



Re-energising Wales

How to protect, promote and achieve scale in community and local ownership of renewable energy in Wales



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About the author

Regen is a not-for-profit, mission-led organisation. Their mission is to transform the way we generate, supply and use energy to enable the transition to a more decentralised, decarbonised and democratic energy system. Regen has over 16 years' experience in pioneering new energy models at the cutting edge of the energy transformation, transforming policy and regulation, and championing a diverse, engaged and democratic energy sector.

Jodie Giles is a senior project manager at Regen and leads their community energy work. Since 2013 she has facilitated Regen's communities network, overseeing its growth into a UK-wide network of over 250 community organisations. Jodie has engaged and managed strong relationships with key stakeholders in the energy industry such as the Department for Business, Energy and Industrial Strategy, Ofgem, developers and Network Operators, on behalf of communities. She has over 16 years' experience overall in working with community organisations and is an expert on local energy supply and flexibility services.

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Acknowledgements

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Regen would also like to thank the IWA and particularly Shea Buckland-Jones and Rhea Stevens for their enthusiastic, robust and engaging support throughout.

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About Re-energising Wales

The Institute of Welsh Affairs' *Re-energising Wales* project is a three year project (April 2016 - April 2019) that will deliver a plan to enable Wales to meet its projected energy demands entirely from renewable sources by 2035

This report outlines recommendations for how to protect, promote and achieve scale in community and local ownership of renewable energy in Wales. It is the fourth strand of a series of reports published as part of 'Re-energising Wales'.

1 Energy Demand

We **established a framework** to collect and report on operational energy demand data, in order to help collate temporal and geographical data and better understand what drives energy demand.

2 Developing a future energy systems vision

We used the Swansea Bay City Region (SBCR) as a case study exemplar, **showcasing how the SBCR** can maximise the size and location of its renewable energy resources in order to meet its projected energy demands by 2035. Lessons from this can be applied across Wales.

3 Setting the economic parameters

Building on the above SBCR report, we outlined the **economic opportunity** that arises with a truly transformative approach to energy generation and domestic refurbishment in the SBCR. We also assessed **the economic costs and benefits** of renewable energy transition in Wales.

4 Social and Community Issues

This work programme is split into two reports. The first part involved interviews with local and community organisations across Wales to capture their experiences around developing renewable energy projects in Wales. **This current report, the second part of this work programme, outlines recommendations for how to protect, promote and achieve scale in community and local ownership of renewable energy in Wales.**

5 Regulatory and political challenges

We assessed **what powers are required** for a new renewable energy regime to be implemented well in Wales.

6 A delivery plan

We will create a detailed, timed, and costed action plan for developing a credible renewable energy programme for Wales which brings together findings from the project by March 2019.

There have also been two policy papers: *Funding Renewable Energy Projects in Wales* and *Decarbonising Transport in Wales*.

Foreword

We are at a crucial point in time in trying to ensure that our energy system is fit for purpose for future generations. Action within the energy sector has considerable potential to contribute to overcoming pressing concerns relating to health, the economy, climate change and equality. We believe that ensuring that the economic, social and environmental value derived from renewable energy schemes is retained locally should be central to the development of the renewable energy sector in Wales. Therefore, as part of the research for this report, we wanted to further understand the Welsh levers that could be used to drive more community and local ownership of renewable energy generation in Wales.

To produce this report and its recommendations, we have used the IWA's convening power to bring together diverse opinions and expertise to develop an informed perspective on how the energy sector in Wales can be improved for future generations. The Welsh Government and UK Government are currently developing a number of energy policy updates, and we hope this report will contribute to their consideration of these issues and to their plans for renewed action. We also hope this report will contribute to the plans of a number of other key actors, including local authorities and Ofgem in particular.

This report sets out a number of clear recommendations that, if implemented, will significantly and positively impact Wales' energy sector. We would like to thank Regen for their work conducting this research and preparing a thorough, compelling, evidence-based vision for energy in Wales. We would also like to extend our thanks to all those individuals and organisations who have participated in interviews that have helped develop this contribution to the debate.

Shea Buckland-Jones

Re-energising Wales Project Coordinator

Foreword

Community Energy Wales (CEW) was set up to ensure communities were at the heart of the transition to a zero-carbon future, creating sustainable, vibrant and enterprising communities that have a greater stake in their own future and are able to ensure that as many of the benefits of this transition are retained locally.

CEW were pleased to support this report and the Re-energising Wales project as a whole because these values were shared in the ambition for this project. This report, in particular, highlights the opportunity we have in Wales to enable this to happen using the powers that currently exist. This way of working is supported in Wales through the Well-being of Future Generations (Wales) Act 2015. The Act recognises the value of collaboration with communities to deliver these solutions whilst recognising the wider value that can be delivered through the Well-being of Future Generations Goals. We look forward to working with partners in Wales to develop these recommendations and demonstrate how Wales can do things differently.

Robert Proctor

Business Development Manager, Community Energy Wales



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1 Executive Summary

Wales has set ambitious targets for renewable electricity generation, community and local ownership. The Welsh Government has shown political will and put these targets and policies in place because they recognise the value a thriving renewables sector can bring to communities, businesses and the public sector in Wales.

Harnessing and retaining that value locally is the focus of this report, which explores some of the more specific levers and uniquely Welsh factors that could be used to drive more community and local ownership of onshore renewable electricity generation in Wales. The report sets out recommendations under four themes:

Shared ownership

To build on Welsh Government targets and actions we make the following recommendations:

Recommendation 1:

Welsh Government should require all new renewable energy projects in Wales above 5 MW to have between 5% and 33% community and local ownership by 2020¹, in addition to the existing Welsh Government target² for all new renewable energy projects to have at least an element of local ownership by 2020.

Recommendation 2:

Welsh Government policy should require local authorities to offer 50% business rate relief on the community percentage of shared ownership projects, and a sliding scale of business rate relief for the developer proportionate to the community share (for example, if the community share is 15% the developer would get 15% business rate relief). Despite non-domestic (business) rates normally being assessed every five years (with the next revaluation due in 2022), we believe this rate relief recommendation outlined above should be in place before 2020 and guaranteed for at least 10 years to provide certainty in financial modelling.

Recommendation 3:

Welsh Government should undertake a business rates review during 2019 to reflect the loss of value on subsidy-free renewables projects.

Recommendation 4:

Welsh Government should increase financial support to the Welsh Government Energy Service (WGES) to provide enhanced support to community organisations developing shared ownership projects. This should include covering the communities' legal costs, accessible bridging finance, commercial negotiation support, and low interest rates on loans from the Development Bank of Wales.

1 In this report we define community and local energy as including local authorities, residential and social landlords and community organisations that have a tangible and lasting benefit to the community.

2 Welsh Government, [Lesley Griffiths high on ambition for clean energy](#), September 2017

‘Energy for Wales’

Recommendation 5:

The Welsh Government should look at the viability, cost and timescales involved, along with the local benefit that could be realised, if they were to set up a local energy company for Wales, ‘Energy for Wales’, that builds on the WGES, but does not necessarily supply energy. This should be investigated during 2019, to capitalise on opportunities arising from market developments such as flexibility. Roles this company could play include acting as:

- a development company for Welsh Government, community and local authority energy projects at scale, building on the activities currently undertaken by WGES and Community Energy Wales (CEW)
- a supplier, offering community Power Purchase Agreements (PPAs) and a ‘Welsh generation tariff’ to businesses and households. YnNi Teg could be used as a pilot project for a community PPA with a counterparty such as Dŵr Cymru who have ambitious renewable energy targets, or with Transport for Wales/Keolis Amey Wales Cymru in helping to deliver the renewable energy targets under the new Wales and Borders rail contract
- an aggregator of flexibility services to sell to National Grid and Distribution Network Operators (DNOs).

Planning and land access

Planning Policy Wales edition 10⁴ gives material weight to social, environmental and economic benefits associated with renewable energy developments in Wales, and supports shared ownership. We believe:

Recommendation 6:

Planning authorities should look favourably and give material weight to the social and environmental impacts of renewable energy generation which maximizes benefits to the economy and communities, in accordance with Planning Policy Wales Edition 10⁵.

Recommendation 7:

Welsh Government should create more Strategic Search Areas where there is capacity on the electricity network to connect and export power.

Recommendation 8:

Welsh Government should ensure community owned projects are favourably considered, even if outside Strategic Search Areas.

Recommendation 9:

Welsh Government should ensure the WGES is resourced to support local authorities to make planning decisions that enable more community and local energy in Wales.

Recommendation 10:

Welsh Government should require each local authority to develop a future energy strategy that identifies sites and supports renewable energy and low carbon development by 2020. This should align with and complement existing requirements for local authorities to set local targets for renewable energy in their local development plans.

3 YnNiTeg: [Fair energy for Wales](#), accessed January 2019

4 Welsh Government, *Planning Policy Wales edition 10* p94-96, December 2018

5 Welsh Government, *Planning Policy Wales edition 10*, p94-96, December 2018

Recommendation 11:

Natural Resources Wales (NRW) should allocate at least 5 sites for at least 15 MW per year from 2019 onwards, for 100% community and local authority owned renewable energy developments at nominal/peppercorn rent. NRW should also allocate at least 3 sites for at least 60 MW per year from 2019 onwards for shared ownership schemes at nominal/peppercorn rent.

Recommendation 12:

Welsh Government should set a policy for community organisations to have the right to have first option or a right to bid on public land to develop renewables projects by 2020.

Recommendation 13:

Welsh Government should ensure all renewable energy projects on public land are either community owned or have at least a 20% shared ownership stake. This should come into effect by 2020 alongside the Welsh Government local ownership target for all new renewable energy projects to have at least an element of local ownership by 2020⁶.

