T&E responses to consultation on an EU strategy for LNG and gas storage

September 2015

Summary

Natural gas is a fossil fuel. Even if every car, truck and ship would use natural gas, the transport sector would still be emitting greenhouse gases. Natural gas cannot deliver the decarbonisation that the sector needs to achieve the EU climate goals up to 2050. Even if some argue that it could be a transition fuel, its potential GHG benefits are limited and certain aspects such as methane slip throughout the life cycle of the fuel might jeopardise any potential reductions. Investing in this technology would divert necessary resources from truly low-carbon alternatives in the transport sector and would create lock-in effects. Besides, creating extra demand for natural gas in the sector would increase the energy dependence of the EU. Public resources for energy transition in transport should go where it offers the greatest public benefits – improved efficiency and sustainable electrification.

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 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?

The biggest message from the Energy Union communication is the need to reduce dependence on gas imports through pipelines. LNG is perceived as a solution to this problem. However, the principle of "efficiency first" should be given priority over the development of new infrastructure. The private sector is free to invest in new LNG terminals and infrastructure, but it should not count on public support of any kind. Subsidies to all fossil fuels, including natural gas, should be eliminated. In the same vein, the LNG strategy should make clear that using natural gas (LNG) will not be subsidized for use in the transport sector. Additional LNG imports would be better used to reduce dependence on pipelines, rather than cater for extra demand in transport. If the EU wants to improve its energy security, creating new demand for natural gas does not seem to be the way out.

Natural gas is not a bridge fuel towards sustainable transport; it is another internal combustion-engine reliant, largely imported fossil fuel which on a lifecycle basis emits greenhouse gas emissions comparable with oil – especially in liquefied form – when the whole life cycle is analysed and methane slip is considered. Even in a perfect world where all potential issues, including methane slip, are addressed, it would deliver a few percentage points of GHG emission reductions compared to liquid fossil fuels used in

transport. Publicly supporting infrastructure to be used by an alternate fossil fuel would go against the principle of decarbonisation of the transport sector in the following decades. The EU would be locking in to an infrastructure that is not expected to be used if we want to truly tackle climate change. It would just be postponing a transition to clean transportation.
In addition, where taxes on natural gas exist, they are typically already much lower than diesel taxes. Politicians should not try to force gas in with even more subsidies by way of tax breaks or support for refuelling infrastructure. Public resources for energy transition in transport should go where it offers the greatest public benefits – more energy efficiency and sustainable electrification.

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?

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.

T&E is certain of the threat that LNG means for climate change. While studies show how the use of LNG, for example in the marine sector, would result in a reduction of other air pollutants such as NOx and SOx, the result for GHG emissions it is not so positive. In ideal conditions, GHG emissions are not as high as HFO or MGO. However, there are two issues (Brynolf et al., 2014a, Lowell et al., 2013 and Meyer et al., 2011) which make LNG harmful: the high GWP of natural gas and the recurrent risk of methane slip, which occurs very often during the production, distribution and operational stages. When taking into account upstream emissions, it is still uncertain if the GHG emissions of LNG will be lower than in the current situation, as natural gas production pathways can be "relatively energy intensive compared to petroleum pathways". (Thomson et al., 2015). Even during the combustion itself of LNG in the shipping sector, reductions delivered are considerable but not enough to decarbonise the sector. In cases where the production and distribution are not properly managed, it could be even worse from a climate change perspective than using HFO or MGO.

Table 1: LNG emission factors (DEFRA, 2015)

Fuel	Emissions per GJ - Net CV			
	kg CO_2	kg CH_4	kg N_2O	kg CO_2e
LNG	56.81	0.0034	0.0001	56.93
Reduction versus HFO (%)	28%	-182%	95%	29%
Reduction versus MGO (%)	24%	-182%	95%	25%

Notes: Negative values represent increases in emissions.

Another example of specific issues which concern transport and sustainability is the use of LNG as a fuel for trucks. There seems to be an underestimation of the methane leakage that might occur at all the stages of the LNG usage for this type of vehicle – production, distribution and use as fuel. A new study by the International Council for Clean Transportation contains several high-level conclusions which point in this direction. The study identifies first that minimizing overall well-to-wheels leakage is the key determinant in whether trucks using natural gas will offer long-term benefits as part of an overall shift to a more efficient and lower-carbon heavy-duty vehicle fleet. Keeping well-to-wheel natural gas leaks at or below 1 percent throughout the supply chain is critical to ensuring a climate benefit. Second, innovation will be needed for natural gas trucks to keep pace with diesel and gasoline engine efficiency improvements and thus to maintain their carbon reduction benefits, although the effect is less critical than reducing methane leakage.

(http://www.theicct.org/assessment-heavy-duty-natural-gas-vehicle-emissions-implications-and-policy-recommendations)

In the case of passenger cars, the same issues as for shipping and heavy-duty vehicles arise: limited – if any – GHG reductions, methane slip and lock-in risk. The difference is that in this mode of transport the solution is readily available: sustainable electrification.

In conclusion, T&E believes that before the massive implementation of LNG in Europe, further environmental, climate and innovation considerations must be analysed in detail.

- The reduction of GHG emissions is not evident and needs to be tackled. Its production, distribution and use as fuel for transport generates CO2 emissions and even more when considering methane slip/leakage, phenomena which occur with great frequency. Methane slip is often considered in the available literature as a risk during the LNG operational phase as a fuel for marine vessels or lorries, but leakage in the early distribution phase is frequently overlooked. However, the GWP (global warming potential) of LNG (=methane) is very high at all stages, which means it is a barrier to the decarbonisation of transport and may even aggravate the problem of climate change.
- The deployment of LNG as a regular and generalized fuel for lorries and marine vessels is a barrier for further investment in R&D and the development of more sustainable low carbon alternatives for both these sectors. The implementation of LNG as a generalized fuel will result in massive investments in infrastructure development, adaptation of engines and machinery in general, as well as capacity building. The life-span of LNG as a general fuel will inevitably be extended to pay off the initial investment, thus creating a barrier for investment in innovation and the development of other sustainable low-carbon fuels. The risk of lock-in and stranded assets is too large to be ignored. If stakeholders within the private sector would push for its use in transportation, a proper regulatory framework would first need to be in place to ensure that natural gas does not receive any type of public support through tax breaks or support for infrastructure development.
- It should not be forgotten that LNG – natural gas - is still a **fossil fuel**. It still contributes to global warming and its production pathways are energy and resource intensive. This is not consistent with the objectives of the upcoming (beginning of 2016) European Commission communication on decarbonisation of the transport sector. Moreover, switching to LNG will not help the EU to achieve the 60% reduction goal by 2050, established under the EU's White Paper on Transport.

Further information

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