

February 2023

Retaining the UK's leadership in renewables

Recalibrating policy in the midst of an energy crisis
and increasing global competition





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Cover photo of the Kincardine Offshore
Wind Farm project courtesy of Principle Power



It was just over a year ago that the UK stood at COP26 as the global magnet for investors in green technologies – most notably offshore wind, floating wind, tidal stream and green hydrogen, where the UK excels. International delegates toured innovation hubs, like the Offshore Renewable Energy Catapult centres in Levenmouth and Blyth, and the Siemens Gamesa factory in Hull. No one expected the extent to which the world would change in 2022.

The Russian invasion of Ukraine has created a gas crisis across the world, and most notably Europe, driving nations across the world to accelerate their transitions to a low cost, clean energy system. As European nations gathered to increase their renewable energy ambitions, the Biden Administration was forming its own renewable energy strategy with a focus on developing a clean energy manufacturing base the USA.

In reaction to the USA's Inflation Reduction Act, which provides \$393bn of subsidies, the EU is currently forming the details its own Green Deal Industrial Plan which will likely relax state aid rules, introduce fast-tracked permitting for clean technology and offer new incentives for investment. All the while China continues to develop more new renewable capacity than any country of earth, growing competitive new technologies like the 70-story-tall MySE 18.X-28X wind turbine, and OEMs like Goldwind, who aim to rival European companies like Siemens Gamesa and Vestas for dominance of the global market.

Intensifying global competition for capturing a competitive advantage in renewables shows the importance of the sector to economic growth and productivity, and the need for the UK to take bold steps to retain its own competitive advantage in this space. Renewables are now the lowest cost means of generating new electricity, and will remain so even



RenewableUK's CEO,
Dan McGrail speaking at
Global Offshore Wind 2022

with the increases in supply chain costs caused by the tail of COVID and the war in Ukraine. Renewables are able to offer countries around the world lower bills, green jobs, economic revitalisation and energy security, all whilst tackling the shared challenge of climate change. There is a huge demand for new component factories in the sector across Europe and the world, and therefore an industrial opportunity waiting to be captured for the countries who create the best investment environment for manufacturing investment. Furthermore, for the nation with those companies who can remain at the forefront of the development of new technologies, expertise and competitive products – there is an enormous global market to capture.

So what can the UK do to retain our leadership in renewables in the midst of fierce global competition for investment, skills and supply chains, in turn maximising the economic benefits?

This report outlines some clear measures for Government to take forward.

Dan McGrail
CEO, RenewableUK



Executive Summary

The benefits of renewables and the clean energy sector

- Delivering the Government's 50GW offshore wind target, including 5GW floating, alone will require £155bn of private investment in the UK.
- By 2030, the UK could see at least 97,000 jobs in offshore wind and over 27,000 in onshore wind.
- The wind and solar farms agreed with Government in 2022 alone will reduce average household energy bills by over £100 each year.
- The average wage of jobs in green industries (£42,600) is significantly above the national average (£33,400).¹
- Renewable energy and green technology investment is transforming local economies across the UK.



