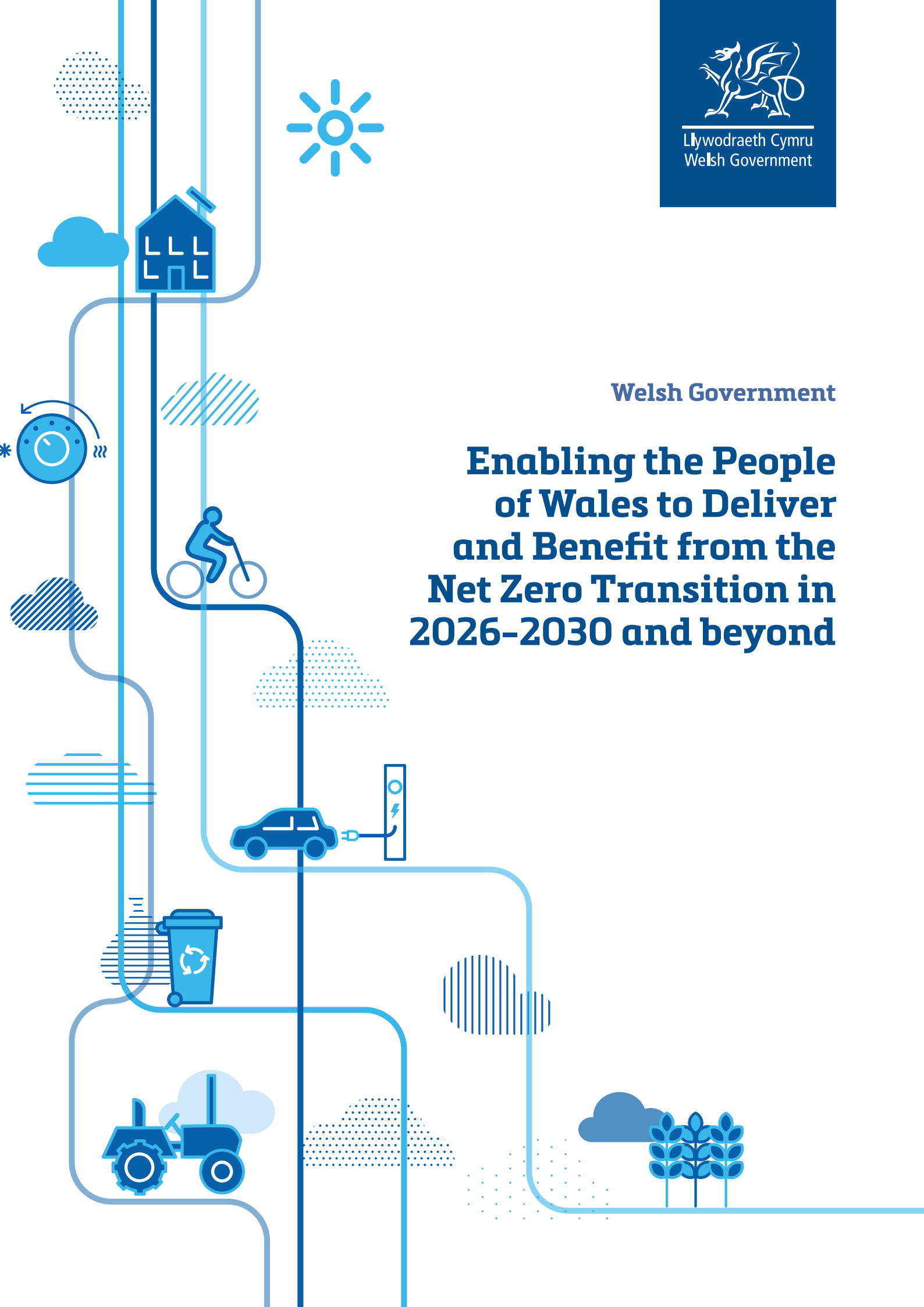


Llywodraeth Cymru
Welsh Government

Welsh Government

Enabling the People of Wales to Deliver and Benefit from the Net Zero Transition in 2026-2030 and beyond

1. Why are we engaging

A changing world brings both risks and opportunities to Wales. Our climate is warming and we are seeing more and longer very hot spells of weather alongside milder, wetter winters, rising sea levels and more frequent violent storms. Every year of delay means the likelihood of more floods, fires, and heatwaves, and greater risks to our health, economy, and future.

But there is more. This is an opportunity, with benefits – to our health, bank balances, security, lifestyles and to our growth as a nation to be seized. At a societal level, acting sooner will cost less than dealing with the damage later. In an uncertain world, decisions which allow us to reduce our demands for energy and materials, or source them in ways that are sustainable, move us towards greater certainty on costs and supply. It's an opportunity to create new jobs, cleaner air, and stronger communities. And this is also about fairness – to future generations and to those already feeling the impacts. There is also a clear understanding that both adaptation and mitigation need to be considered together in our response to the challenge of climate change.

The way in which we make changes and the timing of these changes is really important. The costs and benefits are not always equally distributed. We need to understand what will enable these benefits, what stops us realising them and what considerations and trade-offs need to be balanced. And that's why we need your input.

Mae'r ddogfen hon ar gael yn Gymraeg hefyd / This document is also available in Welsh
Rydym yn croesawu gohebiaeth a galwadau ffôn yn Gymraeg /
We welcome correspondence and telephone calls in Welsh

1.1 The purpose of this paper

This discussion paper is designed to inform and stimulate discussion about the next stages of our route to a cleaner, brighter future. It draws on a range of evidence and reviews to give you a sense of the different options available and to prompt your responses, to help us chart the best path for Wales. We will be drawing on this document heavily at Wales Climate Week in November 2025, and taking the fruits of those discussions into account as we develop the next plan for reducing emissions over the next five years, due to be published by the end of 2026.

In our Net Zero Wales: Carbon Budget 2 plan, we set out that the 2020s needed to be the decade of action. We recognised the need for urgent action to reduce our emissions and to unlock the benefits of a cleaner, healthier, fairer and more economically prosperous future.

We are already halfway through that decade of action, and we have made significant progress. But the rate of change cannot tail off. We must embrace and drive the opportunities of transition at pace. The lion's share of emission reductions to date have happened in the power and industry sectors. And while there is still more work to do in those sectors, as we move through the next decade, we will see increased change in other emission sectors like **agriculture and land use, housing, and transport**. The next emission reduction plan, scheduled for publication in late 2026 will need to set out a clear path to decarbonise these sectors as well as others, and secure the associated benefits for Wales.

As you move through this paper, we encourage you to reflect on:

- How can we **accelerate** a shift in practices and behaviour so that we can realise early benefits?
- How do we **unlock the potential** in Wales for example, to improve productivity, increase our household energy security, and/or make it easier to get around in cleaner, greener ways?
- How can we reduce emissions while also **building our resilience** to the changing climate?
- What **barriers** stand in our way? How can we remove them?
- What **risks or consequences** do we need to work together to avoid, ensuring a fair and just transition?

1.2 How will we involve people in this exercise?

Wales Climate Week has become the centrepiece for involving stakeholders in understanding the emerging evidence, gaining unique insights, creating connections and accelerating progress towards our climate goals. The main conference has operated on a virtual basis since 2020 and brings together public sector bodies and networks, industry bodies and businesses, environmental organisations, academic institutions and more, to collaborate.

