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05 March 2021

To whom it may concern,

Enabling a High Renewable, Net Zero Electricity System: Call for Evidence Response

Scottish Renewables is the voice of Scotland's renewable energy industry. Our vision is for Scotland leading the world in renewable energy. We work to grow Scotland's renewable energy sector and sustain its position at the forefront of the global clean energy industry. We represent over 260 organisations that deliver investment, jobs, social benefits and reduce the carbon emissions which cause climate change.

Our members work across all renewable energy technologies, in Scotland, the UK, Europe and around the world. In representing them, we aim to lead and inform the debate on how the growth of renewable energy can help sustainably heat and power Scotland's homes and businesses.

We welcome the UK Government's recognition that achieving our ambitious climate targets will require significant levels of renewable deployment and that the right policy framework is crucial to support this deployment to deliver net zero while minimising costs for consumers.

The CfD auction mechanism has been instrumental in both supporting the large-scale deployment of renewables to date and in supporting the cost reductions that make onshore and offshore wind plus solar the cheapest sources of energy. Clarity and certainty on the future of the CfD mechanism is needed to allow industry time to plan accordingly, and to provide certainty to investors and the wider UK supply chain.

A clear framework of future auctions would help sustain supply chains and prevent peaks and troughs in investment, helping to keep finance costs as low as possible and ensure the best value to the consumer.

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Scottish Renewables welcomes the opportunity to provide our view on the proposed amendments outlined in this call for evidence. In responding, we would like to highlight the following key points:

- It is essential that there is a holistic review of energy system to ensure a coordinated approach to establishing a system that achieves net zero.
- An evolutionary approach to policy change is key to maintaining investor confidence in renewable projects and minimising costs to consumers.
- Price stabilisation mechanism will be key to achieving the levels of renewable energy deployment needed to achieve net zero.
- The interaction of TNUoS charging with the CfD mechanism is a crucial consideration in achieving the levels of deployment net zero requires and particular attention should be given to the impact of the TNUoS charging mechanism.

Scottish Renewables would be keen to engage further with this agenda and would be happy to discuss our response in more detail.

Yours sincerely,

Cara Dalziel

Cara Dalziel | Markets & Networks Policy Manager

Maintaining growth in renewable deployment to meet net zero targets

- 1. How is the industry currently approaching developing renewables projects without CfDs? In what ways might non-CfD backed projects obtain revenue from wholesale and other markets, and secure investment?**
- 2. What do you consider to be the effects of increased low-carbon deployment on future wholesale power prices and renewable capture prices?**
- 3. How viable will investment in new renewable projects based primarily on wholesale prices be in future? Could this investment case be supported if there was more extensive deployment of flexible assets such as storage?**
- 4. How much longer after the 2021 allocation round should the current CfD be used? Is a price based on a short-run marginal cost market the most effective basis for a long-term renewables contract?**
- 5. Are there any changes or alternatives to the wholesale market that might facilitate merchant deployment?**
- 6. How can market participants be encouraged to provide contracts to secure low-cost investment in renewables?**

Response to Q1-6

Meeting our net zero ambitions means that we must achieve a renewables-based system across the economy, with the Climate Change Committee forecasting that electricity demand will double by 2050.¹ The most recent Future Energy Scenarios² from the Electricity System Operation (ESO) showed that an average new build rate of 4.5-5.8 GW of renewables per year (not accounting for site closures) would be required to stay on a net zero trajectory.

We welcome the recognition throughout the call for evidence document of the need for continued deployment, however we note that questions 1-6 seem very focussed on merchant deployment. While it is important that all options are kept open to ensure net zero targets are met, we must also realistically consider whether non-CfD backed deployment alone would be sufficient to meet government targets. When considering this against the volumes noted

¹ <https://www.theccc.org.uk/wp-content/uploads/2020/12/The-Sixth-Carbon-Budget-The-UKs-path-to-Net-Zero.pdf>

² <https://www.nationalgrideso.com/future-energy/future-energy-scenarios/fes-2020-documents>

above, we believe that some form of stabilisation mechanism is needed to de-risk private investment and secure low-cost financing for new low-carbon projects. This can be demonstrated by the volume of onshore wind deployment seen during its four-year hiatus from the CfD with the average increase of installed capacity of 18% per annum from 2009-2017 dropping to an average 6% increase from 2018-2019.

