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# Interconnector financing models

## 1 Introduction

The following paper outlines the European Union regulation of interconnection financing and Ofgem's proposals to mix the regulated and market approaches. A number of case studies are also provided.

## 2 Current approaches to Interconnector financing

EU law allows for two types of interconnection financing models, a public model and a private one.<sup>1</sup>

The public model is often called the 'regulated approach' in which the investment is carried out by the Transmission System Operator (TSO) and underwritten by the consumer through their contribution to regulated network charges. Within this model interconnectors are built and owned as regulated transmission assets. EU Regulation<sup>2</sup> on third party access stipulates that interconnector capacity cannot be charged for

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<sup>1</sup> van Koten, S: *Merchant interconnector projects by generators in the EU: Profitability and allocation of capacity* Energy Policy 41 (2012) <http://www.sciencedirect.com/science/article/pii/S0301421511009190>

<sup>2</sup> Regulation (EC) No 1228/2003 of the European Parliament and of the Council of 26 June 2003 on conditions for access to the network for cross-border exchanges in electricity (Article 6) <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32003R1228:en:NOT>

unless the interconnector is congested. When an interconnector is congested the TSO must address these problems via ‘*non-discriminatory market based solution*’ (e.g. an auction) any revenues from this can only be used for specific purposes:

- Guaranteeing the actual availability of the allocated capacity;
- Network investments maintaining or increasing interconnection capacities;
- As an income to be taken into account by regulatory authorities when approving the methodology for calculating network tariffs, and/or in assessing whether tariffs should be modified.

Such revenue may therefore be used to reduce network charges and reduce the burden on consumers.

The private model of financing, also known as the ‘merchant approach’, seeks to encourage private investors to fund interconnection projects by exempting them from Third Party Access requirements enabling them to charge and keep rents arising from the interconnector.<sup>3</sup> Commenting on the model Ofgem have stated:

*Under this model, interconnector owners can be exposed to the full upside, or downside of their investment. Consumers do not underwrite any part of the costs, the decisions of when and how to invest are left in the hands of developers.<sup>4</sup>*

To qualify for an exemption certain criteria must be met:

- The investment must enhance competition in electricity supply;
- The level of risk attached to the investment is such that the investment would not take place unless an exemption is granted;
- The interconnector must be owned by a natural or legal person which is separate at least in terms of its legal form from the system operators in whose systems that interconnector will be built;
- Charges are levied on users of that interconnector;
- Since the partial market opening referred to in Article 19 of Directive 96/92/EC, no part of the capital or operating costs of the interconnector has been recovered from any component of charges made for the use of transmission or distribution systems linked by the interconnector; and,
- The exemption is not to the detriment of competition or the effective functioning of the internal electricity market, or the efficient functioning of the regulated system to which the interconnector is linked.<sup>5</sup>

<sup>3</sup> *Ibid* (article 7)

<sup>4</sup> Ofgem *Cap and floor regime for regulation of project NEMO and future subsea interconnectors* (June 2011) <http://www.ofgem.gov.uk/Europe/Documents1/Cap%20and%20Floor%20Regime%20for%20Regulated%20Electricity%20Interconnector%20Investment%20for%20application%20to%20project%20NEMO.pdf>

<sup>5</sup> Regulation (EC) No 1228/2003 of the European Parliament and of the Council of 26 June 2003 on conditions for access to the network for cross-border exchanges in electricity (Article 7) <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32003R1228:en:NOT>

Assessing the advantages and disadvantages of the merchant approach Oxford Energy notes that:

*Merchant investors may therefore be better incentivised than regulated TSOs to build new interconnectors, because they can take more of the benefit from the investment. They also face less regulatory uncertainty if they are granted an exemption (or regulatory holiday) under the terms of Regulation 1228/2003. Regulated TSO investments suffer from the additional uncertainty that regulated rates for return may change in the future. This is particularly the case for interconnectors, as more than one regulator is involved.*

