

# 9. Interconnectors



## SUMMARY

### **‘Support for interconnectors, but conditional on there being a level playing field’**

Almost all interviewees thought in principle at least, greater interconnection with Europe was ‘a good thing’ and would bring benefits in terms of greater diversity of supplies, grid management and ultimately lower bills for consumers. One respondent described interconnection as being equivalent to ‘time zone arbitrage’ (i.e. it allows market participants to take advantage of different time zones and demand patterns in continental Europe when seeking to balance the system).

Some believed the primary role of interconnectors should be to help meet peak demand and address system management challenges, but not to substitute domestic generation. A number of generators raised concerns about whether a level playing field existed between overseas generators and conventional generation given the existence of the Carbon Price Floor in the UK, and the scale of the network charges that GB generators pay. One interviewee stated we should not build interconnectors based on ‘carbon tax arbitrage’ across Europe.

There was widespread support for trying to get the EU Emissions Trading Scheme (EU ETS) to work properly to give consistent carbon price signals across the EU, enabling the UK to move away from unilateral action on carbon taxes and thereby reduce this arbitrage effect. Energy UK welcomes the Government’s renewed commitment to delivering a meaningful carbon price through the EU ETS and encourages Government to engage with industry on how to meet this challenge.

## 9.1 Interview responses

Almost all interviewees thought ,in principle, greater interconnector capacity was a ‘good thing’ bringing benefits in terms of diversity of supply, grid management and ultimately delivering lower bills for consumers.

Members mentioned a range of potential benefits including interconnectors could provide a range of system benefits and ancillary services. It was acknowledged that interconnectors could help enhance capacity adequacy, i.e. improve loss of load expectation (LOLE) and the ability of generation capacity to meet demand. Interconnectors can help with ‘peak shaving’ and ‘trough filling’, i.e. shifting system load during peak and off-peak periods. Some also mentioned the benefits of increased interconnection in terms of infrastructure upgrade savings, i.e. avoiding more expensive capex or refurbishment projects.

While many acknowledged the benefits of interconnectors and their importance in the context of increasing system balancing challenges, some questioned whether interconnector capacity should be considered as an ‘alternative’ to domestic generation or whether it was best viewed as a complement to it. Several interviewees emphasised the importance of a ‘level playing field’ between domestic generation and imported electricity, i.e. the system and policy costs/benefits of each were fully taken into account.

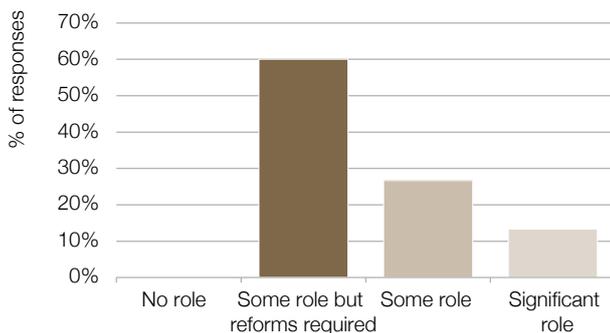
Interviewees expressed views such as:

**“ Interconnection is good if it is efficient and serves a purpose as it brings in cheaper electricity. It may also help stabilise prices.”**

**“ They are good for liquidity and market flexibility.”**

**“ The presence of interconnectors exacerbates the issue of GB generator competitiveness with EU generators, in particular given they do not pay TNUoS and other charges.”**

Figure 49: Is there a role for more interconnection in GB?



## 9.2 Analysis

### 9.2.1 Current levels of interconnection and usage in the UK

The views expressed show the market is, in general, supportive of the existing interconnector capacity in the UK. At the time of writing, the UK has 4GW of interconnector capacity, through which it was a net importer of 20.5GWh contributing 5.7% of UK electricity supply in 2014<sup>67</sup>.

As UK wholesale electricity prices have been consistently higher than Dutch and French wholesale prices, an arbitrage opportunity exists for the efficient utilisation of interconnectors. Some respondents noted they are already witnessing system benefits such as better balancing and lower wholesale prices as a result of existing interconnector capacity.

