

# WELSH GOVERNMENT

## INTEGRATED IMPACT ASSESSMENT

<b>Title of proposal:</b>	<b>The Climate Change (Wales) Regulations 2018:</b> <ul style="list-style-type: none"> <li>• <b>The Carbon Accounting (Wales) Regulations 2018</b></li> <li>• <b>The Climate Change (International Aviation and International Shipping) (Wales) Regulations 2018</b></li> <li>• <b>The Climate Change (Credit Limit) (Wales) Regulations 2018</b></li> <li>• <b>The Climate Change (Interim Targets) (Wales) Regulations 2018</b></li> <li>• <b>The Climate Change (Carbon Budget 2016-2020 and 2021-2026) (Wales) Regulations 2018</b></li> </ul>
<b>Official(s) completing the Integrated Impact Assessment:</b>	<b>Graham Craig</b> <b>Decarbonisation Programme</b>
<b>Department:</b>	<b>Economy, Skills and Natural Resources</b>
<b>Head of Division/SRO:</b>	<b>Prys Davies</b>
<b>Cabinet Secretary/Minister responsible:</b>	<b>Lesley Griffiths AM</b> <b>Cabinet Secretary for Energy, Planning and Rural Affairs</b>
<b>Start Date:</b>	<b>24 September 2018</b>

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## SECTION 1. WHAT ACTION IS THE WELSH GOVERNMENT CONSIDERING AND WHY?

**In narrative form, please describe the issue and the action proposed by the Welsh Government. How have you applied / will you apply the five ways of working in the Well-being of Future Generations (Wales) Act 2015 to the proposed action, throughout the policy and delivery cycle?**

Climate change seriously threatens our well-being and that of future generations. In October 2018 the Intergovernmental Panel on Climate Change's special report found that human activities are estimated to have already caused approximately 1°C of global warming above pre-industrial levels.<sup>1</sup> At current rates of warming, we could reach 1.5°C as soon as 2030, which would result in serious negative impacts for humans and the environment. We would see threats to food security and water supply, risks to infrastructure, and more extreme weather. Biodiversity and ecosystems would also be affected; up to 90% of coral reefs could be lost. Large-scale and irreversible effects such as melting ice sheets would continue to have impacts for centuries to come.

The IPCC declared the world is currently not on track to meet the 2°C temperature goal of the Paris Agreement. If we are to achieve this goal, countries must significantly step up their efforts to combat emissions in the next decade. Tackling climate change can help to achieve other society-wide benefits such as health, education, and employment. The choices made in doing so have significant implications for poverty eradication and inequality reduction.

The purpose of the Environment (Wales) Act 2016 ("the Act") Part 2 is to demonstrate Wales' commitment to playing its part in global efforts to combat greenhouse gas emissions by requiring Welsh Ministers to set a statutory framework for reducing emissions. It includes a target of reducing Welsh emissions by at least 80% in 2050 and provides for Welsh Ministers to bring forward a number of regulations related to the 2050 target. These regulations help to set out how the framework is administered including what we are counting in our emissions and the emission reduction pathway we will take it does not look at the action we will take. The regulations are:

1. The Carbon Accounting (Wales) Regulations 2018

The Act makes provision for Welsh Ministers to set in secondary legislation what is to be counted as a carbon credit (carbon unit) for the purposes of managing the Net Welsh Emissions Account (NWEA) and how they are to be administered. Welsh Ministers are proposing to establish a "Welsh credit account" to create a formal, transparent system in which the Welsh Ministers' carbon units must be held and administered.

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<sup>1</sup> <http://www.ipcc.ch/report/sr15/>

## 2. The Climate Change (International Aviation and International Shipping) (Wales) Regulations 2018

The Act makes provision for Welsh Ministers to set in secondary legislation their approach to emissions arising from international aviation and international shipping. Welsh Ministers are proposing to include the Welsh share of these emissions in the NWEA.

