

Ervia's response to the Commission for Regulation of Utilities on the Greenlink Electricity Interconnector Consultation

13th August 2018

Ervia

Introduction to Ervia

Ervia is a commercial semi-state company with responsibility for the delivery of gas and water infrastructure and services in Ireland, through Gas Networks Ireland and Irish Water. It also provides dark fibre broadband infrastructure through its business Aurora Telecom. Gas Networks Ireland develops, operates and maintains the natural gas transmission and distribution networks in Ireland, consisting of 13,954km of gas pipelines. Gas Networks Ireland provides gas transportation services to all gas suppliers and shippers. Irish Water is the national water utility responsible for providing safe, clean and affordable water and wastewater services to 1.7 million customers in the Republic of Ireland. Irish Water is responsible for the operation of all public water and wastewater services.

These national gas and water utilities underpin the social and economic development of Ireland and will play strategic roles in the transition of Ireland to a low carbon and sustainable economy by 2050.

Climate Change in Ireland

Ireland is currently struggling to meet its climate targets. The latest EPA figures¹ show that, at best, Ireland will only achieve a 1% reduction by 2020 compared to a target of 20%. In relation to 2030, Ireland's target calls for a 30% reduction of emissions compared to 2005, with binding annual limits over the 2021-2030 period. The latest EPA projections indicate that Ireland will exceed the allowable carbon budget implied by those limits by between 47-52Mt over the period, even assuming the allowed flexibilities are fully used. Ireland wants and needs to transition to a low-carbon and climate resilient society and announced significant measures to do so in the National Planning Framework. Ervia believes that electrical interconnection will help Ireland achieve these targets, however there must also be clear benefits to the Irish consumers.

European Union targets for interconnection

In its 2014 European Energy Security Strategy², the European Commission committed to working with Member States to ensure speedy implementation of Projects of Common Interests and other measures to meet the target of achieving interconnection of at least 10% of installed electricity production capacity for all Member States by 2020, and 15% by 2030. Ireland's interconnection level is currently at 7.4% as reported by the European Commission³. Once the United Kingdom leaves the European Union in 2019, Ireland will have zero interconnection with European Union Member States. This might offer Ireland an opportunity to seek a derogation from this target as it would be expensive to construct 15% of installed electricity production capacity in interconnection to other EU member states. In a Brexit scenario the Greenlink Interconnector would not contribute to Ireland achieving this target.

The important role of interconnection

Ervia agrees that Electrical interconnection plays a vital role in Ireland's energy system. It provides a necessary link to the much larger EU Internal Energy Market. It has aided the state's decarbonisation effort and helped to reduce curtailment of wind generation, increasingly so as the levels of wind generation have rapidly increased. It has also led to increased competition in the all-island single electricity market and thereby helped to put downward pressure on electricity prices to the benefit of all electricity consumers. While further interconnection will play a role in Ireland's decarbonisation and future energy mix, a full system analysis should be carried out to identify the least cost solution to allow Ireland meet its climate change targets, rather than examining individual projects on a case by case basis.

¹ [EPA Press Release on Ireland's Climate Targets](#)

² <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52014DC0330&from=EN>

³ https://ec.europa.eu/commission/sites/beta-political/files/energy-union-factsheet-ireland_en.pdf

Question 1

Are there any other specific factors that the CRU should consider in assessing the Greenlink CBA?

The Greenlink CBA needs to consider any negative impacts on the Irish Gas Network or wider energy system

A second electricity interconnector from the Republic of Ireland to the United Kingdom could have a significant impact on the operation of the electricity network and market, but may also impact on the gas network and the broader energy market. This requires further consideration.

Ervia welcomes the recent CRU consultation on Policy for Electricity Interconnection and in particular section 4.2.3 (Other impacts and considerations) number 3 which states *“Wider impact on other energy market participants, distributional impacts, e.g. impact on gas networks, gas tariffs and their knock-on impacts on gas consumers and/or I-SEM prices, impacts on other existing and/or potential electricity interconnectors.”*

Ervia request that this analysis is carried out as part of the Greenlink CBA.

