An Roinn Iompair
Department of Transport

Development of a National Policy Framework for Alternative Fuels Infrastructure for Transport

Issues Paper

1. Purpose of this Paper

The purpose of this document and call for submissions is to invite written submissions from key stakeholders and all parties with an interest in the development, regulation and use of alternative fuels infrastructure in the transport sector.

Submissions received on foot of this issues paper will inform the preparation of an updated *National Policy Framework on Alternative Fuels Infrastructure for Transport*, in line with the requirements of the recently adopted Regulation (EU) 2023/1804 (AFIR) on the deployment of alternative fuels infrastructure, and repealing Directive 2014/94/EU, which applies across all EU Member states from 13 April 2024.

This updated policy framework will revise and replace the existing National Policy Framework on Alternative Fuels Infrastructure for Transport in Ireland 2017-2030, to reflect the recently established mandatory alternative fuels infrastructure targets and requirements that have been set out under AFIR, and the evolution in national policy and climate ambition since the adoption of the previous Alternative Fuels Infrastructure Directive (2014/94/EU).

The Department of Transport expects to advance and publish an updated draft policy framework for further consultation in the second half of 2024, with final policy frameworks required to be submitted to the EU Commission by 31 December 2025.

WHO IS THIS CONSULTATION EXPECTED TO BE OF INTEREST TO?

This consultation is open to all parties for comment, however, is expected to be of particular interest to those bodies who are (or who expect to be):

- involved in the manufacture, installation, ownership, use or operation of electric vehicle charging points;
- involved in the manufacture, installation, ownership, use or operation of liquefied methane refuelling infrastructure or hydrogen refuelling infrastructure;
- energy transmission and/or distribution system operators;
- regional and local authorities;
- public transport, freight and logistics transport operators, shipping operators, aviation services providers and airport and port authorities;
- involved in research & development in the transport and energy sectors; or
- other public sector bodies, businesses, industry and representative bodies in the transport and energy sectors.

HOW TO RESPOND TO THIS CONSULTATION?

This issues paper should be read alongside Regulation (EU) 2023/1804 in order to ensure a full understanding of the mandated requirements and questions posed.

In particular, respondents should familiarise themselves with a number of key provisions of the regulation, dependent on their particular areas of interest.

ELECTRIFICATION & RECHARGING INFRASTRUCTURE

- Articles (3), (4) and (5) relate to the mandatory fleet-based and infrastructure targets for recharging infrastructure dedicated to light-duty and heavy-duty vehicles on the TEN-T network, and the obligations around payment mechanisms, price transparency and accessibility applying to operators of publicly accessible recharging points.

- Articles (9) and (10) relate to the mandatory infrastructure requirements relating to shore-side electricity supply in maritime ports on the TEN-T network, and in inland waterways.

- Article (12) relates to mandatory targets for the supply of electricity to stationary aircraft at all airports on the TEN-T network.

- Article (13) relates to railway infrastructure that is not covered by the TEN-T Regulation (EU) 1315/2013 and the potential development of propulsion systems for rail sections that cannot be fully electrified, such as battery-powered trains, and any recharging infrastructure needs.

- Article (14) sets out key elements relating to electrification that are to be considered in each Member State's national policy framework, such as, supporting measures for captive fleets, public transport services, private recharging and potential use in the aviation and maritime sectors.

- Article (15) relates to certain reporting requirements, requiring inputs from transmission system operators and distribution system operators, on how the deployment and operation of recharging points could enable electric vehicles to further contribute to the flexibility of the energy system, including their participation in the balancing market, and to the further absorption of renewable electricity.

- Articles (19) and (20) relate to certain user information that must be displayed at recharging points, and the types of static and dynamic data that must be made available by operators of publicly accessible recharging points.

- Annex I summarises expected reporting requirements related to electrification to be provided in national progress reports.

- Annex II provides detail on technical specifications and standards relating to electrification.

HYDROGEN REFUELLING INFRASTRUCTURE

- Articles (6) and (7) relate to the mandatory infrastructure targets for hydrogen refuelling infrastructure for road vehicles, and the obligations applying to operators of publicly accessible hydrogen refuelling points.

- Article (13) relates to railway infrastructure that is not covered by Regulation (EU) 1315/2013 and the potential development of alternative fuel technologies and propulsion systems for rail sections that cannot be fully electrified, such as hydrogen-powered trains, and any refuelling infrastructure needs.

- Article (14) sets out further elements relating to hydrogen that are to be considered in each Member State's national policy framework, such as, supporting measures for captive fleets, public transport services, and the potential use of hydrogen in the aviation and maritime sectors.

- Articles (19) and (20) relate to certain user information that must be displayed at refuelling points, and the types of static and dynamic data that must be made available by operators of publicly accessible hydrogen refuelling points.

- Annex I summarises expected reporting requirements related to hydrogen to be provided in national progress reports.

- Annex II provides detail on technical specifications and standards relating to hydrogen infrastructure.

LIQUEFIED METHANE REFUELLING INFRASTRUCTURE

- Article (8) refers to liquefied methane refuelling infrastructure for road vehicles.

- Article (11) relates to the supply of liquefied methane in maritime ports.

- Article (14) sets out further elements relating to liquefied methane that are to be considered in each Member State's national policy framework, such as .

- Articles (19) and (20) relate to certain user information that must be displayed at refuelling points, and the types of static and dynamic data that must be made available by operators of publicly accessible liquefied methane refuelling points.

- Annex I summarises expected reporting requirements related to liquefied methane to be provided in national progress reports.

- Annex II provides detail on technical specifications and standards relating to liquefied methane refuelling infrastructure.

The Department would ask that all responses and submissions to this issues paper be forwarded to climateengagement@transport.gov.ie no later than close of business on Friday, 14 June, and entitled:

'AFIR Issues Paper: Response from [Organisation | Individual]'.

TERMS AND CONDITIONS

Respondents are advised that the Department of Transport is subject to the Freedom of Information Act 2014 and the European Communities (Access to Information on the Environment) Regulations 2007–2014 and the Data Protection Act 2018.

In making a response to this call for submissions, contributors should note that submissions received will be published online following the conclusion of the consultation and review period.

Should your response to this consultation incorporate any sensitive information or information which you would not wish to be released under FOI, AIE or otherwise published, please ensure to clearly indicate where your response contains any such information. This can include:

- personal information
- commercially sensitive information
- confidential information

For the avoidance of doubt, respondents should not assert confidentiality or commercial sensitivity over their entire submission but must clearly identify the specific sections containing such information.

The Department's privacy statement is available for further review here.

Contents

2. Background

The availability and supply of alternative fuels infrastructure in transport acts as a key support and enabling mechanism to the wider decarbonisation of the sector.

The recently adopted Regulation (EU) 2023/1804 (AFIR) on the deployment of alternative fuels infrastructure, and repealing Directive 2014/94/EU, sets out mandatory minimum levels of alternative fuels infrastructure to be deployed by Member States and applies across all EU Member States from 13 April 2024.

By ensuring that our transport systems incorporate a widespread and accessible network of recharging and refuelling infrastructure, AFIR seeks to ensure that we will be better placed to encourage the take-up of low- or zero-emission alternatives in the sector.

While the previous Alternative Fuels Infrastructure Directive (2014/94/EU) set out a framework for the deployment of alternative fuels infrastructure across the EU's Trans-European Network for Transport (TEN-T), uneven development of recharging and refuelling infrastructure across the Union, and the lack of interoperability and user friendliness of such infrastructure, led the EU to consider it appropriate to set out minimum mandatory infrastructure requirements for Member States in a revised Regulation, to support the development of a comprehensive and complete network of alternative fuels infrastructure.

The existing National Policy Framework on Alternative Fuels Infrastructure for Transport in Ireland 2017-2030, was developed in line with the previous Directive and its infrastructure targets were informed by the national vehicle fleet and transport energy usage profile as they stood in 2015. At the time of its publication, Ireland had just over 2,000 electric vehicles (EVs) on our roads, with petrol and diesel accounting for over 99% energy use in transport, with alternative fuels making up just a 0.84% share.

Since then, there has been a significant evolution in policy and the level of climate ambition at both national and EU level since the adoption of the original AFI Directive in 2014, with the *Climate and Low Carbon Development (Amendment) Act 2021* and the carbon budget programme and sectoral emission ceilings which followed marking a significant strengthening of the legislative framework for climate action and increase in the level of national ambition.

Under the measures set out in our Climate Action Plan, it is recognised that fleet electrification and the use of renewable transport fuels are expected to provide the greatest share of emissions abatement in the short to medium term. Improvements in vehicle technology and the electrification of our vehicle fleet form a critical component of our decarbonisation pathway. However, as was highlighted by the Sustainable Energy Authority

Ireland in their *Energy in Ireland 2023* report, Ireland's transport energy demand remains highly fossil dependent.

In 2022, 93.9% of road transport energy demand came from fossil fuels, with 68.6% coming from fossil-diesel and 25.4% coming from fossil-petrol. Road transport covers the energy demand of private cars, heavy goods vehicles, light goods vehicles, buses, taxis, etc., and accounts for 96% of transport emissions which fall within the carbon budget framework.

The remaining 6.1% of non-fossil energy in road transport comes mainly from the biofuels blended into the diesel and petrol fuels available from garage forecourts across the country. In 2022, 4.7% of road transport energy came from the biodiesel blended into our diesel, and 0.8% came from the bioethanol blended into our petrol. Electricity accounted for just 0.5% of road transport energy in 2022.

Irish Vehicle Fleet	2015	2022	% Change	Fleet Share
Private Cars	1,985,130	2,225,971	+12.1%	77.0%
Light Goods Vehicles	299,609	347,454	+16.0%	12.0%
Heavy Goods Vehicles	30,932	41,730	+34.9%	1.4%
Motorcycles	36,974	47,235	+27.8%	1.6%
Tractors & Machinery	89,153	79,486	-10.8%	2.8%
Other Vehicles	128,496	147,129	+14.5%	5.1%
Total Fleet	**2,570,294**	**2,919,005**	**+12.4%**	**100%**

Figure 1: Changes in the Irish vehicle fleet 2015 - 2022. (Source: D/Transport, NVDF)

As highlighted in a recent Transport & Environment's *State of European Transport 2024* report– ever increasing mobility has driven a surge in emissions, and since its peak in 2007, transport in the EU has been decarbonizing more than 3 times slower than the rest of the economy. At its core, the fundamental challenge facing the sector in terms of emissions reduction therefore is the tension between emissions reduction and economic growth.

While non-transport emissions in Europe have decreased 38% since 1990, transport emissions have grown by a quarter and represent the largest source of GHG emissions in the EU and are expected to account for a 44% share of all emissions by 2030 under current Green Deal policies.

We therefore need to urgently decouple the direct correlation between transport emissions and wider social and economic activity. For this reason, our focus is on pursuing measures to address travel demand in this first instance by pursuing policy measures that promote greater efficiency in our transport system, allied with significant investment in sustainable alternatives and incentives and regulatory measures to promote the accelerated take-up of low carbon technologies.

Achieving our climate ambition in transport will only result through a systemic change in our transport planning and behaviour, and from an integrated combination of measures that are premised on an 'AVOID-SHIFT-IMPROVE' framework to achieving greater transport sustainability.

AFIR and the use of alternative fuels in transport fall under the IMPROVE category of measures, addressing the efficiency of road transport, maritime and aviation journeys, which cannot be easily shifted to other modes.

Despite these challenges, there are positive signals of change in the sector. The use of transitional biofuels in the Irish transport sector in 2022 was 26.2% higher than in 2021. Using early provisional data from January to September 2023, SEAI estimates that biofuel demand to the end of 2023 will be 18.8% higher than 2022. The increased use of biofuels helps avoid transport emissions by partially displacing fossil fuel demand.

SEAI have estimated the use of biofuel will help avoid 0.8 MtCO2 of transport emissions in 2023 and has helped avoid 5.2 MtCO2 of transport emissions over the last decade. For context, the estimate of 0.8 MtCO2 of emissions avoided through biofuel use in 2023 is equivalent to taking approximately 290,000 fully petrol or diesel fuelled private cars off the road.

With respect to vehicle electrification, Zero Emission Vehicles Ireland (ZEVI) was also launched in July 2022 and has been established as the dedicated office charged with supporting consumers, the public sector and businesses to continue to make the switch to zero emission vehicles. The office leads on the design and investment of policy supports required to maintain momentum and achieve very challenging EV targets – providing a range of infrastructure and grant supports (gov.ie/zevi).

From the low baseline of roughly 2,000 Irish EVs in circulation at the time the previous National Policy Framework was published, there has been a rapid surge in their uptake, with

now over 114,000 EVs on our roads. While this growth is positive and substantive, it is now appropriate that we increase efforts to improve the pace of supply of publicly accessible recharging infrastructure to ensure that infrastructure deployment keeps pace with vehicle uptake.

In efforts to address this, ZEVI published their Electric Vehicle Charging Infrastructure Strategy in January 2023, setting out the proposed pathway for the delivery of electric recharging infrastructure to 2025, supported by funding of €100 million to help leverage private sector investment in EV charging infrastructure.

While the strategy acknowledges that home-charging is expected to remain the most cost-effective and convenient way of charging electric vehicles in Ireland, the strategy is aligned to the aims of the AFIR regulation and focuses on the provision of publicly accessible charging infrastructure across four main categories of identified user needs: home / apartment charging, residential neighbourhood charging, destination charging, and high-powered motorway/en-route charging.

In February 2024, the Minister for Transport announced the launch of a new €21 million scheme to accelerate the development of high-powered EV recharging infrastructure along Ireland's major transport corridors, and over the coming weeks, ZEVI expect to publish a number of key strategies and policies that will further guide and accelerate the development of our EV recharging network.

While hydrogen-powered vehicles have at present very low market penetration rates across the EU, the Department, through the Shared Island Initiative and in cooperation with the Department for the Economy in Northern Ireland, has also undertaken two research studies relating to hydrogen refuelling infrastructure on an all-island basis.

The Phase 1 study explored safety regulatory frameworks applying to hydrogen refuelling infrastructure on both sides of the border, highlighting commonalities and emphasizing the importance of interoperability and the need to avoid regulatory divergence, while the Phase 2 study has examined the feasibility of a green hydrogen refuelling corridor between Dublin and Belfast and is expected to conclude in the coming months.

In updating our national policy framework, we will revise and replace the existing National Policy Framework on Alternative Fuels Infrastructure for Transport in Ireland 2017-2030, to better reflect the recently established mandatory alternative fuels infrastructure targets and requirements that have been set out under AFIR, and the evolution in national policy and climate ambition since the adoption of the previous Alternative Fuels Infrastructure Directive (2014/94/EU).

The Department of Transport expects to advance and publish an updated draft policy framework for further consultation in the second half of 2024, with final policy frameworks required to be submitted to the EU Commission by 31 December 2025.

This call for submissions seeks therefore to gather such views from interested stakeholders.

3. Scope of the AFIR Regulation

As summarised in Article (1), AFIR establishes minimum mandatory levels of alternative fuels infrastructure to be deployed by Member States to ensure that a sufficient alternative fuels infrastructure is in place across the Trans-European Network for Transport (TEN-T) to support the use of alternative fuels for road vehicles, trains, vessels and stationary aircraft.

The regulation also lays down common technical specifications and requirements on user information, data provision and payment requirements for alternative fuels infrastructure, alongside establishing rules for the national policy frameworks and for the reporting mechanisms to be observed by Member States.

It should be noted that as an EU Regulation, its provisions are directly applicable in Ireland from 13 April 2024. It is also the case that, in general, AFIR should be understood and considered as a 'complete regulation' of the sector.

This interpretation of AFIR as a 'complete regulation' means that, in principle, in the areas on which the regulation sets out particular obligations or mandated requirements, these elements are not expected to be further regulated at a national level in order to maintain and preserve a common European market, allowing all market actors to operate under the same rules within the EU.

