

Speech by Ambassador Paul Johnston to IVA seminar on lessons from the UK energy market,

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Energy has come to the forefront of European policy debates, both as a Prosperity and Security issue. A combination of Fukushima, Shale Gas, and not least Putin have put energy questions at the top of our shared agenda. Later this week in Brussels, Stefan Löfven, David Cameron and the other EU Heads of State and government will be debating the Russia/Ukraine crisis but also the European Commission's proposals for an Energy Union. The two issues are not unrelated...

The energy debate in Sweden is also topical, not least given the recent launch of the cross-party Energy Commission, which will look at the question of energy supply issues until 2050. Combined with IVA's Crossroads Electricity Project, there is obviously an appetite across Europe, and definitely here in Sweden, to explore the scope for new solutions to one of the central challenges of our time.

Finding security of supply and stability has long been the holy grail of energy policy. Achieving this while moving towards a low carbon and price competitive future is even more challenging. As all European countries contemplate the future of their energy supply amid regional and global uncertainties, achieving a forward-thinking energy policy with clear targets is vital to security and sustainability.

The UK has sought to address this through the Electricity Market Reform launched in 2012. Our policy is to reduce emissions at home while simultaneously adding long-term security and capacity – all the while relying on the private sector. It is quite similar to what I understand to be IVA's vision for Sweden's electricity supply and the UK's experience with EMR could perhaps serve as an example for Sweden as it seeks to find its own solutions.

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Of course, our countries have different starting points and different strengths in the electricity market, but our shared vision and challenges mean we can look to each other for examples, evidence and perhaps even inspiration.

The Foundation of EMR

The UK EMR is based on a cross-party vision.

After the 2010 election, the Conservative Party and the Liberal Democrats produced an agreement setting out policies the coalition would pursue when in power. One of the agreed initiatives was to reform the energy market to achieve security of supply while reducing CO2 emissions.

From this shared goal came the Electricity Market Reform project. EMR is now an established set of laws and policy – an example of smart legislation and state interaction with the private sector market. EMR is the UK's route to secure, clean and efficient energy supply in the future.

EMR is also part of the UK's overall vision of addressing the global threat of climate change.

Overall UK Approach to climate goals – 80% by 2050

Addressing climate change at home and abroad has been a cornerstone of the British Government's energy policy in recent years under centre-right and centre-left governments. I would be confident of that remaining the case whatever the election outcome in exactly 50 days' time, not least because many of our commitments are now enshrined in law.

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We want to be a driver of ambitious action on the international stage and ensure that our own policies promote a secure energy supply based on low carbon solutions at home.

The Climate Change Act of 2012 is the framework to achieving the UK's climate goals. This act imposes a legal obligation on the UK government to reduce greenhouse gas emissions by at least 80 percent by 2050, compared to 1990 levels.

It is ambitious and rightfully so. And its real bite is that it is not aspirational – it is a legal requirement. It is, in fact, the world's first legally binding climate change target.

To underpin the rigour of the legislation and to ensure a future government might not choose at some point to put off reducing emissions until just a few years before the 2050 deadline – this government has introduced a carbon budgeting system that caps emissions at specific levels over five-year periods.

The idea is to have a cost-effective path to achieving the 2050 requirement. Importantly, the first four carbon budgets have already been placed in legislation and now run up to 2027, demonstrating a long term commitment to this path.

Our first carbon budget target required a 23% reduction in emissions to occur from 2008 to 2012. During those four years we actually reduced emissions by 26%.

We are now in the midst of our second carbon budget. By 2017 the UK must have a 29% reduction in emissions – we can say we are well on pace to achieving that number.

The extent of our ambition is evidenced in the carbon budgets. By 2027, after the fourth carbon budget, we will have reduced our emissions by 50% compared to 1990 levels.

We are working towards that mark now and are doing so with an eye to the future.

This long term planning under the Climate Change Act and through the carbon budgets also benefits businesses by providing greater stability and certainty around which companies can plan. That is also the rationale for EMR itself.

Why we need EMR – current energy mix

The UK does not enjoy the vast hydropower resources Sweden does. So in seeking to hit our national and EU targets for CO2 reductions we need reforms which help move our energy system away from polluting fossil fuels towards renewable and low carbon technologies.

Approximately 25% of the UK's existing generation capacity – or 20 gigawatts – will be lost over the next ten years due to new regulations or due to age. Of course this will put pressure on our energy supply as our capacity margin will be significantly reduced.