1. CBI/ECIU (2023) Mapping the Net Zero economy

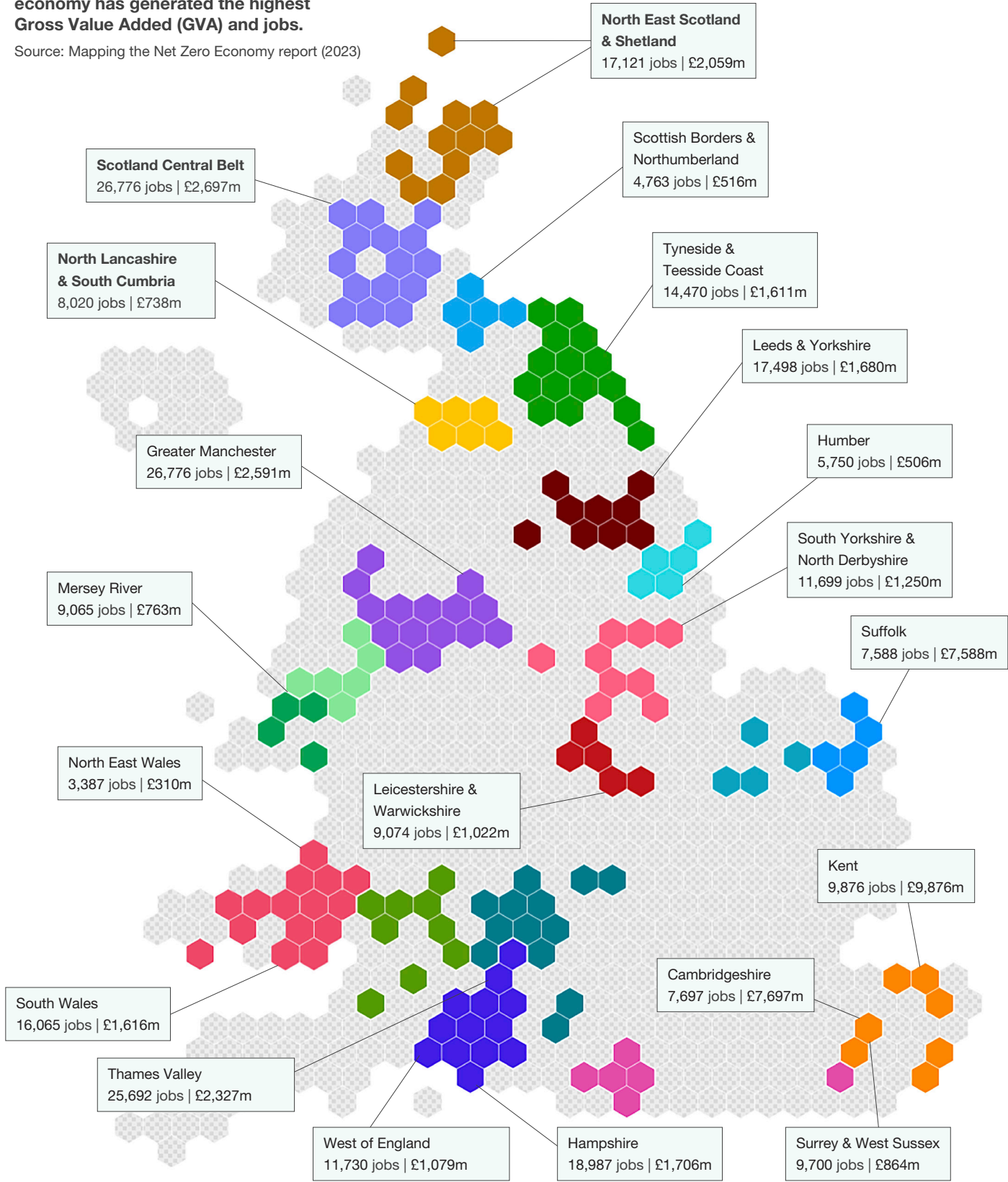


Executive Summary

The benefits of renewables and the clean energy sector

Top 20 hotspots where the net zero economy has generated the highest Gross Value Added (GVA) and jobs.

Source: Mapping the Net Zero Economy report (2023)





Executive Summary

US vs. UK; the changing landscapes for energy investors

At a time when the USA has set up a much more positive policy and regulatory environment for investors, the UK is continuing to develop policies which would increase uncertainty and dampen investment.

The UK Intervention, uncertainty and slow progress	The USA Incentives, tax credits and grants
<ul style="list-style-type: none">• A limited number of tax incentives for renewable energy investment (e.g. Capital Allowances), in marked contrast to oil and gas.• CfD auction parameters which don't sufficiently recognise increases in supply chain and other costs.• The Review of Electricity Market (REMA) includes a set of disruptive reforms which could have adverse impacts on private investment flows, leading to higher business costs for businesses and consumers. The existing model of CfD auctions it could overhaul has secured billions of pounds of investment.• Plans for Local Marginal Pricing (LMP) are being formed on limited and flawed analysis which fails to take account of its impact on longer term investment. Analysis suggests if LMP is introduced the cost of capital might increase by 2-3% to compensate.• The Electricity Generator Levy is a new cost on industry which has not been adequately reformed to limit its damage on investor confidence and resulting increases in the cost of capital.• The lack of network capacity and delayed grid connections continues to be the biggest barrier to the expedited delivery of new renewables and can lead to delays to deployment of 10 years or more.	<ul style="list-style-type: none">• The Inflation Reduction Act (IRA) was passed in August 2022, building on the Bipartisan Infrastructure Law.• The IRA includes tax incentives, grants, loans and other programmes to support clean energy development, manufacturing and supply chains:• The Production Tax Credit (PTC) and Investment Tax Credit (ITC) have already helped drive development of renewables to date are being modified and extended to 2025, at which point they'll be replaced by an emissions-based credits which are structured to incentivise investment in disadvantaged communities and green jobs.• The IRA provides the Environmental Protection Agency with \$27bn to award grants for clean energy and climate projects which reduce emissions.• The IRA provides \$40bn to guarantee loans for innovative clean energy projects.• The IRA provides specific Tax Credits for wind energy component manufacturing. In total, the US now provides a \$120million subsidy to the supply chain of each new 1GW wind farm (see page 13).• It is estimated that the IRA will drive \$370bn into the modernisation of the American energy system.



Executive Summary

RenewableUK's recommendations to Government

Accelerate the pace of renewable energy development and investment

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Recommendation 1: Streamline the planning process and ensure planning authorities are adequately resourced, so that key infrastructure projects can move quickly through the planning system.

- Although it only takes around 3 years to build an offshore wind farm, it currently takes about 3-5 years to move through the consenting phase.
- Onshore wind farms can be built in a just over a year, but the planning framework in England still effectively bans new development.

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Recommendation 2: Speed up pace and scale of investment in the UK's grid (transmission network) to enable new renewable projects to be delivered more rapidly.

- There are offshore wind farms being granted leases which can't get a grid connection for another decade.
- We need a new model of grid development; where critical investments are accelerated by Ofgem and the Transmission Owners to rapidly upgrade our electricity system.
- To deliver this step change in grid development, Government should act immediately by reforming the remit of Ofgem through an amendment to the Energy Bill.

Maximise potential investment in projects and manufacturing facilities

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Recommendation 3: Set new tax incentives and reform capital allowances to support renewable energy investment.

- The US and EU are establishing a system of tax incentives to encourage investment, and the UK Government should ensure our incentive structure remains competitive.
- Ensuring that the investment allowance regime offered to renewables is as clear and at least equivalent to that offered to oil and gas will be important.
- In addition, reform to Capital Allowances should be announced as part of the Spring Budget, with improved rates for net zero and renewable energy-supportive infrastructure, and a removal of the 'long-life asset' distinction.

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Recommendation 4: Setting sustainable prices for renewable electricity - starting with Contracts for Difference Auction Round 5 - and reforming CfD auctions to: maximise the investment in projects, enable the development of the future renewables pipeline, and support supply chain investment.

