural gas available to back up intermittent renewable generation.

This is a major issue better targeted at other policy discussions but there is a real risk that parts of the EU will sleepwalk into renewables-coal partnerships, when the thrust of European climate change policy should be to back up renewables with natural gas.

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)?

Our view is that the EU will need significant volumes of natural gas – to 2050 and beyond. There is a wide-ranging debate about the percentage share of the generation-mix that a country can obtain from renewables before intermittency risks making the system unstable. Given that natural gas is by far the cleanest of the hydrocarbon generation sources, Member States need to ensure that they have sufficient natural gas-fired power capacity to back up renewables. In our view, it would run counter to the EU's climate change policy thrust, if coal were to continue to be the back-up fuel. We applaud the UK Government for introducing an Emissions Performance Standard, which, when coupled with environmental directives, the LCPD and IED, will significantly reduce unabated coal-fired generation in Britain.

The versatility of gas, due its availability and flexibility should also be a factor in making it one of the principal fuels of choice.

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.

We do not see any significant barriers, regulatory or otherwise, to the use of or access to LNG terminal infrastructure.

At many terminals, primary capacity is available for reservation over the medium- or long-term. At all terminals, unused short-term capacity is made available via the secondary market either via the "spot delivery slot" (regulated terminals) or UIOLI (exempt terminals) processes. However, it should be noted that the "spot" and short-term LNG market (as defined by GIIGNL: being contracts of four years or less) has evolved significantly over the last five years and currently accounts for 29% of global LNG trade. Many of these spot trades are undertaken on an ex-ship basis where direct access to terminal throughput capacity is not required.

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 explained in our response to question 6, we do not see any significant barriers to accessing LNG infrastructure. LNG itself is readily accessible at the global price. In terms of encouraging this LNG-originated gas to flow across the EU, interconnected and integrated energy markets would encourage LNG flows between Member States. In that regard, full implementation of the Third Energy Package would be highly beneficial.

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?

Related to the need for full implementation of the Third Energy Package is the need for a stronger policy emphasis on appropriately designed and implemented European Network Codes.

3. 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?

After a long period without additions to the Atlantic LNG supply base, we anticipate just over 60 mtpa (equivalent to c.25% of current global supply) of US supply coming onstream over the next decade. It is likely that this, combined with other new LNG supply in other parts of the world, will result in an increase in LNG volumes being delivered to the EU.

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?

The EU should maintain and develop good relationships with international partners but this should not extend to commercial negotiations; such discussions should be left to market participants. The EU may wish to engage with existing and potential LNG supplying countries to ensure that policies are not put in place which might constrain exports to the EU. Furthermore, the overall flexibility in the global LNG market (and therefore the amount of LNG potentially available for the EU at times of stress) could be enhanced by encouraging other LNG importing countries to increase the flexibility in their fuel mix.

Where group of member states or state gas companies wished to work together to negotiate with suppliers, that should be permissible but on

normal commercial terms. A year or so ago there was discussion about the EU operating a central buyer policy in relation to gas imports. After over a decade of seeking to open up markets, remove the power of incumbents and create a single, transparent, liquid gas market, such a move would be a clumsy act of centralisation. Any demand aggregation should be at the choice of market participants and not carried out at governmental or regulatory level.

4. 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?

