



Decarbonising Wales

Introduction

Fundamental questions need to be asked and choices need to be made about the future of Welsh society and the economy. For instance, should Wales promote new, green industries, taking advantage of new technologies and better industrial processes that can be exported and can drive economic growth? Or should Wales instead pursue a strategy of gradual 'degrowth' to reduce its impact on natural resources and increase the sustainability and resilience of local economies?

These choices go beyond technocratic decisions about how to achieve an agreed goal, rather they involve political and economic choices about what the shape of the Welsh economy and the structure of Welsh society will look like in the future. It is important to articulate these choices, so that the public can choose which to endorse, and to enable policymakers to take a longer-term, strategic perspective. This will require actions to be taken to build this future vision.

The Welsh Government has recognised the need to decarbonise the Welsh economy and has previously set out a range of policies and strategies to reduce emissions in Wales and to mitigate the effects of climate change in Wales ([Welsh Government 2019a](#); [Welsh Government 2019b](#)). Most recently, its second carbon budget sets a direction of travel towards net zero alongside a suite of policy proposals and pathways to emissions reduction ([Welsh Government 2021a](#)). It is clear, however, that the target of [net zero emissions by 2050](#) will require ambitious and far-reaching reforms across a range of sectors, particularly if that

target is moved forward to 2035 ([Welsh Government, 2021b](#)).

The research on Just Transitions ([Price et al., 2021](#)) published by the Wales Centre for Public Policy (WCPP) highlighted some of the challenges and some of the opportunities from a governance angle in achieving decarbonisation in a socially and economically just way in Wales. Welsh legislation, in particular the [Well-Being of Future Generations \(Wales\) Act 2015](#), promotes cross-cutting working and collaborative, long-term ways of working that could help facilitate the changes that will be needed to transition to net zero.

Attempting to reach net zero while preserving a standard of living for the people of Wales which is roughly equivalent or better than today's will lead towards certain policy choices and away from others.

The need for longer-term thinking is also highlighted by the Climate Change Committee (CCC). The CCC highlight the need for a clear, long-term sectoral strategy to reduce emissions alongside specific carbon reduction targets ([Climate Change Committee, 2020](#)). But while there is a shared understanding of the need to reduce emissions, there is not yet a clear view on how this can be achieved, and divergent views of what sorts of strategies and policies will be most effective in achieving net zero.

This matters because diverging pathways are not only a matter of alternative routes to the same destination but are in some cases routes to entirely different destinations. The strategies and policies that will be put in place reflect the need to reduce emissions and the scientific evidence around emissions reduction. But they will also reflect the cultural, social, and political values which the Welsh Government and people in communities wish to promote. In some cases, value choice might lead to very different outcomes: for instance, the choice to 'rewild' large parts of the Welsh countryside will very likely require high-intensity agriculture elsewhere, which would be incompatible with lower-intensity agroecological farming, which may nonetheless be desirable for land management and carbon sequestration reasons. Likewise, attempting to reach net zero while preserving a standard of living for the people of Wales which is roughly equivalent or better than today's will lead towards certain policy choices and away from others.



Policymakers working in decarbonisation at any level will therefore need to grapple with 'big picture' questions around the values and priorities that will be reflected in their choices, and to ensure that these values and priorities are debated openly and obtain democratic agreement and legitimacy.

At WCPP we are contributing to this discussion by commissioning a range of experts with diverse viewpoints to support policymakers in

forming their long-term strategies. Our experts have been asked to write opinion papers on some of the key questions surrounding decarbonisation in Wales, highlighting why their position should be adopted by Welsh Government and public services in Wales. In so doing, WCPP is not taking a position on these questions, but we instead hope to clarify what the parameters of debate are and to build capacity and willingness to engage with the broader, longer-term questions around the purpose of net zero.

Our initial topic areas are set out below, and we hope that readers will engage widely with the pieces which will be published over the coming months.

Economic development: green growth or degrowth?

