

Natural Resources Wales response to the Welsh Affairs Committee call for evidence on renewable energy in Wales.

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We welcome the opportunity to respond to this call for evidence.

Summary

As a Welsh Government sponsored body our purpose is to pursue sustainable management of natural resources in Wales. We have a role to protect and enhance the Welsh environment as we move to a low carbon future and, in our State of Natural Resources Report¹ (SoNaRR), have identified energy systems as needing transformative change.

In our response to this call for evidence we identify opportunities where UK and Welsh Government can better enable the transition to a low carbon, renewables-based energy system. We highlight that an increase in renewables deployment must be carried out in a way that is protective of Wales' biodiversity and enhances ecosystem resilience. We also set out where a green recovery from the impacts of the Covid-19 pandemic can help this transition.

Renewable energy installations are the central part of an increasingly complex, decentralised and flexible, low carbon energy system but in which such installations should not be considered in isolation. Our energy system should be underpinned by the energy hierarchy where the priority is to reduce unnecessary energy use and improve the efficiency with which it is used. Decarbonisation of energy will require electrification of heating and transport, needing considerable expansion of generating capacity.

To enable the required speed of transition, there is a role for Governments to provide stable and long-term support mechanisms that give certainty to investors whilst avoiding adverse environmental impacts. Small scale renewables are an important part of the low carbon energy system and have additional system and social benefits that should be fully recognised. Wales needs to develop the appropriate grid infrastructure to enable expansion of renewables at all scales. The Welsh public sector has the potential to play a significant role in the energy transition, but regulatory changes are necessary to enable this.

¹ <https://naturalresourceswales.gov.uk/evidence-and-data/research-and-reports/state-of-natural-resources-report-sonarr-for-wales-2020/?lang=en>

There is potential to develop Wales' marine renewable resource where taking strategic approaches to environmental research, development planning and assessment can aid the deployment process and help us to understand impacts on the environment.

Although a small country, Wales has leading laws on sustainability and resource management. We recognise the global importance of CoP 26 and believe Wales has important contributions to make to it as well as it being a chance to progress action within our communities.

The Covid pandemic gives a timely opportunity to reset our economy with a green recovery, including immediate actions such as rapid investment at scale in home insulation, low carbon heating and small-scale renewable systems. These are not only necessary for our low carbon future but can create skilled employment in installation and supply chains.

Ensuring Wales has a society with the necessary skills, behaviours and organisational capacity is fundamental to enabling a successful energy transition.

What we do

Natural Resources Wales (NRW) is the largest Welsh Government sponsored body - employing 1,900 staff across Wales with a budget of £180 million. NRW's primary purpose is to pursue sustainable management of natural resources in relation to Wales and respond to the climate emergency. To carry out this function we have a variety of roles, including as:

- Advisor: principal adviser to Welsh Government, industry and the public on environmental and natural resource management issues
- Regulator: protecting people and the environment including regulation of marine, forest, water and waste industries, and taking enforcement action against those who breach regulations
- Responder: to some 9,000 reported environmental incidents a year as a Category 1 emergency responder
- Statutory consultee: to approximately 9,000 planning applications a year
- Manager/Operator: We manage seven per cent of Wales' land area including woodlands, National Nature Reserves, water and flood defences. We also operate visitor centres, recreation facilities, hatcheries and a laboratory.
- Partner, Educator and Enabler: we collaborate with the public, private and voluntary sectors, we provide grant aid and help a wide range of people use the environment as a learning resource.
- Evidence gatherer: we monitor our environment, commission and undertake research, and are a public records body.

- Designator: for Sites of Special Scientific Interest – areas of value for their wildlife or geology, Areas of Outstanding Natural Beauty (AONBs), and National Parks, as well as declaring National Nature Reserves.

The legislative and policy framework

Informed by science, there is a strong policy framework to drive the transition to a low carbon future. The 2015 Paris Agreement sets out a global framework to avoid dangerous climate change by limiting global warming to well below 2°C and pursuing efforts to limit it to 1.5°C. The EU formally ratified the agreement on 5 October 2016, thus enabling its entry into force on 4 November 2016².