- Due to a combination of factors – most notably inflation and supply chain constraints – supply chains costs have increased across all infrastructure projects, including renewables.
- It's important that Government recognises this within the parameters it sets for CfD auctions. For example, not doing so for Auction Round 5 could result in the UK unlocking private investment in a very limited number of wind and solar farms next year.
- Reforming the CfD allocation process in the long run, to better balance price and supply chain considerations, will increase the economic footprint of renewable energy development in the UK.

Continued...

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Recommendation 5: Increase investment in key infrastructure such as ports through new mechanisms which unlock private investment, such as revenue guarantees.

- Offshore wind turbines are now the size of the Shard (c220 meters), and the manufacture, marshalling, assembly and pre-assembly of their components requires large port spaces.
- To date, UK Government has used grant funding to unlock private investment in ports.
- However, complementary reforms should be developed to unlock further private investment, utilising bodies like the UK infrastructure Bank.

Ensure market and regulatory framework supports investment

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Recommendation 6

- Clarity that REMA will pursue an evolutionary approach to market reform, ensuring that investor confidence in the policy and regulatory framework is maintained to meet power sector decarbonisation goals.

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Recommendation 7: A simplified system to Grid Charges.

- Reforms to grid charges need to address the ever-increasing impacts of transmission charging on some renewable energy projects which are dampening investment.
- Wind and solar projects need to be sited where the best wind and solar resources are, which includes Scotland and other locations which are currently subject to higher transmission charging.
- Ofgem's proposals for Locational Marginal Pricing would be a fundamental change to the power market which would undermine investor confidence.



Chapter 1:

Accelerating the pace of renewable energy development and investment

The UK is in an enviable position of having one of the world's largest pipelines of offshore wind projects, at close to 100GW.²

The faster these projects can be brought forward for development, the larger the UK market, the more investment brought to the UK. For example, ensuring that 50GW of offshore wind, including 5GW floating offshore wind, is developed by 2030 alone will drive £155bn of investment in the UK and support at least 97,000 jobs.³ As recent CBI analysis showed, the average wage of jobs in green industries (£42,600) is significantly above the national average (£33,400).⁴

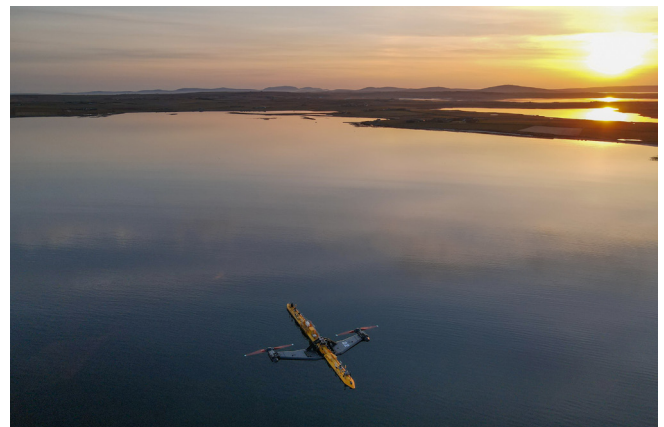
There are no downsides to expediting this development if you can achieve it, given every new wind and solar farm built in the UK displaces expensive gas, and lowers the cost of electricity for UK billpayers and businesses.

As previously outlined, the benefits of expediting development are magnified for innovative technologies like floating wind and tidal stream, where the UK is in a global race to develop technology and expertise, and capture first mover advantages.

Floating wind and tidal stream

The development of floating wind will enable a vast increase in potential developments in deeper, windier waters – both in the UK and across the world. The UK has the largest pipeline of floating wind projects, the largest national target and the largest number of floating wind farms in its waters – including the world's largest, Hywind and Kincardine in Scotland. We need to ensure our established supply chain companies in offshore wind, and oil and gas companies who could diversify their floating expertise into the sector, lead the way in the development of floating technology and expertise so that they can capitalise on the future global market for it (estimated to be between 200-250GW by 2050, representing between 400-500bn in capital expenditure investment alone). A recent analysis published by [Opergy](#) forecast that the floating wind workforce could be as large as 67,000 by 2040 – depending on Government policy and ambition.

Similarly, the UK remains a leader in tidal stream. A recent report and analysis [published by the Offshore Renewable Energy Catapult](#) has shown that not only can the sector provide thousands of green jobs and 11.5GW of power by 2050, but it could be considerably cheaper than new nuclear by 2035, and almost cost-competitive with solar and wind by 2047.



2MW Orbital 'O2' tidal stream turbines, Orkney courtesy of Orbital Marine

2. RenewableUK Project Intelligence Database

3. Offshore Wind Industry Council 'Offshore Wind Skills Intelligence Report'

4. CBI/ECIU (2023) Mapping the Net Zero economy

How do you increase the speed of renewable energy projects coming forward?

Recommendation 1:

Streamline the planning process

Although it only takes around 3 years to build an offshore wind farm, it currently takes around 3-5 years to move through the consenting phase.⁵ This is due to a combination of under-resourcing within planning authorities and environmental regulators, unclear guidance to those bodies, and a lack of streamlining within the process. For example, due to a lack of clear guidance, no offshore wind project since 2017 has been recommended for approval by the Planning Inspectorate. All 6GW of those projects were delayed until the Secretary of State reviewed them to confirm approval.

