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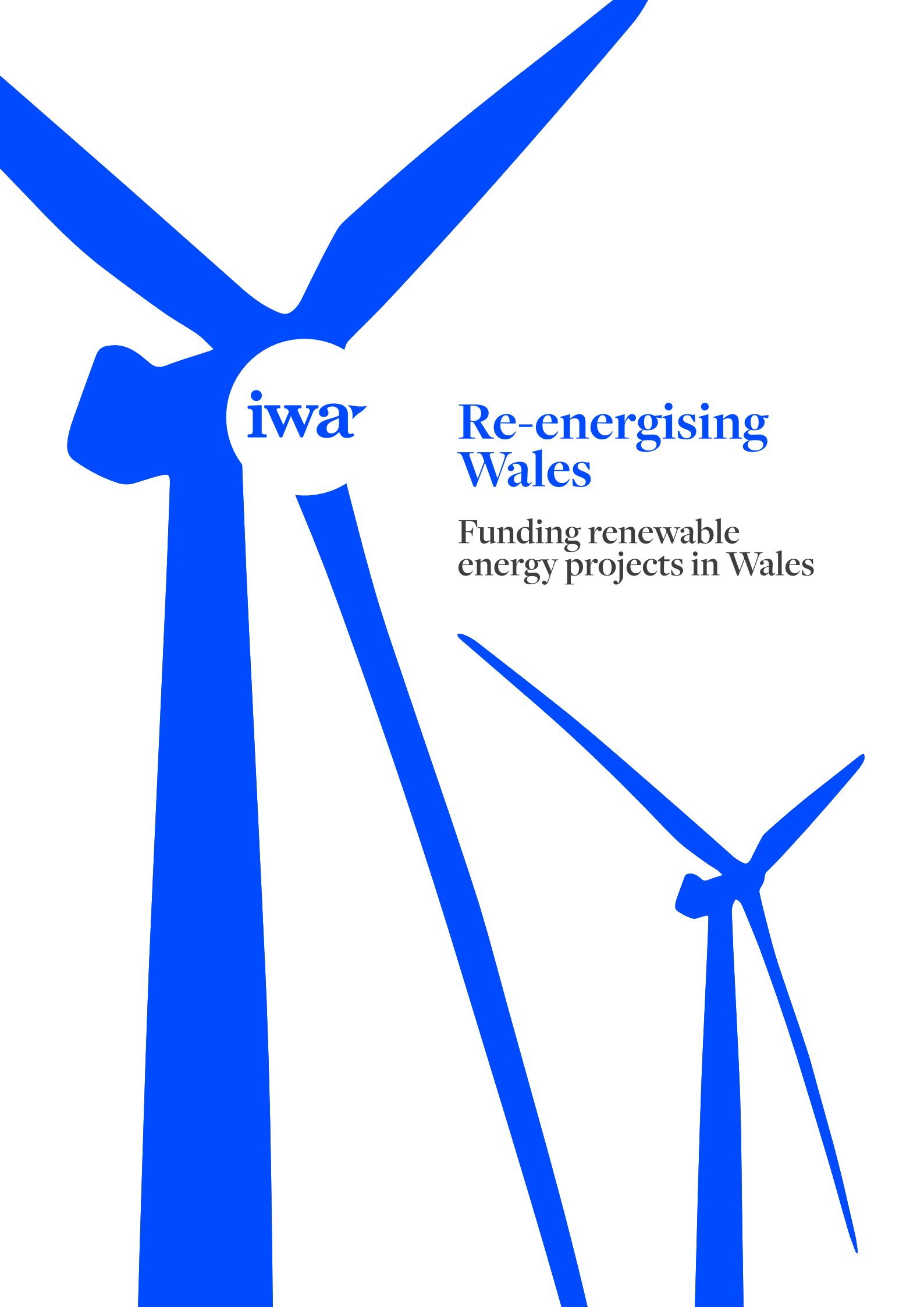
Re-energising Wales

Funding renewable energy projects in Wales



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MAKING
WALES
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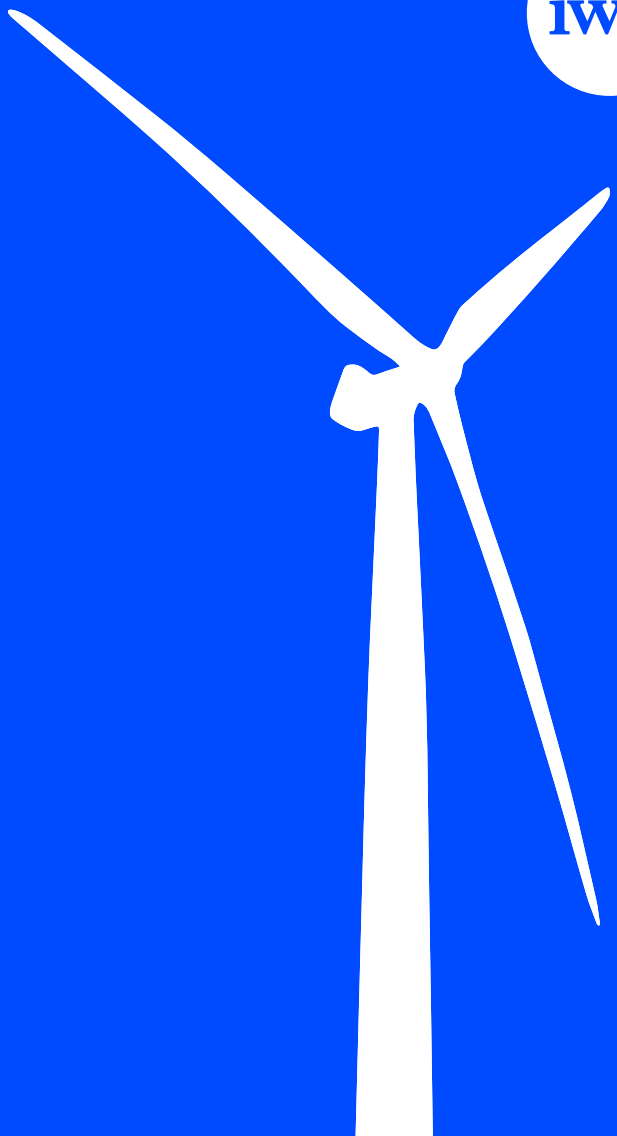

MAKING WALES BETTER

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The Institute of Welsh Affairs is an independent think-tank. Our only interest is in seeing Wales flourish as a country in which to work and live. We are an independent charity with a broad membership base across the country. We aim to bring people together from across the spectrum in a safe space where ideas can collide and solutions can be forged in our five priority areas: the economy, education, governance, health & social care, and the media in Wales.

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- Providing a platform for people to put forward innovative ideas to improve the well-being of Wales.
- Bringing together experts and practitioners to critically examine the evidence in key areas and to suggest improvements.

Discussing

- Convening a diverse series of events across Wales where ideas are explored and challenged.
- Providing a central 'meeting place' for networking - both digitally and through regular high quality events - and by bridging the worlds of politics, business, public service and academia.

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- Working with policy makers to translate new ideas into workable proposals.
- Working with and through our extensive network of partners to spread best practice.

For more information about the IWA, its policy work, and how to join, as either an individual or corporate supporter, contact:

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Re-energising Wales

Funding renewable energy projects in Wales

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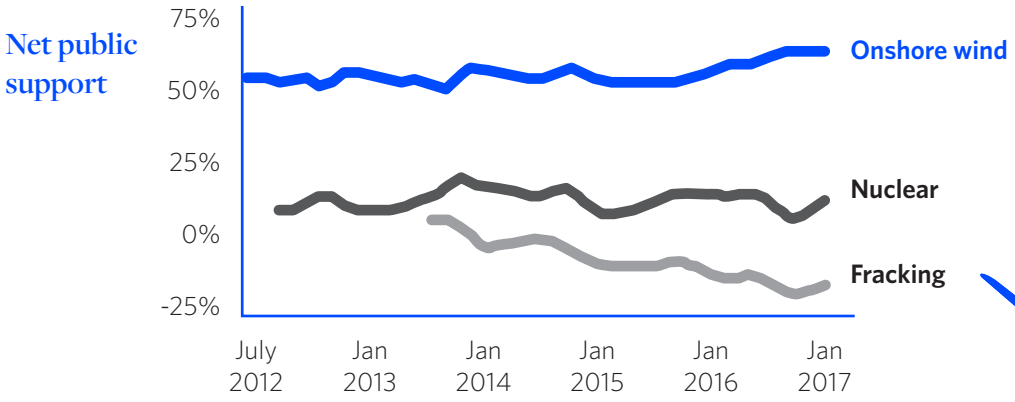
Foreword

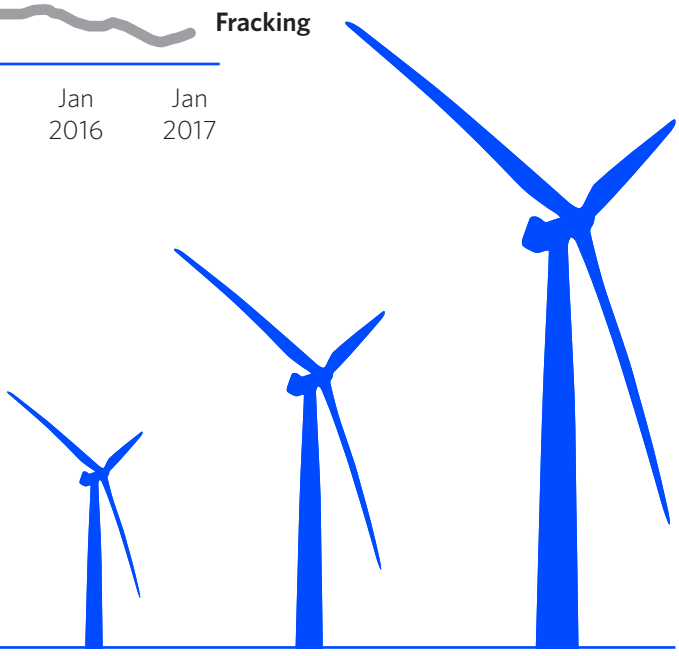
Wales has substantial zero carbon renewable energy resources. Despite this, figures from 2015 show that, at 20%, Wales' renewable electricity generation as a percentage of its overall electricity generation was the lowest across the four nations of the United Kingdom. Just as the City of London and south east England exploit their comparative advantages of financial muscle, political power and geographical location, we in Wales must leverage our own comparative advantages.