While some projects are now proceeding subsidy free, merchant and PPA projects will only work for a small number of the most optimal projects. In addition, this is likely to be short-lived given the continued downward pressure of CfD deployment on merchant prices. Without a subsidy or price stabilisation mechanism, projects need to work harder to make the economics of the project stack up. Corporate PPAs are increasing, mainly driven by consumer pressure to decarbonise operations, but again not at levels that are sufficient to meet the necessary deployment for net zero. PPAs can also be challenging to agree, sometimes needing a significant lead time due to more complex contracts that generators and off-takers may not be familiar with. It is also important to consider the availability of PPAs in the long-term, as off-takers eventually meet their own renewable targets and interest in PPAs ultimately decreases.

For many established or near-established technologies the CfD is now seen as a price stabilisation product rather than a subsidy. For example, in AR3 strike prices for offshore wind were lower than long-term forecast average market prices meaning that at times they will be paying back money. The continuation of this price stabilisation is essential due to how these projects are financed both in the short to long term. Most developers require bank finance during the construction phase. This is usually done through project finance however project finance is extremely challenging and more expensive without a predictable and secure long-term revenue stream during operations to pay back the debt. Even utilities who can construct these projects using their own balance sheets may need to recycle capital during operations. Increasingly, this capital recycling and refinancing during operations is being done by large pensions funds and infrastructure funds. Again, those investors need predictable and secure long-term revenue streams or they may not invest.

The CfD mechanism has also played a crucial role in driving cost reduction and the commercialisation of fixed bottom offshore wind. This is a success that now needs to be replicated in floating wind, tidal stream and wave energy technologies.

With this in mind, we believe that the CfD must continue to support continued investment and the levels of deployment net zero requires. Alternatively, a market based hedging solution at a reasonable price could be developed and delivered by an investment grade counterparty, however there are concerns over whether this would provide the level of certainty needed. Ultimately continuing with the CfD likely provides the best deal for the government and

consumers at present. At an absolute minimum, it is crucial that the CfD continues until at least the end of the 2020s to provide investors and developers with the certainty needed over bidding for seabed.

We note that there has been increasing discussion of whether, and how, the existing market design might need to change in future. Increasing deployment of low carbon generation with zero or very low marginal cost onto the system will significantly reduce baseload wholesale prices over the coming decade, particularly the renewable capture prices. This price cannibalisation has the potential to make investments in both new and existing renewable projects (when their CfD contracts end) unviable. There is a strong case to be made for a different market arrangement and we would note that there are some potential options already identified by the industry or energy consultancies^{3,4} that could provide a starting point for further discussion and analysis. While at present we feel that the existing market arrangements are likely still the best set up, we envisage that market design will need to evolve and this process of consulting on the reform options should begin as soon as possible. This is needed to maintain investor confidence in the UK's renewables market. An enduring market is needed for all low carbon technologies – whether that be new build or existing sites to ensure the delivery of low carbon power needed to meet consumers' needs at the lowest overall cost. In light of this, the post 2030 landscape needs to be clear by the mid 2020s.

Ultimately any solution will be a compromise and will need to balance the risk to consumers versus risk to generators and investors whilst supporting our progress to net zero. We would suggest that there is a need to establish a stronger evidence base, such as through this call for evidence, to assess the pros and cons of different policy options and whether they are likely to perform better than more incremental changes to the status quo.

In addition, wholesale prices, the need to do more to encourage flexible demand and electrification and future carbon taxes will all have an impact and must be included when considering changes to the CfD. Any reform of the electricity market needs to take account of timescales and potential impacts. The industry needs a degree of certainty and stabilisation and any hiatus of support will be damaging not only to industry, but also to net zero ambitions.

³ Electricity markets with a high share of variable renewables, Imperial College London

⁴ The net zero paradox, Cornwall Insights, October 2020

Ensuring overall system costs are minimised

- 7. How could intermittent renewable generators change their operating or investment behaviour to respond to wholesale price signals?**
- 8. What would be the impact on the cost of capital of introducing greater exposure to the market price for power?**
- 9. In your view which of the potential options for providing increased exposure to market signals offers the greatest benefit to the consumer? Are there any other options that we should be considering?**

We acknowledge BEIS' concern about managing a changing system throughout the CfD lifetime and note that the system is changing to integrate high levels of renewables.