## 3. The Climate Change (Credit Limit) (Wales) Regulations 2018

The Act requires Welsh Ministers to set in secondary legislation a limit on the total amount by which the NWEA can be reduced through the use of carbon units (international offsets) in each budgetary period. The 2018 Regulations relate to the first carbon budget. Welsh Ministers are proposing to set the limit at 10% of the first carbon budget.

## 4. The Climate Change (Interim Targets) (Wales) Regulations 2018

The Act requires Welsh Ministers to set in secondary legislation interim targets for 2020, 2030 and 2040. These targets set out a long-term pathway to 2050 and must be set in secondary legislation by the end of 2018. Welsh Ministers are proposing to set the following interim targets:

- 2020: 27% lower than the 1990 baseline
- 2030: 45% lower than the 1990 baseline
- 2040: 67% lower than the 1990 baseline

The interim targets are modelled on the 80% pathway modelled by the Committee on Climate Change (CCC).<sup>2</sup> We consider this pathway to provide the best balance between cost to the Welsh taxpayer and potential contribution to achieving our well-being goals and objectives. It allows for the most achievable low-carbon transition, given Wales' emissions profile.

## 5. The Climate Change (Carbon Budget 2016-2020 and 2021-2026) (Wales) Regulations 2018

The Act requires Welsh Ministers to set in secondary legislation a maximum limit on the total amount of Welsh emissions over consecutive 5-year periods to 2050. These carbon budgets limit the total cumulative emissions released into the atmosphere from Wales in the years between the interim targets. The first two carbon budgets (2016-20 and 2021-25) must be set in secondary legislation by the end of 2018. Following the interim targets above, Welsh Ministers are proposing to set the following budgets:

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<sup>2</sup> <https://www.theccc.org.uk/wp-content/uploads/2017/12/CCC-Building-a-low-carbon-economy-in-Wales-Setting-Welsh-climate-targets.pdf>

- First Carbon Budget (2016 – 2020): an average of 23% below 1990 emissions
- Second Carbon Budget (2021 – 2025): an average of 33% below 1990 emissions

The Regulatory Impact Assessment estimates the costs and impacts of potential policies to achieve the preferred emissions reduction pathway, although the actual impact of meeting our targets on our well-being goals and objectives depends on the measures and policies chosen. These policies will be set out in a report for each carbon budget period, the first being published in March 2019. Policies to deliver our carbon budgets are subject to an engagement process and impact assessments.

We recognise climate change as one of the biggest threats our future generations will face and understand the important role reducing emissions has in creating a more positive social, cultural, economic and environmental future for our country. In all decisions about the legislation we have ensured we applied the ways of working and considered how the action can help both achieve our well-being objectives and contribute to the well-being goals.<sup>3</sup>

### **Long-term**

By setting a long-term framework for meeting the 2050 target, the Regulations provide milestones and a direction of travel for Wales' decarbonisation pathway, whilst the carbon budgets help to focus near-term action to enable us to reach our long term goal. They provide clarity on the Welsh Ministers' vision for, and commitment to, a low-carbon future. As such, they provide a context for today's decision-makers to safeguard the needs of future generations.

However the targets and budgets are achieved, reducing Welsh emissions will help to lessen the impacts to Wales and the world arising from increased global average temperatures. These impacts include flooding, risks to health, water shortages and risks to biodiversity

Alongside our framework the future trends report helps to identify wider changes. It can help us understand the potential short- and long-term issues associated with the potential actions, and identify long-term trends and opportunities for action.

Wales's population is expected to increase over the next 20 years, possibly by around 5%. The targets and budgets are set at a national level, not per person, so increases in Wales's population may make them more difficult to achieve.

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<sup>3</sup> See [Section 7](#).

## **Prevention**

By addressing greenhouse gas emissions, the regulations set the framework for tackling the root cause of issues and risks associated with climate change. They allow for measures and policies that will reduce emissions and therefore help to reduce the global impacts of climate change.

Achieving Welsh and global emissions reduction targets will limit the effects of climate change, reducing the need for adaptation action and avoiding the impacts on our environment, society, and economy.

