



House of Commons
Scottish Affairs Committee

Renewable energy in Scotland

Fourth Report of Session 2021–22

*Report, together with formal minutes relating
to the report*

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The Scottish Affairs Committee

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1 Introduction

1. Renewable energy is currently in the spotlight and is seen as one of the major ways to tackle climate change. COP26 is being hosted by the UK and Italy, with the Climate Change Conference taking place in Glasgow in November 2021. The UK Government has set a legal net zero target by 2050,¹ and the Scottish Government has set targets for 2045.² The Intergovernmental Panel on Climate Change (IPCC) 2021 special report highlights the drastic consequences of not reducing carbon emissions:

Scientists are observing changes in the Earth’s climate in every region and across the whole climate system, [...] Many of the changes observed in the climate are unprecedented [...] and some of the changes already set in motion—such as continued sea level rise—are irreversible [...] However, strong and sustained reductions in emissions of carbon dioxide (CO₂) and other greenhouse gases would limit climate change.³

2. Renewable energy comes from sources that are constantly and naturally renewed:⁴ examples include wind, wave, tidal, solar and hydro.⁵ Scotland has an abundance of these renewable energy resources; in 2020, 97.4% of electricity consumption in Scotland was from renewable energy sources.⁶ The only accredited wave and tidal test centre for marine renewable energy in the world, European Marine Energy Centre (EMEC), is based in Orkney.⁷ In 2019, renewable electricity generated from wind in Scotland came to 23.2TWh.⁸ Currently there are, 14.0GW of renewable electricity projects are consented and in the pipeline for development in Scotland, of these 2.0GW are under construction.⁹ Scotland has ideal conditions for tidal energy production, and we have heard that this industry has great potential for growth, both in the supply chain and also with jobs for Scottish people.¹⁰ This is the ideal time to look at the opportunities Scotland has with renewable energy.

3. Within this report, we have chosen to focus on four key issues, which the UK Government should consider in relation to renewable energy: the grid and transmission charges; the supply chain; funding for renewable energy; and employment within the renewable energy sector.

Our inquiry

4. We launched our inquiry, Renewable energy in Scotland, on 19 March 2021 and published a call for written evidence.¹¹ As part of the inquiry we held five public oral evidence sessions. This included an evidence session in Kirkwall during a Committee visit to view the European Marine Energy Centre’s tidal test site in Orkney. We thank

1 The initial target set out in 2008 was an 80% reduction of 1990 levels by 2050. This was amended by [Climate Change Act 2008 \(2050 Target Amendment\) Order 2019](#) to net zero by 2050

2 Scottish Government, [Climate Change Policy - Reducing greenhouse gas emissions](#), December 2020

3 Intergovernmental Panel on Climate Change, [Special report: Global Warming of 1.5 °C](#), 9 August 2021

4 National Grid, [What is green energy?](#), accessed 12 August 2021

5 Scottish Renewables, [Statistics](#), accessed 23 April 2021

6 Scottish Government, [Energy Statistics for Scotland Q4 2020 Figures](#), 25 March 2021

7 For more information see the [visit note](#)

8 Scottish Government, [Energy Statistics for Scotland Q4 2020 Figures](#), 25 March 2021

9 Scottish Government, [Energy Statistics for Scotland Q4 2020 Figures](#), 25 March 2021

10 [Q81](#), [Q82](#), [Q124](#)

11 Scottish Affairs Committee, [Renewable Energy in Scotland: call for evidence](#), 19 March 2021

everyone who has contributed to our inquiry. We would also like to thank our hosts and everybody who took the time to speak to us on our visit to Orkney. We are particularly grateful to Professor David Ingram, our Specialist Adviser for the inquiry, whose support and contributions provided vital insights into this important subject matter.¹²

5. Our inquiry spanned across several months. We made every effort to ensure that the findings of this Report are accurate and up to date; however, we realise that the issue of renewable energy is a fast-moving topic and there is the potential for some aspects of this report to be out of date shortly after publication.

¹² Professor David Ingram was appointed on 13 May 2021 (see the Committee's [formal minutes](#)). He had two interests to declare (for further details see the Committee's [formal minutes](#)).

2 The grid and transmission charges

6. Scotland has an abundance of natural resources that can be used for renewable energy. In 2019, 97.4% of electricity generation in Scotland was from renewable energy sources.¹³ When we visited Orkney, we heard about the potential of Orkney, Shetland and the Western Isles to provide 50% of UK’s total energy needs.¹⁴ Net zero targets are now law; the UK Government has set a target of net zero by 2050,¹⁵ and the Scottish Government has set a target of net zero by 2045.¹⁶ We heard evidence that targets and commitments by UK Government around renewable energy and net zero were setting the right tone, but that these were not sufficient to ensure delivery.¹⁷ Professor Keith Bell—UK Energy Research Centre Co-Director, University of Strathclyde—told us: “those targets now have to be based up with concrete policies to deliver the outcomes”.¹⁸ We found a consistent theme within written evidence, which emphasised that there must be supportive policy incentives specified in much more detail than the current Energy White Paper provides.¹⁹ The UK Government has said that sectoral strategies and the overarching net zero strategy will be published before COP26 in November 2021.²⁰

7. The potential scale of renewable energy in Scotland is huge. The abundance of natural resources can benefit individuals, organisations, and businesses across the UK. We welcome the targets set by the UK Government for net zero and look forward to seeing how the overarching net zero strategy will impact the renewable energy sector in Scotland and look forward to seeing how this will be reflected in the upcoming Spending Review.

The electricity grid

8. Scotland has the potential to generate a large amount of energy from renewable sources. However, one of the key challenges highlighted to us is the transmission of energy from generation to consumer via the grid; electricity needs to get to where it can be used. Professor Keith Bell—UK Energy Research Centre Co-Director, University of Strathclyde—told us: “Network capacity is essential, and it has to be in the right places at the right capacity at the right time”.²¹ He noted that one of the difficulties of this set-up would be knowing where energy would be generated, sufficiently in advance, to enable grid investment.²² Without a robust grid, the energy cannot be delivered securely to consumers. Bless Kuri—Head of System Planning, Scottish and Southern Electricity Networks—noted: “until we get a certain level of certainty about projects going ahead, we are not able to make a robust investment case in the grid”.²³ Matthieu Hue—Chief

13 Scottish Government, [Energy Statistics for Scotland Q4 2020 Figures](#), 25 March 2021

14 [Q138](#)

15 The initial target set out in 2008 was an 80% reduction of 1990 levels by 2050. This was amended by [Climate Change Act 2008 \(2050 Target Amendment\) Order 2019](#) to net zero by 2050

16 Scottish Government, [Climate Change Policy - Reducing greenhouse gas emissions](#), December 2020

17 [Q5](#), [Q100](#), [Q184](#),

18 [Q5](#)

19 Hitachi ABB Power Grids ([RES0004](#)), Unite the union Scotland ([RES0005](#)), European Marine Energy Centre (EMEC) Ltd ([RES0007](#)), EDF Renewables ([RES0009](#)), RES Group ([RES0010](#)), RWE ([RES0012](#)), Highlands and Islands Enterprise ([RES0014](#)), ScottishPower ([RES0015](#)), UK Marine Energy Council ([RES0021](#)), The Royal Society of Edinburgh ([RES0023](#)), and UK Government, [Energy White Paper: Powering our Net Zero Future](#), December 2020

