Written evidence submitted by Transmission Investment, relating to Renewable Energy and Net Zero in Northern Ireland inquiry (REN0038)

Executive Summary

1. Transmission Investment (TI) is a UK-based, leading independent electricity transmission business, with over ten years' experience developing, acquiring, and managing large complex infrastructure projects[1]. The successful delivery of transmission infrastructure is the key enabler in increasing the integration of renewables onto the grid to allow the renewable energy produced to be transported to where it is needed. This may be through the transmission cables which connect offshore wind to the transmission network, onshore grid, or through interconnectors which enable the import and export of power to help balance the grid.

2. Businesses like TI operate within a booming global renewable energy and electrical infrastructure market, with countries competing for the supply chain and investment funding necessary to deliver ambitious domestic renewable energy and Net Zero targets. Those with a predictable and supportive regulatory and policy environment are deemed most attractive to private investors.

3. In our written evidence we highlight the challenges we face as developers of large-scale transmission infrastructure to enable Net Zero and make recommendations for how these challenges could be addressed. We share these challenges to support the development and delivery of the stable investment environment which is crucial to meet Net Zero targets.

4. Put simply and clearly, it is our strong view that without a clear, coherent, and well-structured framework to support the integration of these renewables onto the system, it is highly unlikely that either the 2030 or 2050 targets can be reached.

Transmission Investment

5. Founded in 2011, TI is a leading developer of and investor in electricity transmission infrastructure assets. TI develops, builds, manages, and operates transmission assets with best-in-class sector knowledge and experience (see Annex 1 for a summary of existing projects). It manages one of the largest offshore electricity transmission portfolios in Great Britain, with a portfolio of approximately 4GW and £3billion in capital employed. TI is also leading the development of electricity interconnector projects in support of the UK's Net Zero ambition, including investing in a proposed 700MW link between Northern Ireland (NI) and Scotland known as "LirIC", and the FAB interconnector between GB and France. We strongly advocate introducing competition into the delivery of transmission infrastructure onshore, as we believe this will enable faster and lower cost delivery of much needed network capacity to support increased renewables on the system.

6. As a business TI have:
   - An extremely experienced asset management and operations team working in the GB offshore transmission sector;

[1] Transmission Investment (tinv.com)

- A history of developing stable and lasting partnerships with stakeholders, investors and industry.
- A broad range of competencies within project development, engineering, construction, asset management and investment structuring; and
- Experience in development, investment, execution and management of large scale and complex infrastructure projects, using its detailed understanding of electricity networks.

Electricity transmission infrastructure's role in enabling Net Zero

7. Support schemes, (such as Contracts for Difference), help to facilitate the deployment of renewables by providing certainty and predictability for investors, however they can also be expensive and depend on assumptions of the expected energy that can be produced. As pipelines of renewable generation projects are brought forward to meet national targets, a trend has started to appear globally, i.e. the emergence of transmission as a bottleneck in delivering clean power, not only where but also when it is needed[2]. New transmission is being identified as being essential to avoid curtailment, where generation (such as wind) is reduced because it exceeds demand in the market it is connected into.

8. To ensure support schemes are delivering best value, curtailment should be avoided where possible by providing sufficient flexibility on the system. There are a range of technologies in development that may be able to provide grid-scale flexibility, however, these are yet to be fully proven commercially at scale and will require regulatory support mechanisms before they mature[3]. These emergent solutions will also require new network reinforcements to transport the energy to each individual storage facility.

9. In addition to the emerging technologies, electricity interconnection provides a well-proven means of optimising the use of excess energy, minimising investment needed in generation (and storage) capacity and maximising overall economic benefit with neighbouring markets. The first high-voltage, direct current interconnector in GB, to France, was commissioned in 1986 and a further eight have been commissioned since, including Moyle connecting to Scotland. The technology is proven, and operations well understood, and with the right investment environment, is ready and able to overcome the challenges of deploying renewables at scale.

