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## **How is the UK Government maximising opportunities to learn from and partner with international partners within and beyond the EU?**

10 December 2013

### ***About Friends of the Supergrid***

*The Friends of the Supergrid (FOSG) is a group of companies which have a mutual interest in promoting and influencing the policy and regulatory framework required to enable large-scale interconnection in Europe. FOSG combines companies in sectors that understand, and will deliver the High Voltage infrastructure and related technology, together with companies that will develop, install, own and operate that infrastructure.*

### **A Single EU Electricity Market**

- 18 years ago the UK and its EU partners agreed that an integrated energy market where consumers would be able to choose supplier and freely trade electricity across national borders was a priority. The reason for that was to open the markets to competition, increase security of supply and reduce prices.
- The reality today is that the EU has yet to deliver an integrated energy market. There are 28 national markets with very different regulatory frameworks which have as a consequence resulted in higher prices and lower levels of security of supply, than if a single market existed. Moreover, free trade in electricity is much reduced (especially for electricity produced from renewables), due both to existing market designs and to the lack of the necessary grid infrastructure among Member States.
- **As EU Heads of Government search for solutions to deliver low cost energy to European consumers, the greatest barrier to keeping costs low is the lack of a single electricity market. A working example of a cross-border trading system is PJM Interconnection in the US, where consumers in New Jersey can buy electricity generated in Illinois, benefitting from the low cost renewables that have come online across the PJM market.**
- In the EU barriers to cross-border trade in electricity have yet to be fully addressed and as a result their consumers suffer from artificially high prices.
- The UK is an electricity island with very limited interconnection to its neighbours. As a consequence it has significantly limited its scope for enhancing security of supply, for reducing energy prices, for exploiting its local energy resources, for trading its spare capacity, for becoming an energy exporting country and for developing lower cost solutions to reducing its CO<sub>2</sub> emissions.

## 1. Supergrid

### 1.1 Target

The most effective route to the delivery of a single EU electricity market is Supergrid, which will also help achieve:

- The 2020 (first links becoming future parts of Supergrid), 2030 and 2050 emissions reduction objectives;
- the reduction of import dependence especially of gas and oil, which in 2010 exceeded 50% of EU gross energy consumption;
- an increase in security of energy supply for all EU Member States; and
- the integration of renewable energy sources across the EU;

The development of Supergrid will also provide additional benefits such as:

- enhanced opportunities for the development and export of key European technology including High Voltage Direct Current (HVDC) control systems and cabling;
- an increase in production of vessels, cables and technology devices; and
- skilled employment opportunities across the EU

The development of an integrated European electricity network would support the UK and other Member States to progress towards a decarbonised economy while better utilising existing sources of energy within the EU.

With increased interconnection, rather than building capacity markets in each Member State, countries will be better able to share capacity and by so doing reduce the cost to the consumer of system balancing.

### 1.2 Roadmap

In this transition phase to sustainable (zero carbon) electricity supply, fossil fired gas and coal plants will become less used. With Supergrid this spare plant, which is now becoming semi redundant, could provide back-up across the EU reducing the need for investment in short-term capacity in individual Member States. The UK for instance could envisage instead of some of its generation plants including the capacity payment for their availability, to tap into existing spare capacity across a wider market and avoid the costs of some of those investments in new generation.

Ergo: less capital expenditure in the UK on new fossil plant. Ergo: higher capacity utilisation for existing fossil plant across Europe. Ergo: cheaper electricity for the entire European customer base.

Supergrid will also deliver enhanced security of supply of primary fuel. It is the means of building new renewable capacity in the Northern seas and across the Mediterranean. Ergo: access to free fuel indefinitely.

Moreover, with Supergrid there would be a replacement of imports with domestic supply. A recent study by the CEBR in the UK showed that the multiplier effect from such replacement is between 2 and 3 depending on the productivity of the economy.<sup>1</sup>

As an addition to the above, a massive export market for European technology would be created. Currently Siemens, ABB and Alstom are the predominant suppliers of HVDC technology outside of China. Two of these companies have their global centres of excellence in the UK. While Prysmian, Nexans and ABB are the main manufacturers of transmission cables. They are all European or European based. The US, China and some large emerging markets are all considering the development of their own Supergrids. Europe can develop it here and export the technology.