The extent to which any proposed additional supporting national primary or secondary legislation would be compatible with this regulation will need to be assessed on a case-by-case basis, and where appropriate, to be decided by the European Court of Justice.

EXAMPLE

As an example of this interpretation of AFIR as a complete regulation, the reader may note that Article 5 of AFIR regulates in the area of price setting by operators of publicly accessible recharging points.

Under this article, AFIR includes a mandate that at publicly accessible recharging points with a power output equal to or more than 50 kW, the ad hoc price charged by the operator shall be based on the price per kWh for the electricity delivered, and which allows the possible application of an occupancy fee by the operator based on a price per minute basis to discourage long occupancy of the recharging point.

In this instance, Member States would not be expected to add to, limit or restrict the application of these price components by operators of publicly accessible recharging points with power outputs greater to or equal than 50 kW, through additional regulation at a national level.

ALTERNATIVE FUELS COVERED BY THE REGULATION?

The definition of alternative fuel types considered within the scope of AFIR is set out under Article 2 (4) of the regulation:

ARTICLE 2(4):

'alternative fuels' means fuels or power sources which serve, at least partly, as a substitute for fossil oil sources in the energy used for transport and which have the potential to contribute to its decarbonisation and enhance the environmental performance of the transport sector, including:

(a) 'alternative fuels for zero-emission vehicles, trains, vessels or aircraft':
- electricity,
- hydrogen,
- ammonia,

(b) 'renewable fuels':
- biomass fuels, including biogas, and biofuels as defined in Article 2, points (27), (28) and (33) of Directive (EU) 2018/2001,
- synthetic and paraffinic fuels, including ammonia, produced from renewable energy

(c) 'non-renewable alternative fuels and transitional fossil fuels':
- natural gas, in gaseous form (compressed natural gas (CNG)) and liquefied form (liquefied natural gas (LNG)),
- liquefied petroleum gas (LPG),
- synthetic and paraffinic fuels produced from non-renewable energy.

It is noted that where the regulation references '*liquefied methane*', this definition extends to include LNG, liquefied biogas or synthetic liquefied methane, and blends of those fuels, as set out in Article 2 (34).

A broad hierarchy of alternative fuel types is therefore implicit in AFIR, in terms of their inherent potential to contribute to decarbonisation and improve environmental performance of the transport sector.

The regulation is also clear in its view that the use of fossil gaseous or liquid fuels should only be possible if their use is embedded into a clear decarbonisation pathway that is in line with the long-term objective of climate neutrality, requiring increasing blending with, or replacement by, renewable fuels such as biomethane, advanced biofuels, or renewable and low-carbon synthetic, paraffinic, gaseous and liquid fuels.

As these renewable fuels are considered to be technically compatible with current vehicle technology (with minor adaptions) and can be distributed, stored and used with existing infrastructure, the regulation does not, in general, introduce any mandatory infrastructure

targets for this category of fuels, and considers only a limited targeted policy for liquefied methane infrastructure deployment necessary to close remaining gaps in the network.

Key alternative fuels infrastructure targets for land transport, maritime and aviation are set out in subsequent chapters.

TRANS-EUROPEAN TRANSPORT NETWORK (TEN-T)

The mandatory targets that have been set out in AFIR have been established to ensure a consistent and coherent deployment of alternative fuels infrastructure across the TEN-T core and comprehensive networks, with a view to ensuring that users and operators of alternatively fuelled vehicles and vessels face a seamless mobility experience across all member states, and such that the TEN-T network itself can support the transition to zero- and low emission mobility.

The TEN-T is the key strategic European network of rail, inland waterways, short-sea shipping routes, and roads, and acts as the main spines of the transport network of all Member States. The comprehensive TEN-T network seeks to link 424 major European cities (urban nodes) and key strategic ports, airports, and railway terminals with coherent, connected, and high-quality transport infrastructure.

Delivering the full extent of the proposed TEN-T network will take a number of decades, and the TEN-T regulation identifies links and key strategic gateways on the network as elements which belong to either the 'core', 'extended core' or 'comprehensive' network. All core elements of the network are targeted to be completed by 2030, newly added extended core elements by 2040, with full completion of the comprehensive network by 2050.

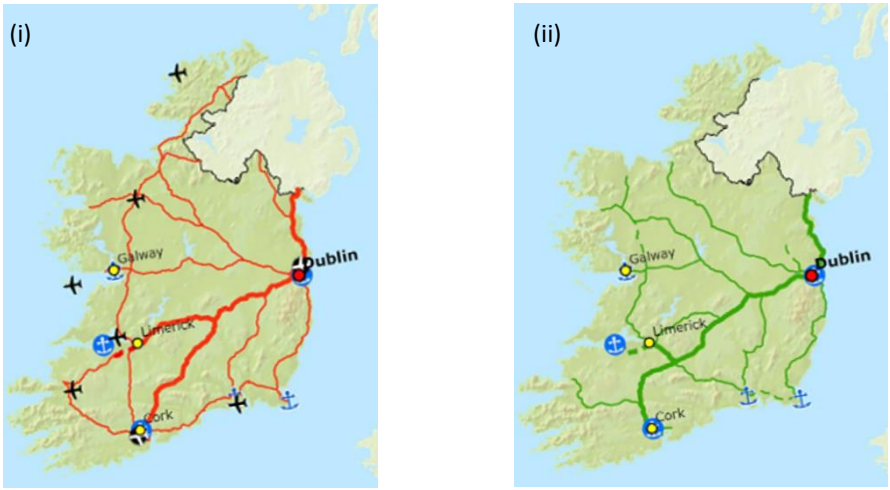

Figure 2: Urban nodes, airports and ports on the Irish TEN-T (i) road and (ii) rail networks. Core elements of each network are bolded.

A provisional agreement between the European Parliament and the Council co-legislators on a proposed update of this Regulation was announced in December 2023[1], which will introduce some new elements to Ireland's TEN-T Core and Comprehensive network. These new additions are summarised below and reflected in the maps above, and are expected to be formally adopted by Regulation later this year:

1. The addition of Galway and Limerick to the network of urban nodes.
2. The addition of the existing rail lines of Ballybrophy-Limerick and Limerick Junction-Waterford to the comprehensive rail network
3. The addition of the planned rail lines of Athenry-Claremorris and Waterford-Rosslare Europort to the comprehensive rail network
4. The addition of the Port of Galway to the comprehensive network.
5. The realignment of the core network road link between Limerick and Foynes

In Ireland, of the c.5,300 km comprising the national road network, the TEN-T road network makes up almost 2,200 km (of which c.500 km is on the core network) and carries approximately 19.2% of all vehicular kilometres in the country, while the current Irish TEN-T rail network has a total length of 1,944 km, of which the Dublin to Cork, Limerick and Northern Ireland (Belfast) routes comprise the TEN-T core lines.

GENERAL STRUCTURE OF THE NATIONAL POLICY FRAMEWORK

Article 14 of AFIR provides a list of mandatory and optional elements that Member States must consider when developing their National Policy Framework. These elements are highlighted in the textboxes provided at the end of this section.

In line with this Article, each Member State is obliged to prepare and transmit to the European Commission a draft national policy framework by 31 December 2024, with final policy frameworks to be submitted to the EU by 31 December 2025.

In developing these national policy frameworks, Member States are also tasked to consider a number of factors, including the needs of the different transport modes existing on their territory, the interests of regional and local authorities, in particular where recharging and refuelling infrastructure for public transport is concerned, as well as those of wider stakeholders.

[1]Press Release: Trans-European transport network (TEN-T): Council and Parliament strike a deal to ensure sustainable connectivity in Europe - Consilium (europa.eu)

In considering the types of policies and measures that might support the promotion of alternative fuels in transport, there is a broad spectrum of potential mechanisms which can be considered, such as:

- **Legal Measures** – consisting of legislative, regulatory or administrative measures to support the build-up of alternative fuels infrastructure, such as national targets, obligations on operators to deploy infrastructure, fuel station concessions, etc.
- **Policy Measures**, such as
    - Direct incentives for the purchase of alternative fuels vehicles or for building the infrastructure;
    - Availability of tax incentives to promote alternative fuels vehicles and the corresponding infrastructure;
    - Use of public procurement in support of alternative fuels vehicles and infrastructure;
    - Demand-side non-financial incentives, e.g., preferential access to restricted areas, parking policy and dedicated lanes;
    - Technical and administrative procedures and legislation regarding facilitating the authorisation of alternative fuels infrastructure;
- **Deployment & Manufacturing Supports** – incentives for manufacturing, purchase subsidies for new technologies, tax exemption/reductions and public-private partnerships to support the establishment of manufacturing plants for alternative fuels technologies.
- **Research, Technological Development & Demonstration** –Living Labs, supports for dedicated research programmes for alternative fuels, alternative fuels vehicles, vessels and aircraft, as well as their recharging and refuelling infrastructure.

The existing National Policy Framework on Alternative Fuels Infrastructure for Transport in Ireland 2017-2030 set out 50 policy commitments and measures for consideration in support of the previous Directive (cf. Appendix), and it is proposed that each of these will be reviewed with reference to their appropriateness for continuation or extension to support implementation of the revised Regulation, in addition to the identification of new actions.

MANDATORY ELEMENTS OF THE NPF:

a) An assessment of the current state and future development of the market as regards alternative fuels in the transport sector, and of the development of alternative fuels infrastructure, considering intermodal access of alternative fuels infrastructure and, where relevant, cross-border continuity, and the development of alternative fuels infrastructure on islands and in the outermost regions;

b) National targets and objectives pursuant to Articles 3,4, 6, 8, 9, 10, 11 and 12 for which mandatory national targets are set out in AFIR;

c) Policies and measures necessary to ensure that the mandatory targets and objectives are reached;

d) Measures, planned or adopted, to promote the deployment of alternative fuels infrastructure for captive fleets, for recharging stations and hydrogen refuelling stations for public transport services and recharging stations for car sharing;

e) Measures, planned or adopted, to encourage and facilitate the deployment of recharging stations for light-duty and heavy-duty vehicles in private locations that are not accessible to the public;

f) Measures, planned or adopted, to promote alternative fuels infrastructure in urban nodes, with respect to publicly accessible recharging points;

g) Measures, planned or adopted, to promote enough publicly accessible high-power recharging points;

h) Measures, planned or adopted, necessary to ensure that the deployment and operation of recharging points, including the geographical distribution of bidirectional recharging points, contribute to the flexibility of the energy system and to the penetration of renewable electricity into the electric system;

i) Measures to ensure that publicly accessible recharging and refuelling points for alternative fuels are accessible to older persons, persons with reduced mobility and persons with disabilities in accordance with the accessibility requirements of Directive (EU) 2019/882;

j) Measures, planned or adopted, to remove possible obstacles with regards to planning, permitting, procuring, and operating of alternative fuels infrastructure;

k) An overview of the state of play, perspectives, and planned measures in respect of the deployment of alternative fuels infrastructure in maritime ports other than for liquefied methane and shore-side electricity supply for use by sea-going vessels, such as for hydrogen, ammonia, methanol and electricity;

l) An overview of the state of play, perspectives, and planned measures in respect of deployment of alternative fuels infrastructure including targets, key milestones and financing needed, for hydrogen- or battery-powered trains on TEN-T rail sections that cannot be electrified;

m) An overview of the state of play, perspectives, and planned measures in respect of deployment of alternative fuels infrastructure in airports other than for electricity supply to stationary aircraft, such as for electric recharging and hydrogen refuelling for aircraft;

n) An overview of the state of play, perspectives, and planned measures in respect of deployment of alternative fuels infrastructure in inland navigation, such as for electricity and hydrogen.

OPTIONAL ELEMENTS OF THE NPF

a) An overview of the state of play, perspectives, and planned measures for the deployment of alternative fuels infrastructure in maritime ports, such as for electricity and hydrogen, for port services as defined in Regulation (EU) 2017/352 of the European Parliament and of the Council;

b) National targets and measures to promote alternative fuels infrastructure along the road networks which are not included in the core and comprehensive TEN-T networks, with result to publicly accessible recharging points;

c) Measures to guarantee accessibility of recharging and refuelling infrastructure in the entire territory of the Member State, paying particular attention to rural areas to ensure their accessibility and territorial cohesion;

d) Measures to ensure that the density of publicly accessible alternative fuels infrastructure available at national level considers population density;

e) National targets and objectives for the deployment of alternative fuels infrastructure related to the above points of this paragraph for which no mandatory targets are laid down in AFIR.

4. Key Policy Considerations

AFIR is a broad ranging regulation and introduces a number of new elements which were not considered under the previous Directive. Some key policy considerations that have been identified which will need to be considered to inform the update of our national policy framework are outlined below.

1. Related Plans & Policies
2. Setting of Key Objectives
3. Consideration of Alternatives
4. Estimating Future Demand for Alternative Fuels
5. Mapping Infrastructure Targets at National Level
6. Barriers to Uptake and Infrastructure Deployment
7. Identification of Supporting Measures
8. Competition & Consumer Protection
9. Health & Safety
10. Data
11. Accessibility
12. Key Siting Criteria

Learning from international experience will also be crucial in developing our national policy framework, to enable the adoption of best practice and support and promote efficient and effective implementation.

As was highlighted in the Department's draft National En-Route EV Charging Plan, some key lessons learned from international experience in the development of that plan will also be relevant here and which are summarised in the figure below.

Figure 3: Lessons Learned from Successful International Experiences

4.1 Related Plans and Policies

There has been a significant evolution in policy and the level of climate ambition at both national and EU level since the adoption of the original AFI Directive in 2014. In the following, we summarise some key considerations across a number of these files that will be important to consider in developing an updated national policy framework.

CLIMATE ACTION AND LOW-CARBON DEVELOPMENT (AMENDMENT) ACT 2021

The *Climate Action and Low-Carbon Development (Amendment) Act 2021* (the *'Climate Act'* or *'Act')* is Ireland's overarching climate legislation and was adopted in June 2021, marking a significant increase in the level of national climate ambition over the previous 2015 Act.

While the 2015 Act had acknowledged the Paris Agreement and made a commitment to a low-carbon, climate resilient and environmentally sustainable economy by 2050, the 2021 Act committed Ireland to achieving net-zero greenhouse gas emissions by 2050, and reducing national emissions by 51% by 2030 (relative to an emissions baseline of 2018), embedding these binding and ambitious emissions reductions targets in law.

In particular, the national climate objective commits the State to 'pursue and achieve no later than 2050, the transition to a climate resilient, biodiversity-rich, environmentally sustainable and climate-neutral economy', while the interim 2030 target of 51% emissions reduction marked a significant increase on the 30% emissions reduction target that had been established in Climate Action Plan 2019 for non-ETS sectors (including transport).

Alongside its emissions reduction targets, the 2021 Act put a robust governance and accountability framework in place, provided for the establishment of a carbon budget programme, and committed the State to the development of annual climate action plans.

Following the adoption of an economy-wide carbon budget programme in April 2022, Government adopted sectoral emissions ceilings for key areas of the economy (including transport) in July 2022, with the emissions ceilings for the LULUCF sector and the distribution of 'unallocated savings' in the second carbon budget period to be set at a subsequent date.

Under this framework, Government committed the transport sector to the pursuit of a decarbonisation pathway that will reduce the sector's emissions by 50% by 2030, and which is consistent with a 5-year carbon budget of 54 MtCO2eq. (megatonnes of CO2 equivalent) over 2021-2025, and a carbon budget of 37 MtCO2eq over the 2026-2030 period. It is currently estimated that the sector has expended c.63% of its sectoral emissions budget over the first three years of the first carbon budget period.

CLIMATE ACTION PLANS: CAP23 AND (DRAFT) CAP24

Climate Action Plan 2023 (CAP23) was the first statutory plan that incorporated both the economy-wide targets and legally binding sectoral emission ceilings set by Government in July 2022.

