

Climate Adaptation Research Briefing

November 2021



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Contents

1. What is climate adaptation?	1
2. Global context	2
“Code red” for humanity	2
The Paris Agreement and COP26.....	2
3. Independent Assessment of UK Climate Risk.....	4
In Wales, more action is needed across a range of areas.....	4
4. Progress in adapting to climate change	6
The UK has fallen behind in adapting to climate change	6
5. A Climate Conscious Wales	8
Technical annex	8
5.1. Risks to people, communities and infrastructure from flooding.....	9
5.2. Risks to public water supplies from drought and low flows.....	11

- 5.3. Tackling land management practices that increase flood risk..... 11
- 5.4. Risks to ecosystems and agriculture businesses from changes in climatic conditions12
- 5.5. Cross-cutting actions15

1. What is climate adaptation?

Climate adaptation seeks to **reduce the risks posed by climate change**, and to benefit from any associated opportunities where possible. It is one of two main policy responses to climate change, alongside mitigation (reducing greenhouse gas emissions). Both are necessary because even if emissions dramatically decrease, further warming is considered unavoidable. Adaptation will be needed to deal with climatic changes already in motion.

2. Global context

“Code red” for humanity

On 9 August 2021, the **Intergovernmental Panel on Climate Change (IPCC)** published its **latest assessment report**. The IPCC is the United Nations (UN) body responsible for assessing the climate change science.

The report made **headlines** globally. The UN called it “code red” for humanity, commenting it is “**unequivocal that human influence has warmed the atmosphere, ocean, and land,**” and

The scale of recent changes across the climate system as a whole and the present state of many aspects of the climate system are unprecedented over many centuries to many thousands of years.

The report included stark evidence. It highlighted, for example, that the last five years are the hottest on record since 1850, the recent rate of sea level rise has nearly tripled compared to 1901-1971, and that it is 90% certain human influence is the main driver of the retreat in glaciers and decreased arctic sea-ice.

The Paris Agreement and COP26

In late 2015, the **21st Conference of the Parties to the UN Framework Convention on Climate Change (COP 21)** took place in Paris. This was hailed as a make-or-break opportunity to secure intergovernmental agreement on approaches to tackling climate change. The subsequent landmark ‘**Paris Agreement**’ aimed to **keep global warming below 2°C above pre-industrial levels, and preferably below 1.5°C**. The Agreement **required** all Parties, as appropriate, to **engage in adaptation planning and implementation** through measures such as national adaptation plans, vulnerability assessments, monitoring and evaluation, and economic diversification. While Wales is not a signatory to the Paris Agreement, the UK as a whole is. As a significant contributor to UK emissions, Wales’ contribution is crucial to UK global climate leadership and action.

The latest IPCC report is stark, particularly in the context of the Paris Agreement (emphasis added):

Global surface temperature will continue to increase until at least the mid-century under all emissions scenarios considered. **Global warming of 1.5°C and 2°C will be exceeded during the 21st century** unless deep reductions in carbon dioxide (CO₂) and other greenhouse gas emissions occur in the coming decades.

Every region globally is projected to increasingly experience concurrent and multiple changes in climatic impact drivers (aspects of weather and climate). These would be more widespread at 2°C (compared to 1°C) global warming, and be more widespread and pronounced at higher warming levels.

From 1-12 November, around 30,000 delegates and 200 world leaders attended the **26th UN Conference of the Parties (COP26)** in Glasgow. The talks are **widely considered** to be the last opportunity to deliver on commitments to keep global temperature rise to within 1.5 – 2°C. For further information about COP26 see **our recent research article**.

3. Independent Assessment of UK Climate Risk

The UK Government and the administrations of Wales, Northern Ireland and Scotland must now set out a clear, measurable vision for a climate-prepared country, bringing forward policies to deliver it. This assessment provides them with the tools to do so, in a way that is compatible with the wider policies for Net Zero and other major government objectives. The benefits of coordinated action in this way are clear. It is time for a more effective response to climate change.