Since 2022, the Welsh Government Climate Conversations grant fund has widened engagement beyond the virtual conference, to include dialogue with local communities and members of the public from across Wales. Since 2022, the fund has provided financial support to organisations to hold 111 community events, involving over 6,000 members of the public. To qualify for the funding, event organisers are required

to hold their event during or beyond the main Week (over a set period), explore a set of structured questions provided by the Welsh Government, and submit a post-event evaluation report with key findings. The evidence is then used to inform future Government decision-making and to provide additional insights into the issues that matter to communities across Wales.

This year, the Welsh Government will invite discussion on the points raised in this paper through a bold, fully immersive, new-look virtual conference and exhibition (Monday 3 to Wednesday 5 November). Also, the Welsh Government will host three invite-only workshops in South, Mid and North Wales to explore the key questions in this paper with selected members of the public representing different audience demographics, including school children and marginalised groups. The Climate Conversations grant fund will also support the delivery of community events which will continue up until the end of February 2026.

Input and feedback will be gathered from this programme of events and analysed to ensure a range of views are considered in the development of the next emission reduction plan (for 2026-2030). Discussions with members of the public will also explore what more the Welsh Government could do to encourage engagement with those affected by the policies in these areas.

2. Introduction

2.1 Context and Decarbonisation Commitments in Wales

Addressing climate change is written into our laws. We have legally binding climate targets to reach net zero by 2050, with interim carbon budgets for 2020, 2030 and 2040 shaping its trajectory.

Carbon Budget 1.
Our first carbon budget (2016–2020) was set at an average of 23% reduction against the base year, 1990. In 2022, we showed we exceeded our 2020 interim target and the first carbon budget. In doing so, we recognised the global pandemic had a significant effect on 2020 emissions.

Carbon Budget 2.
The Second Carbon budget (2021–2025) is set as an average reduction of at least 37%. Our current **Net Zero Wales plan** recognises the challenge and urgency of climate change and looks to outperform the second carbon budget to ensure we are on the right pathway to our 2030 interim target, and net zero by 2050. So far, we are on track. Between 2023 (the most recent year for which we have official data) and the base year, 1990, Welsh emissions have decreased by 38%.

Carbon Budget 3.
In 2026, the Welsh Government will publish its plan for meeting Carbon Budget 3 (2026–2030).

Carbon Budget 4.
In 2025, the Senedd will make regulations setting Carbon Budget 4 (2031–2035) in law.

Most of the decarbonisation we have seen in Wales to date has been delivered by the power and industrial sectors. With opportunities in these sectors largely taken, or planned, we must now seek more significant reductions in other sectors. This document sets out to explore the options, benefits and risks of different actions and combinations of actions to meet our statutory emissions reduction targets in Wales in Carbon Budget 3, and lay the ground for further emissions reductions in Carbon Budget 4 (2031-2035) and beyond.

2.2 Independent Advice

Independent research plays an essential role in informing policy by providing objective, scientifically grounded evidence.

In this paper we describe the key features of how the Climate Change Committee envisage the path to the 2030s, provide a brief overview of the current UK and Welsh Government policy landscapes, and present other evidence and reports which have considered the route to net zero.

The Climate Change Committee is the statutory adviser to the Welsh Government. It recently (May 2025) published **advice to Wales** on the level of CB4 and set out a pathway to get there. That advice suggests that cost-effective, near term, net zero consistent pathways in the next ten years will increasingly be delivered in areas which intersect with daily life for the majority of people in Wales:

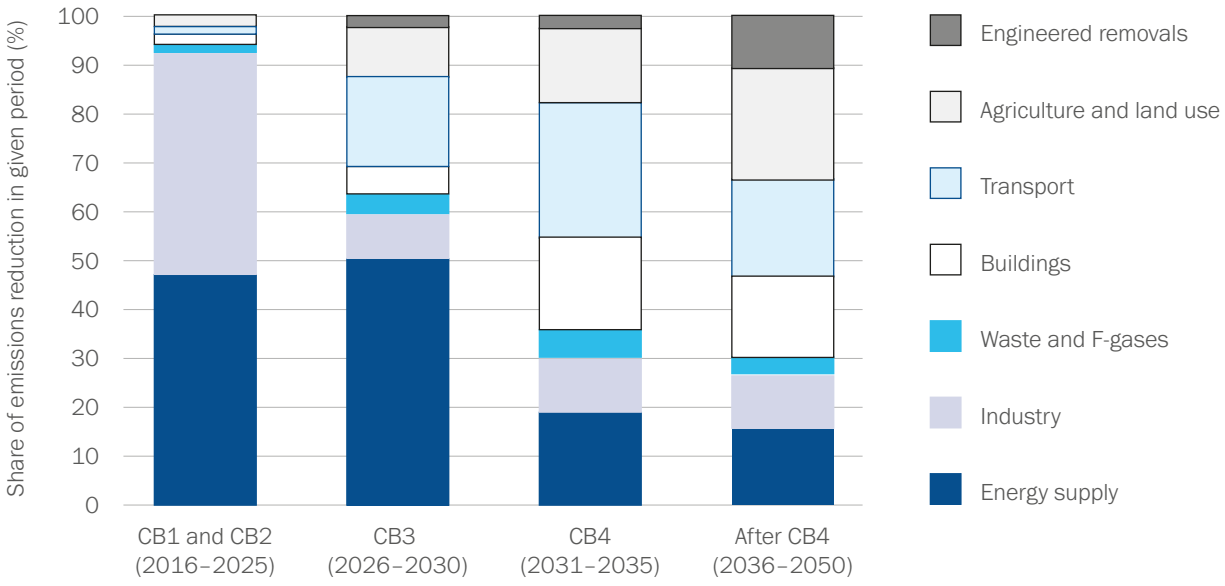
- transport – primarily through the uptake of electric vehicles;
- buildings – primarily through the uptake of electric heating solutions;

› agriculture and land use – primarily due to market forces in the food system requiring farmers to diversify their incomes and the rural economy.

It is important to note that the CCC pathway and advice is the only comprehensive advice available providing analytically evidenced, costed actions which could deliver the emissions reductions we need. All forward-looking pathways will necessarily be based on a significant level of assumption. The CCC assumptions are set out in its **methodology document** and supporting data tables. Other pathways which deliver a different cost/benefit profile will be possible and we are keen to understand and explore alternative routes.

Distribution of emissions reductions during carbon budget periods

More than 60% of the emissions reduction required over CB4 are from mainly devolved sectors



CCC Cost Data

The CCC has published the cost and expected emissions reduction for every measure they identify as significant in the Balanced Net Zero pathway. These give specific cost-effective actions to decarbonise each sector. The data included in this document is selective, but aims to illustrate measures expected to reduce the most carbon emissions for each sector (highest % of sector abatement), and the most cost-effective measures per tonne of CO2 abated (lowest net cost, £/tonne).