At a UK level the Climate Change Act 2008 committed to an 80% reduction in carbon emissions relative to 1990 levels, to be achieved by 2050. This was updated in June 2019 to extend emission reduction by 100%³. In Wales, the Environment (Wales) Act 2016 sets a target of reducing greenhouse gas emissions by at least 80% by 2050. The Act also requires a series of interim targets (for 2020, 2030 and 2040) and sets associated carbon budgets for key sectors.⁴ On 2nd May 2019 the Committee on Climate Change (CCC) published ‘Net Zero – The UK’s contribution to stopping global warming’.⁵ The Committee’s key recommendation is for the adoption of a target to reduce UK greenhouse gas emissions to net zero by 2050. For this target to be reached, their advice recommends a 95% reduction in greenhouse gases by 2050. Welsh Government declared a climate emergency on 29th April 2019⁶ and on 11 June 2019 Welsh Government committed a target for Wales to achieve net zero emissions by 2050⁷. The Climate Change Committee provided further advice for Wales in their 2020 report⁸. The Minister for Environment, Energy and Rural Affairs set out the Welsh Governments latest ambitions in her Energy Statement in December⁹

Crucially solutions to the climate emergency and meeting carbon targets must be considered in tandem with the biodiversity crisis we also face. The Well-being of Future Generations (Wales) Act 2015 and the Environment (Wales) Act 2016 require public sector actions to meet sustainable development principles, enable the sustainable management of Wales’ natural resources and promote ecosystem resilience. In oral evidence presented to the Committee on 28 January, Professor Jenkins concisely summarised that renewable energy is, by nature, a diffuse energy source, that it will have environmental impacts and involve lots of people. The environmental and social impacts of renewables deployment must be considered in

² https://ec.europa.eu/clima/policies/international/negotiations/paris_en

³ <https://www.legislation.gov.uk/ukdsi/2019/9780111187654>

⁴ <https://www.legislation.gov.uk/anaw/2016/3/part/2/crossheading/emissions-targets-and-carbon-budgets-main-duties-of-the-welsh-ministers/enacted>

⁵ <https://www.theccc.org.uk/publication/net-zero-the-uks-contribution-to-stopping-global-warming/>

⁶ <https://gov.wales/welsh-government-makes-climate-emergency-declaration>

⁷ <https://gov.wales/written-statement-response-committee-climate-changes-net-zero-report>

⁸ <https://www.theccc.org.uk/2020/12/17/net-zero-wales-by-2050-wales-faces-a-decisive-decade-to-get-on-track-to-an-emissions-free-future/>

⁹ <https://gov.wales/written-statement-energy-statement>

the energy transition, seeking design solutions that have positive outcomes for nature and communities.

In their plan, Prosperity for All: A Low Carbon Wales¹⁰, Welsh Government set a target for renewable technologies to generate 70% of electricity consumption in Wales by 2030. They recognise the benefits of community engagement with the energy system and are aiming to achieve 1GW of locally owned renewable energy capacity by 2030 with all new developments to have an element of local ownership. Importantly Welsh Government recognise that a whole energy system approach is necessary to achieve decarbonisation goals of which renewable energy technologies play the principal part.

The planning system can be used to help achieve these targets where the Welsh Government's Planning Policy Wales promotes an energy hierarchy. The Welsh Government expects all new development to mitigate the causes of climate change in accordance with this energy hierarchy.¹¹ Additionally, whilst not finalised, the emerging National Development Framework: Future Wales 2040 identifies areas that the Welsh Government has assessed as potentially better able, in terms of environmental sensitivities, to accommodate larger scale wind and solar energy generation schemes. Development in these areas should be assessed in the local context, responding to challenges and opportunities identified in our Area Statements.

The Call for Evidence

Our response to this Call for Evidence is framed in the context above where support to increase deployment of renewable installations must be focused not only on generation installations but also on the wider energy system¹² that is necessary to enable and optimise a rapid and significant expansion of renewable capacity in Wales. In our recently published State of Natural Resources Report¹³ (SoNaRR) we identify energy systems as one of the three key areas for transformative change necessary to redesign our society and economy to enable sustainable management of our natural resources. Overall the energy and materials footprint for the UK is the equivalent of 2.7 planet's worth of natural resources, for Wales it is 2.5 planet's worth. A future Welsh economy operating within the regenerative capacity of the biosphere globally as well as in the context of local ecosystems, would need to aim for "one planet" living.