Against this backdrop, the Electricity Market Reform is designed to bring about far-reaching changes to

- (1) better deliver the investment needed to maintain security of supply,
- (2) meet our renewable and decarbonisation targets,
- and (3) minimise consumer bills.

There are significant pressures on the electricity market that EMR seeks to address. It is estimated that electricity demand will steadily increase – by up to anything from 30-50% by 2050. As of now, the UK's percentage of renewables is low compared to Sweden's – only 12% of UK electricity comes from renewable sources, whereas in Sweden it is well over 50% (45% hydropower and 8,5% wind).

To meet this demand and to meet the 2050 target, it is estimated that we will need nearly 110 billion pounds in investment in renewable energy over the next ten years alone. A big opportunity for business, including foreign investors, as well as a climate commitment fulfilled.

What EMR involves

EMR has been designed in large part to incentivise private sector investment. The two principal features of the reform are (1) something called Contracts for Difference and (2) creation of something called a Capacity Market. I'll take each in turn.

Contracts for Difference are intended to reassure investors that whatever happens to energy prices in the market they will attract a predictable return on their investment. They are legally binding, private law contracts between a government-owned limited company and an electricity generator.

What happens in practice is that a producer sells its electricity into the market normally. The difference is that the Contract for Difference will reflect the difference in the estimate of the market price and an estimate of the long term price – also known as the strike price. If the market price is higher than originally predicted, then the generator may have to pay back the difference. If the market price is lower the state will pay the generator.

The strike price is determined by the government (through a Limited Company owned by the government) and then agreed with a generator (who could be running offshore wind farms or a nuclear power station) in a long-term, private law contract. Private law contracts are important because they provide certainty and allow for normal contract rights, obligations and recourse.

Contracts for difference are designed to stimulate investment in low carbon technologies, including renewable resources, nuclear and Carbon Capture and Storage by providing predictable revenue streams.

Predictability helps to minimise risk and makes it easier and cheaper to secure finance. The government is putting almost £8bn – something like 90 billion kronor – into CFD between now and 2020 alone.

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The system will initially be standardised and allocated across a wide range of low carbon technologies, ie different technologies will receive different levels of subsidy to attract investment in these new technologies. The ultimate goal is to have a competitive, tech-neutral system of allocation, ie a free market in low carbon energy options.

After the first round of contract for difference auctions, the benefits to investment and the electrical market are already being realised – including lower prices for technology and an increase in electricity capacity – nearly 550 megawatts more than if there had been no auction.

In total over £315 million has been awarded to renewable electricity technologies through the procurement process - both onshore and offshore, across the UK. From these technologies, more than 2 GW of capacity could be built, including 1.1 GW from offshore wind projects – resulting in enough power for 1,4 million homes in the UK.

The auctions have also led to a decrease in price. More companies have bid for the contracts, thereby driving down price due to increased competition in the renewable technology sector. Solar power's strike price was 58% lower than it would have been, we estimate, without this additional competition. Offshore and onshore wind were 18% and 17% lower respectively. The savings in cost can then be passed on to the consumers. It is estimated that the UK will save £110 million per year because of the auction process.

Capacity market

The Capacity Market is designed to support the security of supply when necessary. As a product of government, private business and NGO collaboration, the capacity market will ensure that there is enough reliable capacity to meet in demand.

It is essentially composed of three parts: First there is a forecast of future peak demand, determined years in advance; Second, a prediction of the capacity needed to ensure supply for the future peak demand, which is then contracted through a competitive

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central auction and; finally there's the availability of providers to enter into capacity agreements.

The capacity agreements will cover 15 year periods. The contract will demonstrate the suppliers are committed to provide electricity when needed in the delivery year in exchange for a steady capacity payment. If the supplier fails to provide the agreed upon electricity when called, the party will face stiff penalties.

Providers of capacity will thus receive predictable revenue in exchange for reliable capacity supply. It is essentially an insurance policy against blackouts.

The first capacity market auction took place last December. There were over 500 applicants, which shows a strong industry interest in the new approach.

As a result the capacity of supply for 2018/2019 will be met and at good prices for the consumer. At the auction, the government received commitments amounting to 49.26 GW of electricity at a clearing price of £19.40 kilowatt hours. That translates to an auction bill of roughly £11 per household this year. As the security of capacity increases in the coming years, the UK is predicting that the Capacity Market price per household will decrease to about £2 a year.