Who likes what?



Wind energy

- Popular
- Cheap
- Effective



Support for renewable energy has been consistently high since the Department of Energy and Climate Change surveys (now the Department for Business, Energy and Industrial Strategy) began in 2012, at around 75-80%. So how can Wales lever its geographic advantage in renewable energy terms such as we enjoyed when coal was king?

Welsh Government is committed to an annual reduction of 3% in greenhouse gas emissions under its control and under its Environment (Wales) Act 2016 has committed to put in place statutory emission reduction targets, which include at least an 80% reduction in emissions by 2050 and carbon budgeting to support their delivery. Welsh Government has also recently committed to targets for renewable energy, and separate targets for community energy. To meet these targets we need a combination of energy saving and the exploitation of renewable energy resources.

The Welsh Government has spoken of fostering economic development in Wales by concentrating on green energy, establishing here an industry whose products or expertise will be required worldwide as limiting climate change is addressed with more urgency.

Key to achieving this and meeting challenging targets will include having sufficient investment vehicles in Wales targeted at the right growth areas. Investment vehicles should support the ability of Wales both to maximise the generation of renewable energy and to retain intellectual and financial capital within Wales itself. If Wales is to have any hope of making green energy an important part of an economic growth strategy, it needs to plot a course of development that gives opportunities to small and medium-sized firms in Wales to develop their experience in the generation and transmission of green energy.

The Re-energising Wales project

This short paper is the first of a series of papers published within the remit of the IWA's 'Re-energising Wales' project. 'Re-energising Wales' aims to create a blueprint which could be adopted by decision makers to make Wales a net exporter of renewable energy by 2035. This blueprint will set out a plan to enable Wales to meet its projected energy demands entirely from renewable sources by 2035, which will – at the same time – allow Wales to achieve an 80% reduction in energy-related greenhouse gas (GHG) emissions.

The project will show how this can be achieved by embracing a model that changes the relationship between people and energy, one that maximises the contribution from community and locally-based enterprises. 'Re-energising Wales' has been split into six large scale work programmes which will be published alongside the short papers:

1 **Maximising energy efficiency & demand management**
Developing an energy saving programme, including an overview of energy efficiency in Wales.

2 **Developing an energy portfolio/systems vision**
Using the Swansea Bay City Region as a case study, modelling demand and likely scenarios for supply through different forms of renewable energy to meet these demands.

3 **Setting the economic parameters**
Assessing the costs and profitability of developing a robust, fit-for purpose and sustainable renewable energy supply.

4 **Social and Community Issues**
Assessing the values behind community engagement in energy saving and generation, and the barriers to increased participation. This work package will involve consultation and dialogue with communities across Wales and government.

5 **Regulatory and political challenges**
Assessing what powers are required for a new renewable energy regime to be implemented well.

6 **A delivery plan**
A detailed, timed, and costed action plan for developing a credible renewable energy programme for Wales bringing together findings from the 5 work packages.

What Wales Must Do: Key Recommendations

In order to attract existing and potentially new vehicles to support investment in renewable energy projects within Wales, the IWA recommends that:

1. Welsh Government, non-governmental organisations and other parties should strongly explore the need to devolve a range of powers over renewable energy subsidy setting to Wales. Well-designed and time-bound sustainable energy support policies are vital to attract finance and improve risk-return profiles.

2. Welsh Government should lobby the UK Government for future access to the Contacts for Difference (CfD) mechanism for onshore wind to enable further deployment of this technology in Wales.

3. Wales needs to exploit specialist forms of finance, including mezzanine finance, in order to drive investment in renewable energy projects and ensure adaptability and diversity within the energy market.

4. Welsh Government should develop a sustainable energy strategy which maps out timing, capacity needs and location for new renewable energy assets. This will include deployment targets and technology specific considerations. This should include an analysis, in collaboration with the National Grid, Distribution Network Operators and others of how existing as well as new grid infrastructure in Wales (north, mid and south) can be utilised to respond to Wales' particular energy aspirations.

5. Welsh Local Government pension funds should significantly reduce their exposure to investment in fossil fuels. All funds should identify and take climate change into account as a key risk, as underpinned by the duties set out in the Well-being of Future Generations (Wales) Act 2015.

6. All public sector pension boards in Wales should recruit a suitably experienced renewable energy advisor or employee and increase industry engagement by joining an industry body such as the Institutional Investors Group on Climate Change.

7. Requirements for investors (capital providers, asset managers and consultants) to share data on performance, risks and the costs of renewable energy investments should be strengthened in order to improve market transparency and promote the understanding of the risk profile of these investments. This should help drive collaboration and knowledge sharing.

8 The Welsh pension funds' collective investment vehicles could potentially invest up to £13 billion worth of assets. Scope is needed within the design of the different asset pools to allow collective investment vehicles to be able to invest directly into local renewable energy projects.

9 Welsh Local Government Pension funds should consider setting a target of 5% total investment in Welsh renewable energy projects by 2020. This should include direct investment in new projects and investment in the repowering market. Investment could be channelled through the collective investment vehicles or through existing platforms or bodies such as the 'Pensions Infrastructure Platform'.

10 Welsh pension schemes and the Welsh Government should partner to jointly identify suitable renewable energy projects that benefit local communities and at the same time provide Welsh pension schemes with long term, inflation linked returns.

11 Welsh Government should support the development of a new cooperative, charitable or not for profit body which has a clear brand and supports investment in Welsh renewable energy projects, with an aim to establish the body by the end of 2019. This entity could be an obvious local partner for developers and investment platforms such as Abundance to build significant renewable energy sites, creating joint investments.

12 In order to enable more community shared ownership of large scale renewable energy projects, more encouragement is needed in Wales within the tendering and planning process. There should be more onus on bodies such as Natural Resources Wales to show how their tender process fits into the Well-being of Future Generations (Wales) Act 2015 criteria.

13 Welsh Government must report on an annual basis on what actions each Welsh Government department has taken to reduce their impact on GHG emissions in Wales and the estimated emission abatement achieved. This should include the impact of investment programmes and actions that have been taken to reduce energy consumption and increase renewable energy generation, including community renewable energy generation, as part of plans for overall greenhouse gas reductions and as part of reporting under the Well-being of Future Generations (Wales) Act 2015.

14 Renewable projects should be at the centre of a coherent and ambitious strategy to boost the Welsh economy that involves every department of Welsh Government. Green Growth Wales should promote their emerging pipeline of work more widely to maximise opportunities for collaboration and community involvement.

15 Local supply chains should be prioritised within energy efficiency schemes delivered in Wales as much as possible. To achieve this, part of the solution includes a strategic and holistic green-up-skilling of the construction SME sector in Wales so that Wales-based contractors can compete with UK wide and multinational firms.

16 Welsh Government should lobby the UK Government to allow community renewable energy schemes to be eligible for Social Investment Tax Relief.

17 Welsh Government should introduce business rates relief to a range of renewable energy technology projects in order to drive community participation in renewable energy schemes, as already implemented in Scotland.

18 The National Infrastructure Commission for Wales must have targets for supporting the deployment of renewable energy and associated infrastructure.

Introduction

‘As a nation, we are rich in energy resources and this provides a tremendous opportunity to fuel our drive for a fairer and more prosperous Wales and to achieve a better quality of life for our own and future generations’.

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'As a nation, we are rich in energy resources and this provides a tremendous opportunity to fuel our drive for a fairer and more prosperous Wales and to achieve a better quality of life for our own and future generations'

This statement comes directly from the First Minister's foreword as part of the Welsh Government's 'Energy Wales: A Low Carbon Transition'. Yet when it comes to delivering on the potential of these natural resources, Wales has at points lagged behind the other UK nations. The most recent figures for 2015 show that, despite an increase in energy generation from renewable energy sources across the UK, Wales had the lowest figure of the four UK nations in terms of the percentage of renewables within the Welsh electricity generation mix at roughly 20%, albeit this figure is higher at roughly 30% when comparing just renewable electricity generation in Wales against total electricity consumption within Wales itself in 2015. Wales has a proportionately high share of the UK's electricity generation and heavy industry. At 32.7 percent, coal played the largest parts in 2015 in generating electricity.

Meanwhile, renewable heat generation in Wales is considerably lower than renewable electricity generation. Heat accounts for around 45% of the UK's total energy needs and decarbonising the sector, whilst meeting peak energy demand in winter, is recognised as one of the biggest challenges facing the energy industry.

With legislation in Wales now providing a framework and clear commitment to clean energy, making Wales reach its renewable energy potential is fundamental to taking advantage of Wales' 'abundance of natural resources' in order to deliver secure, reliable, clean and affordable energy. The Environment (Wales) Act 2016 has committed to put in place statutory emission reduction targets, which include at least an 80% reduction in emissions by 2050 and carbon budgeting to support its delivery. In Wales, energy supply sources constituted 38% of total 2014 GHG emissions.

Despite these commitments, significant numbers of potential renewable energy projects in Wales have struggled to go ahead and obtain sufficient funding due to cuts in subsidies and other factors. Furthermore, significant recent projects have struggled (or not attempted) to attract Welsh capital funding, with profits then flowing outside Wales.

However, there is money in Wales that could be used to invest in such projects. Local government pension funds, for example, have a collective investment of £13 billion, while further models mentioned in this paper are used across the UK to generate the kind of investment that these projects need.

