



Llywodraeth Cymru
Welsh Government



All Wales Plan 2021-25

Working Together to Reach Net Zero

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How this document is set out

This document is set out in three main parts.

- › **Pledges** - The first part showcases the commitments to action which have been made across Wales.
- › **Case Studies** - The second part shows some of the actions taken already. These case studies exemplify the collective effort of action being taken, set out in written and digital case studies. We hope the lessons learned inspire others to act.
- › **Voices of our Youth** - The third part focusses on children and young people, who have already altered the level of awareness of, and concern about, climate change. We recognise the crucial role they can play.



Cabinet Foreword

It will take more than Welsh Government action to meet Carbon Budget 2 (2021-25) and we need everyone to play their part in achieving net zero.

We wanted our Pledge Campaign, launched at our Climate Change Conference 2019, to galvanise action. Since then we have received over 118 Pledges to date from every corner of Wales and from across society; with businesses, the public sector, communities and school pupils all committing to be part of Wales' greener and fairer future. Your Pledges are the seeds that will grow into the actions we need to tackle climate change. This is a huge effort from Team Wales - thank you!

Some great work is already taking place across Wales. The examples of action within this document show your leadership, innovation and partnership

working, in joining and in some cases leading, the effort needed to tackle the climate emergency. Together we must act as a nation to provide a better future for both current and future generations. This includes working with our young people and ensuring that our actions meet their aspirations.

This is our first All Wales Plan published alongside *Net Zero Wales*, our emissions reduction plan for Carbon Budget 2, recognising the crucial role that you, our partners play.

Together we have made a great start. Now we must continue to work together so that Wales can continue to go from strength to strength, meet the challenge of climate change and deliver a greener and fairer future.



Pledge Campaign

Our Pledge Campaign was launched at our Climate Change Conference in October 2019. Since the launch we have received **118 Pledges** for action (See annex for all the details). We did not prescribe where action should be taken so we could stimulate and not constrain ideas from participants.

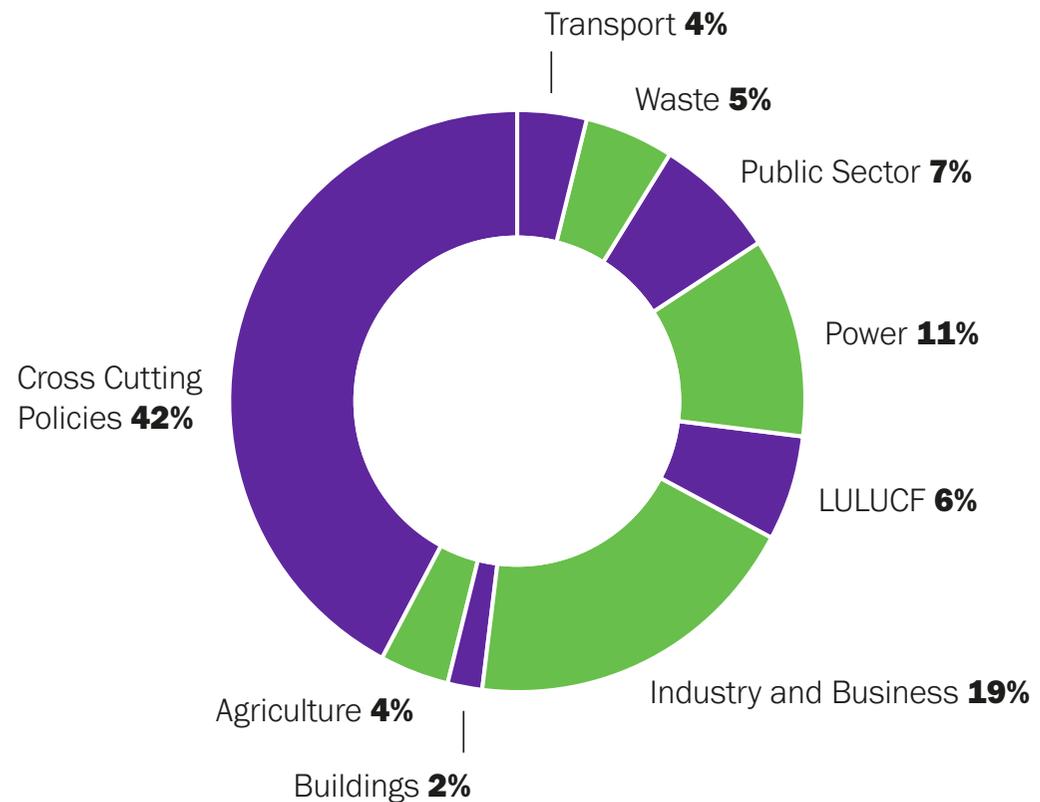
In this document we have themed the Pledges by areas where the intent for action was made. These are:

- › Commitment to net zero or action on climate emergency
- › Understanding and Reducing Carbon Footprint
- › Education, Engagement & Capacity Building
- › Energy & Reducing Energy Demand
- › Homes and Housing
- › Circular Economy and Waste
- › Enriching our Natural Resources

While these themes show the collective effort across Wales from businesses, public sector bodies, communities, schools and individuals, we know that this is only a fraction of the work that is currently going on.

The chart at fig 1 highlights the emissions sectors from *Net Zero Wales* in which the most action has been Pledged. As you can see, the largest area of action is categorised as **Cross Cutting Policies** with 42%. This simply means, a Pledge which has included a variety of commitments, where actions will reduce emissions in a number of sectors. Our second biggest sector where action has been promised in is the Industry and Business sector, with 19% of the commitments.

Figure 1 – Actions by Emissions Sector

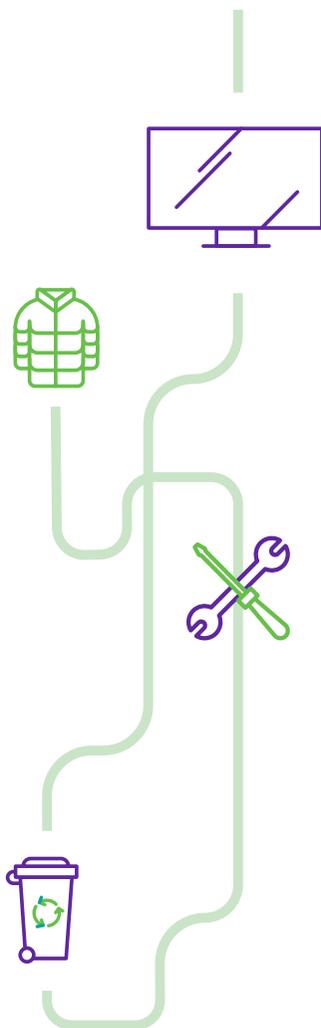


What Pledge can I make?

We hope the Pledges within this document and the four Calls to Action will help you decide which Pledge you could make. We want organisations such as businesses, public sector, non-governmental organisations, groups, clubs and others to think about what they can do and then capture that commitment.

If you are a business that has signed up to the Green Growth Pledge¹ or if you are a school or community group looking to get involved in tree planting (See proposal 33 of *Net Zero Wales*), you can use it as a Pledge and show others across Wales the actions you are taking.

Individuals across Wales are important too. Pledges can include personal action that you want to make to help tackle climate emergency.



Here are some ideas of Pledges you can make:

Personal	Organisation
Choose to re-use plastics often made from fossil fuels	Commit to net zero and then produce and publish an action plan on how you will get there
Drive less – and take public transport	Encourage low carbon vehicle use, active travel or more remote working within your organisation
Buy local and avoid food waste	Minimise the waste from your products and packaging
Buy clothes that last and invest time to repair them if needed, extending their life	Talk to your supply chain - ask the businesses in your supply chain how they are reducing their emissions.
Turn off the light when not in use and unplug appliances	Install or procure renewable energy
Join or start a group to help develop community projects to tackle climate change	Educate and engage people on climate change
Get involved in planting trees or wildflowers in your garden or community	Plant trees on your land
Keeping the heat in (insulation, draught proofing, double glazing) and better temperature management	Make your buildings and/or equipment and vehicles more energy efficient

Calls to Action

We need to build on the collective action set out in *Net Zero Wales* and within this document. We need help from across Welsh society if we are to continue to build on the impressive start we have made. The four Calls to Action introduced in our **engagement plan in 2020** will continue over the Carbon Budget 2 period. These are:

- › **Call 1** – Submit ideas and evidence directly to Welsh Government. We will be publishing a new engagement plan in early 2022 for stakeholders.
- › **Call 2** – Encourage engagement within your workplace or sector. Within your local community, identify actions you can collectively take and the support you need from others to deliver them and then make a commitment in our **Pledge Campaign**.
- › **Call 3** – Constructively challenge public bodies, businesses and civil society organisations to continue to make commitments through Pledges they make.
- › **Call 4** – Sign up via **Decarbonisationmailbox@gov.wales** to receive updates on engagement activity and to attend our engagement events on specific topics and issues

What other commitments can you make? Tell us by making a Pledge. You can do so here:

English: www.smartsurvey.co.uk/s/RXOPO/

Welsh: www.smartsurvey.co.uk/s/RXOPO/?lang=434121

¹ businesswales.gov.wales/green-growth-Pledge-0 See Policy 54 of *Net Zero Wales* – also.

All Wales Plan 2021-25

Team Wales Pledge Wall

In the months following our declaration of a climate emergency many local authorities and other public sector organisations, towns, communities and businesses also declared climate emergencies. Our Pledge Wall has attracted many declarations and other commitments from right across the length and breadth of Wales.

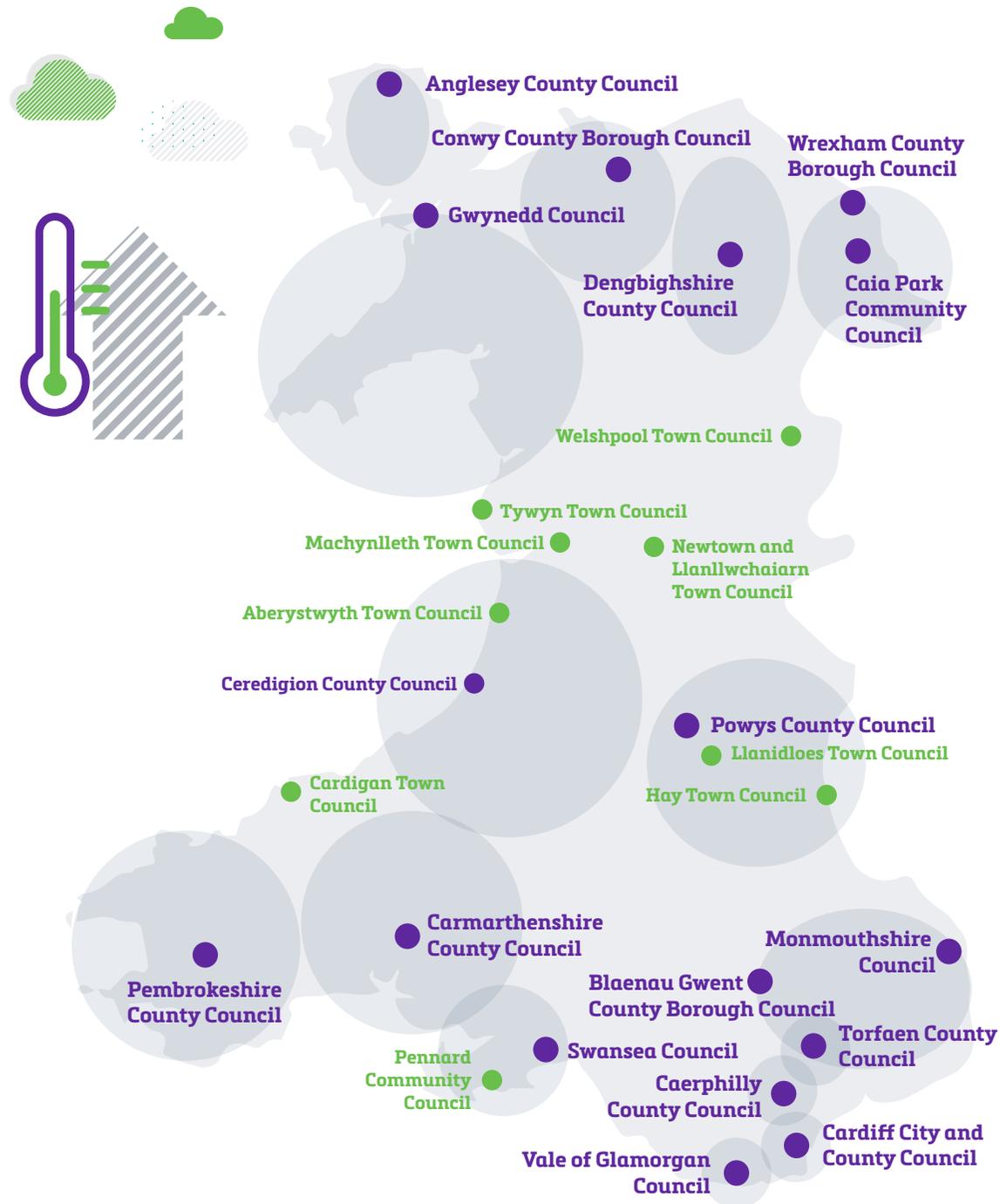
These are set out in our Pledge Wall themed around:

- › Commitment to net zero or action on climate emergency
- › Understanding and Reducing Carbon Footprint
- › Education, Engagement & Capacity Building

Action through:

- › Energy & Reducing Energy Demand
- › Homes and Housing
- › Circular Economy and Waste
- › Enriching our Natural Resources

Local Authorities, Town and Community Councils that have declared a Climate Emergency in Wales



Commitment to net zero or action on climate emergency

Ceredigion County Council

Ceredigion Council has committed to becoming a net carbon neutral local authority by 2030.

Aberystwyth University

- › We have already voluntarily agreed to commit to a net zero target by the end of the financial year 2030-31.
- › We are committed to responsible investment and are taking clear steps to divest from fossil fuels. As a result, we are moving the University's investments in public equity funds with the greatest exposure to fossil fuel producers to a fund which specifically excludes investments in fossil fuels by 31 December 2019. The replacement fund also excludes the highest carbon emitters, so has a substantially lower carbon footprint than the market.
- › Our current Carbon Management Plan runs until 2020-21 and we will be developing a new Sustainability Strategy for a Carbon Neutral University once Welsh Government define the scope of the carbon neutral public sector target.
- › We are also establishing a Sustainability Operations Group, including defining the objectives of the Group so that the right stakeholders are present. The intention is to hold the first Operational Group meeting in January 2020.

Conwy County Borough Council

We Pledge to become a net zero carbon council by 2030 and help our communities to become net zero carbon. We Pledge to deliver our decarbonisation plan and take responsibility for making the right choices for the future.

Dŵr Cymru Welsh Water

It's our ambition to become a world class, resilient and sustainable water service for the benefit of future generations. As part of this ambition, Dŵr Cymru Welsh Water is targeting full carbon neutrality by 2040 and to achieve a 90% reduction in its total carbon footprint (operational & embedded emissions) by 2030. Dŵr Cymru Welsh Water will build on the 65% reduction it has achieved since 2010/11 and commit to inspire our customers, regulators and other stakeholders to actively support us in delivering these ambitious targets, whilst pursuing their own carbon agendas.

Gwynedd County Council

Mae'r Cyngor yn ymrwymo i gymryd camau pendant i leihau allyriadau carbon ac ymdrechu am ddyfodol di-garbon, ac i chwilio am ffyrdd arloesol o gyflawni targedau di-garbon.

Carmarthenshire County Council

has declared a climate emergency.

On 20th February 2019 the Council committed to

1. becoming a net zero carbon local authority by 2030
2. develop a clear plan within the next year.
3. call on Welsh and UK Governments to provide support and resources to enable effective carbon reductions.
4. work with partners to develop opportunities to deliver carbon savings.

In recent years the Council has already made efforts to support sustainability:

1. Six months ago, the council agreed to reduce single-use plastics in council buildings and offices and ban plastic cups and straws.

2. Carmarthenshire was the first council in Wales to introduce electric pool car vehicles around seven years ago, and has recently secured funding for plug-in chargers following an increase in electric vehicle sales.

3. The council has a policy of integrating low and zero carbon technologies into major building works projects such as schools, where PV installations and Passivhaus standards are already in use.