The design of the decarbonisation pathway set out therein was informed by detailed transport modelling undertaken with the National Transport Authority to identify a pathway that can achieve a 50% reduction in transport emissions by 2030, and incorporating key recommendations of an in-depth OECD review, *Redesigning Ireland's Transport for Net-Zero*, which found that our existing transport systems embed car-dependency and increased emissions by design.

It was identified through this work that compliance with our transport sectoral emissions ceilings will only result through a systemic change in our transport planning and behaviour, and from an integrated combination of measures that are premised on an 'AVOID-SHIFT-IMPROVE' framework to achieving greater transport sustainability.

The decarbonisation pathway that was set out in CAP23 and which has been retained in the draft CAP24 (published December 2023 and which is currently being finalised following its public consultation for the purposes of Strategic Environment Assessment & Appropriate Assessment), is built on such an approach.

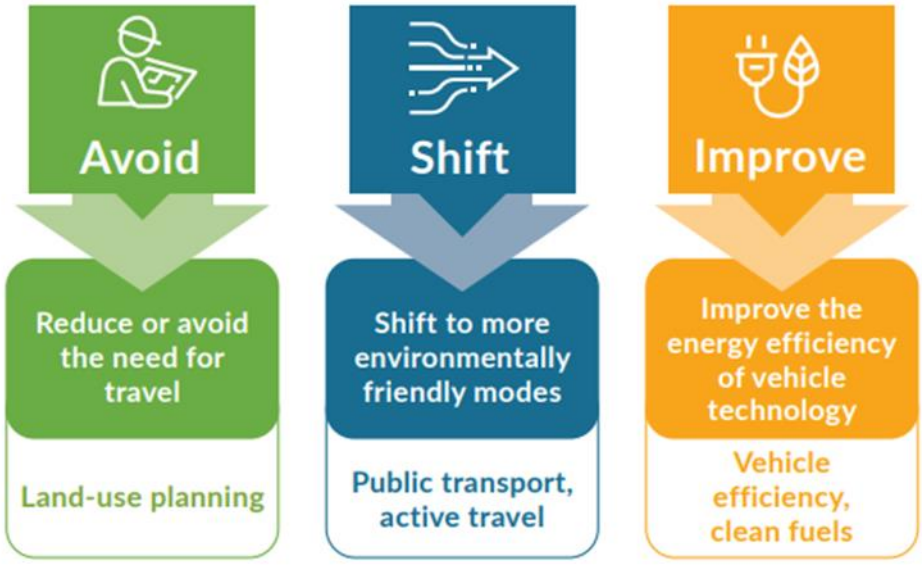

Figure 4: Use of the Avoid-Shift-Improve framework encourages greater transport sustainability and highlights the fundamental link between transport demand and spatial and planning policy.

At its core, the fundamental challenge for the sector in terms of emissions reduction is to decouple the direct correlation between transport emissions and wider social and economic activity. For this reason, our focus is on pursuing measures to address travel demand in this

first instance by pursuing policy measures that promote greater efficiency in our transport system, allied with significant investment in sustainable alternatives and incentives and regulatory measures to promote the accelerated take-up of low carbon technologies.

AFIR and the use of alternative fuels in transport fall under the IMPROVE category of measures, where it is recognised that fleet electrification and the use of renewable transport fuels are expected to provide the greatest share of emissions abatement in the short to medium term. Improvements in vehicle technology and the electrification of our vehicle fleet form a critical component of our decarbonisation pathway.

Nonetheless, it is important that we continue to embed our vehicle and infrastructure strategies in a manner that is consistent with our National Sustainable Mobility Policy and our forthcoming National Demand Management Strategy, '*Moving Together - A Strategic Approach to the Improved Efficiency of the Transport System in Ireland*', in order to maximise the significant well-being and safety benefits that can be realised through a people-centred rather than a vehicle-centred approach to decarbonisation.

Key targets under the IMPROVE heading of our decarbonisation pathway that have been identified as necessary to support the achievement of our 50% emissions abatement target by 2030 include:

- Accelerating the electrification of the vehicle fleet such that approx. 1 in 3 private cars on the road by 2030 are a battery electric vehicle (30% fleet share). Achieving this target is expected to require a 100% EV share of new private car vehicle registrations by 2030;
- Achieving a c. 20% EV share of the commercial light duty goods fleet, and a 30% zero-emission share of new registrations of medium- and heavy-duty vehicles (trucks & buses) and at least 3,500 low-emission HDVs by 2030.
- Supporting the transition of our public transport services to cleaner alternatives such that 1,500 of our public service obligation (PSO) bus fleet are electrified by 2030, and through expanding the network of electrified rail services.
- Increasing the level of renewable fuels in transport such that we achieve an equivalent 10% bioethanol blend in petrol and 20% biodiesel blend by 2030.

In line with the draft CAP24, a new interdepartmental group on Alternative Fuels for Transport has been established by the Department of Transport, that will oversee the broad range of activities to encourage greater renewable transport fuel use in the decarbonisation of the sector, acknowledging in particular the regulatory requirements arising from the EU 'Fit for 55' package of renewable energy and alternative fuel obligations – in land, aviation and maritime transport.

RENEWABLE TRANSPORT FUELS POLICY 2023-2025

The Renewable Transport Fuel Policy 2023-2025 (published June 2023) sets out the Department's policy concerning the supply of renewable transport fuels for transport and the proposed actions to be undertaken over the next two years concerning the renewable transport fuel obligation (RTFO), which seeks to achieve greater renewable energy use in transport. In line with this policy, regulations supporting a transition to up to 10% bioethanol fuel blending in petrol (gov.ie/E10) came into force in July 2023.

The RTFO, which is administered by the National Oil Reserves Agency (NORA), places an obligation on suppliers of mineral oil to ensure that a percentage of the motor fuel they place on the market in Ireland is produced from renewable sources. In 2022, c.7% of the diesel fuel supplied to the market was from renewable sources, and our intention is to continue increasing the level of renewable fuels in transport such that we achieve an equivalent 20% biodiesel blend by 2030.

It should, however, also be noted that Ireland's current overreliance on imported biofuels in our transport fuel supply for short-term decarbonisation to 2030 and beyond makes us particularly vulnerable to shocks in the global fuels supply chain.

The move to renewable alternatives (electrification and renewable fuels of non-biological origin, green hydrogen and e-fuels) from domestic renewable sources, while requiring a high level of ambition by the State, is considered to be the best way to ensure future energy security for transport use.

This will require a coordinated consideration of how best to support indigenous production, as well as providing the appropriate infrastructure for distribution, and to ensure that the vehicle technology for end use supports a consistent move away from fossil-fuelled internal combustion engines to electric or hydrogen alternatives.

ROAD HAULAGE STRATEGY

Ireland's first 10-Year Road Haulage Strategy was published in December 2022 and provides a roadmap as to how the Government will support the haulage and road freight sector to decarbonise and meet the targets set out in the climate action plan.

The strategy fulfils a key Programme for Government commitment and is focused on generating efficiencies, improving standards, securing jobs and helping the road freight sector move to a low-carbon future.

It is noted that while the heavy goods fleet comprises a relatively small share of the total vehicle fleet in the country (c.40,000 vehicles), these vehicles are almost exclusively fuelled by diesel and produce a significant share of Ireland's total transport emissions.

While decarbonisation will remain a significant challenge for the sector to 2030 and beyond, there is an increasing commercial availability of alternatively fuelled vehicles, particularly electric drivetrains, and a growing drawdown of funding supports available under the Zero-Emission Heavy Duty Vehicle scheme[2].

It is also noted that both CAP23 and the Road Haulage Strategy included a new target for the sector following Ireland becoming a signatory in November 2022 to the Global Memorandum of Understanding on Zero Emission Medium- and Heavy-Duty vehicles.

This non-binding agreement targets 30% of sales of new Medium- and Heavy-duty vehicles (trucks and buses) to be zero emission by 2030, increasing to 100% of new sales in 2040.

A critical element in supporting the transition of this sector will be the provision of high-powered charging infrastructure for heavy-duty vehicles, and in the longer term for certain heavy-duty long-range applications where battery-electric vehicle technology may not be technically feasible, through the provision of green hydrogen refuelling infrastructure.

THE EU 'FIT FOR 55' LEGISLATIVE PACKAGE

Figure 5: The EU's Fit for 55 legislative package supports the first major EU climate milestone to achieve a 55% reduction of emissions by 2030, and by 2050, to make the EU climate neutral.

The Fit for 55 package is a set of proposals to revise and update EU legislation with the aim of meeting the EU's climate goal of reducing total EU emissions by at least 55% by 2030, relative to a 1990 emissions baseline, and aligned to a net-zero 2050 ambition. A number of

[2] Previously known as the Alternatively Fuelled Heavy-Duty Vehicle (AFHDV) grant scheme, and which is administered by Transport Infrastructure Ireland (https://www.tii.ie/roads-tolling/tolling-information/zero-emission-heavy-duty/).

legislative files contained within the package are expected to act as key legal instruments to promote the supply / demand for alternative fuels infrastructure, and are outlined below:

- **Renewable Energy Directive** - Directive (EU) 2018/2001 on the promotion of the use of energy from renewable sources (the Renewable Energy Directive, RED) establishes the primary legal framework for the development of renewable energy across all sectors of the EU economy. The RED was amended in November 2023 via Directive (EU) 2023/2413 in an effort to accelerate pace of the clean energy transition, and account for an increase of the renewable energy target to at least 42.5% by 2030, following Russia's invasion of Ukraine and the need to accelerate the EU's independence from fossil fuels. Member States are obliged to transpose the Directive into national legislation within an 18 month period.

- **CO2 Standards** – a recent revision of Regulation (EU) 2019/631 which sets CO2 emission performance standards for new passenger cars and for new light commercial vehicles has established 2035 as the phase out date for the manufacture of ICE-vehicles. Political agreement has also been reached to update Regulation (EU) 2019/1242 setting CO2 emission performance standards for new heavy-duty vehicles, and is expected to be adopted later this year. The revised Regulation will see 90% of all HDV registrations as zero-emission by 2040. Both of these files act as key supply-side instruments

- **ReFuelEU Aviation** - Regulation (EU) 2023/2405 on ensuring a level playing field for sustainable air transport mandates the increasing deployment of sustainable aviation fuel (SAF) at Union airports out to 2050, obliging aviation fuel suppliers to supply aviation fuel containing increasing levels of SAF and synthetic aviation fuels. The mandated minimum share of SAF will start at 2% in 2025 and rise to 70% by 2050. From 2030, a minimum share of this will need to be in the form of synthetic aviation fuel. While the fuel use requirements for sustainable aviation fuels can largely rely on existing refuelling infrastructure, investments are needed for the electricity supply of stationary aircraft.

- **Fit for 55 Maritime Package -** Several proposals in this package, including the FuelEU Maritime Regulation (Regulation (EU) 2023/1805), the revised Monitoring, Reporting, and Verification (MRV) Regulation, the Emissions Trading System (ETS) directly address emissions reduction from maritime transport and will help provide the regulatory certainty to put the shipping industry on a pathway towards the phasing out of GHG emissions. Other files, such as the proposed Energy Taxation Directive, and the revised Renewable Energy Directive will also have an impact on emissions from the shipping sector.

- **Clean Vehicle Directive** - Directive 2009/33/EC on the promotion of clean road transport vehicles in support of low-emission mobility ensures that a minimum national share of vehicles obtained by public bodies via public procurement are reserved for low-emission vehicles, and acts both as an important demand-side instrument and mechanism for the public sector to demonstrate leadership in the transition to alternative fuels.

- **Energy Performance of Buildings Directive –** where AFIR is directed at publicly accessible recharging infrastructure, the recent revision of the Energy Performance of Buildings Directive (Directive 2010/31/EU) includes certain provisions that demonstrate how building policy can promote electromobility and private EV infrastructure, setting out mandates for pre-cabling and the installation of recharging points for electric vehicles in new and renovated buildings.

INTERPLAY WITH OTHER NATIONAL PLANS & POLICIES:

In addition to the above, there are a number of other international, national and sectoral policies and strategies that will need to be considered in the development of the national policy framework.

While the Department of Transport does not have direct responsibility for production of alternative fuels, there is a need to ensure the Department's policies and programmes which support alternative fuel usage in transport optimise the opportunities arising from increased domestic production, as envisioned under, for example, the National Hydrogen Strategy and forthcoming National Biomethane Strategy.

A number of the key strategies that will be included in our review are listed in the table below, which are expected to be supplemented by further forthcoming plans and strategies, such as the review of the National Planning Framework, National Energy Demand Strategy, and forthcoming Renewable Electricity Spatial Planning Framework (RESPF).

- All Island Strategic Rail Review
- Review of the National Ports Policy
- National Aviation Policy
- Review of the Regional Airports Policy
- National EV Charging Infrastructure Strategy
- ESB Networks for Net Zero
- EirGrid – Shaping our Electricity Future
- National Hydrogen Strategy
- National Biomethane Strategy
- Bioeconomy Action Plan
- Powering Prosperity – Ireland's Offshore Wind Industrial Strategy
- GNI Strategy 2022-2035
- Clean Air Strategy

Consultation Question(s)

1. **How best can we ensure a coherent approach to infrastructure delivery across all transport modes? Do additional powers or responsibilities need to be designated to existing agencies or national bodies to enhance delivery and cooperation between the transport and energy sectors?**

4.2 Setting Key Objectives

The importance of setting clear objectives is a key element for consideration in the update and development of our national policy framework. At a high level, AFIR's key strategic objective seeks to:

- ensure the deployment of sufficient alternative fuels infrastructure in the Union, in particular for road vehicles, trains, vessels and stationary aircraft.

It may be appropriate to set further key objectives and across the different transport sub-sectors to provide a means for the identification of potential alternatives and supporting measures, and to enable the development of an objectives and outcomes-led monitoring and reporting framework.

Examples of key objectives might include:

- To provide the appropriate infrastructure and long-term investment signals to increase consistent use of renewable and low carbon fuels and substitute sources of energy in land / maritime / air transport;

- To minimise potential detrimental impacts on biodiversity, soils and land use, water, cultural heritage and our landscape in the deployment of alternative fuels infrastructure;

- To ensure that all publicly accessible recharging and refuelling points for alternative fuels are accessible to older persons, persons with reduced mobility and persons with disabilities in accordance with the accessibility requirements of Directive (EU) 2019/882;

- To support the adaptation and resilience of existing, redesigned and new transport alternative fuels infrastructure to minimise the impacts of climate change;

- To ensure that the planning, development and deployment of alternative fuels infrastructure avoids the creation of stranded assets, and that public and private investments made are future-proofed and contribute to the transition to climate neutrality;

- To improve and enhance regulatory certainty with regard to the uptake of renewable and low-carbon fuels and sustainable technologies;

- To ensure that supports for alternative fuels do not give rise to increased transport demand and instead augment our Climate Action Plan target of reducing total vehicle

kilometres travelled by 20%[3];

- To reduce the risk that policy measures and infrastructure provided to serve short-term demand across transport subsectors for biofuels and/or non-renewable transport fuels disincentive the early take-up of zero-emission alternative technologies;

- To support a just transition and enhance economic and societal benefits across our regions through the provision of alternative fuels transport infrastructure and increasing the supply of alternative fuels for use in transport;

- To ensure that the establishment and operation of alternative fuels infrastructure is developed as a competitive market, with open access to all parties interested in the roll-out or operation of recharging and refuelling infrastructure;

- to ensure that the deployment and operation of alternative fuels infrastructure, including the geographical distribution of bidirectional recharging points, contributes to the flexibility of the energy system and to the penetration of renewable energy share in transport;

- To prioritise sustainability and energy efficiency first principles, ensuring that the upgrade of existing facilities and infrastructure is prioritised to minimise carbon emissions associated with new construction;

- To enhance and facilitate innovation, ensuring that new and innovative technologies that can further enhance or accelerate the provision and usage of alternative fuels infrastructure are encouraged, coupled with the enhanced use of data to inform decision-making.