### 9.2.2 Future deployment of interconnected capacity

In its latest 'Single Market Progress Report' the European Commission found that greater investment in interconnection is needed in the UK<sup>68</sup>. This is a part of broader European Council ambition to see all member states maintaining at least 10% of

their installed capacity in interconnection<sup>69</sup>.

At this stage in the UK, mature proposals are being developed in respect of an additional 10.3GW of interconnectors, theoretically capable (in aggregate with existing interconnector capacity) of contributing 35% of UK 2014 total electricity supply<sup>70</sup>.

New interconnectors have two options for deployment in the UK:

1. A regulated route known as "cap and floor" where revenues generated by the interconnector over a 25 year period, must be within a band determined by Ofgem based on the costs associated with the project. Where revenues fall below the lower end of the band, the interconnector developers are paid the difference up to the floor by the National Electricity Transmission System Operator (NETSO), who recovers the costs via transmission costs applied via the Transmission Network Use of System (TNUoS) charges on transmission system users; or
2. A merchant route, therein being exempted from EU regulations but increasing risk to the developer and finance providers.

Table 7: Existing UK electricity interconnectors

#	Interconnector	Commissioned	Connection location	Capacity
1	IFA	1986	France	2 GW
2	BritNed	2011	Netherlands	1 GW
3	Moyle	2001	Northern Ireland	500 MW
4	East-West	2012	Republic of Ireland	500 MW
<b>Total capacity</b>		<b>4GW</b>	<b>\$300</b>	

Source: National Grid and associated press articles

Table 8: Existing GB electricity interconnectors and mature proposed projects

Project	Country	Capacity	Regime	Est. start date
IFA	France	2000MW	Merchant	1986
Moyle	Ireland	500MW	Regulated	2002
BritNed	Netherlands	1000MW	Merchant	2011
EWIC	Ireland	500MW	Regulated	2012
ElecLink	France	1000MW	Merchant	2019
NEMO	Belgium	1000MW	Cap & Floor	2019
NSN	Norway	1400MW	Cap & Floor	2020
FAB Link	France	1400MW	Cap & Floor	2022
IFA2	France	1000MW	Cap & Floor	2020
Viking	Denmark	1000MW	Cap & Floor	2022
Greenlink	Ireland	500MW	Cap & Floor	2021

Source: Ofgem website, November 2015

<sup>67</sup> DECC, Digest of UK Energy Statistics (DUKES) 2015, Chapter 5, Table 5B

<sup>68</sup> [https://ec.europa.eu/energy/sites/ener/files/documents/2014\\_countryreports\\_unitedkingdom.pdf](https://ec.europa.eu/energy/sites/ener/files/documents/2014_countryreports_unitedkingdom.pdf)

<sup>69</sup> [http://www.consilium.europa.eu/uedocs/cms\\_data/docs/pressdata/en/ec/141749.pdf](http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/ec/141749.pdf)

<sup>70</sup> DECC, Digest of UK Energy Statistics (DUKES) 2015, Chapter 5, Table 5A

NEMO Link, NSN, IFA2, Viking Link, FAB Link and Green Link have all been granted a cap and floor by Ofgem in principle. ElecLink will operate under a merchant model, with a partial exemption from European legislation. Following a call for “intent to submit” from Ofgem earlier in 2015, a second application window has now been postponed until 2016<sup>71</sup>.

