Response to CRU - Consultation on Policy for Electricity Interconnectors

Assessment Criteria for Electricity Interconnection Applications

10th 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, climate resistant and sustainable economy by 2050.
Overview / Executive Summary

Ervia welcomes the opportunity to respond to the Policy on Electricity Interconnectors – Assessment Criteria for Electricity Interconnection Applications consultation.

Ervia provide the following comments and recommendations as its response to the Policy for Electricity Interconnectors consultation and also welcomes the other impacts and consideration, especially on other energy market participants as set out in section 4.2.3.

1. Section 4.1 additional ‘Technical criteria’ to consider:
   a. Reliability of electrical interconnectors should form a key element of investment analysis.
2. Section 4.2 additional ‘Economic criteria’ to consider:
   a. Assess the economic benefit of security of supply from electrical interconnection v gas infrastructure alternatives.
   b. Further interconnection should only be considered if it can be shown to provide best value for consumers compared to the alternatives.
3. Section 4.2.3 additional ‘Other impacts and considerations’ to consider:
   a. Electrical interconnection to Britain should be considered separately to electrical interconnection to mainland Europe as Britain will no longer be an EU Member State after Brexit.
   b. Increased interconnection may actually increase Ireland’s carbon emissions, and potentially market prices.
   c. Line item 7. Include ‘LNG’ in the potential alternatives to electricity interconnection.

Technical Criteria

Reliability of electrical interconnectors should form a key element of investment analysis

In the EirGrid report All-Island Transmission System Performance Report 2016\(^1\) it was highlighted that Irish Interconnectors have suffered significant reliability issues since they have started operation in the Irish market.

1. In 2016 the availability of the East-West Interconnector (EWIC) was 70%

2. In 2016 the availability of the Moyle Interconnector was 59.04%

Electricity interconnection is expensive and when Ireland is considering investing significant sums of money building further interconnection, a full analysis should be carried out to ensure the Irish consumers will not be burdened with paying for unreliable infrastructure. The chart below shows the poor reliability of the Moyle interconnector between 2010 and 2016. If Ireland is to rely on further interconnection for electricity, a full analysis of their reliability should be a major component of any evaluation. It seems from the recent reliability history of Irish Interconnectors (also UK-France Interconnection²), electrical interconnection is not the most reliable way to increase a country’s security of supply.

![Historic Moyle Availability](image)

Consideration should therefore be given to the financial impact of long outages, taking into account expenses such as repairs, insurance and loss of benefits to consumers.

**Economic Criteria**

**Assess the economic benefit of security of supply from electrical interconnection** v gas infrastructure alternatives.

**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

² [https://www.ft.com/content/52e957a6-b64a-11e6-ba85-95d1533d9a62](https://www.ft.com/content/52e957a6-b64a-11e6-ba85-95d1533d9a62)
interconnector can carry over 30 times the energy for less than half the capital cost of the electricity interconnector.

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

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.

**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.

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

*assumed imports of 4MTPA LNG per year
**based on publicly 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.
Further interconnection should only be considered if it can be shown to provide best value for consumers compared to the alternatives.

Ervia believe that interconnection can play a role in Ireland’s 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.”

Another recent piece of analysis by Valeria Di Cosmo (ESRI, FEEM), Sean Collins and Paul Deane (UCC) shows that if the annual costs of a proposed interconnector between Ireland and France exceed or equal €45m per annum, this new interconnector would not bring “overall welfare gains neither to the Island of Ireland nor France, even if the interconnector’s owners and Irish consumers may partially benefit from this project”. Interestingly the paper also notes that if electrical storage becomes popular during the next ten years in either France or Ireland, interconnection between these two countries would generate welfare losses in both states.

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

Other impacts and considerations

Electrical Interconnection to Britain should be considered separately to electrical interconnection to mainland Europe as Britain will no longer be an EU Member State after Brexit.

With the United Kingdom set to leave the European Union in 2019, Ireland should assess applications for further electrical interconnection to Britain separately from applications to other EU Member States. According to a European Commission document, Ireland in 2013 had an interconnection level of 7% with the UK). When the United Kingdom leave the European Union in March 2019, Ireland’s installed interconnection with other European Member States will be 0%. Rather than building more Electrical Interconnection to meet EU targets, Ervia believes that Brexit could provide a strong case for Ireland to seek a derogation from EU interconnection targets.

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5 European Commission – Achieving the 10% electricity interconnection target
Increased interconnection may actually increase Ireland’s carbon emissions, and potentially market prices.

When the price of carbon is different between two countries (like Ireland and United Kingdom), there is the potential for interconnection to have a negative effect on the country with the lower carbon price in terms of emissions. It is also important to note here that France is considering implementing a significant carbon floor price\(^6\).

Currently the UK implement a Carbon Floor Price of £18 per tonne of CO\(_2\) emitted from their ETS sector. For years 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 increase their Carbon Floor Price when they potentially leave the EU ETS trading scheme in 2020\(^7\) Ireland could be at risk from higher emissions and prices in our power generation sector as less efficient power plant would be utilised in Ireland to export energy across the interconnector at times of high prices in the UK.

The ESRI mentioned in a report “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.”\(^8\)

Before committing to significant investment for further electrical interconnection Ireland needs to be sure it will not have unintended consequences for its carbon emissions and market prices.

\(^6\) Emmanuel Macron – 26\(^{th}\) September 2017
\(^7\) UK to stay in EU ETS until 2020 at least
\(^8\) ESRI – Working Paper 458