

OFFSHORE WIND

The making of a market



These days it seems pretty easy for the UK consumer to opt for a supplier of renewable electricity at an affordable price. They can choose a tariff from one of the established suppliers which guarantees that a proportion of their power will be part of that company's growing renewables pot, or they can opt for one of the new kids on the block, Bulb, say, or Octopus Energy, which have made a virtue of being green from day one.

The point is that all interested parties – from the latest round of would-be developers of offshore wind projects to the consumer who wants to go green for home electricity – have confidence in the market. Renewable energy is here to stay and, driven by a very public political commitment to net zero by 2050, it is grabbing an ever-larger share of UK electricity generation.

Climate change driver

Successive UK governments have played a large part in creating what is now a robust renewable energy market. From a low base of around 2% of electricity generation in the early 1990s, renewables are now delivering over 45% and rising. The biggest driver to grow the market has been climate change and a UK commitment to reduce carbon emissions and hit that net zero target.

Key developments towards this

The UK's success in offshore wind was no fluke. In fact, the sector benefitted from years of subsidies and government support. Nick Cottam looks at the origins of this critically important technology.

goal have included the signing of the Kyoto Protocol in 1997 and the development of the Paris Agreement in 2015, under which 196 signatory countries agreed to limit global warming to well below 2°C above pre-industrial levels. Fossil fuels, we must accept, are on borrowed time. Fortunately for the UK, there has been a hurricane's worth of offshore wind to harness – good for the climate but also a tantalising prospect for improving energy security.

As politicians dither over next-generation nuclear in the face of cost and planning concerns, the UK has an opportunity to become the 'Saudi Arabia of wind' said Boris Johnson at the end of 2020. The commitment – part of the Prime Minister's 10-point plan for a 'green industrial revolution' – is to raise offshore wind deployment to 40 GW by 2030. That means ensuring there is a framework in which wind and other forms of renewable energy can continue to grow and thrive.

That framework has come about after successive governments sought to subsidise

what was once a costly and immature technology. Developers hoping to test the water for offshore wind and other forms of renewable energy needed to be confident that there would be a demand for the electricity generated at a price that would make development viable.

At the other end of the supply chain, consumers who made a significant capital investment in solar energy (for example) were given the carrot that they could sell any electricity they didn't use into the grid at a market price. This, in turn, kept the capital cost of solar installations on the high side. Though this cost has started to come down as the Feed-in Tariff became less generous and was eventually phased out for new customers in March 2019.

These days, says Rebecca Williams, Policy Director at the trade association RenewableUK: 'it's about how we can build enough renewables quickly enough to get us to net zero. If you look at how we can reduce carbon from the rest of the economy, then you have to look at the way we produce energy first.' Hence a regime of government subsidies designed in the UK at least to drive efficiencies and ultimately, it is argued, encourage the market to stand on its own two feet.

Avoiding greenwash

This dash for renewables has not been without its wobbles and is still vulnerable to greenwash, according to renewable power provider Good Energy. In a new report the company accuses some of its competitors of misleading consumers by offering so called 'green tariffs', which have little or no environmental benefit. According to Good Energy, no tariff should be marked as 100% renewable unless the supplier is buying that power from a renewable generator.

The company is urging the regulator Ofgem to close a loophole which has allowed many suppliers to mislead millions of consumers into joining '100% renewable' tariffs while providing close to zero support for renewable generators in the UK. Instead of buying or generating renewable power, suppliers can buy second-

The wind turbine blade factory in Hull has created around 1,000 jobs – from apprentices to skilled workers

Photo: Green Port Hull

hand certificates for as little as 10p, claims the company.

With its own wind and solar farms at six UK locations, Good Energy believes it is in a good position to take the moral high ground. 'Most people would expect a supplier claiming to offer green power to actually be buying green power. However, often that is not the case at all,' notes the company's Senior Policy Manager, Dr Tom Steward. Environmental claims, urges the company, should be independently audited to denote what qualifies as additionality with a clear threshold for compliance.

Going back to the 1990s, the UK government faced the complex task of trying to promote the development of renewable energy in what had become a deregulated electricity industry. The solution was the introduction of the Non-Fossil Fuel Obligation (NFFO), originally designed to support nuclear power in the face of cheaper coal.

But the policy was, in fact, remarkably successful in stimulating the rapid growth of renewable electricity, including hydro, wind power, biomass, landfill gas and sewage waste.

NFFO put the electricity companies under an obligation to purchase what was an increasing quantity of non-fossil power. If this power cost more than fossil

power, the difference would be made up by the taxation of coal-derived electricity. In other words, you penalise carbon-intensive coal to subsidise the growth of clean energy.