Both the capacity market and the contracts for difference are supplemented by other institutional elements, though those two are the main elements of the reform package.

The key themes running through the reform architecture are predictability and security and a strong encouragement to invest in clean technology.

Where we are now

Implementation of EMR has been relatively smooth despite the complexity of the undertaking. Cooperation between government agencies and private actors has been strong and is leading to increased investment and supply.

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At the moment we are doing well in terms of the amount of investment in renewable energy and storage in the UK. Our approach has been to let the market dictate which technology is used for renewable electricity generation. We have no tech-specific targets and the result is a wide mix of cutting edge electricity generation.

The UK has some of the best offshore wind farms in the EU. There are over 20 sites, including four of the largest in the EU. The wind farms have over 3.3 gigawatt capacity.

We are one of the leaders in wave and tidal generation plants and have seen a steady increase in development of facilities there too.

The UK is responsible for roughly 27% of all tidal development projects and 23% of wave projects globally, which is not bad for a country with rather less than 1% of global population! We are also leading the way in the establishment of energy parks – facilities that bring together experts from universities, other researchers and private businesses in the field of marine energy. Our work in the UK's Government's Nordic Baltic Network has built bridges between leading researchers in the UK and across Scandinavia.

Through these groups, we are looking to become smarter and more innovative in marine energy sources.

Role of Swedish Investors / Looking to the Future

Swedish investors have played a large role in the development of the British energy markets. Vattenfall has invested over 2 billion pounds since entering the UK market in 2008. As a result, five major wind farms – on and offshore – have been developed along with other smaller but still important investments.

Electricity Market Reform has added incentive and opportunity for firms, including Swedish firms, to enter the British market and continue to develop the relationship. There is still so much potential in electricity generation that has yet to be realised.

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At the moment the UK gets only 12% of its electricity from renewable sources. Estimates are that we will need that number to be closer to 20% by 2020 to meet our 2020 targets. So there is obviously room for, and a requirement to, develop further.

The UK's energy roadmap, produced in 2013, estimated that a realistic central range of wind power by 2020 is about 18 gigawatts. That number goes up to 40 gigawatts by 2030. EMR is helping to reduce costs to realise this massive potential.

Similarly, wave and tidal have the theoretical capacity to be able to comprise up to 20% of the UK's current energy demand. Short term predictions are to produce 200 to 300 megawatts by 2020, but that could rise to 27 gigawatts by 2050. Based on our extensive shoreline, our wave and tidal energy potential is estimated at 25-30 gigawatts a year.

There is also a great opportunity to expand production in bioenergy. The government aims to reach 30% of the 2020 targets through biofuels and bio-refineries.

EMR has already helped unlock investment.

The UK's renewable electricity sector has doubled in size since 2010. The first Contracts for Difference were awarded only in April last year. The projects included offshore wind farms, coal to biomass conversions and a dedicated biomass plant with combined heat and power.

By 2020, these projects are expected to provide up to 12 billion pounds of private sector investment, 8500 jobs and 4.5 gigawatts of low-carbon electricity.

As I noted earlier, our government predicts that the UK will need a further 100 billion pounds of investment in electricity infrastructure between now and 2020 – of which 65 billion is needed in electricity generation capacity.

Nuclear power is also going to continue being important to British energy capacity and generation.

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In October 2013, the key terms for an investment contract were agreed for a new nuclear reactor at Hinkley Point Centre. This will lead to 16 gigawatts of new power. Plans for development at Moorside will also lead to 3.6 gigawatts, and plans for two to three reactors at Wylfe in Anglesey and Oldbury will also help meet our needs further.

It's not only capacity that needs more investment, but also the interconnectors that require attention over the next decade. Between 2010 and 2014, over £16 billion were invested in the electricity network. Nonetheless it is estimated that a further £34 billion is required from now until 2020.

Conclusion

As I hope I've been able to set out, we are in the early stages of an ambitious project to diversify our energy sources to ensure both security and capacity, while meeting our domestic and international climate change ambitions.

Attracting investment is key to meeting the UK's long term energy obligations. It is also key to the future of the British economy. Investment will stimulate the economy, support growth of UK supply chains and boost the job market.

Electricity Market Reform is the essential mechanism for encouraging investment. It includes innovative, competitive features, in particular Contracts for difference and the capacity market. Consumers will also benefit due to more stable supply and prices.

I hope my remarks have illustrated the scale of the potential in the UK and the scale of the ambition we have. Thank you for the opportunity to take part in your conference.