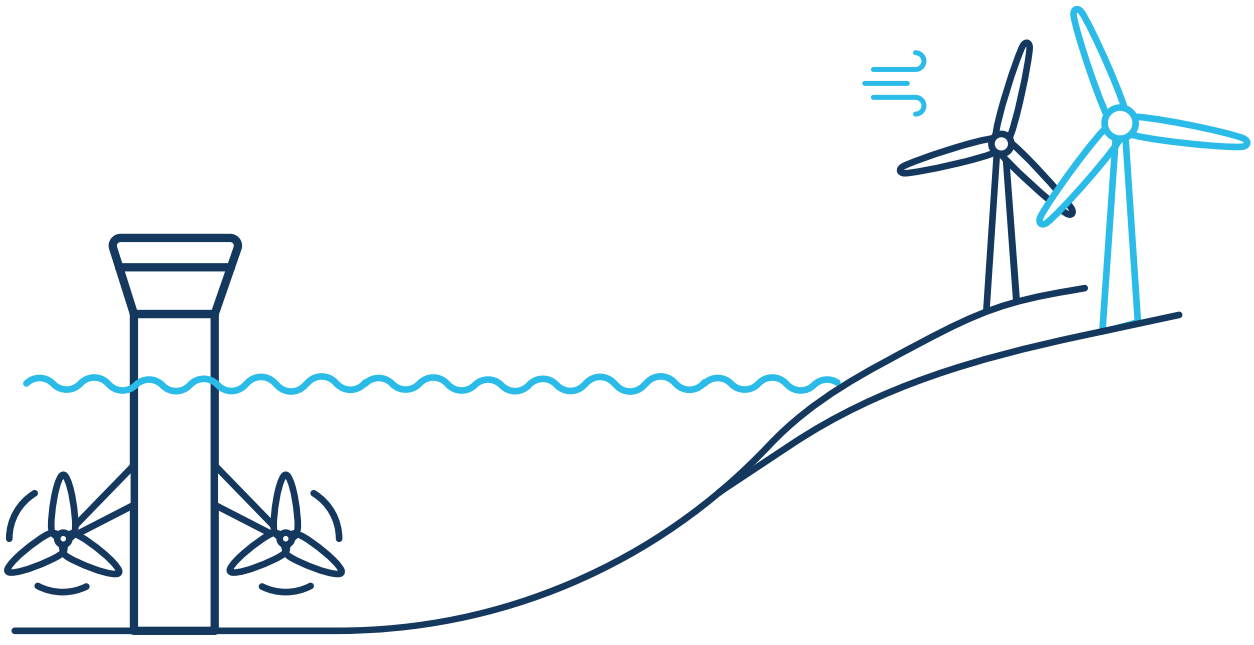
We aim to highlight the policies which could have the largest impact on sector emissions, as well as potential 'win-wins' where the employment of certain decarbonising measures is cost-saving or cheap per tonne of abatement.

For measures that are cost saving, the public and businesses should *in theory*, be motivated to adopt them as they would gain financially. Where this is not happening, government can consider what barriers exist to their widespread take-up, and how to help overcome those barriers. This could include policies such as education campaigns, signposting, loans to mitigate upfront costs, guidance and regulations or other types of support.

For measures that incur additional costs, additional interventions may be needed to motivate their uptake and/or to mitigate negative impacts on some societal groups. This could include policies such as loans and grants, guidance and regulations, required standards, taxes or fines, or other types of intervention. In some cases, it could also include innovative approaches to reduce the cost of the measures, such as pump-priming the delivery industries.

Since the start of 2023, multiple other independent bodies and groups have also published influential analyses and recommendations on climate mitigation strategies tailored to Wales' unique social, economic, and environmental context. These include the **Net Zero Wales 2035 Challenge Group,** supported by the Wales Centre for Public Policy (WCPP), and various other Government-commissioned consultations and reviews.

Such evidence informs policies which are ambitious yet feasible, economically sound, socially just, and aligned with international climate commitments. The evidence also identifies knowledge gaps, highlights emerging challenges or unintended consequences and is an essential part of the policy-making process.



3. Common threads

Given the way in which we heat our homes, travel, and produce food are currently largely dependent on fossil fuels or results in wider emissions, it is unsurprising that common threads emerge from the evidence and advice we have on transport, agriculture, land use and housing. These can be characterised in different ways and we have chosen to group them into three themes: shared strategic objectives, the role of people in shaping and delivering change, and innovation and capacity building.

3.1 Cross-Sectoral Alignment in the Advice

Shared Strategic Objectives

Across agriculture, land use, housing, and transport, the advice we have received from numerous sources consistently supports the same strategic objectives:

- **Rapid decarbonisation** to meet statutory carbon budgets.
- **Nature-based and low-carbon solutions** tailored to Wales' geography and economy.
- **Fairness, social justice and equity,** ensuring vulnerable groups are protected and supported.

These objectives reflect Wales' commitment to the Well-being of Future Generations (Wales) Act 2015, which mandates sustainable development across all policy areas. It is further reinforced by the Welsh Government's Environment (Principles, Governance and Biodiversity Targets) (Wales) Bill which underpins its commitment to restoring nature.

The role of people in shaping and delivering change

Advice in all sectors recognises that technical solutions alone are insufficient. There is a role for everyone in this, making new and different choices about the way we live, work, travel and eat, supported by a system that means these green choices are cheaper, easier and more convenient. For example, by encouraging healthy diets and sustainable consumption, promoting energy-saving awareness, as well as reducing car dependency and encouraging walking, wheeling and cycling. We know from the evidence and from our own experience that change can be hard for people, especially if they perceive they are being treated unfairly, or the change is being done to them. As a result, change can generate significant tension – which we want to understand, and resolve through our policy response.

Across the evidence landscape, there is consistent advocacy for participatory approaches, for example:

- Farmers and landowners in land use planning and management.
- Tenants and landlords in retrofitting houses and building low carbon homes.
- Communities and service-users in transport planning.

This reflects a broader shift among the public toward greater interest in and for **deliberative democracy** and **place-based governance**, in which policies are shaped by those affected.

The **Climate Action Wales Public Engagement Strategy** commits the Welsh Government to involving the people and communities of Wales in climate decision-making, and encourages people to make green home energy, travel and sustainable food choices. Examples of ongoing engagement and involvement in policy development include:

- The Agriculture Industry and Climate Change Forum (AICCF), at which agricultural stakeholders present evidence and help monitor decarbonisation action within Welsh agriculture.

- The Land Use for Net Zero, Nature and People (LUNZ) hub consortium has also been providing policy input into land use policies and the just transition needed to reach Net Zero.
- Involvement of tenants and landlords in the evaluation of the Welsh Housing Quality Standard and Optimised Retrofit Programme, to inform future policy on retrofitting social homes.

Innovation and Capacity Building

All sectors of the economy have a role in reducing emissions – and can do this in a way that is in tandem with economic growth. While we are focusing this discussion paper on the agriculture, land use, transport and housing sectors, many of the opportunities and challenges also apply to broader sectors. Advice on emission reduction in all sectors highlights the need for:

- **Technological or business model innovation:** e.g. agri-tech, electric vehicles or new ways of paying for heat pumps.
- **Skills development:** to maximise the economic opportunities for all e.g. retrofit workforce, sustainable transport planning, land management
- **Data and monitoring systems:** to track progress and outcomes to aid decision-making.

This points to a cross-sectoral need for additional **investment in our communities, in education, training, and digital infrastructure** from both the public and private sectors. It also represents an opportunity to foster economic prosperity in tandem with environmental sustainability, leveraging innovation, skills, and investment for a resilient, inclusive, and future-ready Wales.

We will use Wales Climate Week to stimulate a discussion on what might currently be preventing such innovation and skills development and whether there is enough support available to transition the economy to a greener future, with regards to technology, skills and data.