*However, there are disadvantages in relying on merchant investors from a social welfare point of view; the basis for their profits is the availability to take advantage of spot price differentials, and this may lead to sub-optimal provision of capacity (that is, as explained below, because the greater difference in electricity price between two countries, the greater rent obtained by the interconnection provider, so there are no incentives to expand capacity up to the point where prices are equalized). As transmission capacity is subject to economies for scale, the building of an interconnector may well have the effect of foreclosing the market to new entrants. In other words, in a situation where a large interconnector would provide maximal social benefits, an interconnector of restricted size (as provided by merchant investor) would reduce economies of scale available from incremental capacity, making it unprofitable for another investor to complete the job with a second interconnector. In this context, a regulated investment would be preferable if it were to provide greater capacity. The regulated investor is less concerned with spot price differentials, as rents above the regulated tariff cannot (legally) be taken as profit.<sup>6</sup>*

The use of these approaches varies on a case by case basis. Ofgem note, however, historically a regulated approach has been favoured in mainland Europe, whilst Great Britain (GB) has preferred a merchant approach.<sup>7</sup> The reason for the UK's tendency towards the merchant route is, according to Ofgem, as follows:

*In GB, the onshore transmission owners are prohibited from including interconnection in their RAB [Regulated Asset Base] which would allow them to get a regulated return on any investment in interconnection assets. So, in the absence of a regulated regime, new investment in electricity interconnection can only be delivered by the merchant route, with developers seeking for an exemption from European legislation (eg from Use of Revenues requirements and TPA).*

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<sup>6</sup> Oxford Energy *Cross-border electricity interconnections for a well-functioning EU Internal Market* (June 2012) <http://www.oxfordenergy.org/wpcms/wp-content/uploads/2012/06/Cross-border-electricity-interconnections.pdf>

<sup>7</sup> Ofgem Cap and Floor

Section 4 provides some case studies of both types of approach in action.

### 3 Ofgem's 'Cap and Floor' proposals

Ofgem are currently in the process of consulting on a 'Cap and Floor' model of incentivising interconnection investment. As noted above, GB has tended toward a merchant approach to interconnection development. However, Ofgem have found this to be '*increasingly challenging*'. This has resulted from the European Commission imposing additional conditions on the exemption decision in the case of connection between GB and the Netherlands. Ofgem have stated that this:

*...was perceived by developers as an indication that the Commission sees exemptions as exceptions. It reflects the fact that in most European Member States, typically the national Transmission System Operator (TSO) invests in interconnection and often there is no merchant-exempt route available. This in turn, has limited the range of candidate countries for connection to GB.<sup>8</sup>*

Ofgem's proposals are aimed at overcoming the obstacles presented by the merchant approach whilst maintaining a developer led investment and working within European legislation. The cap and floor proposals have been designed to incorporate a market led approach into a regulatory framework.

The proposed approach will introduce a cap and a floor on interconnector returns derived from auctioning of interconnector capacity in auctions taking place in different timeframes (the cap and floor levels will be set on congestion charges). This allows interconnector owners to earn returns within the bounds of a pre-set cap and floor. It is envisaged that cap and floor levels will be set ex-ante and remain fixed for regime length of 20 to 25 years to provide the investor with a degree of certainty about future returns.

Under the proposed model revenues above the cap are to be returned to the System Operator who will use these to lower network charges. Revenues below the floor trigger a payment from consumers.

The model will be applied to Project NEMO (a subsea interconnector between GB and Belgium). The levels of cap and floor will be assessed leaving open the possibility of introducing an incentive based approach for other projects, beyond NEMO.<sup>9</sup>

It is intended that the final proposals for the approach will be published before the end of 2013.