Electricity interconnection and its role in enabling the Net Zero Transition

10. Electricity interconnectors enable the efficient integration of renewables onto the system. They are transmission cables which connect neighbouring energy markets enabling energy to be produced where it is cheapest (e.g. where there is a surplus of wind generation) and then to flow to markets where prices are higher[4], helping to lower electricity prices for consumers. (e.g. to enable the import of electricity from GB to the SEM, or the export of electricity from the SEM to GB). Interconnector owners and operators principally make revenue through selling the

[2] Lack of ambition and attention risks making electricity grids the weak link in clean energy transitions - News - IEA
[3] Long duration electricity storage consultation: designing a policy framework to enable investment (publishing.service.gov.uk)
[4] For example, to enable the import of electricity from GB to the SEM, or the export of electricity from the SEM to GB.

capacity on the interconnector cable via auctions to allow electricity to flow between markets, and flows are driven by the price difference between the connected markets.

11. Interconnectors enable the efficient utilisation and integration of renewables onto the system by:
    - providing a route to maximise renewable use through exporting or importing renewable electricity;
    - making renewables, such as wind generation, more investable through helping to support the maximisation of revenues; and
    - as more inherently unpredictable renewable generation is connected to the system, providing the flexibility needed to support the system operator to balance supply and demand and reduce the need to curtail excess renewable generation.

12. Interconnectors also help to deliver and strengthen security of supply by supporting the diversification of generation being imported and enabling neighbouring countries to support each other when domestic energy supply does not meet demand. This has been apparent in recent winters, as evidenced in SONI's review of Winter 2022/23 where there were *"42 days during the winter period where we were reliant on wind generation and/or interconnection from Ireland and Great Britain to keep the system out of the Alert (24 days) and Emergency (18 days) States."*

13. NI currently has two interconnectors, Moyle, allowing it to export and import electricity to and from Scotland, and the North-South interconnector, connecting NI to the RoI. The Single Electricity Market (SEM) is also supported by the East West Interconnector between Wales and RoI. The need for further interconnection between the SEM and other markets has been recognised in several studies to date, in particular the need for further interconnection to Great Britain.

14. SONI's Draft Transmission Development Plan for Northern Ireland 2023-2032[5] noted, *"Changes in Northern Ireland's Interconnection - UK policy recognises the economic and technical benefits associated with increased interconnection and therefore seeks to promote interconnection between Great Britain, Northern Ireland, and Ireland's transmission systems. Increased interconnection between transmission networks results in a larger energy market. With increased market integration there is greater competition and the potential for prices to be reduced. There is also access to a broader generation base which enhances the networks' security of supply. This can potentially defer the need for additional generation to be constructed to meet security of supply standards or requirements."* Additionally, they recognised the potential for new interconnection to Scotland, representing an effective benefit to UK collectively.

15. In summer 2023, the Department of the Environment, Climate and Communications in Ireland published their National Policy Statement on Electricity Interconnection[6]. This was accompanied by a study undertaken by DNV to identify what are the implications on the Irish electricity sector from further cross-border interconnection. The study's key finding was,

[5] Draft Transmission Development Plan Northern Ireland and SEA 2023-2032 | SONI Consultation Portal
[6] gov.ie - National Policy Statement on Electricity Interconnection 2023 (www.gov.ie)

"Additional interconnection capacity in 2030, beyond existing projects or those at advanced development stage, has significant economic benefits for the SEM system. Developing a new interconnector with Great Britain is justified both from the developer and societal perspectives. Furthermore, it supports the achievement of Ireland's 2030 energy objectives and de-risks offshore wind development." In addition, their Draft Offshore Renewable Energy Future Framework Policy Statement 2024[7] considered analysis of additional interconnectors up to 16.7GW to facilitate the potential increase of Offshore Renewable Energy.