Many forecasts and models, including those of the CCC, assume that some version of the current economic and social arrangements will prevail into the future and base their modelling on this assumption. However, others argue that radical changes to economic and social systems will be required in order to reach net zero.

One position holds that current resource use is unsustainable, and that existing capitalist or market economic systems focused on growth cannot adequately respond to the scale of the climate crisis. A 'doughnut' model, for instance, situates an upper bound for resource use at 'planetary boundaries': thresholds for resource use beyond which major damage would be caused to global ecosystems, biodiversity and climate. There is also a lower bound, the 'social floors' which set a minimum standard of living for citizens ([Raworth, 2012](#)). Such a model has been developed for Wales ([Swaffield and Egan, 2020](#)).

Responding to the threat of climate change and the perceived overuse of natural resources, some instead aim for a 'steady-state economy', which would reset the global economy so that resources and energy are used within the 'carrying capacity' of local and global

ecosystems ([Alexander and Rutherford, 2014](#)). Because this would likely involve a protracted and deliberate economic contraction in high income countries, this view is often called 'degrowth'. While there would no longer be economic growth, proponents argue that a degrowth economy should aim to redistribute existing wealth and ensure a higher level of basic well-being or 'flourishing within ecological limits' ([Jackson, 2009: 156](#)).

Others, however, argue that economic growth remains necessary. Growth has brought prosperity and allows for technological development through increases in resources and capital. Advocates for 'green growth' or 'ecomodernism' argue that economic growth has been the prerequisite for advances in health, prosperity and wellbeing that have been observed since the industrial revolution ([Asafu-Adjaye et al., 2015](#)). More than this, however, they argue that growth allows for the 'decoupling' of growing prosperity from damage to ecosystems or the climate more broadly. Economic and technological development will then allow for continuing growth in energy use and prosperity while reducing the cumulative impact of humanity on the environment. This would allow greater human flourishing, particularly in parts of the world which have hitherto seen less economic development.

In Wales, the picture is complicated by the devolution settlement and the finance available to the Welsh Government.

Developing a 'circular economy' in which as many materials as possible are re-used or recycled may help to reduce the environmental impact of economic activity while remaining largely agnostic on the question of growth. However, it is not clear whether resources currently in use would be able to meet increased energy or resource need, and current levels of

resource use may be themselves unsustainable in the long run.

Our pieces will explore these perspectives and the benefits adopting each approach might have for the people of Wales, in the context of Welsh legislation such as the Well-being of Future Generations Act. It will be important to balance the effectiveness of each approach in tackling climate change with the effect on well-being, prosperity, and the capacity to maintain interventions into the future.

Energy needs for Wales' future economy

The energy transition is probably the most advanced, and the most visible, aspect of decarbonisation. Wind turbines are now a common sight in the South Wales Valleys and there is widespread awareness — exacerbated by the Ukraine-Russia war — of the need to move away from fossil fuels.

Yet, realising this transition will be complex. Electrification of industrial processes and personal transport will require significant additional generating capacity, and upgrades to transmission and distribution infrastructure to allow this capacity to reach people's homes. The intermittent nature of renewable energy (i.e., that it is not always 'on' or able to generate) means that energy storage and/or flexible use of energy by end users will be an increasing consideration in the future. And some form of energy 'backstop' to provide additional generating capacity may be necessary.

In Wales, the picture is complicated by the devolution settlement and the finance available to the Welsh Government. While Wales has control over some aspects of energy policy, and has set policy in this area (e.g., [Welsh Government, 2021c](#)), planning responsibility for developments of over 350MW generating capacity is reserved to the UK government. Additionally, the Welsh Government has only limited capacity to borrow for infrastructure or investment purposes, limiting its ability to directly finance new projects.

Welsh Government policy tends towards promoting renewables, including through the aim to have 70% of Wales' energy demand being met through renewable energy and 1GW of locally-owned renewable projects by 2030 ([Welsh Government, 2021c](#)). It has also supported the use of sites in Wales for new nuclear reactors including Small Modular Reactors (SMRs) in Trawsfynydd ([Thomas, 2021](#)). Organisations such as the Institute of Welsh Affairs (IWA) have proposed that Wales should take advantage of its potential strengths in marine energy and floating offshore wind ([IWA, 2019](#)); others propose pursuing hydrogen fuel cells to meet industrial and energy storage demand ([Sen, 2020](#)).