Independent Assessment of UK Climate Risk: Advice to Government (June 2021)

The **Climate Change Act 2008** requires the UK Government to publish a Climate Change Risk Assessment every five years. The UK Government commissions the **Climate Change Committee (CCC)** to undertake this work. The **2017 risk assessment** was accompanied by national evidence summaries for each devolved administration. The **Welsh summary** formed the basis for the Welsh Government's climate adaptation plan (see **later section**). The **most recent assessment** was published in June 2021, and included an **evidence summary for Wales**.

In Wales, more action is needed across a range of areas

Key points from the **evidence summary for Wales** included:

- Of the 61 risks and opportunities identified, **more action is needed** in Wales to address 32 of them.;
- Of the 61, six issues are deemed to be **both a risk and opportunity**, four of which are associated with the natural environment. Each of these require more action or further investigation; and
- There are also eight **opportunities** that could arise from climate change, with half of these related to the natural environment.

A number of broad themes emerged from the analysis:

- Current objectives in a wide range of national, sector and issue specific plans in Wales are contributing to climate adaptation. **However, they will not, in their current form, be sufficient to manage the scale of the risks described in the report.** There is evidence of an adaptation gap between current planning and the scale of action required to manage climate change risks. It will be important to address these over the next five years.

- Work is needed to **support decision makers to understand and explore management of climate risks** utilising data, scenarios and narratives of future climate change, to help them identify different adaptation pathways for communities, the economy and the natural environment. This work needs to recognise the importance of cascading risks and the effect of multiple climate impacts.
- Climate adaptation planning needs to be supported by an **improved evidence base on climate risk achieved through monitoring, research, risk assessment and strategic planning at local, regional levels supported by national policy and action by the Welsh Government.**

A full summary of the risks and opportunities is on pages 15 to 18 of the [Wales summary](#).

The [CCC assessment](#) also outlined a range of Welsh Government policies that can support climate adaptation. These include the [Natural Resources Policy](#), [Sustainable Farming and Our Land Strategy](#), and the [National Peatland Action Programme](#).

4. Progress in adapting to climate change

In June 2021, the CCC published **Progress in adapting to climate change**. It explained that, even with ambitious global emissions reduction efforts, further climate change is inevitable. The changes include warmer and wetter winters, increased winter rainfall intensity and flash flooding, drier and hotter summers, and continuing sea level rise.

The report **focused on adaptation implementation in England**, but has relevance for the whole of the UK. The UK Government **responded to the report** in October 2021.

The UK has fallen behind in adapting to climate change

The report said that the UK Government's **National Adaptation Programme** "has not delivered the necessary improved resilience to the changing climate as was intended under the UK Climate Change Act". It said the UK Government should set a "clear vision for a well-prepared UK", supported by quantifiable targets to embed adaptation in policy across the natural environment, planning, infrastructure, homes and housing.

UK-wide, nearly 60% of the risks and opportunities assessed in the 1500-page **assessment of climate risk** have been given the highest urgency score. The CCC **identified eight priority risk areas** which need immediate attention, at the latest in the next two years:

1. Risks to the viability and diversity of terrestrial and freshwater habitats and species from multiple hazards;
2. Risks to soil health from increased flooding and drought;
3. Risks to natural carbon stores and sequestration from multiple hazards, leading to increased emissions;
4. Risks to crops, livestock and commercial trees from multiple climate hazards;
5. Risks to supply of food, goods and vital services due to climate-related collapse of supply chains and distribution networks;
6. Risks to people and the economy from climate-related failure of the power system;
7. Risks to human health, wellbeing and productivity from increased exposure to heat in homes and other buildings; and

8. Multiple risks to the UK from climate change impacts overseas.

Baroness Brown, Chair of the CCC Adaptation Sub-Committee **said:**

The severity of the risks we face must not be underestimated. These risks will not disappear as the world moves to Net Zero; many of them are already locked in. By better understanding and preparing for the coming changes, the UK can prosper, protecting its people, its economy, and its natural environment. A detailed, effective action plan that prepares the UK for climate change is now essential and needed urgently.

5. A Climate Conscious Wales

The UK Climate Change Act **requires the Welsh Government to report on its objectives, actions and future priorities regarding climate change impact.** It also provides the Welsh Ministers with powers with regards to public bodies and their response to climate risk. The Welsh Government published its most recent climate change adaptation plan, **Prosperity for All: A Climate Conscious Wales**, in November 2019, informed by the **CCC's 2017 Climate Change Risk Assessment.** The recently published **Net Zero Wales** plan states the adaptation plan will be updated in 2022.