Recommendation 14:

All public bodies should give greater weight to social benefit⁷ alongside local benefit in their scoring and evaluation of bids for developing renewable energy projects on public land by 2020.

Recommendation 15:

Public sector bodies such as NRW and local authorities who make land available to community and local energy projects should be able to count the carbon savings from those projects towards their targets to be carbon neutral by 2030⁸.

Grid connection

Recommendation 16:

The Welsh Government should engage closely with Ofgem in the RIIO 2 (Revenue using Incentives to deliver Innovation and Outputs) process to ensure mechanisms are put in place to enable anticipatory investment in the network by DNOs and National Grid.

Recommendation 17:

District Network Operators (DNOs) should be required in their RIIO 2 investment strategies to plan their network to ensure it can meet the demands in local authority strategic energy plans.

Recommendation 18:

The Welsh Government should provide specific support for Welsh organisations to partner with DNOs on network innovation projects.

Recommendation 19:

The Welsh Government should engage in Ofgem's current review⁹ of how we pay for the electricity network.

6 Welsh Government, [Lesley Griffiths high on ambition for clean energy](#), September 2017

7 Including for example, shared ownership, jobs and apprenticeships created, and educational value.

8 Welsh Government, [Public sector decarbonization](#), December 2017

9 Ofgem, [Electricity Network Access and Forward-looking charging review](#), December 2018

2. Introduction

2. Introduction

Wales generates the equivalent of 48% of the power it uses from renewables¹⁰ and the Welsh Government has set a target to reach 70% by 2030¹¹.

Change of the scale we need in our energy generation, use and supply simply cannot happen without public backing. Renewables development must engage local communities to maintain the active backing and local investment needed.

One fifth of the renewable electricity capacity in Wales is locally owned, about 529 MW¹². The Welsh Government has set a target to achieve 1 GW of locally owned capacity by 2030 and for all new projects to have an element of local ownership by 2020.

The aim of this report is to make recommendations as to how to protect, promote and achieve scale in community and local ownership of renewable energy in Wales in order to maximise its economic and social value. The recommendations within this report are designed to enable Wales to become a world leader in community and local energy that delivers genuine benefit for people in Wales.

In this report we define community and local energy as including local authorities, residential and social landlords and community organisations that have a tangible and lasting benefit to the community. The scope of the report is onshore renewable electricity generation capacity in line with Welsh local ownership targets. There are, of course, many additional opportunities in heat, energy efficiency and fuel poverty, offshore wind, wave and tidal. These are outside the scope of this project, however the research identified some findings in these areas and the report captures these in **Appendix 1**.

This report builds on the Re-energising Wales workstream four, part one report entitled *Factors influencing local and community engagement in renewable energy in Wales*, which involved interviews with local and community organisations across Wales to capture their experiences around developing renewable energy projects in Wales. Findings from that research include the need to develop expertise in local communities, the limited resources available to local authorities, and the cultural shift required.

¹⁰ Welsh Government, *Energy Generation in Wales*, 2017

¹¹ Welsh Government, *Lesley Griffiths high on ambition for clean energy*, September 2017

¹² Welsh Government, *Energy Generation in Wales*, 2017

2.1 Method

This report draws together desk-based research, eight semi-structured interviews with key stakeholders, and the experience from the Regen team of working on innovative local energy models.

The desk-based research focused on analysis of best practice UK and international examples of how to enable community, shared and locally owned energy projects at scale. The research drawn on is listed in the footnote references throughout this report.

Interviews with stakeholders were used to test ideas to support community and local energy and to gather feedback on possible recommendations. Interviewees included DNOs, Scottish stakeholders, wind developers, Welsh Government and community representatives. A list of interviewees is included in the acknowledgments section of this report above.

Four key areas where action could be taken in Wales to support community and local energy were identified and tested with stakeholders:

- Shared ownership
- Establishing 'Energy for Wales', a Local Energy Company for Wales
- Planning and land access
- Access to grid.

The potential of action in each of these areas was reviewed and recommendations identified on the actions, policies and structures that would support community and local energy at scale in a Welsh context.

3. Context

3. Context

3.1 A changing energy system

Seismic shifts in technology are transforming our energy system. There has been a rapid rise in decentralised generation, the emergence of smart digital technologies to enable greater flexibility in the use of energy, and the development of disruptive technologies such as energy storage. These shifts are widely predicted to continue, driven by the falling price of renewable generation and battery storage; a rapid shift to electric vehicles; and the use of smart digital and big data technologies to manage a complex decentralised system.

The UK Government and Ofgem have produced a Smart Systems and Flexibility Plan¹³ to support this transformation. However, this is just the start of a major process of updating the regulation of the UK power system, that is currently designed for large power stations and one-way power flows, to support the smart, flexible and decentralised system of the future.

3.2 The end of renewable energy subsidies

The rapid rise of decentralised generation has been driven by public subsidies. The Feed-in Tariff (FiT) supported small scale and community and local energy projects, providing guaranteed revenue and long-term certainty which made projects less risky and easier to finance. Once the FiT closes in April 2019, there will be no subsidy for renewable electricity generation. The Contracts for Difference mechanism is unlikely to be suitable for community and local energy projects and is currently targeted almost solely at offshore wind.

The UK Government has now published a consultation on proposals for a 'Smart Export Guarantee (SEG)' to replace the FiT export tariff, which would ensure small-scale generators are paid for power they export¹⁴. The wider benefits of community energy are noted by the Department for Business, Energy and Industrial Strategy (BEIS) in the consultation, however, it is not clear whether generators will receive a fair market price for their exported electricity.

Within the consultation, there is no timetable for implementation, there will be no retrospective payments, contract lengths agreed by suppliers could also vary, making it difficult for community organisations to develop financial models or secure finance. Community Energy England comment that 'without additional support mechanisms for community energy, the continued focus on market-based solutions will significantly increase the risk and reduce margins for many community led projects. The proposed SEG is also heavily dependent on the effectiveness of smart meters. There will be a significant period from the FiT closing from 31 March 2019 whereby projects not registered in time for FiTs will receive no payments for exported electricity'¹⁵.

The effects of reducing subsidies for renewable electricity generation can be seen in the slow down of deployment noted in the Energy Generation in Wales 2017 report¹⁶. Industry sources predict this slow-down will continue following the end of subsidies and that new models will be needed to enable the development of community and local energy renewable energy projects.

13 UK Government and Ofgem, *Smart Systems and Flexibility Plan*, July 2017

14 BEIS, *The future for small-scale low-carbon generation*, January 2019

15 Community Energy England, *BEIS consultation on a Smart Export Guarantee*, January 2019

16 Welsh Government, *Energy Generation in Wales*, 2017

3.3 Welsh Government Policies

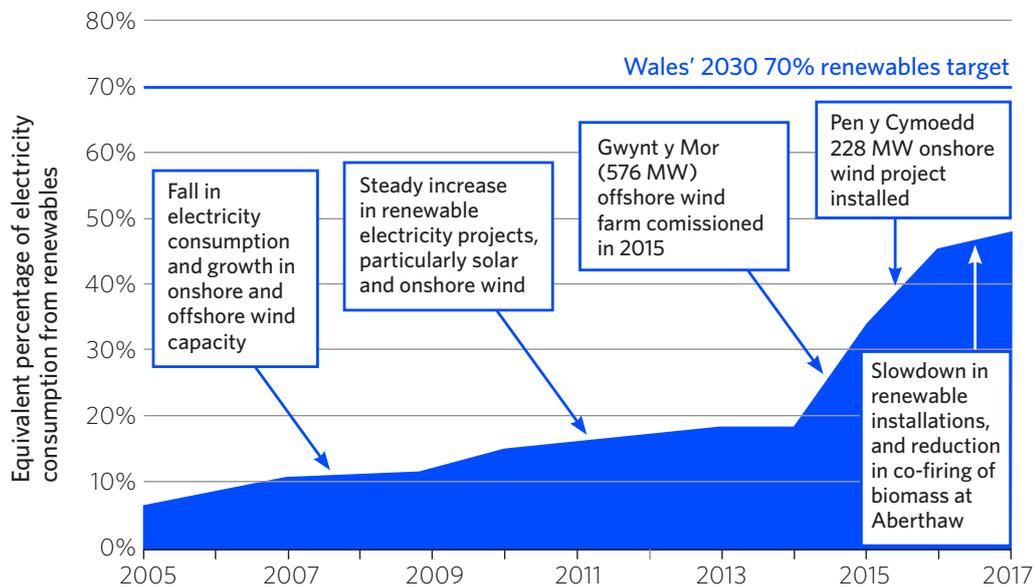
The Welsh Government has demonstrated strong leadership on renewable energy in recent years. In 2017 the Welsh Government set targets¹⁷ for Wales to generate 70% of its electricity consumption from renewable energy by 2030, 1 GW of renewable electricity generation capacity to be locally owned by 2030, and for all new renewable energy projects to have an element of local ownership by 2020. The WGES was also launched in October 2018¹⁸. It is the Welsh Government's view¹⁹ that increasing the local ownership of energy generation contributes to increased prosperity in Wales and reconnects people with the sources of their energy, which is fundamental to a low carbon future.

The Welsh Government has put in place a positive planning environment for renewable energy in the tenth edition of Planning Policy Wales²⁰. This planning policy provides a more attractive environment for development than in England and is, therefore, likely to attract developers to focus efforts in Wales. This positive planning support dates to the introduction of Technical Advice Note (TAN) 8: renewable energy (2005)²¹, which sets out seven Strategic Search Areas (SSAs) to concentrate large scale (over 25 MW) onshore wind developments in specific areas.

3.4 Energy Generation in Wales

The Energy Generation in Wales 2017²² report shows that while there has been significant progress towards these targets in the past few years, there is now a slowdown in renewables installations, and a small pipeline of projects coming forward. The report calculates that approximately 22% of total electricity generated in Wales is from renewables, equivalent to 48% of electricity consumed in Wales annually.