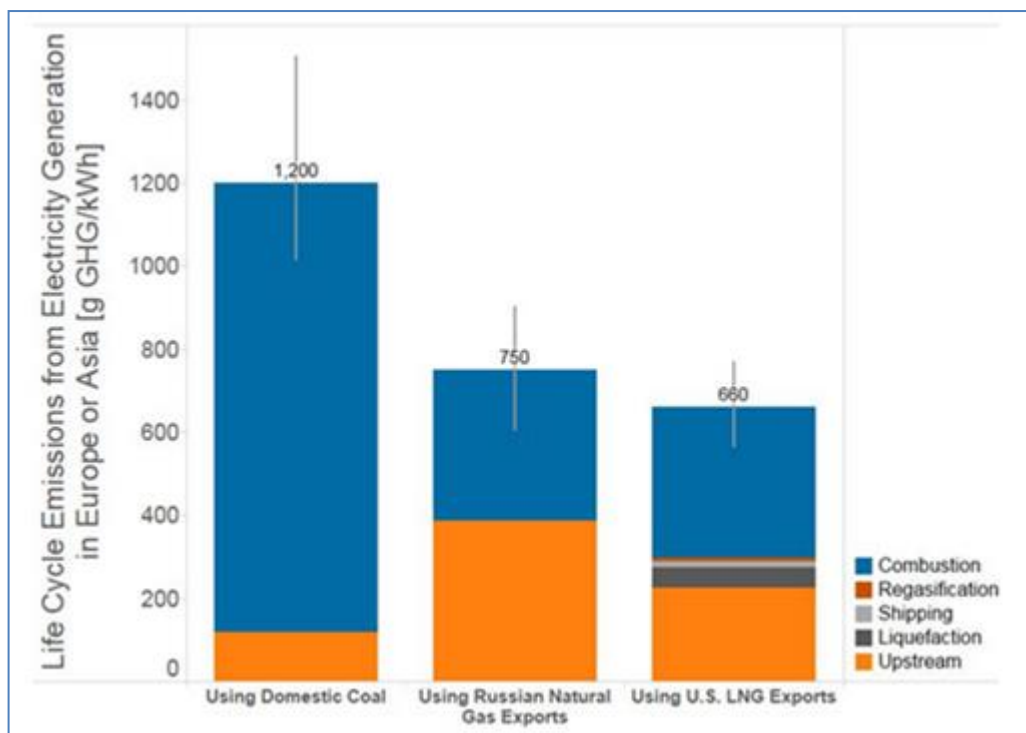
We recognise LNG use in transport as a potential for growth in the long-term. However, in terms of total LNG consumption, the transportation sector is likely to remain small for some time.

5. 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.

The life cycle emissions of LNG should be taken into account when developing future policies or initiatives. Whilst LNG does increase the lifecycle emissions of natural gas, the majority of emissions in the lifecycle are still generated at the point of use (eg: in a power station) and, even with the additional emissions associated with LNG shipping and liquefaction, the total GHG emissions are still much lower from the generation of electricity from natural gas when compared to coal. Thus, with the global flexibility of LNG, natural gas can have a powerful impact in lowering GHG emissions.

There are various international studies on the life cycle GHG emissions of the LNG supply chain. The 2014 US Department of Energy report* concludes that power generation in Europe from U.S. imported LNG to replace coal-fired generation would have lower life cycle GHG emissions. The 2015 Carnegie Mellon University** study indicates that export of U.S. LNG to Europe could even reduce emissions compared to Russian pipeline gas to Europe (due to Russian pipeline leakage) and would almost halve GHG emissions when displacing coal in power generation, as illustrated in the graph below.



*'Life Cycle Greenhouse Gas Perspective on Exporting Liquefied Natural Gas from the United States', US Department of Energy, 2014.

** 'Life Cycle Greenhouse Gas Emissions from U.S. Liquefied Natural Gas Exports: Implications for End Uses', Carnegie Mellon University, 2015.

6. Storage

Internal market constraints and challenges for 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?

Storage has the opportunity to provide additional security of supply. The challenges are in the level and volatility of overall gas demand and the associated level and type of storage.

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)?

We have no evidence to suggest that current market and regulatory conditions are not adequate.

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

In the UK, "Operating Margin" payments have been useful in the past, although it is important that they are suitably calibrated to a level which does not impede commercial operations.

Storage Infrastructure

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?

Similar to our view on LNG infrastructure, we do not believe there is an optimal level for storage. Such a concept is only likely to distort the market mechanism and increase costs.

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

We have no evidence that further EU action is needed.

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?

Again, similar to our view on LNG infrastructure, the risk of stranded assets applies where consumers bear the costs of any inefficient investment in price-regulated infrastructure. The development of storage is therefore better left to market-led commercial investments.

As above, investments that might have been made into gas storage infrastructure will not automatically be switched into renewable investments, in the event of the storage investment opportunity being taken off the table so the implication that gas storage investments might crowd out renewables is false.

Regulatory framework and potential barriers for storage

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

We have no view to express.

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?

We have no view to express.

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?

We have no view to express.

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.

We have no view to express.

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.

We have no view to express.