

Date: 20/05/2022

Response to Public Consultation on the Renewable Fuels for Transport Policy

Dear Sir/Madam,

Our response focuses on the use of hydrogen for mobility.

Summary of Hydrogen Mobility Ireland's recommended actions

The inclusion of hydrogen within the Biofuels Obligation Scheme (BOS) is a positive and the value of the credits, 4x, reflect the qualities of hydrogen and the early stage of the mobility sector. But there are limitations. In contrast to fuels such as biodiesel and bioethanol:

- Hydrogen is unable to leverage existing infrastructure, so the industry must be developed from scratch. The first hydrogen mobility projects require high risk investments.
- Hydrogen production and supply is characterised by costs that are heavily front-loaded, while equipment will be operated for more than 10 years. Companies seeking to invest in hydrogen (producers, infrastructure providers and users) require visibility of revenues through the lifetime of the assets.

The support for green hydrogen proposed through the BOS, carries little certainty in terms of duration and monetary amount beyond a few years.

Yet hydrogen can deliver zero particulate emissions and zero carbon dioxide. It is a storable fuel, which means it 1) enhances security of supply, and 2) provides the operational certainty that many commercial users require. Its use would diversify Ireland's energy sources (complementing battery electric vehicles in the future).

Recommended actions

- **Flexibility for hydrogen in the BOS:**
 - **Relax additionality** rules around the use of renewable generation
 - **Permit the use of grid electricity** for hydrogen production.
- **A hydrogen strategy and separate legislation** that:
 - Provides appropriate dedicated supports for 1) hydrogen infrastructure (e.g., vehicles, hydrogen refuelling stations) and 2) for hydrogen as a commodity (like the BOS does).
 - Sends clear signals of the future role of hydrogen in Ireland to industry with ambitious targets.
- **10+ year support commitment** for hydrogen projects to provide certainty to companies willing to invest in long-term, strategic infrastructure, in the same way that onshore wind, offshore wind, and solar are supported.
- **Reward zero emissions** with an economic value for this factor.

Without these measures, particularly the flexibility in the BOS, it will be difficult for early hydrogen mobility projects to develop. This would leave Ireland lagging Europe and putting us at risk of missing EU targets. For instance, having hydrogen refuelling stations every 150km on the major EU (TEN-T) road network, as per The Fit for 55 package which may be transposed into a Regulation by the end of this year.

In addition, delaying the introduction of hydrogen through mobility risks missing our decarbonisation targets. Hydrogen is a key option for decarbonising heavy duty transport and is important for the whole energy system decarbonisation through use in hard to electrify sectors (industry, heat) and providing a means for long duration energy storage.

Limitations of the Biofuels Obligation Scheme for hydrogen

Hydrogen is characterised by upfront capital costs

Early deployments require a significant capital investment to create the new infrastructure for producing, distribution and dispensing hydrogen for mobility. In contrast to, say, oil and gas, hydrogen for mobility is characterised by a high proportion of fixed upfront costs (renewable power, electrolyser, distribution trailers, hydrogen refuelling stations), and low ongoing costs.

These factors, coupled with the incumbent option being lower cost for users, makes investing in hydrogen for mobility challenging; Fleet operators do not want to purchase vehicles due to the lack of infrastructure and risk of not being able to reliably refuel, while infrastructure providers do not want to develop refuelling stations as a lack of vehicles on the road risks not guaranteeing offtake for hydrogen produced. At the same time, initial hydrogen refuelling stations should be constructed with capacity to accommodate growth, so in the early years, they would not operate at full capacity.

One could argue that many of the point above are 'infrastructure' issues, whereas the Biofuels Obligation Scheme is directed to incentivising the uptake of commodity fuels. For hydrogen, the infrastructure and the commodity need to be incentivised as one package.

Hydrogen refuelling is a different business to diesel refuelling

Because of the dynamics outlined above, supply will directly match specific demand in early projects, potentially tying users to specific suppliers for multiple years. This is different to the established petrol and diesel forecourt model, where vehicle users are free to use multiple suppliers—even when no business agreement exists—and the commodity is part of a global market. The early hydrogen refuelling market will therefore not replicate the diesel market.

Challenges facing the early hydrogen mobility market

To commercialise the hydrogen market, consumer confidence needs generating. This will come from:

- A refuelling network, with stations in strategic locations that enable viable commercial vehicle operations.
- 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 need confidence that hydrogen fuel will be available for the full lifetime of these operations and a guarantee of supply in times of low green hydrogen production from low wind supply.
- High reliability of hydrogen supply, this requires ensuring sufficient redundancy in case of down time at the refuelling stations as well as upstream supply chain components.

Summary of BOS limitations

From the discussion above, it is evident that hydrogen is different from biofuels. Biodiesel and bioethanol integrate with existing markets, which has developed over decades. In contrast, hydrogen for mobility must be created from scratch.

Infrastructure for hydrogen does not exist. To develop it, investors will be looking at business cases that operate for 10+ years. Hydrogen Mobility Ireland hopes that grant funding will be available for

infrastructure (e.g., hydrogen refuelling stations, vehicles, and electrolyzers) in addition to BOS credits.

Flexibility needed to make the BOS work for hydrogen

The inclusion of hydrogen in the Biofuels Obligation Scheme (BOS) as detailed in the Renewable Fuels for Transport Policy Statement 2021 – 2023 can help provide fuel cost parity for early projects, but without the actions below, it will be extremely difficult to see a hydrogen mobility market develop, in our view.