## **Integration**

Action on climate change only helps to reduce impacts globally but also supports the global sustainable development goals. The regulations deliver the Prosperity for All commitment to “set out a low-carbon pathway, providing clarity and certainty for action and investment...through setting targets for 2020, 2030 and 2040”. In working towards the targets, it will be possible to adopt measures and policies that support other Welsh Government priorities and commitments and bring benefits beyond reducing emissions. Examples of such policies include:

- Replacing private vehicle use with walking or cycling reduces emissions and improves health
- Insulating homes reduces emissions, lowers energy bills and improves health
- Reducing emissions from private vehicle use improves air quality and health

Consideration will be given to the effect of measures and policies on other public bodies and their well-being objectives.

## **Collaboration**

The regulations provide the technical mechanism and governance framework for meeting the 2050 emissions reduction target. Achieving that target will require significant contributions from a huge number and wide range of partners, including:

- All Welsh Government departments
- UK Government departments
- Other public sector bodies
- Energy companies
- Transport providers
- Manufacturers
- Farmers and landowners
- Individuals

Within the Welsh Government a cross-Government governance structure was established to support the development of the regulations, consisting of:

- A Ministerial Task and Finish Group
- A Programme Board
- Working Groups to consider the emissions sectors

Measures and policies will be set out in a report for each carbon budget period, the first being published in March 2019. Policies to deliver our carbon budgets are subject to an engagement process and formal consultation period, where appropriate.

### **Involvement**

The Act makes provision for Welsh Ministers to receive advice from our advisory body, the UK Committee on Climate Change (UKCCC), in the setting of our regulations. In 2017 Welsh Ministers requested advice from the UKCCC relating to the NWEA and setting the interim targets and first two carbon budgets. Each time, the UKCCC ran a call for evidence which they published on their website.<sup>4</sup> We promoted the calls for evidence through Ministerial statements, targeted stakeholder engagement, newsletters and social media. We also hosted events with the UKCCC for key stakeholders to discuss the issues. Over 70 delegates attended from a range of sectors.

The calls for evidence allowed us to involve interested parties in where to set our targets and budgets. In terms of individuals, we want to involve them at the most meaningful stage. As policies are developed to meet the targets and budgets, Government will need to involve those affected in order to understand the full range of impacts.

### **Impact**

The regulations provide for significant global cost avoidance over the long-term. The Stern Review estimated the annual cost of climate change mitigation to the global economy is in the region of - 1% to 3.5% of annual global GDP by 2050, while unabated climate change could cost the world at least 5% of GDP and, if more dramatic predictions come to pass, the cost could be more than 20% of GDP. Costs incurred to meet the targets and budgets in the short- and medium-term will lessen the financial burden on future generations.

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<sup>4</sup> <https://www.theccc.org.uk/2017/03/09/responses-to-the-environment-wales-act-consultation/> and <https://www.theccc.org.uk/publication/building-low-carbon-economy-wales-setting-welsh-carbon-targets/>

## Costs and savings

The cost of meeting the targets and budgets depends on the policies adopted and have been explored through the Regulatory Impact Assessment to accompany the regulations. However, the CCC estimates that the total cost of following the interim targets to an 80% reduction in 2050 is around £30bn, compared to a scenario where no new policies are implemented. This estimate refers to the costs of decarbonising to society as a whole: costs will be split between the UK Government, Welsh Government, businesses and people in Wales. The CCC analysis shows that by 2030 the value of the emissions reduction under the Wales 80% scenario (£1.0bn or 1.6% of Welsh GDP) would outweigh the costs of the abatement measures (£898m, 1.4% of GDP).<sup>5</sup> Once the abatement measures that lead to cost savings are also factored in (£137m or 0.2% of GDP), the Wales 80% scenario delivers a significant net benefit in 2030 (approximately £250m or 0.4% of GDP).

## Mechanism

As the regulations are secondary legislation we have completed a Regulatory Impact Assessment.

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<sup>5</sup> Based on GDP data for 2017.