4. Its fleet of refuse or rubbish lorries is the most emission-friendly fleet in Wales.

5. Street lighting has been converted to LED units.

6. There has been significant investment in Safe Routes in the Community and Safe Routes to Schools to encourage more sustainable travel.

Monmouthshire County Council has declared a climate emergency and produced a strategy and action plan. We Pledge to work in partnership with others to deliver on our action plan to reduce our emissions to net zero carbon by 2030.

Natural Resources Wales

We have structured the NRW Pledge around the priorities within the route map for decarbonisation across the Welsh Public Sector, particularly as they were based on those of NRW's Carbon Positive project. The Pledge highlights just some of NRW's key decarbonisation actions during the timeframe of the Plan (2021 -2026).

As a net carbon positive organisation by virtue of the woodland estate that we manage, NRW will work to further reduce our emissions and manage the Estate to support the ambition for a carbon neutral Welsh public sector by 2030.

NRW Pledges to address each of the priorities within the route map for decarbonisation of the Welsh Public Sector. We will specifically for:

- › Buildings - work towards the NRW built estate being energy efficient and meeting best practice energy performance standards (e.g. net zero for new build);
- › Mobility & transport - promote and enable homeworking along with creating a more flexible “hybrid” workplace that delivers reduced office and staff commuting emissions through NRW's post-Covid Adfywio (Renewal) programme;
- › Accelerate transition to all NRW cars and vans being ultra-low emission vehicles by 2026;
- › Procurement - develop tailored carbon reporting requirements and KPIs for our largest greenhouse gas emitting procurement frameworks/contracts, along with a tiered system of requirements for all suppliers based on value and purchase type;
- › Land Use - deliver the National Peatland Action Programme to bring under restoration management extensive areas of peatland across Wales to reduce their greenhouse gas emissions;
- › Governance - make consideration of carbon in decision-making the norm by organising staff carbon literacy training programmes that will influence organisational culture and actions;
- › Public sector wider influence – help facilitate collaborative working on decarbonisation across the Welsh public sector, particularly through our Carbon Positive project, Area Statement and PSB work, including sharing good practice and lessons learnt.

Barry Town Council

Barry Town Council has declared a climate emergency and in response has committed itself to reaching net zero carbon by 2030 as an organisation and has developed an Action Plan and Strategy to reach this overarching goal. The Strategy identifies key areas for improvements and developments with a focus on leadership, education, co-ordination and collaboration. The Action Plan is a live document of ongoing projects and tasks that all lead towards our goal of carbon neutrality as an organisation and increasing biodiversity at our cemeteries with a view that we can help local residents and businesses do the same.

Flintshire County Council

1. Commit to making Flintshire County Council a net zero carbon local authority by 2030 at the latest.
2. Develop a clear plan which outlines how net zero carbon will be achieved.
3. Support implementation and review of the Section 6 Plan for Biodiversity and Local Nature Recovery Action Plan.
4. Call on Welsh and UK Governments to provide the necessary support and resources to enable effective carbon reductions and ecological resilience.
5. Collaborate with partners in the public, private and third sector to develop and implement best practice methods that can deliver carbon reductions and biodiversity enhancement.
6. Ensure our staff are well informed of the climate crisis and ecological emergency and consider it in their roles across the Council.
7. Be transparent with our progress.

Pembrokeshire County Council

To set up a whole Council working group, to include evidence from experts from the private, 3rd sectors and relevant individuals, to develop an action plan, timescales and recommendations to support the authority in aiming to become a net zero carbon organisation by 2030.

The Vale of Glamorgan Council is committed to addressing the climate emergency. Building upon work already underway, we will take forward innovative projects such as work to develop the first net-zero (in-use) carbon schools in Wales. We Pledge to make meaningful changes to address the climate emergency and become a carbon neutral organisation by 2030.

Swansea University

Universities are a major force in creating a more sustainable future, both in conduct of operations and in how they build future capacity to address sustainable development issues.

The pursuit of sustainable development is an exciting challenge for Swansea University, it presents us with the opportunity to play a crucial leadership role in the region, the UK and globally.

Our aim is for Swansea University to continue to build a reputation for outstanding sustainability performance. We will continue to implement new ways of thinking and working, contributing to a brighter, more sustainable, future.

We are currently finalising our new Sustainability strategy which will be published in Jan 2021. This is the third and most ambitious Sustainability Strategy produced by Swansea University covering the period 2020 to 2025.

The strategy makes several significant commitments across four clear themes. These are: The Climate Emergency greenhouse, a cross cutting commitment through our other themes on: Our Natural Environment, Our Working Environment and Our Travel.

One example of our commitments within the strategy:

“To be carbon neutral for scope 1 and 2 emissions and reduce scope 3 emissions by 50% by 2035, with at least a 70% Scope 1 & 2 reduction by 2030 (from 2015/16).”

Urban Foundry Ltd.

As a registered BCorp we are committed to sustainable working - as part of that we are signed up to the BCorp Climate Collective and have Pledged to reach net zero by 2030, though we're aiming to get there as far in advance of that as we can!

www.bcorpclimatecollective.org/net-zero-2030

Tyf Group

We Pledge to achieve net zero emissions by 2025, using a combination of emissions reduction and gold standard carbon offset. We Pledge to change our business model to help our clients and customers do the same.

RWE: To be Carbon Neutral by 2040.

Mott McDonald Ltd.

Mott MacDonald Ltd commitments position and commitments are set out in the following link: www.mottmac.com/download/file?id=38242&isPreview=True

NFU Cymru: Net Zero Agriculture 2040.

Understanding and Reducing Carbon Footprint

ClwydAlyn

We Pledge to launch our environmental strategy by the end of 2020 which commits ClwydAlyn to reduce our Carbon footprint in all our business activities.

We have a Green Team which are already making a company wide changes to help bring these practices into place for the new year.

Cardiff and Vale University Health Board

have Pledged:

1. To co-fund with HEIW a Leadership Fellow post in Sustainable Healthcare for the next 3 years.
2. To investigate and support businesses cases for low-carbon reusable equipment over disposable choices.
3. To produce a Sustainability Action Plan, addressing SMART targets to align with the Welsh Public Sector Decarbonisation 2030 Policy.

Curtins have Pledged to make 2020 our year of change. All of our specialist teams are working to reduce carbon impact in our work; and we will assess our progress in our carbon database at the end of the year. We have committed to publish our 2020 results as a benchmark, setting targets for 2021 and beyond to achieve our decarbonisation vision.

Gwyrddio Penarth Greening

We Pledge to work with the community of Penarth to take local action on climate change - from sustainable travel and promoting plastic free to growing local food and encouraging a reuse and sharing economy through our Repair Cafe and new Benthg.

The Chartered Institution of Waste Management (CIWM) Cymru Wales

is part of CIWM the leading membership organisation for professionals in the sustainability, resources and waste management sector.

We have long championed environmental protection, waste prevention and recycling, resource productivity and circular economic principles. We are committed to demonstrating how we are taking action both within the organisation and through proactive engagement with our members to support progress towards net zero.

We are part of the have 'The Pledge to net zero initiative' which is led by Society for the Environment, Institute of Environmental Management and Assessment, the Association for Consultancy and Engineering and the Environmental Industries Commission, together with leading environmental consultancies WSP and AECOM.

Signatories commit to the following three Pledges:

- › set and commit to deliver a greenhouse gas target in line with either a 1.5 °C or well below 2 °C climate change scenario – covering buildings and travel as a minimum;
- › publicly report greenhouse gas emissions and progress against this target each year; and,
- › publish one piece of research or thought-leadership piece each year on practical steps to delivering an economy in line with climate science and in support of net zero carbon.

Routes in the Community and Safe Routes to Schools to encourage more sustainable travel.

Environment Platform Wales

Minimise the carbon footprint of all our events and work with our members to help them do the same.

Freshwater

At Freshwater, we Pledge to continually improve our approach and behaviours, to help in addressing Climate Change. Everyone in the business is dedicated to following our environmental management system. We regularly monitor and evaluate the impact we have on our environment and commit to making any necessary changes and improvements. We strive to work with clients, colleagues and stakeholders, to continue to reduce our carbon footprint and support a sustainable and carbon neutral economy for everyone.

NJM Energy & Environment

Committed to providing realistic advice to clients for reducing and eliminating energy usage and associated carbon emissions.

Linc Cymru Housing Association

- › Complete a SHIFT sustainability certification and carbon footprint assessment to inform a Linc Decarbonisation Strategy in 2021. This strategy will see sustainability and decarbonisation underpin the organisation's operations and strategy moving forward.
- › Continue the decarbonisation of our social housing. Linc is part of the Optimised Retrofit Scheme which involves working collaboratively with stakeholders and partners on the decarbonisation of Pathfinder homes.
- › To roll out Carbon Literacy training to staff to ensure that employees are empowered to help Linc move towards a zero-carbon future, and work to be a contributing part of the climate change solution.

NJM Energy & Environment

Committed to providing realistic advice to clients for reducing and eliminating energy usage and associated carbon emissions.

Oriel Davies Gallery

As a member of the Galleries Climate Coalition we commit to making positive steps towards reducing emissions and improving sustainability. The GCC's target is to collectively reduce our industry's carbon emission by at least 50% by 2030 and achieve near zero-waste practices. We recognise the value of think global / act local.

Velindre University NHS Trust is developing an ambitious Sustainability Strategy which will be published in April 2021.

The strategy will outline our bold and progressive targets and how we will hold ourselves to account and monitor our achievements.

We aim to become a sustainability and Future Generations exemplar organisation who inspire and encourage our staff, patients and donors to be as environmentally conscious as us!

Children in Wales - Plant yng Nghymru

We will introduce a new Environment & Sustainability Policy as well as appointing an Environment Champion from amongst our staff in order to drive forward this important agenda, focusing upon reducing our carbon footprint.

Pembrokeshire Coastal Forum

Pembrokeshire Coastal Forum (PCF) has a vision of sustainable coasts and ocean for future generations, we will achieve this by pledging to, Be part of the solution, continuing to work in partnership, Engage young people and wider communities with climate change, Support coastal communities to respond to climate change impacts and Work on coastal challenges including water quality and transition to low carbon energy including marine renewable energy.

Pembrokeshire County Council are pursuing an agenda to establish Pembrokeshire as the green energy capital of the UK.

Vale of Glamorgan Public Services Board

As a Public Service Board we understand that the Vale of Glamorgan's natural environment is very important to our residents and we are committed to working in partnership with our community to address the climate emergency. That is why we have developed a PSB Climate Charter where we have set out some of the key commitments that we will work towards to address the climate emergency.

Size of Wales

- › Support community projects that secure, and sustain over the long term, an area of tropical forest at least the size of Wales (at least 2 million hectares).
- › Support communities to tackle climate change and develop sustainable livelihoods by growing millions of trees.
- › Move Wales towards eliminating imported deforestation from our economy.
- › Inspire people across Wales to reduce their forest footprint, support tropical forests and take climate action.

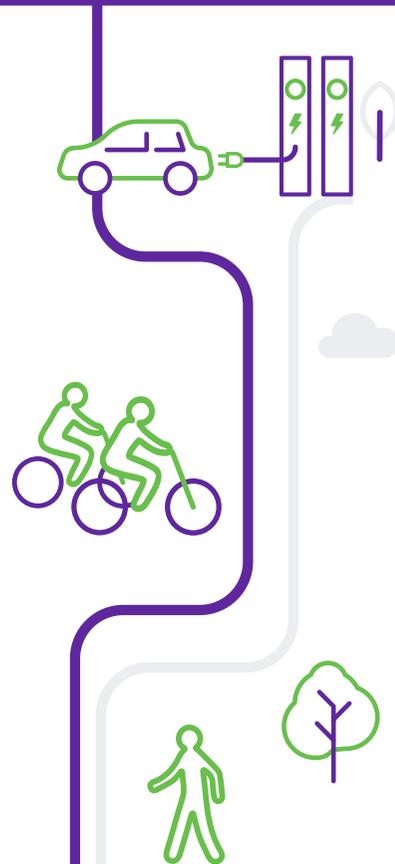
Individual Pledges for Understanding and Reducing Carbon Footprint

I Pledge to make Climate Change my top priority. I Pledge to do everything I can to reduce my carbon footprint, and transition from my current job into a environmental role to assist with the solution to climate change.

Recalculate my Carbon Footprint (last did this late 2018) Continue to research optimal refurb of stonewalled terraced house we have bought to downsize to next year.

Aim to reduce (by 80%) consumption of meat and dairy products.

For 80% of Wales' energy to be renewable by 2035.



Warm Wales Cymru Gynnes CBC

All Warm Wales staff Pledge to have a meat free office every Monday.

Development Bank of Wales

The Development Bank of Wales is fully committed to addressing the climate change emergency and continues to develop ways of working that will have direct impact, driven through:

- › Ongoing delivery of a carbon reduction plan focused on our own operations through a dedicated working group with the ambition to reach net zero.
- › Utilising our research unit Economic Intelligence Wales to explore policy and product recommendations to inform the transition to a low carbon economy.
- › Supporting the businesses we work with to improve and reduce environmental impact including through referrals to Business Wales sustainability advisors.

Education, Engagement & Capacity Building

Individual Pledges for Education, Engagement & Capacity Building

I Pledge to be an advocate for climate science, discussing, educating, and providing understanding of the local and global impact of climate change wherever possible.

I will work to roll out the Carbon Literacy Project to the public sector in Cardiff.

For Wales to lead on Climate Change Upskilling and Training to ensure we have a pipeline of talent needed to address our climate emergency.

Help spread the word about easy, everyday, environmental actions.

Wales TUC Cymru will offer greener workplaces and just transition training to all trade union reps from our affiliate unions.

Cynnal Cymru - Sustain Wales

We Pledge to support the public, private and voluntary sectors in Wales with taking action to reduce carbon emissions through the provision of free or discounted introductory sessions on Carbon Literacy and eco literacy in 2021. We will continue to support and promote an integrated approach to tackling climate change so that, as well as the necessary mitigation and adaptation, a more just society can be created with fair work, an inclusive economy and healthy, restored ecosystems.

Cytun – Churches Together in Wales

Continue to promote amongst our members the threefold Climate Sunday commitment to (1) hold a worship service focussing on the climate to deepen our personal commitment to God's Creation, (2) as a church to join EcoChurch or Live Simply to reduce our carbon footprint and improve our impact on the planet, and (3) to sign up to the Time is Now Declaration of the Climate Coalition to demand action at the COP26 summit. www.climatesunday.org/

Being in Nature

Gifting Work That Reconnects/ Active Hope training to Welsh Government employees to support personal resilience and strengthen motivation in the face of climate emergency.

Costain is committed to decarbonising Wales and delighted to be leading the Deployment of Industrial Decarbonisation in the South Wales Industrial Cluster where we are creating the pathways and opportunities to promote Wales as a global player in decarbonised industrial and economic growth. By proposing a project to the Industrial Strategy Challenge Fund, we aim to deliver large scale Hydrogen Production and Carbon Capture significantly reducing emissions by millions tCO2 per annum working with local and global partners to bring investment, knowledge and deliverability to the region.

EcoDewi - St. David's Peninsula Energy & Ecology Group

EcoDewi is committed to supporting the communities throughout the St. David's Peninsula on projects to tackle the climate emergency and biodiversity crisis.

Extinction Rebellion Cymru

To continue our work towards a Citizens' Assembly in Wales on the Climate and Ecological Emergency and to push for the truth to be told by all those in positions of power and influence.

"We refuse to bequeath a dying planet to future generations by failing to act now. We act in peace, with ferocious love of these lands in our hearts. We act on behalf of life."

National Federation of Women's Institutes Wales

The WI will continue to raise awareness about climate change, build support for tougher action on climate change with AMs and MPs, and educate members and the wider public on how to reduce their carbon footprint.

National Lottery Community Fund

To commit and £100m across the UK to support communities to take action on climate change over the coming 10 years.

To review how we can support our customers to take action to improve their environmental performance.

Develop an action plan to help the Fund reduce its carbon emissions associated with internal travel.

Penarth Climate Action Group

We Pledge to:

- › Demand the government and big business stop allowing and funding fossil fuel extraction.
- › Put pressure on local government to significantly reduce carbon emissions and protect nature.
- › Raise awareness of climate breakdown, global overheating and biodiversity collapse.
- › Be a focal point for collective action in our community, promoting conversations, listening and support.