A more co-ordinated and efficient planning system is going to be required to achieve the Government's target of 50GW by 2030, with care taken to address evidence gaps, procedural blockages and other issues. We welcomed the commitments made in the Energy Security Strategy to streamline the planning and consenting process – for offshore wind and grid infrastructure – and the establishment of the Offshore Wind Acceleration Taskforce to ensure the delivery of necessary reforms across Government and legislation. This should continue at a greater pace, and be accompanied by additional funding for consenting bodies as part of the Spring Budget and a continued cross-Departmental focus on ensuring evidence gaps, procedural blocks and other issues are addressed.

The other clear area for planning reform is in onshore wind. We were delighted to see the Prime Minister announce that he would end the effective ban on onshore wind in England which has been in place since 2015. New onshore wind farms would bring billions of pounds of private investment to the UK and support new jobs. For example, building the onshore wind we need to achieve net zero (30GW by 2030) would add £45bn of GVA to the economy and support

27,000 jobs by 2030, and 30,000 more in the years that follow.⁶ Given this, the CBI, MakeUK, the Federation of Small Business and the National Farmers Union [all support new onshore wind development](#).⁷ The supply chain for onshore wind and offshore wind are very inter-related, so the development of onshore wind should be recognised as supporting the UK's offshore wind leadership ambitions, as well as a significant boost to the economy in its own right.

However, the changes to the national planning policy framework (NPPF) initially proposed by Government for consultation are unlikely to unlock significant opportunities for onshore wind development in England. We believe that – given its public popularity, manifold benefits to the UK economy and the need to tackle climate change – we should treat onshore wind like any other planning application. There is no logical reason why onshore wind should be treated differently to other infrastructure development, particularly in the midst of the energy and climate crises we face, and polls show that 70% of people in England believe the planning system should be “*broadly supporting new renewable energy developments like onshore wind*”,⁸ increasing to 71% of people who say they live within five miles of an onshore wind farm.

Whatever the final planning framework for onshore wind, Government has to ensure it at least meets the following tests, expanded on in [our article here](#):⁹

1. Does the new framework increase annual deployment of onshore wind?
2. Does it enable communities who want onshore wind to bring proposals forward and benefit from local projects?
3. Does it enable businesses that want to use onshore wind to reduce bills?
4. Does it enable onshore wind development in locations where there would potentially be high electricity generation?
5. Does it enable the ‘repowering’ of wind farms—where old turbines are replaced with more modern, and more efficient, models?

5. This timeframe covers the work needed to secure consent and manage the development process through to financial close.

6. RenewableUK Onshore Wind Industry Prospectus

7. [Voices in Support of Onshore Wind](#) (renewableuk.com)

8. Survation polling (2021) - <https://www.renewableuk.com/news/583059/Poll-shows-majority-of-people-in-UK-want-planning-system-reformed-to-enable-more-onshore-wind-farms.htm>

9. [The 5 key tests of a new onshore wind policy](#) (renewableuk.com)

Recommendation 2:

Speed up pace and scale of development of the UK's grid system to enable new renewable projects to be delivered more rapidly

One of the biggest constraints on the pace of development of new renewables is the UK's electricity grid infrastructure. For example, in some instances, industry can deliver offshore wind farms faster than they can be connected to the grid by around 3-5 years. The issues grid constraint is particularly acute in areas of high wind and solar resource, such as Scotland and Wales.

These delays are happening because:

- 1. Grid development currently only takes place where there is overwhelming established demand for it.** This is delaying the pace of renewable energy development, and wider changes in the UK's electricity demand and supply (e.g. the roll out of EVs, heat pumps etc).
- 2. The UK currently has “first come first served” approach to grid connections.** This means large queues of potential wind, solar and other electricity generators can build up in an area – all waiting to connect. The ‘transmission queue’ for England and Wales currently comprises nearly 240GW of new generation and interconnector schemes¹⁰ – the equivalent electricity providing capacity of 75 Hinkley Point C nuclear power plants, waiting in line. This includes 35GW of new applications within in the last 6 months. Slow moving projects can therefore act as a blocker to connecting more viable projects which sit behind them in the queue.

Both of the above points are compounded by the fact that developing grid infrastructure often takes longer than the development of renewable energy projects. By the time there is ‘overwhelming demand’ for grid, it is very hard for grid development to catch up.

Furthermore, not only is investment too slow in the grid network that will connect new renewable energy projects to the grid, but this is also true for investment in the cables that will carry their electricity to where it's needed (much of which will be offshore).

We need a new model of grid development, where critical investments are accelerated by Ofgem and the Transmission Owners to rapidly upgrade our electricity system.

Spotlight on Scotland

In Scotland, a significant number of offshore wind farms that were granted leases in 2022 by the Crown Estate Scotland won't be able to get a grid connection until the mid 2030s; over 10 years later. As it stands, many of the developers of these offshore wind farms haven't even been told where their grid connection will be or how it will be delivered.

Spotlight on Wales

The Welsh Affairs Select Committee's inquiry into [Grid Capacity in Wales](#) (Oct 2022) found that “grid capacity in Wales is significantly restrained” and that “11 of the 94 grid reinforcements that are necessary to meet the Government's 2030 offshore wind target will not be delivered on time for the target to be met, under current regulatory and consenting processes”.

We were pleased to see the British Energy Security Strategy (BESS) recognised the importance of “accelerating the connecting network infrastructure” and committed to develop grid infrastructure ahead of time by ensuring “Ofgem expedites its approvals process to build networks in anticipation of major new sources of generation and demand.” We also appreciated the BESS's recognition that reforming the UK's approach to grid development would be in the interest of bill payers:

“On costs, building ahead of need, where good value for money, may mean paying more in the short term for an asset that isn't efficiently utilised immediately but is the cheapest option over the long term and reduces the need for repeated disruptive works to continually upgrade the system.”