## SECTION 7. CONCLUSION

### 7.1 How have people most likely to be affected by the proposal been involved in developing it?

The Climate Change (Wales) Regulations 2018 simply provide the mechanism or framework for meeting the 2050 target. The Regulatory Impact Assessment estimates the costs and impacts of potential interventions to achieve the preferred emissions reduction pathway, although the actual impact of meeting our targets on people and communities depends on the measures and policies chosen. These policies will be set out in a report for each carbon budget period, the first being published in March 2019. Policies to deliver our carbon budgets are subject to an engagement process and impact assessments.

We have undertaken extensive engagement to ensure stakeholders are involved both internally and externally in developing the regulations.

In 2017 Welsh Ministers requested advice from the Committee on Climate Change (CCC) relating to the Net Welsh Emissions Account and setting the interim targets and first two carbon budgets. Each time, the CCC ran a call for evidence that they published on their website. We promoted the calls for evidence through Ministerial statements, targeted stakeholder engagement, newsletters and social media. We also ran events for stakeholders to hear directly from us and the CCC, and to discuss the issues. The events were attended by more than 70 representatives from industry, local government, environmental NGOs, academia, Natural Resources Wales, the Future Generations Commissioner, energy providers and farming unions. The CCC received 26 formal written responses to the calls for evidence.<sup>6</sup>

In spring 2018, we ran a competition with Keep Wales Tidy to engage schoolchildren on decarbonisation. Schools were asked to produce a video exploring what they thought Wales would look like in 2030 due to decarbonisation policies.

We have already started to involve people in the longer-term action we need to take by consulting on early policy ideas for meeting the 2030 target.<sup>7</sup> Over the summer we ran events in Cardiff and Llandudno, reached out to the public at Caerphilly Castle, ran a webinar with the Welsh Council for Voluntary Action and promoted the consultation on Twitter. We published a children and young people's version of the consultation and the overwhelming response was that the potential actions would have a positive impact on children and young people. We also engaged with

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<sup>6</sup> <https://www.theccc.org.uk/2017/03/09/responses-to-the-environment-wales-act-consultation/> and <https://www.theccc.org.uk/publication/building-low-carbon-economy-wales-setting-welsh-carbon-targets/>

<sup>7</sup> <https://beta.gov.wales/low-carbon-pathway-wales>

numerous organisations representing people with protected characteristics to highlight the consultation and better understand the impacts of climate change and potential policy responses.

## **7.2 What are the most significant impacts, positive and negative? How will the proposal maximise contribution to our well-being objectives and the seven well-being goals and/or avoid, reduce or mitigate any negative impacts?**

The Climate Change (Wales) Regulations 2018 simply provide the mechanism or framework for meeting the 2050 target. The Regulatory Impact Assessment estimates the costs and impacts of potential policies to achieve the preferred emissions reduction pathway. The actual impact of meeting our targets on our well-being goals and objectives depends on the measures and policies chosen. These policies will be set out in a report for each carbon budget period, the first being published in March 2019. Policies to deliver our carbon budgets are subject to an engagement process and impact assessments.

However, given that the regulations provide the framework for reducing emissions in Wales it is possible to reflect on how achieving Welsh and global targets might affect the well-being goals in terms of reducing the impacts of climate change.

### **A prosperous Wales**

The Stern Review estimated the annual cost of climate change mitigation to the global economy is in the region of -1% to 3.5% of annual global GDP by 2050, while unabated climate change could cost the world at least 5% of GDP and, if more dramatic predictions come to pass, the cost could be more than 20% of GDP. Costs incurred to meet the targets and budgets in the short- and medium-term will lessen the financial burden on future generations. The cost of meeting the targets and budgets depends on the measures and policies adopted. However, the CCC estimates that the total cost of following the interim targets to an 80% reduction in 2050 is around £30bn, compared to a scenario where no new policies are implemented. This estimate refers to the costs of decarbonising to society as a whole: costs will be split between the UK Government, Welsh Government, businesses and people in Wales.