20 UK Government, [Energy White Paper: Powering our Net Zero Future](#), December 2020, p15

21 [Q22](#)

22 [Q22](#)

23 [Q77](#)

Executive Officer, EDF Renewables—commented that there should be better preparation for investment in the grid: “More can be done to anticipate the investment needed to support renewable projects”.²⁴

9. Steven McMahon—Deputy Director, Electricity Distribution and Cross Sector Policy, Ofgem—told us that changes to the grid are needed to hit UK Government targets on offshore wind “particularly around how transmission is planned, developed, and connected”.²⁵ He also explained that the UK needs a grid that will support the new demands on electricity for example, the increase in electric vehicles and changing the way we heat our homes,²⁶ and stated: “We need to make sure that any ambitions the Government have around that are not held up by a lack of capacity”.²⁷

10. With regard to timescales of grid development, Professor Karen Turner—Director, Centre for Energy Policy, University of Strathclyde—was concerned about the pace of change: “when we are talking about net zero, 2050 sounds a long way off, but it is not, and a lot of action needs to be taken very quickly and rapidly”.²⁸ Bless Kuri told us how developing the grid at the current pace of change makes the net zero targets very challenging to meet:

We see that the current system is rather congested at the moment. Going at the normal pace, it will be very challenging to hit those targets, so we believe there needs to be some changes around how decisions are made about infrastructure proposals, the planning process itself.²⁹

He continued his concerns later in the evidence session:

We also need to see bolder decisions being made by Ofgem in particular, because the current approach looks at certainty of need before investments are progressed. The slight challenge we have here is that there are lots of interdependencies. If we wait for that, if you get to much later in the decade before you make those concrete decisions, there will not be enough time to complete them.³⁰

11. The grid is critical for renewable energy to reach consumers. Urgent investment is needed in the grid to ensure that net zero targets are met. The grid needs to be reinforced and expanded to ensure that renewable energy generated in Scotland can connect to the grid and benefit the rest of the UK. We recommend that Ofgem completes a review of the grid in Scotland as a matter of urgency, and at the latest by the end of 2022 to implement changes in good time for the 2045 target. Ofgem should make bold decisions by prioritising reinforcement of the grid in areas where there is potential for a high renewable energy yield. Since net zero targets have already been set in law, Scotland should be enabled to play its part fully in the renewable energy mix of the UK.

24 [Q40](#)

25 [Q66](#)

26 [Q74](#)

27 [Q58](#)

28 [Q37](#)

29 [Q61](#)

30 [Q67](#)

Transmission charges

12. Transmission Network Use of System (TNUoS) charges are set by Ofgem. These charges are paid by developers to transmit their electricity to customers, and the cost is passed on to consumers as a “network” cost in their energy bills.³¹ Transmission charges are described by National Grid as recovering “the cost of installing and maintaining the transmission system in England, Wales, Scotland and Offshore”.³² Ofgem publishes transmission charges each year on 31 January, and updates take effect from 1 April.³³ Professor Keith Bell—UK Energy Research Centre Co-Director, University of Strathclyde—outlined what transmission charges were set up to do: “The TNUoS regime is an attempt—imperfect as it may be—to reflect the costs of the network as part of that overall cost minimisation”.³⁴

Volatility of charges

13. Transmission charges vary and are subject to annual review, this affects how much developers must pay to transmit the electricity they produce. Claire Mack—Chief Executive, Scottish Renewables—told us that Members of Scottish Renewables say the volatility of transmissions charges make it “almost impossible [...] to be able to get those costs in a meaningful way into their projects”.³⁵ Lucy Whitford—Managing Director for UK & Ireland, RES—followed from this stating “it is hard to make investment decisions, because you don’t ultimately know what those charges will be in the future”.³⁶ Bless Kuri—Head of System Planning, Scottish and Southern Electricity Networks—stated that “the poor predictability of this cost”,³⁷ affects the business cases for these projects. Neil Douglas—Director, BVG Associates—commented on renewable energy generators: “If they don’t know what the TNUoS charge will be in five, 10, 15 or 20 years’ time, that is an uncertainty. The only way that they can finance that project is to price that risk, therefore they may be pricing themselves out”.³⁸ During our visit to Orkney, Dr Gareth Davies—Managing Director, Aquatera—told us how the volatility is specifically affecting investment in Orkney:

Ranges have gone from £150 down to £50 in Orkney [per KWh]. [...] To go to the investment proposition, if you are going to investors and saying, “Your access to market could vary from here to here,” it is an incredibly difficult economic proposition to make.³⁹

14. The evidence we have heard has highlighted issues around the volatility of transmission charges. The short-term volatility of transmission charges is a barrier to the development of renewable energy as it affects confidence in investment and the future cost of a project.

31 Ofgem, [Costs in your energy bill](#), accessed 26 July 2021, What are network costs?

32 National Grid, [Transmission Network Use of System \(TNUoS\) charges](#), accessed 21 July 2021

33 National Grid, [Transmission Network Use of System \(TNUoS\) charges](#), accessed 21 July 2021

34 [Q23](#)

35 [Q45](#)

36 [Q47](#)

37 [Q66](#)

38 [Q27](#)

39 [Q120](#)

Locational charges

15. Scotland is a net exporter of electricity,⁴⁰ and in 2020 31.8TWh of renewable electricity was generated in Scotland.⁴¹ This is the equivalent of powering all households in Scotland for almost three and a half years.⁴² The most recent statistics from 2019 show the net exports of electricity from Scotland were 19.3TWh.⁴³ Professor Keith Bell—UK Energy Research Centre Co-Director, University of Strathclyde—pointed out that “renewable generation in Scotland to a large extent depends on the GB market and consumers within England to earn its revenues. That requires transmission network capacity, not just within Scotland but also down through England”.⁴⁴

16. The Transmission Network Use of Service (TNUoS) charges methodology is designed to have locational differences in the tariff, this has been the case since privatisation in the 1990s.⁴⁵ Steven McMahon—Deputy Director, Electricity Distribution and Cross Sector Policy, Ofgem—summed up why locational transmission charges exist: “The further the electricity has to travel, the more expensive it will be”.⁴⁶ Claire Mack—Chief Executive, Scottish Renewables—told us that the system we have is not built for renewable energy:

It was devised about 30 years ago in a very different era, when we did not have the renewables-led system that we are aiming for now. The incentive within it to place generation closest to demand does not fit with what we need now, which is probably to harness the best of resources as quickly as possible in order to achieve our net zero ambitions.⁴⁷

17. We received evidence about the different locational charges across the UK and how there is a higher impact on Scottish developers.⁴⁸ In Scotland developers must pay to connect to the grid, whereas in Wales developers are paid to connect to the grid. Scottish Renewables stated that: “TNUoS charges for a wind farm in Scotland will increase £4.50–£5.50 per MWh while an equivalent wind farm in Wales will get paid £2.80 per MWh”.⁴⁹ This evidence pointed at transmission charges being a barrier to renewable energy development. When asked about this, Matthieu Hue—Chief Executive Officer EDF Renewables—stated: “overall, it can impact the competitiveness of projects”.⁵⁰ Bless Kuri—Head of System Planning, Scottish and Southern Electricity Networks—reported that he had been told transmission charges do affect Scottish renewable energy development: “Our stakeholders, our customers, tell us that this is an issue for them in terms of achieving commercial viability for their projects”.⁵¹ The SSEN transmission charging stakeholder feedback report shows that out of the stakeholders they contacted for their survey, 84% said that TNUoS presents a barrier to the delivery of future projects.⁵²