Any actions must be therefore be consistent with the energy hierarchy where priority is given to measures that reduce energy waste and increase efficiency of use. Simply replacing current levels of energy use supplied by fossil fuels with energy from renewable sources is not an option in the transition to Net Zero. Ambitious programmes should urgently be put in place to improve the energy efficiency of

¹⁰ https://gov.wales/sites/default/files/publications/2019-06/low-carbon-delivery-plan_1.pdf

¹¹ <https://gov.wales/sites/default/files/publications/2019-02/planning-policy-wales-edition-10.pdf>

¹² <https://ukerc.ac.uk/publications/the-costs-and-impacts-of-intermittency-2016-update/>

¹³ <https://naturalresourceswales.gov.uk/evidence-and-data/research-and-reports/state-of-natural-resources-report-sonarr-for-wales-2020/?lang=en>

homes and businesses¹⁴. Even with such programmes the National Grid predict a doubling of electricity demand with the electrification of heating and transport to decarbonise these sectors¹⁵.

Expansion of intermittent and decentralised renewable capacity¹⁶ will require integration with a more flexible energy system and active balancing mechanisms¹⁷, utilising data to optimise greater complexity within the system¹⁸ ¹⁹and drawing more on energy storage²⁰ - all underpinned by a fit-for-purpose electricity grid with interconnection to other networks²¹. It also requires the necessary policy, regulatory and market environments that not only allows the system to operate effectively but will enable the energy system to develop at the pace needed to meet emissions targets.

The energy system has already undergone a substantial transformation with a rapid expansion of renewable energy developments during the past 10 years or so, driven by successful UK Government support schemes such as the Feed in Tariffs and Contracts for Difference. These have included installations ranging from large-scale, commercial offshore wind to small scale, distributed, domestic photovoltaics²². Our energy system is now less centralised, has increasing storage capacity, is becoming smarter and better connected with Ireland and mainland Europe.

How can the UK Government best support the deployment of renewable generators in Wales?

Investment certainty

UK Government must ensure that it has consistent, long term financial support mechanisms in place across all UK nations to provide stability and certainty for investors, reducing risk for distributed renewable installations at a range of scales. This will likely be a combination of market-led and government support²³ that must increasingly recognise the value of flexibility services and benefits that many components of a renewables dominated energy system can provide as the variable cost of renewable generation falls.

¹⁴ <https://www.theccc.org.uk/wp-content/uploads/2020/12/Executive-Summary-The-path-to-Net-Zero-and-reducing-emissions-in-Wales.pdf>

¹⁵ <https://www.nationalgrideso.com/future-energy/future-energy-scenarios/fes-2020-documents>

¹⁶ https://www.energy-uk.org.uk/publication.html?task=file_download&id=5722

¹⁷ <https://www.wartsila.com/docs/default-source/power-plants-documents/transition-lab/optimising-the-uks-shift-to-a-renewable-powered-economy.pdf>

¹⁸ <https://nic.org.uk/studies-reports/smart-power/>

¹⁹ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/633442/upgrading-our-energy-system-july-2017.pdf

²⁰ <https://www.carbontrust.com/resources/energy-storage-systems-in-the-uk-low-carbon-energy-future-strategic-assessment>

²¹ <https://eciu.net/blog/2021/there-is-more-than-low-wind-behind-our-electricity-system-woes>

²² <https://gov.wales/sites/default/files/publications/2021-01/energy-generation-in-wales-2019.pdf>

²³ <https://www.carbonbrief.org/what-does-subsidy-free-renewables-actually-mean>

Value of storage services

Although not explicitly a renewable energy technology, we propose UK Government investigate the value of storage services²⁴ that are provided by technologies such as pumped hydroelectric storage schemes²⁵ within the context of a flexible energy system. Including the wider benefits of pumped hydroelectric storage to the energy system within revenue streams²⁶ would likely assist viability and enable investigation into, and possibly deployment²⁷ of new capacity in Wales.

