Irish Academy of Engineering
Review of Government Report on:
Security of Energy Supply of Ireland's Electricity and Natural Gas Systems

Press Briefing – Questions and Answers

1) Why is the Academy so concerned about this report?

Ireland has sleepwalked into a situation where there is a serious threat to the reliability of its energy supply due to a lack of the backup gas-fired generation capacity necessary for periods of low wind energy production.

Assuming that this problem will be addressed urgently, the Academy remains extremely concerned at the threat to the medium and long term reliability of the power system due to the single point of connection of the national gas supply at Moffat in Scotland.

Ireland has no storage facility for natural gas, an interruption of the supply at Moffat could shut down Irish gas supplies (and possibly much of the Irish economy) in 20 minutes.

The proposals in the report to reduce this risk are technically flawed and unrealistic in their assumptions around the commercialisation of new technology.

The report should not be used to underpin future energy policy development.

2) Where will Ireland get its gas supply in 2030?

Current Government policy forbids the licensing of any further gas production in Ireland. By 2030 the Corrib Field will be depleted, and Ireland will obtain *all* its gas from the European gas grid (including the UK) via the Moffat terminal in Scotland.

3) Why is the government opposed to importing Liquified Natural gas (LNG)?

The government is opposed to the use of natural gas (produced almost exclusively in the United States) from shale deposits using the hydraulic fracturing technique ("fracked gas"). It fears that such gas might be imported into Ireland via an Irish LNG import terminal.

4) Why is the government opposition to fracked gas imports entirely meaningless in the context of 2030 gas supplies?

In 2021 the US supplied the European gas grid with approximately 6.5% of its requirements. This was primarily fracked gas. Since Ireland currently obtains approximately 70% of gas supplies from the European gas grid, Irish consumers are already using fracked gas.

The war in Europe has resulted in Russian gas supplies being cut off, these are unlikely to be restored and Europe will greatly increase its importation of LNG from around the world. The US has already agreed to double its exports of LNG to Europe by year end (primarily fracked gas). By 2030 it is almost certain that at least 20% of gas in the European gas grid will be fracked gas.

By 2030 Ireland will be 100% dependent on the European gas grid for its gas supplies. Irish consumers will consume significant quantities of fracked gas regardless of which import terminal it arrives at.

The existence of an LNG import facility in Ireland will not change the amount of fracked gas in the European gas grid (including Ireland's gas grid) one iota.

5) Why is the government's proposal for strategic LNG storage using a Floating Storage and Regassification Unit (FSRU) flawed?

FSRUs provide a convenient and cost effective approach to importing LNG. They are designed to transport gas from A to B reasonably quickly. They are not designed to provide strategic gas storage because of an important physical phenomenon known as "Boil Off Gas" (BOG).

FSRUs typically lose up to 0.2% of their stored gas volume each day in BOG. An FSRU used as proposed in the report could lose 20% of its cargo over a season unless the gas is captured and injected into the grid. If this is done, then the FSRU is effectively an import facility with artificially constrained delivery. It is not clear what exactly the government intends with such a facility.

At times of peak demand, a single FSRU would provide less than 4 days gas supply. This is not sufficient to meet Ireland's gas security requirements.

6) **Why is the use of the Kinsale Field as a gas storage facility by 2030 entirely unrealistic.**

The Kinsale field has not only been decommissioned; it has also been abandoned. Any attempt to reuse the field must start at square one. The effort now required would be similar to the original development and is not possible in the timescale envisaged.

Gas storage would require the provision of large quantities of "cushion gas" which constitutes an expensive upfront investment. The report does not provide any cost estimates for this.

7) **Why is the government's proposed reliance on green hydrogen for electricity generation in 2030 entirely unrealistic?**

Green hydrogen produced from water using hydrolysis is likely to be a very useful energy vector in the future, particularly for heavy transport. It could conceivably be used to power gas fired generation as a backup to intermittent renewable energy generation although this overall process would be highly inefficient.

There are two fundamental problems with the government proposals:

- Despite the enthusiasm of policymakers, the timescale for scaling up commercial application of this technology is most likely 15 years and possibly even more. The report suggests constructing an electrolyser facility in excess of 1,600MW by 2030 at a cost of €1Bn. Such a facility is 80 times larger than the largest currently available electrolyser facility available in the world.

- Hydrogen produced at times of excess wind power availability must be stored for use when backup generation is most required (periods of low wind power availability). The only proven large scale storage technology for hydrogen today utilises salt caverns in suitable geological formations. Unlike other European countries, the Republic of Ireland does not have any suitable geological formations for such storage.

In addition to the above the report assumes, incorrectly, that sufficient hydrogen can be produced at a marginal electricity price of zero, it says nothing about the possible location of production facilities nor the infrastructure for transporting the hydrogen.

The Academy of Engineering is very supportive of the development of green hydrogen as an important future vector for energy delivery. But energy policy must be based on realistic development timescales.

This "policy-by aspiration" approach must be firmly discarded if Ireland is to make realistic affordable plans for the future.

8) What is the effect of current energy policy uncertainty on the Iris economy?

The current uncertainty is a major concern to large Foreign Direct Investors (FDI) and impacts negatively on the decisions of such investors to invest in Ireland. This has never previously been a concern for Irish FDI.

Two large international energy investors (Equinor and Shell) have walked away from projects aimed at building major capital-intensive offshore renewable generation facilities. (Equinor confirmed that its reasons for withdrawal were based on frustration with Irish permitting regulations). The report does not set out any criteria for reform of the planning and permitting system.

9) What effect will the actions proposed in the report have on Irish electricity prices in 2030?

Ireland already has the highest electricity prices (pre-tax) in Europe. The report does not provide any information on the likely evolution of Irish electricity prices.

10) How do policy actions in Ireland compare with Germany, the country most immediately impacted by the curtailment of Russian gas supplies?

Germany enacted legislation on 1st June 2022 to accelerate the importation of LNG and plans to have 5 floating import facilities (FSRU) in operation by the end of 2023 – including 2 by the end 2022/beginning 2023.

The new German legislation temporarily exempts FSRU development from public procurement processes and removes the requirement for an Environmental Impact Assessment (EIA) for such facilities.

In Ireland the Energy Security Report asses the option of a floating LNG terminal for Ireland as "*possible but challenging by 2025*".

11) What are the Academy's recommendations?

The Academy believes that the current report should not be used to underpin future policy decisions.

In the Academy's view the most important immediate action to be taken is the encouragement of LNG import facilities

The Academy will respond in more detail to the Government's report.