Consultation Question(s)

2. **Do you agree with the example objectives proposed above? What other objectives might be appropriate? Which of these objectives should have a greater priority?**

[3] CAP target for reduction in vehicle kilometres travelled is relative to a 2030 business as usual scenario.

4.3 Consideration of Alternatives

Once all key objectives are identified, it will be important to consider the potential alternative options that might achieve these objectives.

As AFIR establishes a mandatory minimum level of infrastructure to be provided along with timeframes and milestones for deployment, a 'Do Nothing' scenario will not be appropriate for consideration.

The baseline scenario for infrastructure targets against which alternative scenarios will be compared to will therefore be aligned to the mandatory minimum levels established in AFIR.

In terms of possible alternatives, some scenarios for consideration could include:

- Leaving Market Forces to Drive Development;
- Deployment of Limited Technologies;
- Maintaining Technological Neutrality; and
- Low- and High-Ambition Infrastructure Deployment scenarios.

It is recognised that each scenario to be considered will have its own advantages and constraints and also that each sub-sector of AFIR will also face its own particular challenges.

For example, in the maritime sector, the cost of investing in the provision of on-shore electricity supply infrastructure and vessels that can avail of these facilities are recognised to be significant from both ship and shore side.

The sector will also face significant engineering challenges in catering for the retrofitting of legacy electrical infrastructure in brownfield sites to serve the power output capacity needs that will have to be met to serve large vessels at berth.

Financial challenges for our major commercial ports, which are self-funded entities, are also expected to materialise, arising from the likely expectation that the stakeholders investing in the mandated infrastructure and vessels may not necessarily benefit economically in the short-to-medium term.

While it can often be the case that as technology evolves, the cost of the technology to the consumer comes down, this cost does not always come down at the rate expected or required to increase market uptake significantly.

Private sector investors can also be reluctant to build infrastructure where a market is in its infancy. In the absence of appropriate levels of infrastructure to support the uptake of alternative fuels, it is unlikely that enough vehicles or vessels will be sold to assert the required downward pressure on market price.

This can then inhibit consumers from buying alternative fuelled vehicles as their price remains prohibitive, and this perceived lack of consumer demand has an impact, in turn, on the numbers of vehicles and vessels being introduced to the market (thereby prohibiting choice to the consumer).

The expected costs of implementation will form a key criterion by which measures and alternatives will be assessed. It may be that by concentrating on the development of the infrastructure to meet the minimum requirements, finite resources do not have to be stretched to cover a broad range of infrastructure types and accompanying supports.

Finally, it is also important to note that this national policy framework is intended to support rather than replace more specialised sectoral strategies and consultations.

Indeed, ZEVI have already published a number of strategies and proposals with respect to the planned development of our EV recharging infrastructure. These strategies have been aligned to and have had detailed consideration of AFIR's requirements for electric recharging infrastructure, in addition to been subjected to public consultation and SEA/AA assessment.

Similarly, matters such as the financial challenges that Irish ports may face were also recognised in the recent Issues Paper on the Review of the National Ports Policy, which questioned '*How can ports best progress projects with a strong value case but a negative business case?*'

While contributions from respondents which may reiterate points raised in responses to other consultations are welcome, respondents should note that it is not the purpose of this call for submissions to replace or repeat matters raised in the development of those more specialised strategies or policies.

Rather, the focus of this call for submissions is retained on how best to inform the development of a national policy framework which satisfies the requirements of AFIR's Article 14, and the mandatory and optional criteria set out in the previous Chapter.

Consultation Question(s)

3. **Do you believe greater levels of alternative fuels infrastructure deployment beyond the minimum levels set by AFIR are required to accelerate the uptake of zero-emission and renewable fuels in the land / maritime / air transport sectors?**
4. **Should Government prioritise its support on a smaller number of alternative fuels (and if so, which), or try to diversify its approach to include all alternative fuel types, where such support may be more limited? How might we best achieve cumulative network effects?**
5. **How can we avoid piecemeal development and/or alternative fuels infrastructure deficits in rural regions? Can market forces be relied on to ensure the development of alternative fuels infrastructure in more rural or remote regions of the transport network?**
6. **How might the deployment and operation of alternative fuels infrastructure best contribute to the flexibility of the energy system, including their participation in the balancing market and to the further absorption of renewable electricity?**
7. **By what key criteria should alternative scenarios be assessed?**

4.4 Estimating Future Demand for Alternative Fuels

Demand modelling will be critical to ensure an integrated and planned approach to infrastructure deployment, to minimise the risk of developing stranded assets, and to ensure that our energy grid has the capacity to accept planned renewables and minimise delays in providing required connections for the multiple new high-power recharging and refuelling points that will be required to meet the mandatory AFIR targets.

While it is expected that electrification provides the most immediate and effective means to decarbonize the land transport sector, we are still at a relatively early stage of market deployment with some degree of uncertainty with regard to the kind of vehicles and vessels that will come onto the market and to the kind of fuel types and technologies that will be widely used in other transport sectors.

According to the European Alternative Fuels Observatory, demand for alternatively fuelled vehicles has grown significantly since 2008. An EU-wide view of this growth in the category of alternative fuelled vehicles is included below, including hydrogen, electric (including battery electric and plug-in hybrid), and other alternative fuels (CNG, LPG, LNG).

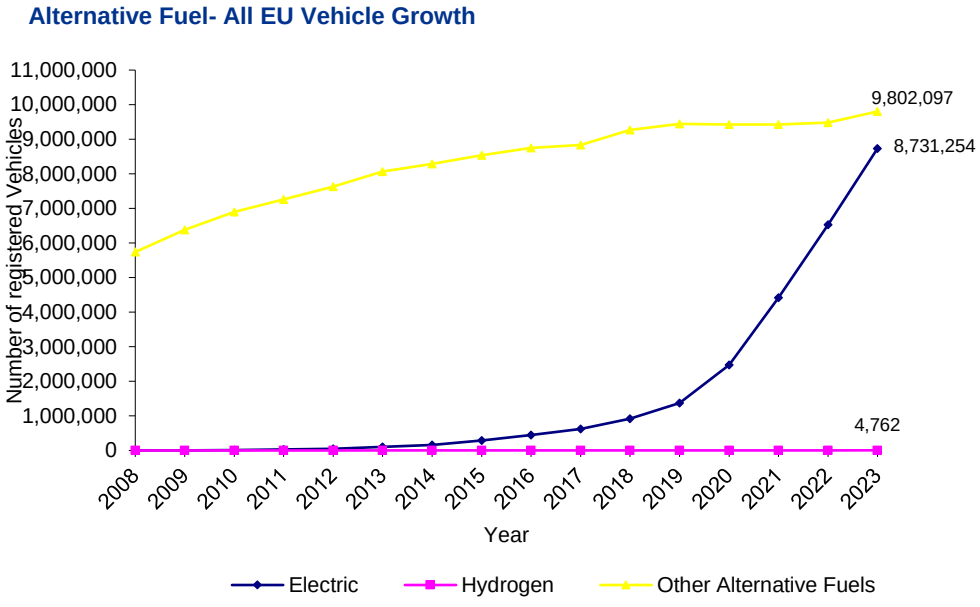

Figure 6: Growth in alternatively fuelled vehicle take-up across EU-27 countries.

In considering the potential evolution of the Irish vehicle fleet, modelling undertaken for CAP23 has also informed the expected levels of vehicle electrification and rate of transition required in order to support our climate ambition of a 50% reduction in transport emissions by 2030.

As the measure expected to deliver the single largest amount of direct emissions abatement in the Climate Action Plan, improvements in vehicle technology and the electrification of our vehicle fleet form a critical component of our decarbonisation pathway, and necessitate accelerating the electrification of the vehicle fleet such that approx. 1 in 3 private cars on the road by 2030 are a battery electric vehicle (30% fleet share). Achieving this target is expected to require a 100% EV share of new private car vehicle registrations by 2030;

With respect to commercial vehicles, it is also expected that we will need to achieve a c.20% EV share of the commercial light duty goods fleet, and in line with Ireland's commitments to the Global Memorandum of Understanding on Zero-Emission Medium and Heavy Duty Vehicles, a target of a 30% zero-emission share of new registrations of medium- and heavy-duty vehicles (trucks & buses), with at least 3,500 low-emission HGVs and 1,500 low-emission buses on our roads by 2030.

In considering the expected demand for renewable transport fuels, the Biofuel Study Report 2022 also set out the modelled demand for road transport biofuel consumption to meet 2030 CAP targets, where up to 700 million litres annually is expected to be required by 2030.

The Report recommended further research into advanced biofuel, renewable fuel of non-biological origin (RFNBO) and recycled carbon fuels (RCF) to meet future EU RED sub-targets. This may require modelling of renewable fuel demand in road and rail transport modes in the context of future plans to obligate supply in these transport sub-sectors under the RTF Policy, and the Department's Interdepartmental group on Alternative Fuels will further consider this question.

With regard to the scope of the RTF obligation beyond road and rail transport, it is not yet clear what the short-term demand for biofuel and advanced biofuels or longer-term demand for synthetic efuels will be under new EU requirements for example in the aviation and maritime sectors. Consideration of the hierarchy of supply and use of renewable energy, of biofuels in particular, across the transport subsectors also needs to be considered further.

However, recent revisions of Regulation (EU) 2019/631 and the forthcoming update of the Regulation (EU) 2019/1242, which treat the CO2 emission performance standards for new passenger cars, light-duty vehicles and heavy-duty vehicles, also provide key supply-side instruments that should accelerate the uptake of zero-emission vehicles, and thereby create demand for recharging and refuelling infrastructure.

In particular, these Regulations set effective phase-out dates for the manufacture of fossil-fuelled internal combustion engine vehicles (to be fully phased out by 2035 for LDVs, and to achieve a 90% phase out for HDVs achieved by 2040).

The increasing number of electric vehicles in road, rail, maritime and other transport modes will require recharging operations to be optimized and managed in such a way that does not

cause congestion and takes full advantage of the availability of renewable electricity and low electricity prices in the system.

AFIR therefore also encourages Member States to consider and promote the use of smart metering systems in combination with smart recharging points at publicly accessible recharging stations, where technically feasible and economically reasonable.

As mentioned above, in other sectors such as maritime and aviation, it is not yet clear what shape the future demand for alternative fuels will take. While the Regulation on the use of renewable and low carbon fuels in maritime transport ('the FuelEU Maritime Regulation') establishes rules that will reduce the greenhouse gas intensity of energy used on-board by ships arriving at ports under the jurisdiction of the EU and seeks to promote the development and use of renewable and low-carbon fuels across the Union, the file is technologically neutral, allowing industry to navigate the most cost-efficient path towards reaching the GHG reduction targets.

Similarly, the ReFuelEU Aviation Regulation mandates the increasing deployment of sustainable aviation fuel (SAF) at Union airports out to 2050, obliging aviation fuel suppliers to supply aviation fuel containing increasing levels of SAF and synthetic aviation fuels.

The mandated minimum share of SAF will start at 2% in 2025 and rise to 70% by 2050. From 2030, a minimum share of this will need to be in the form of synthetic aviation fuel. The share of synthetic aviation fuel under these mandates will start at a minimum of 0.7% from 2030, rising to 35% by 2050. Though crucially, the Regulation includes a flexibility mechanism in the form of a ten-year transition period during which an aviation fuel supplier can supply the required level of SAF as a weighted average across the EU, rather than at each airport within the scope.

The Department is working to develop a SAF Policy Roadmap to support the deployment of SAF within the Irish context, whether that be through importation of fuels, indigenous production, or a mix of both.

Consultation Question(s)

8. What is your assessment of the current state and future development of the market as regards alternative fuels in the transport sector, and of the development of alternative fuels infrastructure?
9. What is your expectation regarding the use of and demand for alternative fuels in the Irish maritime sector - such as demand for liquefied methane and shore-side electricity supply for use by sea-going vessels, or for hydrogen, ammonia, methanol and electricity?
10. What is your expectation regarding the use of and demand for alternative fuels in the Irish aviation sector other than for electricity supply to stationary aircraft – such as for electric recharging, sustainable aviation fuels or hydrogen refuelling for aircraft?

4.5 Infrastructure Targets

The mandatory minimum infrastructure targets established in AFIR will need to be mapped at a national level, and any proposed infrastructure targets that may go beyond the minimum requirements should be underpinned by due consideration on the expected rate of alternative fuelled vehicle uptake and infrastructure utilization, through the use of fleet modelling and investment capacity scenarios.

In the following, we summarise the key baseline infrastructure targets that have been established under AFIR.

ARTICLE 3 - ELECTRIC RECHARGING INFRASTRUCTURE - LDVS

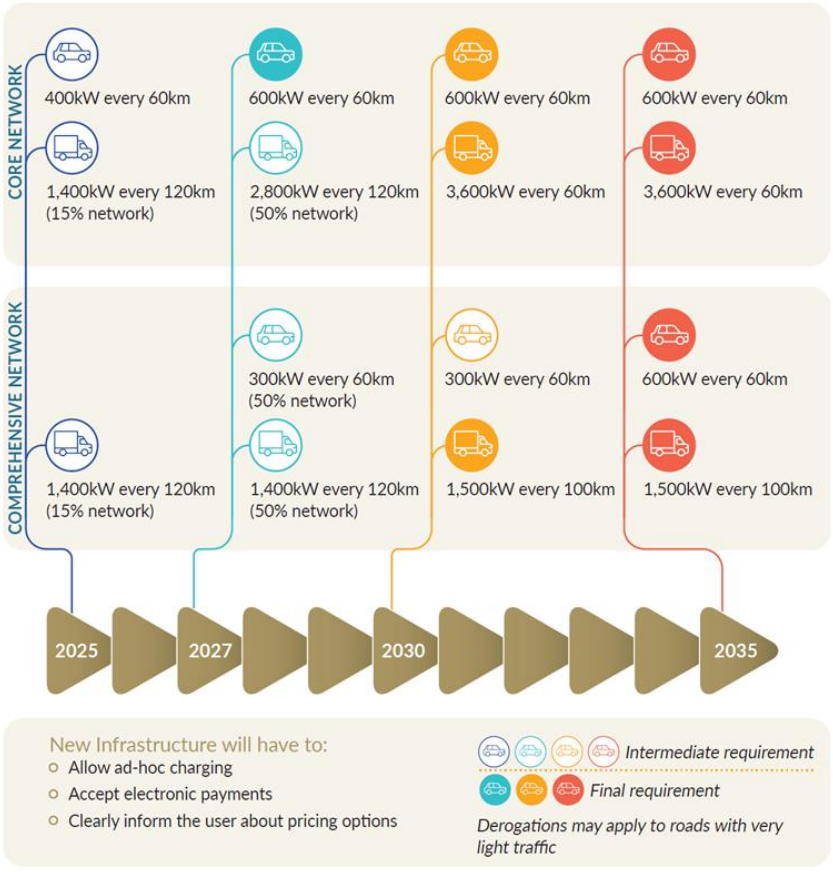

Figure 7: Summary of the LDV and HDV electric recharging infrastructure targets for the TEN-T core and comprehensive road networks that have been mandated under Articles 3 and 4 of AFIR.

AFIR establishes both national fleet-based targets for light-duty vehicles (LDVs) and distance-based targets on the TEN-T network.

The fleet based targets of AFIR obligate Member States to provide a total cumulative power output through publicly accessible recharging points of at least 1.3 kW per battery electric vehicle, and of at least 0.8 kW per plug-in hybrid electric vehicle in the country, with the aim of ensuring that uptake of light-duty EVs is matched by a commensurate deployment of sufficient publicly accessible recharging.

The distance-based targets for the TEN-T network set out in Article 3 are intended to ensure full coverage across the EU's main road networks by 2035, thereby ensuring easy and seamless travel and reducing 'range anxiety', and will see publicly accessible fast-chargers installed at 60 km intervals on the TEN-T network, with each recharging pool ultimately offering at least 600 kW in terms of power output.