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<sup>8</sup> Ofgem *Cap and Floor Regime for Regulated Electricity Interconnector Investment for application to project NEMO s* (March 2013)  
<http://www.ofgem.gov.uk/Europe/Documents1/Cap%20and%20Floor%20Regime%20for%20Regulated%20Electricity%20Interconnector%20Investment%20for%20application%20to%20project%20NEMO.pdf>

<sup>9</sup> *Ibid*

## 4 Case studies

### 4.1 East/West Interconnector – regulated approach

The East/West Interconnector (EWIC), which connects the Republic of Ireland with GB, operates under a regulated approach. Under this approach all *'reasonable costs'* incurred by EirGrid Interconnection Ltd (EIL) during the construction and operation will be recovered from the final consumer via Transmission Use of System Charges. The level of these tariffs will be regulated. EirGrid is not allowed to benefit from the interconnector beyond the *'regulated rate of equity it invested the EWIC'*.<sup>10</sup>

Pursuant to Article 16 (6) of regulation EC 714/2009 any revenue earned from the interconnector through congestion charges must be used for:

- Guaranteeing the actual availability of allocated capacity; and/or
- Investment in maintaining or increasing interconnection capacities.

Furthermore:

*...revenues from auction receipts will be net against EIL's revenue requirement, to lower the amount to be recovered from TUoS customers.*<sup>11</sup>

It is estimated that the capital requirement for building the interconnector was €601m. Operational costs are estimated at just below €8m per year (by EIL although the regulator places them at below €7m). Table 1 outlines the year-on-year cost recovery agreed by EIL and the regulator. The table includes the operators request and the regulators decision.<sup>12</sup>

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<sup>10</sup> Commission for Energy Regulation *East West Interconnector Revenue Requirement Public Information Note* (September 2012) <http://www.cer.ie/GetAttachment.aspx?id=c742460f-f00d-456e-9400-f92198fe7149>

<sup>11</sup> *Ibid*

<sup>12</sup> *Ibid*

**Table 1: EWIC revenue requirement as request by EirGrid and approved by Commission for Energy Regulation<sup>13</sup>**

Line Item #	Element	EirGrid Proposal			CER Decision		
		€m	€m	€m	€m	€m	€m
		2012/13	2013/14	2014/15	2012/13	2013/14	2014/15
	<b>Expenditure</b>						
(1)	Debt Service Costs & Liquidity	€48.99	€29.76	€34.89	€48.99	€29.76	€34.89
(2)	Equity Opportunity Cost of Capital and Principal Repayment (2011 prices)	€4.51	€4.37	€4.23	€4.33	€4.20	€4.09
(3)	East West Readiness Recovery (2011 prices)	€0.63	€0.61	€0.58	€0.54	€0.52	€0.49
(4)	Operational Costs (2011 prices)	€7.83	€7.94	€7.72	€6.02	€6.63	€6.66
	Underlying Net Requirement	<b>€61.97</b>	<b>€42.68</b>	<b>€47.43</b>	<b>€59.88</b>	<b>€41.11</b>	<b>€46.14</b>
(a)	Reprofiling						
	Extent of Reprofiling	(-€13.40)			(-13.40)		
	Additional Revenues	(-€15.0)	(-€5.0)	(-€5.0)	(-€15.0)	(-€5.0)	(-€5.0)
	Adjustments as a result of reprofiling (2011 prices)	€1.06	€6.53	€1.39	€1.01	€6.09	€0.99
	Adjusted Net Requirement	<b>€34.63</b>	<b>€44.21</b>	<b>€43.82</b>	<b>€32.50</b>	<b>€42.21</b>	<b>€42.14</b>

## 4.2 BritNed – merchant approach with regulated elements

BritNed is the name given to the 1GW interconnector that connects GB to the Netherlands. It was built and is maintained under a merchant approach, although with regulated elements.

The interconnector developer received an exemption on use of revenue under Regulation EC 714/2009. This means that revenue from the interconnector is dependent on auction returns, i.e. the project is funded through the sale of capacity. BritNed's exemption was granted on the basis that it allocates capacity using a mix of short-term explicit auctions and day-ahead implicit allocation.