Figure 1: Growth in the percentage of electricity from renewable sources in Wales



17 Welsh Government, *Lesley Griffiths high on ambition for clean energy*, September 2017

18 Welsh Government, *Launch of the WGES*, October 2018

19 Welsh Government, *Locally owned renewable energy call for evidence – summary of responses*, December 2018

20 Welsh Government, *Planning Policy Wales Edition 10*, December 2018

21 Welsh Government, *Planning Policy Wales Technical Advice Note 8*, July 2005

22 Welsh Government, *Energy Generation in Wales*, 2017

Approximately 65% of renewable electricity generated in Wales comes from wind, of which 30% is generated by the 726 MW of offshore wind projects off the Welsh coast and 35% by just over 1 GW of onshore wind. Solar PV makes up 31% of installed renewable capacity, however, its lower capacity factor means that solar PV provides 13% of renewable electricity generated.

Two major projects, the Gwynt y Mor (576 MW) offshore wind farm commissioned in 2015, and the Pen y Cymoedd (228 MW) onshore wind project installed in 2015, are making a significant contribution towards Wales' 70% renewables target.

3.5 Prospects for developing renewable generation

The costs of renewable generation have fallen substantially in recent years. The first subsidy-free wind projects are starting to be developed. For example, Pant y Maen, a seven-turbine wind farm in Denbighshire, was granted planning permission in February 2018, and could be developed without subsidy by 2021. Subsidy-free solar projects are also being developed. For example, the 49.9 MW Gwent Farmers Community Solar Scheme received planning permission in November 2018.

Despite some subsidy-free schemes being developed, many in the industry argue renewable energy will not be developed at sufficient scale without some form of public price guarantee. The consultancy Cornwall Insight recently wrote to Claire Perry²³, Minister of State at the Department for Business, Energy and Industrial Strategy, calling for a 'floor price' to be established to attract investment into renewable energy projects.

Access to the electricity network is cited by developers and communities we interviewed as a key barrier to the future development of onshore wind in Wales. However, this also means some of the best (most windy) sites have not yet been developed. This could provide an opportunity for community organisations and local authorities to work together to develop projects that are locally owned.

The planning environment is broadly supportive, however, many of the SSAs set out in Technical Advice Note (TAN) 8²⁴ are in areas where there are grid constraints and the cost of connecting to the network to export the electricity is prohibitive.

The costs of offshore wind have been declining rapidly and there are potential development sites off the coast of Wales included in the latest Crown Estates lease round (see **Appendix 1**). However, there are no examples of local or community ownership of offshore wind in the UK due to the extremely large scale of investment required and high transaction costs. The Welsh Government has commissioned research to explore the potential for offshore wind in Wales. This research should be expanded to explore local ownership.

23 Cornwall Insight, *Daily Bulletin Issue 3359*, January 2019

24 Welsh Government, *Technical Advice Note (TAN) 8: renewable energy*, 2005

3.6 Local ownership

The Welsh Government definition for ‘locally owned’ covers projects owned by households, communities, local authorities, housing associations, other public sector bodies, charities (including faith organisations), further education establishments, local businesses (registered in Wales) and Welsh farms and estates.

The Energy Generation in Wales 2017 report²⁵ estimates that 751 MW of installed renewable energy capacity is locally owned. Of this, 529 MW is locally owned renewable electricity, including 185 MW of onshore wind and 179 MW of solar PV. In total, there are over 63,000 locally owned renewable energy projects, largely made up of domestic rooftop solar PV projects. Whilst these projects comprise just 20% of all renewable energy capacity in Wales, they make up 94% of all renewable energy projects.

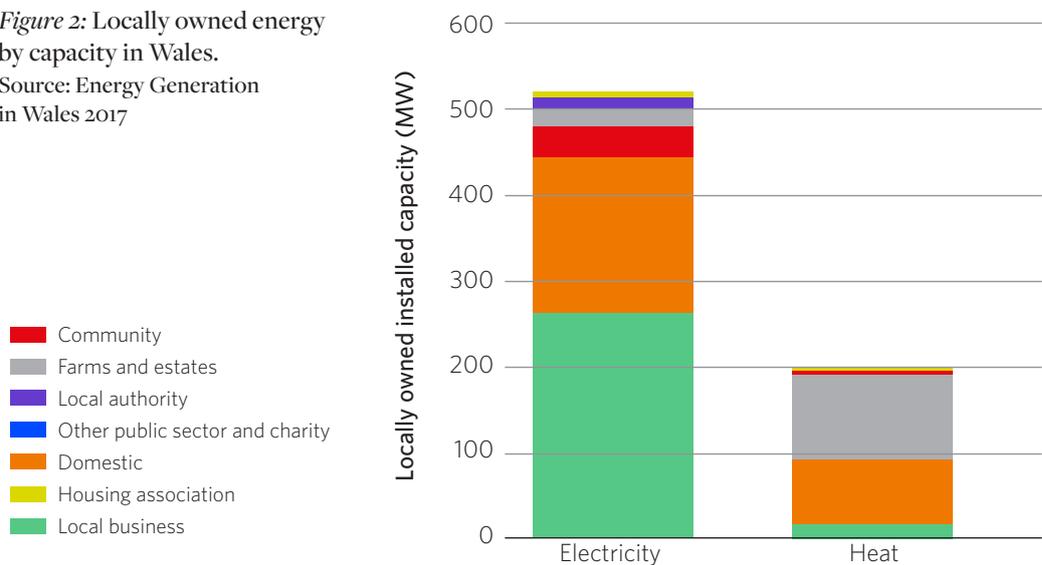
The amount of renewable energy capacity that is owned by community groups in Wales increased this year, reaching 37 MWe (megawatt of electrical capacity) and 0.5 MWth (megawatt of thermal capacity). This includes 10 renewable electricity projects over 1 MW, made up of nine solar farms and the Awel Aman Tawe community wind farm.

Over 150 local businesses own renewable energy generation in Wales, ranging from large developers to small-scale projects owned by small commercial and industrial businesses. Wales is just over half way towards achieving its 2030 target for locally owned renewable energy capacity.

Whilst this is positive progress it should be noted that for many projects there is a long development time. For example, the Awel Amen Tawe 4.7MW two turbine community owned wind farm took 18 years to plan and develop due to planning and the pioneering nature of the scheme. The project will deliver around £3 million surplus for the community over the project’s lifetime.

Figure 2: Locally owned energy by capacity in Wales.

Source: Energy Generation in Wales 2017



25 Welsh Government, *Energy Generation in Wales, 2017*

4. Areas for action

4. Areas for action

4.1 Shared ownership

Countries with ambitious plans for local ownership, such as Scotland, have placed significant focus on shared ownership schemes. Whilst 100% community owned projects will tend to deliver the most value to communities, for Wales to achieve targets for 1 GW of local ownership by 2030, stakeholders agree there will need to be more partnership projects with commercial developers.

Existing examples of shared ownership projects in Wales include Alwen Forest²⁶ which will have a 15% shared revenue community stake.

The shared ownership taskforce report²⁷ to the Department for Energy and Climate Change (DECC, now BEIS) in October 2014 recommended that developers with a project cost of more than £2.5 million should offer communities a chance to invest in the project; the stake suggested by the report is between 5% and 25%. The developers we spoke to for this research said they would consider between 5% and 33% community ownership.

The shared ownership taskforce recommended several ways for developers to work with communities and offer either:

- split ownership – where a community buys part of the project, e.g. a wind turbine
- shared revenue – where the community buys the right to some of the revenue generated
- joint venture – where the community and developer work together to develop, own and manage the project.

4.1.1 Lessons learned on shared ownership since 2014

Shared ownership offers are expected to be made at 'fair market value', however this can be difficult to establish. For example, Good Energy gained planning permission for Newton Downs²⁸ 5MW solar farm on the basis the project was offered for sale at a fair market value to Yealm Community Energy, once completed. Differing views on 'fair market value' and changes in the market led to a protracted two-year negotiation between the developer and community. Whilst this resulted in the eventual sale of the project, a clear mechanism for establishing 'fair market value' would have made it much smoother.

26 Innogy, *Exploring the potential for renewable energy at Alwen Forest*, 2018

27 Shared Ownership Taskforce: *Report to DECC*, October 2014

28 Yealm Community Energy, *Newton Downs Farm*, 2018

Monitoring is essential to evaluate the success of any shared ownership measures. The UK Government introduced legislation to enable community and shared ownership schemes to access the FiT (which is available to schemes up to 5 MWs) for a 10 MW scheme by splitting it into two 5 MW projects. Stakeholders interviewed felt that developers set up Community Interest Companies (CICs) to take advantage of this scheme with little or no genuine community benefit or involvement. Genuine community ownership and benefit needs to be defined, explicit and monitored in order to be meaningfully increased.

Efforts required by commercial developers to make offers of shared ownership need to be minimised or offset e.g. by making planning, financing, and grid connections easier for shared ownership projects. One specific driver supported by the stakeholders interviewed for this research was the use of business rates relief to encourage more renewables. For example, **offering 50% business rate relief on the community percentage of the project, and a sliding scale of business rate relief for the developer proportionate to the community share. For example, if the community share is 15% the developer would get 15% business rate relief. A business rates review was also called for to reflect the loss of value on subsidy-free renewables projects.**

In Scotland the net economic benefit of renewable energy developments can be considered with material weight in planning, and up to 100% of business rates relief is available for a renewable energy project if arrangements exist that entitle community organisations to at least 15% of the annual profit or as much of the annual profit that is attributable to 1 MW of the project's total installed capacity.