40 [Q63](#)

41 Scottish Government, [Energy Statistics for Scotland Q4 2020 Figures](#), 25 March 2021

42 Scottish Government, [Energy Statistics for Scotland Q4 2020 Figures](#), 25 March 2021

43 Scottish Government, [Energy Statistics for Scotland Q4 2020 Figures](#), 25 March 2021

44 [Q22](#)

45 [Q64](#)

46 [Q61](#)

47 [Q45](#)

48 RES Group ([RES0010](#)), ScottishPower ([RES0015](#)), Red Rock Power Ltd ([RES0024](#)), SSEN Transmission ([RES0030](#))

49 Scottish Renewables ([RES0002](#))

50 [Q44](#)

51 [Q66](#)

52 SSEN Transmission, [Transmission Charging Stakeholder feedback report](#), May 2021

18. It can be difficult to prove that transmission charges are a barrier to renewable energy development. Professor Karen Turner—Director, Centre for Energy Policy, University of Strathclyde—highlighted: “we don’t know the counterfactual, we don’t know how many projects could have been attracted”.⁵³ Steven McMahon from Ofgem was asked if transmission charges being a barrier to renewable energy development was difficult to quantify, he replied: “It is, just in terms of establishing that counterfactual, but whether it has been a barrier to our renewable targets, I don’t think it has”.⁵⁴ However, a number of our witnesses have made it clear that locational transmission charges are a barrier to renewable energy development.⁵⁵

19. Ofgem is considering transmission charges in an internal review, which has been ongoing since 2018.⁵⁶ When we asked Ofgem about conducting the review of transmission charges, Steven McMahon stated: “It is something we are pursuing. [...] we constantly need to check that our regulation is fit for purpose, and we are looking at whether these arrangements remain fit for purpose for a net zero world, but there is a lot happening”.⁵⁷ The UK Government told us it has discussed transmission charges with Ofgem and were confident Ofgem was looking at the issue. Anne-Marie Trevelyan MP—Minister, Department for Business, Energy & Industrial Strategy—said:

I am comfortable that Ofgem has definitely noted this as a potential issue now and also does recognise the critical importance of renewables in achieving net zero. It is at the moment considering whether the current transmission arrangements are right for the future and it is looking at the volatility of those transmission charges as it thinks about how this goes forward.⁵⁸

20. Locational transmission charges weigh more heavily on developers in Scotland when projects in other areas of the UK, like Wales, are paid to connect to the grid. The financial burden of transmission charges and grid investment needs to be justly shared across the UK and not fall heavily, and unjustly, on the developers of renewable energy projects in Scotland. The current review by Ofgem about locational transmission charges is not happening at a fast-enough pace.

21. We recommend that the UK Government specifies that, as part of its internal review, Ofgem must consider the financial burden of transmission charges in Scotland. Ofgem should consider the long-term impacts on net zero targets and aim for a way to ensure renewable energy projects have the chance to flourish over the next 30 years, rather than pushing for a short-term, lowest cost view. Ofgem should publish the result of their internal transmission charges review as soon as practicable, and certainly within six months.

53 [Q25](#)

54 [Q65](#)

55 [Q23](#), [Q44](#), [Q46](#), [Q120](#), RWE ([RES0012](#)), Independent Renewable Energy Generators Group ([RES0022](#)), SSEN Transmission ([RES0030](#)), RES Group ([RES0031](#))

56 Ofgem, [Network charging and access reform](#), accessed 27 July 2021

57 [Q64](#)

58 [Q198](#)

Ofgem and the net zero targets

22. Ofgem (the Office of Gas and Electricity Markets) is the independent regulator of the gas and electricity market. Its role is to protect consumers now and in the future by working to deliver a greener, fairer energy system.⁵⁹ Ofgem considers that this role implicitly includes net zero within its aims: “We already have a duty to protect future consumers, which we interpret as a full commitment to achieving net zero at lowest cost”.⁶⁰ Neil Kermod—Managing Director, European Marine Energy Centre (EMEC) Ltd—responded to this in a later evidence session:

Ofgem kept saying in evidence that it was all about doing things for the lowest possible cost. [...] The point is this: if we go for the lowest cost, we will fail to achieve the maximum market. We will end up with something cheap that barely works, as opposed to something that is excellent.⁶¹

23. Throughout written and oral evidence there was an acknowledgement that net zero was considered by Ofgem, but that it is not prioritised to a sufficient degree.⁶² Bless Kuri—Head of System Planning, Scottish and Southern Electricity Networks—summed up those concerns:

We still feel there is a case for the Ofgem remit to be widened to properly cover net zero. At the moment, we think there is probably more focus on the shorter term, and maybe on the costs borne by the specific consumers of electricity; whereas when you open the agenda to truly net zero it is not just electricity consumers, it is everyone affected.⁶³

The UK Government’s view is that net zero “is sufficiently defined in that primary objective to protect both current and future consumers as it stands”.⁶⁴

24. Ofgem is considering net zero targets in their planning. However, we are convinced by significant evidence to suggest that more emphasis should be put on net zero and this should be made explicit and formalised within Ofgem’s remit. We recommend that the UK Government amend Ofgem’s statutory duties to consider net zero targets in all its decision making, alongside the duty to protect the interests of existing and future consumers.

59 Ofgem, [Who we are](#), accessed 7 June 2021

60 [Q69](#)

61 [Q100](#)

62 Scottish Renewables ([RES0002](#)), EDF Renewables ([RES0009](#)), RES Group ([RES0010](#)), Highlands and Islands Enterprise ([RES0014](#)), SSEN Transmission ([RES0030](#)), RES Group ([RES0031](#)), European Marine Energy Centre (EMEC) Ltd ([RES0033](#)), Scottish Government ([RES0039](#)), [Q48](#), [Q99](#)

63 [Q71](#)

64 [Q209](#)

3 Supply chain and funding for renewable energy

Supply chain

25. A strong supply chain is vital to meet net zero targets on renewable energy generation. A pipeline of projects can produce a secure UK supply chain as companies can invest with confidence.⁶⁵ Neil Douglas—Director BVG Associates—told us “a pipeline of projects is the most important thing to drive the supply chain”.⁶⁶ Unite the Union highlighted that being able to produce parts for renewable energy within the UK, and Scotland in particular, will provide the additional benefit of reducing carbon emissions from importing goods.⁶⁷ Having a strong pipeline of projects means that private companies are more likely to invest in the UK supply chain. Professor Keith Bell—UK Energy Research Centre Co-Director, University of Strathclyde—gave the example of Ørsted winning a large amount of volume in Contracts for Difference (CfD) auctions when the auctions first took place. Ørsted knew it had a pipeline of renewable energy projects over a number of years. He concluded: “You can get a lot of efficiency because you know you have that volume of work”.⁶⁸

26. We also heard that a strong supply chain can provide a good return on investments for the UK including jobs and businesses. Christopher Milne—Chief Financial Officer, Orbital Marine Power—noted “the return on that investment, because of the heavily UK-based supply chain, will be in multiples”.⁶⁹

27. When we visited Orkney we heard that Orbital Marine Power had used an 80% UK based supply chain for the development of the O2 tidal turbine.⁷⁰ Christopher Milne detailed where in the UK the parts of the O2 turbine had come from, for example “a composite blade manufacturer down on the south coast, to fabrication work from Wales, to the north of England, to Scotland”.⁷¹ He was positive about the state of the supply chain in the UK, even though he stated that this may have “been underinvested in in recent years”.⁷² He continued:

