Initial Project Assessment of the third cap and floor window for electricity interconnectors

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1 Executive Summary

WEI, Ireland's largest renewable energy organisation, comprises over 200 members collaborating to advance wind energy as an essential, economical, and environmentally friendly part of the country's low-carbon energy future.

NGESO's FES 2022 was used as the key input for data on supply and demand information for relevant European countries. This data has been shown to have a clear divergence from both the TYNDP 2022 data, and individual country policies. In particular, Ireland can be seen to have supply and demand data that is considerably out of kilter with both government policy, ambition, and Irelands TSOs modelling.

FES 2022 draws on data from 2020-2021, which falls short of providing all the pertinent information needed for informed decision-making, especially concerning long-term considerations. WEI expresses concern that projects undergoing review via the IPA may be evaluated using outdated data that hasn't been benchmarked against industry-recognised sources such as the TYNDP. This outdated data could significantly impact modelling efforts, particularly in terms of power flow analysis.

WEI recommends that Ofgem conducts a review of Ireland's data inputs and carries out a re-evaluation of the CBA modelling with updated inputs using TYNDP inputs specific to Ireland. WEI are more than willing to assist with input data and reviewing the sources utilised.

2 Introduction

Wind Energy Ireland (WEI) welcomes the opportunity to engage with Ofgem and provide feedback on the Initial Project Assessment of the third cap and floor window for electricity interconnectors Consultation.

WEI is Irelands largest renewable energy organisation with more than 200 members who have come together to plan, build, operate, and support the development of the country's chief renewable energy resource. We work to promote wind energy as an essential, economical, and environmentally friendly part of the country's low-carbon energy future.

3 The Irish Context

Europe is at a critical crossroads in its energy systems development. Climate change is a problem not just faced by each country individually, but it is an existential crisis facing humanity. If we are to overcome the worst effects of climate change, countries must band together to drive towards a Net-Zero world.

Decarbonising the Irish and European energy systems is an essential first step and will create not just a cleaner energy system but a more efficient and more effective one too. The key to this decarbonisation is the electrification of our economies powered by renewable energy. To move away from harmful fossil fuels, a new energy system must be designed around the specific characteristics of renewables, and how to connect resource rich areas to demand centres.

Electricity interconnection will be pivotal in Ireland and Europe's journey towards achieving Net Zero status. Enhancing interconnectivity is imperative to realise our renewable energy aspirations and bolster the collective security of our energy supply. By strengthening interconnection, we can effectively balance the supply and demand of electricity across borders, providing a crucial backup power source during periods of reduced capacity within the Irish electricity grid.

This enhanced interconnection capacity enables greater flexibility, allowing for increased imports during unforeseen events like extreme weather or the failure of major power plants. As variable renewables assume a larger share of the energy mix in both Irish and European grids, the significance of interconnection will continue to grow, facilitating the seamless import and export of electricity.

WEI would like to recognise the success that the cap and floor regime has brought in attracting investment to increase interconnector capacity for the GB market over the past decade. There is

clear recognition of the importance of developing interconnectors, and the role that they will play in the future energy system.

The framework for Ireland's interconnection was established in the 2018 National Policy Statement on Electricity Interconnection, which underscored the strategic significance of interconnecting electricity systems.

Currently, Ireland's interconnection capacity stands at 500 MW through a single connection to the UK known as the East West interconnector. Thanks to the directives outlined in the 2018 policy statement, this capacity is slated to more than triple by 2026, reaching 1,700 MW, including the reinstatement of direct interconnection between Ireland and the EU via the Celtic Interconnector. The 2018 Policy Statement was updated with the publishing of the "National Policy Statement on Electricity Interconnection 2023", which aimed to outline a set of Policy commitments from the state on interconnection.

Additionally, preliminary proposals, though still in the conceptual phase of development, suggest a potential capacity exceeding 5,000 MW post-2030. In the 2023 Interconnector Policy Statement, DECC stated that "We will support a further connection to Great Britain by 2030 beyond the completion of the Greenlink Interconnector in 2024."

