

Fossil Fuel Prospecting, and use of LNG as an Energy Carrier, in the Context of Irish Climate Action

Opening statement for the Oireachtas Joint Committee on Environment and Climate Action

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I thank the Joint Committee for the opportunity to provide evidence on these important topics. I am a Full Professor in the Faculty of Engineering and Computing at DCU, with a research focus on national energy systems decarbonisation in the context of the Paris Agreement.

I shall comment first on oil and gas prospecting.

The temperature goal of the Paris Agreement effectively commits to a corresponding, finite, global limit on further emissions of carbon dioxide from all human activities, including fossil fuel combustion. Global energy systems now have to be fully and rapidly decarbonised within that constraint. However, *already* identified and characterised fossil fuel reserves would, if fully used, significantly exceed this limit. This was a key finding of the International Energy Agency in its report [Net Zero by 2050](#) in May 2021, which stated bluntly that “... [b]eyond projects already committed as of 2021, there are no new oil and gas fields approved for development in our [Paris aligned] pathway and no new coal mines or mine extensions are required.”

Reflecting this global situation, under the terms of the [Climate Action and Low Carbon Development \(Amendment\) Act 2021](#), no new licences may be issued for oil or gas exploration in the Irish territory. There remains a *legal* possibility that legacy licences issued before this Act came into force might still lead to development of additional fossil fuel resources: but it must be emphasised that any such development would now clearly conflict with effective global climate action.

The only currently active oil or gas extraction in Ireland is from the [Corrib natural gas field](#). Extraction from this field peaked in 2018, when it accounted for over 60% of domestic consumption. However, supply is already declining quite rapidly, and accounted for only 26% of consumption in 2022. The field will likely be largely exhausted by 2030. However, it is important to emphasise that this does not, in itself, provide any argument for promoting development of additional fossil fuel resources. On the contrary, it reinforces the imperative to fully decarbonise our energy system as rapidly as possible, and specifically to maximise the use of secure, indigenous, *renewable* energy. That does raise separate questions about the specific technologies required to deliver “on demand” energy from variable renewable sources such as wind and solar. I would be happy to address that further in discussion if the Committee wishes.

I will now turn to discussion of [LNG](#), which is quite separate from questions of fossil fuel prospecting or extraction.

LNG is not a distinct type of fossil fuel, and does not occur in nature. Rather it is an engineered *state* of natural gas, where it is cooled to a very low temperature (approximately -162°C) such that it condenses into liquid form. This can facilitate long distance transport, particularly by sea. However, liquefaction is an energy intensive process, so there are significant energy losses associated with this process. LNG can also function to some extent for temporary *storage* of natural gas: but this requires continuing energy input to maintain the refrigerated liquid state: that is to say, progressively larger losses as the storage time is extended. All these losses lead to greater carbon dioxide emissions intensity (per unit of energy actually used) for LNG compared to direct transport and use of natural gas in the gaseous state.

Currently in Ireland, there is [some small scale use of LNG](#) (imported in containerised tanks and transported by truck) for specific industrial use, in locations where there is no connection available to the national gas network. However, there is no facility for large scale LNG importation and regasification to feed into the gas network itself. Accordingly, current supply of networked natural gas is from a combination of the Corrib extraction and two gas pipeline interconnectors to the UK grid (the latter also supplying Northern Ireland and the Isle of Man). As Corrib depletes further, the balance will shift progressively more toward the UK interconnectors. However: note that this is in a period where total natural gas consumption should decline significantly, consistent with our climate objectives, and specifically our statutory domestic carbon budget and sectoral ceiling constraints.

That said, the Russian invasion of Ukraine, and consequent major disruption of natural gas supplies in mainland Europe, raised new concerns for security of natural gas supply generally across the continent. While there already existed significant LNG import capacity in both mainland Europe and the UK, the war has led a number of countries to move rapidly to further diversify supplies by deployment of additional LNG facilities including both fixed (onshore) import terminals and floating storage and regasification units (FSRU). At face value that raises a reasonable question as to whether Ireland should also deploy some form of LNG infrastructure. This issue was identified as central to the recent [national review and consultation on the general security of supply of gas \(and electricity\) in Ireland](#). I understand that, arising from this, a new Government position on security of supply will be published imminently. I do not want to pre-empt those conclusions here, but there are a few points that bear emphasising:

- Natural gas imported to Ireland from the UK is primarily extracted in the UK and Norway. Ireland is thus not *directly* exposed to disruption of natural gas supplies from Russia to mainland Europe.
- Nonetheless, the UK natural gas grid is strongly interconnected to the European grid. Accordingly, Ireland's security of supply is *indirectly* exposed to disruptions in mainland Europe; however, by the same token, that also means that Ireland *already benefits* from existing and planned LNG supply infrastructure in the UK and mainland Europe that secures and diversifies supplies.
- Against the background that effective climate action requires rapid reductions in all fossil fuel use, including natural gas, there are now significant concerns of emerging *over-capacity* in European LNG import infrastructure. A [recent report](#) states that "... according to a new analysis by the Institute for Energy Economics and Financial Analysis ... European countries may have hugely overshot the mark, with current planned import capacity far exceeding likely LNG demand by 2030."
- While, following Brexit, there is a formal [issue for Ireland in meeting the so-called EU "N-1 infrastructure standard"](#) this does not reflect any material change to the underlying plant or technical risk. The most cost effective way of addressing this particular issue is therefore likely to be through appropriate political rather than technical measures.
- Deployment of LNG infrastructure in Ireland on any *commercial* basis would necessarily create perverse incentives to *increase* rather than reduce overall natural gas consumption; and, further, would risk exposing Ireland to direct importation of *fracked* natural gas, particularly but not exclusively from the US. As previously [discussed in this Committee](#), the upstream emissions profile and wider environmental impacts of fracked natural gas are substantially higher than for "conventional" natural gas: introducing it into the Irish system would therefore be a highly retrograde step.

In conclusion, I do not want to downplay in any way the ongoing genuine and serious risks to Irish energy supply. However: these risks arise directly from having developed an energy system that is chronically reliant on imported fossil fuels. The solution to that cannot plausibly be by way of doubling down on such a failed strategy. Further, while the short term risks of disruption to energy supplies are real and significant, on any medium or long term basis they are entirely dwarfed by the risks of catastrophic climate disruption. The recent assessment that global average surface temperature increase [will likely already breach 1.5°C above pre-industrial, on a full year basis, within the next 5 years](#) reflects the near term severity of our predicament. Whether we wish it or not, the fossil fuel era is already ending and we are entering into an age of consequences. The question for Ireland is whether to exit fossil fuel dependency now, in a rapid, proactive and managed way, or to dither and risk being forced into much more difficult, chaotic and painful responses in the near future.