TCC Wales Leaders are committed to working with decision makers on the issue of climate change in North East Wales.

FSB Wales

We will publish our first piece of major policy work on SMEs and the environment in Wales, and will work closely with our members focusing on what they can do to reduce their environmental impact, whilst engaging with Welsh Government to support our members in this endeavour. We will ensure that this is an ongoing conversation for FSB, our membership and the smaller business sector.

Wales Co-operative Centre

We will put tackling climate change at the front and centre of our new strategy. Helping to create a greener economy will be a focus for the Wales Co-operative Centre in the years ahead.

Awel Aman Tawe

Develop a low carbon education, arts and social enterprise centre at Hwb y Gors in Cwmgors.

Awel Aman Tawe / Egni Coop

Working with our fellow charity EnergySparks, enroll 50 more schools in our energy education and monitoring platform. Develop a Welsh language site, and Welsh curriculum tools to supplement what already exists from their experience in Scotland and England.

Afallen

We will launch the National Park City concept in Wales, supporting any urban area which wants to develop their own capacity and networks in this area. We will develop practical tools and methodologies to allow organisations to more easily implement “Future Generations” outcomes for themselves and their clients and partners.

The One Planet Centre

To keep encouraging public bodies to optimise all their planning & spending decisions to help reduce their ecological footprints to a measurably sustainable level. Note: Ecological footprint = carbon footprint + all other impacts/benefits.business and public building in Wales.

Welsh Centre for International Affairs

Help to coordinate Climate.Cymru - a campaign to take 50,000 diverse voices from Wales to COP26.

4theRegion CIC

4theRegion members and partners Pledge to work together across organisations to embed the principles of the Wellbeing of Future Generations Act in everything we do. We will co-produce, lead and raise the profile of projects that promote new ways of living and working, to create an economy that works better for people and the planet.

Cylch Meithrin Mynyddygarreg Pledges to make the children aware of nature in their early years by planting flowers and vegetables outside the Cylch and taking them for walks in the surrounding countryside and to purchase Eco friendly play equipment.

Energy & Reducing Energy Demand

Transport for Wales

We Pledge to procure 100% of our electricity from renewable sources each year, 50% of this will be from Welsh renewable sources by 31st December 2025.

Marine Energy Wales

Marine Energy Wales has a vision for a thriving and diverse marine energy industry in Wales. We Pledge to:

- › Provide advice and support for the sector
- › Raise awareness and collaboration
- › Promote the wider understanding of the benefits of marine energy

This will help us generate clean energy, deliver a low carbon economy, develop jobs and skills and take action on climate change by reducing our carbon emissions.

Wales and West Utilities

Wales & West Utilities Pledges to deliver a Net Zero-ready smart gas network by 2035 in a multi-vector energy system to deliver heat, power and transport demand securely and at lowest cost for customers.

Egni Coop Working collaboratively, install solar on every school, business and public building in Wales. We've installed nearly 4MWp so far!

Surple

We Pledge to drive energy savings across the public sector in Wales by working tirelessly to jump the barriers that exist in our way – be it procurement, people or bureaucracy. As we have done in Newport CC and will do in other councils.

BT Group is proud to buy 100 per cent of its electricity in Wales from renewable energy – but we want to go further and help others to do so too. We Pledge to collaborate across sectors and our supply chain in Wales to become a net zero carbon emissions business by 2030 for our own operations and 2040 for our supply chain and customer emissions. In particular, we are ready to work with Welsh Government and others to address the decarbonisation of transport.

Community Energy Pembrokeshire (CEP) Pledges to: engage communities across Pembrokeshire, deliver community led renewable energy, energy demand reduction and energy supply projects.

Future Generations Commissioner for Wales

As Future Generations Commissioner for Wales I will continue to highlight climate change as the key challenge for future generations. In the work that I do, and the way my organisation is run, we are taking action on climate change in a number of ways as set out below.

In 2021 we will continue to challenge ourselves on doing better to reduce our organisation's footprint even further:

- › We have signed up to Cardiff's Healthy Travel Charter which includes commitments to support walking, cycling, public transport and ultra-low emission vehicle use.
- › We encourage staff and visitors to travel by public transport and active travel - over three quarters of my team routinely travel to work by public transport or active travel. We also use walking meetings and promote the benefits through social media
- › We monitor travel, waste, electricity, water and gas in line with the UK Government's advice on measuring greenhouse gas emissions, and report on office energy consumption and business mileage annually, and printing quarterly. In 2019-20, car mileage decreased by 52%.
- › Continue to use Ecotricity, to provide us with 100% renewable energy.

- › Composted and recycled office waste and encouraging paperless working.
- › Continue with our 'Anytime Anywhere working' policy which has been in place since 2016. This reduces team need to travel unnecessarily and supports work life balance – it put us in a good position when adapting to home working as a result of the COVID-19 crisis.
- › Continue to offset my emissions by making donations to Size of Wales and the Woodland Trust.
- › Repurposed second-hand video conferencing equipment and regularly hold meetings via Skype, FaceTime and Microsoft Teams.
- › Obtained most of my office furniture second hand from Welsh Government and local social enterprises. Any procured furniture was purchased in line with our policy value which is to 'consider value for money as the optimum combination of whole-of-life costs in terms of not only generating efficiency savings and good quality outcomes for the organisation, but also a benefit to society, the economy, and the environment, both now and in the future.'
- › Looked for ethical supply chains when sourcing goods and services for our office and banned single-use plastic cups from the office.

Individual Pledges for Energy & Reducing Energy Demand

At home: travel less and be more mindful to shop locally and seasonally

At work: complete studies retraining in BSc Environmental Conservation and use existing skills to obtain a role that makes a measurable difference in tackling issues like climate change.

To walk and cycle as much as possible shop locally.

Aim to reduce (by 80%) consumption of meat and dairy products.

I Pledge to cycle as much as possible to avoid car journeys. I will also actively engage in training and/or encourage and assist particularly older women to get (back) on their bikes.

To eat less meat.

I Pledge to do all I can both at home and at work to address climate change. I Pledge to walk and cycle whenever possible, reduce my purchase of new items and minimise waste.

I Pledge to share the message of the climate emergency. I Pledge to work from home where possible and to cycle/ walk more often. I Pledge to reduce my meat consumption. I Pledge to shop locally. I Pledge to buy loose, unpackaged products where possible. I Pledge to reduce my electricity use at home.

I Pledge to have solar panels installed on my house in 2022.

Use my car less.

To reduce carbon emissions by 50% before 2026.

I walk/cycle/scoot instead of drive whenever I can. Sometimes it can't be helped as the journey is too far or we need to get somewhere too quickly, but public transport is a far more eco friendly alternative. More people need to be encouraged to not drive whenever they can. Walking and cycling are not only better for the environment but the exercise is also good for our mental and physical health.

I Pledge to reduce my reliance on single occupancy vehicles and convert to either walking, cycling or using public transport. I also Pledge to continue a plant based diet and being a conscientious consumer.

To use single use plastic and to encourage friends, family and people I know to start becoming greener so for example, electric cars or solar panels.

AberInnovation

We Pledge to continue and expand our work in facilitating ground-breaking research and innovation in the fields of circular economy, decarbonisation, green growth and climate change mitigation.

Purolite

To encourage the use of hydrogen powered vehicles. Just need the infrastructure.

CSconnected

CSconnected represents the compound semiconductor community in and around South Wales. In addition to the CS community's commitment to reducing carbon emissions over the next ten years, compound semiconductors provide critical technologies that will enable all industry sectors and consumers to achieve net-zero.

Homes and housing

Denbighshire County Council

We also Pledge to ensure that our existing homes have a pathway to Carbon Zero and that all new developments achieve Carbon Zero. We will be working collaboratively with our partners, people and residents to change behaviours towards environmental issues.

Melin Homes

Minimise our carbon footprint, but offsetting emissions with planting trees. Work collaboratively with our partners and stakeholders. Develop a clear plan to combat climate change. Carbon Literacy training for all our staff. Developing our schools project to include carbon literacy.

Newport City Homes

As a responsible social business, we will engage with our residents to develop an annual audit on our carbon footprint and look to reduce this year on year.

We are fully committed to playing a significant role in achieving a low carbon and environmentally sustainable Wales. We Pledge to understand our baseline footprint, develop an informed strategy with priority areas including an ambitious decarbonisation programme and strong engagement with our residents to help them reduce their own carbon footprints.

Pobl Group

We Pledge to launch our decarbonisation strategy in early 2021, committing us to a net zero carbon future. Truly sustainable, affordable homes will become our new normal, and through footprinting and sustainability reporting, we'll make Carbon cutting key to all our decision making.

Sero

Hi, we're Sero. Our Pledge is that by 2025, we will have helped retrofit more than 100,000 homes towards Net Zero Carbon and, we'll have helped build thousands of new homes that don't need retrofitting at all to become Net Zero Carbon with the National Grid and we'll be helping the residents of all those homes to simply live zero carbon, lower cost lifestyles.

Tai Tarian

The time has come to respond to the climate crisis with urgency. It is time to stop waiting to see what others will do.

Tai Tarian aims to achieve carbon neutrality by 2030, which will include our homes, offices and transport.

We will achieve our aim through a combination of actions, such as:

1. Extensively investing in our homes, improving the energy performance wherever possible
2. Using emerging technology to make homes and commercial buildings smarter
3. Continue our pioneering work in making renewable energy in new homes cost effective
4. Introducing an extensive tree planting and bio-diversity programme
5. Gradually change our vehicle fleet to electric power
6. Encouraging employees to make less use of cars, by car sharing, cycling or other solutions.
7. Working more flexibly, either from home or from community hubs, reducing overall travel distances
8. Sharing learning to help our colleagues and our customers adapt their behaviour

Although this is an extremely ambitious commitment, the passion and commitment of our people to this issue convinces me we will achieve it.

From our leadership on wildlife projects in the borough, to our engagement with the climate strike and our weekly "Fridays for Future" climate focus, we are already alive to the need for change. Follow our journey toward carbon neutrality, and consider making your own commitment to achieving the change we so urgently need to address the climate emergency. We will keep everyone updated on progress through our social media channels, our website, and local news outlets.

Circular Economy and Waste

Litegreen Ltd

We Pledge to minimise the single use plastic used across the company, including single use PPE items & sourcing reusable alternatives from other independent green businesses local to us.

Pete's Shop Pledges to do its part to tackle the climate emergency through prioritising supplies from organisations which use sustainable business models, using a green energy supplier and supporting other organisations which are dedicated to reducing their carbon footprint.

St. John's Methodist Church, Bangor

We Pledge to apply for and attain an Eco-Church award within 5 years, to eliminate single use plastics from church life and create a wild garden or organic vegetable patch on an unused patch of land recently acquired.

Individual Pledges for Circular Economy and Waste

I will always think very carefully before I buy anything. Do I need it? Can I borrow or make instead? What impact will my purchase have on people and the planet?

I will also push hard to get my local council to take the climate and ecological emergency seriously - they are so behind in their views and not taking action yet.

I Pledge to use reusable shopping bags and not plastic ones, I also Pledge to walk to places more.

I aim to use resources efficiently and reduce waste.

Llansaint Women's Institute

Members of Llansaint WI Pledge to minimise their carbon footprint and raise awareness about climate change by becoming ethical shoppers and recycling warriors

Enriching our Natural Resources

Individual Pledges for Our Natural Resources

Manage my woodland in a holistic way to both capture and store carbon, and increase biodiversity.

Establish new Wild Meadow in Llandysul Ceredigion along banks of Teifi.

Severn Rivers Trust

We will undertake to promote and deliver a range of Natural Flood Management approaches throughout our work in Wales.

Coed Cadw – The Woodland Trust

To raise public and political awareness of what it means to 'protect, create and restore' tree cover. Delivering 'the right trees in the right places' for inclusive wellbeing, to reverse the collapse of biodiversity and to mitigate this climate breakdown, for us and all future generations.

All Wales Plan 2021-25

Team Wales Case Studies

Action to tackle emissions is already taking place across the length and breadth of Wales by organisations and individuals taking the lead. Some of these actions not only tackle climate change but also deliver a range of other benefits. The following case studies feature leadership, collaboration, innovation and technology which we know will be crucial in tackling climate change.

The case studies are presented either in written or digital format. They have been mainly organised to align with the emission sector chapters in *Net Zero Wales*. These are Energy and Heat Generation, Transport, Residential Buildings, Industry and Business, Public Sector, Agriculture, Land Use, Land Use Change and Forestry, and Waste. We have also included Education and Engagement recognising the crucial work in this area.

Energy and Heat Generation

Welsh Government Energy Service

The Welsh Government Energy Service supports the public sector and community groups to work towards increasing renewable generation and decarbonisation. A summary of their impact is set out in the infographic below.

Further information and details of case studies are available here:

gov.wales/sites/default/files/publications/2021-07/energy-service-annual-report-2020-2021_2.pdf

Overall impact: July 2018 – March 2021

By **March 2021**, we passed a significant milestone, working with community groups and public bodies to secure investment of **£102 million** for energy efficiency, renewable energy and ultra-low emission vehicles.



Saving
432,000
tonnes of CO₂



that is the same amount of CO₂ as 800 km² of trees absorb in a year, an area larger than Ynys Môn

Generating
£212 million
of local income and savings



Committing to 32.6MW

of new renewable energy capacity in Wales

That is enough electricity to power

9,400  Welsh homes...

or enough **solar panels** to cover the Principality Stadium pitch

56 times



We have supported
408 projects
22 local authorities



Solar power
156 projects



Wind power
30 projects



Energy efficiency
148 projects



Hydro power
12 projects



Heat networks & renewable heat
25 projects



Efficient street lighting
37 projects

Ripple Energy

Ripple are a new and emerging company successfully crowdfunded by over 1000 members of the cooperative. They are constructing the UK's first wind turbine owned by the members, which is due to be supplying its owners with low cost, green energy by the end of 2021. The wind farm is being built at Graig Fatha, in the heart of the South Wales Valleys in Rhondda Cynon Taf.

The Welsh Government has supported Ripple with a £1.1million grant. This new novel business model means local residents and businesses were able to purchase a share in the wind turbine. Shareholders will receive electricity generated by the wind turbine at wholesale price through Octopus Energy, meaning they receive clean energy and savings on their electricity bills.

Ripple's ambition is to have local communities coming together for ownership of renewable energy generation. This ambition supports the Welsh Government's Local Ownership Policy and net zero commitments. The Welsh Government's aim is for all new energy projects in Wales to have an element of local ownership. The electricity generated by the Ripple wind turbine also contributes to the Welsh Government's 2030 renewable energy targets of generating 70% of electricity demand in Wales from renewables and to have 1 GW of locally owned energy generation.

Catalysing local energy generation and use – Crown Business Park, Tredegar

Welsh Government's Smart Living initiative is working with the local authority in Blaenau Gwent and technical consultants AECOM to catalyse local energy generation and use by commercial tenants in a local business park. This will involve identifying in detail the technical feasibility and economic viability of installing roof mounted PV arrays, SMART metering and LED lighting within business buildings on the park, and using the energy generated by the business directly or sell via private wire to other businesses on-site. An initial package of measures on two buildings, involving 16 tenanted units located at the Crown Business Park in Tredegar will be trialled. This work runs in parallel with the Smart Living WBRID² challenge project developing a business service platform overlay.

A key aim of the project, and the intended support scheme for businesses is to derive environmental benefits and achieve significant carbon savings from implementation of the project and many of these have already been identified. The project and the broader support scheme will deliver economic and social benefits, largely through business competitiveness from reduced costs and enhanced business opportunities at the Business Park.

A calculator tool has been provided to enable individual businesses to identify capital investment and returns and the local authority to develop an offer of a grant or loan to support them. Further phases of this pilot are being developed to engage private sector tenants with the Tech Valleys Programme or equivalent support schemes.

DIGITAL CASE STUDIES

Egni Co-Op Solar: Geraint Thomas National Velodrome of Wales

Egni Co-op installs largest solar array in Wales (2,000 panels) on Geraint Thomas National Velodrome of Wales.

www.egni.coop youtu.be/ZC80dcRmla0

Bombora mWave™ - Advancing a Sustainable Energy Future/ Full Scale 1.5MW mWave™ Demonstration- Pembrokeshire Project Update

Bombora is developing technology to harness wave energy, and has a 1.5MW mWave Pembrokeshire Demonstration Project, which is part funded with £10.3 million from the European Regional Development Fund through the Welsh Government.