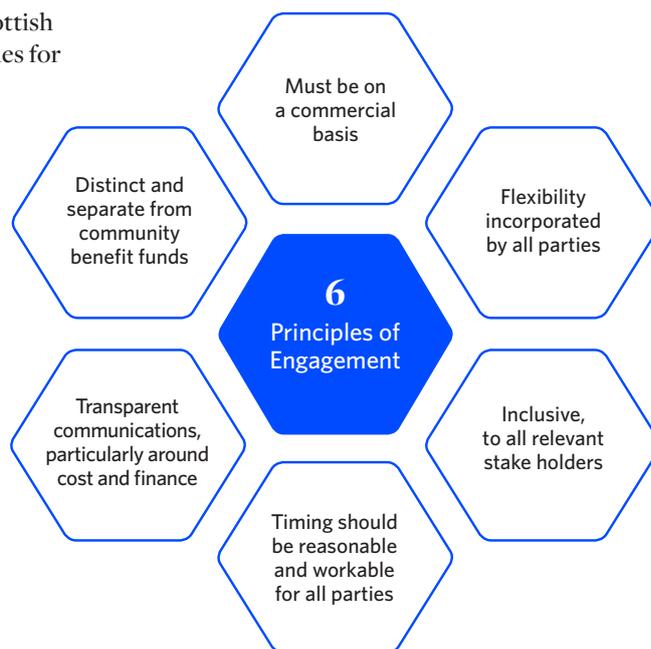
The Scottish Government's Good Practice Principles for Shared Ownership of Renewable Energy Developments²⁹ guide covers the rationale for shared ownership and key guiding principles for communities and developers. The document outlines roles and responsibilities of each party during the typical shared ownership journey, how to extend shared ownership beyond the immediate geographical community and urges communities to seek professional independent financial advice.

The levers in Scottish National Planning Policy³⁰ are highlighted and clarity is provided on what a planning authority can legitimately view as a material consideration when determining planning applications. The document states that 'including an element of shared ownership in a renewable energy project should not reduce the economic viability of the overall project' but should be mutually beneficial. There is guidance on negotiating the commercial terms of the shared ownership investment, and on what to do if there is a change of ownership, making sure the legal agreement includes how a future sale will be dealt with, how the community will be informed and what influence they will have on their share. Local Energy Scotland support is highlighted as available throughout the process including for funding, professional services, online tools and resources, and signposting.

29 Scottish Government, Shared ownership of renewable energy developments - good practice principles: consultation, November 2018

30 Scottish Government, *National Planning Framework 3*, June 2014

Figure 3: Key principles from the Scottish Government Good Practice Principles for Shared Ownership of Renewable Energy Developments



In 2018, the Welsh Government published a call for evidence³¹ on the benefits and impacts of increasing the amount of locally owned renewable energy generation, in order to include an ownership target in their forthcoming policy statement. They were seeking evidence from key stakeholders on the benefits that renewable energy is currently providing to Wales, how generation could benefit Wales equitably and how the Welsh Government could support the development of more locally owned generation to support their renewable energy targets set in 2017.

One of the key actions for the Welsh Government as a result of the evidence they received is to support public and community organisations to develop shared ownership schemes through the WGES, with legal advice and accessible finance, such as [reducing interest rates charged on WGES capital loans managed by the Development Bank of Wales](#).

4.1.2 Stakeholder views on shared ownership

The stakeholders we interviewed all cited shared ownership as one of their top three priorities for driving more community and local energy in Wales, but that it had to be delivered in a supported way by continuing and even extending support programmes like WGES to support capacity and expertise. Some of the stakeholders felt business rate relief would be a useful driver and others said it was too short term to be useful in a financial model, so the Welsh Government needed to provide a policy statement to enable business rate relief for 10 years, recognising that it takes between seven and nine years to develop large-scale projects.

The evidence from Scotland and stakeholders who have experience of the Scottish system is that shared ownership projects have increased the proportion of community ownership and that the political will and specific targets have been driving developer behaviour. The target for half of consented projects to be shared ownership by 2020 in Scotland is a strong political statement of ambition that helps industry have confidence. The industry

31 Welsh Government, [locally owned renewable energy – a call for evidence](#), December 2018

stakeholders we spoke to said between a 5% and 33% stake was reasonable in Wales and that shared ownership should have material weight in planning. The guidance in Scotland has helped set expectations but will be reworked to focus more on the terms of the deal rather than the legal models.

Stakeholders we interviewed thought communities and local authorities should be offered shared ownership but local businesses should not be included, to avoid the risk of companies setting up Welsh based special purpose vehicles to deliver 'local ownership'. They noted that communities who are proactive and have already set up community energy groups with clear aims will be in a much stronger position to collaborate with developers looking to deliver projects in their area. However, where there is no local community organisation, the developer can look to an experienced community developer such as Community Energy Wales as a partner.

4.1.3. Shared ownership recommendations

To build on Welsh Government targets and actions we recommend:

Recommendation 1:

Welsh Government should require all **new renewable energy projects in Wales above 5MW to have between 5% and 33% community and local ownership by 2020, in addition to the Welsh Government target for all new renewable energy projects to have at least an element of local ownership by 2020³²**.

Recommendation 2:

Welsh Government policy should require **local authorities to offer 50% business rate relief on the community percentage of shared ownership projects, and a sliding scale of business rate relief for the developer proportionate to the community share** (for example, if the community share is 15% the developer would get 15% business rate relief). Despite non-domestic (business) rates normally being assessed every five years (with the next revaluation due in 2022), we believe this rate relief recommendation outlined above should be in place before 2020 and guaranteed for at least 10 years to provide certainty in financial modelling.

Recommendation 3:

Welsh Government should undertake a business rates review during 2019 to reflect the loss of value on subsidy-free renewables projects.

Recommendation 4:

Welsh Government should increase financial support to the Welsh Government Energy Service (WGES) to provide enhanced support to community organisations developing shared ownership projects. This should include covering the communities' legal costs, accessible bridging finance, commercial negotiation support, and low interest rates on loans from the Development Bank of Wales.

32 Welsh Government, Lesley Griffiths high on ambition for clean energy, September 2017

4.2 'Energy for Wales'

Several of the reports we reviewed for this study discussed the potential of a local energy company being formed as a way for communities to retain greater value locally.

The new First Minister in Wales, Mark Drakeford committed to explore setting up an energy company for Wales in his manifesto³³, where it states 'Using the mutual model of *Dŵr Cymru*, we will examine the case for a new Welsh Energy mutual that can encourage energy efficiency measures and help tackle fuel poverty, help consumers be aware of best tariffs, help promote local energy generation, and advise on strategic energy investment, innovation and inclusive growth.'

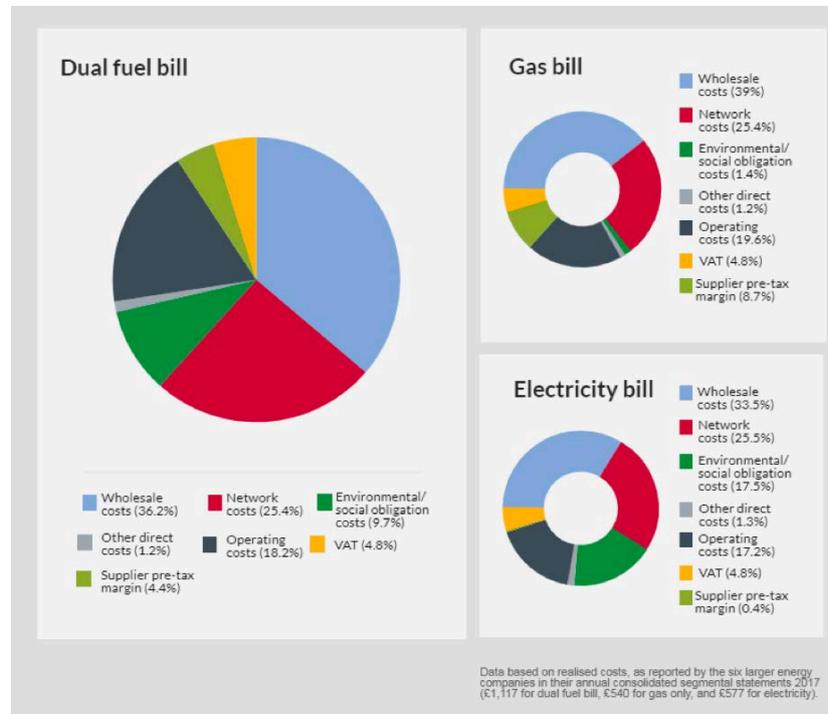
More detailed work will be required to assess the viability of an 'Energy for Wales', a local energy company for Wales, however this research provides some factors to be considered in progressing this.

4.2.1 Publicly owned electricity supply companies

Two fully licensed electricity suppliers have been established by local authorities in England: Robin Hood Energy in Nottingham and Bristol Energy. Another supplier, Our Power, has been established by social landlords in Scotland.

The market for energy supply is very challenging at present with several suppliers going bust in recent months. A recent publication from Ofgem³⁴ indicates how tight margins are with a supplier pre-tax margin of 0.4% on electricity and 4.4% on dual fuel. Figure 4 illustrates what makes up an energy bill.

Figure 4: The breakdown of a typical UK domestic energy bill 2018.
Source: Ofgem



33 Mark Drakeford, Welsh Labour Leadership Manifesto, *21st Century Socialism*, November 2018

34 Ofgem infographic: [Bills, prices and profits](#), December 2018

4.2.2 Local supply models

In a post subsidy world, community and local energy schemes will need to look at all aspects of the generation, use and supply of energy in their locality to identify sources of value. New business models could involve linking local generation and supply and using storage and demand side response to be flexible in the demand for power.

Regen’s Local Supply paper³⁵ investigated which local supply models could work best to encourage and use locally generated electricity and retain the economic benefits in the area. These are set out in Figure 5. Two options that are feasible in a Welsh context are:

- community energy clubs in geographically defined areas with a group of local consumers and at least one generator (for example, Bethesda Local Energy project), or;
- a local generation tariff - this could take the form of a Wales generation tariff.