Supporting small-scale renewables

The Contracts for Difference (CfD) scheme has been successful in providing investment certainty for large-scale wind developments and enabled the sector to expand. We believe that there is also a role for small-scale renewable installations to contribute to Wales' decarbonisation with considerable generation potential for residential, farm²⁸ and business/light industrial sites. The Feed-in-Tariff scheme was successful in incentivising rapid deployment of small-scale renewables but led to a boom and bust situation where withdrawal of government support has led to a significant reduction in deployment at this scale²⁹. There are multiple benefits³⁰³¹³² of supporting deployment of small-scale renewables in addition to simply looking at the unit cost of energy generation. These include an increased rate of deployment and support for Welsh Governments target for community ownership³³. Although the FiT replacement scheme, the Smart Export Guarantee, is enabling some homeowners to install new solar photovoltaic systems³⁴³⁵, it is not enabling the potential contribution this sector can make to low carbon generation. We propose that UK Government work with the market to develop an effective, long term incentive to re-establish deployment of renewable technologies at this scale.

How should the UK and Welsh Governments work together to support the development of renewable energy projects in Wales?

Marine renewables deployment

²⁴ <https://www.jacobs.com/sites/default/files/2020-10/Jacobs-Strategy-for-Long-Term-Energy-Storage-in-UK-August-2020.pdf>

²⁵ <https://www.dnvgl.com/Publications/the-benefits-of-pumped-storage-hydro-to-the-uk-77723>

²⁶ https://www.researchgate.net/publication/301635158_A_review_of_pumped_hydro_energy_storage_development_in_significant_international_electricity_markets

²⁷ <https://strathprints.strath.ac.uk/66242/>

²⁸ <https://www.forumforthefuture.org/Handlers/Download.ashx?IDMF=3218cdb3-09a4-4092-b8e5-f5e5140a6635>

²⁹ <https://energysavingtrust.org.uk/present-and-future-uk-solar-power/>

³⁰ <https://science.sciencemag.org/content/368/6486/36>

³¹ <https://energypost.eu/nine-advantages-small-scale-solutions-have-for-reducing-global-emissions/>

³² <http://www.regenwales.org/upload/pdf/071015091201Impact%20of%20Small%20and%20Community%20Hydro%20in%20Wales.pdf>

³³ <http://wpieconomics.com/site/wp-content/uploads/2020/01/Future-of-Community-Energy-20200129-Web-Spreads.pdf>

³⁴ <https://energysavingtrust.org.uk/solar-installation-payback-possible-smart-export-guarantee/>

³⁵ <https://www.gov.uk/government/statistics/solar-photovoltaics-deployment>

We have made comments below on marine renewables which are relevant to the first and second questions in this call for evidence. For clarity we have combined them under the second question as responsibility for marine renewables (wave, tidal, and wind) within Wales lies with both UK and, or Welsh Government depending on the scale of development.

Some developments, especially offshore wind, are likely to span geographical and jurisdictional boundaries and it will be important that there is clear integration of priorities between UK and Welsh administrations and effective ways of working that seek to minimise complexity of consenting processes in transboundary locations.

Although the Future Wales³⁶ planning framework sets out a strategic approach for expansion of onshore wind and solar, there is a need for a more strategic approach to be applied to planning deployment of renewables in the marine environment. This needs to be supported by more research into the effects of deployment on marine ecology and other marine users. Where a strategic approach has been taken, for example the ongoing Offshore Wind [‘Round 4’ Leasing process](#) exercise undertaken by The Crown Estate, development has been steered to areas of lower environmental sensitivity.

A strategic approach is especially important for offshore windfarms and tidal range deployments given their size and the possibility that effects of individual projects can combine. Strategic planning helps to optimise the selection of development location and to identify key issues which reduce future environmental and consenting risks at the project level.

Floating offshore wind is emerging as a technology and would similarly benefit from a planned approach should the technology continue to develop. Future offshore wind development is well supported as a technology by a comprehensive programme of environmental evidence gathering initiated by The Crown Estate ([Offshore Wind Evidence and Change Programme](#)).

While identification of suitable areas for wave and tidal stream development has led to establishment of Demonstration Zones off the Pembrokeshire and Anglesey coast, there remains an urgent need for extensive research into the environmental impacts of tidal stream technologies. There is also considerable interest in tidal range development at different locations around the Welsh coast. The size of such developments inevitably risks significant environmental impacts. It is possible that tidal range developments in certain locations might have environmental impacts of a scale that affect the ability to develop other renewable energy installations in and around Welsh waters.