Projects of Common Interest (PCIs) within the EU are pivotal cross-border infrastructure endeavours that integrate the energy systems of member countries. These projects are instrumental in advancing the EU's energy policy and climate objectives. Since its inception under Regulation No. 347/2013 of the Trans-European Networks for Energy (TEN-E), the PCI process has proven to be an effective mechanism for advancing electricity interconnection projects. Notably, both the Greenlink and Celtic Interconnectors are being developed under this regulatory framework, highlighting its efficacy in fostering cross-border energy initiatives.

The TEN-E Regulation underwent revisions following the initial publication of the National Policy Statement on Electricity Interconnection in 2018. The updated Regulation took effect in 2022, coinciding with the introduction of the sixth PCI list under this regulatory framework, published in 2023 and implementation in 2024.

Introducing a novel category of infrastructure projects, the new Regulation introduces Projects of Mutual Interest (PMI), enabling EU projects to connect with third countries such as the United Kingdom. Upon receiving PMI status, a project enjoys equivalent support to those designated as PCIs.

The Union-wide Ten-Year Network Development Plan (TYNDP) process administered by ENTSO-E serves as the mechanism for identifying projects eligible for PCI and PMI consideration. Only projects included in this plan are eligible to apply for PCI or PMI status. Subsequently, once the

Offshore Transmission Strategy is established, only proposals aligned with these strategies will be considered for inclusion.

The TYNDP provides the links that support and complement national grid development plans. It provides a European-wide vision of the future power system and investigates how power links and storage can be used to make the energy transition happen in a cost-effective and secure way. The TYNDP is anchored by a set of scenarios delineating potential future configurations of the European power system. ENTSO-E, in collaboration with its gas equivalent, ENTSO-G, has crafted these scenarios in consultation with diverse stakeholders. Each scenario undergoes thorough analysis using specialised modelling tools to assess its ramifications on energy markets and networks.

In September 2023, Minister for the Environment, Climate and Communications, Eamon Ryan, signed a new Memorandum of Understanding (MoU) with Claire Coutinho, the UK Secretary of State for Energy Security and Net Zero, at the Department for Energy Security and Net Zero (DESNZ) which will increase cooperation for developing offshore renewable energy, explore further electricity interconnection opportunities. The MoU on 'Cooperation in the Energy Transition, Offshore Renewables and Electricity Interconnection' will facilitate increased cooperation on opportunities for further electrical interconnection between the island of Ireland and Great Britain[1].

Whilst there has been recent innovation in Ireland's development of interconnection policy, to date, there has been minimal comparable development in Northern Ireland. However, the Department for the Economy in Northern Ireland is now taking initial steps to formulate policy on the amount of electricity interconnection which will be needed for the Northern Irish network and the requirement or form of any corresponding support mechanism. SONI's updated Tomorrow's Energy Scenarios 2023, published in May 2024 identifies an increase in, and better use of, interconnection potential as critical to address the future needs of the power system in integrating more renewable energy whilst ensuring continued security of supply.

The Energy Strategy for Northern Ireland (published in 2021 by the Department for the Economy (DfE)) has been accompanied each subsequent year by detailed action plans. The Action Plan 2022 set out the requirement for a Northern Ireland Smart Systems and Flexibility Plan (SSFP) which would detail how DfE will achieve the transition of Northern Ireland's energy system. The Action Plan 2024 has built on this by tasking the department and the Utility Regulator of

[1] https://www.gov.uk/government/publications/energy-transition-uk-ireland-memorandum-of-understanding/energy-transition-offshore-renewables-and-electricity-interconnection-cooperation-uk-ireland-memorandum-of-understanding

Northern Ireland with commissioning research into the implications and impact of interconnection with other jurisdictions on both the Northern Ireland consumer, and on the planned increase in renewable electricity generation in the region and within the I-SEM. RNI would propose that future DfE policy with respect to interconnection should also take into account the full cost of dispatch down as modelling indicates that Northern Ireland will continue to be a net importer via interconnectors up to 2030 (and beyond) which could lead to significant costs both for developers, investors and consumers.