According to a report from Community Reinvest, local government pension funds in the UK invest over £14 billion into fossil fuel companies. Welsh councils specifically invest £739 million of their pension funds in fossil fuel companies. That equates to 6.6% of their total investments, higher than in Scotland, England or Northern Ireland. This investment occurs despite the financial, social, technological, environmental and regulatory risks associated with such investments. Furthermore, the Well-being of Future Generations (Wales) Act adds a duty to the public bodies listed in the Act, including local authorities, to consider the long-term implications of their actions. Calculations by Platform London show that UK local councils have lost up to £683 million from their pension funds due to failed investments in coal firms. Such concerns are reinforced by Mark Carney, the Governor of the Bank of England, who has warned that action to meet global climate change targets could leave fossil fuels and other high-carbon investments as worthless "stranded" assets. Meanwhile, a Carbon Tracker report states that an inadequate response to climate change may lead to a market failure in the financial system. Giant pension funds such as the National Employment Savings Trust fund is shifting almost 10% of its investments into a new climate change fund designed to move people's money out of fossil fuels and into renewable energy, as pressure mounts on large investors to protect their portfolios from the risks associated with climate change. Research by 'As You Sow' allows investors to find out if they are exposed to climate change risks.

Overcoming some of the barriers to investment in renewable projects, and exploring some options to facilitate more, could allow Wales to move beyond the rhetoric and really deliver on its ambitions. The purpose of this paper is to highlight opportunities that could lead to the development of more investment in renewable energy projects in Wales. We have developed this work following interviews with 20 experts from the energy and financial sectors, within and outside of Wales. These experts include developers, private investors and investment advisors amongst others, all of whom have offered their candid assessments on what would need to change to make renewable projects more viable. Therefore, while we acknowledge that this paper offers opinions which are backed up with evidence in most instances, we think it is a valuable contribution to the debate as it also offers a list of clear recommendations which could act as a starting point for exploring some of these issues and opinions further. A full list of individuals interviewed is provided as Appendix 1

1

The Big Picture: The barriers to renewable energy project investment in Wales

1 The Big Picture: The barriers to renewable energy project investment in Wales

There is a range of distinct barriers inhibiting investment in renewable energy schemes. Following interviews with experts, three specific areas are consistently raised as the main barriers to being able to raise capital from within Wales for schemes to ensure wider economic and social benefits are retained locally. Those three barriers are:

— Uncertain subsidy levels and government policy
— Planning and development risks
— The capacity and limitations of the electricity grid in connecting renewable energy projects.

1 Uncertain subsidy levels and government policy

The speed of cuts in subsidies and uncertainties in UK Government policy, particularly cuts to the feed-in tariffs, have acted as a barrier to making renewable energy schemes an attractive investment. For example, solar capacity installation fell by 75% in early 2016 as the UK Government cut feed-in tariff incentives. Changes in subsidies are constantly altering business models for projects, which creates uncertainty to investors. This has left question marks over how assured are income streams for renewable energy projects, with investors and projects needing more safeguarding from potential tariff changes. Ultimately, we need 'grid parity' for all forms of renewable energy so that renewable energy technologies can provide energy at the same cost to ratepayers as traditional technologies. We currently need more subsidy certainty in order to be able to achieve this.

All forms of energy generation are subsidised in some form – be that financial or through externalising the impacts of generation to environment and society. The level and duration of

financial subsidy is particularly important as it is critical to project's viability. According to Jeremy Smith, Innogy, what is vital to developers is a long-term guaranteed price for the electricity produced for a set number of years in order to offset the uncertainty around future energy prices. Smith noted the 'Contract for Difference' mechanism as being ideal when it was available for onshore wind projects, as it offered a guaranteed price over a fifteen year timeframe equivalent to the operational life of a wind turbine. New onshore wind projects now face a highly uncertain route to market. Onshore wind in Wales, like other renewable technologies, is supported by the Welsh Government and arguably there is plenty of opportunity for the deployment of onshore wind projects in Wales due to relatively slower deployment than in other parts of the UK. Welsh Government should therefore lobby the UK Government for future access to the Contacts for Difference (CfD) mechanism for onshore wind to enable further deployment of this technology in Wales. The exclusion of onshore wind from the CFD mechanism could result in the UK having to pay more to meet its carbon emission reduction targets than is necessary. With current activity in the energy market around the integration of flexibility and energy storage into the system, the use of more established lower cost sources of renewable energy such as onshore wind becomes even more important.

Greater policy certainty and direction at a UK Government level is needed regarding renewable energy subsidies. The October 2016 Ernst & Young **"Renewable energy country attractiveness index"** shows that the UK has dropped to 14th in 2016 from 8th in 2015 "due to the uncertainty caused by Brexit, the closure of the Department of Energy & Climate Change and the approval of Hinkley Point C".

Welsh schemes have been susceptible to UK Government policy and subsidy changes. Several experts interviewed felt that Wales should explore the need to be given responsibility to be able to directly levy money from Welsh consumers energy bills to pay for subsidies supporting low carbon energy. The UK Government currently levy such charges across the UK and use the 'Levy Control Framework' (LCF) to control the costs of supporting low carbon energy. Wales should explore the need to gain powers over levy responsibility or explore the need to executively devolve one of the schemes included within the LCF, such as the 'Contracts for Difference' (CFD) or the 'Feed-in Tariff Schemes' (FITS). Devolving such mechanisms would relieve the impact of UK Government policy decisions on schemes in Wales.

Yet the current changes that are taking place in the energy market raise questions over whether this is actually viable. For example, Scotland and Northern Ireland had competence over the Renewables Obligation scheme but this scheme recently closed to all new generating capacity and Scotland and Northern Ireland therefore lost powers in this area. Recent 'Electricity Market Reform' has seen a move towards centralisation at a UK Government level and not further devolution.

Wales could make the case to have autonomy over subsidy setting through the devolution of some of these mechanisms. In particular, were the two governments to differ substantially ideologically, devolved schemes in Wales could be structured to better fit regional geographic and technical advantage, public attitudes and investment opportunities.

Academic colleagues in Scotland have been keen to argue that it would be **better and cheaper for Scotland** to be able to support its own renewable energy goals if it had autonomy over subsidy and an independent Scottish electricity system rather than being part of a 'socialised' UK system. This is largely due to the increased cost to consumers that will occur because of nuclear power sites in England and Wales and due to Electricity Market Reform incentive levels which are unlikely to support significant deployment of offshore renewable resources

in Scotland or Wales. A recent report argues that the costs of delivering the UK's low carbon programme itself could be reduced substantially if the Scottish Government were given powers to fund its own renewable energy programme.

When considering how well UK schemes are aligned with Welsh ambitions, despite Welsh Government support for nuclear energy at the Wylfa Newydd site, for example, question marks exist over how Welsh Government and UK Government priorities align. It was raised during the interviews for this paper whether it would be better and cheaper for Wales to be able to support its own renewable energy goals if it had autonomy over subsidy and an independent Welsh electricity system. David Clubb, RenewableUK Cymru, pointed out that most of the renewable energy project development, and hence public investment, over the coming years will be targeted at offshore wind, and much of that sits off the east coast of England.

The economic viability of a move towards devolving autonomy over subsidy setting to Wales is uncertain. Simple research shows that the average annual household energy bill for Wales amounts to £1,280 for gas and electric. Of an average bill, 9% goes toward government backed green levies each year, amounting to roughly £115 per household in Wales. According to the Committee for Climate Change, green levies will add a further £55 to bills across the UK between now and 2020, rising to £75 by 2030. If each of the 1.3 million households in Wales were paying the UK average, they would currently contribute around £150m annually towards green levies, with this set to increase as outlined above.

Consideration could be given to whether this money can be actively directed towards supporting renewables investments and energy efficiency schemes in Wales rather than large scale energy generation investments for example across the rest of the UK (including nuclear energy). Conversations would be needed with energy companies to assess whether it is practicable for energy bills to be managed at a Wales wide level. Consideration also needs to be given to the economic impact of the devolution over these mechanisms and its impact on affordability issues for households across Wales. It is possible that ambitious renewable energy and energy efficiency schemes for Wales would have to rely on a subsidy regime that raises resources from the UK as a whole and is run from Westminster as a result. However, this does not automatically rule out devolution in this area as finances for subsidies could, in theory, be raised elsewhere and not just through households.

The experts interviewed commented that without the guarantee of subsidies, renewable projects will have to demonstrate that they stack up economically regardless of the level of financial support from government in order to draw in other investment. Keith Jones, National Trust, highlighted that alternative models of distributed renewable energy supply can be used to increase a scheme's economic viability. For example, modelling for the innovative Bethesda local energy scheme, which is supported by the Welsh Government, has shown a much better return on investment for potential projects moving them from marginal to healthy potential for investment. Simon Hamlyn, British Hydropower Association, backed this point stating that different delivery models and different types of finance are needed following subsidy cuts. Hamlyn cited the example of hydro schemes, noting that subsidy cuts have significantly curtailed the development of schemes over 100kw.

Meanwhile, renewable energy industry cost reductions driven by rapid unit price falls in certain technologies such as solar photovoltaic systems, wind turbines and batteries are increasing the cost competitiveness of renewable energy compared with traditional fossil fuel based energy. These cost reductions are vitally important in reducing a renewable energy project's reliance

on government subsidy schemes and they offer a breakthrough towards reducing policy risk in the sector. Banks, as an example, are beginning to increase the provision of finance into the renewable energy space now the market has reached significant scale and maturity. An increase in market understanding of renewable energy projects and their associated risk assessment has also occurred, although this could improve further. Entrance into the market by the mainstream banks will increase competition, reduce the costs of borrowing and increase the tenor of project loans. Agreements such as the Paris climate deal are key to drawing in investment from such institutions as national governments around the world have made major commitments to reduce carbon emissions over the long term.

Taking the above into account, the IWA believes that in order to overcome uncertain subsidy levels and government policy, a range of options are worth pursuing. This firstly includes the need for Welsh Government, non-governmental organisations and other parties to strongly explore the need for Wales to gain responsibility to be able to levy money from Welsh consumer energy bills to pay for subsidies to support low carbon energy, or explore the need for Wales to executively devolve one of the schemes included within the LCF, as options for driving renewable energy deployment. Alongside this, greater clarity is also needed from the UK Government on the future of the LCF. The IWA's 'Re-energising Wales Project' will explore the issues around devolving powers over subsidy mechanisms further in a future work package looking at powers and regulatory issues around energy in Wales. Secondly, we also need to support the delivery of alternative models of distributed renewable energy supply that are not so reliant on government subsidies.