Tidal range development would therefore benefit from a strategically planned approach like that developed for offshore wind. Steering development towards locations that are less sensitive and the establishment of robust evidence to support

³⁶ <https://gov.wales/working-draft-future-wales>

the assessment of environmental impacts is critical in reducing consenting risk for this technology. Notably, the [Welsh National Marine Plan](#) recognises this and the need to take a strategic and evidence based approach to this sector.

There are also gaps in planning policy. Should a programme of tidal lagoons be pursued, the need for a UK level National Policy Statement to support decision-making will be particularly important.

It is worth noting that gaps in evidence about the effects of wave, tidal stream and tidal range technologies have been identified, and a number of vehicles for co-ordinating research are in place (such as the [Offshore Renewables Joint Industry Research Programme for Ocean Energy](#)). Welsh Government has formed the Welsh Consenting Strategic Advisory Group working collaboratively across Government, Natural Resources Wales, Industry and Non-Governmental Organisations to address consenting issues, including identifying evidence needs. However, these initiatives do not have the funding to carry out the important research that is needed to fill these evidence gaps. This is set in the context of existing resource shortages for general marine monitoring and research.

Finally, NRW has established an Offshore Renewable Energy Programme to increase coordination and integration of its functions and enhance the service we provide as the offshore renewable sectors continue to expand. The increased expertise and capacity within the Programme are currently time limited and again there is a need for longer term funding to address the evidence needs that are critical to regulatory decision making.

Support services

We believe that Welsh Government can play a valuable role in the provision of business support services to attract inward investment in renewable energy supply chains in Wales. It is important though that there is co-ordination of such support with UK Government and other devolved nations to provide consistency and certainty for investors.

Welsh Government energy responsibilities and public sector potential

Welsh Government's responsibilities for energy currently extend to licensing and granting consent for oil and gas projects, all onshore wind projects, energy projects under 350MW that are developed in Wales, and the promotion of energy efficiency.

There is considerable potential for deployment of renewables by the Welsh public sector in addition to use of the wider land area of the Welsh Government Woodland Estate which we manage. Whilst we have made good progress in development of wind generation capacity on the estate^{37 38} more could be achieved. We recommend that the UK Government and the Welsh Government work together to review and

³⁷ <https://naturalresourceswales.gov.uk/about-us/what-we-do/energy/wind-energy/?lang=en>

³⁸ <https://group.vattenfall.com/uk/what-we-do/our-projects/pen-y-cymoedd>

potentially reform the regulatory framework that governs the ability of Welsh Government to:

- enable public sector investment in renewable energy development on the Welsh public-sector estate,
- enable the ability of the public sector to generate and trade electricity and develop grid infrastructure with benefit to the public sector, local communities and the Welsh economy.

Addressing grid capacity constraints

Grid capacity in Wales is constraining deployment of renewable installations³⁹. A lack of grid capacity is widely recognised as the single biggest constraint to further development of onshore wind and solar in mid-Wales and is a significant constraint to locations in both North and South Wales.

The current market approach to development of the grid does not take a planned, strategic approach to future-proof design for a low-carbon energy system nor do the mechanisms of financing allow for longer term integration of additional capacity needed to accommodate increased demands of electrification of heating and transport.

Linked with regulatory reform described above, UK Government should work with Welsh Government and stakeholders to swiftly design a new financing mechanism for power distribution with associated development and operating regime, to enable expansion of onshore renewables, improve distribution and enable electrification of the economy⁴⁰. It is clear though that a smart energy system must be developed in parallel with this to optimise energy generation, distribution and use within the network and save on infrastructure costs where possible⁴¹.

Within the context of grid infrastructure, we also wish to highlight the role of local energy planning and the need for UK Government to recognise and respect the importance of local energy solutions in a successful low carbon transition. Strategic and market level outcomes may not always be the most appropriate solutions. The Welsh Government Energy Service⁴² has worked with the four Growth Deal areas of Wales to carry out regional energy planning so that low carbon solutions are an integral part of their growth plans.

What mechanisms can ensure that subsidies for renewable generators are good value for money?

Definition of value for money

³⁹ <https://www.westernpower.co.uk/distribution-future-energy-scenarios-regional-information>

⁴⁰ <https://www.ofgem.gov.uk/news-blog/our-blog/networks-fit-net-zero>

⁴¹ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/505218/IC_Energy_Report_web.pdf

⁴² <https://www.carbontrust.com/our-projects/welsh-government-energy-service>

Our start point in response to this question is to query the definition of ‘value for money’.