In considering the fleet-based target, there is an important consideration with respect to the potential for adverse effects arising from any oversupply of private infrastructure and power output. Should an expectation be created that a disproportionately high power output is mandated to be provided at a publicly accessible recharging point, but which is paired with an expectation of low levels of usage, this may diminish the motivation of private market actors to invest in publicly accessible infrastructure.

In particular, owners of EVs are typically expected to make use to a large extent of home charging, or in collective parking places in residential and non-residential buildings. While the deployment of ducting infrastructure and of recharging points in such buildings is regulated by Directive 2010/31/EU (EPBD) and its recent revision, it will be important to take into account the availability of such private infrastructure when planning the deployment of publicly accessible recharging points.

As set out in the earlier Background chapter, ZEVI have already set out a National EV Charging Infrastructure Strategy and a draft National En-Route EV Charging Infrastructure Plan for the national road network. This plan constitutes the first part of a National EV Charging Network Plan, focusing on the en-route, Motorway and Primary and Secondary Roads. In addition to the en-route element, ZEVI is also working with Regional and Local Authorities to deliver a Regional and Local EV Charging Network Plan, including considerations of destination and neighbourhood charging at a local level. Once finalised, both plans will constitute our National EV Charging Network Plan.

It is worth noting that this proposed plan goes further than AFIR's requirements, covering the entire national road network and its proximity, coupled with a package of proposals on investment, regulation and policy instruments to be delivered over the coming years, and expects to provide greater coverage of recharging infrastructure than the minimum level mandated under AFIR.

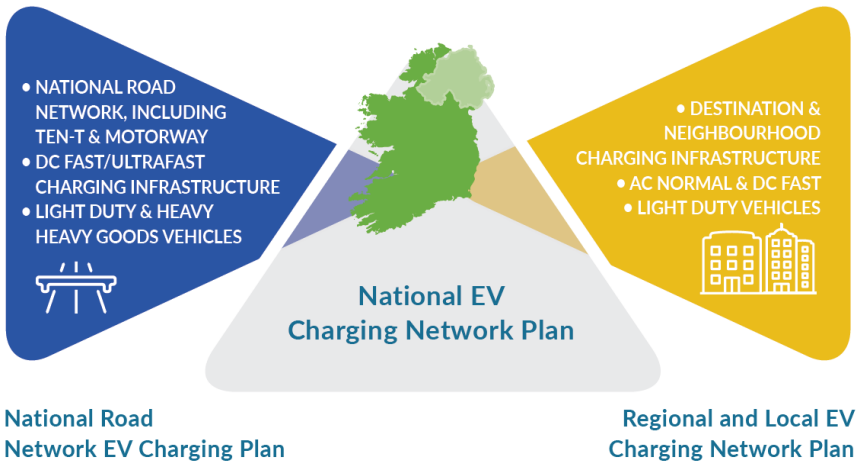

Figure 8: Overview of the constituent elements of the National EV Charging Network Plan.

ARTICLE 4 - ELECTRIC RECHARGING INFRASTRUCTURE – HDVS

It should be noted that the infrastructure and power output needs for heavy-duty vehicles are distinctly different to the recharging infrastructure needs of LDVs. In particular, the power outputs that are mandated under AFIR are recognised to raise a significant challenge for the energy grid.

However, these power outputs are the expected levels necessary to be provided such that they are capable of recharging an HDV within a driver's legal break time, and as necessary to provide confidence to the road haulage & logistics sector to invest in the battery HDV vehicle alternatives that are now coming to the market.

A gradual deployment across the TEN-T network from 2025 to account for time needed for the planning, design and implementation of infrastructure, which will require extending/upgrading the electricity grid in certain areas, land acquisition, environmental authorisations and the awarding of public contracts, is therefore considered appropriate for this sector.

In particular, AFIR mandates that by 31 December 2025, at least 15% of the TEN-T road network is equipped with publicly accessible recharging pools dedicated to heavy duty electric vehicles, and which can provide a total power output of at least 1,400 kW.

These targets then rise in staged manner, to ultimately ensure recharging pools dedicated to HDVs are provided with a maximum distance of 60 km between them on the TEN-T core network, with each recharging pool offering a power output of at least 3,600 kW and at least two recharging points with an individual power output of at least 350 kW.

The targets for the TEN-T comprehensive network are slightly reduced, where the minimum level of infrastructure that is to be provided will see publicly accessible recharging pools dedicated to HDVs at a maximum distance of 100 km between them.

Here, it is expected that given the particular make-up of the domestic Irish road freight sector, comprising a large number of small operators covering shorter distances than freight operators on the continent, it is expected that minimum level of HDV charging mandated by AFIR will be sufficient, and in fact, surpass the demand expected to materialize in the short-to-medium term.

For this reason, it is expected that our main objective for HDV recharging infrastructure will be to deliver the baseline required AFIR targets.

ARTICLE 6 - HYDROGEN REFUELLING INFRASTRUCTURE

With respect to hydrogen refuelling infrastructure, under this article's provisions, the baseline requirement mandated under AFIR is to ensure that hydrogen refuelling infrastructure is deployed in urban nodes on the TEN-T network and deployed with a maximum distance of 200 km between stations on the TEN-T core network by the end of 2030.

With the anticipated agreement regarding the revision of the TEN-T Regulation network that was noted earlier, this will mean an expected deployment of hydrogen refuelling infrastructure in Dublin, Cork, Limerick and Galway, and with a maximum distance of 200 km between stations on the TEN-T core network, and Member States will be obliged to demonstrate that by 2027, they are on a linear trajectory to achieving their 2030 targets..

However, as was noted above, hydrogen-powered vehicles currently have very low market penetration rates across the EU and are largely considered to be more appropriate for the heavy-duty sector, in instances or use-cases where battery-electric vehicles may not be technically feasible. Nonetheless, AFIR seeks to establish a sufficient minimum hydrogen refuelling infrastructure and is considered as essential in order to 'de-risk' private investment in hydrogen in transport, and to encourage and ensure that those who switch to hydrogen-powered vehicles can travel throughout the Union, without significant issue.

EU's own hydrogen strategy notes that the HDV segment is the most likely segment for the early deployment of hydrogen-powered vehicles and therefore, hydrogen refuelling infrastructure should focus on that segment initially, while also allowing LDVs to fuel at publicly accessibly stations. To this end, all publicly accessible hydrogen refuelling infrastructure stations are mandated to be capable of serving both LDVs and HDVs and serve gaseous hydrogen at 700 bar designed to be capable of dispensing a minimum cumulative capacity of 1 tonne of hydrogen per day.

As acknowledged in the Department of Environment, Climate and Communications *National Hydrogen Strategy*, Ireland's policy approach is toward the production of green hydrogen

leveraging our offshore wind potential, though further clarity on the end-uses and demand for hydrogen in transport will be required.

However, it is expected that the deployment of renewable hydrogen in Ireland will initially focus on hard-to-decarbonise sectors where, for some applications, energy efficiency and direct electrification may not provide feasible or cost-effective solutions.

These AFIR targets for land transport (and primarily the HDV sector) are expected therefore to be some of the first end-use elements to develop, while aviation and maritime, which will likely provide greater demand for hydrogen use in the longer term, will take more time to be established.

It will be important to ensure that these first deployments of hydrogen refuelling infrastructure in Ireland are progressed carefully to reduce the risk of stranded assets, to this end the Department has undertaken two research studies through the Shared Island Initiative and in cooperation with the Department of the Taoiseach and the Department for the Economy in Northern Ireland, relating to hydrogen refuelling infrastructure on an all-island basis.

The Phase 1 study explored safety regulatory frameworks applying to hydrogen refuelling infrastructure on both sides of the border, highlighting commonalities and emphasizing the importance of interoperability and the need to avoid regulatory divergence, while the Phase 2 study has examined the feasibility of a green hydrogen refuelling corridor between Dublin and Belfast and is expected to conclude in the coming months.

While AFIR does not set any further obligation for hydrogen refuelling infrastructure in the aviation or maritime sectors, it may be appropriate in the policy framework to consider that the roll-out of hydrogen infrastructure could also take into account the emergence of new technologies, such as liquid hydrogen technology, and further consider its potential use in the aviation and maritime sectors.

ARTICLE 8 - LIQUEFIED METHANE INFRASTRUCTURE FOR LAND TRANSPORT

As was mentioned earlier, AFIR considers the existing infrastructure for liquefied petroleum gas (LPG), compressed natural gas (CNG) and liquefied methane in land transport to be mature across the EU, and so considers only a limited targeted policy for liquefied methane infrastructure deployment necessary to close remaining gaps in the network

The previous Directive 2014/94/EU established the TEN-T core network as the basis for the deployment of natural gas infrastructure for transport, and so AFIR sets an aim of closing any remaining gaps in the network, so as to ensure that refuelling points are established every 400 km along TEN-T core by end 2025, where there is demand, after which the target should cease to apply.

Also as noted earlier, where the regulation references '*liquefied methane*', this definition extends to include LNG, liquefied biogas or synthetic liquefied methane, and blends of those fuels, as set out in Article 2(34).

In line with the previous Directive, the initial phase of CNG station rollout in Ireland was undertaken via Gas Network Ireland's Causeway Study. The Causeway Study, which was part-funded by EU and by the Commission for Regulation of Utilities (CRU), also sought to examine the impact of the introduction of CNG on the gas network, and established CNG stations in Dublin Port, Cashel, Clonshaugh and Limerick.

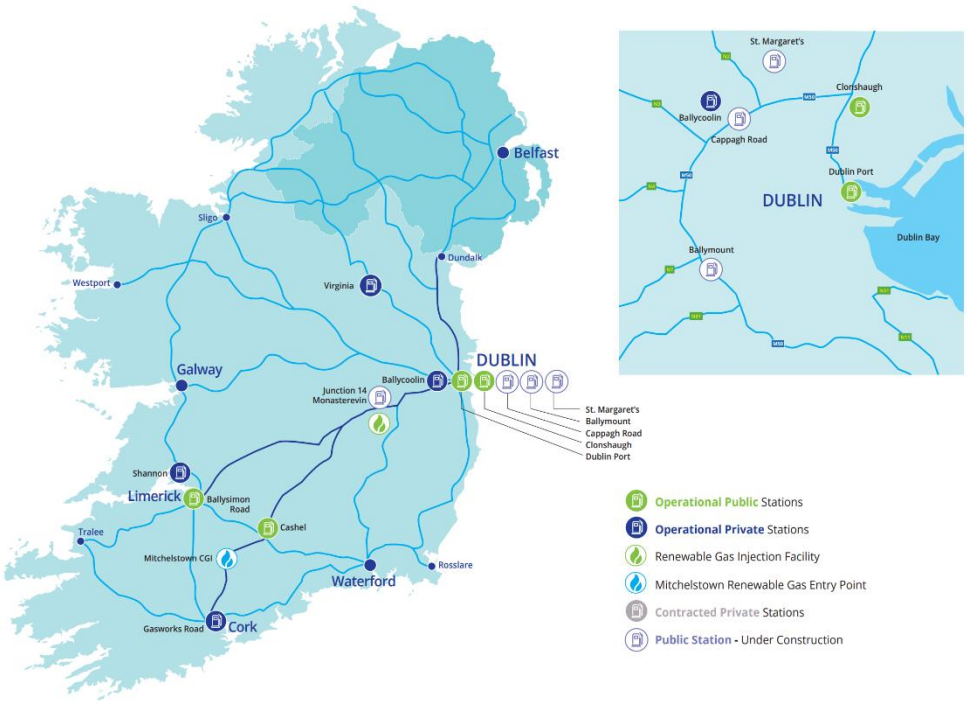

Figure 9: Map of operational and planned CNG refuelling stationl in Ireland and in the Dublin region. (Source: GNI)

The delivery of additional stations under the Causeway programme was set against the backdrop of extremely challenging market conditions for gas in transport in Ireland. Covid-19 had a pronounced negative impact upon CNG station rollout, and there was a significant deterioration in market conditions for gas in transport due to the dramatic upward movement in the wholesale price of natural gas in the lead-up to and following the Russian invasion of Ukraine, in addition to extended timelines in terms of receiving safety case approval for installation of CNG refuelling stations.

Amid such a challenging mix of market conditions, Gas Networks Ireland have scaled back from their original level of their ambition, however looking ahead and in line with the National Biomethane Strategy, there is some potential for vehicles to be fuelled by

biomethane (bioCNG), an indigenously produced renewable gas, offering some potential to assist in the decarbonisation of freight transport.

In 2023, certified renewable gas served over 25 million kWh of Irish transport energy demand, accounting for 94% of total gas supplied for transport, and in developing the national policy framework, it will be important to consider what level of additionality is required in this space.

ARTICLE 9 - PORT INFRASTRUCTURE – ON SHORE POWER SUPPLY

This article of AFIR sets a mandate that by 2030, TEN-T ports of Member States must provide a minimum shore-side electricity supply for seagoing container ships, as well as seagoing passenger ships above 5,000 gross tonnes (GT) while moored at quayside.

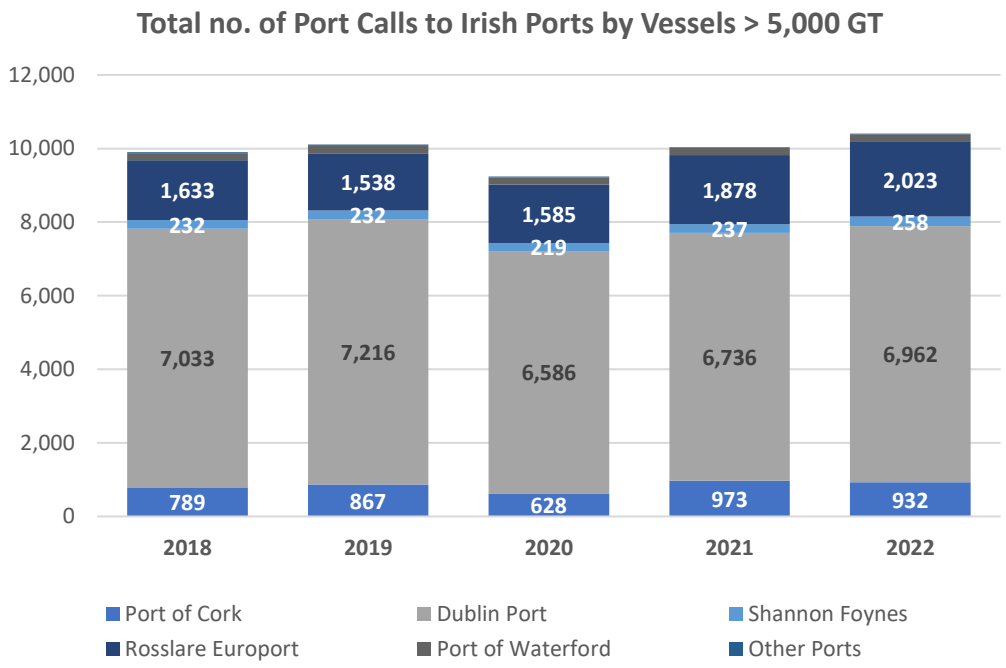

Figure 10: Total number of port calls to Irish ports by vessels weighing above 5,000 GT over 2018-2022 (Source: Eurostat)

TEN-T core or comprehensive ports that reach a minimum number of annual port calls trigger the obligation to provide onshore power supply (OPS) for at least 90% of total port calls. Only ships that remain two hours or more at berth must be supplied with shore-side electricity. Averaged over a three-year period, the minimum number of port calls is as follows:

- 100 port calls by seagoing container ships above 5,000 GT;
- 40 port calls by seagoing RoRo passenger ships;
- 40 port calls by speed passenger craft; and
- 25 port calls by other seagoing passenger ships above 5,000 GT.