### 9.2.3 The benefits of more interconnector capacity

The majority of respondents were, in principle, supportive of more interconnector capacity and were able to identify a variety of areas where they perceived further interconnection would be advantageous, including:

- **Security of supply:** some respondents felt greater levels of interconnection would reduce the total quantum of capacity required by helping to meet peaks in demand, allowing the security of supply objective to be met at a lower cost. On the other hand, some believed interconnection capacity was not a like-for-like substitute for domestic generation. However, most respondents acknowledged having a portfolio of interconnected markets helped to diversify the underlying energy mix.
- **Wholesale prices:** some interviewees acknowledged the potential benefits of increased interconnection in harmonising prices between markets, which in GB would largely result in a reduction in wholesale prices. Analysis commissioned by National Grid found each additional GW of UK interconnector capacity reduced wholesale prices by 1-2%<sup>72</sup>.
- **Liquidity and system integration:** respondents generally agreed interconnection could help meet changing peak demand patterns and facilitate increased integration intermittent generation. Some respondents noted interconnectedness had been beneficial by allowed pooling of the day-ahead auction and increasing market liquidity.

### 9.2.4 Increased interconnection and the impact on domestic markets

Some respondents were concerned there was not a level playing field between domestic capacity and interconnected capacity. They claimed interconnected capacity benefited from regulatory support, policy arbitrage and exemptions, and this disadvantaged existing domestic supply. Several pointed towards the growing net import rates across existing GB-EU interconnectors (see Table 9). Others noted if interconnectors could “stand on their own two feet” then development of capacity should not be constrained. Some believed the

provision of regulated revenue streams to interconnectors was at odds with a market-based approach and the price signals alone should provide the necessary investment signals.

60% of respondents believed if increased interconnection is to be allowed, the UK must consider reforming their operation in the market. The concerns expressed were largely centred on three major themes, each discussed in more detail in the following paragraphs.

Table 9: Percentage of net imports via interconnector

Interconnector	2012	2013	2014
IFA	36%	59%	85%
BritNed	66%	72%	90%

Source: Department of Energy and Climate Change (2015)

### Policy vs. price arbitrage

Respondents were concerned that ‘policy arbitrage’ was currently a significant driver of GB interconnector value. As noted above, the economics of interconnectors is predicated on the efficient movement of generation between zones based on price. However, with EU carbon (EUA) prices continuing to be depressed compared to increasing UK Carbon Price Support (CPS) rates, non-market factors were seen to be distorting price signals. This policy arbitrage was a particular concern for several interviewees. Figure 50 shows historical and future CPS levels compared to EUA prices (converted to GBP using historical EUR-GBP rates).

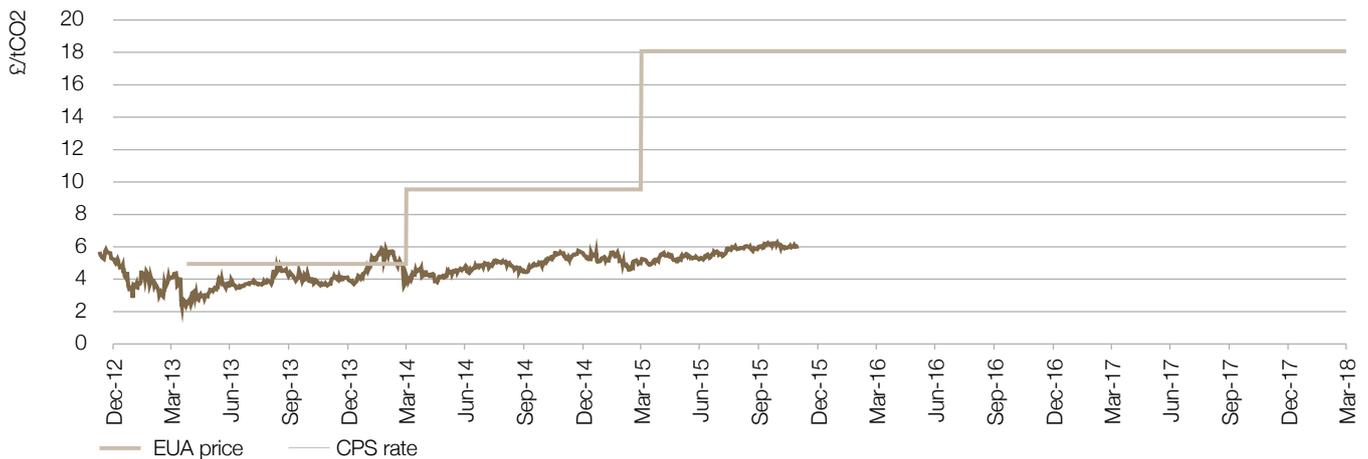
In a recent policy speech, the Secretary of State confirmed Government’s commitment to improve the functioning of the EU ETS market in order to send appropriate carbon pricing signals, and pointed out that collective action ‘at the European level’ would be a more powerful intervention. Restoring the ETS to ‘full health’ as described by the Secretary of State would reduce the need for market-distorting unilateral action on carbon price in the UK.

