Date: 15/04/2022

Response to Consultation on the proposed revision to the Gas Directive and the Gas Regulation and proposals for a Regulation on Methane Emissions

Dear Sir/Madam

Recognise complexity of the hydrogen market

The widespread use of hydrogen in Ireland can happen and must if we are to achieve net-zero, in our view. The introduction of hydrogen as a clean energy vector is a major policy and business challenge—one of the greatest that Ireland currently faces—however.

If we consider a simple overview of the potential hydrogen market, it is apparent why the challenge exists. Hydrogen can be produced from multiple sources: grid electricity (e.g., curtailed, low demand periods, or general demand periods), direct connection to renewables (e.g., a wind farm connected to an electrolyser), and others. Hydrogen has multiple uses: domestic heating, transport, backup power, and industrial (feedstock and heating). Today, there is only a small market for industrial hydrogen use in Ireland.

Structure policy to enable all uses to develop

Policy and incentives should be structured to enable those multiple sources and uses because each can help solve different problems. For instance, using curtailed wind for backup power supports the resilience of the electricity grid while direct connection production diversifies Ireland's energy sources, and—in a net zero world—is probably the most efficient way of powering heavy-duty transport[1]. It is important that future incentives do not undermine existing incentives. For instance, if a mechanism incentivises hydrogen for transport, a later mechanism for, say heat, should not encourage the migration of hydrogen away from transport uses.

Policy priorities should be on green hydrogen. Green hydrogen can be a source of indigenous energy, it has the best environmental profile (zero CO_2) and production in the short-term can contribute to learnings as Ireland explores the enormous potential of export hydrogen.

Symbiosis of uses and the gas grid as a sink

As an industry group focussed on mobility, we see the use of, say, hydrogen stored in the gas grid to be unlikely in the medium term. This is because hydrogen fuel cell vehicles require a high purity of hydrogen and blending hydrogen with methane in gas grids is not advantageous to this, due to currently high deblending costs. Dedicated hydrogen grids could be an attractive option for hydrogen in the future.

So, one could conclude that blending hydrogen in the gas grid is not relevant to transport. That is not the case in our view, however. First, we believe that the production of hydrogen for one use case will benefit the other use cases—it is about developing the ecosystem and building expertise.

[1] 'Eliminate not Abate: Hydrogen Efficiency Advantages for Zero CO2 Transport', Hydrogen Mobility Ireland, Jonathan Hogan, April 2022 (https://h2mi.ie/publications/)

But beyond this, the gas grid could have excellent value for early transport projects. Consumers will not buy and drive vehicles if they cannot see perfect reliability of their chosen power source. The early market for hydrogen mobility will not look like the existing petrol or diesel market, there will not be multiple backup options. Supply will be produced for specific demand. More explanation is in the Appendix.

For this reason, it may be necessary to produce more hydrogen than is used in the very early projects. A potential use of that excess could be injection to the gas grid. From the producer's perspective, the price achieved may not be as attractive as using it in a vehicle (depends on contracts and incentive mechanisms), but the ability to achieve some revenue and use the energy would be welcome and provide a backstop.

Focus on business ready and most economically attractive

Achieving large scale hydrogen use in Ireland will be a journey for government, the Irish people and the companies developing the supply chain. Hydrogen mobility is the perfect option to start to develop the skills and expertise in Ireland for constructing and operating hydrogen infrastructure before developing larger scale projects for energy storage and hydrogen export:

Hydrogen fuel cell technology for mobility has already been developed, evaluated and proven in deployments across Europe and the world.

Hydrogen produced for mobility is the highest value use of hydrogen used to reduce emissions. This minimises the government support needed to initiate hydrogen activity in Ireland, while also building the scale of hydrogen supply in Ireland, which will reduce costs to other hydrogen uses. This is shown below:

Summary of response

The key points in this response are:

- Structure early incentives so that future incentives for different use cases do not undermine initial use cases.
- Focus on green hydrogen.
- Permit the use of the gas grid as a sink for early mobility projects.
- In the initial period of market development, focus on the most business ready and economically viable solutions—the mobility market ticks these boxes—because they will speed up development of the whole ecosystem.

Yours Sincerely,

Jonathan Hogan

On behalf of Hydrogen Mobility Ireland

Appendix: Establishing an early hydrogen mobility market – why a sink is needed

Early hydrogen mobility deployments require a significant capital investment to create the new infrastructure for producing, distribution and dispensing hydrogen for mobility. In contrast to oil and gas this is characterised by high, fixed upfront costs (renewable power, electrolyser, distribution trailers, HRS). This type of investment is challenging without visibility of demand, creating a chicken and egg conundrum, which restricts expansion of the sector without public sector intervention: Fleet operators do not want to purchase vehicles due to the lack of infrastructure and risk of not being able to reliably refuel. Infrastructure providers do not want to develop refuelling stations as a lack of vehicles on the road risks not guaranteeing offtake for hydrogen produced. Supply is therefore created to match whatever demand visibility is available to the project and hence it is tricky to develop infrastructure for scale.

Establishing an early hydrogen mobility market in Ireland will face a number of challenges. To commercialise the market consumer confidence will need to be generated in hydrogen technology. This will come from:

- Sufficient coverage of a refuelling station network for viable operations. This will come from a planned deployment of multiple stations in strategic locations.
- High reliability of hydrogen supply. This will come from ensuring sufficient redundancy in hydrogen supply chains and at hydrogen to refuelling stations in case of down time at the stations themselves and upstream supply chain components.
- Fleet operators in Ireland, having hands on experience with the new technology before it is rolled out at scale.
- Visibility of hydrogen supply for lifetime of vehicles. Commercial vehicles typically operate for 10+ years. Consumers will need confidence that hydrogen fuel will be available for the full lifetime of these operations and guarantee of supply in times of low green hydrogen production from low wind supply.

About Hydrogen Mobility Ireland

Hydrogen Mobility Ireland is a group of stakeholders looking to develop the use of hydrogen for transport in Ireland to help meet the challenge of decarbonising transport whilst keeping transport practical and affordable. Hydrogen Mobility Ireland includes industry members from across the transport and energy industries and has been informed by input from a range of policy stakeholders from the Republic of Ireland and Northern Ireland.