The supply-chain evidence is there. We can do this. We can build this. The important thing is that we entrench these supply chains, that we send the signal that allows them to invest in these facilities. Some of these facilities have been underinvested in in recent years, and that can be reversed. It can be a resurgence for a lot of facilities that are already there, and a new business line that has significant export, as well as domestic, potential.⁷³

65 [Q5](#), [Q16](#), [Q30](#), [Q43](#) [Claire Mack], [Q50](#) [Matthieu Hue], [Q53](#) [Claire Mack], [Q85](#), [Q161](#), [Q175](#)

66 [Q30](#)

67 Unite the Union Scotland ([RES0005](#))

68 [Q16](#)

69 [Q87](#)

70 [Q85](#)

71 [Q85](#)

72 [Q85](#)

73 [Q85](#)

28. With a secure pipeline of renewable energy projects, a supply chain could become the bedrock of jobs in areas such as manufacturing and fabrication. Dave Moxham—Deputy General Secretary, Scottish Trades Union Congress (STUC)—stated that: “the task is for us to create a supply chain so that we can add to the security of employment” in the UK.⁷⁴ Jobs in the renewable energy sector in Scotland are discussed in more detail below.

29. In the Offshore Wind Sector Deal, agreed in 2019, the offshore wind industry committed to 60% lifetime UK content by 2030.⁷⁵ The term “lifetime UK content” refers to a commitment for 60% of the supply chain to be produced in the UK, which includes parts, labour, and maintenance across the life of a project, as well as decommissioning. Although this target was set by industry, the trade unions expressed scepticism to us about the likelihood of it being met. We were told by Dave Moxham that hitting the 60% UK content target “without getting the capital phase right is incredibly difficult, I would say arguably impossible, to do”.⁷⁶ This was backed up by Bob MacGregor—National Officer, Unite the Union—“There is no way, with the way things are going at the minute, that that target will be met. There is no chance”.⁷⁷ Anne-Marie Trevelyan MP—Minister, Department for Business, Energy & Industrial Strategy—stated that the UK Government are supporting the 60% UK content target: “I hope we are giving confidence to the market”.⁷⁸

30. The Scottish Government is supporting the Scottish supply chain through the ScotWind leasing round by providing a visible “pipeline of contracts for the domestic supply chain to prepare for”.⁷⁹ It goes on to describe what this includes:

Applicants to the Leasing Round are required to submit a Supply Chain Development Statement that sets out the anticipated level and location of supply chain impact throughout the lifetime of the project. Crucially, those who do not comply with the commitments laid out in their Supply Chain Development Statements (SCDS) can expect to face consequences, ranging from financial penalties to an inability to progress to a seabed lease.⁸⁰

31. Anne-Marie Trevelyan MP—Minister, Department for Business, Energy & Industrial Strategy—informed us: “We want to see more UK supply chain”.⁸¹ She went on to describe how UK Government commitments intend to provide investor confidence:

We have set this clear plan, No. 1 in the 10-point plan, for 40 gigawatts of offshore wind by 2030, at least a gigawatt of which we hope to be floating wind, which is a huge supply chain. In a literal sense, it is enormous. We have set out those strong decarbonisation commitments alongside to give that confidence to the industry to invest.⁸²

74 [Q144](#)

75 UK Government, [Offshore Wind Sector Deal](#), 4 March 2020

76 [Q157](#)

77 [Q173](#)

78 [Q214](#)

79 Scottish Government ([RES0039](#))

80 Scottish Government ([RES0039](#))

81 [Q186](#)

82 [Q214](#)

The Minister went on to describe recent supply chain commitments announced in England: “a £160 million offshore wind manufacturing investment scheme was opened right across the UK and two projects were announced last week, one in Humberside and one in Teesside”.⁸³ Whilst this is welcome news for the UK, she did not inform us of any specific UK Government supply chain investment in Scotland.

Contracts for difference and funding

32. Funding for renewable energy development, from research, design and deployment, through to energy production, comes from both the UK and the Scottish Government. The evidence we received on funding focused on Contracts for Difference. The Contracts for Difference (CfD) scheme is “the main way the UK Government supports the development of low-carbon electricity generation”;⁸⁴ it has been running since 2015. Winning a CfD contract means that: “Developers are paid a flat (indexed) rate for the electricity they produce over a 15-year period; the difference between the ‘strike price’ (a price for electricity reflecting the cost of investing in a particular low carbon technology) and the ‘reference price’ (a measure of the average market price for electricity in the GB market)”.⁸⁵ This funding is decided in allocation rounds, with the fourth allocation round expected in December 2021.⁸⁶ The website states:

CfDs incentivise investment in renewable energy by providing developers of projects with high upfront costs and long lifetimes with direct protection from volatile wholesale prices, and they protect consumers from paying increased support costs when electricity prices are high.⁸⁷

On 13 September 2021 the draft allocation framework for the fourth allocation round was published.⁸⁸

33. Over a third of projects supported by CfD are in Scotland.⁸⁹ CfD funding is welcomed by the developers we heard from.⁹⁰ Matthieu Hue—Chief Executive Officer, EDF Renewables—explained: “We have seen the benefits of the CfD bringing stability into investment, reducing costs, increasing the volume of deployment”.⁹¹ Neil Douglas—Director, BVG Associates—noted that CfD funding has: “been particularly successful in offshore wind in reducing cost”.⁹² Claire Mack—Chief Executive, Scottish Renewables—highlighted how useful it has been to members of Scottish Renewables: “The volumes that the CfD mechanism bring forward creates a stabilisation mechanism that de-risks private investment, so it is very good at helping my members secure low-cost funding”.⁹³

83 [Q214](#)

84 UK Government, [Contracts for Difference](#), 2 March 2020

85 UK Government, [Contracts for Difference](#), 2 March 2020

86 UK Government, [Contracts for Difference](#), 2 March 2020

87 UK Government, [Contracts for Difference](#), 2 March 2020

88 UK Government, [Contracts for Difference \(CfD\): Allocation Round 4](#), 13 September 2021

89 [Q186](#)

90 Scottish Renewables ([RES0002](#)), Hitachi ABB Power Grids ([RES0004](#)), Baker Hughes ([RES0006](#)), EDF Renewables ([RES0009](#)), RWE ([RES0012](#)), ScottishPower ([RES0015](#)), Simply Blue Energy ([RES0017](#))

91 [Q49](#)

92 [Q14](#)

93 [Q39](#)

34. CfD predates legal net zero targets. Professor Karen Turner—Director, Centre for Energy Policy, University of Strathclyde—noted that following the introduction of the net zero targets, lowest cost of energy production may no longer need to be the primary consideration⁹⁴ and that CfD funding could be amended to focus not on lowest cost, but best value: “It is about aligning the incentive for increasing renewable energy capacity in a way that is efficient for the energy system but that also bears in mind that cost minimisation should not be the ultimate goal if that means we sacrifice in other areas”.⁹⁵ Neil Kermod—Managing Director, European Marine Energy Centre (EMEC) Ltd—wanted CfD to change focus to make net zero happen, not just looking at the lowest cost: “If we make sure we align all our policy objectives around driving an industry to happen as opposed to driving the cost to the bare minimum as soon as possible, we will end up with a very different outcome”.⁹⁶