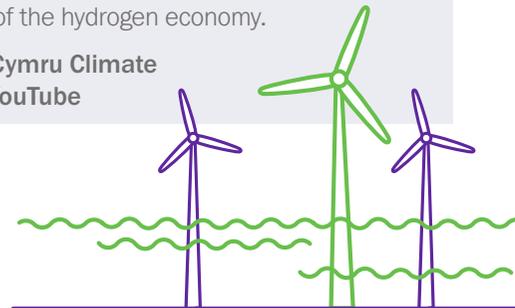
www.youtube.com/watch?v=yfSAN-2pz9w
www.youtube.com/watch?v=7dHHv_VLP9Q&t=22s

Ynni Glan - HyCymru Climate Week 2020

Ynni Glan is a clean energy consultancy based in Cardiff, Wales, specialising in fuel cells. Ynni Glan works with companies from architects to installers to provide a comprehensive service to develop renewable & low carbon energy projects.

HyCymru, the Wales Hydrogen Trade Association, is the trade body to advance the hydrogen economy in Wales in the 2020s by representing the fuel cell & hydrogen industries at all levels of government, brokering project opportunities and raising public awareness. We create international hydrogen bonds to share best practice and to help make Wales, with all its advantages, one of the early-adopters of the hydrogen economy.

Ynni Glan - HyCymru Climate Week 2020 - YouTube



Marine Energy Wales

Marine Energy Wales brings together technology developers, the supply chain, academia and the public sector to establish Wales as a global leader in sustainable marine energy generation, making a significant contribution to a low carbon economy.

youtu.be/g2lvjsaBfhM

Marine Power Systems

Marine Power Systems is a marine renewables technology development company based in South Wales. youtu.be/2XFueN4Bc08

Minesto

Minesto operates as a developer of marine energy technology in Sweden, Wales, and Northern Ireland. It develops Deep Green technology, which produces electricity from slow tidal and ocean currents through a turbine. Minesto operates a low-flow tide stream project at Holyhead.

youtu.be/RcSh5HLIZcE youtu.be/liEdkrmSSAI
youtu.be/24PQ0k8ABSc

NoviOcean

NoviOcean develops technologies to draw energy from wave power. youtu.be/UfBoOzfhmfk

Awel Aman Tawe - Winner Environmental Enterprise

Awel Aman Tawe is a community energy charity that aims to tackle climate change and enable local regeneration in the Upper Swansea and Amman Valley. The set up a community owned wind farm in 2017 and aim to provide rooftop solar panels for over 250 sites in Wales, providing affordable, sustainable energy for community buildings and schools. youtu.be/WnEOzkHJv-o

Transport

Transforming how we move around in Cardiff – Cardiff Council

Some of Cardiff's most significant challenges relate to air pollution, high levels of congestion and obesity. Cardiff Council has chosen to address these challenges in a joined-up way through their wellbeing objective 'Cardiff grows in a resilient way'. They have set out to 'lead a transformation of Cardiff's public transport system, alongside promoting more active forms of travel'. Their efforts to promote active travel have been integrated with work on health to ensure that the solutions they come up with unlock multiple benefits and contribute to some of the Council's other well-being objectives.

Examples include:

Cardiff Castle Street

- › Closed to traffic during the first lockdown to make available active travel
- › Working with local creatives, Patternistas, to create designs on the street Helping local businesses
- › Food and drink available to order from nearby restaurants
- › Adapting layout to enable social distancing

Greener Grangetown

- › Sustainable drainage system used to improve existing riverside cycle footpaths – removes 40,000m³ of rainwater/year from the sewer network
- › Targeted active travel at communities in poorest health
- › Cleaned and greened unwelcoming concrete spaces
- › Collaboration with Arup, Dŵr Cymru and Natural Resources Wales

Cardiff School Streets

- › Pedestrianised areas around 14 Primary Schools during peak times, reducing harmful pollution levels and allowing students to walk and cycle safely to school
- › Promoting active travel as habitual practice for children and young people, creating long-term behavioural change
- › Active travel officers supported school staff and pupils (through School/Eco Councils) to develop their own active travel plans

For further information on this case study and other relating to the Well-being of Future Generations Act please click here: www.futuregenerations.wales/resources_posts/case-studies/



Natural Resources Wales - Homeworking

Background

To better understand the likely changes in Natural Resources Wales' (NRW) carbon footprint, due to Covid-19 and homeworking arrangements. NRW used their 2019 staff travel survey data to calculate our baseline emissions from homeworking and commute, with the aim of providing an evidence base to inform future decisions on building management and homeworking policies. NRW also explored the emissions impact of a range of homeworking scenarios against this baseline.

Method

They calculated NRW's annual emissions for:

- › Commute, home and office energy use during 2019-20 (pre Covid baseline) and during 2020-21 (during the Covid work from home directive),
- › Modelled emissions with 30% and 60% homeworking (against pre Covid baseline)

They also modelled the impact of homeworking on emissions in different office scenarios (e.g. typical, rural, urban and more sustainable office).

Headline results

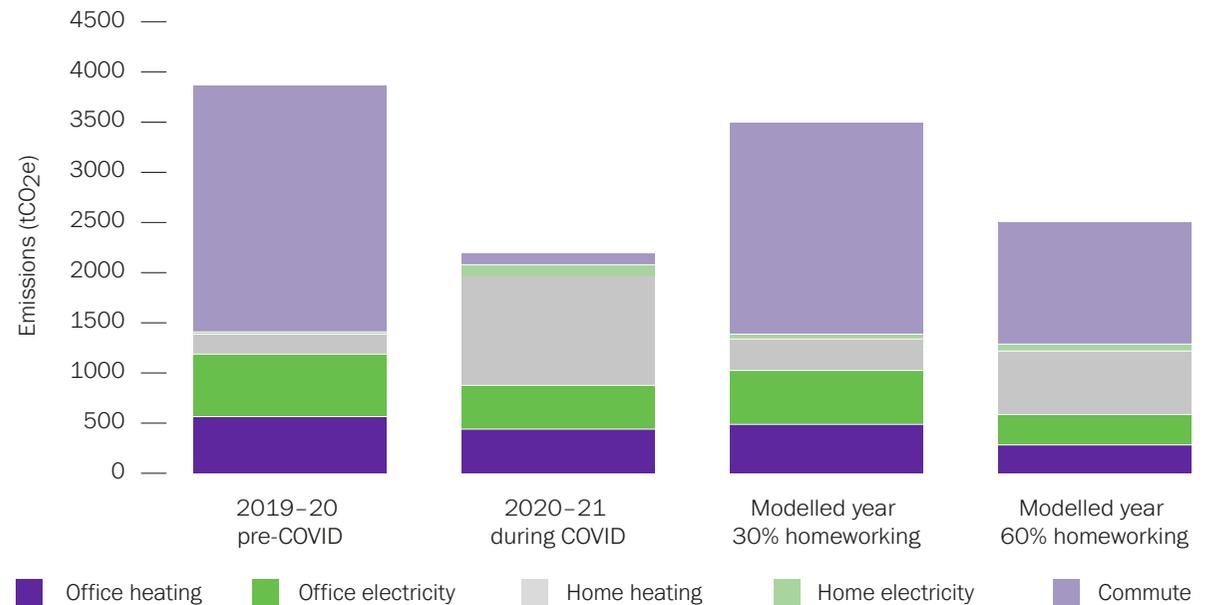
Impacts of Covid-19 compared to 2019-20 baseline:

- › NRW's annual emissions reduced by 43.2%
- › Commute emissions decreased by 95.4%
- › Office energy emissions decreased by 26.3%
- › Home energy emissions, attributable to NRW, increased by 444.6%

Figure 2. NRW annual emissions

Modelled annual emissions scenarios against 2019-20 baseline (when homeworking was just under 20%):

- › 30% homeworking would reduce emissions by 9.6%
- › 60% homeworking would reduce emissions by 35.3%



Key findings:

- › Homeworking reduces NRW's total emissions
- › Promote during the summer months, and in rural areas to maximise emissions benefit
- › Improved building energy management is needed to maximise emissions benefit of fewer staff in offices
- › Office space rationalisation and ways of working should focus on reducing commute distances
- › Close the gap between the NRW and Welsh national average
- › Decarbonisation of staff commute crucial to help reduce office working emissions through greater use of active travel and low emission vehicles

Electric Charging Infrastructure in the National Parks

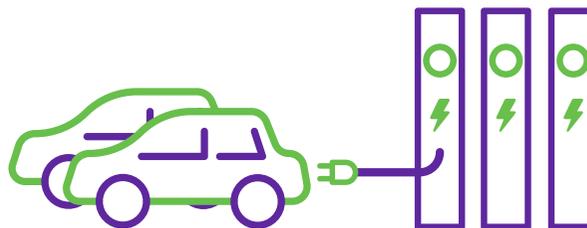
Pembrokeshire Coast National Park Authority (PCNPA), working in partnership with Pembrokeshire County Council has an ongoing project to improve the electric vehicle (EV) charging infrastructure within the National Park. The project aims to:

- › Provide for the EV charging needs of residents, visitors and to support and encourage the transition to electric vehicles thorough coverage across the county.
- › ‘Fast’ & ‘Rapid’ charging increased across the county, supporting the increase electric vehicle purchase, benefiting residents who do not have off-street charging.
- › Reduce carbon from the use of EV’s, contributing to net zero targets.
- › Continuing to build on the fast growing network of EV charging points in Pembrokeshire which is being driven by PCNPA and Pembrokeshire County Council partnership.

Alongside this project the PCNPA has a fleet management strategy to replace its internal combustion engines (ICE) vehicles with EV’s. The improved charging point infrastructure directly supports this strategy.

Freight Systems Express (Wales) Limited

Freight Systems Express (Wales) Limited (FSEW) is a Cardiff based company, which provides transport and delivery services throughout the UK, Europe and the World. FSEW have supported the company to be the first in the General Freight Industry for the UK and Wales to operate a pure electric 4x2 truck to support its logistical activities in Wales. As part of the project the intention is to convert a further 12 trucks to electric. From this, FSEW expects to expand this low carbon form freight transport into other areas of the UK for final mile and superstore deliveries. This project will bring significant commercial and environmental opportunities, reducing emissions and moving towards a low carbon economy bringing opportunities around clean growth for business and wider benefits for people and our environment.



Buildings

Innovative Housing Programme

The Welsh Government's Innovative Housing Programme identifies and tests solutions stimulating the design and delivery of new, high-quality, affordable homes through new housing models, new delivery pathways, and new construction techniques. Two examples are below.

Gwynfaen Scheme

The Gwynfaen scheme will deliver a mixed tenure development of 144 zero carbon homes overlooking the Loughor Estuary. The development will enhance the opportunities for the supply chain to achieve economies of scale for the materials and components necessary to achieve zero carbon homes.

Gwynfaen will provide new homes and will become the benchmark for low carbon living in Wales, capturing best practice approaches to place making, urban greening and fully integrated renewable technologies, as well as low carbon design. The project will also demonstrate the benefits and possibilities of collaboration as a means of delivering more and better homes in Wales.

LivEco Scheme

For video content click here:
vimeo.com/420337095/3cfa9a3af6

Please click here for further information of the Innovative Housing Programme:
gov.wales/innovative-housing-programme

SPECIFIC

We also continue to support the development of new ideas developing from businesses and academia. SPECIFIC is funded through the European Regional Development Fund (ERDF) to develop active building technology and collaborate with organisations in West Wales and the Valleys. They have recently added to their portfolio of demonstrator projects and have worked with transport for Wales to showcase an active train shelter.

SPECIFIC's most recent **active building demonstration** is a rail-approved platform waiting shelter. The shelter has been installed at the **Solar Heat Energy Demonstrator (SHED)** site and is being used for testing and verification of suitable solar technology. The aim is to prove that there is a use for an off-grid rail waiting shelter which can be installed at rural stations, and will enable the structure to generate, store and release enough energy to run essential services in a low carbon manner.

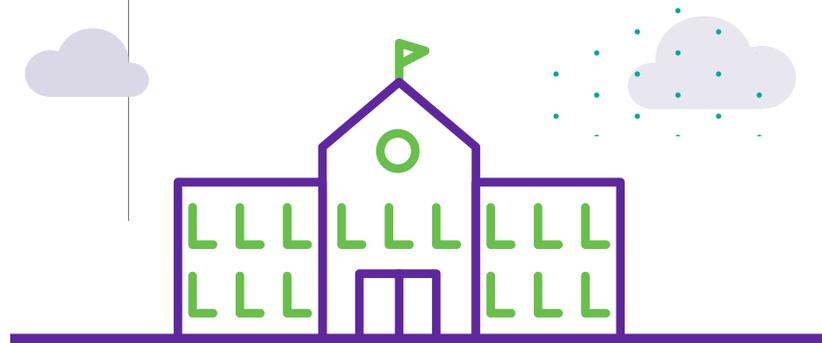
Smart Living

The vision for Bridgend is to make Bridgend a decarbonised, digitally connected smart county borough. Bridgend County Borough Council (BCBC) has been actively pursuing a decarbonisation agenda for a number of years and has been a demonstration area for the Smart System and Heat Programme and, in partnership with the Energy Systems Catapult, created the first innovation trial in Bridgend: the Home Energy Service Gateway. It has hosted the Western Power Distribution Network (electricity) and Wales & West Utilities (gas) FREEDOM project and won an Innovate UK Design competition looking at how heat, power and transport could be integrated.

From the experience gained from these pilots, Bridgend developed its Local Area Energy Strategy to 2050 and Smart Energy Plan and has been focusing over the past twelve months to bring forward several of the Bridgend Innovation Projects from the plan to the point where they are ready to be deployed with funding secured, including the following schemes:

- › Bridgend Town District Heating Network Phase One
- › Caerau Heat Scheme
- › B-Snug
- › SBRI affordable heat schemes

Further work is ongoing for continued development of innovation trial areas and enhanced access to funding to grasp these and wider opportunities.



Industry and Business

South Wales Industrial Cluster

The South Wales Industrial Cluster (SWIC), a partnership between Welsh industry, energy suppliers, infrastructure providers, academia, legal sector, service providers and public sector organisations, has been awarded over £21 million in grant funding that has been matched by industry to total over £40m for two projects to map and develop what is needed to support South Wales in becoming a net zero carbon region by 2050.

The heart of both projects is aimed at achieving net zero and at the same time, reversing the decline of heavy industry and creating economic prosperity for Wales. This will be done by developing a plan to preserve the existing 113,000 manufacturing jobs and potentially creating more than 30,000 new skilled jobs by 2050. While this plan is dynamic and wide-reaching, the SWIC is appreciative that there is no “silver bullet” for decarbonisation of industry. SWIC will present numerous decarbonisation pathways to help ensure the wellbeing of future generations.

The partners, businesses and organisations stretch from Pembrokeshire in the west to Monmouthshire in the east. The project will work with the various sectors to develop holistic industrial site decarbonisation options and create a plan to ensure South Wales industry as a whole achieves net zero by 2050.

Collaborators in the SWIC projects are CR Plus Limited, Costain, Associated British Ports, Capital Law, Carbon 8 Systems, Celsa Steel, Confederation

of Paper Industries, Connect and Convey Ltd, Costain, Dragon LNG, Energy Systems Catapult, ERM, Front Door Communications, Industry Wales, Lanzatech, Liberty Steel, Lightsurce BP, Port of Milford Haven, National Grid Electricity Transmission, Neath Port Talbot Council, Offshore Renewable Energy Catapult, Pembrokeshire County Council, Progressive Energy, ROCKWOOL Ltd, RWE, Siemens, Shell, Simec Atlantis power, Tata Steel, Tarmac, University of South Wales, Vale Europe, Valero Energy, Western Bio-Energy, Western Power Distribution and Wales & West Utilities.