Members also noted the exemption of interconnectors from balancing service use of system (BSUoS) and transmission network system use of service (TNUoS) charges was driving interconnector value. Interconnectors are exempted from such network charges in line with EU legislation to promote a single energy market, avoiding “pancaking” of charges

<sup>71</sup> <https://www.ofgem.gov.uk/electricity/transmission-networks/electricity-interconnectors#block-views-publications-and-updates-block>

<sup>72</sup> <http://www2.nationalgrid.com/mediacentral/uk-press-releases/2014/%C2%A31-billion-could-be-saved-from-electricity-costs-if-uk-doubles-its-interconnector-capacity-by-2020,-says-new-analysis-from-national-grid/>

Figure 50: Comparison of GB CPS rates with EUA carbon price



Source: Thomson Reuters, Climate Change Committee, KPMG analysis; EUA carbon price converted to GBP for comparison

and encouraging efficient use of interconnector capacity (as opposed to a mechanism put in place by Government or the system operator), however the view of several interviewees was that the cumulative impact of these additional price arbitrages means there is not a level playing field between interconnector capacity and domestic generators.

### Interconnector participation in GB capacity market

While many interviewees were generally supportive of cross-border capacity competing in the capacity market, some interviewees raised concerns regarding the rules of participation for interconnectors, in that it is the interconnectors' owners that participate rather than the overseas generation capacity owners.

Some interviewees were sceptical whether interconnectors provided the same level of capacity certainty as conventional domestic generation sources. They acknowledged the use of de-rating factors for interconnectors, but noted current capacity market rules' arrangements effectively provided interconnectors with a free option. That is, given penalties are capped at 100% of the year's capacity market revenues, in situations where demand exceeds supply in both interconnected markets, the interconnector operators may find it more economic to supply the market with higher prices and incur the penalties for failure to deliver under the capacity market agreement. This is not the case for domestic generation plant. Some interviewees expressed this concern noted that cash-out reform was designed to provide the economic signals to address this issue.

De-rating factors are therefore critical in ensuring interconnector remuneration is a true reflection of its likely ability to deliver

under the capacity market agreements, and also to ensure domestic generation plant is not inefficiently priced out of the auctions. Table 10 shows the published de-rating factors for GB interconnectors.

Some respondents also expressed concerns regarding the 'quasi'

Table 10: De-rating factors applied to interconnectors in the capacity market

Border	De-rating factor
GB – Belgium	64 – 94%
GB – France	63 – 94%
GB – Ireland	26 – 56%
GB – Norway	82 – 93%

Source: DECC (February 2015), Electricity Market Reform: Announcement of de-rating methodology for interconnectors in the Capacity Market, [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/404260/Inteconnector\\_de-rating\\_methodology\\_final\\_final.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/404260/Inteconnector_de-rating_methodology_final_final.pdf)

classification of interconnectors as generation assets for the purpose of capacity market auctions. While most interviewees agreed a reliable level of interconnection in the capacity market enhanced auction competitiveness, some believed an optimal model for cross border participation in capacity mechanisms was not yet in place. Some interviewees believed increased coordination between system operators in interconnected jurisdictions was necessary in order to understand the impact of interconnectedness on capacity adequacy across Europe and ensure capacity is supplied where it has been committed.