Furthermore, Welsh Government should also develop a sustainable energy strategy which maps out timing, capacity needs and location for new renewable energy assets. This should include deployment targets and technology specific considerations. The strategy should be updated regularly with periodic reviews to take into account policy views and evolving technology developments. Creating a sustainable energy pipeline will help provide investors with confidence that investable projects will be forthcoming.

2. Planning and development risks

The level of risk is often cited as one of the main reasons that investment vehicles have, to date, been reluctant to invest in renewable schemes. Chris Blake, Director of The Green Valleys (Wales), emphasised that the perception of the risk that companies and communities take during the development and planning stages of such projects has played a part in the current lack of investment seen in Wales. This was echoed by Anthony Purnell, Treasury and Pension Investments Manager for Carmarthenshire County Council, who agreed that renewables are seen as high risk during the development stage, yet assets which are already operating and have a regular steady income could be more attractive to vehicles such as pension funds. This is not unique to renewable projects, but does give some indication that if pension funds, for example, will invest in infrastructure schemes then this is unlikely to be at the development stage. Nevertheless, investment in schemes that are already operating still presents an opportunity for organisations and investment vehicles based in Wales to own stakes in energy assets across Wales. Welsh bodies should invest more at the post development stage of projects. Jeremy Smith, Innogy, highlighted the example of the Gwynt Y Mor project, in which Innogy are one investor amongst several. They were successful in bringing in funding partners after the development stage. Innogy took on the early development risks but other investors were needed to fund the project.

George Finnie, the former Manager of the 'new opportunities/direct investment portfolio' for the Strathclyde Pension Fund, noted that Strathclyde typically fund renewable energy schemes that are either in the construction or post construction phases, however these schemes always had planning and connection consents before they invested. In cases where Strathclyde had invested during construction they had found that while schemes can have long lead in times, there are wide compensations for construction risk, which can offset some of the risk involved. Another option for mitigating risk to allow for investment in renewable schemes is the 'repowering' market, which looks – for example – to upgrade existing power generators such as wind turbines. Given that these schemes are likely to already have a grid connection and planning consent, they can offer a less risky investment.

Alongside investment in the 'repowering market' and the post development stage of projects, consideration needs to be given to the gap in terms of start up funding for renewable schemes. One approach to resolve this gap is for Welsh Government itself to step in and support projects in their early stages. This is already offered to an extent through Welsh Government's **Local Energy Scheme** and **Green Growth Wales**. However, Chris Blake suggested that it could be useful to create an arm's-length vehicle at a Welsh Government level to further facilitate investment. Several interviewees thought that Welsh government had been very risk averse in the past and arguably could have invested in large energy schemes that have been developed in Wales.

Through an arm's length or stand alone body Welsh Government could take on the early risk by purchasing a stake in projects and taking a 'first loss' position to help secure further investment and reduce the cost of capital from strategic investors, including pension funds. Welsh Government stated that any development of an arms length body, to be appropriate, must be aligned to a specific purpose and if this included high risk financing, there would have to be an acceptance that investments would sometimes result in losses.

Meanwhile, Helene Winch, an Investment Advisor, cited the role that bodies such as the European Investment Bank play in taking first loss and encouraging private money to invest alongside them. Welsh Government were quick to point out that investment is needed from a wide range of actors especially the private sector. Michael Brown, Robert Owen Community Banking, which specialises in high risk mezzanine lending to the energy sector, backed this up and stated that other investors should not be averse to investing in projects at this early stage. Brown stated that what we need in Wales is a much stronger independent finance sector evolving to create specialisms, adaptability and diversity. Brown felt that this process can be accelerated by Welsh Government supporting this evolution, but it certainly will not happen if they are encouraged to effectively compete against an emerging independent finance sector. A mechanism whereby Welsh Government are merely required to provide the underwriting guarantees against loss would help the independent finance sector in Wales be able to raise private finance. Brown also noted the role of 'Mutual Guarantee Societies' models which are private guarantee institutions created by SMEs who benefit from them.

An example of a specialist form of finance, as referenced above, is 'mezzanine finance' which is a mix of debt and equity financing that gives the lender the rights to convert to an ownership or equity interest in the company/project in case of default. Monika Paplaczyk, Thrive Renewables, noted how they, for example, have started providing mezzanine loans to renewables projects, including community energy projects, in order to compliment senior loans provided by banks, so they are effectively providing mezzanine funding to plug the funding gap.

This form of finance has helped community groups gain quicker access to finance, as opposed to raising finance through a community share offer for example. Paplaczyk used the example of heat investment noting that there is significant interest from investors to consider investment in the heating sector, including for example, investment in district heat networks. However, Paplaczyk felt that further certainty and clarity on the revenues and contractual arrangements would be required when funding heat projects and initially, a joint venture approach or the mezzanine finance route would be the ideal investment vehicle for financial investors. Wales needs to exploit specialist forms of finance, including mezzanine finance, in order to drive investment in renewable energy projects and ensure adaptability and diversity within the energy market.

The experts interviewed for this paper made it clear that it is hard to get investment at an planning and development stage but – although the cost of capital can be enormous – returns can be very attractive. The communication of risk and returns of renewable energy schemes are also key in overcoming the barriers to investment. Helene Winch, an Investment Advisor, used the example of Scotland where communication alongside political will and clear visibility of renewable energy schemes across Scotland has been key to driving further investment.

3. The capacity and limitations of the electricity grid in connecting renewable energy projects

The 'Electricity Market' is currently facing a big transformation. The degree of change from a centralised power generation model to a distributed power model will need huge investment to transform the grid. These complex challenges are driving the evolution of utility sector, supporting the development of Smart Grids. The existing grids are under pressure to deliver the growing demand for power, as well as provide a stable and sustainable supply of electricity and capacity issues are acting as a barrier to increased local renewable energy supply. Because of this many renewable energy projects have not been connected to the electricity system and this threatens the country's prospects for a low-carbon future. Capacity issues have clearly impacted local energy prices and connection costs for those looking to connect renewable projects to the grid. Solutions to this have been widely discussed and include approaches such as major increases in grid upgrade investment and encouragement for network companies to take creative approaches to connecting projects without costly network upgrades.

The IWA believes that Welsh Government should undertake an analysis, in collaboration with the National Grid, Distribution Network Operators and others of how existing as well as new grid infrastructure in Wales (north, mid and south) can be utilised to respond to Wales' particular energy aspirations. The IWA recognises that this has been considered to some extent by Western Power Distribution in their 'Shaping Subtransmission to 2030' report and we believe this should inform Welsh Government's work. This analysis should form part of a Welsh Government led sustainable energy strategy which maps out timing, capacity needs and location for new renewable energy assets. This strategy would also will assist in exploring further issues such as the devolving of renewable energy subsidy setting to Wales as outlined above.

Recommendations

If renewable energy schemes are going to attract capital investment from within Wales, the IWA suggests that the following recommendations are implemented:

1. Welsh Government, non-governmental organisations and other parties should strongly explore the need to devolve a range of powers over renewable energy subsidy setting to Wales. Well-designed and time-bound sustainable energy support policies are vital to attract finance and improve risk-return profiles.

2. Welsh Government should lobby the UK Government for future access to the Contacts for Difference (CfD) mechanism for onshore wind to enable further deployment of this technology in Wales.

3. Wales needs to exploit specialist forms of finance, including mezzanine finance, in order to drive investment in renewable energy projects and ensure adaptability and diversity within the energy market.

4. Welsh Government should develop a sustainable energy strategy which maps out timing, capacity needs and location for new renewable energy assets. This will include deployment targets and technology specific considerations. This should include an analysis, in collaboration with the National Grid, Distribution Network Operators and others of how existing as well as new grid infrastructure in Wales (north, mid and south) can be utilised to respond to Wales' particular energy aspirations.

2 Pension Funds

2 Pension funds

Local government pension funds currently held around Wales are an obvious resource that could, in part, be invested into renewable projects. There are eight Welsh Local Government pension schemes in Wales, each overseen by a committee. These eight funds operate with a collective investment of approximately £13 billion. A significant proportion of this £13 billion is invested outside of Wales and not directly in Welsh assets.

Andrew Padmore, Egnida, questioned the risk return strategy of Welsh Local Government pension funds. Whilst there is a perception of higher risk through investment in renewable energy, pension schemes are already investing in areas that have considerable risks and limited returns. Their investment in areas such as equities and gilts amount to significant portions of investment, and a number of interviewees highlighted concerns around these investments. Although diversified investments are usually needed to spread risk, according to Helene Winch, an Investment Advisor, the types of investments that pension funds in Wales are currently investing in, such as gilts and corporate bonds, are not offering a good risk adjusted return due to low interest rates.

Dr Eurfyl ap Gwilym, IWA board member, suggested that long term investments with safe yields are needed. If successful, investments in infrastructure projects such as renewable energy can often bring a yearly return that is inflation linked and much higher than could be achieved through government bonds. With interest rates at current levels, investing in renewable energy infrastructure makes good financial sense. As an example, it is stated in 'The Greater Manchester Pension Fund' annual report that the fund is directing £245 million of investment in infrastructure (including renewable energy) as at 31 March 2016, and "Although the infrastructure portfolio is immature, the 'since inception' performance has improved to an annualised return of 8.5% per year as at 31 March 2016." Meanwhile, the UK Green Investment Bank, which invests in and manages green infrastructure assets, had a 10% projected portfolio return in 2015-16. At the time of writing, Greencoat UK Wind PLC, a British investment company investing in operating UK wind farms, reported an annual dividend yield of 5.30%, whilst also at the time of writing, UK Government bond yields sit at under 2%. On a

market capitalization basis, the EU's largest 5 power generators have collectively lost over 100 billion euros (or 37% of their value) from 2008 to 2013.

Following pension reforms by the UK Government, exploring this area as a potential source of investment for renewable energy is timely. Local government pension funds have specific obstacles to overcome before they can take advantage of the potential that renewable energy schemes have to offer. This chapter will explore the barriers to encouraging local government pension funds to invest in renewables and offer recommendations for how to overcome them.