The Welsh Government focused the **adaptation plan** on risks identified by the 2017 assessment as being 'more urgent'. These are outlined in the tables below.

Technical annex

The **technical annex** accompanying the plan set out further details on the adaptation framework and actions over a five-year period.

The first part of the annex outlined the **framework** for climate adaptation. This included a summary of the impacts from climate change, climate risks and the relationship between adaptation and mitigation. It outlined the legislative framework for adaptation (the UK Climate Change Act, Environment (Wales) Act and Well-being of Future Generations (Wales) Act). Finally it set out the Welsh Government's approach to the plan, including monitoring and evaluation and core objectives:

- Knowledge: Increase its knowledge and understanding of the impacts, risks, opportunities and threats from climate change on all sectors in Wales in the short, medium and long term;
- Capacity: Develop the tools and processes needed to manage the risks and work with others to support and build adaptive capacity in social, environmental and economic circles; and
- Resilience: Take direct action to adapt to the impacts early by reducing vulnerability, lessening the threats and taking advantage of the opportunities that will come from climate change.

A first progress report on the plan will be published in spring 2022, followed by a second informed by external review in spring 2024. The third adaptation plan will be published in spring 2025.

The second part of the annex set out the **actions** the Welsh Government would take on climate adaptation. It covered:

- Adaptive nature and the rural economy;
- Protecting our coasts and seas;
- Staying healthy;
- Safe homes and places;
- Caring for the historic environment;
- Successful business; and
- Resilient infrastructure and transport.

For each area, it outlined sub actions, the outcome on climate risk, stakeholders and delivery partners. It also set out the Welsh Government's strategic approach, including to:

- Review and update its approach to communication for climate change adaptation in Wales;
- Integrate consideration of climate risks into all future Welsh Government policy and business planning, and encourage the same in all other public bodies;
- Assess the risks and opportunities presented by climate change through active engagement in UK research programmes; and
- Support the international community in global climate change adaptation.

5.1. Risks to people, communities and infrastructure from flooding

Sea level rise caused by climate change, and increased incidence of storms, means increasing risk of erosion and flooding for communities. The Welsh Government stated that, through its adaptation plan, it aims to “create safer homes and places which are more resilient to the anticipated impacts from climate change”. The plan outlined nine actions on flooding – these are summarised in the table below. As the adaptation plan was published in 2019, all tables contain an update on progress since publication (where possible).

Risks to people, communities and infrastructure from flooding		Progress to date
Actions already taken	Legislation to require sustainable drainage system (SuDs) standards in all new developments in Wales.	Legislation came into force in January 2019 for new developments over a certain size. The Welsh Government has committed to legislate to strengthen the requirements for the use of SuDs that provide wild-life habitat.
	Launch the Warm Homes Programme	The Welsh Government's Warm Homes Programme delivers energy efficiency measures through Nest and Arbed .
	Natural Resources Wales (NRW) Shore Management Plans	A large-scale assessment of the risks associated with coastal processes, and the strategic policy direction .
Short term actions	25,000 homes fitted with energy efficiency measures by 2021	The latest Arbed and Nest annual reports are available on the Welsh Government website.
	Launch fuel poverty plan for consultation	A consultation was launched in September 2020, and the plan was published in March 2021
	Increase the use of 'nature based solutions' through the implementation of the river basin management plans and flood prevention strategies	The final RBMPs haven't been published yet but the consultation documents suggest an emphasis on nature based solutions. See Western Wales and Dee .
Medium term actions	Implement Tackling Fuel Poverty 2020-2035	The fuel poverty plan was published in March 2021.
	Implement the National Strategy for Flood and Coastal Erosion Risk Management in 2020	The strategy was published in October 2020, accompanied by Welsh Government press release .