Using the simple metric of electricity generated versus pound of support as a test of value for money favours technologies that can be deployed at scale with ever improving economies of scale, such as offshore and onshore wind, and large scale solar. These technologies will play the central role in a low carbon energy system and such a recognition of value is appropriate in this context.

There should be clarity and consistency on the definition of value for money when comparing investments in less replicable low carbon technologies such as nuclear or emerging marine renewables.

As previously described, small-scale, distributed installations have an equally important role in decarbonisation of electricity but are unlikely to be competitive in meeting the value for money metric above. Small-scale systems have many other benefits such as rapid deployment, more equitable distribution and higher social returns that are more difficult to monetise within a value criterion.

With some technologies moving forward at scale with reducing support or on a subsidy free, merchant basis, there is a need to separate purposes of support schemes and recognise different definitions of value for money. These may be between highly competitive technologies at scale and emerging technologies or support mechanisms where installations have much wider social or system benefits.

Locking-in environmental impact

With increasing connection of intermittent/non-dispatchable renewables to the energy network, provision of grid balancing services is currently largely reliant on fossil fuel technologies. Although they may only operate for short periods, they are carbon emitters, as well as emitters of other pollutants of concern under national air quality emission ceilings (NO_x, particulates etc.).

This has already been manifest (with an initial Governmental policy and legislative response), during previous capacity market auctions that led to a large rise in diesel engine farms. The introduction of the specified generator provisions in the Environmental Permitting (England and Wales) Regulations 2016, have sought to curtail and control the emissions from such activities, but phasing this in is complicated where existing capacity contracts may be in place⁴³.

Some work has been undertaken to look at the future for flexible plant⁴⁴. In addition, it appears that in the 6th Carbon Budget work undertaken by the Climate Change Commission, modelling has also been undertaken for the various future scenarios considered, including some information on types of generation, but this is only available on the UK wide basis. It is therefore not easy to understand the potential

⁴³ <https://consult.defra.gov.uk/airquality/medium-combustion-plant-and-controls-on-generators/>

⁴⁴ <https://www.energy-uk.org.uk/publication.html?task=file.download&id=7617>

implication of further flexible generation, and its likely wider environmental impacts (not just carbon contribution) specifically for Wales.

It is therefore essential that any support mechanisms are designed to maximise deployment of clean technologies and avoid long term lock-in of technologies that have a cost to society through their emissions or environmental impact.

What opportunities are there for renewable generators in Wales of greater interconnection with other electricity markets?

UK Government is undertaking the Offshore Transmission Network Review to improve grid connection options and support additional offshore wind capacity. An offshore grid network integrated with the onshore grid may allow greater opportunities for development of offshore wind and possible benefit to onshore wind in some cases. This in turn could assist interconnection with Ireland and/or other parts of the UK west coast and mainland grid to help optimise utilisation of variable resource availability.

How can the UK Government facilitate Welsh contributions to COP26?

The CoP Team within Cabinet Office will be issuing a call for Expressions of Interest (Eols) in relation to CoP events and activities in early 2021. It will be important that this call is publicised within Wales and to Welsh organisations. There is also the potential for the CoP team to proactively seek input from Wales and the other nations of the UK. It will be particularly important for the UK Government to ensure that in evaluating the Eols, consideration of the needs for a representative selection of contributions from organisations and society within each of the UK nations is addressed. Hence, it will be important that the criteria for events to have an international dimension does not undermine selection of such contributions. Welsh contributions could be further facilitated by collaboration with Welsh Government and key Welsh organisations, such as Natural Resources Wales, in addition to the call.

What implications is COP26 expected to have for Wales?

While the implications of the negotiations and outcome of the CoP itself are difficult to predict at this time, and unlikely to have a significant immediate impact upon Wales, or elsewhere in the UK for that matter, the CoP clearly presents an opportunity to raise the awareness of climate change and the need for concerted action within Wales and Welsh society. NRW has identified the CoP in our 2021/22 Business Plan as a vehicle to gain real momentum for change through both promoting the need for decarbonisation and managing climate impacts and risks across all sectors in Wales. In the same way that the 2012 Olympics was expected to deliver greater mass participation in sport, it should be an objective for CoP26 to

raise awareness of climate change and for it to be judged in terms of the extent to which greater action is delivered over the next few years.