Two specific issues are consistently raised as being the main barriers to pension fund investment in renewable energy projects in Wales:

— Cultural and behavioural decisions of pension fund trustees, boards and consultants

— The small scale and size of Welsh pension funds.

1. Cultural and behavioural decisions of pension fund trustees, boards and consultants/investment managers

The cultural attitudes of pension fund decision makers could be a barrier to investment in renewable projects. Anecdotal evidence from Gerald Holtham, Cadwyn LLP and IWA board member, highlighted that when considering local government pension fund investment, local authorities have trustees that are extremely conservative and very much in the hands of consultants and investment managers who advise them. Other experts also argued that pension fund advisors and trustees do not see the opportunities in the renewable energy market well enough and can be too cautious, whilst usually perceiving renewable energy opportunities as being too small.

Local projects are also not ordinarily directly funded through local government pensions by Pension Fund Committees. According to Jon Rae, Director of Resources at the Welsh Local Government Association, Welsh pensions funds are invested in stock markets all around the world. Some investments are at arm's length so they are invested through investment managers such as Blackrock or Standard Life who invest in a wide range of products and markets to optimise risk and return. Investment decisions are on the basis of independent expert advice.

Money is invested usually on the advice of the Investment Manager appointed by a pensions committee. Anthony Purnell, Carmarthenshire County Council, explained that an Asset Allocation Strategy is set internally by trustees and pension scheme members taking into account risks and volatility and is then managed on their behalf by an investment manager. There is a local government pensions fund panel that Welsh local government pension funds are members of which gives regulatory oversight and engages with companies in regards to issues such as ethical investments and social responsibility. The law is generally clear that schemes should consider any factors that are financially material to the performance of their investments, including social, environmental and corporate governance factors. However, Purnell was quick to point out that whilst investment managers are more conscious of climate change than previously, they have a fiduciary duty to protect their members' interests and would not invest in climate change projects if it was potentially at the expense of being able to pay out pensions to its members. However, as noted earlier in the report, Welsh Local Government pension funds are currently investing in fossil fuels which carries significant risk

in itself. Furthermore, as outlined in the Department for Communities and Local Government 'Local Government Pension Scheme: Guidance on Preparing and Maintaining an Investment Strategy Statement' document, an administering authority "Must explain the extent to which non-financial factors will be taken into account in the selection, retention and realisation of investments". Welsh Local Government pension funds should ensure that factors such as environmental and social returns are weighted and taken into account when making investment decisions.

Changing perceptions and mindsets of pension fund investment decision makers could be key to promoting understanding of the opportunities of investing directly in renewable energy projects. Helene Winch, an Investment Advisor, noted the key role that Scottish Government has played in supporting renewable energy projects, which has included clear communication across Scotland regarding the positive impacts of schemes. Renewable energy schemes are also proportionately more visible across Scotland when compared with, for example, the number of renewable energy projects that investors in London might visibly come across. Communication, particularly from government and investors, is a big issue and poor communication can be a clear barrier to investment. According to Helene Winch, there has been more positive communication with foreign investors than domestic investors. Requirements for investors (capital providers, asset managers and consultants) to share data on performance, risks and the costs of renewable energy investments should be strengthened in order to improve market transparency and promote the understanding of the risk profile of these investments. This should help drive collaboration and knowledge sharing. This should help drive collaboration and knowledge sharing.

More positive communication could help change the perceptions and mindsets of pension fund decision makers and this would introduce considerable potential for pension funds to have an impact in their local area, something that has been traditionally lacking. There is very little ability for pensioners to have their money invested in their local economies. Many pension schemes make their first infrastructure investments in their local market which is driven by market familiarity, better understanding of government policy risk as well as typically domestic inflation linkage in the asset cash flows.

In terms of the decision making structure, George Finnie, Strathclyde pension fund, noted that it can help having people who understand the opportunities and risks of renewable energy schemes on the different committees or boards. Raising the profile and clearly informing and communicating the opportunity that renewable schemes offer with committee, board members and investment managers could play an important role. Strathclyde pension fund has been able to diversify its investments, allocating up to 5% of its fund, which roughly amounts to around £750 million, towards infrastructure including renewable energy projects. Notably this fund has also chosen to invest directly in projects in some instances, rather than investing through arms length organisations. Finnie noted that a pension fund must have the desire, resources and expertise to be able to successfully invest directly in assets. According to Finnie, whilst it carries risk, if done properly, it has clear benefits which include cutting out costs and potential for better internal returns.

Finnie, who previously managed the 'new opportunities/direct investment portfolio' part of the Strathclyde Pension Fund noted that, due to its success, this portfolio looks set to grow to potentially up to 20% of the total fund. One of the key things to note about this fund is their decision to invest in a wide range of different types of renewable energy so that they have a diverse range of assets. For example, they have invested in solar and wind technologies which are both fluctuating types of energy generation, but they also invest in technologies

such as biomass which consistently generate the electrical power needed to satisfy the minimum energy demand. Strathclyde have tended to invest in areas which do not get locked into markets that are unpredictable and change rapidly. In some instances they have opted for longer term investments of 20-25 years that have a greater degree of certainty, as opposed to shorter term, riskier investments that have the potential for higher overall returns. Finnie believes that the direction of travel for pension funds will be towards more alternative investments to avoid volatility and allow pension funds to be in a position where they buy their own assets. The renewables market, according to Finnie, is now a much more mature market which provides an option for diversified investments. Strathclyde Pension Fund has also joined the Greater Manchester Pension Fund and the UK Green Investment Bank plc in committing capital to community-scale renewable energy projects.

Welsh pension funds should look to emulate this Strathclyde model and go a step further by allocating a proportion of their funds to renewable energy projects. A trustees' statement of investment principles, asset allocation strategy and the local government pensions fund panel itself should identify and take climate change into account as a key risk. The need for this is global, but also underpinned in Wales by the public body duties as set out in the Well-being of Future Generations (Wales) Act 2015. Wales could also learn from models further abroad. Big funds such as PensionDanmark, German Municipalities, Masdar and Statoil already invest in large, state-subsidised projects in the renewable energy sector. This publication is helpful in highlighting the breadth of investment in offshore wind as an example.

Taking the above into account, Welsh Local Government pension funds should significantly reduce their exposure to investment in fossil fuels. All funds should identify and take climate change into account as a key risk, as underpinned by the duties set out in the Well-being of Future Generations (Wales) Act 2015. This should ensure that factors such as environmental and social returns should be weighted and taken into account when making investment decisions. Carbon footprinting could improve a funds awareness of carbon risk. Furthermore, all public sector pension boards in Wales should recruit a suitably experienced renewable energy advisor or employee and increase industry engagement by joining an industry body such as the Institutional Investors Group on Climate Change.

2. The scale and size of Welsh pension funds

The scale and size of Welsh pension funds has been noted as a barrier to their investment in renewables. Anthony Purnell, Treasury and Pension Investments Manager for Carmarthenshire County Council, acknowledged that this was part of the reason some local government pension funds in Wales had not invested in 'alternative' investments such as private equity, hedge funds and infrastructure.

Yet this could soon change. Policy responsibility for public sector pensions sits under the Department for Communities and Local Government's (DCLG) in the UK Government. In July 2015, the UK Government suggested that local government pension fund scheme assets within England and Wales should be pooled and an agreement has been reached by the UK Government Ministers to set up a Welsh pooling arrangement. Examples of pooled arrangements already exist. For example, the Lancashire County Pension Fund and London Pensions Fund Authority have pooled their assets to launch a £5bn Global Equity Fund.

While UK Government plans envisaged pools with at least £25bn each, the Welsh group is believed to have permission to remain below this level in order to give the country its own

national fund. Decisions have been taken to establish a formal 'Collective Investment Vehicle' (CIV) to facilitate asset pooling in Wales by 2018. This would be overseen by one Investment Manager. One of the key principles of this is that administering authorities will retain control over setting the investment strategy and detailed asset allocation for their individual funds. However, funds will then invest in asset pools which will be made available by the operator of the Wales Pool. Further information can be found within the WLGA May 2016 committee papers.

The Treasury has argued that new collective vehicles will be better equipped to compete with big investors on complex but potentially lucrative investments such as infrastructure projects. Iwan Walters, Eversheds, suggested that collective investment could be channelled through existing platforms or bodies such as the 'Pensions Infrastructure Platform' or through a similar approach in the university sector rather than by setting up a new entity. The Government has conceded that illiquid investments, such as property, infrastructure, and private equity are likely to transition into the pools over a much longer period of time, and has stressed specifically that investments with significant exit costs should not be wound up early on account of the pooling arrangements.

Some collaboration across the eight local government pension scheme funds in Wales is already in place in areas like administration, communications and passive investments. Pooling funds will result in better diversification and negotiation of better deals with the asset managers and consultancy firms that currently oversee funds as well as increased in-house expertise and specialisation. Jon Rae, WLGA, was however quick to note the process of pooling funds doesn't mean that £13 billion is going to be immediately available for infrastructure investments. However the ambition is to significantly increase investments in infrastructure. This will take time and the offer made through proposed national infrastructure arrangements will be carefully examined. A 'Wales Pool' consultation response previously suggested raising current infrastructure exposure from 0.3% towards 5% and possibly 10% long term, suggesting a potential additional investment of around £1bn in infrastructure. This increase of infrastructure investment does not necessarily mean that money will be retained locally. It is likely that a significant proportion of this will be invested globally.

The Welsh pension funds' collective investment vehicles could potentially invest up to £13 billion worth of assets. Initially, different asset pools will be collectively agreed between the pension funds and the operator of the Wales pooled funds. These asset pools will outline different investment options and different choices over the specific assets that pension funds can invest in. The IWA recommends that scope is needed within the design of the different asset pools to allow collective investment vehicles to be able to directly invest into local renewable energy projects. Furthermore, local government pension funds in Wales should consider setting a target of 5% total investment in Welsh renewable energy projects by 2020. The IWA believes that is reasonable, particularly with the development of Environmental, Social and Corporate Governance Funds. Renewable energy should play an important part within a well-diversified investment portfolio. Welsh pension schemes and the Welsh Government should partner to jointly identify suitable renewable energy projects that benefit local communities and at the same time provide Welsh pension schemes with long term, inflation linked returns.

