Increasing private investment in low carbon energy

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Policy recommendations

1. **Provide visibility on the availability of support** through Pot 2 CfDs beyond 2025 to support a reliable pipeline of orders for the UK supply chain and increase competition
2. **Reintroduce a carbon price escalator** to take effect in the 2020s, reducing investment risk in renewable energy generation
3. **Commit to the introduction of a market stabilising CfD for mature renewables**, capping the level of support at the level given to the cheapest form of conventional generation
4. **Support the growing low carbon long-term electricity contract market**, including by providing guarantees on counterparty risk for PPAs and through government procurement, with standardised contracts
5. **Commit to maintaining interconnection with continental Europe** after the UK leaves the EU

This briefing considers how to increase investment in low carbon energy to support the delivery of the Clean Growth Strategy (CGS). The first section sets out background on the state of the market to date. The second section offers four solutions to driving a more robust market. This briefing sits alongside a new report, *Towards the new normal: increasing investment in the UK's green infrastructure*.

BACKGROUND

Power accounts for 21% of the UK's greenhouse gas emissions.[1] Decarbonising the energy sector in line with our Climate Change Act target of at least an 80% reduction in emissions by 2050 compared to 1990 will require significant investment in low carbon energy. The government anticipates that around **95GW of new electricity generating capacity** will need to be built over the next two decades.[2]

The outlook for low carbon energy generation is mixed. Clear policy drivers in this area have established a private investment market, notably in the offshore wind market. **Investments in low carbon power generation have been proceeding at the necessary pace** in line with Committee on Climate Change (CCC) indicators, and account for almost all progress in reducing GHG emissions from 2012.[3]

[1] As of 2016. Committee on Climate Change (June 2017) *Meeting Carbon Budgets: Closing the policy gap*
[2] National Audit Office (July 2016) *Nuclear Power in the UK*
[3] Committee on Climate Change (2016) *2016 Progress Report to Parliament*

Solar power is now able to compete with conventional energy generation without subsidy,[4] and onshore wind is expected to be the lowest cost form of energy generation in the UK[5] though its growth is hampered without a route to market. The 2017 Contract for Difference (CfD) auction announcement showed that costs for offshore wind have nearly halved in two and a half years[6] and mainstream investors are increasingly active in the market. Government and industry are confident that further cost reductions will be realised in offshore wind.

However, **electricity demand will be greater in the future with the anticipated electrification of heat and transport**. National Grid estimates electricity peak demand could be as high as 85GW in 2050, compared to around 60GW today[7] so greater investment will be needed to meet this growth. In contrast, investment has been falling: Green Alliance's recent assessment of the UK's infrastructure pipeline found that renewables spending has fallen by £1.1bn in the past six months and that there will be a **95% fall in investment between 2017 and 2020**. They conclude that "this is not due to falling renewables costs; it is due to a shrinking pipeline of projects".[8] A record 2.6GW onshore wind capacity was installed in Britain in 2017, but this was because developers rushed to meet the deadline of Pot 1 CfD contracts,[9] creating a cliff edge of investment.

Bloomberg New Energy Finance found that overall renewables investment dropped 56% in 2017 to £10.3bn – the single greatest fall from any country surveyed, against a global increase of 3% in investment.[10]

HOW TO DRIVE THE MARKET

There are several steps government should take to increase the levels of private investment in low carbon energy generation.

1. **Provide policy visibility to support investment**

Energy investments are made with a long-term view: an energy project can take 10 years to develop and operate for up to 50 years[11] so a project developer must have reasonable certainty that there will be a market for their infrastructure asset some years into the future before they commit to investing.[12]

The Clean Growth Strategy's reconfirmation that up to £557m will be made available for further CfD auctions of Pot 2 projects will help build on the significant cost reductions delivered in the auction round of September 2017. The full £730m per year for CfD funding announced in the 2016 Autumn Budget will deliver around 55TWh of low carbon generation if strike prices are sustained.[13] But government must not rest on its laurels. A further 50-70 TWh must be contracted to meet the fifth carbon budget.