35. The UK Government outlined how the CfD process is always evolving. John Waldron—Policy Lead for Renewable Electricity Futures, Department for Business, Energy & Industrial Strategy—explained: “We have undertaken a call for evidence recently on the future of the CfD and how it can integrate renewables into the whole system”.⁹⁷ Anne-Marie Trevelyan MP—Minister, Department for Business, Energy & Industrial Strategy—added more detail:

There will be another review and, as John says, we have started that process again so that we can try to move with the times. As the technology moves, we move with it. It is not set in stone. We are not running the CfD as we did in allocation round 1. It looks quite different now. It is a continuous activity.⁹⁸

36. During the inquiry, we heard about recent changes to the CfD model around CfD funding and the supply chain. This followed on from what we were told about CfD funding to date being unsuccessful in driving local supply chains.⁹⁹ New supply chain plan guidance for CfD was announced by the UK Government on 7 July 2021, just before our final evidence session for this inquiry. This guidance describes a new section in the CfD form asking about the percentage of UK content for a project and it instructs assessors to award points on that basis.¹⁰⁰ It also gives the UK Government the ability to “terminate contractors if generators are not making a sufficient effort to deliver their commitments”.¹⁰¹

37. Contracts for Difference (CfD) has been useful in driving down the cost of offshore wind and provides certainty to developers of renewable technology, but more could be done to improve the CfD system. By focusing on net zero goals the CfD could be realigned to prioritise best value, not just lowest cost. We recommend the next CfD round should prioritise renewable energy systems, not just at the lowest cost, but with a long-term view that focuses heavily on net zero targets and best value for money, up to 2050.

94 [Q15](#)

95 [Q6](#) [Professor Karen Turner]

96 [Q100](#)

97 [Q201](#)

98 [Q202](#)

99 [Q14](#)

100 UK Government, [supply chain plan guidance](#), 7 July 2021, p23

101 [Q214](#)

Tidal energy funding

38. The UK has the right conditions for tidal energy. It is estimated the UK has around 50% of Europe’s tidal energy resource and that wave and tidal stream energy has the potential to meet up to 20% of the UK’s current electricity demand.¹⁰² Orkney has a significant tidal resource; they were described to us as “geographically perfectly placed”,¹⁰³ for utilising tides for energy generation. The European Marine Energy Centre (EMEC) is based in Orkney. We visited the EMEC Fall of Warness tidal testing site¹⁰⁴ and saw the Orbital Marine Power O2 machine¹⁰⁵ in action. Christopher Milne—Chief Financial Officer, Orbital Marine Power—commented on how Scotland has some of the UK’s best resources to meet net zero:

We are targeting net zero. Some of the best renewable resource sits in the north of Scotland, be that marine or offshore wind, so why do we make that more expensive to develop? Surely we need to develop the most energetic resource if we are to hit our targets.¹⁰⁶

39. During our evidence session in Kirkwall, funding for tidal energy projects and CfD were highlighted as barriers to the development of the full potential of tidal energy. The witnesses vehemently argued for more funding for tidal energy and to use this funding to drive the cost of tidal energy down to remain at the forefront of tidal energy technology. Neil Kermodé—Managing Director, European Marine Energy Centre (EMEC) Ltd—argued:

I keep asking myself: if you were trying to make this happen, would you make it as hard as you could or as easy as you could? I think there is a fundamental question we need to ask, which is not, “How can we drive down the cost to the barest minimum?” but, “How can we make this happen?” because if you drive cost to the barest minimum, the barest minimum will happen. We need to be quite generous.¹⁰⁷

40. Christopher Milne noted that CfD “is not helping our industry. In fact, because of its structure it offers no opportunity for the industry at all”.¹⁰⁸ He then went on to tell us about his request to UK Government for CfD auction round 4: “100MWh to be ringfenced at £250MWh, plus the vision for a gigawatt to be installed through the 2030s [...] we believe we could be competitive in the CfD at those prices, and that we could deliver blueprints that will help us deliver much lower costs in very quick timescales”.¹⁰⁹ We welcome the announcement on 13 September 2021 of the strike price for tidal stream being close to what was asked for by the sector at £211.¹¹⁰

102 Department for Business, Energy and Industrial Strategy, [Wave and tidal energy: part of the UK’s energy mix](#), 22 January 2013

103 [Q84](#)

104 For more information see the [visit note](#)

105 Orbital Marine Power, [Technology](#), accessed 28 July 2021

106 [Q97](#)

107 [Q89](#)

108 [Q87](#)

109 [Q87](#)

110 UK Government, [Contracts for Difference \(CfD\) Allocation Round 4: Administrative strike prices methodology](#), 13 September 2021, p4

Comparison of the UK to Denmark

41. We received a number of pieces of written evidence in which Denmark’s wind industry was compared with tidal energy in the UK.¹¹¹ Denmark pressed ahead with early investment in wind technology in the 1980s; the UK Government focused its investment in wind technology on the lowest cost. Nova innovation, a tidal energy company, explained that: “As a result, Denmark deployed 343 MW of wind capacity in the 1980s while the UK, which focused on grant funding rather than revenue support, deployed just 4.3 MW”.¹¹² EMEC explained that this initial government investment is why Denmark is now world leaders in wind power: “a behemoth of an industry emerged to dominate the market”¹¹³ and how the UK did not become a world leader: “The design of the support mechanisms for UK wind were fundamental in misdirecting the industry to lowest cost rather than maximal benefits”.¹¹⁴ In 2019 Denmark had €7 billion worth of exports in wind related technologies.¹¹⁵ Simply Blue Energy stated the Danish model is widely regarded as a success story and that UK marine energy should be viewed as something that can follow the Danish model.¹¹⁶ Nova innovation told us “Denmark’s success in wind energy followed directly from the right policies put in place in the early days of the sector—principally targeted revenue support”.¹¹⁷ Simply Blue Energy outlined that marine energy is different from wind energy: “marine energy is a UK-developed technology, and so should not be viewed through the same lens as offshore wind when devising new subsidy arrangements”.¹¹⁸

42. Neil Kermod summed up the need for early investment in tidal energy: “If we commit to this early enough, we can make this work. If we blow it, we have only ourselves to blame”.¹¹⁹ This was echoed by Dr Gareth Davies—Managing Director, Aquatera—who said: “the UK can make a huge contribution [...] but we have to make sure that we keep our position at the table”.¹²⁰

43. Investment in tidal energy production could mean an exportable product for the UK, both in parts and final product. Christopher Milne—Chief Financial Officer, Orbital Marine Power—explained: “It can be a resurgence for a lot of facilities that are already there, and a new business line that has significant export, as well as domestic, potential”.¹²¹ Dr Davies also added: “If we want to be part of that export community selling clean technology over the next three or four decades, we have to be leading that”.¹²²

44. Anne-Marie Trevelyan MP—Minister, Department for Business, Energy & Industrial Strategy—stated “The Government continue to be happy to consider well developed projects for harnessing tidal energy in the bays around our coastline”.¹²³ When the Minister was asked about being left behind the rest of the world regarding tidal energy,

111 Simply Blue Energy ([RES0017](#)), European Marine Energy Centre (EMEC) Ltd ([RES0007](#)), Nova Innovation Ltd ([RES0020](#))

112 Nova Innovation Ltd ([RES0020](#))

113 European Marine Energy Centre (EMEC) Ltd ([RES0033](#))

114 European Marine Energy Centre (EMEC) Ltd ([RES0033](#))

115 Wind Denmark, [Statistics](#), accessed 7 July 2021

116 Simply Blue Energy ([RES0017](#))

117 Nova Innovation Ltd ([RES0020](#))

118 Simply Blue Energy ([RES0017](#))

119 [Q86](#)

120 [Q136](#)

121 [Q85](#)

122 [Q123](#)

123 [Q192](#)

she emphatically told us that: “we will not be left behind”, and hoped to see CfD bids for tidal energy coming through later in the year.¹²⁴ When we questioned the Minister about tidal energy companies not being able to access CfD funding, she informed us of the Smart Export Guarantee,¹²⁵ although, we note that the guarantee does not include tidal technology.¹²⁶ It is unclear which options are available for developers of tidal technology who want to access funding but cannot apply for CfD.