	<p>Include a measure for coastal groups report annually in the new national strategy for flood and coastal risk management in 2020.</p>	<p>The measure is included in the National Strategy for Flood and Coastal Erosion Risk Management:</p> <p>“MEASURE 10: Coastal Groups to report annual progress on SMP Action Plans to the Welsh Government through the Wales Coastal Group Forum.”</p>
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5.2. Risks to public water supplies from drought and low flows

In addition to flooding, drought is another significant risk from climate change. The Welsh Government and Natural Resources Wales (NRW) are responsible for management of water resources, including regulation of water abstraction. The adaption plan set out ten drought related actions:

Risks to public water supplies from drought and low flows	Progress to date
	<p>Water Strategy for Wales (2015)</p>
	<p>Dwr Cymru’s ‘Let’s stop the block’ campaign</p>
	<p>Water UK launched its “Fine to Flush” standard</p>
Actions already taken	<p>Drought plans have been produced by water companies in Wales</p> <p>The two Welsh water companies published their new drought plans in 2019, and have since both been given direction to publish their final drought plans for 2020-2025. See: Dŵr Cymru Welsh Water and Ha-fren Dyfrdwy</p>

Short term actions	New Water Resource Management Plans in 2020	The two Welsh water companies published their Water Resource Management Plans in 2019. See: Dŵr Cymru Welsh Water and Hafren Dyfrdwy :
	Research to increase understanding of the impacts of climate change on water availability to inform the climate change risk assessment in 2021	The Evidence for the third UK Climate Change Risk Assessment (CCRA3): Summary for Wales was published in mid-2021. The assessment was used to inform the CCC's Independent Assessment of UK Climate Risk (June 2021),
	NRW to produce a costed national action plan for a five year period to restore peatlands	The National Peatland Action Programme 2020-2025 was published in November 2020.
Medium term actions	The Welsh Government will publish new guidelines for Water Resource Management Plans (WRMPs) by 2025.	The Welsh Government published guidance for developing WRMPs in 2016. Updated guidance (from 2021) is available on the NRW website.
	Ofwat has set water companies a minimum target to reduce water leakage by 15% by 2025	Target to reduce leakage by 15% included in both Dŵr Cymru Welsh Water and Hafren Dyfrdwy 2020-2025 plans.
	Produce new river basin management plans (RBMPs) by 2021 and achieve 'good status' in inland waters by 2027.	These have yet to be published. There are three RBMPs that cover Wales – one wholly in Wales (called Western Wales) and two cross border with England (the Dee and the Severn).

NRW leads on preparing the RBMP for Western Wales and the Dee. The Environment Agency leads on the RBMP for the Severn.

NRW's two RBMPs are at the same stage. A summary of responses to the consultation were published in September but the final RBMP has yet to be published. See [Western Wales and Dee](#).

The latest on the Welsh involvement in the Environment Agency's Severn RBMP can be [found here](#).

The Water Framework Directive, with an overall aim to achieve 'good environmental status in all water bodies, is implemented in stages based on these river basins.

NRW's [Cycle 2 Interim Classification \(2018\) Frequently Asked Questions document](#) states that 40% of water bodies in Wales met good or better status in 2018. An updated classification is expected in 2021

5.3. Tackling land management practices that increase flood risk

The adaptation plan set out that the promotion of good agricultural practice to increase resilience of soils and water is a priority for the Welsh Government. It stated that changes in agricultural and forestry productivity and practices in response to climate change may lead to increased use of pesticides. Increased occurrence of winter floods and summer droughts is likely to lead to a greater volume of pesticides being lost to water courses as well as a higher risk of erosion occurring on exposed soils. The plan set out three actions relating to land management:

Tackling land management practices that increase flood risk		Progress to date
Actions already taken	Dwr Cymru was awarded almost £1m by the Welsh Government to deliver a 'PestSmart' project	Dwr Cymru <u>PestSmart</u> project.
Short term actions	Continue to work with stakeholders to meet the policy aim of reducing to the lowest possible level the effect of pesticide use	At the end of 2020, a <u>joint UK consultation</u> was launched on a revised plan for the sustainable use of pesticides.
Medium term actions	Promote good environmental, agricultural practice to increase resilience of soils and water which includes good soils and active nutrient management.	<p>The <u>Sustainable Production Grant</u> (SPG) aims to address on-farm nutrient management and storage.</p> <p>Glastir schemes, such as the <u>Glastir small grant schemes</u>, can be applied for this purpose.</p> <p>There are also <u>controversial agricultural pollution regulations</u>. The outcome of the High Court case, heard in October 2021, is expected in due course.</p>