FlexisApp

Flexis was funded through ERDF to build research capacity in energy systems in Welsh Universities. During the 5 years of funding they were involved in over 250 industrial collaborations and over a 100 research projects are in progress. FlexisApp will take forward the research and demonstration capacity of FLEXIS and part fund the commercial development of energy technologies, that focus on industrial decarbonisation and greenhouse gas (GHG) reduction e.g Swansea university and Tata Steel are collaborating how waste heat from industry can be reused and establishing The Centre of Expertise in Data and Smart Energy Systems a partnership project with Cardiff University and artificial intelligence (AI) software company, Maiple. The project will develop world-leading artificial intelligence and machine learning algorithms that power smart energy solutions for global application.

Frog Bikes

Smart Cymru has supported businesses to reduce their carbon emissions through grant funding to develop products and processes, in addition to expert advice through Smart Innovation. Since 2015 we have supported 73 projects in this area and awarded nearly £3.5m in grant funding to projects valued at in excess of £7m. Frog Bikes is one of the companies who have benefited.

Frog Bikes Manufacturing Ltd, who create lightweight and affordable children’s bikes, received £75k funding from Welsh Government to help the company achieve its commitment to reducing its carbon emissions.

Currently their frames are manufactured from virgin aluminium in Asia, painted and then shipped to their factory in Mamhilad, Pontypool, where other bought-in parts such as brakes, gears, chains, seats and handlebars are assembled.

Frog Bikes has been able to bring on a dedicated specialist to lead its Smart Cymru decarbonisation feasibility project, to help find ways to extend the useful life of their bicycles and components. This includes increasing the number of uses for each bicycle, with future plans to re-use and remanufacture components to extend their life, and ultimately recycling materials when each bike reaches the end of its useful life.



Also, in order to help keep used bikes in operation for longer, the company launched an MOT test pilot, to give used Frog Bikes a 'health check'. The MOT checks for damage, wear and tear and potential repairs or adjustments on 20 key safety points, to help keep children road-safe and in the saddle. In Wales, the scheme has initially been rolled-out to three bike stores with hopes of further expansion.

The changes that the feasibility project has enabled for the business will deliver substantial carbon savings by using fewer new materials (especially aluminium) within the supply chain, and by reducing the distance that materials are shipped around the globe.

www.frogbikes.com

Smile Plastics, Swansea

Smile Plastics transform waste plastics from food and cosmetic packaging for use in architecture and the luxury design industry. We are supporting the business with a £150,000 repayable loan from the Economy Future's Fund and a further £150,000 grant from the Circular Economy Fund, which is administered by Waste and Resources Action Programme (WRAP) Cymru on behalf of Welsh Government. The funding will help the company, which supplies global brands including Stella McCartney and Christian Dior, to expand and increase its production to help satisfy a growing demand for its products and increase the amount of material it annually recycles.

DIGITAL CASE STUDIES

Zelim

Zelim has provided funding, signposting, and mentoring to Offshore Survival Systems to develop unmanned rescue and recovery offshore. A goal of this project is that it will help the further decarbonising of wind farms further by improving maintenance flexibility and the yield output for offshore windfarms.

www.youtube.com/watch?v=IT-CLAVy-hk

RICE Cymru

Reducing Industrial Carbon Emissions (RICE) is a £9.2million EU-backed initiative funded through the European Regional Development Fund (ERDF) to test and drive forward next generation technologies to help reduce carbon emissions from Welsh industry.

youtu.be/0mAlqK-LZNE youtu.be/EkP_6cbUkRc

Swansea University - Ian Mabbett - decarbonisation thoughts

Associate Professor Ian Mabbett from Swansea University's Materials@swansea project provide insight on their programme.

Materials@swansea represents a cluster of projects that focus on the decarbonisation of buildings and industry and share expertise in metals; alloys; coatings; energy generation, storage and systems.

youtu.be/6xjRQ7Gdduc

Wales TUC: Green recovery and just transition

In TUC Cymru's report, 'A green recovery and a just transition' they call for a massive economic stimulus and set out a plan to achieve a 'just transition' to a net-zero economy for workers and communities in Wales.

youtu.be/OHIQh-Pjxg youtu.be/eTWzD0s7MC8

Social Business Wales Awards 2018 - Environmental finalists

Wales Co-operative Centre is a not-for-profit co-operative development agency in Wales. It is the largest co-operative development body in the UK. The Centre manages several major initiatives in Wales.

The Social Business Wales Awards have been run annually since 2010, as part of the Social Business Wales project, to highlight and honour the best social businesses in Wales.

youtu.be/VYLULIKuYDg



Agriculture

Sustainable Management Scheme Fferm Ifan Ecosystem Service Improvement Scheme

A collaborative farmer led Sustainable Management Scheme project taking landscape scale action on land management to improve ecosystem resilience and the services they provide. Fferm Ifan is a cooperation of 11 tenant farmers based on the Ysbyty Ifan estate. Fferm Ifan farmers seek to improve and manage natural resources in a more sustainable and efficient way. The project covers approximately 2,456 Ha and includes new targeted land management actions which will also deliver socio-economic benefits to the 11 farms and to the wider rural community Fferm Ifan live within. The farmers have grazing rights to the Migneint, one of the largest areas of blanket bog in Wales, which is designated as a Site of Special Scientific Interest, Special Area of Conservation and Special Protection Area.

As part of the work the Centre for Ecology and Hydrology (CEH) are providing guidance on catchment sensitive planting. They will be planting more farmland trees and hedgerows along streams to help protect riverside habitats, reduce soil erosion and alleviate flood risk downstream. Ditch blocking on the Migneint will continue and help raise the water table, store carbon and will also reduce flood risk in the Conwy Valley.

The farmers are also taking part in grazing trials to encourage more biodiversity and wildlife in the peatland. As part of the grazing trials, cattle have been introduced to the Migneint for the first time in living memory and there are plans in place to restore habitat to encourage more lapwings and curlews to breed successfully in the area.

The group is also working closely with a number of partners including the National Trust, Snowdonia National Park Authority, RSPB, Centre for Ecology and Hydrology, Bangor University and Natural Resources Wales in order to share ideas and learn from the expertise and experience of the partners.

An exciting element of the project will be looking into developing new markets for the non-food products of sustainable land management – clean, slow water, carbon storage and thriving biodiversity. The main aim of the group is to work together to ensure that the future generations of these traditional farming families can continue to thrive within this Welsh-speaking upland community.

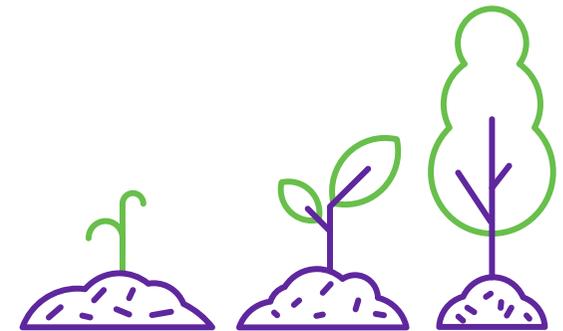
Assessing the potential of genomic testing dairy heifers to increase genetic gains and financial returns (European Innovation Partnership)

Nine farmers in North Wales investigated the potential for using genomic testing of their dairy heifers to identify the best animals to breed from at an earlier age. With the average cost of rearing heifers within the group of farms at £1,420 it is important that this investment is targeted towards animals that will perform in terms of milk production but also contribute to the future breeding of the herd. Specific traits can be targeted with the ability to identify the genetically superior animals at an earlier age. This allows gains in fertility, health and production to be made allowing faster genetic progress of the herd and improvements in the overall productivity and efficiency of the herd.

The group compared the use of genomic testing with the more traditional method of using Parent Average Predicted Transmitting Ability to see if the extra cost of genomic testing was worthwhile. Overall, the cost benefit of using genomic testing was calculated to be £19.39 per animal. This demonstrates a clear benefit and can help the herd to achieve;

- › greater milk yields of the desired quality;
- › faster genetic improvement of the herd;
- › improved health and fertility status; and,
- › lower replacement rates.

All of these factors will contribute to the lowering of the herd's carbon footprint while improving the resilience and sustainability of the business.



Establishing trees in dense bracken (European Innovation Partnership)

Bracken is an aggressive plant that quickly dominates large areas of land and typically occupies upland areas that are suitable for tree planting. Establishing trees in these areas is problematic as the young saplings are often out-competed by the bracken. Two farmers in mid Wales are investigating different methods of establishing the trees without using chemical herbicides and assessing whether different tree species are more able to successfully establish in these sites.

The farmers are looking at different methods of cultivation including a remote controlled robot with a cultivator attachment and a mini digger with a rotovator attachment. Both of these machines are able to operate on slopes. In addition, they are looking at methods of weed suppression after the trees have been planted to give the trees the best chance to establish in the first couple of years.

Early results are showing that oak saplings suffered higher losses than birch, rowan and sitka suggesting that oak may not be the best option for bracken dominated areas.

Cultivation prior to planting did influence the height that saplings grew in the first year and continued weed control also affected this. However, the project has found that the cultivation techniques are costly and there is a narrow window when they can be realistically undertaken before ground conditions become too wet in the autumn. The group are continuing to monitor the progress on the sites and weed control around the developing saplings will continue to be assessed.

This is an important project as so many farmers are looking to plant trees on areas of upland to increase carbon sequestration and lower their carbon footprints. Identifying sustainable tree establishment methods will also reduce the reliance on chemicals that are currently only available through a derogation.

DIGITAL CASE STUDIES

Henbant Permaculture - Patterns for Permaculture Farming in Wales: A brilliant future

Henbant Permaculture uses a combination of key line design, holistic management and permaculture to produce veg, eggs, milk and meat all in a sustainable way and at a human scale.

youtu.be/DCgBvFuUu2M

Green Recovery Wales

The Welsh uplands can offer so much – from producing food, to giving nature a home, storing carbon and reducing flood risk. Join Rhys on the family farm where he'll be taking a closer look at the heather moorland and the different benefits it provides!

Who doesn't love hay meadows?! Rhys takes a closer look at this wonderful habitat and the multiple benefits it provides, not only for nature but for the farm business as well. Last stop of the day...but saving best till last!

youtu.be/JLYvVOXx9ho youtu.be/BVLG3NyKrXw

Foliar feed for grassland (European Innovation Partnership)

Four farmers in south west Wales are hoping to reduce their use of nitrogen fertilisers on their grassland without compromising yield and productivity. The majority of nitrogen fertilisers are applied to grassland

systems in solid or prilled form and the nutrients are applied to the ground before being washed into the soil to be taken up by the plant's root system. A host of variables can affect the efficiency of this process meaning that utilisation is often as low as 60%. However, foliar feeding offers an alternative way to get the nutrients to the plants and involves the direct take up of the nutrients via the pores in the leaves. This leads to greater utilisation of the fertiliser making the system more efficient and productive.

On each farm, one large grazing field has been split into three plots to compare standard prilled nitrogen with the foliar feed and a control plot that receives no nitrogen. In 2020 the nitrogen use efficiency, which is measured as the increase in DM yield achieved per kgN compared to the control plot, was much greater for the foliar feed than the conventional prilled fertiliser. For example, at one of the sites the additional yield achieved for every kgN applied when compared to the control plot was 9.8kg/ha for the conventional prilled fertiliser but 37.6kg/ha for the foliar feed. Similar results were seen across all sites.

This has highlighted to the group the opportunity to reduce overall nitrogen applications but still achieve the high outputs needed to maintain productivity and during 2021 the group will investigate what level of input is required to achieve their desired productivity. There are considerable knock-on benefits to the environment if this system of fertiliser application proves successful including;

- ▶ reduced fertiliser applications resulting in reduced associated impacts of production and haulage of chemical fertilisers;
- ▶ reduction in the farm's carbon footprint; and,
- ▶ improved utilisation resulting in less run-off and pollution incidents.

Land Use, Land Use Change and Forestry

Sustainable Management Scheme - Cambrian Wildwood Project

Sustainable Management Scheme projects are collaborating to restore habitats across Wales, tackling climate change and the decline in biodiversity, improving the quality of our water and air and reducing the risk from flooding.

They are ensuring the supply of our water and other natural resources and maintaining our productive capacity through the landscape scale activities. In addition to environmental outcomes we are also seeing outcomes for community and volunteer engagement, skills development, job creation, business diversification and health well-being benefits.

Located in Bwlch Corog in the Cambrian Mountains, the Cambrian Wildwood project focuses on a 140ha area aiming to restore ecologically degraded and unproductive land to improve the wildlife and natural processes, which will benefit an overall area of 3,000ha and its surrounding communities.

The project will restore habitats connecting woodlands and heathlands helping to increase ecosystem resilience and improve the variety of wildlife. It will undertake activities such as blocking drainage grips and increasing woodland cover to help reduce and manage surface water flow, improve water quality, and increase carbon storage in soils and trees.

The project will also improve access to provide opportunities to exercise and enjoy nature. There are also plans for public engagement, opportunities for skill development, an educational programme for primary schools, courses for teenagers and activities on site, including volunteering.

Natural Resources Wales – Peatland Restoration

Peatlands are important ecosystems for biodiversity and ecosystem services and extend over an estimated 4% of the Welsh landscape supporting many important habitats and species. They are an important natural resource for carbon storage and capture. Peatland environments across Wales need urgent action to reverse habitat loss and poor condition. Degraded deep peatland on the NRW managed estate could be emitting as much as 99,653 tCO₂e/year.

The National Peatland Action Programme (NPAP) is a five-year ambitious programme of restoration and sustainable management of peatlands led by NRW with additional funding from Welsh Government.

The programme is targeting those peatland bodies most in need of restoration with the aim of delivering 600-800 hectares of restoration per year. It will also safeguard those in good and recovering condition.

The six priority themes for the programme are:

1. Peatland erosion
2. Peatland drainage
3. Sustainable management of blanket peats
4. Sustainable management of lowland peats
5. The restoration of afforested peatlands
6. The gradual restoration of our highest carbon emitting peatlands
7. Activity is being delivered by NRW and partners across a range of land uses on both private and public land.

Overview of work delivered during the 1st year of the programme (2020-21)

The programme has coordinated and delivered activity with the following partners: Brecon Beacons National Park, Snowdonia National Park, Elan Valley Trust, RSPB and National Trust.

The table below provides a summary of the work undertaken, and the mechanisms used to deliver improvements in year one, covering an area of between 947 and 1,475 Ha.

Reported Ha	Priority themes
1179*	Peatland drainage, Peat Erosion
164	Peatland drainage, Erosion, sustainable management of uplands.
115	Afforested peatlands Lowland peatlands
12.5	Peatland drainage and sustainable management of lowland peatlands
4.5	Sustainable management of lowland peatlands

**ha figure subject to review to bring it in line with NPAP recording methodology with an estimated minimum figure of 651 ha*

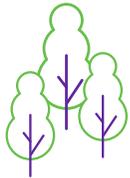


Keep Wales Tidy – Local Places for Nature

Even the smallest actions to help nature can contribute to tackling climate change. Nature's has a fantastic ability to trap carbon safely and provide other important benefits. Keep Wales Tidy run a capital grant scheme to enable communities in Wales to create nature on their doorstep. The programme focusses on community participation, particularly in areas of deprivation, urban and peri-urban communities and those with little access to nature. Every package provides all the materials, tools and expert support a community needs to create their space for nature. In return, communities must get landowner permission, and commit to maintaining the nature space for at least 5 years. For further information see the Keep Wales Tidy website.

Local Places for Nature by Keep Wales Tidy

During **2020-2021**, we helped communities create, restore and enhance hundreds of habitats across Wales.



5,744
Trees



Including **82** new community orchards

520
Gardens Built

82 Large Gardens
438 Small Gardens



2,669

Habitat Boxes and Bird Feeders
erected for wildlife



73,200 Bulbs

15,596
native plugs,
shrubs and
bushes planted



Supplied communities with

4,104 Tools

5,480 pairs of gloves
62 Wheelbarrows



642 Community
Planters



DIGITAL CASE STUDIES

National Forest for Wales

Creating a National Forest in Wales is a long term commitment, spanning many decades. Welsh Government is currently engaging with a wide range of stakeholders to understand how best to deliver the National Forest.

New managed woodlands created for the National Forest will:

- › provide spaces for leisure and nature,
- › help to capture and store carbon,
- › provide timber - a sustainable resource for construction.

youtu.be/Wy_ugCdI9PO youtu.be/Y6jeNdsgiuI

Size of Wales

Size of Wales provides funding and expertise to local and indigenous communities in tropical regions to support them to secure and sustain their precious forests, grow more trees and establish sustainable livelihoods.