Figure 5: Key considerations for local supply models.

Source: Regen local supply 3rd edition

■ Green = No barrier ■ Amber = Potential barrier ■ Red = Likely barrier						
Model	Sources of value	Regulatory challenges	Technical challenges	Commercial challenges	Acceptability	Viability / sustainability
Local generation tariffs	Price time shifting Supplier margin in return for recruitment Potential to access lower UoS charges / flexibility contract Better price for generator	Slow move towards HH settlement, but is already available	Rely on smart meters Households require flexible load	Needs willing licensed supplier Uncertainty with flexibility markets Cost of flexible load	Requires switching and behaviour change But strong local story and potential for community-led marketing	Requires scale to be of interest to supplier Must remain competitive to retain customers
Microgrids	Avoiding/reducing UoS charges from matching Supplier margin if not-for-profit Better price for generator Potential price time shifting	Potential for charging review to increase UoS charges behind the meter Rules and regulations on building and managing private networks	Balancing provided by exempt supplier - storage, DSR etc. Households may require flexible load	Cost of setting up balancing and billing functions for exempt supplier	Requires signing up to alternative model But should be cheaper	Must remain competitive to retain customers
Peer-to-peer trading	Price time shifting Potential to access lower UoS charges/flexibility contract Better price for generator	Cannot sell direct over public network without a licence/derogation	Households may require flexible load Need accessible trading platforms	Needs willing licensed supplier if using public network	Requires signing up to alternative model But potential for strong local story	Requires good balance of generation and demand participants May only appeal to early adopters / energy aware
Aggregators	Flexibility contract	Currently restricted from entering certain markets, e.g. Balancing Mechanism	Households require flexible load and possibly some automation	Cost of flexible load and automation. Uncertainty accessing flexibility markets	Separate payment from energy bill may be more appealing	Market limited to those with flexible load

35 Regen, *Local supply: Options for selling your energy locally*, 2017

The Financing Community Energy, Visions for the Future of Community Energy³⁶ report, led by the Tyndall Centre for climate research, looks at visionary community energy models for 2050. The report focused on a renewable energy federation model that sells electricity to retailers via PPAs, and the Smart Energy Local Aggregator model and concludes a combination of these services will be required to make community energy viable.

Figure 6: Models from the Financing Community Energy, Visions from the Future

Name	Renewable Electricity Federation	Energy Saving Services	District Heat Network	EV Charging	Smart Energy Local Aggregator
					
Energy activity	Generating electricity	Helping customers save energy	Generating and providing heat	Charging points for EVs	Trading energy
Geography	Federation of projects across the UK	Local	Local	Local or regional	Local
Resources needed	Renewable electricity generators	Appliances and tools	Heat generator Pipe network	Charging points Payments system	IT systems
Cost profile	High upfront costs, lower running costs	Low upfront costs, medium running costs	High upfront costs, lower running costs	High upfront costs, lower running costs	Relatively low costs
Revenue and customers	Sale of electricity to energy retailer via PPA	Sale of building works and appliances Energy services contracts Individuals and SMEs	Heat services to households and local businesses	Sale of electricity to individuals and fleet operators	Flexibility and demand side response contracts with DSOs

4.2.3 Summary of stakeholder views on a Local Energy Company for Wales

The views of stakeholders on a local energy company for Wales were mixed. Nearly all stakeholders thought that there was not enough value in the energy supply alone to establish such a company, but some saw the potential for an arm’s length company that acts as an aggregator, sells this power to the public sector, and could get a good price for renewable energy through negotiating better PPAs at scale. Innovative ‘win-win’ models were suggested, for example providing local renewable energy to power the electric vehicle fleet of public bodies and using smart technologies to enable them to charge at periods of low electricity prices.

Ynni Teg could be used as a pilot project for a community PPA with a counterparty such as Dŵr Cymru who have ambitious renewable energy targets, or with Transport for Wales/Keolis Amey Wales Cymru in helping to deliver the renewable energy targets under the new Wales and Borders rail contract.

Stakeholders also suggested such a company could also have a renewable energy development arm to develop commercially viable projects on the public estate, centralising skills for all public sector bodies, carrying out prospecting, assessments and builds. This function was supported by most of the stakeholders we interviewed. For example, Energy4All and Communities for Renewables are community owned entities playing a similar role. One stakeholder said the focus should be on a community and socially owned developer, bringing capacity to the community energy sector. Existing organisations such as Community Energy Wales could play a role in this with more capacity. Stakeholders also pointed to the need for a Welsh finance platform to help all communities raise money (like Ethex³⁷ for Wales).

³⁶ Tyndall Centre, <https://tyndall.ac.uk/FinancingCommunityEnergy> report not yet published, referenced with permission of Dr Carly McLachlan January 2019

³⁷ Ethex, Ethex.org.uk, accessed January 2019

4.2.4 'Energy for Wales' recommendations

Recommendation 5:

The Welsh Government should look at the viability, cost and timescales involved, along with the local benefit that could be realised if they were to set up a local energy company for Wales, 'Energy for Wales', that builds on the WGES, but does not necessarily supply energy. We recommend that this should be investigated during 2019, to capitalise on opportunities arising from market developments such as flexibility. Roles this company could play include acting as:

- a development company for Welsh Government, community and local authority energy projects at scale, building on the activities currently undertaken by WGES and Community Energy Wales (CEW). This could also involve WGES and CEW. This company could help spread risk and bring a professional development service to public bodies and communities.
- a supplier offering community PPAs to community and local energy projects and selling this power to Welsh consumers and/or to public bodies in Wales, through a local supply tariff, known as a 'Welsh generation tariff', or similar model. The supplier could enable innovative local energy models through better balancing of supply and demand locally and accessing multiple revenue streams in the market. YnNi Teg³⁸ could be used as a pilot project for a community PPA with a counterparty such as Dŵr Cymru who have ambitious renewable energy targets, or with Transport for Wales/Keolis Amey Wales Cymru in helping to deliver the renewable energy targets under the new Wales and Borders rail contract.
- an aggregator of flexibility services to stack revenue from multiple local flexible demand and generation assets, by selling services to DNOs, the Electricity System Operator, and suppliers directly and via platforms like Piclo.

Welsh Government should investigate the potential structures and investment required for a local energy company during 2019. This could include a wholly publicly owned company and a joint venture with a commercial entity that already has a supply licence and expertise in trading power, PPAs and aggregation of flexibility services.

4.3 Planning and land access

Wales has control of its planning system, which stakeholders identified as a key opportunity to promote locally owned renewable electricity.

The Well-being of Future Generations (Wales) Act 2015³⁹ opens the possibility of social benefit and public good considerations offsetting financial constraints in the cost-benefit analysis of renewable energy projects, potentially tipping the balance for marginal projects in their development.

Planning Policy Wales (PPW) edition 10⁴⁰ looks to bring about the vision of Wales set out in the Well-being of Future Generations (Wales) Act 2015. The planning system plays key role in the decarbonisation of our energy system and the ability of communities to develop projects and own generation assets in their area. PPW suggests that low carbon energy is part of 'Productive and Enterprising Placemaking and Well-being' and is good for Wales'

38 YnNiTeg: [Fair energy for Wales](#), accessed January 2019

39 Welsh Government, [Well-being of Future Generations \(Wales\) Act](#), accessed December 2018

40 Welsh Government, [Planning Policy Wales Edition 10](#), December 2018

long-term goals. As such, planning authorities should look favourably on renewable and low carbon generation which maximizes benefits to the economy and communities while minimizing social and environmental impacts⁴¹.

4.3.1 Stakeholder views on planning and land access

Stakeholders' views on how planning and land access supports community and local energy projects varied. They noted that Welsh Government have been proactive in identifying suitable sites for renewable energy known as SSAs (see TAN 8)⁴². However, they also commented that connecting to the grid in these areas has sometimes been prohibitive and the SSAs can limit projects in these areas. One interviewee said that planning and land access were major barriers, stating 'For our project it was frustrating because our site was just outside the TAN 8 area. TAN 8 was too high level. There is a danger it's perceived as a detailed study when it's not and can be used to oppose projects outside those areas. It needs to be accompanied by strong legislation to ensure community ownership, otherwise developers agree options on the land before communities get a look in.'

Stakeholders noted **Welsh Government could create more SSAs where there is capacity on the electricity network to connect and export power, and make sure community owned projects are considered favourably even if outside SSAs.**

Several interviewees said that community projects should be given material weight in planning decisions, based on the added social value they bring.

They proposed that the forthcoming Welsh Government wind and solar resource assessment for Wales should be used for producing an online 'Energy Atlas', overlaid with grid connection availability which could be used as a baseline to identify new SSAs.

Another stakeholder theme was for the Welsh Government to support the development of a future energy vision for each local authority area that identifies sites and supports renewable energy and low carbon development. Most of the interviewees wanted a more proactive, strategic and planned approach to renewables. Some suggested that each local authority could be given a responsibility or target to generate a proportion of their consumption as a county in their area, and an obligation to show how their plans and planning decisions help meet the requirements of the Well-being of Future Generations (Wales) Act 2015 and Welsh Government targets for renewables, community and local energy and shared ownership.

41 Welsh Government, *Planning Policy Wales edition 10* December 2018, p 94-96. "Planning authorities should give significant weight to the Welsh Government's targets to increase renewable and low carbon energy generation, as part of our overall approach to tackling climate change and increasing energy security.....In all cases, considerable weight should be attached to the need to produce more energy from renewable and low carbon sources, in order for Wales to meet its carbon and renewable targets..."