Increasing market exposure will increase risk for generators and potentially undermine revenue stabilisation. Developers need to factor this risk into bids so greater market exposure will lead to greater risk margins, higher strike prices and increasing costs being passed through to consumers. This would be further compounded by the impact of price cannibalisation on wholesale prices. It is also important to consider that not every generator is able to respond to signals in the same way (e.g., if they are on a long-term PPA or if PPA terms change alongside the CfD). There is a role for the evolution of market arrangements to play in ensuring that investment is not undermined by low or negative wholesale prices.

We would note our previous opposition to the extension of the negative pricing rule. Depending on the outcome of this call for evidence we could end up in a situation where only projects successful in AR4 are subject to this change of rules. We would again suggest that this wider conversation needs to be concluded first to ensure a consistent approach for projects in the pipeline.

In terms of the options outlined in the consultation document, we believe that further work needs to be carried out to better understand any potential impacts. Currently most of the proposed options simply assign risk elsewhere, falling mainly onto developers. There is the potential that the increased risk and cost of capital for developers could outweigh any potential benefits in the cost of managing the system. We would also note that there are dependences on changes to other parts of the system and therefore any options being considered must be tested across multiple future scenarios.

We would note that there could be potential benefits to moving to paying on deemed generation, however we do have concerns over the other proposed options as they stand. For

example, changing the reference price from day-ahead hourly market to a more forward market creates additional risk and cost from a generators side. Generators already face balancing risk from the day-ahead market so we are unclear how extending it further would be beneficial to the system. Reducing the contract length from the current 15 years would also lead higher bids as developers would be required to pay off finance in a shorter period of time.

As noted earlier, industry has already begun discussing further market design options including a market-wide price floor which should be explored further.

10. Should CfD generators be incentivised to account for flexibility and wider system impacts, and/or to provide balancing services to the system operator? How could this be achieved?

11. Should the CfD mechanism incentivise minimum grid stability requirements (in CfD plants) to minimise system costs and help ensure secure and stable operation? How could this be achieved and what are the barriers?

As fossil-fuels are phased out we will increasingly rely on low carbon technologies to provide flexibility and stability services to our network. To date, intermittent renewable technologies have not been able to provide these ancillary services to the ESO, with the primary low-carbon technology to provide such services being pumped storage hydro.

However recent innovations from industry are showing progress in this area. For example, ScottishPower Renewables has recently demonstrated that onshore wind can be used in black start services through the use of grid forming technology⁵. Statkraft UK has also recently installed rotating stabilizer synchronous machines at a site in Moray⁶ which can provide stability services such as inertia, short circuit level and frequency. Drax's Cruachan pumped storage hydro station was among the first power stations to start providing inertia as part of a world-first stability contract by the NG ESO⁷.

⁵https://www.scottishpowerrenewables.com/news/pages/global_first_for_scottishpower_as_cop_countdown_starts.aspx

⁶ [https://www.statkraft.co.uk/newsroom/news-and-stories/archive/2020/Statkraft and GE join forces on new stability contract for the GB grid increasing renewables growth and supporting green recovery/](https://www.statkraft.co.uk/newsroom/news-and-stories/archive/2020/Statkraft_and_GE_join_forces_on_new_stability_contract_for_the_GB_grid_increasing_renewables_growth_and_supporting_green_recovery/)

⁷ https://www.drax.com/press_release/drax-begins-world-first-power-system-stability-contract-with-national-grid-eso/

CfD generators should be able to compete for provision of flexibility services required by the network and this can then be accounted for by generators when considering their revenues and bidding into CfD auctions. Rather than making specific changes to the CfD regime a more appropriate approach would be for the UK Government to review in a timely way its policy on flexibility and storage, including longer duration storage and, on the basis of this, determine the right policy interventions. This would ensure a more technology neutral and holistic approach with renewable generators have a level playing field to provide ancillary services. It is also important to note that it should not be the role of the CfD regime to incentivise minimum grid stability requirements as they are already required by the grid code.

Furthermore, consideration should be given to wider issues outside of the CfD regime that act as a barrier to renewable and storage technologies (such as pumped storage hydro) participating in these services. Policies across the market are not net zero compliant and fossil fuels are still predominately used to provide flexibility. We note that BEIS is already undertaking work across this area through the Smart Systems and Flexibility Plan, however it is crucial that quick action is taken on ensuring our flexibility markets are compatible with a zero-carbon electricity system.