3.2 Cross sectoral interdependencies

The advice consistently reinforces the importance of taking a systems-based approach, to better understand interdependencies, trade-offs, and tensions – resolving which means we can minimise unnecessary costs and maximise co-benefits. Some examples are set out here.

- **Land Use ↔ Housing**

  Urban expansion and a response to the need for more homes in Wales may affect agricultural land availability. There is a finite amount of land available for multiple primary purposes: housing, food production, forestry, biodiversity, renewable energy, peat restoration etc. This can generate tensions in the economic purpose of the land of Wales and its ability to contribute to meeting our climate targets.

  Equally, embedding green infrastructure in housing developments can support biodiversity and carbon sequestration. Historically site masterplans and home construction materials and methods have often not paid adequate attention to nature and climate, but this is changing. For example, in the design of new social homes, the Welsh Development Quality Requirements emphasises that new developments should be environmentally and ecologically sustainable as a result of good design.

In addition, the Welsh Government's new Timber Industrial Strategy, **Making Wood Work for Wales**, and social housing collaborations like Tai ar y Cyd present good ways of working for the future.

- **Housing ↔ Transport**

  Some housing developments in recent decades have been based on the occupants' access to and reliance on private cars, contributing to emissions and potentially harming health. In contrast, compact, mixed-use communities with built-in active travel routes can reduce car dependency and strengthen social cohesion.

- **Transport ↔ Land Use**

  Transport infrastructure projects impact ecosystems and land use patterns. There may be some inevitability in this, but if we are to reverse the decline in biodiversity and meet our emissions targets, we need to better understand the trade-offs and make better decisions.

  We need to generate and take opportunities for transport networks to act as key links between areas of woodland and habitat.

Rural transport access affects viability of rural businesses and therefore economic opportunity in our rural communities.

These interdependencies reinforce the need for a system-based approach, with **integrated spatial planning, cross-sectoral policy design, and multi-level governance with, again, citizens and communities at the heart of decision-making**.

As we develop our plan for Carbon Budget 3, we intend to adopt a thematic approach to describing the policies and proposals needed to support the pathway. The cross-sector linkages described here illustrate the relationships between and across sectors.

As set out in the **CCC's 2023 briefing on Adaptation and Decarbonisation**, there are also significant interdependencies to be considered between climate change mitigation and adaptation in relation to all these sectors. Some specific examples are mentioned in the following sections.

We will use Wales Climate Week to explore these themes – how can we consider the relationships, compromises and mutual benefits between these potential policies?

Spatial Planning and Placemaking

The planning system plays a key role in tackling the climate emergency through the decarbonisation of the energy system and the sustainable management of natural resources.

Future Wales – the National Plan 2040 is our national development framework, setting the direction for development in Wales to 2040. It is a development plan with a strategy for addressing key national priorities through the planning system, including sustaining and developing a vibrant economy, achieving decarbonisation and climate resilience, developing strong ecosystems and improving the health and well being of our communities.

Future Wales is a spatial plan, which means it sets a direction for where we should be investing in infrastructure and development for the greater good of Wales and its people. Future Wales sets the challenge of delivering these improvements to the public, private and third sectors. It makes clear the importance of planning new infrastructure and development in such a way that they are complementary rather than competing priorities, ensuring opportunities are maximised and multiple benefits are achieved.

As the national development framework, Future Wales is the highest tier of development plan and is focused on solutions to issues and challenges at a national scale. Strategic and Local Development Plans are required to be in conformity with Future Wales and must be kept up to date to ensure they and Future Wales work together effectively. Planning decisions at every level of the planning system in Wales must be taken in accordance with the development plan as a whole.

4. The advice to date

4.1 Agriculture and Land Use

4.1.1 Agriculture and Land Use – current landscape

As of 2025, the Welsh Government has several active and evolving policies in place for agriculture and land use, reflecting its commitment to sustainability, climate resilience, and food security. These include:

Agriculture (Wales) Act 2023

- Provides the legal framework for agricultural support post-Brexit.
- Introduces Sustainable Land Management (SLM) objectives, including:
  - Supporting viable agriculture
  - Tackling climate change
  - Climate resilience
  - Enhancing biodiversity
  - Protecting cultural heritage and language
- Embeds environmental outcomes (e.g. carbon sequestration, biodiversity) into future farm support payments.

Sustainable Farming Scheme (SFS)

- Replaces the Basic Payment Scheme (BPS).
- Voluntary, but will become the main route for government support.
- Farmers must undertake Universal Actions (e.g. soil testing, biosecurity, benchmarking) to receive baseline payments.
- Additional SFS payments will be available in the Optional and Collaborative Layers for those farmers who choose to go above and beyond the Universal Layer.
- Supports practices such as agroforestry, carbon rich habitat management, and low-input grassland management.
- Informed by the Carbon Sequestration Evidence Review Panel.

Control of Agricultural Pollution (Wales) regulations (2021)

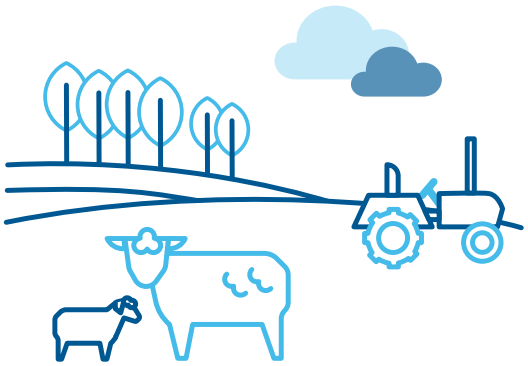
- Significant indirect impact on greenhouse gas (GHG) emissions, primarily by improving nutrient management and reducing pollution from organic manures and fertilisers. Examples include:
  - Ensuring fertilisers and manures are applied only when and where needed, reducing excess nitrogen in soils and thereby lowering N_2O emissions
  - Nutrient management planning and integration of manure and fertiliser nutrient supply.

Animal Health and Welfare Framework

- Contributes to emissions reduction primarily through its influence on livestock management practices, which are a major source of methane (CH_4) and nitrous oxide (N_2O)

Multi-Annual Support Plan (MASP) 2025-2030

- A 5-year roadmap for agricultural support.
- Provides clarity and stability for farmers during the transition to new schemes.
- Aligns with the SFS and broader environmental goals.



Woodland Creation

Strategic Vision

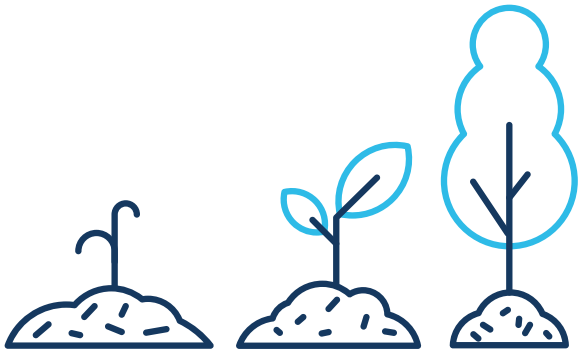
- The **Woodland for Wales Strategy** sets a long-term goal to increase woodland cover by 2,000–4,000 hectares annually.
- Woodlands are expected to deliver multiple benefits: carbon sequestration, flood risk reduction, livestock shelter, biodiversity enhancement, and public wellbeing.

National Forest for Wales

- This key Programme for Government commitment aims, in time, to create a connected network of high-quality woodlands across Wales.
- A long-term programme that will also support the restoration of ancient woodlands and promotes sustainable management for future generations.