Through education, community engagement and advocacy they also raise awareness in Wales of the importance of tropical forests and trees in tackling climate change. They aim to inspire people to see that they can be part of the solution.

youtu.be/liJACrOvjE

Waste & Circular Economy

Sustainable procurement and office refurbishments

Wales is leading the way when it comes to sustainable procurement of office furniture showing what economic and social value can be achieved through office refurbishments that keep resources in use and avoid the need for the extraction of new resources and increasing emissions.

In recent years, we have seen a number of public bodies in Wales demonstrate sustainability leadership through refurbishing their offices – organisations including Transport for Wales (see below), Public Health Wales, Hywel Dda Health Board and North Wales Police.

The fitting out of office furniture for the North Wales Police Station in Llay has been described as the 'UK's greenest' with remanufactured and repurposed furniture being sourced locally within North East Wales with 88% of the furniture refurbished or remanufactured, saving 58 tonnes of CO₂e greenhouse gas emissions and avoiding 26 tonnes of waste. 94% of the furniture used in Public Health Wales' new office in Cardiff were either remanufactured or refurbished saving over 134 tonnes of CO₂e GHG emissions.

41 tonnes of waste has been diverted from landfill.

Hywel Dda University Health Board have developed a new approach to using resources placing emphasis on recognising when equipment could be re-used rather than replaced. Through using the Warp It software, they have been able to repurpose and re-use surplus equipment and assets across the estate. This approach delivers annual cost savings equivalent to £126,000, avoids over 25 tonnes of waste sent to landfill and saves 96 tonnes CO₂e.

These initiatives have also enabled employment and skills opportunities for economically inactive citizens, supported partnerships with local businesses and third sector organisations here in Wales including Orangebox, who remanufacture chairs, Greensteam Flooring who refurbish carpet tiles and Merthyr Institute for the Blind who remanufacture items and offer project management support.

Sustainable procurement and office refurbishments – Transport for Wales

Furniture at Llys Cadwyn

Transport for Wales first announced the move to its new headquarters in Pontypridd, Llys Cadwyn, in 2017. Once the building was completed in 2020, the challenge was to furnish the offices in preparation for moving around 400 team members.

Supported by WRAP Cymru, TfW organised a supplier event in February 2020, which 30 suppliers attended. The session helped suppliers understand TfW's objectives in furnishing its new headquarters in line with its values, brand, and vision, emphasising sustainability and supporting the circular economy.

An open procurement procedure was undertaken using Sell2Wales to advertise the tender. There were 8 bids in total and the contract was awarded to the contractor demonstrating experience and ability to realise benefits in support of a circular economy, using recycled furniture and utilising local suppliers. Remanufactured and refurbished furniture was prioritised since its environmental footprint is 80% less than that of new furniture.

TfW was able to make use of our own office furniture for around 140 team members, but needed to procure extra seating, kitchen furniture, meeting room furniture, desks, chairs and lockers.

Working with the contractor and Merthyr Institute for the Blind, TfW remanufactured desks, sourced coffee tables made locally from recycled chopping boards and black plastic bags and created the world's most sustainable sofa comprised of 100% recycled polyester, a frame made from recycled postconsumer plastic, recycled foam cushions, and recycled plastic zippers.

Merthyr Tydfil Institute for the Blind provided long-term employment to five local refurbishers with disabilities. In total TfW achieved:

- › 30% of the furniture in the office is re-used from TfW.
- › 47% of the furniture is re-used from other organisations.
- › 3% of the furniture was handmade in Pentre by employees of Merthyr Institute for the Blind.
- › All the workers involved were paid the Real Living Wage.
- › 16% of the furniture is new and locally sourced, of this only 4% is new and sourced outside of Wales.

This project has saved 90,000 kgs CO₂ and 31.8 tonnes of furniture. We also saved 2,500kgs carbon by using recycled paint to paint the office interior.

“Utilising the circular economy approach to procure the furniture for our new headquarters means that we have been able to achieve multiple benefits, not only has it been more cost efficient, but it has provided social and economic benefits to our partners at Merthyr Institute for the Blind and their employees as well as the environmental benefits.”

Natalie Rees

Sustainable Development Manager

Increasing recycling

Wales looks a very different place today than it did 20 years ago. When the Senedd had its first sitting in 1999, Wales recycled less than 5% of its municipal waste. In 2020, Wales achieved the highest ever recycling rate of over 65% putting it third in the world. Collection of recycling materials from homes is frequent and universal. Food waste is collected from every household and recycling centres in Wales are evolving into modern eco-parks where businesses and enterprises capture the value in materials and keep resources in use.

Recycling is part of our culture – it’s what we do.

This achievement has been down to a number of factors. The Welsh Government has had a long-standing commitment to zero waste – setting recycling targets and funding infrastructure. Delivery has been a truly collective effort with everyone playing their part including local authorities, communities and households across Wales.

This has had an important impact on emissions too. The transformational changes to increase recycling have seen a dramatic reduction in waste being sent to landfill and a plateauing of waste being incinerated. By 2019 emissions from waste had declined by 64% and recycling is an important contributor.

Wrap Cymru reported through their My Recycling Wales website that 403,000 tonnes of CO2 emissions had been avoided through recycling in 2019/20. In addition, Eunomia, the environmental consultancy, produce an annual Recycling Carbon Index which uses the most up-to-date waste data available to calculate the quantity of CO2 emissions each local authority is saving through their recycling collections. Welsh local authorities have dominated the top of this index for a number of years. Recently, Merthyr Tydfil came top of the index following its switch to multi-stream collections in 2015 with separate food waste collection, and reducing the size of its residual waste bins.

DIGITAL CASE STUDIES

Capital Valley Plastics English subtitles

Capital Valley Plastics is based within Cwmavon South Wales. Capital Valley Plastics manufactures polythene building film from 95 percent recycled polythene. It has been awarded funding from the Circular Economy grant fund to help increase its capacity.

www.youtube.com/watch?v=I0j3fe0I-R0

Repair Café Wales

Is a community Interest company that facilitates pop-up events, offering training and advice to encourage communities that want to work towards a more circular economy, creating a culture of repair and re-use, directly addressing the ever growing emergency of unsustainable growth in landfill and waste.

www.youtube.com/watch?v=AXliP5KTEkl

Sarpak

Sarpak, based in Port Talbot South Wales, produces biodegradable and recycled packaging for businesses.

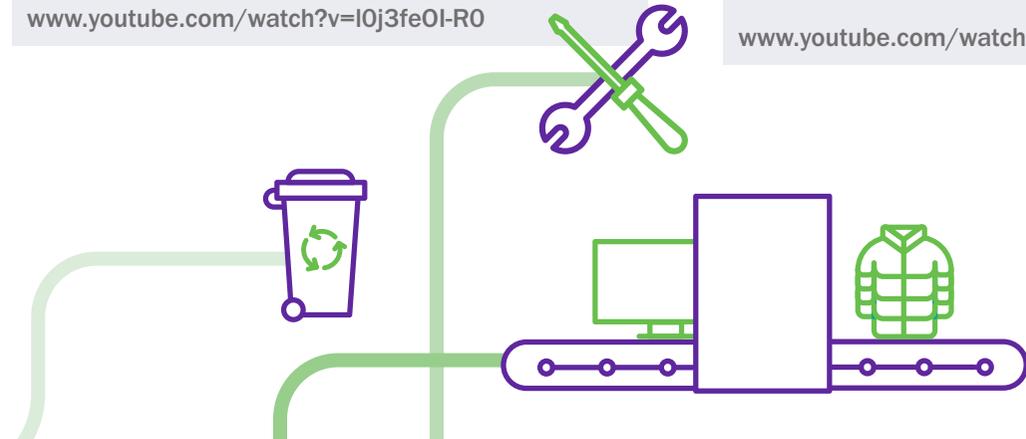
youtu.be/PiO98xhUjbo

Too Good to Waste - Winner: Consumer Facing 2018 / Enillydd: Sy'n Wynebu Defnyddwyr

Too Good to Waste are a leading re-use charity in South Wales; they collect household items like furniture and electrical appliances that are too good to waste from local residents for free. Their aims are:

- › **Waste Minimisation** – Reduce waste to landfill through re-use and recycling.
- › **Anti-poverty** – Alleviate the effects of poverty by providing access to affordable furniture items.
- › **Volunteering** – Providing opportunities to volunteer, gain work experience and social skills.

www.youtube.com/watch?v=I3izebV1a5Q



Public Sector

A strategic approach to decarbonising Natural Resources Wales supply chain

Emissions associated with goods and services purchased by NRW were estimated to be 22,667 t CO₂e in 2015/16, representing 55% of overall operational emissions, and a priority area for reducing the organisation's impact.

NRW used spend-based emission factors to estimate whole supply chain emissions, analysing the results by product category and account codes to identify emissions hotspots. Informed by this analysis and the pipeline of planned procurement, they identified frameworks and contracts as case studies to trial approaches asking suppliers to decarbonise.

In each case study they:

- › Included a standard text template on the importance of NRW's supply chain emissions and why we are asking suppliers to work with us to reduce emissions, and a question on how the supplier organisation manages and monitors organisational emissions, scored in tender evaluation.
- › Worked with the business lead internally to understand the nature of the works, goods or services delivered through the contract and to identify likely key emissions sources.

- › Inserted criteria targeted at reducing these key emissions sources into tender documents, framework agreements, and existing contracts. Examples include: a requirement for suppliers to complete an emissions calculator for each flood defence asset designed and built, demonstrating savings against a baseline; requirements for contractors to demonstrate improvement in emissions over time through key performance indicators e.g. travel emissions to our sites in our facilities maintenance contract; scored tender questions on ways of working to reduce emissions e.g. reducing peat soil emissions associated with plant use on a civil engineering framework.

Important considerations for focussing decarbonisation efforts included which stage(s) of the procurement process to target (e.g. planning, tender, contract management), and whether to focus on supplier organisation, product or contract specific emissions. Multiple approaches are possible and in our case studies we have opted to try a mix of asking about organisational emissions at the tender stage and selected contract emissions during contract management through calculators and KPIs. This will be kept under review as they receive more responses and apply these approaches to more contract types.

NRW are now developing a forward plan to scale up from tackling individual contracts to a process for decarbonisation across NRW procurement. Central to this will be expanding the targeted case study approach to more top emitting contracts; gradually introducing a tiered system of carbon reporting requirements for all suppliers; continuing to develop text templates and tools to support delivery.

Denbighshire County Council

Denbighshire County Council declared a Climate Change and Ecological Emergency in July 2019. The challenge was how to embed action for tackling climate and ecological change into the DNA of the Council and in all the business it seeks to deliver.

The Council changed the 'Principles of Decision Making' section within its constitution to state that all decisions should be made with regard for tackling climate and ecological change. This was formally adopted by the Council in October 2020 and is reflected in its governance for example with updated wellbeing impact assessment process (required for every decision) and project business case template for capital and business development schemes.

The Council also invested in full day Carbon Literacy Training for councillors, senior and middle managers, project managers and key officers (206 learners). This was to equip them with the knowledge and awareness to carry out the duty of both presenting information to decision makers, and for decision makers to have regard for tackling climate and ecological change when reviewing and deciding upon the information presented. An 'Introduction to Climate Change' e-learn course has also been produced and launched internally which all staff can access. This was completed 107 times in the first 4 weeks of it going live.

The change in constitution together with the training has focussed the minds of councillors and officers giving the agenda status inside the organisation. It has also brought clarity of purpose and a way for all staff and councillors to contribute to a reduction in carbon emissions, increasing carbon sequestration and improving biodiversity.

Land Purchase for the Sequestration for the Nation, Pembrokeshire Coast National Park Authority

Wales's three National Park Authorities (NPA) have commissioned expert help to support them lead by example and become carbon neutral by 2030. A baseline study of carbon in NPA and Areas of Outstanding Natural Beauty (AONB) has been commissioned and will inform their route map to net zero.

Over the past two years NPAs and AONBs have undertaken decarbonisation activities such as installing EV charging points (for car and bikes) in public car parks and in their own offices, set up schemes to assist communities to undertake decarbonisation activities, facilitate land managers in the management of their peatlands, installing renewable energy and energy reduction schemes, transport studies and improvements to digital infrastructure to assist with virtual ways of working. The following case study provides an example of projects undertaken to support carbon sequestration and to increase biodiversity by purchasing appropriate land within the National Park.

The Pembrokeshire Coast National Authority's (PCNPA) asset management policy is to hold the minimum estate necessary for delivery of Park purposes, however the 2020-2024 National Park Management Plan includes under Policy E1: Protect and improve biodiversity quality, extent and connectivity at scale a measure to "Acquire or lease sites of actual or potential nature value where this is a cost-effective management option and the Welsh Government's climate emergency declaration and continued declines in the state of nature - with land management identified as a major influence on both - suggest that the PCNPA should hold more land in trust for this and future generations.

After thorough research and investigation by officers across the National Park Authority into various land purchase opportunities both on and off the open market, the site at Trefin was prioritised. Of the options available, the land was considered to deliver the best outcomes for biodiversity and carbon storage whilst also delivering on location and access for management and providing potential opportunities for community use and enjoyment.

The purchased land 'Trefin, Graply End Fields' has enabled the PCNPA to help safeguard the future of the land in terms of:

- ▶ Creating a contiguous strip with existing block of coastal strip land Trywn Llwyd.
- ▶ Restore a mixture of coastal grassland, species-rich grassland, scattered scrub and boundary features for the benefit of a whole range of typical coastal species.
- ▶ Becoming a demonstration site for coastal resilience through the delivery of multiple benefits in the coastal hinterlands.
- ▶ Increase the resilience of the coastal habitats by buffering the coastal strip from adverse impacts and increasing the size and connectivity of the coastal habitat network. It would increase opportunities for chough and also pollinators, along our coastal bee lines. Farmland birds.
- ▶ A rough estimate of the carbon benefit of restoring improved grassland (at an existing value of 60tC/ha) to a mixture of coastal grassland, species-rich grassland, scattered scrub and boundary features is an additional 6 tonnes carbon / hectare. Thirty acres (12 hectares) could therefore result in additional sequestration of 72 tonnes of carbon. It is suggested that an appropriate pre- and post-restoration evaluation of carbon benefit should be performed.

Although the headline carbon storage for woodlands is higher there is a lot of research to suggest that grasslands are more stable carbon stores than woodlands and do not come with the problem of carbon release on establishment (as with woodland creation). Grassland carbon storage is very appropriate for the Pembrokeshire Coast National Park landscape. In addition the management of the land in this way will raise awareness of grassland carbon storage.

The purchase represents a significant positive impact on carbon sequestration and on biodiversity gain in the National Park for current and future generations.



CADW

Over the last 10 years Cadw has worked hard to reduce carbon emissions from the sites within its care. Recent projects at Tintern Abbey and Harlech Castle, for example, have replaced obsolete gas boilers with low carbon technologies, such as air source heat pumps and PV panels. Energy efficient lighting, including floodlights, is standard, and policies designed to maximise the re-use and recycling of materials have been introduced. Future activities include the development of a carbon strategy by December 2022, the development and implementation of carbon management plans for the four worst performing sites, and the introduction of electric car charging points at Blaenavon Ironworks and elsewhere.

Cadw is also working to help the wider heritage sector take action to reduce its carbon emissions and adapt to the impacts of climate change. Promoting the re-use and responsible adaptation of our existing historic buildings, for example, protects their embedded carbon, as well as their significance and contribution to economic, environmental and cultural wellbeing. Other actions include working with the Housing Division and Apprenticeship Policy team to help grow a well-qualified and competent retrofit industry with the capability and capacity to deliver retrofit at the scale needed in Wales.

The development of guidance for building owners, their advisors and contractors is also essential. The Cadw best practice guide Renewable energy and your historic building: Installing microgeneration systems was published in 2010. Further action is planned in 2021, including the publication of a companion volume, Energy efficiency and historic buildings in Wales.

Welsh universities carbon management plans (toolkit)

All Welsh Universities have published Sustainability or Carbon Management Strategies or Plans.

In 2021-22 the Welsh Government made available £10 million to support capital investment in developments that support decarbonisation and the green economy along with capital investment to render campuses Covid safe, investment in digital learning infrastructure and other student facing infrastructure.