12. Do CfD projects receive the right incentives to locate in the optimum locations?

This is dependent on what is considered an 'optimum' location. There is a disconnect between what the current transmission charging regime incentivises (placing generation closest to demand) and where the best renewable resources are located to deliver the lowest cost pathway to achieving net zero. This does not reflect the decentralised energy system of the future.

The renewables industry has led rapid cost reduction over the last decade, with developers reducing the costs at every stage from finance and procurement to design and delivery. However, TNUoS is a cost that developers cannot control. This means that as the cost of a unit of renewable electricity has come down, the proportion of that cost represented by TNUoS has gone up significantly. This is in combination with a predicted substantial rise in transmission charges over the next five years, with the differential between northern and southern projects also amplifying. According to a recent report by SSEN Transmission, a wind farm in the north of Scotland currently *pays* £5.50 per unit of energy as part of the locational TNUoS charges compared to an equivalent wind farm in Wales *getting paid* £2.80 per unit.⁸

⁸ <https://www.ssen-transmission.co.uk/news-views/articles/2021/2/ssen-transmission-calls-for-reform-of-unfair-and-volatile-charging-regime/>

Due to the pay-as-clear mechanism within the CfD, there is an impact on consumer interests as cheaper southern projects will have their strike price brought up to meet more expensive northern projects.

Along with amplified locational signals, volatile and unpredictable TNUoS charges are also harming renewable investment. In research conducted by SSEN Transmission they found:

- Generators see swings in their TNUoS charges typically over 50% up or down each year. For the nine generators studied, year-on-year changes have been between up 774% and down 2090%
- Charges are unpredictable – Using National Grid’s own data, the average forecast error under-estimated the actual charge by one third.

This volatility is in sharp contrast to the total allowed revenue of the TOs that TNUoS charges are set to recover. The cumulative allowed revenue of NGET, SPEN and SSEN Transmission has been stable, within 5% of £2.5 billion, over the past five years. Investors need cost certainty and clear, forecastable TNUoS when planning and delivering long-term investments at lowest cost of the UK consumer. We also note that price volatility is a significant challenge for operational sites, where projects have been built and financed at a specific point in time based on the best view of TNUoS. These projects cannot react to changes in locational signals and therefore volatility in TNUoS costs simply adds risk to the projects. Volatility and unpredictability are not unique to Scotland but experienced by all generators regardless of technology or location. This uncertainty leads to increasing risk margins for developers, ultimately increasing costs that will be passed onto consumers.

In addition, optimum locations can be determined by wider economic benefits which are aligned with the government’s ‘levelling up agenda’ which could support the need for separate CfD pots by location to ensure different regions benefit.

13. Are there actions which Government should consider, outside of Ofgem’s current electricity network charging reviews, to help incentivise efficient market behaviour regarding the location of renewable assets?

The current transmission charging methodology was devised 30 years ago for a different electricity system and does not now recognise the shift in focus of both the UK and Scottish Governments to meet net zero.

It is crucial that the CfD scheme fosters effective competition between generation projects that is not excessively skewed by an amplified locational signal. The transmission charging

methodology is a complex combination of factors that must now include the need to deliver net zero alongside other electricity system and policy goals. Without a rethink, we believe that the direction of travel in network charging could result in a major barrier to delivering net zero. As demonstrated by our response to Q12, there is a strong case to review the transmission charging methodology to ensure that the development of renewables is not discouraged where resources are most abundant. The need for review is even more pronounced given the ongoing review and reform of the offshore transmission arrangements.

We would also take this opportunity to highlight our strong concerns over the option to place TNUoS charges onto small distributed generation within the ongoing Access and Forward-Looking Charges review. This option would see the burden of reform fall mainly on Scottish generation, impacting onshore wind projects in particular, and ultimately put net zero targets at risk.

14. Should the CfD do more to enable the sustainable growth, cost reduction and competitiveness of UK supply chains and how could this be achieved?

In our experience, the UK supply chain is well positioned to deliver innovative, efficient, sustainable advances in technology for the next generation of renewable energy generating projects whilst also contributing to the Industrial Strategy's Grand Challenges.

Building a sustainable supply chain will require a concerted effort including from government, developers, and the supply chain itself. A key challenge will be the need to incentivise supplier investment in UK capacity, particularly in major capital expenditure (capex) items - including the towers, monopiles, subsea cables, and blades - so that there is sufficient manufacturing capacity to facilitate increased levels of UK content in line with the 60% Offshore Wind Sector Deal target.