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It is clear therefore that there are a number of potential energy futures for Wales, each of which would use these elements in differing proportions to meet Wales' energy demand and provide skilled work to increase the resilience of the Welsh economy.

An initial paper will address the Welsh context and which pathways are possible for Wales. This will be followed by shorter papers covering the possible pathways in more detail, focusing on the technical feasibility, requirements of the energy generation, transmission and distribution system and the challenges and opportunities for implementing these pathways. These could be used alongside broader discussion of socio-economic pathways to ensure that the energy system meets the needs of Welsh society into the future.

How wild should Wales be? Land use, agriculture, and climate change

Wales has a predominantly upland geography and uses a higher proportion of its land for agriculture than the other UK nations. Much of this is designated 'less favourable areas' due to poor production potential ([Armstrong, 2016](#)). The future use of this land has been increasingly salient, with an increasing interest in 'rewilding' (where land is taken out of agricultural use and left to return to their prior ecologies) and the potential for changes in the agricultural subsidy regime following Brexit.

Agricultural communities are culturally important to Wales, particularly as they are more likely to be Welsh-speaking than non-agricultural communities ([Farmers' Union of Wales, 2019](#)). Agriculture also supports rural communities economically including through ancillary or related industries such as veterinary services, feedstock, and market facilities. However, they are under significant pressure including from farm consolidation and low-income levels. The current subsidy regime has seen significant numbers of farmers leaving agriculture ([Williams, 2019](#)).



Farmers as well as governments recognise that it will be important to use agriculture to promote habitat restoration and reverse biodiversity loss, but there are diverging views as to how this is best achieved. Welsh Government subsidy reform proposals would see the current system of basic farm payments replaced by payment for 'sustainable land management' ([Welsh](#)

[Government, 2022](#)). For instance, farms could be required to have 10% tree cover, and cover crops may be required for uncropped land over winter ([Welsh Government, 2022](#)). Caution will be needed to ensure that scheme redesign does not lead to consolidation, increased farm exits and unpredictable income ([Jones and Jones, 2021](#)).

More broadly, land use has become a contentious issue in Wales as debates around rewilding have progressed. Advocates for rewilding argue that this would promote biodiversity, restore degraded areas of the Welsh countryside and help with climate change mitigation ([Bakker and Svenning, 2018](#); [Cromsigt et al., 2018](#)). However, opponents argue that rewilding is a threat to rural areas as it imposes a set of values onto communities with no regard for their heritage, culture or way of life, in a form of 'cultural imperialism' ([Betteley, 2018](#)). The language of rewilding can suggest that land is only valuable once local people and agriculture are removed from it.

There are other factors to consider in relation to the view that rewilding is the best way to promote biodiversity and habitat restoration. A rewilded landscape would likely require intensive, input-dependent farming in the remnant of land dedicated to agriculture ([Fairlie, 2013](#)). Others instead argue that an agroecological farm network that integrates 'islands' of wilderness could be better for biodiversity than more wholesale rewilding ([Smaje, 2015](#)). This corresponds to a wider debate between intensive agriculture and more agroecological approaches. Modern intensive agriculture requires less labour and claims to offer higher yields, but is more dependent on inputs like artificial fertiliser and can damage soil health over the medium-term. Agroecological farming tends to emphasise lower-intensity, mixed farming which is more labour-intensive but which aims to promote soil health and biodiversity.

Decisions over land use are clearly linked to the questions above about the shape and goals of future Welsh society. Balancing the needs of

agriculture and rural communities with ecosystem restoration and wider social goals will require deliberate choices around these questions, as well as consideration as to how these goals can be achieved, including the need to retain maximum agency for individuals and communities affected by any changes. Our papers on this topic will explore these questions.

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