To deliver this step change in grid development, Government should act immediately by reforming the remit of Ofgem through an amendment to the Energy Bill – as recommended by Chris Skidmore's Net Zero Review, and the Welsh Affairs Committee following their inquiry into grid infrastructure in Wales.



Ofgem's remit has not substantially changed since its establishment in 2000, and it does not prioritise electricity decarbonisation in line with Government's recent legislation and stated ambitions – it only has a ‘consideration of greenhouse gas reduction’. As a result, Ofgem has been unable to substantially reform its working practices and regulatory frameworks in response to the 2008 Climate Change Act and the UK's subsequent net zero ambition, to detriment of

10. Interconnectors are large power cables which connect the UK electricity network with neighbouring countries.

renewable energy investment and decarbonisation pace. Although Ofgem has established initiatives to try and address issues of underinvestment - such as the Offshore Transmission Network Review and the Accelerating Strategic Transmission Investment project – they do not go far enough in delivering the scale and speed of change required.

Furthermore, the current process for achieving connection to the grid is no longer fit for purpose and is not delivering for connectees, network companies or the system operator. This has been recognised by NGENSO, who are running a Connections Reform project which is due to propose solutions in Q2 2023.

We would be grateful if the Prime Minister could take a more active role, alongside the new Electricity Networks Commissioner, in ensuring that all the other enabling initiatives required by the numerous stakeholders involved in grid development are taken forward – including DESNZ, Ofgem, Defra, DLUHC, National Grid ESO, Scots & Welsh Government and the Transmission Owners.



Ofgem's remit has not substantially changed since its establishment in 2000, and it does not prioritise electricity decarbonisation in line with Government's recent legislation and stated ambitions.



Chapter 2:

Maximise potential investment in projects and manufacturing facilities

Component	Tax credit (watt/W)	Tax credit value per component in a 15MW wind turbine system	Approximate percent of total component value in a 15MW wind turbine system
Blade	\$0.02/W	\$300,000	15%
Nacelle	\$0.05/W	\$750,000	10%
Tower	\$0.03/W	\$450,000	20%
Fixed-bottom foundation	\$0.02/W	\$300,000	10%
Floating foundation	\$0.04/W	\$600,000	5%
Related offshore wind	10% of sales	N/A	N/A

Source: NREL, [A supply chain road map for offshore wind energy in the United States](#)

To retain our position as one of the leading global markets, we must land investments that will ensure project delivery and growth in the context of heightened global competition. At present the UK will need to deploy c.4.5GW of offshore wind annually in the latter half of this decade to meet our 50GW target. This is quadruple the build-out rate of the last 5 years and would account for 50% of current annual turbine manufacturing capacity in Europe. More widely, in the European market annual installation is set to hit 10GW by 2025 and grow over 15GW annually by 2027. In the USA, from near zero capacity today, annual installation is set to grow by over 5GW by 2027.

While this surging demand will require additional industrial capacity, the major turbine manufacturers are constrained in terms of investment due to significant losses in recent years due to falling prices and surging input costs – a situation support packages in Europe and the US aim to address. If there is scarcity in the supply chain later in the decade, at precisely the time UK offshore wind installation needs to ramp up, this could have significant impacts in terms of cost and delivery.

Whilst the Treasury have signalled, at least in the short term, that they intend to be constrained in tax and spending decisions – Government has to recognise that what is happening between the EU and US is not a trade war of new barriers, but a competition of incentives to capture investment. Levelling the playing field is going to require fiscal measures.

A shift in tax incentives – bringing incentives for renewable energy investment at least in line with the oil and gas sector – is long overdue. There are some relatively small and targeted tax incentives that could be made which would not only bring larger industrial investment to the UK, but would be to the benefit of billpayers. And finally, the UK has slowly been developing a greater ‘industrial strategy’ for the sector, which new reforms could amplify the benefits of – growing our already considerable supply chain.

Recommendation 3: Setting new tax incentives for renewable energy investment

It is undeniable that the tax incentives offered by the USA and EU are catching the attention of investors, as was intended. For example, schemes like the USA’s Advanced Manufacturing Tax Credits are specially targeted at increasing the competitiveness of the USA for wind component manufacturing investment. Through their subsidies on component manufacture alone, the USA are now offering a \$120 million tax break on every 1GW fixed bottom offshore wind farm, and a \$140 million tax break on a 1GW floating wind farm.

There has been a need for Treasury to fundamentally review the incentives offered by the UK to encourage

investment in renewable energy projects and manufacturing, which are very undeveloped when compared to those structured for the oil and gas sector.

One of the most notable areas for reform is in Capital Allowances. Due to technological advances, most wind farms now last longer than 25 years. As a result, they're now being classed as 'long life assets', and so receive a smaller Capital Allowance of 6%, than the usual rate of 18%. At a time when Government should really be considering raising Capital Allowances on wind farms from 18% to a more competitive figure like 25%, current policy has moved in the other direction. Now is the time to correct it.

Not only is this a relatively small fiscal measure targeted at a priority sector for UK economic growth, but it's one whose benefit will ultimately be passed down to billpayers – as lowering the cost of renewable energy projects lowers the cost of their electricity in turn.