16. The latest relevant GB Network Options Assessment (NOA), by National Grid Electricity System Operator, was published in January 2022[8]. The NOA analysis is based on an Ofgem approved methodology and recommends network reinforcement needs in GB as well as interconnection. The NOA identified that further interconnection between Scotland and NI provides significant socio-economic value to SEM and GB.

The challenges of developing large transmission infrastructure, such as electricity interconnection

17. The development of a major multi-jurisdictional infrastructure project, such as the LirIC interconnector, will progress in the timeliest and most efficient way when there is a clearly defined, stable and harmonised regulatory and policy environment in place at each end of an interconnector. Within this framework, key actors must understand their role, and how it interfaces with others. Complexity can be reduced if Government departments (or other relevant authorities) provide detailed sector specific guidance that clearly sets out the steps required to obtain, within a specified timeframe, all necessary permits, licences and consents required to construct, operate, and decommission such assets, as well as underpinning supply chain and investor confidence.

18. Additionally, it is essential that there is cooperation and coordination between regulators and governments, especially in the context of a UK project which supports overall UK climate change targets. At present, with the UK leaving the EU structures, there is a lack of a framework to assess and support an intra-UK project, such as an electricity interconnector. This is despite the UK Government's commitment to *"work with Ofgem, developers and our European partners to realise at least 18 GW of interconnector capacity by 2030".* An intra-UK framework would support cooperation between regulators on how to tackle benefit imbalances between regions, and consideration of options for regulatory funding to address the shortfalls in future congestion rents.

19. Experience in GB and RoI advocates that private investor-led projects enable consumers to avoid the development and construction risk, whilst exposing consumers to limited down-side risk (only if the asset is available but there is a sustained period where the market fails to produce sufficient revenues). They avoid downsides, including the burden on bills of the construction cost, the risk of cost overruns, start-up delay and future repair cost exposure of a TSO-led consumer-funded model.

---

[7] gov - Consultation on the offshore renewable energy (ORE) Future Framework Policy Statement (www.gov.ie)
[8] January 2022 NGESO NOA (nationalgrideso.com)

20. It is logical to assume that the arguments that supported Ofgem introducing its Cap and Floor[9] regime in GB to enable investment in this sector would also apply to the rest of the UK. Under this model revenues are partially regulated - consumers underwrite the risks of developers not being able to recover costs (the floor), allowing the interconnector to continue to operate and consumers to enjoy the supply security and carbon benefits of the interconnector. In return, they also benefit when revenues exceed the cap and these revenues are transferred to consumers. Developing a Cap and Floor regime in NI would support investor confidence in building greater interconnection across the UK. This will accelerate the delivery of social economic welfare benefits to UK consumers - avoiding disadvantaging UK interconnection projects compared to our EU neighbours. Providing early indication of any proposed regulatory mechanism would provide confidence to investors to commit the funds to develop the project at pace. This approach was applied to the Greenlink interconnector between RoI and Wales.

21. The project development process itself is exceptionally complex and depends upon the progression of a series of intrinsically linked activities, many of which are sequential in nature. The objective is to execute all the works to obtain all permits, licences and consents necessary to construct, operate and eventually decommission the project. The project must be de-risked as early as possible, design progressed, and all construction contracts and insurances procured and negotiated for signature in parallel to raising the funds to support a Final Investment Decision (FID). Delays to some activities will cause equivalent or even compounded delays to subsequent activities.

22. Due to the global boom in renewable energy projects, the supply market for electrical infrastructure is oversubscribed to such a degree that suppliers have limited capacity to meet developers' needs for the remainder of this decade. As such, suppliers are selective in terms of the projects they choose to contract with, requiring upfront payments to reserve manufacturing capacity.

23. Additionally, suppliers are only willing to work with those developers that have de-risked their projects to such a degree that there is a reasonable likelihood that the project will be forthcoming within the timelines specified i.e. all licences, permits and consents are either in hand or will be forthcoming, and a FID is likely to be positive. A unique consideration for interconnectors in more than one territory is the political and regulatory risk to the project securing consent concurrently throughout all required jurisdictions. As such, developers carefully evaluate the current and proposed regulatory, policy and consenting environment (and other factors) in connecting countries to gain confidence that the risk profile is consistent with projects being successfully constructed and investor confidence assured.