The types of projects in Welsh Universities supporting the decarbonisation agenda include :

- › Rationalisation/reductions of estate size to enhance efficiency and reduce carbon emissions.
- › Replacement of poor quality estate with new builds featuring improved insulation, energy efficiency and incorporation of renewable energy elements with sustainable design incorporated throughout.
- › Installation of photovoltaic systems.
- › Replacements and upgrades to more energy efficient heating and ventilation systems.
- › Installation of LED lighting to increase energy efficiency.
- › Installation of electric vehicle charging points.
- › Installation of Waterless urinals and rainwater harvesting facilities.
- › Greening and Biodiversity projects such as increasing rates of tree planting and landscape enhancements.
- › Consolidation of activity to minimise commuting between sites.
- › Development of a paperless admissions system.

DIGITAL CASE STUDIES

National Trust - Presentation English

Nation Trust is part of the global fight against climate change. It is the single biggest threat to the precious landscapes and historic houses they care for.

Their teams are adapting to changing weather patterns and working hard to address the damage caused by wild fires, heavy rain, increased humidity, high winds, droughts and shifting shores.

youtu.be/98hGo3ribDw

One Planet Cardiff

One Planet Cardiff is Cardiff Council's plan to become a green and sustainable city over the next ten years and to become carbon neutral by 2030, in answer to the climate emergency.

youtu.be/5uEBdgnb5Qc

Education and Engagement



Trade Union - Green Reps

Working together with students, in 2019 Cardiff University UCU (University College Union) ran a successful campaign calling on the university to declare a climate emergency.

Alongside the climate emergency declaration, the university has committed to becoming carbon neutral by 2030. Behind the scenes, the representative has been working for many years in his role as a trade union environment rep to try to make the university more sustainable. To read the case click here.

For more information on how Unions in workplaces are creating change read about how the Wales TUC has set up a new network to support trade union reps who want to promote greener workplaces and sustainability. The Wales TUC has also produced a toolkit to provide information to help union officers and reps in Wales who want to take action on the climate and nature emergency and negotiate for greener and fairer workplaces.

DIGITAL CASE STUDIES

Coastal Communities Adapting Together – STEM Careers event

As part of the engagement work around the Pembroke Dock Marine Project (developing a world-class centre for the development of marine energy in Pembrokeshire), in March 2020, CCAT hosted a student event. The purpose was to demonstrate the STEM skills at the heart of the marine energy industry, to raise awareness about the upcoming local opportunities, and to upskill today's youth, tomorrow's workforce in preparation. The event also served as a launch event for CCAT's bilingual STEM Guide to careers in Marine Energy - An Ocean of Opportunities, to introduce the possible new careers in marine energy (both locally and globally) sowing the seeds of local development and regeneration. This has been developed in collaboration with a number of energy developers and the local supply chain.

www.mhpa.co.uk/pembroke-dock-marine/

Renew Wales

Renew Wales is a practitioner-led programme which helps communities in Wales reduce their carbon footprint, adapt to the impacts of climate change and live more sustainably. It works through a network of local coordinators, hosted in local third sector organisations, renew links community groups with peer mentors – experienced people who can offer their advice, inspiration and knowledge to enable others to take their first steps towards action on climate change

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youtu.be/xpHCLpyUoYc youtu.be/6m74Qv-1KKM
youtu.be/YMAORHwhiac

Wales Commonwealth Games - Team Wales QBR climate change English

Wales Commonwealth Games recognises that climate change effects all of us, they emphasis we must protect our future generations and Wales. Wales Commonwealth Games also encourage people to do what they can to make a difference.

youtu.be/CNU1NxmTm5I

Centre for Alternative Technology (CAT) - ZERO CARBON BRITAIN

CAT is an educational charity dedicated to researching and communicating positive solutions for environmental change. The Zero Carbon Britain campaign provides a range of training courses, events, detailed research reports, innovation lab processes and a free online resource hub to help transform economic, political, and social systems to achieve net zero.

youtu.be/LIKwzevs3XQ youtu.be/LIKwzevs3XQ
youtu.be/dz6EpitYlpc

Everything Change is a series of discussions and events exploring how the roles creativity, adaptive thinking and storytelling can play in overcoming the challenges of climate and ecological crises.

The programme was originally broadcast live globally between 10th–19th June 2021, featuring contributions by Margaret Atwood, Raj Patel, Future Generations Commissioner Sophie Howe and dozens more renowned thinkers, artists and activists. With an international array of contributors from across the arts and creative industries, as well as the sciences, law, business, public policy, activism and education, Everything Change created a unique forum for generating debate and new ideas, driven by some of the most urgent questions of our times, and focusing on seven key areas of change: Money, Food, Water, Energy, Justice, Story and Change itself. Over ten days the thinkers, artists and activists gathered to consider how creative thinking might help shape the imaginative revolution needed to make meaningful action on the climate crisis feel not just vital, but possible.

Everything Change was produced by Taliesin Arts Centre and Swansea University Professor in Creativity, Owen Sheers, in partnership with Dhaka Lit Fest and with support from the British Council. The recordings are available to view on demand to stimulate more dialogue and creative thinking around the vital and far-reaching themes explored in the lively discussions.

An Overview of the recordings are below:

When the Story Changes, with Margaret Atwood and Sadaf Saaz.

“Don’t tell artists what to do; they will figure it out.”

Two-time Booker Prize winner Margaret Atwood explores the role storytelling might play in meeting the challenges of the climate crisis, with reference to her own work and remarkable career, in conversation with Sadaf Saaz, director of the Dhaka Lit Fest. **WATCH NOW**

changing FOOD, with Ian Rappel, Khushi Kabir, Owen Griffiths and Dee Woods, Raj Patel and Jon Gower (Chair).

“We need a globalisation of learning from each other – not globalisation of produce.”

We delve into some of the most damaging aspects of food in the modern world, while also going in search for some of the most creative, exciting and appetising solutions, with a panel of food specialists, artists and thinkers. **WATCH NOW**

changing ENERGY, with Dr Ellie Standen, Joanna Clarke, Dr Samiya Selim, Suzanne Dhaliwal, and Andy Middleton (Chair).

“Be a collector of good stories about things that work.”

This vibrant discussion considers the future of energy. Will our creativity and innovations have ensured the world’s remaining stocks of fossil fuels have been kept in the ground, or will they continue to have been burnt as carelessly as they have been for the last thirty years? **WATCH NOW**

changing JUSTICE, with Adetola Onamide, Cheryl Beer, Jojo Mehta, Syeda Rizwana Hasan, Scarlett Westbrook and Jane Davidson (Chair).

“I can remember succinctly the first moment that everything changed...”

How and where should responsibilities for tackling the climate and ecological crises fall, across countries and generations? changing JUSTICE explores what roles law and justice might play in helping us reach a low-carbon, sustainable future. **WATCH NOW**

changing MONEY, with Dr Emily Bacon, Oana Aristide, Shameran Abed, Suzanne Dhaliwal and Oliver Balch (Chair).

What new models and ideas might best alleviate poverty, and how might the principles of a circular economy become the norm? This event explored what alternative, innovative and creative economic models are on the horizon that might be part of the solution to the climate crisis. **WATCH NOW**

changing WATER, with Aaron Thierry, Dr Saleemul Huq, Sabrina Mahfouz, Vikram Iyengar and Dr Faustina Pereira (Chair).

“Water is the universal link between everyone on the planet.”

What is the future of our relationship to water, in a world where for some there will be too much and for others never enough? At the fourth Everything Change event we dive into the oceans, rivers and lakes of the world to explore the challenges and possibilities of its changing waters. **WATCH NOW**

changing STORY, with Dr Anna Pigott, Ben Rawlence, Marcus Brigstocke, Sherri L Smith, and Dr Amy Brady (Chair).

“Perhaps it’s better to focus on stories about worlds we do want to create, rather than ones we want to avoid.”

Despite our knowledge about the devastations of climate change, we have failed to engage the world’s communal imagination in such a way that it might drive a revolution of action. How might the right stories, told in the right place, at the right moment, change everything? **WATCH NOW**

changing CHANGE, with Dave Manguenier Gough, Jay Griffiths, Dr Mya-Rose Craig (BirdGirl UK), Samia Zaman, Sophie Howe and Andrew Miller (Chair).

“Intersectionality is at the core of every successful movement.”

What can we learn from our pasts to inform our futures and, importantly, what have we learnt about change over this last year of pandemic? About its limitations, its possibilities, and our ability as a species to embody it, in action as well as thought? **WATCH NOW**

Voices of our Youth

We must act as a nation to provide a better future of both current and future generations. Children and young people have played a crucial role in profoundly raising awareness of and concern about climate change. We are particularly keen to engage with children and young people. This section recognises the commitments of our young people and considers their asks of us.

YOUNG PEOPLE PLEDGE WALL

Tredegar Comprehensive School Pupils

- › To not let the water run constantly when brushing my teeth.
- › To use less electricity by turning off lights when they are not used.
- › To not boil a full kettle of water if only a small amount of it is needed.
- › Put the saucepan lids on when cooking to reduce the amount of energy required to make it boil.
- › I Pledge to turn off all light that are not being used and to leave nothing on standby at night.
- › I will switch off any devices as soon as they are fully charged. I will not leave devices charging overnight.

Stanwell School Pupils

- › To buy and wash clothes responsibly
- › We Pledge to reduce our school's annual paper usage to 50% of our paper usage in 2017, by the year 2021

Individuals (Grandmother and grandson)

I Pledge to work alongside my 9 year old grandson to raise awareness about climate change by educating and encouraging family, friends, and members of the wider community but more importantly local schools and the Cylch Meithrin to follow the 5 R's – Recycle, Re-use, Reduce, Refuse and Repair.

My grandson's Pledge

'I will lead by example in my school in Mynyddygarreg and at home to recycle, save energy and water, and to grow my own fruit and vegetables in my garden and greenhouse'

Anonymous Pupil: I Pledge to walk to school in the summer.

Dwr y Felin Comprehensive School Neath

As a school we Pledge to do the following:

1. Try to charge mobile phones for the least amount of time possible, therefore not wasting electricity. Try not to charge over night.
2. Turn the lights off in a room if they are not needed.
3. Try to walk or cycle to school, rather than use a car.
4. Recycle products in school e.g. paper and plastic bottle. Also bring in a drinks bottle to reduce the single use plastic being used.
5. Encourage other people - friends and family members to act in similar ways in their own lifestyle.

Porthcawl Comprehensive

To make my school more sustainable and environmentally friendly.

To keep trying to get my voice heard and gain more knowledge about the climate emergency until I can gather my own facts and start making a bigger difference.

Young Persons from Children in Wales

- › I Pledge to reduce my plastic waste.
- › To do what I can to advocate for the planet.
- › For 80% of Wales' energy to be renewable by 2035.

Ysgol Mynydd-y-Garreg

As a class, we will raise awareness of climate change with our friends and family. We will plant our own food, recycle and not burn, turn off electricals when not used, change our use of packaging and congratulate good attitudes. We will reuse where possible for a positive effect and ensure that bins are used. We will change our little habits together.

Ysgol Gymraeg Gwenllian

As a school, we will raise awareness of climate change within our community, with our friends and our family. We will plant our own food and recycle wherever possible to ensure we do not waste. We will celebrate positive changes and reuse items rather than reject them. We will change our little habits together to have a big impact on the world and community. We will be the answer to climate change.



Case Studies

Coastal Communities Adapting Together

CCAT explores how digital tools can help to build adaptive capacity to climate change, for example engaging people with change by using interactive games and online learning resources to help children and young people understand how climate change is affecting their local area. The project also supports communities in understanding how they can adapt to climate change through workshops and initiatives such as mapping changes and improvements to their area and planning to make their communities more resilient to the effects of climate change.

As a project partner, the Port of Milford Haven has fully embraced the exploration of digital engagement tools including virtual tours, interactive maps and participatory mapping. Innovative ways of supporting social and habitual adaptations further include educational projects and resources to engage people in creating resilient, biodiverse environments, and in upskilling today's youth, tomorrow's workforce in preparation.

The CCAT project is part-funded by the European Regional Development Fund through the Ireland Wales Programme and runs from 2019 to 2021. It will focus on communities in Fingal in Ireland and Pembrokeshire in Wales. For further information see storymaps.arcgis.com/stories/957dd5ab091740f38a518491b5c41d28.

Eco-School I've got the power

Eco-Schools is a charity passionate about engaging young people in environmental education and action. They provide a simple, seven-step framework that guides, empowers and motivates pupils to drive change and improve environmental awareness in their school, local community and beyond.

youtu.be/FYXZVc2ntxY

Foundation for Environmental Education – Wales Climate Week

The Foundation for Environmental Education (FEE) is a non-governmental, non-profit organisation promoting sustainable development through environmental education. FEE is active through five programmes; Blue Flag, Eco-Schools, Young Reporters for the Environment, Learning about Forests and Green Key International.

FEE has members in over 100 countries worldwide, one of which is Keep Wales Tidy. Keep Wales Tidy is a charity working across Wales to protect our environment. Keep Wales Tidy helps to:

- › Take action to make a positive difference;
- › Put people at the heart of everything we do; and,
- › Protect our environment for now and for the future.

youtu.be/g3khoflcjCQ

Children in Wales

Children in Wales is the national umbrella body for organisations and individuals who work with children, young people and their families in Wales. Young Wales is a Children in Wales initiative that amplifies and supports the voices of children and young people across Wales to be heard, listened to and have influence in decisions that affect their lives; underpinned by the UNCRC and the Children and Young People's National Participation Standards. We aim to do this by ensuring that young people have opportunities to participate and raise issues that are important to them; ensuring their voices are heard by decision makers, policy officers, Welsh Government officials and Ministers.

Young Wales has an established history of driving children and young people's rights, engagement and participation agendas on a pan-Wales basis.

We have a cohesive partnership approach to our work encompassing children, young people and partners from a range of sectors and organisations, in order to support children's rights and participation; ensuring that children and young people are at the center of all decision making. Our focus is on enabling children and young people's voices to be heard and listened to throughout Wales. **'Having a Voice – Having a Choice.'**

Throughout Young Wales' engagement with children and young people in the past year we have received a consistent message from them that climate change should be at the forefront of everyone's priorities, should be considered in all aspects of policy development in Wales and that everyone should be aware of climate change. Children in Wales is committed to work with Welsh Government and our stakeholders to support this agenda and furthermore have Pledged to introduce a new Environment & Sustainability Policy as well as appointing an Environment Champion from amongst our staff in order to drive forward this important agenda.

Young Wales leads the UK Youth Parliament Programme (UKYP) and in their annual Make you Mark Ballot 2020, climate change received a high number of votes from young people across Wales, with plastic pollution identified as a key area to address. The UKYP Members are now set to action this agenda and are currently developing a campaign which will include them delivering a series of workshops and events for young people in Wales.

Young Wales will be publishing our Priority Policy Areas in the lead up to our annual conference as part of Universal Children's Day 2021. The Young Wales annual conference will include a series of Climate Change workshops delivered by young people for young people, asking what

next to drive forward the climate change agenda in Wales. Delegates will have an opportunity to consider and develop key recommendations on Climate Change which we will share with Welsh Government and partners following the conference.

We all have a priority to address Climate Change and understand its impacts on social, economic and environmental factors now and in the future, summarised here from a young person who told us: **"Our future is a moot point if we don't deal with climate change."**

Size of Wales

Size of Wales' education programme has been delivering in schools for a number of years thanks to support from the Welsh Government. This programme has raised awareness and understanding in young people about climate change, tropical forests, indigenous people and what we can do here in Wales to combat pressing environmental issues. Over 120,000 young people across Wales have participated in Size of Wales' education programme. This has included in 9 Go Green Days with thousands of young people raising thousands of pounds to plant trees with Size of Wales.

Out of this education programme and building off of the Welsh Centre for International Affairs (WCIA) Mock UN programme, Size and WCIA started the award winning MockCOP programme.

The Model United Nations MockCOP conference provides a fantastic interactive opportunity for young people aged 14-18 to learn about the UN, the annual climate change talks and develop tolerance and understanding of nations and cultures by acting as those nations whilst discussing global issues. MockCOP also received support from Welsh Government in 2020 and Senedd members have been regular features as part of the conference.