The use of shore-side electricity facilities, either fixed or mobile, can serve to provide a clean power supply and contribute to reducing the environmental, climate and health impact of seagoing ships. The installation of OPS terminals at ports will lead to a reduction in carbon emissions for the vessel and the port environment. OPS reduces noise from vessels as engines will be switched off when at berth, while also reducing the cost for vessel owners who are using less fuel. In addition, it can improve the working environment of seafarers onboard the vessel. It is anticipated that vessels plugging into OPS while moored at the quayside will lead to significant air quality benefits in Irish port towns and cities.

However, it is acknowledged that the fulfilment of these AFIR provisions will be particularly challenging for maritime stakeholders. Firstly, there is a significant capital cost to ports in investing in the provision of on-shore electricity supply infrastructure, and it is understood that there could be minimal return on investment for the port companies, as the energy providers are expected to take a majority share of the revenues.

Ports will also face electrical grid and engineering challenges ports to cater for the retrofitting of legacy electrical infrastructure in brownfield sites. Such retrofitting is required to serve the power output capacity needs that can be expected from large vessels such as cruise ships.

There also needs to be due consideration regarding management of the risk that any such OPS infrastructure could become a stranded asset. Though Article 6 of the FuelEU Maritime Regulation will oblige vessels covered by the categories above to connect to OPS and use it for all their electrical power demand at berth from 1 January 2030, certain exemptions apply, including for ships using alternative zero-emission technologies for their electrical power demand at berth.

Some examples of alternative technologies capable of serving such power needs could be through the use of onboard zero-emission fuel cells, via on-board electrical energy storage, or via on-board power generation from wind and solar energy. In keeping with principles of technological neutrality, while AFIR mandates that TEN-T ports provide this OPS infrastructure, industry and maritime operators must still be allowed to navigate the most cost-efficient path towards reaching their GHG reduction targets.

AFIR therefore acknowledges that it is important that a coordinated approach is taken throughout the process of planning, development and deployment of shore-side electricity, so supply and demand match accordingly. It therefore encourages public and private stakeholders on both the ship and port side to coordinate closely.

AFIR also encourages deploying shore-side electricity from an area in a port that results in the maximum return on investment and occupancy rate, as well as maximum environmental benefits (in terms of GHG emission reductions and air pollution reductions).

More broadly, it will be important to establish a harmonized and interoperable common framework for shore-side electricity that facilitates port to vessel compatibility, and which is supported by the necessary technical, financial, legal, engineering and environmental studies.

To this end, the Irish Maritime Development Office (IMDO) have been conducting analysis on the feasibility and future need of OPS. The Port of Cork was selected as a case study to establish the key considerations in the provision of OPS at Irish ports. In December 2023, the IMDO presented its initial findings of the study to key stakeholders from the maritime sector. While representatives from the shipping industry welcomed the provision of onshore power, a number of ports raised concerns regarding the investment level needed to implement at their facilities.

The IMDO, alongside other European ports, are partners on the EALING project (European flagship action for cold ironing in ports). The project aims to conduct the technical, environmental, socio-economic and financial studies, as well as establish a common harmonized and interoperable EU framework for OPS infrastructure.

The planned update to our National Ports Policy will also include the re-evaluation of the policy framework for the decarbonisation of our ports as a key consideration, and extending this analysis and learnings from the Port of Cork study to our other major ports on the TEN-T network will be a key step toward developing an appropriate pathway to the deployment of this infrastructure.

ARTICLE 11 - PORT INFRASTRUCTURE – LIQUEFIED METHANE

As set out earlier, AFIR considers that only a limited targeted policy for liquefied methane infrastructure deployment is necessary to close remaining gaps in the network.

The EU's Smart and Sustainable Mobility Strategy points to zero-emission seagoing ships becoming market ready by 2030, though fleet conversion is expected to take place gradually due to the long lifetime of seagoing ships. The continued use of liquefied methane is therefore considered likely to continue to play some role in maritime transport, where no economically viable zero-emission powertrain technology is currently available.

With respect to liquefied methane infrastructure in our maritime ports (e.g. LNG infrastructure), this provision of AFIR requires Member States to ensure that an 'appropriate number' of refuelling points for liquefied methane are put in place at any TEN-T core maritime ports they designate, in their national policy framework (taking into consideration port development, existing liquefied methane refuelling points, and actual short-and long-term demand) by 1 January 2025.

Here, it is noted that Government has set out in its *Policy Statement on the Importation of Fracked Gas*, that it does not support the importation of fracked gas and that it would not be appropriate for the development of any LNG terminals in Ireland to be permitted or

proceeded with pending the finalisation and further recommendations arising from the review of Ireland's energy supply (*Energy Security in Ireland to 2030*).

Previous analysis has suggested that there is no immediate demand for liquefied methane refuelling in Irish ports, and it is therefore considered appropriate that in our approach to meeting this AFIR requirement, we will consider the deployment of any such infrastructure to be driven by market demand and to prioritise mobile or temporary infrastructure for liquefied methane, such as tanks, tank truck trailers, truck tankers, mobile containers, bunker vessels and barges, over the installation of any hard infrastructure, such as a new terminal.

ARTICLE 12 - AIRPORTS – ELECTRICITY SUPPLY TO STATIONARY AIRCRAFT

Under this Article, Member States are obliged to ensure that the use of an external electricity supply replaces the use of the engines when aircraft are stationary at airports. In particular, that electrical ground power units are deployed at contact and remote stands at airports on the TEN-T network, and deployed such that these provisions are in place by end 2024 for contact stands, and by end 2029 for remote stands. Furthermore, by 1 January 2030, the electricity supplied to these units should originate from the electricity grid or be generated on site without using fossil fuels.

Airports with less than 10,000 commercial flights annually are exempted from the remote stand provision while dedicated de-icing stands, stands inside designated military areas, and those specially dedicated to general aviation aircraft below 5.7 tonnes of maximum take-off weight are exempted from the mandatory requirements.

The use of an external electricity supply over engines while aircraft are stationary in our airports is expected to reduce pollutant and noise emissions, improve air quality and reduce the impact of aircraft on climate change, and can be ensured by either fixed or mobile ground power units.

It is also noted that given a single ground power unit, whether fixed or mobile, is capable of serving multiple stands and of being deployed to meet operational needs, it is not necessary for each stand to be equipped with a fixed or mobile ground power unit.

While the mandatory infrastructure to be provided under AFIR is limited to ground power units for stationary aircraft, as noted earlier, Member States are also obliged to consider an overview of the state of play, perspectives, and planned measures in respect of deployment of alternative fuels infrastructure in airports other than for electricity supply to stationary aircraft, such as for electric recharging and hydrogen refuelling for aircraft;

ARTICLE 13 - RAIL – AF TECH AND PROPULSION SYSTEMS

Finally, we note that though the development of railway infrastructure is primarily considered by the TEN-T Regulation (EU) No 1315/2013, AFIR establishes under this article that as regards railway infrastructure that is not part of the TEN-T core or comprehensive rail network, that Member States should assess the development of alternative fuel technologies and propulsion systems for rail sections that cannot be fully electrified for technical or cost-efficiency reasons, such as hydrogen- or battery-powered trains.

To this end, future alternative fuel infrastructure needs for rail transport are expected to be guided by the final All Island Strategic Rail Review. Of particular note in this space, is the fact that Iarnród Éireann are expected to be the first in Europe to trial a retrofitted hydrogen freight locomotive on its network, as part of a proof-of-concept hydrogen fuel project that will see the conversion of a diesel freight locomotive to hydrogen.

This project is being undertaken with a traction company from Latvia, and where the range of the movements by rail is appropriate, is expected to provide a practical and cost-efficient way for rail operators to decarbonize their existing fleets on rail sections that cannot be fully electrified.

4.6 Barriers to Uptake and Infrastructure Deployment

As noted throughout the previous section, the delivery of the alternative fuels infrastructure called for under AFIR within the mandated timeframes will be extremely challenging.

While past public and private sector investment has ensured a certain level of infrastructure provision with respect to electric vehicle recharging is in place, the AFIR mandates for heavy-duty vehicle recharging, hydrogen infrastructure and on-shore electricity supply in our maritime ports are all recognised to pose significant challenges, given that these areas are an emerging market and it is possible that the level of vehicle (vessel) uptake that would be required to justify a commercial investment has yet to materialise.

In mandating this minimum level of infrastructure, AFIR is therefore seeking to further incentivise first-movers in these areas to transition to alternative fuels. However, as is common in emerging markets, the initial costs experienced by users are greater than what may be expected in more mature markets, and users have limited choice in the vehicles and vessels that are available.

This can establish a 'wicked problem' in terms of a perceived lack of consumer demand and acceptance of alternatively fuelled vehicles and infrastructure, with operators less willing to invest private capital in the development of alternative fuels infrastructure, which further feeds a low level of consumer confidence that the infrastructure is appropriate to their perceived needs.

Moreover, the ever-increasing electrification of transport will require closer integration with the electricity sector, and the power output requirements that are mandated under AFIR, are in several areas, expected to place significant additional strains on our electricity grid.

In developing the national policy framework, it will be important to consider how best to mitigate against key barriers and challenges that are likely to be faced. Such barriers may include:

- High cost of alternative fuelled infrastructure relative to traditional fossil-fuelled alternatives;
- Misinformation with respect to the potential benefits or user experience of alternative fuels;
- Uncertainty for operators in the face of a rapidly evolving policy and technological landscape.
- Lack of available staff and delivery resources in relevant agencies / local authorities;
- Identification of appropriate sites and completion of required environmental assessments;
- Lack of financing to progress infrastructure deployment within mandated timeframes;
- Lack of available grid capacity or delays in connection requests;

- Risk of stranded assets or of under specifying the level of infrastructure
- Supply chain disruptions and capacity constraints;
- Administrative burdens with respect to safety regulations or planning regulations that lead to delays and potential further restrictions;

Consultation Question(s)

11. **What are the key and most pressing barriers you see with respect to the deployment and use of alternative fuels infrastructure in the land transport / maritime / aviation sector? What mitigating steps or measures can be undertaken to address these barriers?**

12. **Given a rapidly evolving policy and technological landscape, how best can we reduce or manage the risk to ensure that the deployment of alternative fuels infrastructure does not lead to the creation of stranded assets?**

13. **In what capacity and to what extent do you believe the EU / Government / public sector / private sector each hold responsibility for leading or supporting alternative fuels infrastructure deployment and reducing implementation barriers?**

4.7 Identification of Supporting Measures

As set out previously, in considering the types of policies and measures that might support the promotion of alternative fuels in transport, there is a broad spectrum of potential mechanisms which could be proposed for consideration, such as:

- **Legal Measures** – consisting of legislative, regulatory or administrative measures to support the build-up of alternative fuels infrastructure, such as national targets, obligations on operators to deploy infrastructure, fuel station concessions, etc.
- **Policy Measures**, such as
    - Direct incentives for the purchase of alternative fuels vehicles or for building the infrastructure;
    - Availability of tax incentives to promote alternative fuels vehicles and the corresponding infrastructure;
    - Use of public procurement in support of alternative fuels vehicles and infrastructure;
    - Demand-side non-financial incentives, e.g., preferential access to restricted areas, parking policy and dedicated lanes;
    - Technical and administrative procedures and legislation regarding facilitating the authorisation of alternative fuels infrastructure;
- **Deployment & Manufacturing Supports** – incentives for manufacturing, purchase subsidies for new technologies, tax exemption/reductions and public-private partnerships to support the establishment of manufacturing plants for alternative fuels technologies.
- **Research, Technological Development & Demonstration** –Living Labs, supports for dedicated research programmes for alternative fuels, alternative fuels vehicles, vessels and aircraft, as well as their recharging and refuelling infrastructure.

Examples of actions progressed under the previous national policy framework (cf. Appendix) include the establishment and work programme of the Low-Emission Vehicles (LEV) Taskforce, which subsequently led to the creation of ZEVI; the establishment of a Green Bus Fund and pilot testing of alternatively fuelled bus trials, the establishment of a taxi scrappage incentive scheme, and feasibility studies with regard to on-shore electricity supply in our ports.

In particular, for public service obligation (PSO) bus services, where the NTA is responsible for the purchase of new bus and coach fleets required for the operation of the majority of PSO public transport services nationally, the NTA is no longer purchasing diesel only urban buses for the operation of urban bus services, and a decision has now been made to purchase zero-emission urban buses only.

The NTA has signed a framework agreement for the order of eight hundred battery-electric double-deck buses and currently has a total of 396 zero-emission battery-electric buses either delivered or on order, with approval in place to order another 80 zero-emission battery-electric

buses. The first all-electric town bus service in Ireland was also established in Athlone in January 2023, as the first project completed under the Department's Sustainable Mobility Policy Pathfinder Programme, which has recently been followed by the roll-out of the first electric regional city bus fleet in Limerick. In total, 55 new double-decker battery-electric buses are expected to service more than 2.1 million emission-free kilometres in Limerick city annually, as part of a €54m investment in the city's bus service.

Alongside these, a number of fiscal measures, such as the Accelerated Capital Allowance and reduced BIK and motor tax and vehicle registration tax are currently in place to promote and support the use of alternative fuels in transport.

In addition to the identification of measures to ensure the delivery of the mandatory infrastructure targets set out above, Article 14(1), parts (d)-(n), and Article 14(2), parts (a)-(d) set out a number of particular use-cases that are to be considered when developing the national policy framework.

These include those measures, planned or adopted, which are intended to promote the deployment of alternative fuels infrastructure for:

- captive fleets, public transport services, and car sharing;
- their contribution to the flexibility of the energy system and to the penetration of renewable electricity into the electric system; and
- accessible use by older persons, persons with reduced mobility and persons with disabilities in accordance with the accessibility requirements of Directive (EU) 2019/882;

AFIR also stresses the importance of providing a sufficient number of publicly accessible recharging points at public transport stations, such as port passenger terminals, airports and railway stations, as well as in residential areas where off-street parking is scarce and where vehicles are parked for extended periods of time.

With respect to the freight sector, the importance of recharging in private depots and at logistics/industrial centres is recognised as enabling the possibility for freight operators to avail of overnight and destination charging, as well as encouraging the deployment of recharging and refuelling infrastructure at multimodal hubs, where other transport modes could also be supplied.

It is noted that in the short-term, it might also be the case that demand across the transport subsectors for biofuels to meet immediate decarbonisation targets could also risk biofuel production/supply 'lock-in' and raise an unintended disincentive to early take-up of zero-emission alternative technologies which are required to meet net-zero.

Therefore, consideration may need to be given to policies and measures that accelerate the switch to zero-emission alternatives rather than biofuels. It has been highlighted by the

Climate Change Advisory Council, among others, that the long-term sustainability of biofuels and their feedstocks, including used cooking oil, in the context of global biodiversity, climate crises and the current pressures facing the global food supply and the potential for a high indirect land-use change (ILUC) risk needs careful consideration.

The risk of fuel fraud in global biofuel feedstock supply chains is being addressed at a European level through the introduction of more rigorous verification requirements, and a separate working group on the sustainability of biofuels supply under the RTFO, has been established in the Department that will consider the contribution of increased demand for biofuels as a factor in fraud risk.

Notably, AFIR also considers that the deployment of publicly accessible recharging infrastructure should primarily be the result of private market investment, supported by Member States where public support is needed to establish a fully competitive market.

In this call for submissions, we are interested in hearing your views with regard to the potential measures that might be implemented to support and encourage the use of alternative fuels in transport.

Consultation Question(s)

14. **In reviewing the list of previous policy commitments and measures which were under consideration to support the previous AFI Directive (see Appendix), which measures do you consider were most (or least) effective?**
15. **What additional measures could be considered to support the mandatory and optional elements, introduced under Article 14 of AFIR, that are to be set out in the updated National Policy Framework?**
16. **To what extent do you believe additional EU interventions or supports are required? Is further Government intervention through taxation instruments and/or legislation needed to force the uptake and deployment of alternatively fuelled vehicles and infrastructure?**
17. **What measures could be implemented in order to ensure greater consistency between alternative fuels infrastructure planning and deployment with enhancements and the development of the national energy grid?**
18. **To what extent should measures that incentivise the supply of alternative fuels be set out in the national policy framework? What renewable fuel sources, feedstocks or methods of generation should be prioritised, and how can we best ensure the sustainability of their supply?**
19. **What measures can we take to ensure that the use of transitional biofuels to meet immediate decarbonisation targets does not lead to 'lock-in' effects or disincentivise the early take-up of zero emission alternative technologies?**

4.8 Competition & Consumer Protection

AFIR introduces some important provisions and obligations for operators and mobility service providers under Article 5 (recharging infrastructure) and Article 7 (hydrogen refuelling infrastructure) with regard to competition and consumer protection, and via the technical specifications and standards set out in its Annexes.