During January to April 2024, DfE consulted on the design considerations for Northern Ireland's SSFP, which considered at length the topic of interconnection as an important flexibility lever. It explored how Northern Ireland could best go about establishing if further interconnection should be actively encouraged and what market signals were required. A key workstream emerging from the SSFP will be to undertake an objective assessment of the need for further interconnection, particularly from 2030 with higher levels of renewable penetration, particularly offshore wind.

4 Review of the IPA Window 3

The IPA process has been fruitful in delivering interconnectors via the cap and floor regime since the cap and floor pilot Nemo Link. The process is fundamentally driven through modelling with several determining properties modelled for each of the projects considered in the window.

The quote "all models are wrong, but some are interesting" from Robert Box encapsulates a fundamental truth about the nature of modelling and prediction. Models, whether they represent complex systems or simple relationships, are inherently simplifications of reality and therefore cannot fully capture the intricacies of the real world. However, despite their imperfections, modelling tools are valuable for understanding, analysing, and making predictions about the modelled scenarios.

The accuracy and reliability of models hinge heavily on the quality of input data. Good input data is crucial as it forms the foundation upon which models are built and predictions are made. Without accurate and comprehensive data, models may produce flawed outcomes, leading to erroneous conclusions and decisions. When bringing this into consideration for the IPA window 3, we can see the most important data considered are the datasets used for both electricity demand and generation for both GB and the neighbouring energy systems.

For this assessment, data from National Grid ESO's Future Energy Scenarios 2022[2] as the input. The outputs from NGESOs FES were brought in for use by ARUP in its Cost Benefit Analysis (CBA)

[2] https://www.nationalgrideso.com/document/263951/download

for the IPA. Our concern arises from the use of this data, as WEI note that there is a material divergence of NGESO FES 2022 European electricity demand growth from that of the EU's TYNDP 2022 despite NGESO basing its European metrics on TYNDP 2022[3].

In Figure 1, a comparison between the Electricity Demand Growth projected in NGESO's Consumer Transformation scenario and the TYNDP's Distributed Energy scenario is shown. It is evident that the TYNDP's forecasts for demand growth in European nations are significantly higher, ranging from three to five times greater than the corresponding growth forecasted in FES 2022 for the period of 2030 to 2050. The demand growth projected in FES 2022 for GB from 2030 to 2050 surpasses that of connecting countries by a factor of two to five. Consequently, FES 2022 anticipates the British economy to expand at a rate exceeding twice the annual growth rate of European economies over the twenty-year period leading up to 2050. These demand assumptions have significant impacts on forecast supply and price levels.