Reliability of electrical interconnectors is of concern and needs to be considered as part of any cost-benefit analysis

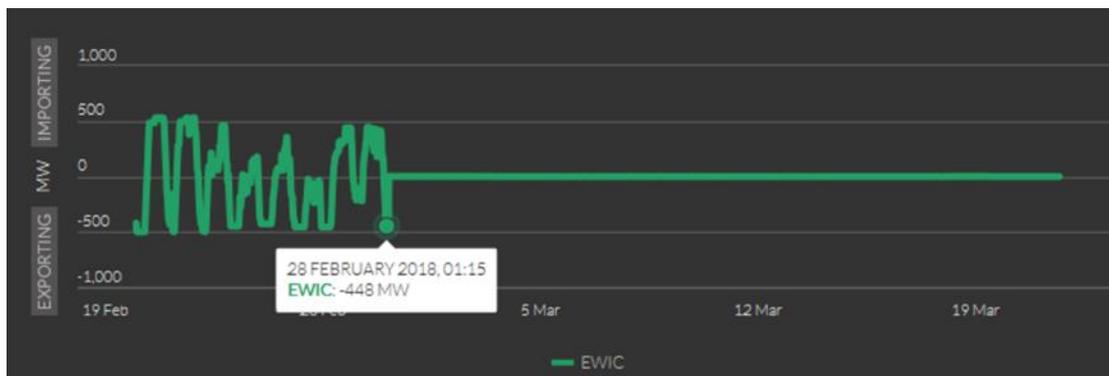
In the 2016⁴ and 2017⁵ EirGrid ‘All-Island Transmission System Performance Report’, it was highlighted that interconnectors have suffered significant reliability issues since commencing operation in the Irish market.

1. In 2016, the availability of the EWIC was 70%; and in 2017 this only improved to 85%.
2. In 2016, the availability of the Moyle Interconnector was 59%; and in 2017 this only improved to 70%.

In the first half of 2018, the reliability of electrical interconnectors has also experienced some significant issues, with at least two outages noticed on the EWIC, one which lasted a month. During Ireland’s peak weather event the “Beast from the East”, Ireland’s electrical interconnection to the UK suffered an outage for a prolonged period of time during a sustained period of high demand, as seen below.

⁴ <http://www.eirgridgroup.com/site-files/library/EirGrid/All-Island-Transmission-System-Performance-Report-Rev.1.pdf>

⁵ <http://www.soni.ltd.uk/media/All-Island-Transmission-System-Performance-Report-2017.pdf>



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Given this recent record of Irish interconnectors (also UK-France interconnection⁷), electrical interconnection does not appear to be the most reliable way to increase a country's security of supply.

1. Ervia asks that sensitivity analysis is carried out in the CBA based on different levels of availability and, based on recent evidence, that it is not assumed that the Greenlink Interconnector will have unrealistic levels of reliability.
2. Ervia would also like clarification on the following: if a Cap and Floor regulatory regime was to be awarded to the Greenlink Interconnector, would the consumers in Ireland be liable for the Floor price if the interconnector was on a long term forced outage? It is important to note that Ofgem require an 80%⁸ availability rate on an annual basis for an interconnector to qualify for a floor payment.

The Greenlink interconnector CBA should assess the economic benefit of security of supply from its project v gas infrastructure alternatives

Ervia believes that further interconnection can play a role in Ireland's future electricity system, however, a recent report by ESRI states that;

*"The impacts of interconnection are difficult to accurately quantify and so there should be a clear net benefit before this, or indeed any, infrastructural project is approved. If there is no clear net benefit Ireland should instead argue for an exemption from any requirement to have a given level of interconnection with another EU Member State rather than pursue suboptimal interconnection to France or elsewhere."*⁹

Ervia believes that Ireland's energy trilemma (security, competitiveness and sustainability) should, if possible, be achieved at least cost to consumers. Further

⁶ EirGrid Smart Dashboard (outage occurred on the 28th of February and lasted until 29th of March)

⁷ <https://www.ft.com/content/52e957a6-b64a-11e6-ba85-95d1533d9a62>

⁸ [Ofgem cap and floor regime](#)

⁹ <https://www.esri.ie/pubs/RN20170201.pdf>

electrical interconnection must demonstrate that it is the least-cost solution versus the alternatives to meet the three requirements of the energy trilemma. Comprehensive Macro Economic Modelling is required to compare all possible options. It is not enough to just consider the pros and cons of another electrical interconnector within the electricity market. The investment must be considered within the wider energy market to determine its overall impact, taking into account factors such as: existing CCGTs; utilisation of the state-owned gas network; future potential LNG infrastructure; and future potential Carbon Capture and Storage (CCS) utilising state infrastructure etc. Assessment of the interconnector in isolation of the wider market could have unintended negative impacts with an overall net negative outcome for the country. Ervia has carried out some high level analysis of potential gas infrastructure alternatives below.

1. Electrical interconnection and gas interconnection comparison

When compared to gas interconnection, electrical interconnection is substantially more expensive to build and can only carry a small fraction of the energy that gas interconnection can supply. Below is a comparison between the EWIC electricity interconnector and IC2 the second gas interconnector built to the UK. The gas interconnector can carry over 30 times the energy for less than half the capital cost of the electricity interconnector.