There is not a shortage of levers the Treasury could pull to encourage investment, including:

- Increasing certainty that all capital spent on net zero appraisal and development qualifies for capital allowances. There remains a risk that spend on assessing and developing net-zero infrastructure falls between two stools for tax purposes, being neither revenue nor capital allowances-qualifying, thereby denying any tax relief.
- Extending the Annual Investment Allowance for qualifying renewable projects from £1m to £20m.
- Increasing writing down allowance rates and switch from reducing balance basis to straight line depreciation.
- Increasing the very low rates of Structures and Buildings Allowances and special rate capital allowances for plant and machinery would help improve the investment case.
- Extending the relief for decommissioning costs currently available for oil and gas assets to low-carbon investments, or allow capital allowances on decommissioning costs during the project lifetime.

The Government's Freeport and Green Port schemes support manufacturing investment, as demonstrated in Teesside where SeAH are currently constructing a facility to manufacture offshore wind turbine monopiles. The Spring Budget is an opportunity to announce expedited timelines around the implementation of existing programmes, an expansion to a broader number of sites, and additions of the tax relief offered through it. For example, some of the key benefits such as businesses rates relief could be extended over a greater number of years.

Recommendation 4:

Setting sustainable prices and reforming CfD auctions

The vast majority of the UK's renewable energy capacity is brought forward through the Government's programme of clean energy 'Contracts for Difference' (CfD) auctions. The Government needs to ensure that the next auction (Allocation Round 5), and those beyond, maximise investment, in both renewable energy projects and the UK supply chain. This requires two actions from Government.

1. Sustainable prices

Due to a combination of factors – most notably inflation and supply chain constraints – supply chains costs have increased across all infrastructure projects, including renewables. It's important that Government recognise this within the parameters they set for CfD auctions – in both the overall budget and Administrative Strike Prices. [Last autumn the Spanish Government set their auction parameters too low](#) and ended up securing only 46MW of wind and solar in an auction where 3.3GW (3,300MW) was targeted.

Special attention should be paid to our emerging technologies, such as floating wind and tidal stream. If we're to ensure UK supply chain companies remain at the forefront of the development of these technologies, they have to operate in a sustainable market which enables them to finance innovation and rapid re-investment.

2. Long-term CfD reform

The UK has world-leading supply chain companies – employing over 31,000 people – and is seeing new investments in facilities like the Siemens Gamesa blade facility in Hull. However, whilst the UK's CfD auctions incentivise investment in renewables, they do not maximise inward investment, re-investment, innovation, growth and cost-reduction in the renewable energy supply chain. As a result, the UK not only misses out on potential industrial benefits, but there is also a risk of under-investment in the supply chain.

Reforming the CfD – to better balance competitive tensions, signals for collaboration, consumer benefit and international competition – will increase the economic footprint of renewable energy development in the UK. It will also ensure that supply chains can scale up sufficiently to deliver the Government's targets in the latter half of the 2020s and 2030s and increase our energy security.

We were pleased to see the UK Government begin to consider potential reforms. These need to develop at pace. The United States and countries within Europe are either in the process of replicating and adapting the UK's CfD model to better support their supply chain's development, or have already done so. Should the UK not bring forward at least commensurate measures, supply chain investment will be further incentivised to locate outside of the UK.


Recommendation 5: de-risking private investment in key infrastructure

Beyond forming a more favourable tax environment, Government should also play a role in continuing to de-risk investment and mobilising private capital into new technologies and innovation.

For example, offshore wind turbines are now the size of the Shard, and the manufacture, marshalling, assembly and pre-assembly of their components requires large port spaces, which the UK currently lacks. Upgrading our ports to enable industrial investment doesn't just ensure the UK grasps an economic opportunity. Increasing demands for components and services within Europe means that it is less likely European ports (e.g Esbjerg, Cuxhaven, etc) could service the UK later this decade if we required them to. Therefore, ensuring the UK has upgraded ports and an enlarged supply chain also ensures we are able to deliver our offshore wind development ambitions in the years to come. We should not risk the possibility that wind farms are delayed or businesses cases compromised because of a lack of key infrastructure.

To date, UK Government has used grant funding to unlock private investment in ports, enabling the UK to secure hundreds of millions of pounds of further private investment in offshore wind manufacturing facilities. The Offshore Wind Manufacturing Investment Support Scheme (OWMISS) unlocked:

- £130 million from JDR Cables in a new cables factory in Blyth.
- £400 million from SeAH in a new turbine base factory in Teesside.
- Building on the OWMISS scheme, Government have committed £160 million to a supplementary scheme targeted at floating offshore wind.



The Chancellor should look at what more could be done by organisations like the UK Infrastructure Bank to crowd in private investment.

However, complementary reforms should be developed to unlock further private investment. UK government could provide revenue guarantees for port investors for a limited period, to overcome the risk-gap at Final Investment Decision.¹¹