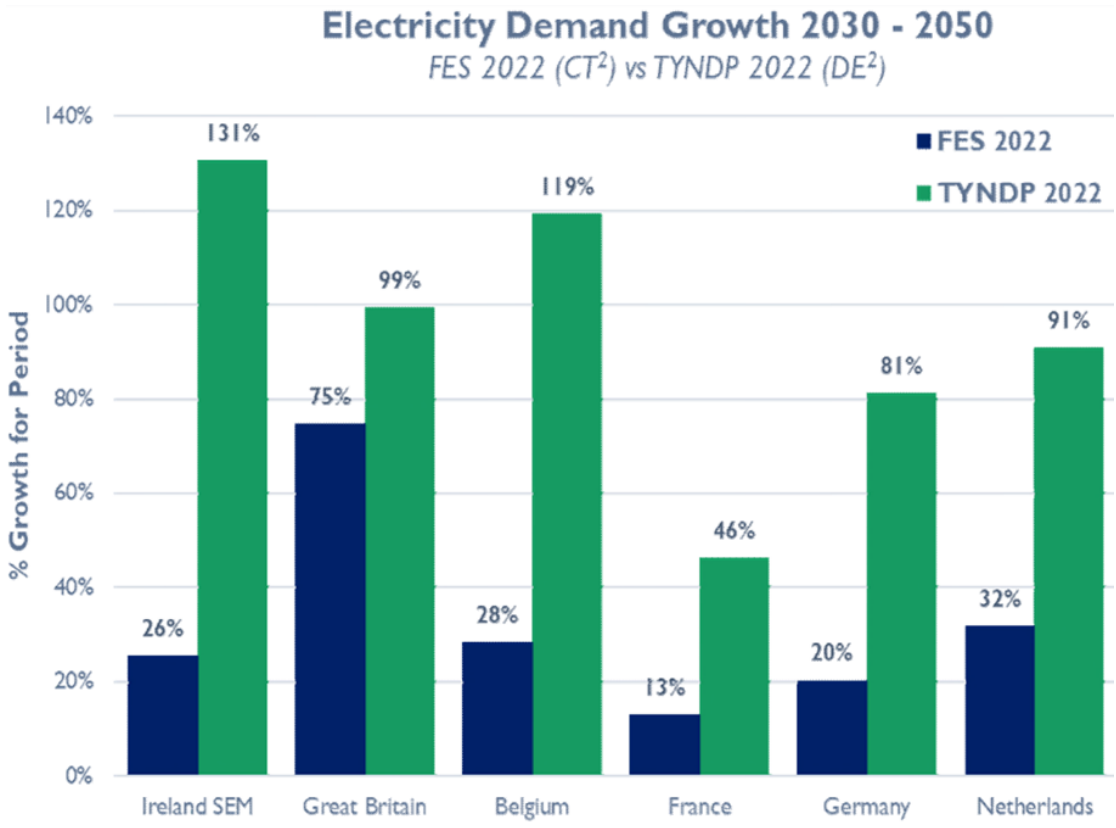

Figure 1. Comparison of Electricity Demand Growth 2030- 2050

When considering the figures used for the supply forecast for each of the relevant countries, we see a similar issue as with the demand side. The supply capacity forecast from FES 2022 can be

[3] https://2022.entsos-tyndp-scenarios.eu/

seen to significantly underestimate the supply capacity from TYNDP 2022. This is particularly worrying focus is put on the outputs for Ireland, where FES sees a 10% decrease in the period of 2030 to 2050 versus a doubling for the same period from the TYNDP 2022 as shown in Figure 2.

The anticipated total capacity of the Single Electricity Market (SEM) is projected to decline from 24.4 GW in 2040 to 22.8 GW in 2050. This decrease includes a reduction of 1.7 GW in onshore wind capacity, while other energy sources remain stagnant. Considering Ireland's targets for 2030, a minimum of 22 GW of renewable energy is expected to be in operation, comprising 9 GW of onshore wind, 8 GW of solar, and 5 GW of offshore wind. Ireland's objectives for offshore wind are particularly ambitious, aiming for 37 GW of operational capacity by 2050, as outlined in the recently released Offshore Network Development Plans by ENTSOE. However, the supply capacity forecast provided by FES 2022 exhibits inconsistencies in its trajectory and is deemed unsuitable for decision-making in 2024 due to its significant deviation from existing policies.