[4] Financial Times (26 September 2017) 'Solar power breakthrough as subsidy-free farm opens'
[5] BusinessGreen (25 October 2017) 'Report: UK's 'outdated' onshore wind ban blocks cheapest form of new energy'
[6] RenewableUK press release (11 September 2017) 'Offshore wind prices tumble in record-breaking auction results – cheaper than nuclear and gas'
[7] National Grid (July 2017) *Future Energy Scenarios*
[8] Green Alliance (December 2016) *The UK's infrastructure pipeline*
[9] The Guardian (22 January 2018) 'Fears for future of UK onshore wind power despite record growth'
[10] Bloomberg New Energy Finance (January 2018) *State of Clean Energy Investment*
[11] House of Commons Energy and Climate Change Committee (February 2016) *Investor confidence in the UK energy sector*
[12] UKERC, quoted in ECCC (February 2016) *Investor Confidence in the UK energy sector*
[13] CCC (January 2018) *An independent assessment of the UK's Clean Growth Strategy: From ambition to action*

To further build on recent progress and drive deeper cost reductions, industry needs as much visibility as possible on the timing and budget of future auction rounds. There is no benefit in delaying this announcement as the competitive auction process and sizeable pipeline of consented or planned projects means early warning for developers can only increase business's ability to plan and bid at the lowest possible prices.

The offshore wind industry currently has visibility up to 2024/2025. **A commitment to a greater roll-out of offshore wind projects beyond the early 2020s is needed to support a reliable pipeline of orders for the UK supply chain and increase competition**, with positive knock-on impacts for cost reductions, export potential and job creation. UK industry is increasing its strengths in the export of cables, blades, foundations and towers for offshore wind, and benefitting from strong expertise in operation and maintenance.[14] Steady, rather than sudden reductions in the levelised cost of energy ensure long-term investment and development into more efficient technologies. Greater granularity on the CfD pledge in the CGS will be helpful to develop this in the first instance.

The need for greater visibility applies equally to all renewable energy investments, especially innovation projects. Often investments in novel technology only net returns on the second or third project, once costs have been driven down by a skilled-up workforce and efficiencies in the supply chain. Investors must have confidence that they can build further projects and see returns.

Visibility also reduces the risk of capital moving abroad during the commercialisation phase. If there is no visibility of future projects then costly technologies that have been developed in the UK, such as tidal lagoons, may be developed and costs reduced abroad. The UK risks being left with the cost of developing new technologies without being able to reap the returns.

A carbon price escalator with forward visibility (akin to the Landfill Tax implemented for the waste industry[15]) with appropriate compensation mechanisms for energy intensive industries should take effect in the 2020s, as coal is retired from the system. This will reduce investment risks in renewable energy generation. By introducing it in line with the coal phase out this would reduce impact on wholesale electricity prices and incentivise development of long-term renewable purchasing contracts (see below).[16]

Policy clarity should include clear rules on how material changes will be dealt with, for example how government would adjust the size or availability of support in case of a major change in circumstances like the deployment or load factors of technologies. This would avoid the damaging loss of confidence that occurred in 2015 when Feed-in Tariffs were unexpectedly and significantly reduced due to overspend.[17]

[14] Renewable UK (September 2017) *Offshore Wind Industry Investment in the UK*
[15] https://www.gov.uk/green-taxes-and-reliefs/landfill-tax
[16] UCL (February 2018) *UK industrial electricity prices: competitiveness in a low carbon world*
[17] ECCC (February 2016) *Investor confidence in the UK energy sector*

2. Provide a route to market for mature renewables

Government should launch a review of onshore renewables policy, including barriers in the planning system. **A route to market for mature renewables, such as solar and onshore wind energy, is required to meet our greenhouse gas (GHG) reductions targets as cost effectively as possible.** Subsidy may be very low or neutral over the life of the contract. A recent study from Baringa[18] for Scottish Renewables found that if a 1GW Pot 1 auction took place in 2018/19, this would deliver exclusively onshore wind projects at a clearing price of £49.4/MWh in real 2017 terms, paying back the consumer over the lifetime of the contract. The Low Carbon Contracts Company would receive a net pay pack of £18m (net present value, using a public sector WACC discount rate of 3.5%).