24. There are other stakeholders, with varying interests, that may influence the nature, timing, direction, and ultimate success of the project. Therefore, in the absence of a clear well understood delivery framework or rules of engagement, there is significant risk that delay, disruption or unanticipated cost may cause a project to stall.

[9] https://www.ofgem.gov.uk/sites/default/files/docs/2016/05/cap_and_floor_brochure.pdf

25. For interconnectors, an illustration of how a project may be easily disrupted would be that of delaying offshore technical surveys required to characterise the seabed and sub-surface ground conditions. Seabed surveys typically deliver the following:
    - Technical data on seabed and sub-surface ground conditions to ensure assets can be installed and the process de-risked.
    - Technical data to inform asset design and installation methodology.
    - Engineering data for the purposes of procurement of Engineer, Procure, Construct contractors that will construct the project.
    - Identifying safety hazards.
    - Ecological habitat mapping that is vital for assessing the potential environmental impacts of installing assets and identifying suitable mitigation, if necessary.

26. Offshore surveys are complex and at the mercy of weather, and as a result, they are normally conducted between April and October. Before surveys can commence, developers must obtain certain permissions from regulatory authorities. Applications for such permissions often have long lead times and processing time is dependent on the volume of applications under consideration, the nature of those applications, as well as the capability and experience of the competent authority. Should the granting of permissions be delayed and as a result the survey weather window for that year compressed or missed altogether, the project is automatically delayed by at least one year due to circumstances beyond its control, with negative knock-on effects for other activities necessary to maintain key project milestones.

27. Delays to offshore surveys means delays to:
    - Confirming the offshore cable route, landfall points, hence grid connection locations.
    - Identifying, negotiating, and securing onshore land requirement to route/locate infrastructure.
    - Providing vital data for engineering design and planning construction methodologies (which need to be environmentally assessed for consent applications)
    - Meaningful engagement with the supply chain on key project design and construction contracts.
    - Delay the progress and completion of environmental impact assessment and the preparation, consultation, and submission of offshore consent applications.
    - Placement of key contracts, investor onboarding and FID.
    - Completion of development on time.

28. Furthermore, private investment in large infrastructure projects, such as interconnectors, is contingent on investment-worthy projects. As mentioned earlier, this is dependent upon regulatory and policy certainty, as well as confidence that the project will be able to progress in a timely manner.

Recommendations

29. To address the challenges above, the following recommendations are made to support the delivery of infrastructure to meet Net Zero targets:

i. Ensure the development and implementation of a clearly defined, stable and harmonised regulatory and policy environment at each end of the interconnector, which will support investor confidence.
ii. Convene (or create) a single UK body to coordinate support for intra-UK infrastructure projects that minimises the cost of delivering all the UK individual devolved administrations climate change goals (like ACER for the EU).
iii. Enable support mechanisms to tackle cost and benefit imbalances between devolved administration regions, e.g. using a cross-border allocation mechanism, to enable national regulators to accommodate beneficial intra-UK projects, within the constraints of their vires, to support delivering greatest social welfare to UK citizens overall.
iv. Promote investment in interconnection at the scale needed to enable the integration of renewables, with least burden on consumers, through a coordinated Cap and Floor regulatory approach across the UK.
v. Establish sector specific guidance for the coordination of licencing, consenting, construction and operation of large-scale electrical infrastructure projects, such as interconnectors, ensuring all key actors can play their part in the process in a timely manner by having access to sufficient resources.
vi. Consider adopting LirIC interconnector as a pilot project to develop a framework for the delivery of all licencing, permitting and consenting requirements for interconnectors and other similar offshore energy projects such as future offshore grids, or the transmission elements of offshore wind farms.

January 2024

Annex 1 – Transmission Investment Existing Projects