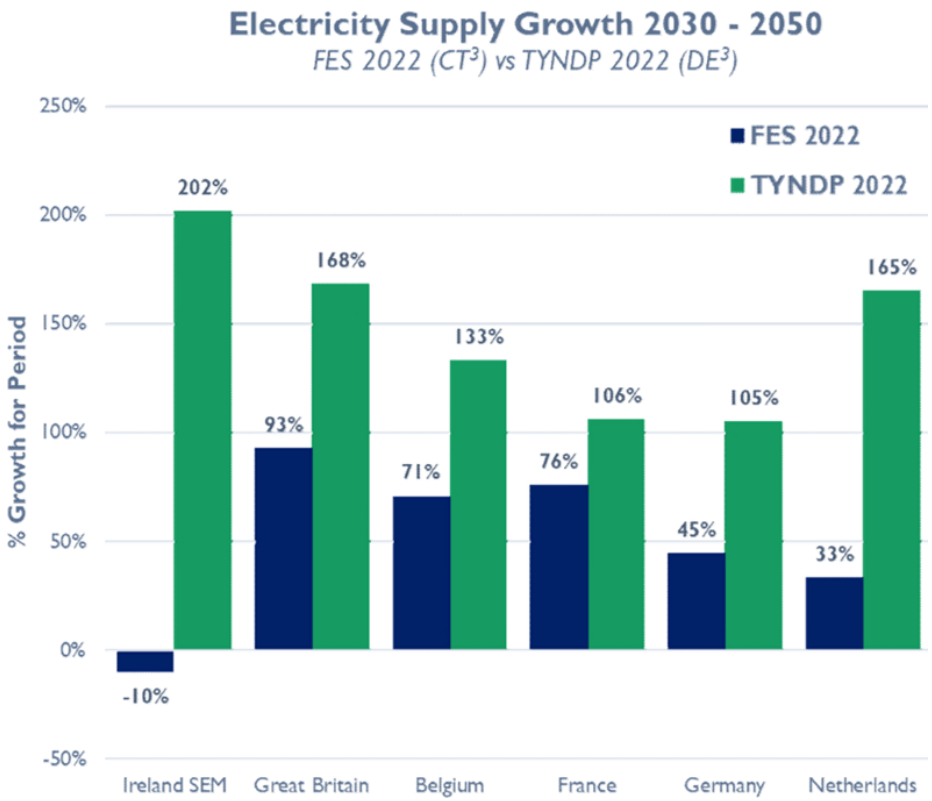

Figure 2. Comparison of Electricity Supply Growth 2030- 2050

If we zoom in on 2030, 2040 and 2050 (Figure 3), we can see this divergence between FES 2022 and current Irish policy further magnified. FES 2022 scenarios are in line with Irish government and system operator forecasts for increases in RES generation. This is also reflected by Arup's modelling showing decreases in Irish wholesale energy prices to 2030 and NGESO's forecast of negative constraint costs until 2032.

In 2040, the scenarios presented in FES 2022 fall behind the forecasts of the Irish government and the system operator. FES 2022 scenarios fail to incorporate the increased uptake of renewable energy projects and the evolving policy landscape, whereas the forecasts of the Irish government and the system operator take these factors into account. For instance, regarding Offshore Wind, FES 2022 predicts achieving a capacity of 5 GW by 2040, whereas DECC aims to reach the same target by 2030. By May 2023, approximately 3.1GW had been awarded successful contracts through ORESS 1, and an additional 1.2GW is exploring alternative pathways to enter the market with the objective of becoming operational by 2030.

Looking ahead to 2050, the scenarios presented in FES 2022 indicate zero growth across all forms of generation. Specifically, gas and onshore wind are projected to decline by 1.2 GW and 2 GW respectively. Such projections starkly contradict Irish policy objectives aimed at achieving Net-Zero emissions by 2050. Moreover, these forecasts are incomparable to relevant scenarios outlined in the TYNDP and suggest an implicit assumption that the Irish economy will contract between 2040 and 2050.