45. The UK is at the forefront of tidal renewable energy technology, but the UK Government must invest more in this sector to ensure that the UK retains its world leading position. A laissez-faire approach risks the UK being left behind again, as happened when Denmark eclipsed the UK in its approach to the offshore wind market. The UK can become world leaders within the tidal energy sector if the right level of investment is introduced and sustained. We welcome the announcement of the tidal stream strike price, but there is concern that this is not the correct funding mechanism for emerging renewable technology. This investment could also bring huge export benefits to the UK. *We recommend that guaranteed financial support be provided by the UK Government for development of tidal energy through the CfD mechanism. This investment will be able to bring tidal energy generation to market to maximise the potential of renewable energy in the UK, give confidence to investors, and increase exports of tidal technology.*

124 [Q197](#)

125 [Q191](#)

126 The technology supported is Solar photovoltaic (solar PV), Wind, Micro combined heat and power (micro-CHP), Hydro, Anaerobic digestion (AD). Ofgem, [Smart Export Guarantee](#), Accessed 28 July 2021

4 A green recovery for Jobs

46. Claire Mack from Scottish Renewables told us that 22,660 jobs are currently supported by green energy in Scotland,¹²⁷ but there is potential for more. Neil Kermod—Managing Director, European Marine Energy Centre (EMEC) Ltd—explained that estimates show “about 4,000 jobs could be in the marine energy industry within this decade. We reckon that would rise to about 22,000 by 2040”.¹²⁸ In 2010 the Scottish Government provided an ambitious suggestion, when it said there was a potential for 130,000 jobs in the low carbon renewable energy sector.¹²⁹ Bob MacGregor—National Officer, Unite the Union—told us that in relation to the 2010 target the Scottish Government: “have created about 6% of that at best. The job creation that was predicted just has not come to fruition, and that is solely because the contracts have been shipped out around the world”.¹³⁰

47. Importing parts for the generation of renewable energy e.g., wind turbines, has been raised as an area of concern.¹³¹ Bob MacGregor—National Officer, Unite the Union—illustrated this point: “We are looking for investment in infrastructure, not importing it—make it here; build it here; use it here”.¹³² Neil Douglas—Director, BVG Associates—told us: “we don’t make wind turbines here. We make certain components. There are a couple of wind turbine blade factories in the UK. We have made some wind turbine towers, but we are not producing the whole turbines”.¹³³ European Marine Energy Centre (EMEC)’s written evidence noted: “The choice is stark: we either build the technology ourselves or we will import it from others at a later date with the associated outflow of capital and adverse impact on balance of payments”.¹³⁴

Training the workforce

48. Successful renewable energy projects require a skilled workforce at all levels. The training of this workforce is critical to ensure net zero targets are met. These people could be people moving from jobs in oil and gas, retraining or new to the workplace. Bob MacGregor put it simply: “We need people to be trained and ready to do it”.¹³⁵ Matthieu Hue—Chief Executive Officer, EDF Renewables—noted the industry is not at capacity: “The industry needs more skilled and trained people”.¹³⁶

49. Skills are transferable between offshore oil and gas and renewable energy.¹³⁷ Claire Mack—Chief Executive, Scottish Renewables—informed us of the work going on in the renewable industry to: “home in on what skills cross over between our current oil and gas workforce into that renewable energy space”.¹³⁸

127 [Q38](#)

128 [Q105](#)

129 Scottish Government, [Low Carbon Scotland: Meeting the Emissions Reduction Targets 2010–2022](#), March 2011, p14

130 [Q173](#)

131 Unite the union Scotland ([RES0005](#)), European Marine Energy Centre Ltd (EMEC) Ltd ([RES0007](#)), Simply Blue Energy ([RES0017](#)), Nova Innovation Ltd ([RES0020](#)),

132 [Q142](#)

133 [Q30](#)

134 European Marine Energy Centre (EMEC) Ltd ([RES0033](#))

135 [Q146](#)

136 [Q56](#)

137 [Q32](#)

138 [Q50](#)

50. Professor Karen Turner—Director, Centre for Energy Policy, University of Strathclyde—stressed the urgency of job creation and skills development in renewable energy: “we do need to act on this quickly”.¹³⁹ Bob MacGregor highlighted the importance of the speed of the project pipeline in relation to jobs and training: “If we do not get investment quickly to get these projects up and running, the training does not need to be there if the jobs are not going to be there at the end of it”.¹⁴⁰

Green energy jobs and the pipeline of projects

51. The pipeline of projects for the supply chain and the creation of jobs are inextricably linked. Claire Mack—Chief Executive, Scottish Renewables—illustrated this point: “the CfD mechanism is pivotal to driving projects. We don’t get jobs without projects, and that is important”.¹⁴¹ To demonstrate the clear link, Neil Douglas explained how wind energy sector jobs have benefited from a pipeline of projects: “The development of the wind industry, both onshore and offshore, has been successful in Scotland in creating jobs in project development, project design, engineering, management and environmental studies”.¹⁴² Steven Bruce—Project Officer (ReFLEX), Orkney Islands Council—provided an example of how the grid impacts the availability of jobs: “If that grid connection was made and we could develop all these technologies at a large scale within the islands, we would be able to create a large number of jobs”.¹⁴³ The interdependency of the pipeline of projects, the supply chain, funding and grid capacity all affect green energy jobs in Scotland.

UK and Scottish Government interventions post pandemic

52. As part of the covid-19 recovery both the UK and Scottish Governments have invested in a “green recovery” for jobs. The UK Government’s Ten Point Plan for a Green Industrial Revolution¹⁴⁴ states that the UK Government “will mobilise £12 billion of government investment, and potentially 3 times as much from the private sector, to create and support up to 250,000 green jobs”.¹⁴⁵ Green recovery for jobs was also mentioned in the December 2020 Energy White Paper.¹⁴⁶ The UK Government launched a Green Jobs Taskforce in December 2020, which published its report on 14 July 2021.¹⁴⁷ This group worked “in partnership with business, skills providers and unions, to help [...] develop plans for new long-term good quality, green jobs by 2030 and advise what support is needed for people in transitioning industries”.¹⁴⁸ The UK Government state it was investing in the “UKs most important asset—our workforce”.¹⁴⁹ Anne-Marie Trevelyan MP—Minister, Department for Business, Energy & Industrial Strategy—told us the Green Jobs Taskforce will:

set out a wide-ranging assessment of needs when jobs have to transition either for upskilling or, as we were talking about in the oil and gas sector, to

139 [Q35](#)

140 [Q161](#)

141 [Q43](#)

142 [Q30](#)

143 [Q113](#)