5.4. Risks to ecosystems and agriculture businesses from changes in climatic conditions

Woodlands and trees are central to climate adaptation – they improve air quality, increase **biosecurity** on farms, reduce erosion and protect soils, buffer water courses, mitigate flood risk and provide shade in urban areas. The plan set out that the Welsh Government will identify opportunities to maximise the adaptation benefits in the design of the National Forest, and encourage farmers and other land managers to plant new areas of woodland. The plan set out six land management actions:

Risks to ecosystems and agriculture businesses from changes in climatic conditions		Progress to date
Actions already taken	Woodlands for Wales launched in 2018	<u>Woodlands for Wales Strategy</u>
	Established Welsh Government’s Glastir Programme to deliver woodland creation	<p>The 11th Expression of Interest for <u>Glastir Woodland Creation</u> opened on 30 September 2021 and closed on 28 October 2021, and was available to land managers able to complete all capital works and planting by 31 March 2023.</p> <p>The <u>Glastir Woodland Creation rules booklet</u> states ‘Next year we will seek to open a new woodland creation funding scheme which builds on Glastir Woodland Creation but is simplified and available consistently through the year. As part of this there will be separate funding available for woodland planning. We are launching a pilot of the woodland planning scheme alongside window 11 of Glastir Woodland Creation.’</p>

Short term actions	Complete consultation regarding future farm support in Wales and develop proposals for a farm sustainability scheme, including climate change adaptation and mitigation measures for the agriculture sector.	The Welsh Government published a White Paper and carried out its first phase of 'co-design' where farmers and stakeholders have informed developing proposals. The White Paper proposed a Sustainable Farming Scheme based on public goods provision including tackling climate change. A summary of consultation responses, findings of the co-design and the Welsh Government's policy response were published on 21 September 2021 .
	Complete the Capability, Suitability and Climate Programme, setting out how cropping potential may change and why.	The programme completed on 30 June 2020.
Medium term actions	Welsh Government will maximise adaptation benefits in the design of the National Forest	Further information about the National Forest can be found in our research article and on the Welsh Government website .
	Increase woodland cover by at least 2000 hectares per annum from 2020 to 2030.	Latest figures on new planting show just 80ha in year to March 2020. See section on planting and restocking in Senedd Research briefing for context: The Deputy Minister for Climate Change has recently completed a "deep dive" into tree planting . He said in a statement to the Senedd :

	<p>“We must protect the trees that we have, and plant 86 million more of them in Wales by the end of this decade, “</p> <p>and</p> <p>“We’re accepting the tree planting targets set by the UK Climate Change Committee. To reach net zero, we need to plant 43,000 hectares of new trees by 2030, rising to 180,000 hectares by 2050.”</p>
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5.5. Cross-cutting actions

Some interventions cut across one or more of the risk areas outlined above. This includes green infrastructure, planning policy and the National Development Framework.

Planning Policy for Wales and the National Development Framework		Progress to date
Actions already taken	Developed Natural Resources Policy	<u>Natural Resources Policy</u> (2018)
	Established a cross-disciplinary working group to deliver urban green infrastructure	<u>Wales Green Infrastructure Forum</u>
	Published Planning Policy for Wales 10 in December 2018	<u>Planning Policy Wales 10</u> (December 2018). <u>Planning Policy Wales 11</u> was published in February 2021.
Short term actions	Welsh Government to promote a “focus on the small things” which can create local, accessible green spaces	Information available on the <u>NRW website</u> .

	<p>Ensure tree planting is delivered through Woodland for Wales is carried out in key urban areas and other key locations to deliver adaptation</p>	<p>NRW published a report on <u>Tree cover in Wales' towns and cities</u> in 2016.</p>
	<p>Consult on plans in 2019/20 to strengthen planning policy to prevent house building in vulnerable areas</p>	<p>An updated <u>TAN15: Development, flooding and coastal erosion</u> was published in September 2021.</p>