Price transparency and the ability to recharge or refuel on an ad hoc basis and pay easily and conveniently without the need to enter into a contract are, in particular, recognised as crucial to ensuring seamless and easy recharging and refuelling.

In particular, mobility service providers are tasked to ensure that, prior to the start of an intended recharging session, all price information specific to that recharging session, clearly distinguishing all price components and applicable e-roaming costs and other fees or charges applied is made available to end users.

A key aim of the Regulation is also to limit or avoid the development of 'closed networks' across the Union, such that, for example "*any electric vehicle driver must be able to charge any electric vehicle (whatever the manufacturer), at any publicly accessible charging station (whatever the charger maker, whatever the CPO, whatever the country), using any service provider (whatever the mobility service provider)*".

This principle and this goal imply some "universal" common requirements, on a governance and technical level with regard to interoperability and technical infrastructure standards, but in particular, also introduces obligations on mobility service providers and operators of recharging and refuelling points to, e.g.:

- provide end users with the possibility to recharge or refuel their vehicle on an ad-hoc basis;
- accept common payment instruments through terminals and devices used for payment services;
- ensure end users always have the right not to make use of automatic authentication; and
- ensure that prices charged are reasonable, easily and clearly comparable, transparent and non-discriminatory.

In a competitive market environment, service providers, who are offering a similar service, need to decide how they are competing with each other – this can be based on pricing, quality and or service differentiation. This is the desired direction to ensure, that customers can decide their service providers based on their own interests and business models.

Nevertheless, it needs to be ensured, to enable interoperability of the different service providers, that all are relying on a similar (minimum) level of requirements, and such mandatory requirements, which need to be fulfilled by all service providers, are established

via AFIR's mandatory obligations and the technical specifications and standards set out under AFIR's Annex II.

It is noted that the EU Commission is expected to adopt further standards via a Delegated Regulation later this year including technical specifications regarding communication between the electric vehicle and the recharging point (vehicle-to-grid communication).

With respect to wider competition in the market, AFIR maintains that the deployment of publicly accessible infrastructure should primarily be the result of private market investment, supported by Member States where public support is needed to establish a fully competitive market.

A key element of establishing a competitive market is the recognition that new services can emerge over time, and entities offering those new services should be able to operate under fair market conditions. In particular, operators of recharging or refuelling points should not give unduly preferential treatment to some mobility service providers, for instance through unjustified price differentiation, which may impede competition and ultimately lead to higher prices for consumers.

In view of limited alternative locations for recharging points for EVs on motorways, existing motorway concessions such as for conventional refuelling stations or rest areas are also recognised as a particular cause for potential concern, since they can run for very long periods, or sometimes, even lack a specific end-date altogether.

Member States are therefore encouraged to seek, to the extent possible and in compliance with Directive 2014/23/EU on the award of concession contracts, to competitively award new concessions specifically for recharging or refuelling stations on or adjacent to existing motorway rest areas in order to prevent the encroachment of green spaces, as well as to limit deployment costs and to enable new market entrants.

Consultation Question(s)

20. **How best can we monitor the development of the alternative fuels market to ensure a level playing field for new market actors, and avoid business practices that may limit competition or misguide consumers and hamper price transparency?**

4.9 Health & Safety

The safety and security of users, particularly at unattended recharging or refuelling facilities, is of paramount importance and a key consideration to be addressed in the development of our national policy framework.

In meeting the mandated infrastructure requirements under AFIR, it is expected that we will in a number of instances, be providing the first instances of such infrastructure in Ireland and so additional operational risk mitigations associated with e.g., flammable gases, explosive atmospheres, pressurized equipment, and safe operation of shoreside power supply to ships may be required.

Health and safety regulation is, in general, based on the underpinning principle that risk should be reduced to as low as reasonably practicable (ALARP) and that the body that generates the risk is responsible to do this as they best understand it and are best placed to manage it.

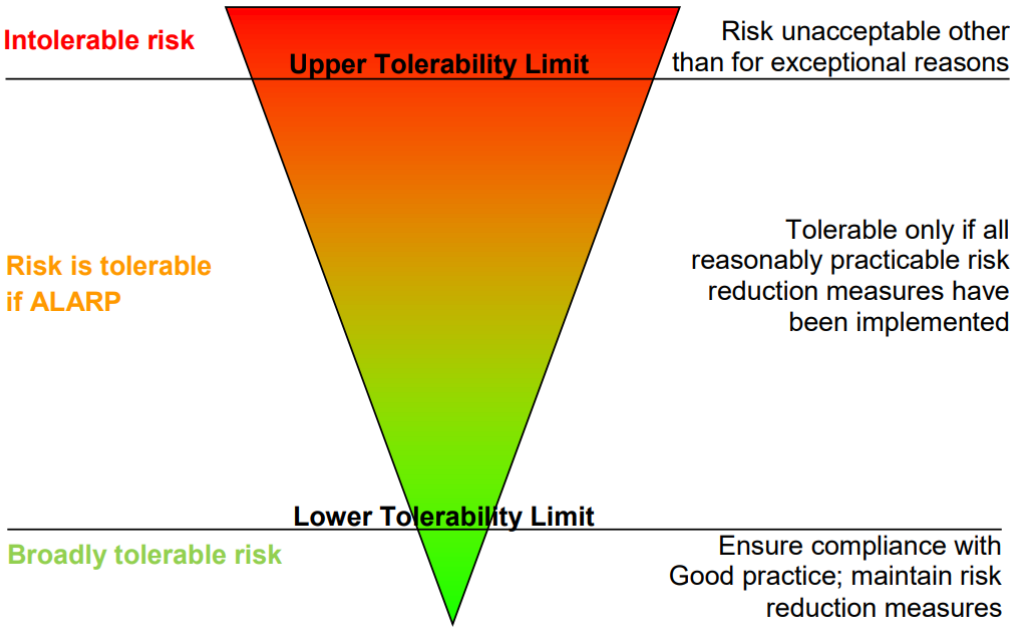

Figure 11: Schematic diagram illustrating the ALARP principle (Source: CRU ALARP Guidance).

This places the onus on the owner/operator to implement reasonably practicable risk reduction measures to protect the workforce and members of the public from the risks arising from their activities, including measures such as equipping recharging or refuelling stations with emergency buttons, displaying emergency services contact information, ensuring adequate lighting, or by any other appropriate measures.

For hazards that are well understood, the judgement of what is reasonably practicable is likely to be made by following good practice, whereas for higher risk, less established operations an assessment requiring engineering risk assessment, or even a precautionary approach is required.

While guidance on good practice and certain technical and safety specifications can be expected to be specified in European or international standards, alternative fuels infrastructure is a rapidly developing area and may require new national codes, guidance and training programmes to be developed.

In Ireland, occupational health and safety legislation also follows from the Safety, Health and Welfare Act 2005, which addresses aspects of workforce safety associated with employment. Multiple regulations sit under the Act, including those currently in place that would be applicable to recharging and refuelling facilities.[4]

Where the Gas Safety Framework provides for a safety case to be approved for compressed natural gas (CNG) refuelling stations before operations can commence, in order to inform a potential approach to the safety regulation of hydrogen refuelling stations, in 2023 the Department commissioned a research study, in collaboration with the Shared Island Unit of the Department of the Taoiseach and the Department for the Economy (NI), to review existing safety regulations that may be applicable to hydrogen refuelling stations.

The study considered the regulatory approach in other countries, the potential for the divergence of UK standards from EU standards and how this may impact interoperability on the island of Ireland and provided options for how Ireland may design its own safety regulatory regime.

Options proposed in this study, for further consideration were:

1. Not to introduce new legislation and remain reliant on existing legislation;
2. Develop new hydrogen safety regulation specific to hydrogen refuelling stations; or
3. To implement a safety case regime for hydrogen refuelling stations.

The study highlighted there is a commonality of approach across Europe via applicable EU directives on flammable atmospheres (ATEX) and pressure equipment. As such, it concluded that appropriate legislation already exists in Ireland and no EU member state has yet implemented any specific safety regulation for hydrogen refuelling infrastructure.

Nonetheless, the study highlighted the need for close coordination where more than one regulator has responsibility in an area (e.g., both the Commission for the Regulation of

[4] For example. regulations regarding the use of pressure systems (such as would be required in a hydrogen refuelling station), are detailed under the European Union (Pressure Equipment) Regulations 2017, with the HSA being the regulator for places of work.

Utilities and the HSA are designated as regulators for CNG refuelling stations (public vs. private).

In the maritime sector, AFIR also notes that new standards are required to facilitate and consolidate the entry into the market of alternative fuels, in relation to electricity supply and hydrogen, methanol and ammonia bunkering, as well as standards for communication exchange between vessels and infrastructure.

Given the global nature of maritime transport, any guidance or technical specifications for maritime transport that are to be adopted should be consistent with those of the international rules established by the International Maritime Organisation (IMO), who act as the key body in adopting uniform and international recognised safety and environmental standards for the sector.

Consultation Question(s)

21. **Given the broad range of modes and alternative fuel infrastructure types considered within the scope of AFIR, how best can we ensure that regulatory bodies are suitably equipped to perform their roles effectively? What additional powers or functions may be required?**

22. **Where a technical standard or protocol is stipulated by regulation, how best can conformance be ensured and validated, without undue administrative or operational burden?**

4.10 Data

Unlocking the potential of mobility data is essential to accelerating the transition towards more sustainable and smarter mobility. By better leveraging data in the alternative fuels market, we can expect to address information gaps, support the creation of innovative services that help optimize personal, passenger and freight transport, and provide valuable insights to researchers and policy makers.

Moreover, the increasing number of electric and alternatively fuelled vehicles in road, rail, maritime and other transport modes will require recharging and refuelling operations to be optimized and managed in such a way that does not cause congestion and takes full advantage of the availability of renewable electricity and low electricity prices in the system. The smart use and leveraging of alternative fuels data with other datasets will be key to ensuring that we maximise the efficiency of such infrastructure.

As a means of enhancing consumer confidence in the use of alternative fuels, it is also important that transparent, easy-to-understand and sufficient information regarding the geographic location, price information, characteristics and services offered at publicly accessible recharging and refuelling points is made available for the user.

Data accessibility, data availability and data quality are therefore key elements to ensuring that we can foster a competitive market with quality services, where e.g., access to data on recharging prices is fundamental, on the one hand to allow consumers to make informed decisions based on transparent information, but on the other hand also for the public sector to monitor prices in the alternative fuels market and ensure fair competition.

Though the previous AFI Directive had sought that certain types of alternative fuels data be made available on an open and non-discriminatory basis, in effect, Member States were highly dependent on charge point operators making data available.

The lack of a harmonized framework with regard to the data types, quality and frequency of update that each Member State sought from operators also gave rise to costs and challenges for operators in meeting different member state requirements and data architectures, ultimately yielding a non-uniform and inconsistent data ecosystem.

AFIR therefore seeks to create a uniform approach to the data format, data quality and the frequency with which data is made available across Member States, introducing an obligation under Article 20 for operators of recharging and refuelling points to make available and accessible certain static and dynamic data through National Access Points (NAPs), at no cost, to third parties, by 14 April 2025.

The Department's ZEVI office is currently working with TII to establish the required data architecture and to finalise a data strategy that will set out the proposed approach to implementing the requirements of AFIR's Article 20. The EU Commission is expected to

adopt further delegated and implementing regulations in the coming months, which will supplement the data provisions outlined in AFIR's Article 20, with regard to the format, frequency and quality of data to be provided.

Consultation Question(s)

23. **How best can we ensure that the alternative fuels infrastructure data that is collected supports further research and policy makers to better plan, regulate or manage our transport and energy systems? What additional data needs do you foresee as being required and is there an established remit or further technical mechanism required to ensure the provision of that data?**

24. **Should additional data reporting requirements and regulations be introduced with respect to private infrastructure and semi-private installations in order to better understand the total grid capacity needs and patterns of infrastructure usage?**

4.11 Accessibility

In developing our national policy framework, a key principle to be followed is that transport should be safe and accessible to all.

Universal Design, which considers persons of different ages, ability, or mobility can realise this, and the Department's Statement of Strategy states that the department, using an integrated universal design approach "will continue to progressively make our transport systems accessible for persons with disabilities, persons with reduced mobility and older people".

With respect to alternative fuels infrastructure, this means that in principle, the location of all recharging and refuelling stations, as well as the recharging and refuelling stations themselves, should be designed in such a way that they are accessible to and user-friendly for as much of the public as possible, in particular older persons, persons with reduced mobility and persons with disabilities, and which meet the accessibility requirements for products and services established under Directive (EU) 2019/882.

Measures to be considered when deploying infrastructure therefore should include, for example, providing sufficient space around parking places, ensuring that the recharging station is not installed on a kerbed surface, ensuring that the buttons or screen of the recharging station are at an appropriate height, and that the weight of the recharging and refuelling cables is such that persons with limited strength can handle them with ease.

In line with these considerations, the Department is also committed to meeting its obligations under the United Nation's Convention on the Rights of Persons with Disabilities (CRPD) to consult with and actively involve persons with disabilities in the development of its policies.

ZEVI has also published draft Universal Design Guidelines for EV Charging Infrastructure (UDG) for consultation in June 2023, and which are expected to be finalized in coming weeks. These guidelines will set out the minimum requirements to be provided when installing an EV charge point, providing technical assistance and a set of recommendations that provide a clear direction to those involved in the manufacturing, procurement, installation, and operation of publicly accessible charging infrastructure, to help entities design, install and operate infrastructure in a manner that is accessible for everyone.

The Universal Design Guidelines summarise key considerations for accessibility when installing electric vehicle charging stations, including the design of the charging station itself, accessibility of the site, and information and communications to inform users before, during, and after a charging session. Recommendations for the design of each key element associated with the charging station, the accessibility of the site, and the information and

communications needed to inform users before, during, and after a charging session are provided.

The Guidelines focus on publicly accessible electric vehicle charging infrastructure (fast and slow) for light passenger vehicles and aim to ensure that charging stations are designed to be inclusive for all users. The Guidelines will also be useful to inform charging infrastructure for commercial light vehicles and privately owned chargers in some instances.

They have been structured according to the following headings:

- **Charging Station Design**: this includes the design and component specifications of accessible charging station infrastructure (e.g., cable length, plug handle, socket cover) and their immediate surroundings.
- **Site Design**: this includes the physical aspects of the environment surrounding the charging station including its location, placement and spacing of the charging station.
- **Information and Communications:** this includes the information and communications (physical and digital) a user has access to before, during, and after a charging process.

These guidelines will also serve as a template should additional specific accessibility considerations for refuelling stations be necessary, and it is expected that where public funding supports the installation of a publicly accessible charge point, it will be a condition of funding that the infrastructure being provided must comply with these guidelines. Further user testing will also be undertaken, to identify aspects of the guidelines that may require standards to be developed.