Support for Tree Planting

- Financial assistance is available via Woodland Creation and Planning Grants.
- Ongoing review of grants and processes to simplify access and encourage participation.



Integration with Farming

- The Sustainable Farming Scheme (see above) encourages farmers to identify opportunities for tree and hedgerow planting.
- Supports integration of trees into farming while maintaining high-quality food production.

Timber Industrial Strategy

- Making Wood Work for Wales (published July 2025) outlines priorities for developing a wood economy.
- Focuses on timber security, use of home-grown timber in construction, strengthening local supply chains, and increasing skilled employment in forestry.

Climate Resilience

- Woodland creation we fund must align with UK Forestry Standards and be suitable for future climate conditions.
- Research is underway to identify climate-resilient tree species to ensure sustainable, diverse, and resilient woodlands.

National Peatland Action Programme

- Peatlands hold c.30% of Wales total soil carbon over just 4% of its land area.
- The National Peatland Action Programme (NPAP) aims to restore these degraded ecosystems by repairing their hydrological integrity.
- Since 2020, NPAP has delivered >3,600ha of peatland restoration exceeding the initial 5-year target a **year early in 2024**. Through this work, an estimated 2.2 million tonnes of stored carbon have been safeguarded.
- Over the next five years, NPAP aims to increase restorations from 600ha to 1,800ha per annum.

Agri-tech Action Plan

- Encourages innovation in precision agriculture, robotics, and data-driven land management.

4.1.2 Agriculture and Land Use – advice

Climate Change Committee (CCC) – Fourth Carbon Budget Advice (2025)

Land Use

- **Woodland creation and management (57% of emissions reduction in 2033; 72% in 2050)**. Woodland creation rates rise from around 1,200 hectares per year in 2025 to reach peak rates of 9,800 hectares per year by 2036. The proportion of woodland cover rises from the current 15% to 17% in 2033, and 26% by 2050.
- **Peatland restoration and management (12% of emissions reduction in 2033; 7% in 2050)**. The proportion of peat under restoration and rewetting management increases from the current 41% to 52% in 2033, and to 85% by 2050.
- **Agroforestry and hedgerows (31% of emissions reduction in 2033; 21% in 2050).** Increasing trees and hedges on farms supports continued food production alongside sequestration in vegetation and soils. It is assumed the transition to agroforestry rises annually by 760 hectares.

Agriculture

- **Low-carbon farming practices and technologies (51% of emissions reduction in 2033).** Supports precision agriculture and low-emission slurry spreading technologies, delivering around half of the emissions reduction required from the agriculture sector. Soil health is also emphasised, with improved nutrient management, reduced fertiliser use, and adoption of cover cropping to enhance soil carbon.
- **Reducing livestock numbers (47% of emissions reduction in 2033).** The CCC recommends a 19% reduction in ruminant livestock numbers (particularly cattle and sheep) to cut methane emissions, which are a major contributor to Wales' agricultural emissions. The CCC use a baseline which commences in 2025, and estimates cattle and sheep number to be 10.9 million, falling to 9.7 million in 2030. However, in 2024, the estimated livestock numbers were 9.8 million. The suggested shift is to be enabled by diversification of income streams and is, they say, driven by a long-term trend of declining consumption of meat and dairy products in the UK.
- While the ruminant livestock reductions often garner the most attention, the CCC advice suggests that in the next decade, **low-carbon farming practices and technologies will need to account for approximately half of the emissions reductions**.
- The CCC suggests the shift to modern, green practices also comes with significant economic opportunity, including (list not exhaustive):
    - **Grass-legume mixes –** nitrogen fixing legumes which reduce nitrogen (fertiliser) inputs will save £180 per tonne of emissions reduced in the next five years;
    - **Improving sheep health –** can save £60 per tonne of emissions reduced in the next five years; and
    - **Decarbonising stationary machinery –** will come with additional up-front cost but with savings of £100 per tonne of emissions reduced in the longer term.

Other key reports in this area include the **Net Zero Wales 2035 Challenge Group (2024)**. This report focussed on the following aspects, which were not quantified in terms of costs or carbon savings but indicated the need for a holistic, inclusive approach to decarbonisation. Overall, their findings are consistent with the CCC advice, albeit a direct comparison is not possible due to the lack of comparable data. The main themes emerging from their work are:

- **Multifunctional land use:** Recommends a shift from single-output farming to systems that deliver food, carbon sequestration, biodiversity, and water regulation. For example, agro-forestry can enable continued agricultural production alongside carbon sequestration and environmental benefits, as well as a potential diversified income source for farmers.
- **Dietary change:** Suggests that reducing meat and dairy consumption can ease pressure on land and emissions.
- **Just transition:** Calls for financial and advisory support for farmers to transition to sustainable practices without economic harm.
- **Community engagement:** Encourages localised land use planning and co-design with rural communities.
- The **Sustainable Farming Scheme (SFS) – Carbon Sequestration Evidence Review Panel** advocated for long-term land stewardship and for farmers to be rewarded for their actions to mitigate and protect carbon stores tied to verified carbon and biodiversity outcomes. It did not include any costed or quantified actions to meet Carbon Budget 3 but may be relevant in terms of the approach.

4.1.3 Agriculture and Land Use – consensus and challenges

The advice above reaches consensus on the need to support a transition to multifunctional landscapes that deliver food production, carbon sequestration and biodiversity. The advice also acknowledges the role livestock plays in the agricultural sector's emissions profile, and the need to restore peatland and expand woodland cover.

The current policy landscape addresses these to an extent, and at Wales Climate Week we want to explore **how to accelerate emission reduction in the agriculture sector in Wales. What are opportunities? What are the barriers? How might they be removed?** In considering these questions you may want to reflect on:

- How do we use land in Wales in a way which supports multiple objectives – including food production, housing, health of the rural economy, nature restoration (including tackling pollution), and protects and enhances the Welsh language and culture?
- How can we use technology (e.g. in AI and remote sensing) to accelerate the transition?
- How can we support rural and agricultural sectors to generate renewable energy to power their communities?
- What are the opportunities (but also the risks) of creating private markets for nature-based goods and services that are accessible and workable for landowners and farmers? How might this look at a smaller scale, given our aims in Wales to keep smaller farmers and tenant farmers on the land?

4.2 Housing

4.2.1 Housing and heat – current landscape

The current policy landscape aims to address overall standards, provide support and incentives to upgrade the current housing stock, and develop a skilled workforce to enable the shift to low carbon heating and cooling. The key policies and their features are:

1. Welsh Housing Quality Standard (WHQS) 2023

- Sets new minimum energy efficiency standards for existing social housing.
- Requires homes to be affordable to heat, well-ventilated, and climate-resilient.
- Developed through extensive consultation, aligning with stakeholder-informed advice.

2. Optimised Retrofit Programme (ORP)

- Provides funding to social landlords for energy efficiency upgrades.
- Supports whole-house retrofit approaches, including insulation, ventilation, and low-carbon heating.
- Encourages innovation and a test and learn approach.

3. Warm Homes Programme

- Targets fuel-poor households with support for government backed insulation, renewable energy generation and heating improvements.
- Recent shift from predominately fossil fuelled solutions to supporting the switch to low and zero carbon systems, based on a whole-house approach.
- Sits alongside the GB-wide Energy Company Obligation (ECO) scheme, including locally delivered ECO LA Flex schemes, in supporting low-income households.