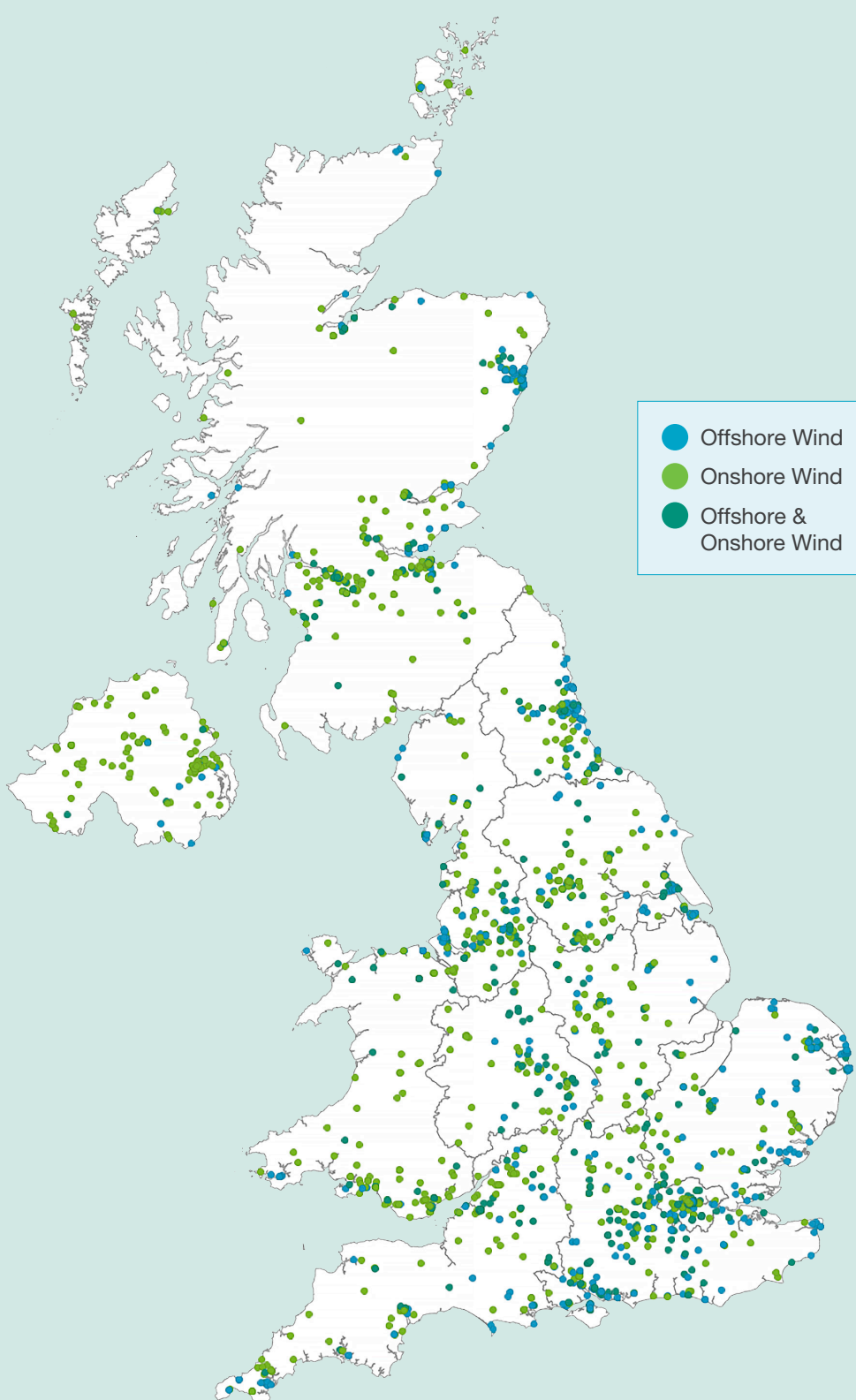
Similarly, the Chancellor should look at what more could be done by organisations like the UK Infrastructure Bank to crowd in private investment. The Green Investment Bank's support in the past for renewable deployment, for instance through projects like Westernmost Rough has been essential in helping projects reach FID and crowding in additional private investment in the sector, including in blade manufacturing. Government-backed loans could be extended beyond manufacturing to renewable energy projects to help lower their costs of capital.

11. This should be set at a minimum hurdle rate for port investors or zero-NPV - in other words at a level which means they would not lose money, but not make any if the port is not used for offshore wind and gives a sensible period to find an alternative business model (e.g. 5-10 years).

SUPPLY CHAIN MAP 2023

OFFSHORE AND ONSHORE WIND

Powered by: 
RenewableUK
EnergyPulse



Source: EnergyPulse | RenewableUK. 19 Dec 2022.



Chapter 3:

Ensure our market and regulatory framework supports investment

The market framework established in the UK to secure investment in renewable energy has been incredibly successful. In the last Contracts for Difference auction alone the Government agreed contracts for £15bn worth of new wind and solar wind farms. As a result, our framework has been replicated across the world.

Whilst our market framework will need to evolve along with our energy system, we need to ensure that it continues to maximise investment at lowest cost for billpayers. For example, if the UK is to achieve the Government's target of 50GW of offshore wind by 2050, this will require £155bn of private investment. Creating uncertainties into our market, which will then need to be accounted for by investors in higher rates of returns, could have enormous implications for the future costs of electricity for billpayers. A small fraction of £155bn will only ever be small in relative terms. It is this in mind that we make the following recommendations.

Recommendation 6:

Clarity that REMA will pursue an evolutionary approach to market reform, ensuring that investor confidence in the policy and regulatory framework is maintained

There have been concerns that, because UK electricity prices are set by the marginal plant – which today is predominantly gas – billpayers may not be gaining the full benefits of low-cost electricity from the UK's wind and solar farms. As a result, some have been calling for Government to rush forward rapid reform of our electricity market to ensure they do.

However, the Government's current system for procuring renewables already ensures billpayers benefit from new renewable energy. Under the Contract for Difference (CfD) framework a fixed price is agreed between generators and Government for a

15-year contract. Critically, if the price of electricity in the wholesale market (the price billpayers pay, set by gas) is above this level – generators pay all of the excess revenue back to billpayers. The current system of CfD auctions have ensured wind farms have paid back £556 million from October 2021 to October 2022 alone.