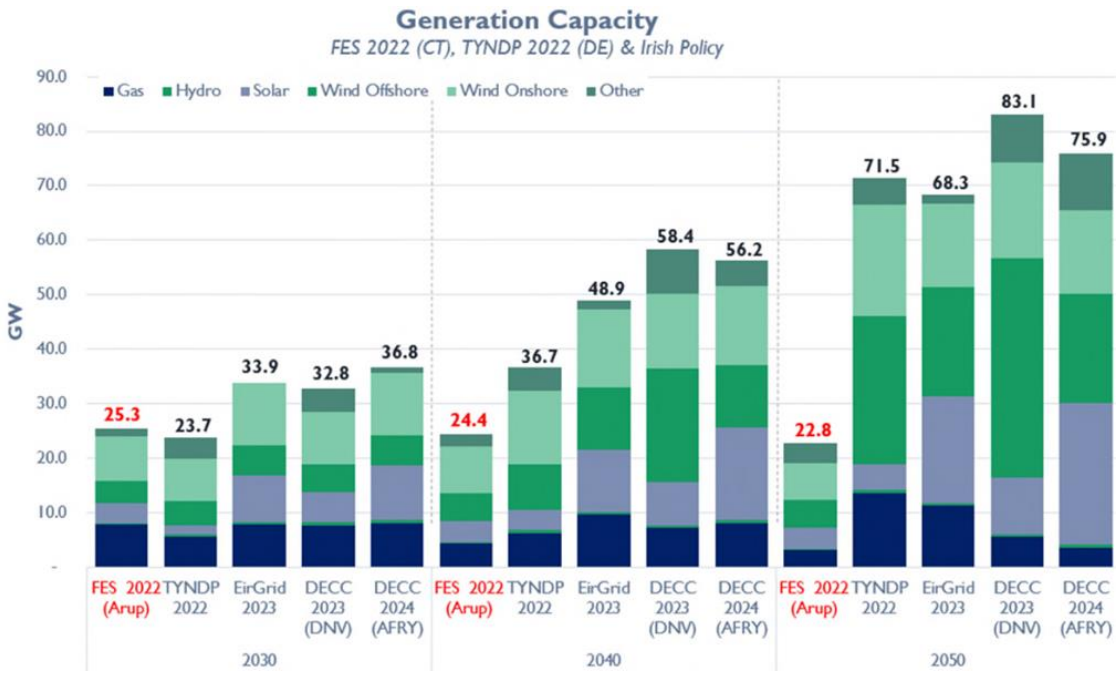

Figure 3. Generation Capacity across different sources for 2030, 2040, 2050 [4,5,6].

[4]EirGrid Tomorrows Energy Scenarios: https://cms.eirgrid.ie/sites/default/files/publications/Tomorrows-Energy-Scenarios-2023-Consultation-Report-November-2023_0.pdf

[5] DECC Impacts of Increased Interconnection on Achievement of Ireland's 2030 and Post-2030 Climate and Energy Objectives: https://assets.gov.ie/265468/14606532-28d5-4108-b315-6c4f6327e64d.pdf

[6] DECC Future Framework Policy Statement: https://assets.gov.ie/281574/09e4b98b-4352-441a-a842-7e1240cc5fae.pdf

To sum up, the utilisation of FES 2022 relies on data from 2020-2021, which lacks crucial information necessary for informed decision-making, particularly in the long term. WEI is apprehensive that projects under review through the IPA may receive recommendations based on outdated data, which hasn't been compared against industry-standard sources like the TYNDP. Considering the differences in generation capacity between the FES and TYNDP scenarios, it can be expected that the increased levels of renewables from TYNDP will have a positive effect on energy prices, and as such, influence the interconnector flows between Ireland and GB.

This outdated data carries significant implications for modelling efforts, especially concerning power flow modelling, and influences the outcomes of the CBA conducted for the projects considering interconnection between the Island of Ireland and GB.

The link between Great Britain and Ireland is deemed essential in our efforts to decarbonise our economies, underscored by the recent memorandum of understanding signed between the two nations. This agreement is pivotal in laying the groundwork for collaboration, aimed at exploring avenues for deeper interconnection between the Single Electricity Market in Ireland and Great Britain, including projects such as offshore hybrid assets. To ensure the realisation of these goals in an efficient and impactful manner, it is essential to facilitate the sharing of information, including the utilisation of more precise inputs and assumptions.

WEI recommends that Ofgem conducts a review of Ireland's data inputs and carries out a re-evaluation of the CBA modelling with updated inputs using TYNDP inputs specific to Ireland. WEI are more than willing to assist with input data and reviewing the sources utilised.

Thank you for the opportunity to provide feedback on the Initial Project Assessment of the third cap and floor window for electricity interconnectors Consultation for Ofgem. We hope you consider the comments and recommendations made within our submission and we would be happy to engage at any point to discuss.

Yours sincerely,

Marcos Byrne

Policy Manager

Wind Energy Ireland