We also need:

- Enabling infrastructure, for example ensuring there is sufficient capacity at UK ports,
- The availability of licensed sites in appropriate locations for manufacturing facilities,
- A requirement for additional capacity at a global level so that suppliers see a business case for investing in additional manufacturing facilities.

We believe that the CfD should do more to enable the UK supply chain and auctions should evolve to be on the basis of a blended approach whereby supply chain commitments are considered alongside the best price a project can deliver. For example, the levers available to government (ASP, capacity, minima/maxima) could be used in Pot 2 to support Pot 2 projects that deliver with local supply chain.

The CfD has been successful to date in bringing down the costs of renewable technologies but ultimately there is a limit to the level of cost reduction that the more established technologies can make. There must be a balance between risk, innovation and competitive tension with the need to maintain significant levels of investment in both development and supply chain to build a globally competitive industry. It is worth reflecting on the balance between what the CfD can achieve, and what other mechanisms may be required to achieve strategic supply chain investment at scale.

We do feel it is important to highlight the strong growth in the supply chain. Scottish Renewables' recently published 'Scotland's Offshore Wind Sector: Supply Chain Impact 2020'⁹ report showcases some of the businesses working in Scotland's offshore wind supply chain, demonstrating the breadth and talent currently evolving to support this rapidly expanding sector.

Supporting and adapting to innovative technologies and business models

15. What are the benefits of renewable projects using multiple low carbon technologies or being co-located with low-carbon flexible assets? Should the CfD support these projects and why?

16. What are the benefits of projects with assets in different locations, including projects paired with flexible assets? Should the CfD support these and why?

Co-location offers the potential to reduce overall planning approval timescales and development costs (including grid connection costs). While there are some benefits for co-location either with other renewable technologies or storage, ultimately individual assets will need to be developed on the basis of their own business case.

As highlighted in Q10-11, there is a need for the UK Government to take a wider approach to incentivise further low-carbon flexible assets and capacity. This should be carried out via the

⁹ <https://www.scottishrenewables.com/publications/787-scotlands-offshore-wind-sector-supply-chain-impact-2020>

Smart Systems and Flexibility Plan rather than focusing on making changes to the CfD regime. This should also include discussion about viable revenue stabilisation mechanisms that can support sufficient investment in long duration storage technologies (such as pumped storage hydro) which will be vital in cost-effectively supporting the deployment of variable renewables through the CfD regime.¹⁰

BEIS and the LCCC should also consider working with industry to establish clear routes for retrofitting where it can benefit the UK consumer or overall energy system.

17. What changes would Government need to make to the Contract for Difference regime to facilitate the coordination of offshore energy infrastructure, what would be the benefits and costs of making them, and could there be a similar case for other renewable technologies?

We are supportive of the conclusion of National Grid ESO's report on Offshore Coordination under the Offshore Transmission Review that coordination and sharing of offshore grid will be crucial to enable a substantial offshore wind deployment. It will have substantial economic benefits, as identified in the NG ESO report, and will also importantly ensure that the impacts on local communities and the environment are substantially reduced.

Industry is also very positive about BEIS' ambition on OFTO reform and the engagement with industry so far.

There are however obstacles to developing a joint and coordinated offshore grid infrastructure. If several independent projects should share a common infrastructure, projects may have different delivery timelines or receive CfDs at different times and cannot commit to their share of cost for such joint infrastructure until they have passed FID and have received the certainty of a CfD.

We note below several suggestions to be considered for how a coordinated offshore grid system can be facilitated:

- Given that the TNUoS cost variation uncertainty mentioned earlier remains a significant barrier to facilitating greater coordination of offshore infrastructure, BEIS should explore whether that uncertainty could be removed from the CfD bidding. Such an outcome would provide much more certainty about site location.

¹⁰ <https://www.imperial.ac.uk/energy-futures-lab/reports/Whole-System-Value-of-Long-Duration-Energy-Storage-in-a-Net-zero-Emission-Energy-System-for-Great-Britain/>

- Allowing for anticipatory investment in the offshore transmission infrastructure until the later projects are able to commit to avoid projects choosing individual point-to-point connections.
- Allowing projects to put in a joint CfD bid to ensure that the projects cooperating on a shared offshore grid infrastructure can have the certainty of a CfD at the same time. Alternatively, it should be allowed for dependent CfD bids, i.e. that a project can withdraw their CfD bid if the other projects necessary to lift the infrastructure are unsuccessful.
- Running CfD auctions by seabed so that there is certainty on the number of projects and capacity to be connected.
- Longer term market design options, such as a market-wide price floor could remove the competition for CfDs which would enable all projects to have the certainty that they will proceed at a certain floor price allowing greater grid coordination.