In common with our sister environmental agencies across the UK, with whom we are collaborating on a proposed contribution at CoP, NRW particularly wish to highlight the critical role of nature-based solutions (NbS) in delivering net zero goals. Our aim would be for the CoP to improve understanding of the potential for NbS to reduce net emissions, manage climate risk and delivery other benefits for biodiversity, rural economies and wellbeing etc. It is worth noting that in relation to the delivery of NbS, the forthcoming Convention on Biological Diversity CoP15 in Kunming is also critically important as it will determine the post-2020 international aims for biodiversity conservation that will drive future UK and Welsh policy on this issue. Clearly, there are strong synergies between delivering biodiversity and climate change goals, with draft post 2020 objectives including the need for greater application of NbS approaches and recognition of the role of habitats in carbon storage and sequestration. Consequently, the outcomes of CoP15 should be an important input and stimulus to CoP26.

Has the COP26 Year of Climate Action had any significant implications for Wales?

While as set out above, NRW seeks to exploit the run up to CoP15 and CoP26 to stimulate climate action, we have been doing this through working with our Welsh stakeholders, and in collaboration with Welsh Government. For example, we have recently contributed to the first Wales Climate Week: a week-long online event focussing on the need for action across a wide range of themes. We have not been engaged in the CoP26 Year of Climate Action (Together for Our Planet) campaign that has been run through the UK Government CoP team so are not aware of any implications for Wales.

What opportunities are there for renewable energy to aid Wales post-COVID-19 economic recovery?

We restate a key point that renewable energy deployment should be considered as the key part of a wider low carbon energy system. We believe that a post-covid recovery should focus on energy system priorities that can be delivered rapidly with benefit to the Welsh economy. We think this should include a programme to deploy energy efficiency measures to the nation's homes, decarbonise heating and install small scale, renewable energy generation and storage systems in residential and business properties.

In its 2019 report the Institute for Welsh Affairs⁴⁵ proposes a short term, low carbon economic stimulus as being a necessary catalyst to speed up the energy transition

⁴⁵ https://www.iwa.wales/wp-content/media/2019/03/IWA_Energy_WP6_Digital-2.pdf

where housing renewal is a priority action. The urgent need to improve the energy efficiency of our homes and businesses is widely recognised^{46,47} and has also been proposed by the Welsh Government Green Recovery Task and Finish Group⁴⁸ led by our Chair, Sir David Henshaw.

Installing insulation, electric heat pumps⁴⁹, solar PV and battery storage systems are actions that can be swiftly delivered using existing technologies and supply chains. Deployment can be scaled up quickly to provide a high number of quality jobs that have short term economic benefit and are vital in delivering long term carbon savings. These measures also enhance community ownership and engagement in the energy system at a local level and can contribute to flexible, optimised operation of the grid through smart services. The UK Governments current Green Homes Grant scheme has shown that there is public ambition to participate in a low carbon, housing renewal programme but organisational capacity and a reliable, regulated mechanism must be in place to ensure that it can be effectively delivered⁵⁰. The Feed-in-Tariff model was successful and showed what could be achieved although that financial mechanism may no longer be the most appropriate.

Where there is support for emerging technologies, either renewable technologies or components of the wider energy system, we propose use of demonstration projects be considered, not only to initiate development of engineering capability, supply chains and finance, but also to understand the impacts on the environment.

Finally, as we have briefly mentioned above, we believe that investment is needed in education, skills and organisational capacity within Wales that will be necessary to support a rapid post-covid recovery and transition to a low carbon energy system.

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⁴⁶ <https://gov.wales/sites/default/files/publications/2019-06/energy-efficiency-strategy.pdf>

⁴⁷ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/936567/10_POINT_PLAN_BOOKLET.pdf

⁴⁸ <https://naturalresources.wales/about-us/news-and-events/news/taskforce-launches-action-plan-towards-a-green-and-just-covid-19-recovery-for-wales/?lang=en>

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https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/943712/heat-pump-manufacturing-supply-chain-research-project-report.pdf

⁵⁰ <https://www.theguardian.com/environment/2021/jan/26/government-plans-to-turn-england-homes-green-in-chaos-with-debt-and-job-losses>