144 UK Government, [Ten point plan for a green industrial revolution](#), 18 November 2020

145 UK Government, [The Ten Point Plan for a Green Industrial Revolution](#), November 2020, page 3

146 UK Government, [The Energy White Paper Powering our Net Zero Future](#), December 2020

147 UK Government, [Green Jobs Taskforce](#), 14 July 2021

148 UK Government, [Ten point plan for a green industrial revolution](#), 18 November 2020, page 28

149 Department for Business, Energy & Industrial Strategy ([RES0026](#))

skills being used in a different sector, and also importantly how we harness the as yet untapped human capital of our young ones to make sure we think about how we drive all the skills development they will need to do green jobs.¹⁵⁰

53. The Scottish Government have invested in a Green Jobs Fund (GJF). It explained: “The GJF will support businesses to create green employment through investment in equipment and premises and research and development (R&D), with subsequent opportunities for individuals to retrain and upskill in new and high-growth areas”.¹⁵¹ As of 25 June 2021, no specific projects have been funded for 2021–22.¹⁵² As of the date of this Report’s publication there have not been any further announcements. The National Transition Training Fund was launched on 1 September 2020. The fund will “help up to 10,000 people aged 25 and over to develop the skills required to move into sectors with the greatest potential for future growth and job opportunities”.¹⁵³

54. **The Scottish Government suggested in analysis that 130,000 green jobs could have been created by 2020, we are disappointed that the evidence we received from Unite the Union stated that only 6% of this was reached. Funding for a green recovery from the UK and Scottish Governments is welcome and we look forward to seeing how this improves job prospects for the people of Scotland including upskilling workers. This is vital to meet renewable energy and net zero targets. The evidence presented to us has exposed the interconnectivity between pipelines of energy projections, the supply chain, funding, and grid capacity and if these factors align, then jobs will follow.**

55. *We recommend that the Scottish Government progress their Green Jobs Fund more rapidly and the UK Government should use part of the £12 billion outlined in the Ten Point Plan to invest in renewable energy in Scotland. This investment should focus on the pipeline of energy projects in Scotland including established and emerging renewable technology. This investment could provide economic multipliers in terms of jobs and improved prospects for renewable energy companies and the people of Scotland.*

150 [Q216](#)

151 Scottish Government ([RES0039](#))

152 Scottish Parliament, [Question ref S6W-00831](#), 1 July 2021

153 Scottish Government, [Investing in skills to support recovery](#), 8 October 2020

5 Final thoughts

56. Renewable energy is a vast topic and we have focused on the interconnected issues of the grid and transmission charges, supply chain, funding, and jobs. There is much more that we can and should be looking at when it comes to renewable energy in Scotland. Green hydrogen and Carbon Capture Utilisation and Storage (CCUS) have come up repeatedly throughout the evidence we have received.¹⁵⁴ We have heard how they have the potential to help with a just transition of jobs from oil and gas for the people of Scotland.

57. Due to the wide subject of renewable energy, we were not able to focus on all issues that have been raised. Green hydrogen and Carbon Capture Utilisation and Storage (CCUS) need dedicated time to see how the technologies can help grow jobs in renewable energy and achieve the best for the people of Scotland. We may return to these subjects later in the Parliament.

154 Scottish Renewables ([RES0002](#)), Hitachi ABB Power Grids ([RES0004](#)), Unite the union Scotland ([RES0005](#)), Baker Hughes ([RES0006](#)), European Marine Energy Centre Ltd (EMEC) Ltd ([RES0007](#)), Ryse Hydrogen and Wrightbus ([RES0008](#)), EDF Renewables ([RES0009](#)), RES Group ([RES0010](#)), RWE ([RES0012](#)), ScottishPower ([RES0015](#)), SGN ([RES0016](#)), Simply Blue Energy ([RES0017](#)), OGUK ([RES0018](#)), The Royal Society of Edinburgh ([RES0023](#)), Red Rock Power Ltd ([RES0024](#)), Orkney Islands Council ([RES0035](#)), [Q27](#) [Neil Douglas], [Q43](#) [Claire Mack], [Q50](#) [Claire Mack], [Q159](#) [Bob MacGregor], [Q161](#) [Dave Moxham]

Conclusions and recommendations

The grid and transmission charges

1. The potential scale of renewable energy in Scotland is huge. The abundance of natural resources can benefit individuals, organisations, and businesses across the UK. We welcome the targets set by the UK Government for net zero and look forward to seeing how the overarching net zero strategy will impact the renewable energy sector in Scotland and look forward to seeing how this will be reflected in the upcoming Spending Review. (Paragraph 7)
2. The grid is critical for renewable energy to reach consumers. Urgent investment is needed in the grid to ensure that net zero targets are met. The grid needs to be reinforced and expanded to ensure that renewable energy generated in Scotland can connect to the grid and benefit the rest of the UK. *We recommend that Ofgem completes a review of the grid in Scotland as a matter of urgency, and at the latest by the end of 2022 to implement changes in good time for the 2045 target. Ofgem should make bold decisions by prioritising reinforcement of the grid in areas where there is potential for a high renewable energy yield. Since net zero targets have already been set in law, Scotland should be enabled to play its part fully in the renewable energy mix of the UK.* (Paragraph 11)
3. The evidence we have heard has highlighted issues around the volatility of transmission charges. The short-term volatility of transmission charges is a barrier to the development of renewable energy as it affects confidence in investment and the future cost of a project. (Paragraph 14)
4. Locational transmission charges weigh more heavily on developers in Scotland when projects in other areas of the UK, like Wales, are paid to connect to the grid. The financial burden of transmission charges and grid investment needs to be justly shared across the UK and not fall heavily, and unjustly, on the developers of renewable energy projects in Scotland. The current review by Ofgem about locational transmission charges is not happening at a fast-enough pace. (Paragraph 20)
5. *We recommend that the UK Government specifies that, as part of its internal review, Ofgem must consider the financial burden of transmission charges in Scotland. Ofgem should consider the long-term impacts on net zero targets and aim for a way to ensure renewable energy projects have the chance to flourish over the next 30 years, rather than pushing for a short-term, lowest cost view. Ofgem should publish the result of their internal transmission charges review as soon as practicable, and certainly within six months.* (Paragraph 21)
6. Ofgem is considering net zero targets in their planning. However, we are convinced by significant evidence to suggest that more emphasis should be put on net zero and this should be made explicit and formalised within Ofgem's remit. *We recommend that the UK Government amend Ofgem's statutory duties to consider net zero targets in all its decision making, alongside the duty to protect the interests of existing and future consumers.* (Paragraph 24)

Supply chain and funding for renewable energy

7. Contracts for Difference (CfD) has been useful in driving down the cost of offshore wind and provides certainty to developers of renewable technology, but more could be done to improve the CfD system. By focusing on net zero goals the CfD could be realigned to prioritise best value, not just lowest cost. *We recommend the next CfD round should prioritise renewable energy systems, not just at the lowest cost, but with a long-term view that focuses heavily on net zero targets and best value for money, up to 2050.* (Paragraph 37)
8. The UK is at the forefront of tidal renewable energy technology, but the UK Government must invest more in this sector to ensure that the UK retains its world leading position. A laissez-faire approach risks the UK being left behind again, as happened when Denmark eclipsed the UK in its approach to the offshore wind market. The UK can become world leaders within the tidal energy sector if the right level of investment is introduced and sustained. We welcome the announcement of the tidal stream strike price, but there is concern that this is not the correct funding mechanism for emerging renewable technology. This investment could also bring huge export benefits to the UK. *We recommend that guaranteed financial support be provided by the UK Government for development of tidal energy through the CfD mechanism. This investment will be able to bring tidal energy generation to market to maximise the potential of renewable energy in the UK, give confidence to investors, and increase exports of tidal technology.* (Paragraph 45)