4. Green Homes Wales

- Managed by the Development Bank of Wales, designed to support eligible homeowners in making energy efficient improvements to their homes.
- Targets households who are able to invest with expert guidance, flexible finance and grant funding.
- Compatible with the Boiler Upgrade Scheme.

5. Net Zero Skills Action Plan

- Includes training for retrofit assessors, installers, and energy advisers.
- Addresses workforce gaps identified in CCC and WHQS consultations.

6. Building Regulations

- Set the standard for new build homes in Wales, with Part L (conservation of fuel and power), Part O (overheating) and Part F (ventilation) of specific relevance to climate mitigation and adaptation.
- Current consultation on uplifting the energy efficiency standards in Part L will ensure compliant new homes and non-domestic buildings will be ‘zero-carbon ready’, meaning no further work will be necessary to ensure they have zero carbon emissions at some point in the future as the electricity grid continues to decarbonise.

7. Welsh Development Quality Requirements 2021

- Sets new minimum standards for new build social housing.
- Requires homes to be meet EPC A (SAP 92) with a non-fossil fuel heating and hot water system.
- Adopts best practice in moving to a decarbonised and circular built economy, including maximising timber use and employing modern methods of construction.
- Will be reviewed and updated in Spring 2026.

8. Incentivising energy efficiency through other housing schemes

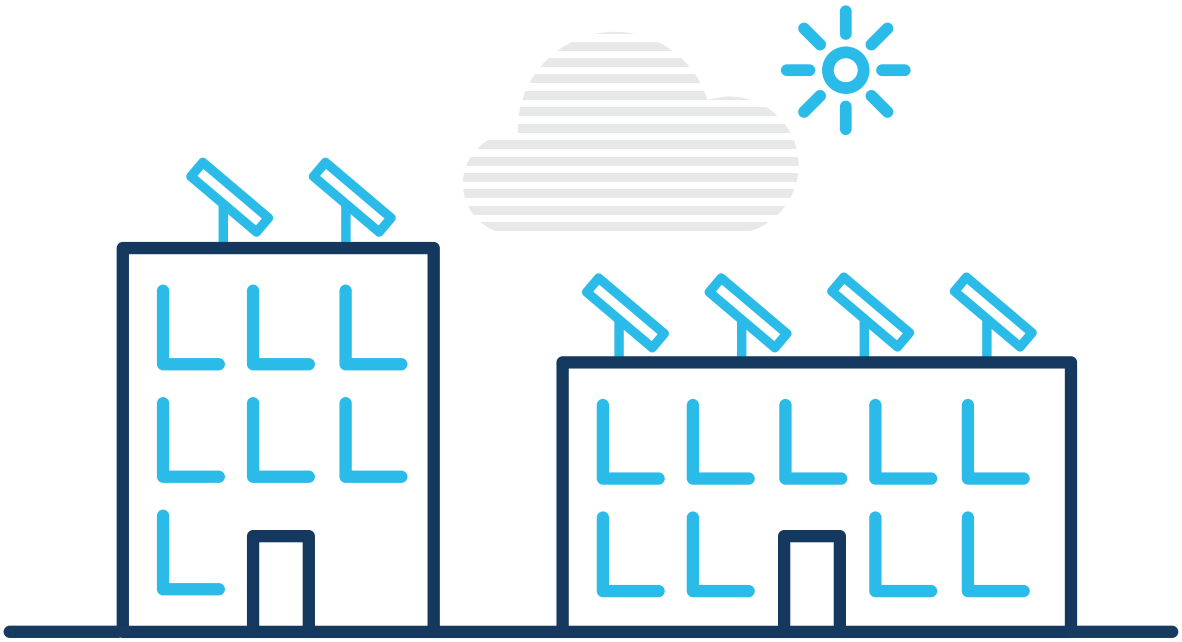
- Our Help to Buy Wales scheme requires all homes sold through the scheme to achieve an EPC rating of B or higher.
- Leasing Scheme Wales and the Empty Homes Grant scheme include financial support to improve the energy efficiency rating of homes.

9. Knowledge sharing and public engagement

- The Nest advice service is free to access for anyone in Wales. It provides energy efficiency and energy cost advice, determines eligibility for free measures through the Nest scheme and signposts to other support and advice services.
- **The Climate Action Wales public engagement programme and website** promotes sustainable energy choices, covering a broad range of topics including tips on simple behaviour changes, information on a range of energy efficiency measures and guides to low carbon heating.
- The Net Zero Carbon Hwb provides resources to social landlords on developing and retrofitting their homes, including case studies and training courses.
- The Wales Built Environment Dashboard offers a platform for suppliers of products and services to share details of their offer with potential customers.

10. Making Wood Work for Wales

- (see above in sections 3.2 and 4.1.1) describes the potential for using Welsh timber in social housing through Tai ar y Cyd.



4.2.2 Housing and heat – advice

CCC – Fourth Carbon Budget Advice (2025)

- **Low Carbon Heating (43% of emissions reduction in 2033):** Urges rapid phase-out of fossil fuel heating systems, with a focus on heat pumps and district heating, resulting in 23% of homes replacing end of life fossil-fuel heating systems to low carbon, electrified heating by 2033, with side benefits of lowering energy bills over time and improving air quality, especially in urban areas. Hydrogen does not play a role in home heating in any scenario.
- **Energy efficiency (19% of emissions reduction in 2033):** Energy efficiency improvements are deployed ahead of low-carbon heating. By 2033, 18% of homes have received big energy efficiency measures (nearly 280,000 measures) including loft insulation, wall insulation and floor insulation. Around 1.2 million small energy efficiency measures including draught-proofing and hot water tank insulation, will have been installed by 2033.
- **New homes, appliances and energy saving practices (39% of emissions reduction in 2033):** All new homes must be built to Net Zero-ready standards from 2026, including no new fossil fuel heating and high fabric efficiency from the outset. Appliances are decarbonised or replaced with energy-efficient equivalents, and energy saving behaviours adopted to reduce energy bills, such as reducing boiler flow temperature and adjusting thermostats, are maintained.
- **Jobs, skills and supply chains:** Identifies the need for investment to generate a trained retrofit workforce and robust supply chains. This presents an option for young people seeking good employment and career opportunity, as well as for workers to transition from businesses impacted by the net zero transition.
- **Engagement:** Recognises the need to develop and implement an engagement strategy to provide clear, trusted information.

The CCC suggests the **costs and savings which might be achieved as we decarbonise housing are mixed and consideration of where they fall will be important.** Some of the changes will put money back in people's pockets almost immediately but some have a much longer payback period.

- **Energy saving behaviours:** the CCC assume that a proportion of energy-saving behaviour observed between 2021-2023 as a result of high energy costs is maintained into the future. The CCC suggest this may account for over 40% of the abatement required in the next five years and is of zero cost to society.
- **Low carbon heating:** the installation of heat pumps, for example, is relatively high cost at over £400 per tonne of emissions reduced and therefore is currently beyond the financial means of many households. The CCC suggest approximately 15% of the emissions reductions in the next five years should come from electric heat installation in private homes, resulting in around 1 in 4 homes heated this way by 2033.
- **Energy efficiency:** also accounts for approximately 15% of the emissions reductions in the next five years, but comes with a saving of approximately £180 for every tonne of emissions reduced. There are however upfront costs.