Consultation Question(s)

25. **What measures should be adopted to ensure the accessibility of alternative fuels infrastructure for all users? How might we best ensure the accessibility of alternative fuels infrastructure in private, or semi-private locations?**

4.12 Key Siting Criteria

The current National Policy Framework identifies the following elements to be key siting criteria, where considering recharging or refuelling infrastructure deployment, in order to ensure that the impact on communities, the environment and important habitats can be minimised, managed and mitigated:

SITING CRITERIA

a) Existing sites (where appropriate) and brownfield sites should be considered in the first instance for any infrastructural development or expansions.

b) Avoid siting alternative fuels infrastructure immediately adjacent to or adjoining European Sites, in order to limit the potential impacts and disturbance to habitats and species therein during construction and/or operation.

c) In the case of shore side electricity or LNG facilities, which may be located within or immediately adjacent to a Special Area of Conservation/Special Protected Area, infrastructure should be located on existing built ground/structures where possible.

d) Avoid siting alternative fuels infrastructure in proposed Natural Heritage Areas, Natural Heritage Areas, Statutory Nature Reserves, Refuges for Fauna and Annex I Habitats occurring outside of European Sites, but which provide a supporting role to European Sites).

e) In order to protect habitats which, by virtue of their linear and continuous structure (e.g., rivers and their banks, hedgerows) or their contribution as stepping stones (e.g. ponds or small woods), are essential for the migration, dispersal and genetic exchange of wild species, these features will be protected as far as possible from loss or disruption through good site layout and design.

f) To protect river habitats and water quality (including physical habitat and hydrological processes/regimes), ensure that no alternative fuel facilities take place within a minimum distance of 25m measured from each bank of any river, stream or watercourse.

g) To protect river habitats, species and water quality, ensure that no infrastructure, including clearance and storage of materials, takes place within a minimum distance of 25 m measures from each bank of any river, stream or watercourse.

h) To protect water quality, where alternative fuel infrastructure is being developed at existing refuelling infrastructure, ensure that the appropriate tests for contaminated land are carried out and the appropriate mitigation measures are developed prior to the construction of alternative fuel infrastructure.

i) To protect water quality, ensure Sustainable Drainage Systems (SuDS) is applied to any new facility and that site-specific solutions to surface water drainage systems are developed taking account of the alternative fuel type(s) being deployed on the site, and which meet the requirements of the Water Framework Directive and associated River Basin Management Plans.

j) Avoid development of infrastructure in flood risk areas. Reference should be made to the Planning System and Flood Risk Management for Planning Authorities and the National Flood Hazard Mapping while referring to the relevant Flood Risk Management Plan

k) Ensure sites for alternative fuel infrastructure are surveyed for the presence of invasive species (as listed in the Third Schedule of the Birds and Natural Habitats Regulations) prior to infrastructural development, and that strict protocols are applied to prevent the spread of invasive species.
l) Avoid, as far as possible, siting alternative fuel infrastructure in areas protected for landscape and visual amenity, geological heritage and/or cultural heritage value. Where this is unavoidable, an impact assessment should be carried out by a suitably qualified practitioner and appropriate mitigation and/or alternatives must be provided.
m) Avoid geologically unsuitable areas including karst where practicable, and areas susceptible to subsidence or landslides.
n) Impact from a transport perspective to be assessed including road access, network, safety and traffic patterns to and from the proposed facility in accordance with road design guidelines and/or relevant local authority guidelines in relation to roads.
o) In addition to the foregoing, the development of any future recharging or refuelling infrastructure should assess the potential vulnerability of new infrastructure to the likely impacts of climate change.

Where full compliance with the above provisions is unachievable, all development proposals should be accompanied by an Appropriate Assessment Screening Report and/or Natura Impact Statement, whichever is deemed necessary, which should include but not be limited to assessing construction related impacts (e.g. water quality), operational related impact (e.g., such as disturbance from noise and water quality) and ex-situ impacts (e.g. roosting/feeding grounds for SPA birds outside of the SPA). This is to limit the potential impacts and disturbance to habitats and species during construction and/or operation.

In updating our policy framework, it will be appropriate to consider whether these siting criteria need updating, in addition to further consideration for any additional siting criteria that may be appropriate for novel alternative fuel types (e.g., ammonia).

5. Feedback Sought

To inform the development of an updated *National Policy Framework on Alternative Fuels Infrastructure*, your views are sought on the following matters:

1. How best can we ensure a coherent approach to infrastructure delivery across all transport modes? Do additional powers or responsibilities need to be designated to existing agencies or national bodies to enhance delivery and cooperation between the transport and energy sectors?

2. Do you agree with the example objectives proposed above? What other objectives might be appropriate? Which of these objectives should have a greater priority?

3. Do you believe greater levels of alternative fuels infrastructure deployment beyond the minimum levels set by AFIR are required to accelerate the uptake of zero-emission and renewable fuels in the land / maritime / air transport sectors?

4. Should Government prioritise its support on a smaller number of alternative fuels (and if so, which), or try to diversify its approach to include all alternative fuel types, where such support may be more limited? How might we best achieve cumulative network effects?

5. How can we avoid piecemeal development and/or alternative fuels infrastructure deficits in rural regions? Can market forces be relied on to ensure the development of alternative fuels infrastructure in more rural or remote regions of the transport network?

6. How might the deployment and operation of alternative fuels infrastructure best contribute to the flexibility of the energy system, including their participation in the balancing market and to the further absorption of renewable electricity?

7. By what key criteria should alternative scenarios be assessed?

8. What is your assessment of the current state and future development of the market as regards alternative fuels in the transport sector, and of the development of alternative fuels infrastructure?

9. What is your expectation regarding the use of and demand for alternative fuels in the Irish maritime sector - such as demand for liquefied methane and shore-side electricity supply for use by sea-going vessels, or for hydrogen, ammonia, methanol and electricity?

10. What is your expectation regarding the use of and demand for alternative fuels in the Irish aviation sector other than for electricity supply to stationary aircraft – such as for electric recharging, sustainable aviation fuels or hydrogen refuelling for aircraft?

11. What are the key and most pressing barriers you see with respect to the deployment and use of alternative fuels infrastructure in the land transport / maritime / aviation sector? What mitigating steps or measures can be undertaken to address these barriers?

12. Given a rapidly evolving policy and technological landscape, how best can we reduce or manage the risk to ensure that the deployment of alternative fuels infrastructure does not lead to the creation of stranded assets?

13. In what capacity and to what extent do you believe the EU / Government / public sector / private sector each hold responsibility for leading or supporting alternative fuels infrastructure deployment and reducing implementation barriers?

14. In reviewing the list of previous policy commitments and measures which were under consideration to support the previous AFI Directive (see Appendix), which measures do you consider were most (or least) effective?

15. What additional measures could be considered to support the mandatory and optional elements, introduced under Article 14 of AFIR, that are to be set out in the updated National Policy Framework?

16. To what extent do you believe additional EU interventions or supports are required? Is further Government intervention through taxation instruments and/or legislation needed to force the uptake and deployment of alternatively fuelled vehicles and infrastructure?

17. What measures could be implemented in order to ensure greater consistency between alternative fuels infrastructure planning and deployment with enhancements and the development of the national energy grid?

18. To what extent should measures that incentivise the supply of alternative fuels be set out in the national policy framework? What renewable fuel sources, feedstocks or methods of generation should be prioritised, and how can we best ensure the sustainability of their supply?

19. What measures can we take to ensure that the use of transitional biofuels to meet immediate decarbonisation targets does not lead to 'lock-in' effects or disincentivise the early take-up of zero emission alternative technologies?

20. How best can we monitor the development of the alternative fuels market to ensure a level playing field for new market actors, and avoid business practices that may limit competition or misguide consumers and hamper price transparency?

21. Given the broad range of modes and alternative fuel infrastructure types considered within the scope of AFIR, how best can we ensure that regulatory bodies are suitably equipped to perform their roles effectively? What additional powers or functions may be required?

22. Where a technical standard or protocol is stipulated by regulation, how best can conformance be ensured and validated, without undue administrative or operational burden?

23. How best can we ensure that the alternative fuels infrastructure data that is collected supports further research and policy makers to better plan, regulate or manage our transport and energy systems? What additional data needs do you foresee as being required and is there an established remit or further technical mechanism required to ensure the provision of that data?

24. Should additional data reporting requirements and regulations be introduced with respect to private infrastructure and semi-private installations in order to better understand the total grid capacity needs and patterns of infrastructure usage?

25. What measures should be adopted to ensure the accessibility of alternative fuels infrastructure for all users? How might we best ensure the accessibility of alternative fuels infrastructure in private, or semi-private locations?

The Department would ask that all responses and submissions to this issues paper be forwarded to climateengagement@transport.gov.ie no later than close of business on Friday, 14 June, and entitled:

'AFIR Issues Paper: Response from [Organisation | Individual]'.

Appendix – Previous NPF Commitments

PREVIOUS NATIONAL POLICY FRAMEWORK 2017-2030: POLICY COMMITMENTS & MEASURES FOR CONSIDERATION:

1. Revise regulations, as required, in relation to technical specifications for normal and high-power recharging points and shore-side electricity supplies in line with the development of new EU standards and/or any further changes to Annex II of Directive 2014/94/EU.
2. The current Programme for Government includes a commitment to establish a Taskforce to consider the range of measures and options available to Government for the purpose of accelerating the deployment of low-carbon technologies, especially EVs.
3. Establish a Green Bus Fund, which would support the uptake of electrically powered buses, either hybrids or full electric (as well as other technologies).
4. Implement any measures recommended by the LEV Taskforce and approved by Government.
5. Assess the need for an action package aimed at removing any administrative obstacles related to the deployment of public and private recharging points.
6. In line with the White Paper on Energy Policy, establish a Government-backed scrappage scheme for taxis aged seven years or older where the car is being replaced by an EV.
7. Consider the contribution of building and planning regulations in supporting market uptake of EVs. Revised regulations would ideally provide for the setting of minimum requirements on the number of electric recharging points to be established at new residential or commercial developments (where car parking is being provided).
8. Address the issue of misuse or 'icing' of charge point spaces through parking and/or road traffic regulations.
9. In order to monitor and evaluate the operation of the recharging points and to estimate the future load on the electricity grid, an assessment methodology and reporting system should be established. EirGrid are in the process of developing modelling scenarios in this context, which will be informed by the ambition of this Framework. Onshore and offshore interconnectivity should be considered in this regard.
10. Participation in the development and research of new technologies, trials, technical specifications and standards at EU and international level.
11. Undertake a life-cycle cost analysis of rolling out fixed electrical ground power (FEGP) units at all airports not currently using electricity supply for stationary aircraft.
12. Develop a feasibility study of shore-side electricity supply for seagoing ships in TEN-T ports (Dublin, Cork and Shannon Foynes) taking into account demands, cost-benefit analysis (CBA), environmental effects and the level of financial support that may be required to make the delivery of the infrastructure feasible. Based on the results of the study, targets for shore-side electricity supply should be established, as required, with a view to the deployment of any related infrastructure at these core TEN-T ports initially, subject to the requirements of the relevant environmental legislation, including Article 6 of the Habitats Directive.

13. The study on shore-side electricity supply should also investigate the possibility for reducing the rate of electricity tax for shore-side electricity in the short-term to stimulate demand. If the reduced rate was below the rate set by the Energy Taxation Directive, authorisation would be required from the EU.
14. Develop, if required, regulatory measures to facilitate the deployment of home/private chargers.
15. Assess the implementation of regulations in relation to user information associated with this Directive 2014/94/EU.
16. Assess and amend (if necessary) regulations and standards in order to ensure appropriate level and use of recharging infrastructure at apartment blocks, parking lots, office and business locations, e.g.: Building Control Act 1990 (3 of 1190), Building Control Act 2007, Building Control Regulations 1994-2014, Building Regulations 1994-2014, Road Traffic (Traffic and parking) Regulations 1997 S.I. No. 182/1997), Road Traffic (Traffic and Parking) (Car Clubs and Electrically Powered Vehicles) Regulations 2014 (S.I. No. 325 of 2014).
17. Consider the inclusion of any amended regulations, a requirement for recharging points to incorporate, where feasible, renewable sources of energy, i.e., solar photovoltaic panels.
18. Ensure the development of the new National Planning Framework takes account of this National Policy Framework for Alternative Fuels Infrastructure for Transport in Ireland.
19. Support and foster research on future technologies, e.g., wireless charging and battery swapping.
20. Establish partnerships with public entities and private companies in order to facilitate trials of EVs in public sector and public transport fleets.
21. Installation of 5 CNG publicly accessible fast-fill stations at strategic locations, including Dublin Port.
22. Complete the assessment on biogas and biomethane, which is currently being undertaken by the SEAI and develop appropriate policy options to support the use of biomethane, particularly in the public transport and freight sectors.
23. Introduce a new ACA tax incentive for companies with the aim of encouraging investment in refuelling infrastructure and equipment for natural gas. The ACA would allow companies to write off 100% of the purchase value of qualifying vehicles and refuelling equipment, including CNG compression equipment, against their profit in the year of purchase. It is anticipated that qualifying vehicles will need to demonstrate compliance with, at least, the Euro 6/VI emission standards.
24. Revise regulations, as required, in relation to technical specifications for refuelling points in line with the development of new EU standards and/or any further changes to Annex II of Directive 2014/94/EU.

25. Utilise the Green Bus Fund to support demonstration projects in public transport fleets. Only vehicles that demonstrate compliance with the Euro 6/VI emission standards will be supported through this fund.
26. Consider the inclusion of biomethane as a transport fuel in the Biofuel Obligation Scheme.
27. Establish a low carbon vehicle fund to provide first mover backing in commercial fleets.
28. Consider revisions of VRT and motor tax treatment to recognise low-emission HDVs.
29. Review funding for innovation within the Irish transport sector.
30. Consider a Green Transport Certificate for goods transported using low carbon technology.
31. Explore support measures to encourage captive fleets, maintained by local authorities and public bodies, to move to CNG vehicles, if suitable, by 2030.
32. Undertake market analysis in relation to demand for LNG (and related refuelling infrastructure) along the TEN-T corridor, to include the motorway between Dublin and Cork, and the associated ports of Dublin, Cork and Shannon Foynes. Market analysis of demand for LNG at TEN-T Comprehensive Ports should also be included.
33. Facilitate trials on hydrogen fuel-cell propelled vehicles.
34. Assess the feasibility of establishing a hydrogen refulling network based on technological development and market uptake.
35. Consider incentives for the uptake of hydrogen, including accelerated capital allowances to support investment in refuelling infrastructure.
36. Secure commitment to maintain or reduce excise duty rates for a prolonged period (minimum 8 years), taking account of excise levels on other alternative fuels, providing certainty to the market for LPG.
37. Introduce an ACA tax incentive for companies with the aim of encouraging investment in refuelling infrastructure and equipment for LPG. The ACA would allow companies to write off 100% of the purchase value of qualifying refuelling equipment against their profit in the year of purchase.
38. Examine Vehicle Registration Tax (VRT) rates on factory fitted LPG-fuelled vehicles.
39. Facilitate trials, as required, on synthetic fuels in public transport vehicles (bus and rail).
40. Analyse need for financial incentives to support greater use of synthetic and paraffinic fuels.
41. Commitment made in Budget 2017 to retain the preferential VRT rates for EVs for a new period of 5 years, and for PHEVs for 2 years.
42. Consider further taxation measures which would play a key role in supporting the transition to a low-carbon transport system.
43. Consider the development of a media campaign that will reflect the benefits of alternative fuels, such as smoother driving, reduced noise and positive image.

44. Consider the development of a media campaign that will provide information on the vehicles/infrastructure available.
45. Review the user-friendliness of existing online data on recharging infrastructure, such as the ecar interactive mapping tool.
46. Consider the development of an online tool for accessing information on refuelling stations for CNG.
47. Develop a cost comparator tool that will provide the capability to examine the total cost of vehicle ownership across a range of alternative fuels (from 2020 onwards).
48. Consider a possible promotional campaign targeted at dealerships.
49. Explore further measures to enhance awareness raising – targeted at fleet managers (private and public) e.g., workshops.
50. Keep abreast of international developments in regulation aimed at curbing emissions in national vehicle fleets, particularly any proposals aimed at limiting the sale of vehicles which are not zero emissions capable. Review any emerging regulations for application in Irish context.

An Roinn Iompair
Department of Transport