A green recovery for Jobs

9. The Scottish Government suggested in analysis that 130,000 green jobs could have been created by 2020, we are disappointed that the evidence we received from Unite the Union stated that only 6% of this was reached. Funding for a green recovery from the UK and Scottish Governments is welcome and we look forward to seeing how this improves job prospects for the people of Scotland including upskilling workers. This is vital to meet renewable energy and net zero targets. The evidence presented to us has exposed the interconnectivity between pipelines of energy projections, the supply chain, funding, and grid capacity and if these factors align, then jobs will follow. (Paragraph 54)
10. *We recommend that the Scottish Government progress their Green Jobs Fund more rapidly and the UK Government should use part of the £12 billion outlined in the Ten Point Plan to invest in renewable energy in Scotland. This investment should focus on the pipeline of energy projects in Scotland including established and emerging renewable technology. This investment could provide economic multipliers in terms of jobs and improved prospects for renewable energy companies and the people of Scotland.* (Paragraph 55)

Final thoughts

11. Due to the wide subject of renewable energy, we were not able to focus on all issues that have been raised. Green hydrogen and Carbon Capture Utilisation and Storage

(CCUS) need dedicated time to see how the technologies can help grow jobs in renewable energy and achieve the best for the people of Scotland. We may return to these subjects later in the Parliament. (Paragraph 57)

Formal minutes

Monday 13 September 2021

Members present

Pete Wishart, in the Chair

Andrew Bowie

Deidre Brock

Wendy Chamberlain

Alberto Costa

Jon Cruddas

Sally-Ann Hart

John Lamont

Douglas Ross

Draft Report (*Renewable energy in Scotland*), proposed by the Chair, brought up and read.

Ordered, That the draft Report be read a second time, paragraph by paragraph.

Paragraphs 1 to 57 read and agreed to.

Resolved, That the Report be the Fourth Report of the Committee to the House.

Ordered, That the Chair make the Report to the House.

Ordered, That embargoed copies of the Report be made available, in accordance with the provisions of Standing Order No. 134.

Adjournment

Adjourned till Monday 20 September 2021 at 2.30 p.m.

Witnesses

The following witnesses gave evidence. Transcripts can be viewed on the [inquiry publications page](#) of the Committee's website.

Thursday 27 May 2021

Professor Karen Turner, Director, Centre for Energy Policy, University of Strathclyde; **Professor Keith Bell**, UK Energy Research Centre Co-Director, University of Strathclyde; **Neil Douglas**, Director, BVG Associates [Q1–37](#)

Thursday 17 June 2021

Claire Mack, Chief Executive, Scottish Renewables; **Matthieu Hue**, Chief Executive Officer, EDF Renewables; **Lucy Whitford**, Managing Director for UK & Ireland, RES [Q38–56](#)

Steven McMahon, Deputy Director, Electricity Distribution and Cross Sector Policy, Ofgem; **Bless Kuri**, Head of System Planning, Scottish and Southern Electricity Networks [Q57–79](#)

Monday 28 June 2021

Neil Kermode, Managing Director, European Marine Energy Centre (EMEC) Ltd; **Christopher Milne**, Chief Financial Officer, Orbital Marine Power [Q80–109](#)

Dr Gareth Davies, Managing Director, Aquatera; **Steven Bruce**, Project Officer (ReFLEX), Orkney Islands Council [Q110–139](#)

Monday 05 July 2021

Dave Moxham, Deputy General Secretary, Scottish Trades Union Congress (STUC); **Bob MacGregor**, National Officer, Unite the Union [Q140–184](#)

Monday 12 July 2021

Rt Hon Anne-Marie Trevelyan MP, UK International Champion on Adaptation and Resilience for the COP26 Presidency and Minister for Energy, Clean Growth and Climate Change, Department for Business, Energy & Industrial Strategy; **John Waldron**, Policy Lead for Renewable Electricity Futures, Department for Business, Energy & Industrial Strategy [Q185–220](#)

Published written evidence

The following written evidence was received and can be viewed on the [inquiry publications page](#) of the Committee's website.

RES numbers are generated by the evidence processing system and so may not be complete.

- 1 Aquatera Ltd ([RES0036](#))
- 2 Baker Hughes ([RES0006](#))
- 3 British Hydropower Association ([RES0011](#))
- 4 Community Energy Scotland ([RES0037](#))
- 5 Department for Business, Energy & Industrial Strategy ([RES0026](#))
- 6 Drax Group ([RES0013](#))
- 7 EDF Renewables UK ([RES0009](#))
- 8 EDF Renewables UK ([RES0029](#))
- 9 European Marine Energy Centre (EMEC) Ltd ([RES0033](#))
- 10 European Marine Energy Centre (EMEC) Ltd ([RES0007](#))
- 11 Highlands and Islands Enterprise ([RES0014](#))
- 12 Hitachi ABB Power Grids ([RES0004](#))
- 13 Independent Renewable Energy Generators Group ([RES0022](#))
- 14 Ingram, Professor David, FIMarEST (University of Edinburgh) ([RES0038](#))
- 15 Leitch, Jim ([RES0032](#))
- 16 Mocean Energy ([RES0034](#))
- 17 Nova Innovation Ltd ([RES0020](#))
- 18 OGUK ([RES0018](#))
- 19 Ofgem ([RES0028](#))
- 20 Ofgem ([RES0003](#))
- 21 Orkney Islands Council ([RES0035](#))
- 22 RES Group ([RES0031](#))
- 23 RES Group ([RES0010](#))
- 24 RWE ([RES0012](#))
- 25 Red Rock Power Ltd ([RES0024](#))
- 26 Renewable Infrastructure Development Group ([RES0027](#))
- 27 Ryse Hydrogen and Wrightbus ([RES0008](#))
- 28 SGN ([RES0016](#))
- 29 SSEN Transmission ([RES0030](#))
- 30 Scottish Government ([RES0039](#))
- 31 Scottish Renewables ([RES0040](#))
- 32 Scottish Renewables ([RES0002](#))
- 33 ScottishPower ([RES0015](#))

- 34 Simply Blue Energy ([RES0017](#))
- 35 Solar Energy Scotland ([RES0019](#))
- 36 The Royal Society of Edinburgh ([RES0023](#))
- 37 UK Energy Research Centre ([RES0025](#))
- 38 UK Marine Energy Council ([RES0021](#))
- 39 Unite the Union Scotland ([RES0005](#))

List of Reports from the Committee during the current Parliament

All publications from the Committee are available on the publications page of the Committee's website.

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| Number | Title | Reference |
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| 1st | Universities and Scotland | HC 54 |
| 2nd | Welfare policy in Scotland | HC 55 |
| 3rd | The UK Shared Prosperity Fund and Scotland | HC 52 |

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| Number | Title | Reference |
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| 1st | Coronavirus and Scotland: Interim Report on Intergovernmental Working | HC 314 |
| 2nd | Coronavirus and Scotland | HC 895 |
| 1st Special Report | Problem drug use in Scotland: Government Response to the Committee's First Report of Session 2019 | HC 698 |
| 2nd Special Report | Coronavirus and Scotland: Government Response to the Committee's First and Second Reports | HC 1118 |