Market stabilising CfD contracts, capped at the same level of support that would be given to the cheapest form of conventional generation (gas CCGTs) will encourage the development of projects in parts of the country where local communities want them. Modelling suggests that future CfD auctions would deliver almost no new onshore wind capacity in England as wind farms with high wind speeds (largely those in Scotland) would be more likely to be competitive under such an arrangement. There is also now a growing pipeline of sites that could be repowered – upgrading the turbines but potentially reusing other infrastructure, which can further reduce the cost of onshore wind. Evidence suggests that such projects also face lower community opposition than building on new sites.[19]

3. Encourage a long-term low carbon electricity contract market

Government can encourage the use of long-term contracts to aid the transition from direct subsidy support via CfDs towards market solutions. A recent report commissioned by the Aldersgate Group finds that the UK market has few contracts with a duration beyond a couple of years ahead, exposing the market to price volatility.[20] Long-term contracts can shield electricity users from these risks, whilst bringing down the cost of constructing new generation capacity. If these long-term contracts could be made tradeable, this maximises benefits for renewable purchasers and the low carbon energy industry by providing flexibility and removing the threat of purchasers being locked in.

This may take the form of guarantees against Power Purchase Agreement (PPA) counterparty risk – for example risk that an energy supplier goes bankrupt and cannot fulfil its obligations – allowing those in PPAs to hedge their risks if something goes wrong or their electricity requirements change, until a new PPA is signed. This would increase familiarity with and confidence in PPAs or other long-term contracts, which would in turn expand the pool of developers and investors in the market and allow low carbon electricity generation to be developed at lowest cost. Government can further support the long-term contract market through government procurement at the central and local level, **providing support for local authorities via standardised contracts and guidance.**

[18] Baringa (April 2017) *An analysis of the potential outcome of a further 'Pot 1" CfD auction in GB*
[19] Policy Exchange (2015) *Powering Up: the future of onshore wind in the UK*
[20] UCL (February 2018) *UK industrial electricity prices: competitiveness in a low carbon world*

4. Invest in network infrastructure

Increasing investment in low carbon energy generation must happen alongside investment in network infrastructure to avoid inefficiencies and congestion costs,[21] with a focus on continued investment in interconnection with continental grids to maintain system security cost effectively. Studies from DECC,[22] National Grid[23] and Policy Exchange[24] have all concluded that greater levels of interconnection would allow the UK to meet its emission reduction targets and maintain robust security of supply in the most cost-effective manner. Policy Exchange estimated that for every additional 1GW of interconnection (the UK currently has 4GW), the costs of meeting the UK's emission reduction target would be reduced by £115m per year.[25]

Government must underline its commitment to maintaining interconnections with continental Europe after the UK leaves the EU to encourage ongoing private sector investment. It would be advantageous to the **UK to retain membership of the Internal Energy Market (IEM)**, or to reach an agreement that maintains the advantages of that membership (and ability to shape rules) should the UK choose to leave, for the secure growth of a renewable energy system in the UK and for the benefit of all consumers.

[21] UCL (February 2018) *UK industrial electricity prices*
[22] DECC (December 2013) *More interconnection: improving energy security and lowering bills*
[23] National Grid (March 2014) *Getting more connected: the opportunity from greater electricity connection*
[24] Policy Exchange (2014) *Getting Interconnected: How can interconnectors compete to help lower bills and cut carbon?*
[25] Policy Exchange (2014) *Getting Interconnected*