MockCOPs allow young people across Wales to interact with each other, learn more about climate change on an international level and build empathy and understanding of the complex global situation.

Out of MockCOP in 2020 the Youth Climate Ambassadors for Wales have grown. A group of young people whose passion for taking action on Climate Change began with involvement in the MockCOP process.

These young people have gone on to speak at the UN, represent Wales at meetings with the US Ambassador, organised conferences with the highest levels of Welsh Government and are taking Wales to COP26 as official delegates in the Blue Zone.

Across these programmes Size of Wales has been supported by Welsh Government to ensure that young people are informed and heard.



Keep Wales Tidy

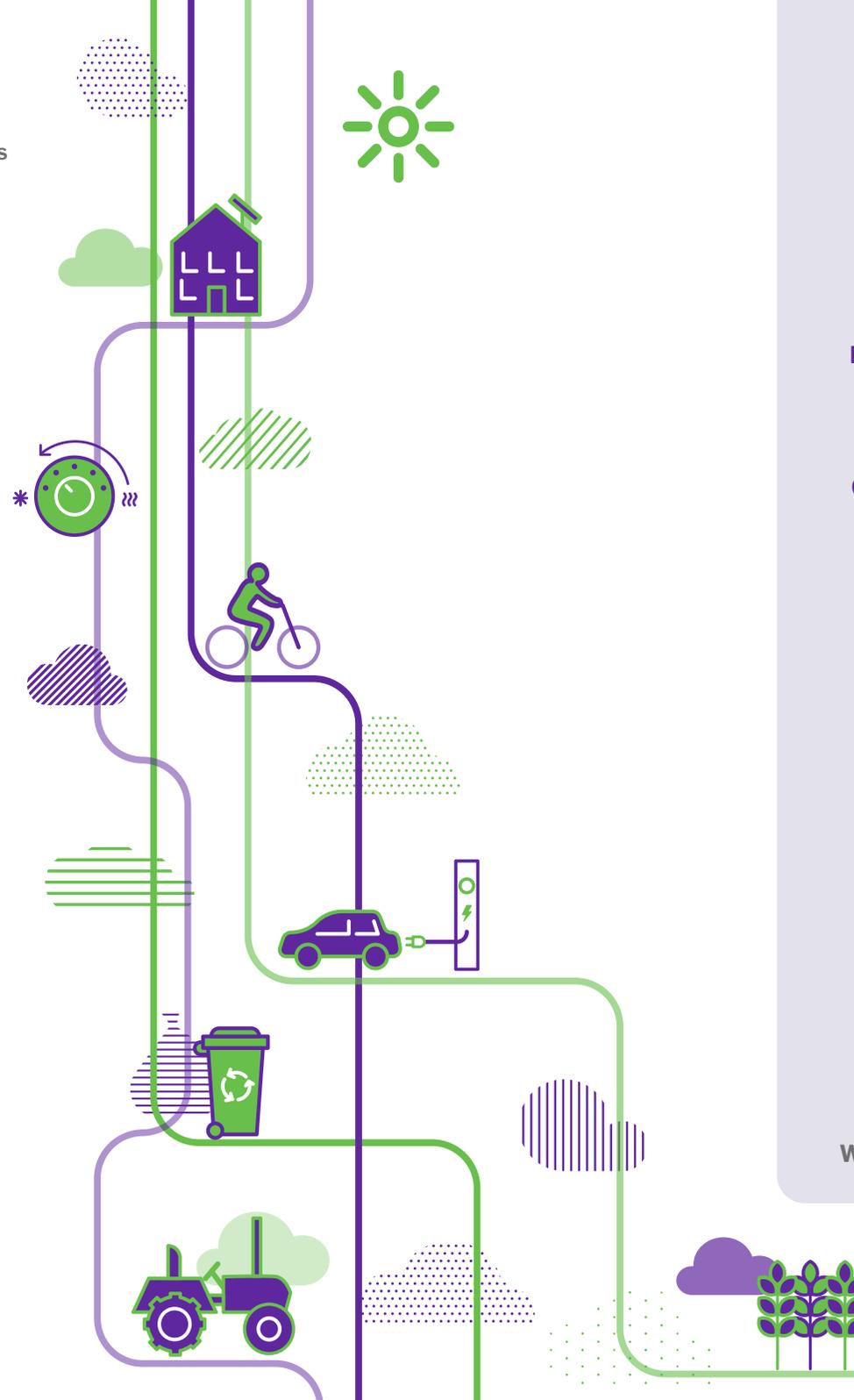
Promoting a circular economy to reduce CO2 emissions

Pupils in Bodnant Primary School in Denbighshire learnt about the environmental impact of clothing production and wanted to do something to help minimise their impact. They already had a successful school uniform and coat reuse scheme running so decided to extend the re-love of clothing message to Christmas jumpers.

The sale was a great success and really helped promote that message that reusing and second hand is great for our planet and helps to be inclusive to all. The school have decided that to make it more accessible and covid-safe, they will be selling jumpers online by taking photos and accepting payment through Parentpay.

A poem for our planet

After taking part in the Eco-Schools week of online climate workshops in April 2021, pupils in Ysgol Bancffosfelen took on the challenge of creating a poem to share their message about our planet's future. The KS2 class came up with the amazing poem below.



I am the murderous veil
Choking the earth as I grow.
I am the killing machine
Destroying hundreds of trees.
I am the crawling creature
Infesting everything I touch.
I am the darkness
Covering the Amazon with glee.
I am the slaying machine
Destroying hundreds of habitats.
I am the suffocating blanket
Heating up the earth.
I am the endangered animal
Crying as my home is destroyed.
I am the evil killer
That no one can see.

We are the fighting army
Gathering knowledge and hope.
We are the solution
Saying that we can understand.
We are the answer
Saving the world for all.
We are the warriors
Battling the on-going war.
We are the champions
Recycling, re-using, repairing.
We are the defenders
Looking to the future.
We are the team
Protecting the world.
We are the heroes
Rescuing Earth from its enemy.

Written by KS2 Ysgol Bancffosfelen

Clean air in Llanidloes

After listening to an assembly on clean air and what comes out of an exhaust, pupils in year 3 and 4 in Llanidloes Primary looked at a sock which collected dirt on a 4mile journey to see just what came out of the back of a car. They then researched what is in the gas that comes out of a car to find out more about the impact it has on health and our planet. This was followed by a study of lichen by the car park in comparison to the wooded area of the playground.

The eco committee decided to run a stall at the Llanidloes green day event on 18th January 2020. They encouraged people to not idle engines and had a display of lichens from their study. The public were asked to sign a Pledge to support these ideas.

Parents have also been asked not to idle engines when collecting pupils and they are asked to park further from school and walk in. The school are also encouraging school transport to turn off engines while picking up pupils.

Saving Energy in Newtown High

Eco-Committee pupils completed an energy survey around the school building using heating sensors to see where energy and heat was escaping from. They also found rooms where lights were being left on and where doors were being left open. They then wrote a report and recommended to the SLT and governors where money and energy could be saved.

The energy survey identified how the school could potentially save £24,000 a year and more importantly reduce carbon emissions by 154tCO₂. The suggestions were split into low, medium and high payback, so they could come up with both long- and short-term action plans.

Young People's Climate Conference

We need children and young people to play a prominent role in driving the transition to a net zero Wales. Children and young people have profoundly altered the level of awareness of and concern about climate change across society, completely changing the terms of the debate. The most challenging test for our plans is to meet the expectations of children and young people who will bear a far greater burden of the costs and impact of climate change than anyone in a position of power today.

Welsh Government supports many activities, through our environmental education programmes such as Size of Wales and Eco-schools. Building on these programmes we wanted to listen to young people directly. In March 2020, for the first time we replicated our Climate Change Conferences specifically for young people. We held events in North and South Wales involving nearly 15 schools and over 150 pupils. We brought young people together at the events to listen to speakers from different backgrounds to inspire and stimulate new thinking to respond to the climate emergency. Many which have resulted in Pledges being made actions being done at schools and pupils. Below are what the young people would like to see happening in the future.

Better transport alternatives such as segregated cycle lanes.	More reliable/cheaper public transport	More people walking and cycling.	The Government should make the public transport free	More sustainable way of using energy
				Plantations
Less meat production	100% of electricity produced using renewables	Schools set up recyclable uniform schemes	Reducing plastic and packaging in the industry and be careful where our food comes from	Big businesses cutting emissions
Use more paper bags				We need to consume less!
I think people should start eating more alternatives to meat and there should be different modes of transport to reduce carbon emissions	Better social media from welsh government, don't know what they are doing as a government to take action	Less intensive farming	The government setting laws rather than giving advice around the world from a range of communities coming together to fight against climate change	More air co2 level measurements to see what we are doing and see how we can decrease. Also reduce plastic and use sustainable energy Less single use plastic
		Laws that force people to listen		
Black bin bag and recycling fines	Economical Travel	Make recycling easy	Ruling over massive companies on their anti-earth policies	Efficient low carbon public transport everywhere

<p>Support young people to have their voice heard in decisions that affect their future</p> <p>Everyone should take part to prevent it from happening in the future</p>	<p>More trees being planted and less transport aka cars being used so use bike if possible</p>	<p>Less plastic waste and more renewable energy being used throughout the UK</p>	<p>All governments around the world should stop what they're doing and start solving climate change. And it shouldn't happen in the future, it should happen now</p>	<p>For more people to take a stand because this is their world and the actions of us all are affecting it, people need to take a stand and change our ways for our generation and the next.</p>	<p>More people taking action and reducing the elements that contribute to climate change, so that the problems are less for the foreseeable future of the next generations to come</p>	<p>We need stricter regulation on large monopolising corporations; as we live in a society dominated by the political right – of course, famous for only caring about money and not environmental stability – we must tackle both the corporations responsible, and the climate challenge itself.</p>
<p>Reduced rates/cuts greenhouse gas emissions, reduce transportation and different use of energy</p>	<p>Reduced rates/cuts greenhouse gas emissions, reduce transportation and different use of energy</p>	<p>Make public transport and active travel more accessible and cheaper for young people</p>	<p>The government showing us all the statistics and information to make us fully aware of the climate situation and what we are doing to counteract.</p>	<p>I would like to see more fair trade products in schools and also for richer countries to lower their emissions by 15% every year, so that poorer countries can heighten their standard way of living.</p>	<p>Produce less beef with less beef you save water and people breed cows to produce beef but cows produce methane with more cows to make beef that's more methane being produced</p>	<p>Less plastic waste and more renewable energy being used throughout the UK</p> <p>For there to be more locally sourced food in big supermarkets</p>
<p>More environmentally friendly options for sources of transport, food sources and waste disposal</p>	<p>Give out more information</p> <p>More trees</p>	<p>Efficient low carbon public transport everywhere</p>	<p>Plastic pollution, people's dietary plans, carbon emissions and the ignorance on our climate crisis to change and be turned into something more positive and sustainable</p>	<p>Reduce plastic and water use in produces and more shared transport or use of transport that doesn't require fuel.</p>	<p>Less reliant on fossil fuels and more on renewable energy</p> <p>Accurate and reliable information</p>	<p>More recyclable products in shops worldwide</p> <p>More input from the government for schools</p>
<p>Local efforts to collectively reduce their combined waste eg bins</p>	<p>All gcse and a level exams online</p> <p>Greta times 1,000,000</p>	<p>More laws being put in place to ban the more detrimental issues</p>	<p>Less CO2 emissions, less massive deforestation, no building houses in flood plains</p>	<p>Less focus on plastic, more focus on adaptation</p> <p>More efficient electric cars</p>	<p>More publicised action</p> <p>More recycling bins in the area</p>	
<p>Less cars driven, more renewable energy and less footprint overall</p>		<p>Economical Travel</p>	<p>Switching to renewable energy sources</p>	<p>Ruling over massive companies on their anti-earth policies</p>	<p>More education in schools and in general</p> <p>Raise more awareness and that we all support each other</p>	

Everyone is vegan and gets their energy from sustainable sources

I would like vegan and vegetarian days enforced in primary schools

Ban on deforestation and use of forest land for cattle and soya plants

More alternatives for reusable products and more actions taking place

I would like to see a massive decrease in the consumption of animal products, laws against single use products (especially plastic) and an end to the use of fossil fuels.

Less CO2 emissions, less massive deforestation, no building houses in flood plains

More recyclable things in stores like paper rather than plastic

Next Steps

This document shows how organisations and people across Wales are joining the international effort needed to tackle climate change. They are committing to do their bit to cut carbon emissions and protect the planet. Every commitment can make a real difference – to the planet and to your communities, your customers, your health and your running costs!

Working Together to Reach Net Zero is published alongside *Net Zero Wales* to demonstrate the collective intent and action from organisations and individuals across Wales in tackling climate change. It includes the ‘ask’, intent and action that our young people and children are involved in. We have made a great start but we need to do more.

As set out in *Net Zero Wales* policy number 15 we will be developing a new engagement plan to help us deliver the plan and harness additional Pledges, calls to action and case studies. We will do this in the first part of 2022. This will help us continue to grow momentum, stimulate ideas and strengthen collaborations across Wales.

Join Us

If you haven't already done so we are asking you to take the first step on your journey by making a Pledge or by acting on our four calls to action.

English: www.smartsurvey.co.uk/s/RX0P0/

Welsh: www.smartsurvey.co.uk/s/RX0P0/?lang=434121

When you make a Pledge or undertake a call to action we will update this plan so others can see your contribution. We will also include you in our mailing list and get in touch with information on how we are tackling climate change and how else you can get involved. This document will therefore be a living document, which grows as the commitment to collective action swells over time.

Tell us how you did it

If you have already made your commitment you can tell us how you did, or if you have a case study then let us know so we can help you share your experience with others. Send it to us via the Decarbonisation mailbox decarbonisationmailbox@gov.wales



Annex: List of Pledge Campaign Respondents

4theRegion CIC	Cynnal Cymru - Sustain Wales	Mott MacDonald Ltd
AberInnovation	Cytun - Eglwysi ynghyd yng Nghymru	National Federation of Women's Institutes- Wales
Aberystwyth University	Cytun - Churches together in Wales	National Lottery Community Fund
Afallen	Denbighshire County Council	Natural Resources Wales
Dwr-y-Felin Comprehensive School, Neath.	Development Bank of Wales	Newport City Homes
Awel Aman Tawe	Dŵr Cymru Welsh Water	Newport City Homes
Awel Aman Tawe / Egni Coop	EcoDewi - St. David's Peninsula Energy & Ecology Group	NFU Cymru
Being in Nature	Eco-Stanwell, Stanwell School	NJM Energy & Environment
BT Group	Egni Coop	Oriel Davies Gallery
Cardiff and Vale University Health Board	Environment Platform Wales	Pembrokeshire Coastal Forum (PCF)
Carmarthenshire County Council	EXTINCTION REBELLION CYMRU	Pembrokeshire County Council
Chartered Institution of Wastes Management (CIWM) Cymru Wales	Flintshire County Council	Pembrokeshire County Council
Children in Wales - Plant yng Nghymru	Freshwater	Penarth Climate Action Group
ClwydAlyn	FSB Wales	Pete's Shop
Coed Cadw - The Woodland Trust	Gwyrddio Penarth Greening (GPG)	Pobl Group
Community Energy Pembrokeshire (CEP)	Linc Cymru Housing Association	Porthcawl Comprehensive
Conwy County Borough Council	Litegreen LTD	Purolite
Costain	Marine Energy Wales	RWE
Curtins	Mark Sims, Deputy Chief Officer, Barry Town Council	Sero
Cyngor Gwynedd	Melin Homes	Severn Rivers Trust
Ceredigion County Council	Monmouthshire County Council	Size of Wales

Sophie Howe, Future Generations
Commissioner for Wales

St John's Methodist Church, Bangor

Stanwell school pupil

Surple

Swansea University

Tai Tarian

TCC Wales

The One Planet Centre

The TYF Group

Dŵr Cymru Welsh Water

Transport for Wales

Urban Foundry Ltd.

Vale of Glamorgan Council

Vale of Glamorgan Public Services Board

Velindre University NHS Trust

Wales & West Utilities

Wales Co-operative Centre

Wales TUC Cymru

Warm Wales Cymru Gynnes CBC

Welsh Centre for International Affairs

23 Individuals

5 Pupils of Tredegar comprehensive school