However, in granting the exemption to BritNed, the European Commission '*imposed additional conditions on the exemption decision at the end of the process which involved a cap on returns*'. With regard to revenue received beyond this cap, BritNed '*shall either use the excess to fund additional capacity or shall pay it to the national*

<sup>13</sup> *Ibid*

*TSOs to finance their regulated investments (for the benefit of national transmission customers)'.<sup>14</sup>*

### 4.3 Moyle interconnector – intrastate interconnection

The Moyle interconnector, which started in commercial operation in 2002 and links Northern Ireland and Scotland, is an example of intrastate interconnection (that is, it connects to part of the same state, rather than two separate Member States). As such, it is not classified as an interconnector under EU legislation. However, *'some of the requirements of EU legislation have been implemented through, for example, the non-discriminatory provision of third party access through the auctioning of capacity rights'.<sup>15</sup>*

The company was mutualised in 2003. This entailed buying out the previous shareholder, Viridian Group Plc., and transferring the asset into a not-for-profit company, Moyle Energy Holdings (note, the company was renamed Mutual Energy Limited in 2009). The company's investment was debt financed through a 30 year bond issued by financing. The asset was subsequently transferred to Northern Ireland Energy Holdings, a company limited by guarantee. Having no shareholders, the Group's principle stakeholders are the energy consumers of Northern Ireland and its financiers. As part of this arrangement, any revenue shortfall can be recovered through use of system charges and any operating surplus is returned to consumers via a reduced electricity tariffs. This relationship is managed through Moyle's Collection Agency Agreement with the System Operator for Northern Ireland (SONI).<sup>16</sup>

Commenting on charges to consumers in the context of the required repairs to the interconnector, Mutual Energy Limited (MEL) stated:

*The Moyle Interconnector is wholly debt financed, with significant savings for consumers locked in until 2033. The arrangement provides for Moyle to charge all electricity suppliers (and thereby consumers) an annual use of system fee, known as CAIRt, to cover the costs of operating the interconnector. These costs are expected to be approximately £20 million per year on average for the 2013/14 and 2015/16 period. The fee is reduced by any revenue which Moyle earns through its capacity allocation auctions. Up until 2012/13 Moyle had earned sufficient capacity auction revenue to allow it to waive the CAIRt fee completely.*

*Applying auction revenue to reduce the costs of the new low voltage cables, MEL estimates that the required unexpected additional CAIRt fee*

<sup>14</sup> Ofgem *Cap and floor regime for regulation of project NEMO and future subsea interconnectors* (June 2011) <http://www.ofgem.gov.uk/Europe/Documents1/Cap%20and%20Floor%20Regime%20for%20Regulated%20Electricity%20Interconnector%20Investment%20for%20application%20to%20project%20NEMO.pdf>

<sup>15</sup> Ofgem *Electricity interconnector policy* (January 2010) <http://www.ofgem.gov.uk/Europe/Documents1/Interconnector%20policy%20consultation.pdf>

<sup>16</sup> *Ibid*

*should not be more than £10 million in 2014 and £20 million in 2015/16. £10 million equates to approximately 1% of consumers' annual electricity costs.<sup>17</sup>*

Commenting on the benefits of the interconnector more generally, MEL stated:

*Research conducted by independent consultants Energy-Link Partnership (based on figures for the last 3-4 years) indicates that wholesale electricity market costs in Northern Ireland would have typically been £28 million higher per annum in Northern Ireland (£112 million all-island) and reserve costs £8 million higher per annum in Northern Ireland (£32 million all-island) without the Moyle Interconnector. Consequently, in addition to security of supply benefits it would appear from the study that the future customer financial benefits would far outweigh the cost of the cable replacement project.<sup>18</sup>*

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<sup>17</sup> Committee for Enterprise Trade and Investment, *Mutual Energy Limited Briefing on Moyle Interconnector: Decision on long-term repair of Moyle Interconnector cables*

<sup>18</sup> *Ibid*