The social, environmental and economic (including job creation) benefits associated with any development should be fully factored into, and given weight in the decision making process. However, planning decisions must be based on an assessment of the impacts of the proposed development, irrespective of who the applicant is. Planning authorities should recognise that community groups, and organisations who seek to promote renewable energy projects, may require particular assistance in navigating their way through the planning system. Planning authorities should be as accommodating as possible when dealing with these projects...

The Welsh Government supports commercial developers working together with community based organisations to take forward projects on a shared ownership basis. We also support the principle of securing financial contributions for host communities through voluntary arrangements. Such arrangements must not impact on the decision making process and should not be treated as a material consideration, unless it meets the tests set out in Circular 13/97: Planning Obligations"

42 Welsh Government, *Planning Policy Wales Technical Advice Note 8*, July 2005

Stakeholders noted local authorities have used buffer zones which have prevented any new wind developments, giving the example of Merthyr Tydfil, and argued that clear guidance should be provided to ensure such policies are not put in place.

The role of NRW, who manage 7% of the land area in Wales, also featured in stakeholder comments. NRW's Energy Delivery Programme⁴³ covers the opportunities and development of renewable energy generation on NRW's land and how they will facilitate onshore wind, hydropower, solar and biomass projects. As part of NRW's guiding energy principles, they state that they 'encourage and... support communities to generate and use energy from sustainable resources locally by harnessing the benefits of their natural resources'⁴⁴.

Wales' largest onshore wind farm, Pen y Cymoedd⁴⁵, with 228 MW of installed capacity on NRW managed land, has a £1.8 million per year community fund run by a local community interest company⁴⁶. The Pen y Cymoedd wind farm is operated by a large wind developer, Vattenfall, as are most of the wind projects on NRW land in Wales.

Stakeholders suggested that NRW's tender processes for developing renewable energy projects on their sites is currently extremely challenging for communities, who are less resourced than large companies and often need more time support and track record to respond to tenders. Whilst NRW have a couple of small community hydro projects on their land, stakeholders wanted them to support more community projects on their land at scale.

A key step suggested was for NRW to simplify its tendering process in the Energy Delivery Programme. This could involve giving communities a longer lead time to respond to tenders and having a dedicated point of contact to help guide community groups through the tender process, which would fall in line with its guiding energy principle on supporting communities to generate energy from local resources.

The research for this report identified the example of the Scottish Land Reform Act⁴⁷ underpinned by lottery funding and community right to buy⁴⁸. Based on this example NRW could allocate sites for community owned developments or shared ownership – perhaps piloting a scheme with Community Energy Wales. Stakeholders felt that **communities should have the right to have first option or a right to bid on public land to develop renewables projects.**

4.3.2 **Planning and land access recommendations**

Planning Policy Wales edition 10 gives material weight to social, environmental and economic benefits associated with renewable energy developments in Wales, and supports shared ownership. We believe:

Recommendation 6:

Planning authorities should look favourably and give material weight to the social and environmental impacts of renewable energy generation which maximizes benefits to the economy and communities, in accordance with Planning Policy Wales Edition 10⁴⁹.

- 43 Natural Resources Wales, *Energy*, accessed January 2019
- 44 Natural Resources Wales, *Energy Guidance Note*, February 2017
- 45 Vattenfall, *Pen y Cymoedd*, accessed December 2018
- 46 Pen y Cymoedd *Wind Farm Community Fund CIC*, accessed December 2018
- 47 Scottish Government, *Land Reform (Scotland) Act, 2016*
- 48 Scottish Government, *Community Right to Buy*, March 2016
- 49 Welsh Government, *Planning Policy Wales edition 10*, p94-96, December 2018

Recommendation 7:

Welsh Government should create more SSAs where there is capacity on the electricity network to connect and export power.

Recommendation 8:

Welsh Government should ensure community owned projects are favourably considered, even if outside SSAs.

Recommendation 9:

Welsh Government should ensure the WGES is resourced to support local authorities to make planning decisions that enable more community and local energy in Wales.

Recommendation 10:

Welsh Government should require each local authority to develop a future energy strategy that identifies sites and supports renewable energy and low carbon development by 2020. This should align with and complement existing requirements for local authorities to set local targets for renewable energy in their local development plans. Support should be provided to authorities through the WGES to procure high quality resource assessments to underpin these strategies. The Regen and IWA Swansea Bay City Region: A Renewable Energy Future Energy system vision for 2035⁵⁰ report methodology developed by Regen could be used as a template – see **Appendix 3**.

Recommendation 11:

Natural Resources Wales (NRW) should allocate at least 5 sites for at least 15 MW per year from 2019 onwards, for 100% community and local authority owned renewable energy developments at nominal/peppercorn rent. NRW should also allocate at least 3 sites for at least 60 MW per year from 2019 onwards for shared ownership schemes at nominal/peppercorn rent.

Recommendation 12:

Welsh Government should set a policy for community organisations to have the right to have first option or a right to bid on public land to develop renewables projects by 2020.

Recommendation 13:

Welsh Government should ensure all renewable energy projects on public land are either community owned or have at least a 20% shared ownership stake. This should come into effect by 2020 alongside the Welsh Government local ownership target for all new renewable energy projects to have at least an element of local ownership by 2020.⁵¹

Recommendation 14:

All public bodies should give greater weight to social benefit⁵² alongside local benefit in their scoring and evaluation of bids for developing renewable energy projects on public land by 2020.

Recommendation 15:

Public sector bodies such as NRW and local authorities who make land available to community and local energy projects should be able to count the carbon savings from those projects towards their targets to be carbon neutral by 2030⁵³. Given energy demand is low compared to their land ownership, this target should be enhanced to becoming carbon positive.

50 Regen and IWA, *Swansea Bay City Region: A Renewable Energy Future*, April 2018

51 Welsh Government, *Lesley Griffiths high on ambition for clean energy*, September 2017

52 Including for example, shared ownership, jobs and apprenticeships created, and educational value.

53 Welsh Government, *Public sector decarbonisation*, December 2017

4.4 Grid connections in Wales

Accessing affordable grid connections is a key part of electricity generation projects.

Large parts of Wales are subject to a National Grid embargo on new generation connections due to constraints on the transmission network. This embargo applies to dispatchable generation and so impacts storage projects but does not affect solar and wind.

Large areas of mid Wales with good wind resources and that are part of the Strategic Search Areas in TAN 8 are poorly served by the electricity network, making development prohibitively expensive.

Whilst these barriers apply to commercial projects as well as to community and locally owned schemes, the research for this report noted that commercial developers are free to look for areas of grid availability whilst communities cannot move, making them disproportionately affected.

As the electricity and gas market regulator for Britain, Ofgem are key to enabling investment in the electricity network. Ofgem's RIIO-2⁵⁴ framework governs how National Grid and DNOs will manage and invest in the network. This includes guidelines on anticipatory investment in the electricity grid, where they propose establishing governance and a framework for assessing the costs and benefits of 'highly anticipatory investment' (HAI), where demand is predicted to emerge long-term. This would involve developing risk-sharing approaches, to offset the risk to any one stakeholder of their asset becoming stranded. Ofgem also acknowledges the need for HAI where it is in the interest of current and future consumers, or it aligns with policy objectives. This opens the possibility of Ofgem allowing DNOs and the National Grid to invest in electricity grid infrastructure ahead of demand under a new HAI framework, where planning authorities identify the potential for renewable energy generation, justified by the Welsh Government's 2030 renewable energy targets, and where financial commitments back up the planned developments.

4.4.1 Stakeholder views on grid connections

Stakeholders identified grid constraints as key issue for community and local energy projects and larger shared ownership developments. They noted that investment in the electricity network will be necessary to achieve Wales' energy goals and argued for an integrated approach in planning for energy developments and additional electricity grid infrastructure. This means planning authorities identifying the potential for renewable energy generation in their area, aligning investment plans with this, supporting appropriate grid developments and engaging with industry stakeholders such as National Grid and DNOs to overcome grid infrastructure issues in Wales.

They also noted that Ofgem is reviewing how the electricity network is paid for. This offers the opportunity to change how the cost of connecting to the network is paid for so that new developments only pay for their sole use assets and not upstream reinforcement to enable them to connect. The review could also enable recognition that if supply and demand is matched at a local level this reduces flows on the network and this should be reflected in the use of system charges paid.

4.4.2 Grid connection recommendations

Recommendation 16:

The Welsh Government should engage closely with Ofgem in the RIIO 2 (Revenue using Incentives to deliver Innovation and Outputs) process to ensure mechanisms are put in place to enable anticipatory investment in the network by DNOs and National Grid.

Recommendation 17:

DNOs should be required in their RIIO 2 investment strategies to plan their network to ensure it can meet the demands in local authority strategic energy plans.

Recommendation 18:

The Welsh Government should provide specific support for Welsh organisations to partner with DNOs on network innovation projects that enable greater deployment of renewable energy within existing infrastructure.

Recommendation 19:

The Welsh Government should engage in Ofgem's current review⁵⁵ of how we pay for the electricity network to

- support mechanisms that recognise the value that balancing supply and demand at a local level can bring and
- call for 'shallow' connection charging so that new generation developments only pay for their sole use assets and do not have to pay for any upstream reinforcement.

55 Ofgem, *Electricity Network Access and Forward-looking charging review*, December 2018

5. Conclusion

5. Conclusion

The Welsh Government have already made significant steps towards achieving genuine local benefit from energy generated in Wales. However, without specific actions to drive forward the changes necessary to meet their Government's targets, Wales could fail to grasp the opportunity to create a thriving local energy economy that delivers a more resilient society, as envisaged in the Well-being of Future Generations (Wales) Act 2015.

The evidence-based recommendations gathered in this report seek to make Wales a leader in local and community energy.

If acted upon, the recommendations in this report will help protect, promote and – crucially – achieve the scale in community and local ownership of renewable energy in Wales to make this a reality.