Rapidly falling costs

Between 1990 and 1999, the government placed five successive 'orders' for non-fossil electricity, effectively underpinning the supply side of the market while also ensuring there was growing demand built into the system. Is this a straight subsidy or the creation of a framework to kick-start the market and drive down costs and prices?

RenewableUK's Rebecca Williams prefers to call it a framework which has helped to meet targets and indeed to bring down the cost of capital. 'The story of the renewable industry over the last 10 years has been one of rapidly falling costs and rising expectations,' she says. 'This is the cheapest way to build the volumes we need to meet net zero.'

Others agree with her. 'Historically, the first major renewable energy implementation policies in Europe were fixed higher payments to generators,' notes Jack Ihle on behalf of the International Energy Agency. 'The UK's NFFO became the most visible alternative to fixed higher payments, and since its

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BP recently made a huge bet on developing wind farms in the Irish Sea, which is currently home to the world's largest operational wind farm.

Photo: Ørsted

implementation, an active discussion has taken place about which system produces renewables most cheaply.'

The downside of NFFO, arguably, is it tended to favour the major players rather than smaller independents, which were less well placed to compete in the auction process and drive down costs.

In a competitive UK market, developers had to propose a bid price lower than competitors to win contracts. This was not the case in other European countries – eg Germany and Denmark – operating a system of fixed higher payments. This is one important reason for falling development costs in the UK – for example offshore wind farms – as developers reaped the benefits of economies of scale and more established processes.

By the completion of NFFO-5 at the end of the 1990s, the average price of renewable power was down close to the electricity pool price of 2.67p per kWh.

Scaling up

In 2002, the NFFO was replaced by a new Renewable Obligation (RO) scheme. This programme was designed to underpin more large-scale generation of renewable energy and encourage suppliers to purchase Renewable Obligation Certificates (ROCs) as part of the requirement for a growing proportion of their energy to come from renewable sources.

Again, government was part of the process by ensuring a market for renewable energy at a guaranteed price over a period of time. Having further primed the market for renewable energy, the RO scheme closed to all new generating capacity in March 2017, the intention being to encourage more independence and self-sufficiency in a maturing market.

Has this happened? Indeed, prices have continued to fall, and the UK has become the world's largest offshore wind market. Abundant resources have been the catalyst for large scale development and government intervention has undoubtedly helped to spawn an industry, not only in terms of renewable energy capacity, but also in the support structures which have led to job creation and economic growth in various parts of the country.

Catalyst for growth

One example is the wind turbine blade factory in Hull which has had a measurable impact,



creating around 1,000 jobs, from apprentices to skilled workers. The statistics speak for themselves: 10% improvement in economic activity over the last five years; 13% improvement in local employment and 30% growth in local enterprises.

Research by Hull University suggests that for every £1 of Siemens Gamesa renewable energy investment, an extra 8p will be generated in the disposable income of the local economy. Add to this a nearly 60% reduction in local unemployment benefit claimants, and it's not difficult to see why governments have been trying to strike a balance between comforting guarantees on demand and returns and a hard-headed auction process.

At the end of this year, we can expect another auction as renewable power generators bid under the Contracts for Difference (CfD) scheme, which replaced ROs. The scheme means that qualifying projects are guaranteed a minimum price at which they can sell electricity, and thanks to economies of scale, the price is still coming down.

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auction in 2019, the lowest price awarded was around 30% lower than in 2017. If the wholesale power price rises above the CfD strike price, then the power generators must pay back the extra cash to government.

The evidence is compelling, argue supporters of the scheme: you drive down costs by encouraging competition and innovation and this supports the long-term development of the market, helping to boost investor confidence.

Doubling the subsidy

'The CfD auction has reduced the cost of capital for projects because of government backing and consumers are getting a better deal as a result,' says Williams. 'Investors want clarity and the more clarity you have for renewable energy, the lower the cost of capital.'

To this end, the government will also include onshore wind and solar in the coming auction, doubling its support for up to 12 GW of new renewable energy. The auction will also include support for less established technologies, including floating offshore wind farms and tidal stream projects. 'Onshore wind

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and solar are now eligible again,' adds Williams, 'because they're the cheapest technologies. The challenge for the early stage technologies is to progress them though to commercialisation.'

Whatever the outcome of the next auction, offshore wind will remain by far the largest contributor to the UK's renewable energy mix and indeed its net zero target. The latest crown estate auction for seabed licenses to develop offshore wind projects – its first in a decade – will generate record-breaking returns from energy companies.

Among them, the oil major BP and its partner, the German utility EnBW, will pay £462mn for the option to develop two windfarms in the Irish Sea.

One thing is certain: in paying out these kind of sums both parties are confident that this particular form of renewable energy has a profitable and almost certainly, a subsidy-free, future. ●



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- Energy supply in a net zero future
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