Additionality rules

Strict additionality rules will slow down early hydrogen vehicle deployments. Full renewable additionality requirements will mean hydrogen vehicle deployments must coincide with developments of new renewable facilities. This is challenging to align. New renewable projects typically have lead times of over 5 years and will sell power generated through power-purchase-agreements (PPAs) that are negotiated long before commissioning. Therefore, strict additionality rules could delay first hydrogen deployments to the late 2020's or later.

Early Renewable Energy Feed-in Tariff (REFIT) energy projects are approaching the end of their 15-year price support period, yet the assets themselves can operate for more years. Allowing electrolyzers to connect to these assets without strict additionality requirements would be advantageous to hydrogen mobility projects and the REFIT assets.

Allow use of grid electricity

Grid electricity can be a source of low-cost power for electrolytic production of hydrogen during periods of high renewable generation and low electricity demand. The ability to use grid power also mitigates the need for large quantities of hydrogen storage and helps to balance grid renewable intermittency. Grid-connected electrolyzers can also make use of curtailed wind power from other wind assets on the grid. This will help improve the economics for early hydrogen projects, by increasing the electrolyser utilisation and accessing low-cost power.

It is therefore beneficial for hydrogen if there are not strict rules on electricity sourcing for green hydrogen production, e.g., only permitting electrolyzers directly connected to renewable assets with no grid connections. Allowing electrolyzers to use grid power will help early hydrogen projects.

Hydrogen Mobility Ireland has developed plans that would see the rollout of 20 hydrogen refuelling stations and serving 4,500 commercial vehicles. We estimate that by 2030 this would require c. 300 MW of electrolysis capacity. Even if we assume all the electricity supply comes from the grid (in reality it may be a mix of grid electricity and direct connection to renewables), this is small in the context of the total renewable generation forecast by 2030 of over 11GW¹. The Climate Action Plan targets up to 15.5GW renewable electricity generation.

10-year+ commitment

Electrolyzers, compressors, hydrogen storage, hydrogen refuelling stations, and vehicles are all assets that can have 10+ year asset lifetimes. The BOS carries no guarantee of duration of support.

¹ " All-Island Generation Capacity Statement 2021-2030, EirGrid Group

This makes constructing the required infrastructure risky on the basis that BOS certificates will underpin the costs for an indeterminate period.

Hydrogen mobility projects need multi-year support in the same way that other renewable energy technologies do (e.g., onshore wind, offshore wind, solar).

Reward air quality

In addition to decarbonising transport, we must improve air quality for the citizens of this country. Hydrogen fuel cell vehicles are zero emission and can be part of the solution to make this happen. An economic value should be placed on zero emissions, e.g., no nitrogen oxides.

Yours Sincerely,

Jonathan Hogan

On behalf of Hydrogen Mobility Ireland

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.

Responses to specific consultation questions

The challenges and opportunities presented by these ambitious targets – with reference to achievability, technical implementation considerations, and availability of sustainable supply whether imported or indigenous.

The ambition for significant increase in the use of renewable transport fuels provides an opportunity to accelerate the introduction and uptake of hydrogen mobility that provides both air quality and CO₂ emissions benefits. The uptake of hydrogen mobility is the first step to unlocking the other benefits of hydrogen in Ireland for example for long duration energy storage, export of Ireland's renewable resources and the decarbonisation of other hard to electrify sectors (e.g., industry, heat)

However, the Biofuels Obligation Scheme does not provide sufficient incentive to encourage the rapid roll-out of hydrogen mobility to levels that will make a significant contribution to Ireland's targets above. As highlighted above, in the section 'Limitations of the Biofuels Obligation Scheme for hydrogen', to catalyse the creation of the new infrastructure required to produce and supply hydrogen to vehicles requires long term certainty on the values of support.

If this dedicated support for hydrogen is made available, and funding is available to support the deployment of zero emission vehicles, then hydrogen production and use can be rapidly scaled to provide a significant contribution to renewable fuel targets.

With reference to proposals for a sub-target for renewable fuels of non-biological origin envisaged under the current European proposals for revision of the RED, that this could be implemented earlier in Ireland, e.g., from 1 January 2024.

Hydrogen Mobility Ireland would welcome a sub-target for Renewable Fuels of Non-Biological Origin (RFNBO), as a specific RFNBO target provides some extra protection to hydrogen producers on the future value of the BOS which will be less tied to the value of biofuels. However, as highlighted above, even with an RFNBO sub-target, Hydrogen uptake will still be limited by the factors set out in the section 'Limitations of the Biofuels Obligation Scheme for hydrogen' above. There will be a risk that further hydrogen producers come online (or other fuel types) and reduce the value of the BOS certificates. A dedicated hydrogen support scheme, as set out above, would provide much greater certainty to investors in hydrogen supply projects and enable the rapid introduction and scale-up of hydrogen in Ireland.

In addition to the proposals in the Policy Statement for credits to incentivise advanced and development fuels, what other measures could promote their supply and use in the transport sector?

The inclusion of hydrogen in the Biofuels Obligation Scheme (BOS), with a significant 4 x multiplier, is welcomed as an incentive for the supply of hydrogen. However, the BOS alone is not enough to incentivize the large-scale roll-out of hydrogen mobility, the reasons for this are set out in the section 'Limitations of the Biofuels Obligation Scheme for hydrogen' above. Instead, a dedicated

support scheme, which provides certainty of hydrogen support over the lifetime of the hydrogen infrastructure is needed.

Capital costs for hydrogen vehicles are also higher than fossil fuel alternatives, though they are reducing as manufacturing scale up increases. These means that to incentive the use of hydrogen, capital grant support is needed for hydrogen vehicles