### 1.3 Result

Currently, European electrical utilities are suffering. Low profitability, following on from low fossil plant utilisation, and long term punitive gas contracts is the current European norm. There is a strategic space for multinational utilities to take synergies from differing peak times and scarcities of fossil plant in some markets, while surpluses exist in others. None of this can happen without Supergrid. European trading in electricity is minimal now. With Supergrid trading activity will ensure that, on a pan-European scale, the electricity is produced from the lowest cost sources reducing the overall price to the consumer across the EU.

## 2. One example of the benefits of trade – UK, France and Spain

### 2.1 Opportunity

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<sup>1</sup> The economic impact of offshore wind CEBR 2012: <http://www.cebr.com/reports/economic-impact-of-offshore-wind/>

See p.7 *et seq*: **Balance of Trade Benefits: Under our Accelerated Growth scenario, by 2030, the estimated increase in net exports is £22.5 billion, sufficient to almost entirely plug the UK's current balance of trade deficit (recorded at £25.6 billion in 2009, the year corresponding with our forecasts).** These positive trade impacts are driven by our assumptions about reduced fossil fuel imports and offshore wind electricity exports as a result of greater offshore wind capacity. They are also driven by our assumptions about the development of the supply chain for offshore wind investments, the increase in UK content of UK offshore wind investments (relative to imports) and the share of continental European offshore wind investment that can be expected to be captured by the UK industry as these supply chain developments occur.

The UK has the opportunity to trade electricity with several Member States, not just in the North Seas region. Improved interconnection could deliver electricity from the south of Europe where excess wind, gas and solar capacity can be balanced with UK domestic generation. The UK Government's design of its future capacity market must include generation from sources outside the UK if the country is to fully benefit. Limiting the market to domestic generation reduces competition, locks in inefficiencies of supply and raises costs for consumers. It also limits the UK's exploitation of its marine renewable resources, which could be harnessed to supply power across a single market.

## 2.2 Investment

The costs of additional HVDC transmission needed to interconnect markets with the UK are significantly less than building new additional generation capacity, and will not run the risk of "locking in" new fossil generation. The European Commission has shown that from now to 2020 €500bn will be needed for new power generation, €400bn for distribution and €140bn for transmission<sup>2</sup>.

As an example, the UK, France and Spain have an opportunity to interconnect their markets which would enable the trade of UK generation to balance Iberian renewables, and French, Spanish and Portuguese power into the UK at times of peak demand. Such an interconnector would offer a cost competitive option to building new plant in the UK to provide domestic system balancing.

The €2bn estimated cost of the interconnector can be contrasted with the estimated €19bn of Hinkley C. In addition, the link would deliver electricity into the UK for between €42-€100 MWh from a mix of existing nuclear and renewables generation in France (cost of nuclear in France as defined by ARENH ("accès régulé à l'électricité nucléaire historique") is 42€/MWh since Jan 1<sup>st</sup> 2012), Spain and Portugal (€50-€100 MWh corresponding to index prices based on different offers depending on the technology used. MIBEL prices (power exchange of Spain and Portugal) are lower and for 1<sup>st</sup> quarter of 2014 are foreseen at 56.4€/MWh), in contrast to Hinkley which will receive an index linked price of €109 MWh for 35 years. There are therefore clear cost benefits from investment in new HVDC interconnection and this should be factored into the UK's future energy policy, complementing investment in domestic low carbon generation in ensuring a sustainable, affordable and secure electricity supply for future generations.

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<sup>2</sup> [http://www.energy-regulators.eu/portal/page/portal/EER\\_HOME/EER\\_INTERNATIONAL/CEER\\_Eastern\\_Partnership/2nd\\_EaP\\_Workshop/2\\_3\\_European%20Commission\\_Tbilisi\\_2013\\_updated.pdf](http://www.energy-regulators.eu/portal/page/portal/EER_HOME/EER_INTERNATIONAL/CEER_Eastern_Partnership/2nd_EaP_Workshop/2_3_European%20Commission_Tbilisi_2013_updated.pdf)

### 3. Summary

**Supergrid is the fundamental architecture of an integrated European electricity market. Without it we have a collection of sub-optimal national markets, and the EU will struggle to meet its emissions reduction goals, while keeping electricity prices higher than they would otherwise be.**

**The UK should continue to champion the delivery of an integrated EU electricity market, which will reduce the cost of energy for consumers, create significant industrial benefits for the country, and enable a low cost pathway to meet our emissions reduction goals.**

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