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Appendix 1:
Wave and tidal
Offshore wind
Heat

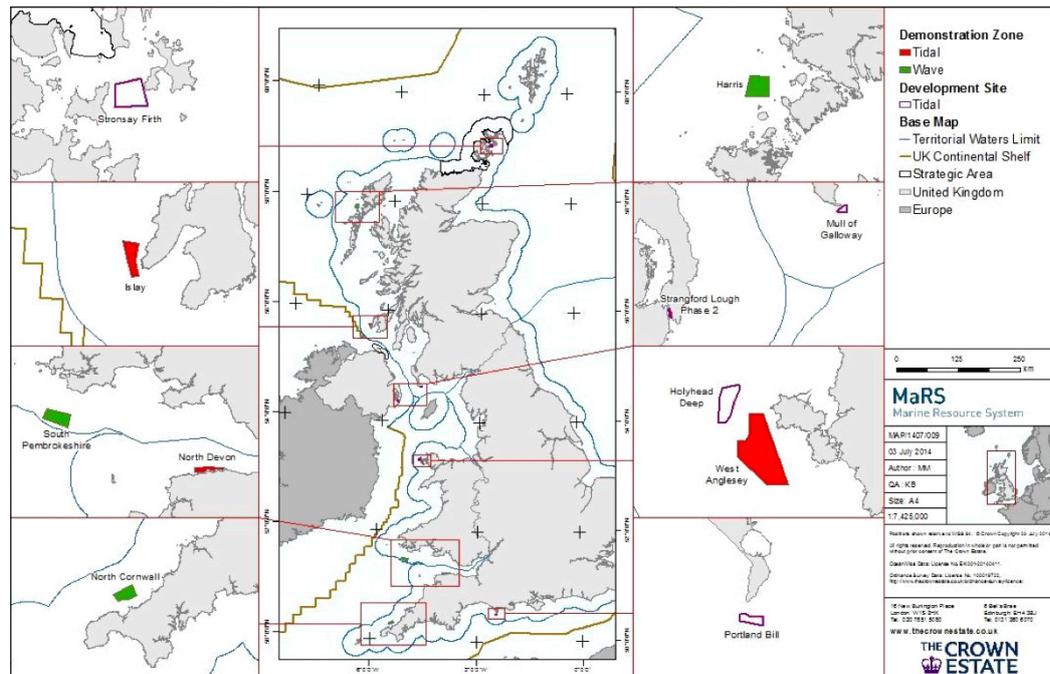
Appendix 1:

Wave and tidal

Wave and tidal stream are still emerging technologies and although there are a few demonstration projects, and one larger scale tidal stream project in the Pentland Firth, Scotland (MeyGen), there are no commercial scale tidal stream, or wave energy projects, deployed in Wales.

Figure 7: Crown Estate wave and tidal demonstration zones.

Source: The Crown Estate/Marine Energy Wales



There are, however, two demonstration zones for wave and tidal energy in Welsh waters: the West Anglesey Tidal Demonstration Zone and the South Pembrokeshire Demonstration Zone for wave energy testing. The aim of these zones is to accelerate the technology development and commercialisation of these technologies.

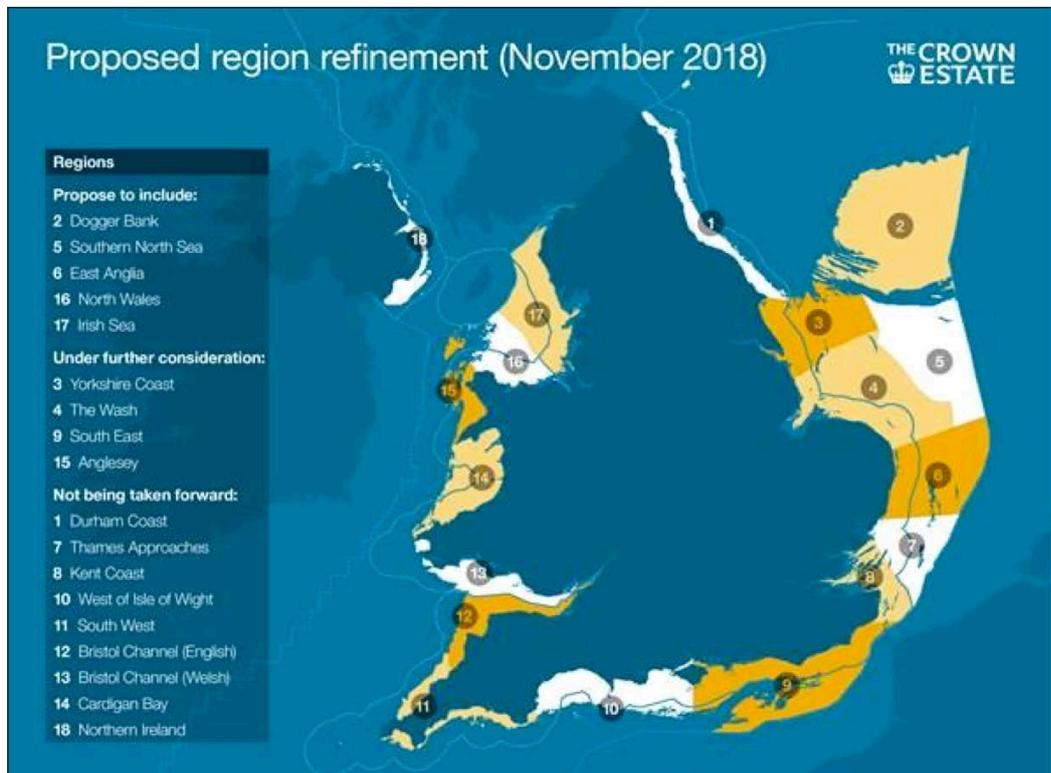
Key to the success of these technologies is government support for research and development. The Welsh Government could look at supporting wave and tidal energy by providing a package for support for research and development and establishing a viable route to market for power produced from these schemes, for example through preferential PPAs.

Offshore wind

The cancelling of Atlantic Array and Celtic Array offshore wind farms mean there is a lack of new offshore wind farms in the Welsh development pipeline. In November 2018, The Crown Estate announced their next leasing round plans, which has broken the seabed into regions and categorised them. One region of the Welsh coast is categorised under 'propose to include in leasing round' (North Wales) and one in 'regions under further consideration' (Anglesey), on the basis that additional work is required to build the evidence base on the seabed resource and constraints.

If there is no offshore wind on the Western seaboard, this is a problem for future energy decarbonisation, and does not capitalise on the investment in ports, infrastructure and skills that Wales has already made. Modelling by Regen for 10:10 in 2017 looked at the potential for shared ownership of offshore wind in the UK, but concluded that for several reasons, including the levels of investment required, offshore wind is currently unsuitable for shared or community and local energy ownership.

Figure 8: The Crown Estate's proposed refinement of available seabed regions.
Source: The Crown Estate



The Welsh Government could engage more closely with the Crown Estate to bring forward offshore wind sites for leasing. The brief for Welsh Government research exploring the potential for offshore wind could also be expanded to include local ownership.

Heat

Decarbonising heat has been identified as a major challenge for Wales to achieve its 2030 carbon reduction goals⁵⁶, whilst also being an area of potential growth for the local ownership targets.

There are eight local authorities in Wales which have received funding from the Heat Networks Delivery Unit (HNDU), which provides funding and guidance from BEIS to local authorities for heat network project development. The aim of the HNDU is to stimulate the heat networks market so that it can become self-sustaining and contribute to the decarbonisation of the UK's energy system.

These eight Welsh local authorities have received a total of £920,800 altogether from the first seven funding rounds, 5.4% of the overall HNDU funding. Cardiff City Council (£395,000) and Bridgend County Borough Council (£204,350) have been awarded the most significant amounts to explore developing heat networks, and in 2018 both Cardiff⁵⁷ and Bridgend⁵⁸ councils advanced proposals for urban heat networks in their area. Both local authorities are also applying for grant funding from the Heat Networks Investment Project (HNIP), a £320m capital funding pot from BEIS to support heat network for the commercialisation and construction stage of projects.

The HNIP opens for applications in April 2019 for 3 years, awarding grants and loans to support public, private or third sector organisations in England and Wales. The scheme has been set up so that heat networks projects can transition from HNDU to HNIP funding when they reach the commercialisation and construction stages. As the HNIP is available for third sector organisations, communities could work with their local authority to secure HNDU funding for initial feasibility and project development work, and then would be eligible to apply for HNIP grants in the later stages, possibly as part of a shared ownership model with their local authority or a local business stakeholders.

Other innovation projects addressing heating in Wales have included the Arbed scheme⁵⁹ to address fuel poverty through energy efficiency and the Freedom project trial of hybrid heat pumps.

Wales could build on these schemes by being at the forefront of schemes to test out new models of low carbon heating with a view to establishing a clear route to decarbonisation of heat.

56 Welsh Government, *Achieving our low-carbon pathway to 2030*, July 2018

57 Cardiff Council, *Cardiff Heat Network*, April 2018

58 Bridgend County Borough Council, *Warm reception for Bridgend heat network scheme*, April 2018

59 Welsh Government, *Arbed programme*, December 2018

Appendix 2: Case studies

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These case studies explore some of the more innovative models being used for community and local energy in the UK and internationally. These examples have been collated from Energy Saving Trust: New Community Energy Development Models in Scotland report, and Regen's report Building Local Economic Resilience Through Democratic Local Energy Models⁶⁰.