In considering these suggestions it is essential that we do not cause barriers for projects that could go it alone and so risk delaying projects by 4-5 years.

18. What changes would Government need to make for the Contract for Difference to facilitate deployment of offshore wind as part of a hybrid offshore wind interconnector project, and what would be the benefits and costs of making them?

There is a strong focus on developing offshore wind projects connected to several countries (hybrid projects) and an integrated grid, as seen by statements of the North Seas Energy Cooperation¹¹ and the EU Offshore Renewable Strategy¹². Potential cooperation on hybrid projects is also included in the Trade and Cooperation agreement between UK and EU. Hybrid projects could be beneficial for increasing interconnector capacity and ensuring offshore wind production is directed to the countries where it is most needed.

¹¹

<https://ec.europa.eu/energy/sites/default/files/documents/Political%20Declaration%20on%20Energy%20Cooperation%20between%20the%20North%20Seas%20Countries%20FINAL.pdf>

¹² https://ec.europa.eu/energy/sites/ener/files/offshore_renewable_energy_strategy.pdf

Given the potential benefits, we would be supportive of promoting such projects, however it is important that there is a level playing field between offshore wind projects within the CfD. With this in mind, it is necessary to consider further whether such projects could be included in the offshore wind pot or if it is necessary to define specific arrangements. One important factor in making this assessment should be how hybrid projects are exposed to offshore grid cost.

19. What role could international renewable projects play in our future generation mix in GB? Are there benefits to supporting these projects with government schemes and how could this be achieved?

There could be a role for international renewable projects in our future generation mix to be able to meet net zero. If these projects were a lower cost option then there could be a case for supporting international renewable projects, however this needs to be balanced against the loss of industrial and local economic benefits at a domestic level. Projects that use UK supply chain could however be seen as positive. We would suggest there needs to be further consideration to how support for international projects could work, keeping in mind that that for any such arrangement to work reciprocal access would need to be agreed with overseas markets.

20. Should part-built project continue to be eligible to compete for CfDs after the fourth allocation round? Are we considering the right implications and what are your views on these?

Part-built projects should not be penalised simply because their project timelines do not align with biannual CfD auctions. Therefore, they should continue to be eligible for CfD auctions.

21. Can cost savings be achieved by developing extensions to existing projects, if so, how great are these cost savings, and what is the justification for these projects being supported through CfDs or any other government mechanism?

22. Similarly, can cost savings be achieved by repowering older projects, if so, how great are these cost savings, and what is the justification for these projects being supported through CfDs or any other government mechanism?

The number of viable sites for renewable projects across the UK is substantial but finite and therefore extending and repowering sites will be an important part of maintaining levels of decarbonised generation capacity needed to meet net zero.

As set out in the 2018 'Repowering Onshore Wind' briefing,¹³ the economics of the site will be the key factor when deciding whether to repower, with only cost-effective sites proceeding with repowering. The cost of repowering may be lower than building new sites, as initial site development costs are already sunk, and it may be possible to re-use existing infrastructure. Extensions of existing projects could share network infrastructure or operation and maintenance programmes, again providing cost benefits. However, in some cases costs will be more aligned to new build sites, for example where new turbines are being put in the associated capex is not likely to be smaller than that of a greenfield site.

Given that the first commercial sites were developed in the mid-1990s, repowering opportunities will steadily increase over the coming decade. With the right planning and policy in place, and a long-term stable investment platform, a clear pipeline of repowering projects can be secured, bringing investment and growth to local communities. An effective regulatory regime for repowering could ensure the continuation of what the market deems to be the most efficient existing sites by enabling the deployment of fewer, larger turbines. The increase in capacity and output from more efficient turbines could ensure that land resource is utilised in the most efficient way (although new sites will still be needed).

For these reasons we are supportive of both extension and repowering projects being supported either through a CfD or other government mechanism. This approach could help to ensure the procurement of the most cost-effective blend of projects to provide low-cost renewables to consumers. We would note that further consideration is needed as to how these projects would be supported through the CfD and whether they would have a separate pot or compete against new build generation.

¹³ <https://www.scottishrenewables.com/publications/211-joint-briefing-repowering-onshore-wind>