	EWIC	IC2	Comparison of gas to electricity
Costs	€600m	€270m (equivalent in 2012 money)	Gas less than half the cost
Max energy flow per day	12,000 MWh	376,000 MWh	Gas can carry 31 times more energy flow
Energy rating	500MW	15,600 MW	
Longest outage	4 months	0 days	Zero outages on the gas interconnectors

Ervia is not promoting a new gas interconnector, but this is an important point to note. It is clear from the table above that the most efficient way to transfer energy across borders is via gas interconnection. Electrical Interconnectors offer Ireland very little in terms of enhanced energy capacity.

2. Electrical interconnection and LNG floating terminal comparison

Similarly as above, when compared to floating LNG infrastructure, electrical interconnection is more expensive to build and can carry considerably less energy. Below is a comparison of the estimated costs and energy flows of the proposed Celtic interconnector and the Next Decade floating LNG terminal proposed for the Port of Cork.

	Celtic Interconnector	FSRU	Comparator of FSRU vs Celtic Interconnector
Cost	€1,100m	€335m (\$400m)**	30% of the capital cost
Max energy flow per year	6,100 GWh	50,000 GWh*	8 times energy flow
Max energy rating	700 MW	9,750 MW	Based on regasification capacity of 800 MMcf/d
Energy Storage capacity	Zero	950 GWh**	15 days avg. non-power demand in 2015/16 or 6.9 avg. days incl. powergen

*assumed imports of 4MTPA LNG per year

**based on publically available data from Flex LNG and Next Decade

In terms of security of supply a floating LNG terminal could also offer Ireland storage of up to 15 days of gas demand, whereas an electrical interconnector offers no storage capacity.

3. Potential CCS project for Ireland

CCS is the process of capturing CO₂ from fossil fuelled power plants or industrial emitters, transporting and injecting it to an underground geological formation (such as a depleted gas field) for permanent storage. Currently there are 17 large scale plants operating globally, with the capacity to capture over 30 million tonnes of CO₂ per annum. Technically, CCS is a proven technology which has operated since 1972. With higher carbon prices in the future, and limited alternative options for large-scale decarbonisation of industry and dispatchable power generation, CCS could become an economically viable solution. Ervia is conducting a feasibility study on the potential for CCS fitted to existing CCGTs in the Cork area.

The identified benefits of the Greenlink Interconnector are very ‘back ended’, in that positive welfare only really starts to be generated in the 2030s, by which time there might be CCS opportunities in the ISEM. It is also noted that the benefits appear to be driven in significant part by assumptions on CO₂ cost savings. If this is due to an assumed high carbon price, this factor would also make a CCS project more attractive.

Brexit

The benefits highlighted in the Greenlink submission do not reflect risks around Brexit and the potential for interconnector flows to be less efficient. Ervia welcomes the CRU

request to Element Power to model Brexit scenarios and we ask that this modelling is shared publically.

CBA to consider variances in carbon price between Ireland and the UK which might be exacerbated due to Brexit

Ervia asks that variances are modelled in the Greenlink CBA to consider the differences in carbon prices in the two regions, which post-Brexit, may vary further.

Currently, the UK implements a Carbon Floor Price of £18 per tonne of CO₂ emitted from its ETS sector. Historically, this was significantly above the EU ETS price for emissions, but more recently it has started to align, with the EU ETS price increasing. If the UK increases its Carbon Floor Price when it potentially leaves the EU ETS trading scheme in 2020¹⁰, Ireland could be at risk from higher emissions in our power generation sector as inefficient plant would be utilised to export energy across the interconnector at times of high prices in the UK.

As noted by the ESRI, “Interconnection between electricity markets facilitates greater penetration of intermittent generation on the electricity network but interconnection also enables carbon leakage, particularly if policies relating to the price of carbon are misaligned across countries.”¹¹

Before committing to significant investment for further electrical interconnection, Ireland needs to be sure that this will not have unintended consequences for its carbon emissions. Ervia therefore asks that sensitivity analysis is carried out on the UK Carbon Floor Price, to assess the effect of an increase in price above the predicted carbon price included in the analysis for the EU ETS price.

Question 2

Are there any other specific factors that the CRU should consider in assessing the Greenlink technical overview report?

Impact of shipping traffic on cable route

As noted by the CRU, “there is no explicit mention in the technical report of any studies undertaken on the proposed subsea cable route for shipping traffic and the impact it is likely to represent to the project”.