Joint Infrastructure Fund (GLIL Infrastructure LLP)

The Greater Manchester Pension Fund and London Pension Fund Authority launched an infrastructure joint venture in 2015 which has now grown to around £1.3bn. Pension funds for West Yorkshire, Merseyside and Lancashire County have also joined the joint venture. GLIL Infrastructure LLP (GLIL) is as a separate legal entity, wholly owned and operated by the five pension funds. GLIL allows participating funds to increase their investment in infrastructure, deliver long term returns that match their liabilities and provide much needed investment in major UK infrastructure projects.

The joint venture announced its first investment of £60m in 2015 towards funding the construction and operation of British renewable energy assets. GLIL works with Iona Capital who are responsible for sourcing and management of a portfolio of UK bioenergy infrastructure projects, utilising proven biological and thermal conversion technologies such as anaerobic digestion and biomass combined heat and power. The venture finances projects from planning consent through to construction, with the intention of holding the operational plants through their economic life.

GLIL has also invested £150m in a significant minority stake in Clyde Windfarm and over £40m to finance a rolling stock fleet on the Greater Anglia rail network.

Recommendations:

The IWA recommends that pension funds consider investing in renewable energy schemes. It further recommends:

5. Welsh Local Government pension funds should significantly reduce their exposure to investment in fossil fuels. All funds should identify and take climate change into account as a key risk, as underpinned by the duties set out in the Well-being of Future Generations (Wales) Act 2015.

6. All public sector pension boards in Wales should recruit a suitably experienced renewable energy advisor or employee and increase industry engagement by joining an industry body such as the Institutional Investors Group on Climate Change.

7. Requirements for investors (capital providers, asset managers and consultants) to share data on performance, risks and the costs of renewable energy investments should be strengthened in order to improve market transparency and promote the understanding of the risk profile of these investments. This should help drive collaboration and knowledge sharing.

8. The Welsh pension funds' collective investment vehicles could potentially invest up to £13 billion worth of assets. Scope is needed within the design of the different asset pools to allow collective investment vehicles to be able to directly invest into local renewable energy projects.

9. Welsh Local Government Pension funds should consider setting a target of 5% total investment in Welsh renewable energy projects by 2020. This should include direct investment in new projects and investment in the repowering market. Investment could be channelled through the collective investment vehicles or through existing platforms or bodies such as the 'Pensions Infrastructure Platform'.

10. Welsh pension schemes and the Welsh Government should partner to jointly identify suitable renewable energy projects that benefit local communities and at the same time provide Welsh pension schemes with long term, inflation linked returns.

3
Further models for investment

3 Further models for investment

If some of the general barriers to investment were addressed and renewable project support became more available, there are a range of models, in addition to those already mentioned, that could be utilised to raise the capital needed. The fundamental point of the models suggested in this paper is that they should directly raise capital within Wales to ensure wider economic and social benefits are retained locally. We recommend that Wales develops its own model based on the strengths of those that currently exist.

Joint Ventures/Shared ownership

There is a potential for multiple parties to work together to support renewable projects, thereby sharing the cost and any risks that might be involved. Joint ventures are common across Europe. Partnerships can include, for example, developers, local authorities and communities working together to form partnerships to develop and build renewable energy projects.

Whilst there are examples of joint ventures within the UK, they are not as common as across other European nations. Iwan Walters', Eversheds, view was that joint ventures were more common elsewhere due to the fact that municipalities had more of an influence over planning and energy grids than local authorities and communities do in the UK. Such an approach in Wales could have the advantage of helping to draw in public sector funds to invest alongside finance from project developers and local communities. As an example, in Germany, a joint venture project undertaken by the **city of Bedburg** (who invested 49% of the project) and RWE (51%) totalled some €110 million for a wind farm development. There are clear advantages for developers working with local authorities in addition to their potential to access lower cost finance and risk sharing, such as possible assistance in the planning process. However, if joint ventures are to be pursued in Wales caution must be taken in making sure that local communities play a part in them. Located eight miles offshore in Liverpool Bay, the **Gwynt y Môr** 576 megawatt offshore wind farm has a mix of investment currently shared between innogy SE (50%); Stadtwerke München GmbH, Munich's municipal utilities company (30%);

the UK Green Investment Bank (10%) and Siemens (10%). This project has little or no local capital investment despite being a significant project based off the Welsh coast. Despite this, the 'Gwynt y Môr Community Fund' is worth over £19 million over the lifetime of the project. During the construction of Gwynt y Môr, £660m was also spent with companies based in the UK, with over £90 million being spent within Wales.

According to Dan McCallum, Awel Co-op, in order to enable community ownership of large scale renewable energy projects, more encouragement is needed in Wales within the tendering and planning process to drive the setup of joint ventures. Enabling changes to the scoring process in tenders set out by landowners such as Natural Resources Wales (NRW) could help achieve this, with McCallum noting that the process is a lot easier to navigate in Scotland. There should be more onus on NRW to show how their tender process fits into the Well-being of Future Generations (Wales) Act 2015 criteria in theory and in practice. Since wholly owned community schemes currently face significant delivery hurdles, shared ownership could be a key mechanism for allowing community ownership of energy to grow. Welsh Government, through its 'Local Energy' renewable energy support service, currently offers a **partnership portal** which is designed to enable organisations and community groups to work together to progress renewable energy projects. Welsh Government should also consider the impact of the Scottish Government's **'Good practice principles for shared ownership of onshore renewable energy developments'** and consider the benefits of such an approach in Wales.

David Clubb, RenewableUK Cymru, felt that as it is vital that the energy generator can secure a guaranteed price from a buyer for the energy produced for a set number of years, a partnership approach with local authorities and others who can purchase energy is beneficial. Developers need joint projects within their pipeline of work. Clubb also felt that the National Development Framework in Wales will drive consultation and project engagement moving forwards. Added to this, key legislation in Wales including the Well-being of Future Generations (Wales) Act 2015 will be an important driver in bringing partners together through planning and other means.

Abundance

One interesting development for investment at a UK wide level is the Abundance platform. This is a regulated online platform that lets people lend money to projects providing a social and/or environmental good. To date **nearly £40 million** has been raised by investors on Abundance to be put into renewable energy projects in the UK. **Abundance** also launched the World's first pension fund investing solely in renewable energy back in October 2015. The Abundance platform has, for example, facilitated a **renewable energy bond offer** from 'Thrive Renewables Plc' through an Innovative Finance ISA in order to attract everyday investors which now funds £10M worth of renewable energy projects.

Andrew Padmore, Egnida, questioned whether the Abundance model would work in Wales given the population size and levels of revenue. Padmore referenced how the renewables market is changing quickly which does not benefit a model where it might take a significant amount of time to raise the money needed for projects. Louise Wilson, Abundance Investment, stated that there is a perception that raising money from the public can take a long time but in reality there is no reason for that to be the case, particularly when fundraising activities can also attract significant publicity for renewable energy projects. The investment preparation time takes no longer than any other source of funding and the experience of Abundance shows

that significant amounts can be raised in less than a month. Several of the people we spoke to in the course of this research felt that Wales should set up a similar model to Abundance, either in partnership with Abundance or as a new entity. Chris Blake, The Green Valleys, questioned whether there is a gap that this Abundance type model for Wales would have to fill. He cited the recent Awel Co-op scheme, which raised money for two wind turbines situated on Mynydd y Gwrhyd through a share offer. However, there is as yet no Welsh based large scale platform that could offer investment to multiple, different sized projects.

David Clubb, RenewableUK Cymru, supported the idea of an Abundance style platform for Wales, but warned that smaller projects haven't been subject to investment markets to date. He suggested that small schemes could be packaged collectively to make them more attractive to investors. Professor Calvin Jones, Cardiff Business School, argued that if smaller projects were to be combined it should be done on at least a 'city region' type scale. Louise Wilson, Abundance Investment, felt that for a handful of small projects with differing cash flows, it can be challenging to combine those and match them against the debt service requirements. As that scales up in number or individual size per project, the pooled approach can be a very effective mode. Wilson noted the significant time and challenge of setting up Abundance throughout the regulatory process and beyond and considered that Wales should not miss the opportunity to leverage what is already out there, in favour of setting up something new.

A model for Wales?

Based on the strengths of the two models we have outlined above we would recommend a distinct entity should be developed in Wales, which could harness these benefits while fitting with a Welsh context and its challenges.

Welsh Government should support the development of a new cooperative, charitable or not for profit body which has a clear brand and supports investment in Welsh renewable energy projects, with an aim to establish the body by the end of 2019. This entity could be an obvious local partner for developers and investment platforms such as Abundance to build significant renewable energy sites, creating joint investments. This body could develop projects that are wholly community owned and also facilitate shared ownership opportunities on larger scale energy projects.

It could enhance community engagement with renewable schemes, manage share offers to raise money on a local level within Wales and draw in investment from local authorities, pension funds and others. Furthermore, Abundance indicated they would be happy to explore working with partners in Wales to stimulate investment in renewable energy projects and look at possible investment mechanisms such as a national or local renewable ISA. Abundance could work with the new Welsh entity to deliver schemes that have clear economic, environmental and social benefits to Wales.

Recommendations:

If some of the general barriers to investment were addressed and renewable project support became more available, the IWA believe that there are a range of models and barriers that need to be explored further. They include:

11. Welsh Government should support the development of a new cooperative, charitable or not for profit body which has a clear brand and supports investment in Welsh renewable energy projects, with an aim to establish the body by the end of 2019. This entity could be an obvious local partner for developers and investment platforms such as Abundance to build significant renewable energy sites, creating joint investments.

12. In order to enable more community shared ownership of large scale renewable energy projects, more encouragement is needed in Wales within the tendering and planning process. There should be more onus on bodies such as Natural Resources Wales to show how their tender process fits into the Well-being of Future Generations (Wales) Act 2015 criteria.