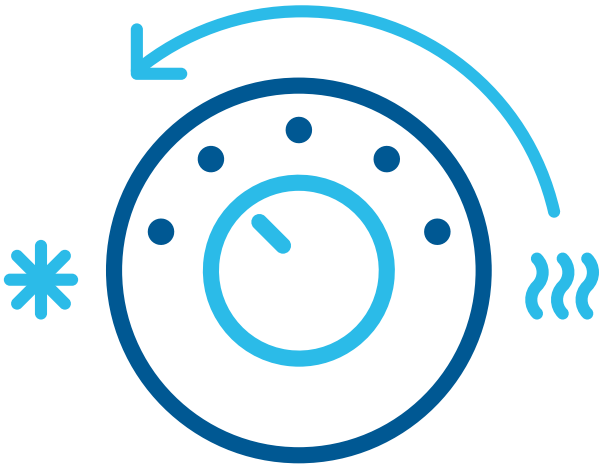
Other key reports in this area include the **Net Zero Wales 2035 Challenge Group (2024).** As with agriculture, the group did not quantify their recommendations with costs or carbon savings but considered the full landscape of changes which may be needed to accelerate decarbonisation efforts. The report was broadly aligned with the CCC but also referenced the following areas:

- **Social equity:** Targeting retrofit investment in social housing and low-income households to address fuel poverty.
- **Local delivery partnerships:** Supporting local people to choose the best option for their home, street or neighbourhood.
- **Tenant Engagement:** Encouraging tenants to establish peer support networks to allow easy sharing of tips and experiences.
- **Innovation in finance:** Proposing Development Bank of Wales offer a range of finance products and crowds in external finance, with products such as green mortgages becoming readily available over time.

Engagement during development of, and consultation on, the **Heat Strategy for Wales** also highlighted similar themes to those outlined above. It also recognised the significant opportunities around affordable warmth, healthy homes, resilient businesses, green jobs and growth, clean air and energy security. The only other major report in this policy space in recent years is the WHQS 2023 consultation, which includes a Part on affordable heat and environmental impact (Part 3). Stakeholders were pragmatic in their responses, supporting ambitious but achievable energy efficiency targets, with flexibility for different housing types and of balancing energy performance with other desired outcomes. To support the level of ambition and its associate cost, consultation respondents called for multi-year funding commitments to enable long-term planning by social landlords.

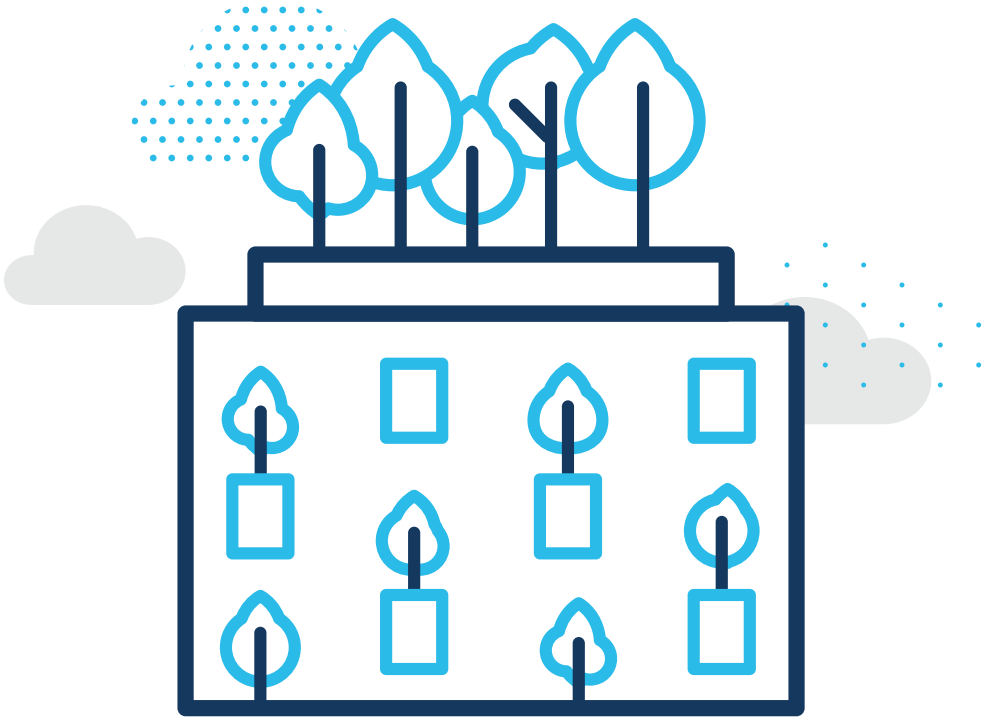
4.2.3 Housing and heat – consensus and challenges

While the CCC advice and the Net Zero Wales 2035 Challenge Group's work reach slightly different conclusions on the areas on which to focus, they are aligned on the need to rapidly, but cost-effectively, decarbonise the way in which we heat our homes. The Net Zero Wales 2035 Challenge Group suggest different ways in which this could be delivered, and the role different actors (e.g. Government, financial institutions, house builders, private and social landlords) might play.



At Wales Climate Week, we want to explore **how to rapidly accelerate the transition to low carbon heating** in homes across Wales in light of these conclusions, and bearing in mind the relative influence of the Welsh and UK Governments. **How can we seize the opportunities? What are the barriers? How might they be removed?** In considering these questions you may want to reflect on:

- What approaches have proven effective in motivating owner occupiers and landlords to invest in energy efficiency and low carbon heating?
- How do we ensure people have access to clear impartial advice and support so they are confident in their decisions around low carbon heating and home energy generation and storage?
- How can we attract young people into a career in energy efficiency and low carbon heating? Who are the key actors and how do we collaborate to make it happen?
- What are the opportunities for reskilling existing workers, and how do we support individuals and businesses to diversify and transition?
- How can the Welsh Government work with partners to nurture a thriving Welsh supplier base delivering goods and services to support housing decarbonisation?
- In terms of finance, where should government place its efforts and how do we crowd in private finance? What other financial solutions are available now, or are in development, to catalyse take-up of low carbon technologies?



4.3 Transport

4.3.1 Transport – current landscape

The transport policy landscape in Wales is shaped by a strong focus on sustainability, accessibility, and reform, particularly in public transport. The key policies and their features are:

1. Llwybr Newydd – Wales Transport Strategy (2021–2040)

› Sets a long-term vision for a low-carbon, inclusive transport system.

› Includes modal shift targets (e.g. 45% of journeys by sustainable modes by 2040).

› Developed through public consultation and expert input.

2. Active Travel (Wales) Act 2013

› Requires local authorities to plan and deliver walking and cycling infrastructure.

› Supports behavioural change and health co-benefits.

3. Road Building Review (2023)

› Cancelled or paused major road projects inconsistent with climate goals.

› Aligns with CCC and Challenge Group advice to avoid carbon lock-in.

4. EV Charging Action Plan

› Aims to expand public EV charging infrastructure across Wales.

› Supports CCC recommendations for electrification of private transport.