Project	Country	Description	Benefits of each model	Enabling factors/policies
Mull ACCESS <i>Active Network Management</i>	Scotland	Community owned hydro enabling more generation onto a constrained network, using electricity from renewables to heat local homes	Avoiding reinforcement costs, software maximises own use if network is constrained	£1,769,000 grant DNO supported
Surf 'n' Turf <i>Wind, tidal, hydrogen</i>	Scotland	Excess community-owned wind and tidal power converted to hydrogen for fuel	Managing network constraint, flexible and transportable fuel, education strand	£1,460,000 from Local Energy Scotland and the Scottish Government's Local Energy Challenge Fund
Levenmouth Community Energy Project <i>Wind, solar, hydrogen, and transport</i>	Scotland	Community-owned wind and solar used to make hydrogen to fuel 25 vehicles and power a business park by private wire	Reduces grid constraint and maximises own use, profits spent on fuel poverty reduction and improving local transport	£4,361,900 grant
Heat Smart Orkney <i>Active Network Management, wind and heat</i>	Scotland	Active Network Management (ANM) to reduce wind generation curtailment, using controllable boilers and heaters	Managing network constraint with demand turn up to heat fuel poor homes (two thirds off gas)	£954,950 grant

60 Regen and Community Energy England, *Building local economic resilience through democratic local energy models*, 2018

Project	Country	Description	Benefits of each model	Enabling factors/policies
<u>Smart Fintry</u> <i>Smart energy systems, Anaerobic digestion, solar, storage, Time of Use tariff</i>	Scotland	Anaerobic digestion (AD), wind and solar project with heat storage and a local supply ToU tariff using smart meters	Local supply with flat rate tariff using existing grid infrastructure to reduce electricity costs and carbon	£841,523 funded by a grant from the Scottish Government under the Local Energy Challenge Fund
<u>Outer Hebrides Local Energy Hub</u>	Scotland	Powering a hydrogen electrolyser through biogas CHP unit with wind turbine, plus AD to support circular economy	Develop local supply chains and skills around electricity and hydrogen	£25,000 grant
<u>Gateshead District Energy Project</u> <i>Gas Combined Heat & Power, storage, balancing</i>	England	Council owned gas-fired CHP facility with battery storage, localised heat and electricity supply via a private wire network	Balance the grid with battery storage, combined heat and power with heat storage. Additional £1m revenue by providing demand response service	Council owned and led £14,000,000 project with EU funding. Future demand identified in local authority's economic development plan
<u>Energise Barnsley</u> <i>Virtual power plant</i>	England	Battery storage and virtual power plant using Gridshare technology in social housing, some with solar arrays, providing a ToU tariff	Reduce demand on the local network and facilitate lower connection costs, social housing tenants benefit from shared photovoltaics/ lower bills (aim for 50% bill reduction)	Funded by Northern Powergrid NIA funding
<u>Energiesprong</u>	England	Innovative approach to whole house retrofit that has potential to be subsidy-free and self-financing if deployed at scale, demonstrators in Nottingham and interest from supply chain	Provides long term certainty for social landlords around energy costs/ repairs	Needs subsidy to scale up and reduce costs to get to a market acceptable rate
<u>Bethesda Energy Local Club</u> <i>Local supply energy sleeving</i>	Wales	Community energy project for residents, using a hydro generator for around 100 homes. Smart meters measure half-hourly energy use, and an Energy Dashboard forecasts the likely generation to users to change behaviour	Local tariff price is higher than what the local renewable generator would normally receive, but lower than what the households would normally pay	Based on settlement code derogations, strong partnership with licenced supplier

Project	Country	Description	Benefits of each model	Enabling factors/policies
Samsø <i>District heating and wind</i>	Denmark	Island community using straw-fuelled district heating systems, 11 onshore and 10 offshore wind turbines to meet 100% renewable electricity and 75% renewable heat demands		
Ecopower <i>Local supply, wind, solar and heat</i>	Belgium	Generates distributes and supplies renewables to 50,000 households. The cooperative generates half the energy that it supplies with 20 wind turbines and 320 solar PV installations, owns a wood pellet factory and a cogeneration plant supplying heat for a municipal building		Supply licence regulation different to UK and does not include socialised costs of network (charged separately) so easier to become a supplier
<i>Vandebron</i> <i>Peer to peer and consumer choice</i>	Netherlands	Renewable energy company allowing customers to choose which generators or technology type to purchase energy from, directly linked to local producers through online peer to peer marketing		
Juhnde <i>CHP</i>	Germany	CHP plant is owned by a cooperative where 75% of the village residents are investor members	Low-cost and low-carbon energy with a 60% reduction of carbon emissions	€5.2M scheme was financed through a combination of shares (0.5M), grant funding (1.3M) and bank loans (3.4M)
Feldheim <i>Whole system wind and CHP</i>	Germany	Energy self-sufficient village operating a 43-turbine wind farm, a biogas CHP plant from over 350 hectares of energy crops, and a wood chip boiler	Whole system approach with own electricity and district heating grid	
<i>Schönau</i> <i>Local network ownership</i>	Germany	A group of citizens of a small German town near the border with Switzerland fought and won a long campaign to win concession to their local distribution grid. In 1997 this was the first German citizen takeover of a distribution grid		German constitution enables public ownership of electricity networks

Project	Country	Description	Benefits of each model	Enabling factors/policies
Hamburg <i>Local network ownership</i>	Germany	The results of a successful referendum meant that in 2014 the citizens of Hamburg were able to buy back operation of their local electricity grid	Profits of network operation for social benefit	German constitution enables public ownership of electricity networks
The Brooklyn Microgrid	USA	A private microgrid operates in parallel to the public network and gives participants more choice in where they buy power from. It provides a peer-to-peer energy market, made up of a combination of software and hardware, using smart contracts and the blockchain	Enables members to buy and sell energy from each other	Reliant on a separate microgrid

Nearly all the UK case studies rely on a combination of Feed in Tariffs/Renewables Obligation Certificates and grants from National Infrastructure Commission/EU and UK Government funds. **None of the UK examples achieve the scale that will enable Wales to achieve its targets**, however, they are a useful indication of the level of innovation and diversity of ambition of the community and local energy movement. The notable amount of Scottish pilot projects testing new models is likely to be a result of the political, financial and technical support available in Scotland through the CAREs programme, the Scottish Government’s Community and Renewable Energy Scheme. Wales has similar powers through devolution, similar geography and a culturally independent mindset.

The German and American examples are interesting because owning the electricity and heat network enables value to be retained locally, however distribution grids in the UK are owned and operated at a macro regional scale by DNOs. This makes it challenging to bring a local section of grid into local ownership. In November 2018 the EU reached agreement on a legal framework for ‘citizen energy communities’⁶¹, which includes the possibility for energy communities, located in the same building or neighbourhood, to own, rent or purchase their own electricity distribution network, but with the uncertainty of Brexit it is unclear if this legislation will affect the UK.

The European examples, especially those that tackle network ownership, are reliant on governments taking leadership positions by setting ambitious targets and legislation that enables community ownership and local supply. The innovative approaches in all these case studies offer potential routes for Wales to achieve scale if the right support is put in place.

61 Euractiv, [Solar PV sector hails EU deal on small-scale ‘citizen energy’](#), November 2018

*Appendix 3:
Swansea Bay City
Region: A Renewable
Energy Future Energy
system vision for 2035*

Appendix 3: Swansea Bay City Region: A Renewable Energy Future Energy system vision for 2035

The report *Economic Impact of Energy Transition in Wales: A Renewable Energy System Vision for Swansea Bay City Region*^{62x} published in April 2018 indicates that £4.6bn of investment in renewable electricity generation, and £1.2bn in ambitious domestic energy efficiency interventions could support 4,500 jobs across Wales during a 15-year investment period, adding £1.66bn to Welsh GVA. Recommendations include new financing mechanisms, the need to take an energy led regeneration approach, and supply chain development in good time, to capture benefits. The report notes that a key element of energy system transformation will be the buy-in of local people as:

- Owners, via direct, pension fund or community investments;
- Partners, in the refurbishment of their homes and their choice of transport;
- Customers of a very different energy supply.

The report costs the future energy system vision outlined in the preceding report *Swansea Bay City Region: A Renewable Energy Future Energy system vision for 2035*⁶³ published in April 2018, which itself outlines key enablers necessary for onshore wind to achieve the system energy vision 2035:

- Establish a strategic policy in Wales on infrastructure, building on the TAN 8 policy
- Identify new strategic search areas (SSAs) for development in areas with good wind resource
- Support new network infrastructure with strategic grid and network upgrades removing constraints to wind development in SSAs by mid 2020s
- For the industry to achieve price parity with other forms of generation by 2020
- Positive economic and social climate for wind – including additional support for local and community energy schemes, and wind farms providing energy directly to end users through local supply initiatives.

62 IWA, *Economic Impact of Energy Transition in Wales: A Renewable Energy System Vision for Swansea Bay City Region*, September 2018

63 Regen and IWA, *Swansea Bay City Region: A Renewable Energy Future*, April 2018

Key enablers for solar PV to achieve the energy system vision 2035

The removal and reduction of subsidy for solar PV has slowed deployment in solar categories across the UK. Other constraints are network capacity restrictions, which are limiting larger ground-mounted projects. In order to achieve a high level of solar PV installations in SBCR by 2035, the report highlighted that the technology needs both a positive planning environment, attractive economics and grid capacity. The report projected the following conditions for SBCR future energy system vision.

Ground-mounted solar

- Post-subsidy investment case improves as technology costs continue to fall, achieving price
- Parity with other forms of generation by the end of the decade
- Co-location investment models, with battery storage a further boost to investment in solar PV from 2020s
- Strategic network infrastructure planning and investment removes capacity constraints
- Positive planning environment exists with strong public support.

Roof-mounted and building integrated solar

- Investment returns continue to improve as technology costs fall, removing the need for FIT subsidy
- A positive government policy agenda helps to encourage roof-top solar and building integrated solar with permitted development rights and building regulations.
- Local Authorities and Registered Social Landlords invest to improve social housing and stipulate renewables in planning permission for new build developments
- Additional investment in innovation to develop building integrated solar PV.



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