4

The role of Welsh Government

4 The role of Welsh Government

Welsh Government can play a key role in generating the investment needed to support more renewable projects in Wales. There are existing and emerging models and vehicles such as Wales' incoming borrowing powers, tax varying powers, and European funding, some of which are explored very briefly below, that the Government have as part of the policy toolkit at their disposal.

Welsh Government need to think strategically about how they use the mechanisms they currently have, and those they are imminently acquiring, to deliver investment in renewable projects based on an ambitious economic plan. With the Environment (Wales) Act 2016 and statutory emission reduction targets, more Welsh Government policies to drive down carbon emissions are likely. If these policies are going to be effective in meeting the challenging targets put in place by this legislation they will have to go further than a siloed approach. Welsh Government echoed this point saying action is needed in this area from across Government but also the private sector.

To date, there have been a series of UK wide missed opportunities regarding ownership of schemes, particularly in light of previous high subsidy levels. As an example at a UK wide level, Dong, a state-backed Danish company which owns or part-owns two-fifths of the UK's existing offshore wind capacity, receives more than £1.5bn a year in subsidies, funded by levies on energy bills paid for by UK consumers. If Welsh Government were able to invest in similar projects with significant subsidy levels, they would see a return in the form of subsidy (although subsidy levels do vary), and would also retain part of any profits, which could be invested back into other projects. Theoretically it could be possible to meet Wales' carbon emission targets through the facilitation of foreign investment, yet this would not reap the additional potential benefits that capital investment from within Wales could drive. Welsh ownership, through government or other parties, is fundamental in ensuring that the positives of a renewable strategy are kept within Wales. Norway, for example, has Sovereign Wealth Funds into which the surplus wealth produced by Norwegian petroleum income is deposited. Surplus wealth is then invested a range of areas that offer returns to ensure financial wealth for

the Norwegian people through responsible management of the fund.

When comparing what the Welsh Government are doing with Scotland there are considerable differences. For example, the Scottish Government have committed in their Programme for Government to consult, during 2017, on plans to deliver a Scottish Green Energy Bond. This would be used to raise capital with which to invest in renewable schemes. If Scotland were to pursue this option then there could be a case for Wales to look at the process and learn lessons to apply when establishing something similar in Wales. The IWA urges the Welsh Government to watch this closely. That Scotland is exploring this first offers Wales the chance to learn from their experience and decide whether this might be the best use of Welsh Government resources.

Examples of current schemes

Green Growth Wales

Welsh Government set up **Green Growth Wales** to stimulate investment and innovation through the Salix Energy Efficiency Loans Scheme (SEELS) and the Invest to Save-Green Growth finance products. To date Welsh Government have largely focused capital available to help projects that could not previously go ahead due to capacity and capability, a lack of senior decision making buy in or a lack of public sector capital for energy efficiency and renewable energy generation. As of April 2016, the Green Growth Fund had **invested around £35 million** and Welsh Government expect the fund to double by the end of this government term. It has invested in **a range of projects**, including, for example, a solar park on council-owned land in monmouthshire.

Although the programme is a specifically public sector focused programme, there is likely to be wider benefits from an approach that seeks to communicate and engage more widely on the objectives, and specific place based opportunities, of the Green Growth Programme pipeline.

While we understand the programme was developed with reference to the adoption of Well-being of Future Generations (Wales) Act 2015, and has a **bench-mark of one tonne saving in CO_2 costing no more than £200**, with new and ambitious carbon emissions targets, significant action is needed in this area from departments across Welsh Government.

In light of this work, and to build on it, the IWA believes that every Welsh Government department must report on an annual basis including:

- The impact of their investment programmes and actions on GHG emissions in Wales
- What actions they have taken to reduce energy consumption
- What actions they have taken to drive renewable energy generation (including community renewable energy generation).

The need for this is vital as part of plans for overall greenhouse gas reductions, and as part of reporting against the wellbeing goals of the Well-being of Future Generations (Wales) Act 2015.

Renewable projects should be at the centre of a coherent and ambitious strategy to boost the Welsh economy that involves every department of government. In particular, the Green Growth Wales Programme should be encouraged to communicate its pipeline more widely to maximise opportunities for collaboration and community involvement in new renewables.

Re:fit

The Re:fit Cymru scheme, announced in March 2016, aims to promote energy efficiency in public sector organisations. Re:fit Cymru has adopted the UK wide Re:fit framework of contractors.

It is this framework that raises questions over whether the scheme is best serving businesses in Wales and whether the programme limits opportunities for SMEs in Wales to win contracts due to its focus on projects that can be delivered at scale. It is notable that there are no Welsh based prime contractors that have been appointed to the UK wide Re:fit framework despite the framework being advertised on 'Sell to Wales'. While the Welsh Government have held two supply chain events to date to introduce the framework providers with the local supply chain, each with significant attendance, the ultimate decision on terms of the tender, and therefore whether Welsh SMEs are more or less likely to get work are the responsibility of the tendering organisation. However, there is an insistence from the Welsh Government that the use of local suppliers will be a determining factor in the selection of supplier and opportunities that are advertised in Wales.

Welsh Government believe that the speed of action in delivering energy efficiency programmes and the ability for the public sector body to transfer the project risks to the service provider, in order to guarantees the savings, is vital and Re:fit exists to deliver large projects quickly which will generate public sector savings, reduce carbon emissions and provide a stimulus to the local supply chain.

This example however highlights the need for local supply chains to be a key factor at the centre of plans to increase energy efficiency, especially since energy efficiency interventions are very labour intensive. The Welsh Government's 'ARBED' area based scheme, for example, is good practice in terms of the scheme creating over 1,000 local jobs since 2012. The IWA believes that to ensure local supply chains in Wales are central to the delivery of energy efficiency programmes both in Wales and beyond, part of the solution includes the need for a strategic and holistic green-up-skilling of the construction SME sector in Wales so that Wales-based contractors can compete with UK wide and multinational firms.

Calvin Jones, Cardiff Business School, made reference to other projects such as the Olympics where Wales under performed when considering Welsh based business involvement in project supply chains. Olympic Games related investment in Wales amounted to £21.54m and the creation of 498 jobs. Despite Wales having 4% of the UK economy, Wales only had a little over 1% of the Olympics' economic activity as detailed in this report.

Social Investment Tax Relief

Although control of 'Social Investment Tax Relief' (SITR) is not devolved to the Welsh Government, it can act as a useful lever to drive the deployment of community energy schemes in particular. The UK Government's tax relief for social investment encourages individuals to support social enterprises and helps them access new sources of finance. It offers 30% tax relief.

Community energy was added to a list of activities excluded from receiving SITR in 2015. According to Dan McCallum, Awel Co-op, social investment tax relief, if applied to community renewable energy schemes, would offer a significant difference by allowing schemes to attract more investment. The IWA believes that Welsh Government should lobby the UK Government to allow community renewable energy schemes to be eligible for Social Investment Tax Relief.

Business Rates Relief

Scotland has introduced business rates relief to a range of renewable energy technology projects that entitle one or more community organisations to either:

- at least 15% of the annual profit
- so much of the annual profit as is attributable to 1 megawatt of the total installed capacity of the project (or more).

The Welsh Government should introduce business rates relief to a range of renewable energy technology projects, in order to drive community participation in renewable energy schemes.

Upcoming schemes

Welsh Development Bank

The new Welsh Development Bank was recently announced as offering £136m worth of funding to SMEs in Wales. This Bank, likely to be up and running in 2017, should invest a portion of this funding into businesses and communities prioritising energy efficiency and the use of renewables. This would also meet the goals of the Well-being of Future Generations (Wales) Act 2016.

According to Michael Brown, ROCB, many new Welsh energy companies have to go across the border to obtain long term capital for development costs. In Brown's view, Finance Wales had been too slow in shifting money to many grassroots sectors and micro businesses. Furthermore, Brown questioned whether a Welsh Development Bank is the preferred mechanism to create lean and sustainable social businesses. Brown is unconvinced that single publicly-funded entities can develop the necessary market intelligence with appropriate methodologies of due diligence, that results in an appetite for high risk specialist startups. Brown noted the role of the UK government in supporting the independent finance sector through various programmes which has resulted in much stronger financial diversity across the border, stating that there is a danger that a Welsh Development Bank will squeeze out competition further. Brown felt that a 'Public Bank' for Wales which had more open accountability and ownership than the proposed Welsh Development Bank might be more suitable.

National Infrastructure Commission

The National Infrastructure Commission for Wales should also consider the role of renewables and the environmental impact of the projects that it supports. The Commission should have a strategic vision for Wales. There has to be a balance between short term projects that might deliver economic gains in the immediate future, and investment in longer, more strategic schemes that could provide economic dividend for future generations. The National Infrastructure Commission for Wales must have targets for supporting the deployment of renewable energy and associated infrastructure.

Recommendations:

Additional to recommendations already noted in this report, the IWA recommends that the following recommendations are implemented by Welsh Government to drive investment in renewable energy schemes:

13 Welsh Government must report on an annual basis on what actions each Welsh Government department has taken to reduce their impact on GHG emissions in Wales and the estimated emission abatement achieved. This should include the impact of investment programmes and actions that have been taken to reduce energy consumption and increase renewable energy generation, including community renewable energy generation, as part of plans for overall greenhouse gas reductions and as part of reporting under the Well-being of Future Generations (Wales) Act 2015.

14 Renewable projects should be at the centre of a coherent and ambitious strategy to boost the Welsh economy that involves every department of Welsh Government. Green Growth Wales should promote their emerging pipeline of work more widely to maximise opportunities for collaboration and community involvement.

15 Local supply chains should be prioritised within energy efficiency schemes delivered in Wales as much as possible. To achieve this, part of the solution includes a strategic and holistic green-up-skilling of the construction SME sector in Wales so that Wales-based contractors can compete with UK wide and multinational firms.

16 Welsh Government should lobby the UK Government to allow community renewable energy schemes to be eligible for Social Investment Tax Relief

17 Welsh Government should introduce business rates relief to a range of renewable energy technology projects in order to drive community participation in renewable energy schemes, as already implemented in Scotland.

18 The National Infrastructure Commission for Wales must have targets for supporting the deployment of renewable energy and associated infrastructure.