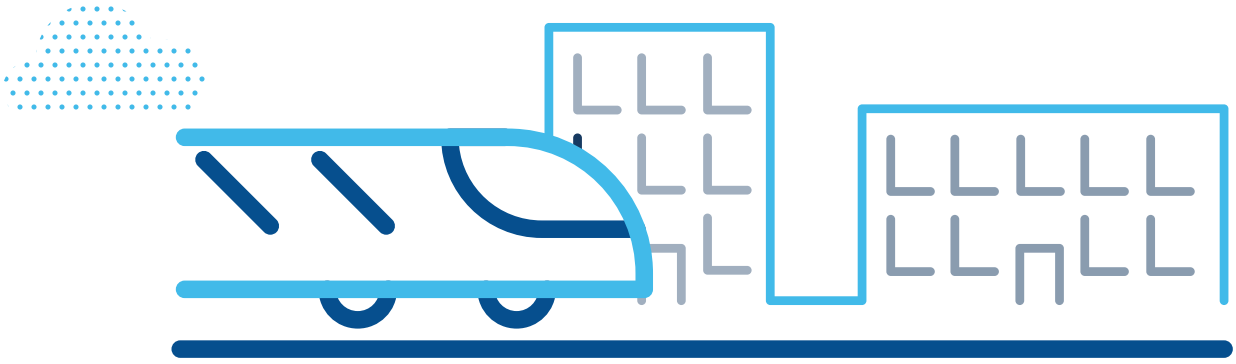
5. Bus Reform: "One Network, One Timetable, One Ticket"

› The Welsh Government is implementing a franchising model for bus services, similar to Transport for London.

› Aims to create a coordinated, publicly planned network with:

- Integrated timetables
- Unified ticketing
- Equitable fares.

› Focuses on alleviating transport poverty, especially for rural, older, and disabled populations.



4.3.2 Transport – advice

CCC – Fourth Carbon Budget Advice (2025)

Electric cars and vans (54% and 20% respectively of emissions reduction in 2033). The CCC pathways suggests by 2033, 39% of cars and 37% of vans on the road are electric. New electric car and van sales are expected to reach 90% of total sales in Wales in 2030, which is behind the 95% market share in the UK's Seventh Carbon Budget advice, with Wales projected to catch up and meet 100% of new sales by 2035. EV uptake is driven largely by the decreasing cost. Public EV charge points per capita in Wales are similar to the UK average, and the Welsh Government's EV charging strategy will significantly support the growth in EV sales required in the CCC pathway.

Zero-emission HGVs (3% of emissions reduction in 2033). The CCC pathway assumes battery-electric vehicles are the option chosen to decarbonise all heavy goods vehicles (HGVs).

Modal shift and efficient driving (15% of emissions reduction in 2033). Making buses and active travel more attractive, affordable, and accessible allow 6% of car demand to switch to public transport and active travel by 2033, rising to 7% by 2035. While car-kilometres continue to grow, modal shift reduces the growth rate compared to the baseline.

Conventional vehicle efficiency, other zero-emission vehicles and rail decarbonisation (5%, 2% and 1% of emissions reduction in 2033, respectively). While EV sales are growing, the CO_2 intensity of conventional vehicles must fall. This is achieved through fuel efficiency improvements to petrol and diesel vehicles, including measures such as light-weighting and hybridisation.

The CCC believe transport is one of the areas of greatest economic opportunity by accelerating decarbonisation. Their economic analysis suggests that new car prices for conventional fossil fuelled cars and electric, battery-operated cars will achieve parity from 2026. They believe the cheaper maintenance costs and comparatively lower cost per mile will generate savings to users. While the same is true for businesses and public sector bodies, the cost of buying any new car is prohibitive for many. It will take time for these models to filter into the second-hand market and for the benefits to be realised more widely.

- **Battery Electric Vehicles –** the CCC assume that BEVs will account for 18% of the abatement in the next five years. There are significant costs, which creates just transition questions, but that investment could reduce costs at a rate of £190 per tonne of emissions abated.
- **Demand reduction (reduction in vehicle km driven) and speed limiting –** on the other hand come at no cost, but according to the CCCs analysis come with significant cost savings. They estimate that Demand Reduction will be responsible for 8% of the abatement in CB3 and will save £260 per tonne of emissions saved. Speed limiting will be responsible for around 6% of emissions savings and will save £250 per tonne of emissions saved.
- **Shipping Efficiency –** is the adoption of operational and technological measures to improve the energy efficiency of ships. The CCC's economic evidence of their balanced pathway suggests this would account for approximately 14% of the emissions savings in Carbon Budget 3, and comes with costs, but could save approximately £110 per tonne of emissions reduced.
- **Eco-driving –** is the introduction of economical driving techniques to reduce fuel use while driving. This includes ensuring that tyres are properly inflated and sharp acceleration and braking is avoided. While only accountable for less than 7% of the abatement in the CCC advice, it comes with significant cost savings, estimated at £230 per tonne of emissions reduced.

The Net Zero Wales 2035 Challenge Group (2024) recommendations were again complementary to the CCC, but did not give quantifiable benefits or emissions savings. The group was particularly focused on supporting an inclusive, flexible transport system for example by reallocation of road space to favour busways, cycleways, and pedestrian zones, by underlining the needs of rural areas and highlighting the importance of accessible, affordable transport for low-income and disabled users. They also recommended aligning transport investment with compact, mixed-use development to reduce travel demand.

There are also some significant inter-dependencies between climate mitigation and adaptation in the transport sector. For example, we need to address increasing risks of:

- overheating for users of public transport and active travel routes, as we seek to encourage greater uptake of these travel modes
- power outages caused by extreme weather events, as we become increasingly reliant on electrified transport options
- disruption to transport networks and services from flooding and storms.

4.3.3 Transport – consensus and challenges

Across the evidence and advice, there are clear themes around adopting new technologies, modal shift, demand management and inclusion. When we consider the shift to electric vehicles – both for domestic and business purposes – we need to ensure the transition is supported and accessible to make sure the benefits fall fairly.

At Wales Climate Week we want to explore **how we ensure an inclusive transition, particularly for rural and/or vulnerable communities**. **How can we seize the opportunities? What are the barriers? How might they be removed?** In considering these questions you may want to reflect on:

- How can we make sure that the people of Wales gain the benefits of travelling actively and using public transport?
- What are the barriers to increasing active travel and greater use of public transport?
- How do we support the people and businesses of Wales to gain the benefits of using EVs? What needs to be in place for EVs to be drivers first choice?
- Are there incentives or disincentives we could put in place to reduce road transport emissions? Do we understand enough about their impacts and trade-offs?
- Where should the Welsh Government focus its efforts? E.g. investing in public transport and active travel? Encouraging demand reduction? Supporting the less well-off to adopt EVs?

5. Conclusion

The Welsh Government has already demonstrated a proactive approach to climate action. We have commissioned a wide array of independent advice across agriculture and land use, housing, and transport and have already responded through our policy and investments, as set out in Net Zero Wales: Carbon Budget 2. Now we must go further.

The independent advice we have received – spanning scientific reviews, stakeholder consultations, and strategic modelling – has provided a rich library for policy development. However, the journey from advice to implementation remains complex and uneven.

In line with the Wellbeing of Future Generations Act we therefore seek the views of those who will be affected by the ongoing journey to net zero. While the tapestry of engagement and dialogue around these issues is already rich, we would like to take this opportunity to seek further input on the shape of the plan. Dialogue will be enabled by Wales Climate Week in November 2025, and through the Climate Conversations grant fund. More detail on these events can be found at the **Climate Action Wales website**.

The response to this report will be wrapped into the plan for Carbon Budget 3, which will be published in 2026.