Ervia is of the view that it would be prudent to carry out a full analysis of the risks posed to the project from shipping traffic in the area, particularly given past events relating to interconnectors/pipelines and anchors from ships.

¹⁰ [UK to stay in EU ETS until 2020 at least](#)

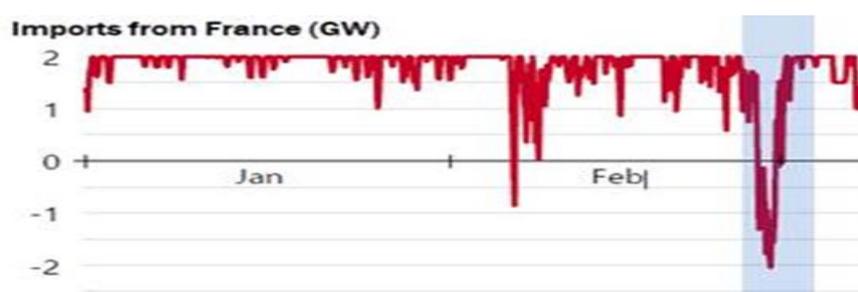
¹¹ [ESRI – Working Paper 458](#)

- In the winter of 2016, the UK to France interconnector experienced a significant outage due to an anchor hitting the power cable during a storm¹².
- There have also been reports of pipelines being hit by anchors, indicating that any infrastructure placed in shipping channels may be at risk, especially during bad weather events.

Availability of infrastructure and electricity, especially in peak events

Development of further interconnection to the UK does not guarantee the availability of electricity in times of peak demand.

As an example, during the “Beast from the East” even though the interconnector between France and the UK was fully operational, the UK were exporting significant volumes of electricity to France, even though as seen below they normally rely on the interconnector for 2 GW of electricity imports at most times. On this occasion, due to higher peak demand and market prices at the time in France, the UK were unable to use this interconnector to import which demonstrates that electricity via interconnection may not be available when it is needed as electricity follows the market price.



Ervia welcome Section 4 of the recent Policy for Electricity Interconnection as proposed by the CRU

Before any decision is made on the potential Greenlink interconnector, a thorough technical assessment, like proposed in the recent Policy for Electricity Interconnectors consultation section 4.1, should be carried out to ensure there are no gaps between the criteria set out in that document and the CRU’s initial observations on the technical assessment in section 4.2.1 in the Greenlink consultation document.

¹² [“All it took was an anchor...” – The Guardian](#)

Question 3

Are there other specific factors that the CRU should consider in selecting the appropriate regulatory approach?

The CRU notes that “if the public interest test is met it may be appropriate to consider to develop a cap and floor for Greenlink”.

Should the public interest test be met, a view could be taken that Ireland’s regulatory approach has been predetermined by a need to avoid a conflict with the UK cap and floor regime and potential amendments. It would be difficult in that context to carry out a meaningful review of what is the appropriate regulatory approach for Ireland in respect of the project.

In the UK, the cap and floor regulatory policy was put in place in part to encourage greater interconnection¹³ as it was felt to be a generally desirable aspect of UK energy policy. Ervia is of the view that Irish policy considerations deserve further detailed analysis, particularly taking into account possible Brexit scenarios.

Ervia feel a decision by the French regulator to delay a decision on a proposed interconnector to the UK pending Brexit negotiations could be relevant

An important factor the CRU might consider is a recent decision by the French Regulator (CRE) in their deliberation 2017-253¹⁴ where they stated *“The potential consequences of Brexit on the energy markets and, in particular, on the rules for access and use of interconnectors between the continent and the United Kingdom cannot be anticipated to this day. The regulatory and economic framework in which new interconnector projects will be developed is therefore highly uncertain, thus questioning the possibility to analyse with sufficient precision the benefits for the community of such projects.*

Furthermore, Brexit and its potential consequences generally raise the question of the approach considered for determining the benefits of the project: to this day, CRE based its decisions on new interconnector projects by taking into account the benefits provided by these projects at the European level. In the context of Brexit, the question of the inclusion of the benefits for the United Kingdom in the calculation methodology could be reviewed in light of the ultimate status of the United Kingdom with regards to its participation to the internal energy market.

In this context, following studies conducted by its services, CRE considers that it is not in a position to decide whether any new interconnector project between France and the United Kingdom is beneficial to the European community before the withdrawal conditions of the United Kingdom from the European Union are clarified.

¹³[Ofgem – Cap and Floor regime](#)

¹⁴[Deliberation of the Energy Regulatory Commission of 16 November 2017](#)

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