Conclusion

Conclusion

Renewable energy across Wales has the potential to substantially boost the Welsh economy, however the funding of projects across Wales is currently one of the biggest barriers to achieving this potential.

A lack of ambition, of strategy, of long termism is currently holding back investment in Wales. There is a need to think differently about how we facilitate more investment in Wales.

Pension funds, Local Government, private sector, third sector and Welsh Government all have important roles to play in this and joined up thinking is required to make it happen.

Pension funds in Wales are currently making investment decisions with little reference to long term climate or environmental impacts, or the potential for such funds to deliver important co-benefits to Wales resulting in little return and minimum or no local benefit. This needs to change in light of the risks of fossil fuel investment and the urgent need to meet challenging climate change targets within Wales. With ongoing pension reform at a UK level and the future of Welsh pension funds likely in a pooled system, there is a significant opportunity here to consider the role of pension funds in supporting the transition to a renewable energy economy. These pooled funds should prioritise investment in infrastructure and renewables while reducing exposure to investment in fossil fuels. Not only will this fit within the framework of new legislation in Wales, but it will also provide the potential to deliver better economic dividends for their members. Lessons from Scotland's Strathclyde Pension Fund as well as The Greater Manchester Pension Fund and London Pension Fund 'Joint Infrastructure Fund' show that divergent thinking from the conservatism of traditional pension funds can offer good returns.

Fundamentally, though, investment is needed from a wide range of actors. The potential for renewable energy in Wales will not all be delivered by small schemes and through pension fund investment alone. It has to be delivered through a coherent strategy driven by Welsh Government, which facilitates projects right across the country. More capital investment is needed from within Wales itself to support projects, while new initiatives such as the National Infrastructure Commission for Wales should, as a central focus, include the need to develop Wales' renewable energy potential. Welsh Government should also consider how best to use subsidy in projects, particularly if uncertainty continues at a UK Government level. Devolution of any powers over subsidy need to be strongly explored since well-designed and time-bound sustainable energy support policies are vital to attract finance and improve risk-return profiles.

Risk is still cited as a reason many are not investing in the renewable market, and it is true that particularly in the planning and development stages some projects are more viable than others. The bigger risk for Wales is letting go the opportunities that renewables will bring

Appendix

Appendix 1: Interviewee profiles

– Andrew Padmore
Egnida

Andrew is founder and CEO of Egnida and specialises in creating and developing businesses in environmental markets. Andrew is experienced in developing successful customer funded and third party funded renewable power generation solutions for a wide range of organisations from FTSE businesses to owner managed SMEs, social housing providers and local authorities.

– Andrew Reid-Jones
Partner, Quantum Advisory

Andrew is a founding member of Quantum. A graduate in International Relations & Politics, he is a member of the CII, the head of regulatory compliance for the Firm and sits on the Governance and Innovation teams within the Firm. Andrew has over 20 years' experience of delivering solutions to sponsors and trustees of employee benefit arrangements in the public, private and voluntary sector for Defined Benefit, Defined Contribution and contract based arrangements.

He leads Quantum's internal regulatory compliance, HR and IT and is Quantum's training specialist, where he designs and runs concise, informative technical training and trustee training for clients. More recently he heads up the defined contribution service offering for our Cardiff office. Externally, Andrew is the Chair of the Global Association of Pension Specialists, based in Holland, and serves as a Board member on the Wales International Business Council.

– Anthony Purnell
Carmarthenshire County Council

Anthony Purnell is the current Treasury and Pension Investments Manager for Carmarthenshire County Council.

– Chris Blake
Director of The Green Valleys (Wales)

Chris is a successful entrepreneur with experience of for-profit and social enterprise start-ups. He has specific experience in fundraising for commercial and social enterprises. He is also a founding director of Community Energy Wales and has previously been an private equity Investment Director. TGV Hydro Ltd is an award winning Welsh company that offers a fully accredited design and construction service for small scale high-head (at least 20m drop) hydro electric systems. They make micro-hydro power a practical reality for landowners and community groups across Wales.
http://www.tgvhydro.co.uk/about-us/

– Chris Foxall
A private investor and chair of Family Housing

Christopher is currently a private investor based in Swansea. He has been involved in the Global Financial Securities business for over 17 years. He has managed global trading businesses in London and Wall Street for some of the world's leading investment banks. Christopher has many years of experience with not-for-profit companies and was recently Chairperson of a charitable organisation focused on people with learning disabilities.

– Dan McCallum
Awel Co-op

Dan is the co-founder of Awel Aman Tawe, a community energy charity and has been manager since 2000. Dan has been involved in every aspect of the project since the start and has shared his experience with a range of community energy projects across the UK. He works with DECC as part of the Contact Group which helped developed the UK's first Community Energy Strategy. He advises community groups across south Wales on developing wind and hydro schemes.

– David Clubb
Director of RenewableUK Cymru

Director of RenewableUK Cymru since 2012, David has worked for more than 15 years in the renewable energy sector at all levels from installer to project manager to policy specialist. RenewableUK Cymru are the representative body in Wales working for all new and emerging energy sectors, including renewables, energy storage, smart grids and the green building industry.
http://www.renewableuk-cymru.com/about/

– Dr Eurfyl ap Gwilym

Dr Eurfyl ap Gwilym is a board member of the Institute of Welsh Affairs. Dr Gwilym is Deputy Chairman of Pure Wafer plc, chair of the Principality Building Society Pension Trustees and a member of the audit committee of the National Museum of Wales and of the Investment Committee of the University of Wales.

He recently stepped down from the board of the Principality Building Society where he was Deputy Chairman and from NCC Group plc where he was a non-executive director. He has also served as a non-executive director of iSOFT Group plc and Eqos Limited. In 1999, he was one of a three man team responsible for floating the Terence Chapman Group on the London Stock Exchange and has since been involved in floating three other companies. Prior to that he was Chief Executive of BIS Banking Systems International, a subsidiary of Nynex Inc, and the Chief Executive of GE Information Services where he also served as UK National Executive for GE and as a member of the CBI President's Council. His early career was spent with Unilever and Philips. He served on the Silk Commission on Devolution in Wales as Plaid Cymru's nominee and is a past National Chairman of the party.

– George Finnie
Strathclyde Pension Fund

George Finnie is the former Investment Manager for the Strathclyde Pension Fund.

– **Gerald Holtham**
Managing Partner Cadwyn LLP
Gerald is a Managing Partner at Cadwyn Capital LLP and is an ex economic advisor to Welsh Government. Gerald is also a board member of the Institute of Welsh Affairs.

– **Helene Winch**
Investment Advisor
Helene Winch is an Investment Advisor providing independent investment advice to institutional investors across public and private equity, infrastructure, renewable energy and low carbon indices.

– **Iwan Walters**
Eversheds
Iwan is a Partner in Eversheds corporate practice group. Iwan is very active with the Clean Energy and Sustainability Group advising on biomass, solar, wind and tidal energy projects. Iwan has extensive experience advising buyers and sellers in relation to onshore wind farm projects in England, Wales and Scotland. Iwan has also advised clients in relation to many of the Round 2 and Round 3 offshore wind farm projects together with leading on most of our biomass transactions.

– **Jeremy Smith**
Head of Development Strategy RWE Innogy UK Limited
RWE Innogy UK (previously RWE npower renewables) is one of the UK's leading renewable energy companies. It operates 22 hydroelectric power schemes, 28 onshore and two offshore wind farms. It has vigorous renewable energy growth plans in the UK and is currently constructing its first biomass CHP power plant in Scotland and the 576 megawatt Gwynt y Môr Offshore Wind Farm, off the North Wales coast. RWE Innogy UK is the UK subsidiary of RWE Innogy, which pools the renewable expertise of the RWE Group across Europe.

– **John Rae**
Director of Resources, Welsh Local Government Association
The Welsh Local Government Association (WLGA) represents the interests of local government and promotes local democracy in Wales. It represents the 22 local authorities in Wales and the 3 fire and rescue authorities and 3 national park authorities are associate members.

– **Keith Jones**
The National Trust
Keith is an Environmental adviser for Wales at The National Trust. Keith is the founder of Cyd Ynni Ogwen, the UK's first end to end energy supply company and also undertakes a number of further roles including Director at Community Energy Wales.

– **Louise Wilson**
Abundance Investment
Louise is Co-founder & Director at Abundance.

– Michael Brown
Chief Executive Officer, Robert Owen Community Banking

Michael has worked nationally within the UK responsible finance sector for 20 years as a trainer, consultant, innovator and entrepreneur. He has published numerous reports on responsible finance and publications for the new economics foundation. He has been evolving a specialism within renewable energy, building a loan book mainly around domestic installations. Robert Owen Community Banking (ROCBF) are a FCA regulated social finance company. They specialise in the green sector and create investment mechanisms. Currently, they have a contract for start up loans in Wales and are financing around 10 new micro businesses a month. http://www.rocbf.co.uk/

– Monika Paplaczyk
Thrive Renewables

Monika joined the Thrive Renewables team in 2007. In her role as Investment Manager, Monika focuses on originating investment opportunities within the sustainable energy market for the Thrive group, performing the investment valuations and negotiations, due diligence of new investments as well as managing commercial aspects of existing portfolios. Monika spent eight years at Triodos Bank where in her role as Senior Investment Manager, in addition to Thrive Renewables, was involved in renewable energy projects managed by Triodos Investment Management.

– Professor Calvin Jones
Cardiff Business School

Professor Calvin Jones works within the Economics Section and Welsh Economy Research Unit in Cardiff Business School. Cardiff Business School is widely regarded as one of the leading business and management schools in the UK. Cardiff University educates approximately 3,000 students annually, including 1,000 international students. The University promotes an internationally focussed community with staff, students and alumni from over 120 different countries.

– Simon Hamlyn
British Hydropower Association

Simon, who is a 3-Dimensional Designer by qualification, comes from a family of architects. Simon's career has embraced international branded drinks, hotels & leisure, electronic entertainment, magazine publishing, internet businesses and, over the past 12 years, consumer and trade membership organisations. Simon has been CEO of the BHA since January 2014.


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