Furthermore, the CfD auction system's fixed price de-risks investment in UK renewable energy for international investors – ultimately to the benefit of billpayers. Analysis by ARUP showed that lower capital costs resulting from investor certainty provided by the CfD lower the levelised cost of energy for an onshore wind project by between £6/MWh and £12/MWh relative to position where no stabilisation is provided.¹² This has been one of the key levers in bringing down the cost of renewable electricity projects under CfD and is not insignificant when the UK will require around £155bn of investment in offshore wind energy alone by 2030.

In short, both investors and billpayers benefit from the model, and it is being replicated by other countries across the world to bring forward high volumes of new renewable generation capacity at record low prices (though many are reviewing how the model could better support supply chain development).

This need to evolve the current market to support the future energy system is not disputed. However, certain proposals to do so by Government – as outlined through their Review of Electricity Market Arrangements would represent a significant shift from current arrangements, which could impact investor confidence and market stability. This is why the Review of Electricity Market Arrangements should be taken forward as an evolutionary package, building on the policies and arrangements that have been instrumental in driving investment into the UK renewables sector and lowering costs to consumers. Additional consultations before implementation will be essential to avoid unintended consequences of these reforms in a sector highly exposed to international investment flows.

It is notable that the last set of market reforms, which did not fundamentally change the wholesale electricity market, took four years to fully formulate, though a consultative process that was considerably more transparent.

12. Arup - <https://www.arup.com/perspectives/publications/research/section/onshore-wind-financing>

Recommendation 7: A simplified system of Grid Charges

As outlined in Recommendation 5, the UK's energy regulator (Ofgem's) remit has not changed since its establishment in 2000, and it does not prioritise electricity decarbonisation in line with Government's recent legislation or stated ambitions – it only has a 'consideration of greenhouse gas reduction'.

Ofgem's inability to suitably prioritise and expedite the energy transition is not only leading to underinvestment in the UK's grid infrastructure, but feeds into its wider regulatory working practices. As a result, the regulator is proposing changes to network charging and assessing the introduction of Location Marginal Pricing which will both create significant headwinds to investment in renewables. These additional costs could quickly outweigh the consumers savings that LMP is intended to deliver, given the scale of investment needed in new generation infrastructure.

Ongoing reforms to network charging, which currently dampens investment in renewables

Ofgem is undertaking a series of reforms to electricity transmission and distribution network charging and access:

- The Targeted Charging Review - the proposals of which have been finalised.
- The Access and Forward-Looking Charges Review – though finalised, further consultation on the Distribution Use of System and Transmission Network Use of System (TNUoS) elements are still to take place through new Task Forces.¹³

None of these reforms are currently addressing the ever-increasing impacts of transmission charging on some renewable energy projects which are dampening investment. Wind projects need to be sited where the best wind resources are, which includes Scotland and other locations which are currently subject to higher transmission charging.

TNUoS charges in their current form are too high in certain areas of the UK, and are creating unnecessary uncertainty through their unpredictability and volatility. These additional costs to renewable projects will ultimately be born in higher costs to the consumer. The TNUoS Task Force's work has been slowed and does not address many of the fundamental issues that are putting renewable projects at risk or driving up costs for consumers; we are concerned that Ofgem is underestimating the scale and pace of investment needed, and the risks network charging poses in undermining investment.

The pursuit of 'Locational Marginal Pricing' to the detriment of investor confidence

Ofgem is currently undertaking an assessment of the potential benefits, costs and implementation requirements associated with transitioning to a zonal or nodal wholesale market design.

Shifting from a national electricity price to localised pricing would be a fundamental change to the power market. As a recent report by University of Strathclyde outlined in detail,¹⁴ these proposals risk undermining the UK's world-leading market for renewables and shaking investor confidence at precisely the time we need to be ramping up clean energy. Analysis by Frontier Economics also warns of the potential for "a substantial increase in the Weighted Average Cost of Capital (WACC) as a result of any move to LMP".¹⁵ Setting hundreds, or even thousands, of local energy prices in real-time would make revenue forecasting incredibly complicated and even more volatile, which risks pushing up financing costs and, ultimately, electricity prices for consumers.

In addition to the detriment to investment, Ofgem needs to consider:

- **Locational restraints.** Renewable energy development is locationally constrained to where wind and solar resource is highest, and where there aren't significant barriers to development, such as land availability, planning rules or protected areas. For example, offshore wind will be the biggest source of UK power – but developers can't choose where those sites will be, which are set out years in advance by The Crown Estate, or Crown Estate Scotland; it is extremely difficult to gain planning permission for onshore wind farms next to urban population centres in southern England.
- **It may have a detrimental impact on some consumers.** In those large parts of the country where developing new large-scale power sources isn't feasible, consumers could be burdened with higher energy prices.
- **Energy Security.** These proposals would benefit large gas plants located near the big cities in England, and risk extending our dependence on gas at the same time as Government has set a target of rapidly cutting gas power by 2030.

13. Ofgem - <https://www.ofgem.gov.uk/publications/access-and-forward-looking-charges-significant-code-review-decision-and-direction>

14. [Exploring Market Change in the GB Electricity System : the Potential Impact of Locational Marginal Pricing - Strathprints](#)

15. Locational Marginal Pricing – Implications for Cost of Capital – Frontier Economics www.frontier-economics.com/media/5496/implications-of-cost-of-capital.pdf



RenewableUK members are building our future energy system, powered by clean electricity. We bring them together to deliver that future faster; a future which is better for industry, billpayers, and the environment. RenewableUK are a UK membership body with a mission to ensure increasing amounts of renewable electricity are deployed across the UK. We support over 400 members to access UK markets and to export all over the world. Our members are business leaders, technology innovators, and expert thinkers from right across industry.

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