The UK Climate Change Risk Assessment: Wales Summary (CCRA) identifies a series of risks for business and industry that would be mitigated in the event of achieving Welsh and global emissions reduction targets.<sup>8</sup> The most significant include risks to business sites from flooding, to business operations from water scarcity and disruption to supply chains and distribution networks. Some of the expected changes to weather patterns in Wales could provide businesses with opportunities to capitalise on changes in demand for goods and services. Achieving Welsh and

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<sup>8</sup> <https://www.theccc.org.uk/wp-content/uploads/2016/07/UK-CCRA-2017-Wales-National-Summary.pdf>

global emissions reduction targets would restrict these opportunities by limiting such changes to our weather patterns.

### **A resilient Wales**

Climate change affects biodiversity in many ways. Impacts on species include changes in distribution and abundance, the timing of seasonal events and habitat use. As a consequence there are likely to be changes in the composition of plant and animal communities. The world's oceans absorb around 25% of atmospheric carbon dioxide produced by human activity. This has caused acidification of marine waters. Rising sea temperatures and acidity appear to be associated with various changes in biodiversity in UK marine and coastal ecosystems. Climate driven changes to salinity, wind, waves and currents are also having an impact.

Climate change affects food security and nutrition through changing water availability, food production, trade, stability of food supplies, access to food, and food safety. Rising food prices push populations to limit food intake by reducing either the quality or the quantity of food they consume. The CCRA identifies two risks with an international dimension that may have an effect in Wales: risks from weather-related shocks to international food production and trade, and risks and opportunities from long-term, climate-related changes in global food production.

Climate change is likely to reduce the amount of available fresh water in parts of Europe and affect source water quality. Projected water scarcity and agricultural droughts may increase the demand on irrigation, including wastewater reuse. Competition for access to water will increase.

### **A healthier Wales**

Climate change affects the health of people in Wales through warming temperatures and changing weather patterns. More intense and frequent extreme events and changes in air, water and food (quality and quantity), ecosystems, agriculture, livelihoods and infrastructure affect human health and well-being. Health impacts can be broadly grouped as respiratory illnesses, heat-related problems and deaths, flood-related health impacts and infectious diseases. Loss of property and livelihoods through extreme weather and disasters can lead to psychological effects like sleeplessness, anxiety and depression.

### **A more equal Wales**

As a result of climate change low-income households will face proportionately greater impacts on the cost of living, for example in relation to higher food prices and flood risks, though they will also benefit most from reduced heating demand. For some low-income households, even the modest changes expected in future decades could have important impacts on household budgets, especially under higher warming scenarios. Moreover, for some impacts, there will be very large individual impacts to low income households, such as from uninsured flood losses, which will have major (life-changing) consequences for those affected.

## **A Wales of cohesive communities**

The CCRA identifies risks to people, communities and buildings from flooding and to building fabric from moisture, wind and driving rain. There are specific risks to the viability of certain coastal communities from sea level rise. Climate change further threatens the safety and connectivity of our communities as it poses risks to transport and energy networks, water supplies and sewers. The CCRA identifies a series of risks to such infrastructure, including from flooding, coastal erosion, drought, high winds and lightning, storms and high waves, and extreme heat.

## **A Wales of vibrant culture and thriving Welsh language**

Historic buildings and their fittings could not only be severely affected by the sudden impact of flooding and storms, but also by a series of individually less severe - but cumulatively significant - impacts. These may include insect infestation and fungal growth in warmer, more humid conditions, and structural problems, for example, caused by soils shrinkage in hotter, drier summers. At the very least, the result of climate change on historic buildings may be more frequent maintenance and higher insurance premiums.

It is reasonable to assume that achieving Welsh and global targets will lessen the impact of climate change on communities across Wales, including Welsh speaking communities. Opportunities arising from action to reduce emissions, for example farm diversification and new, local jobs in energy efficiency or community renewables, may encourage Welsh speakers in rural areas to remain in their communities, helping to sustain the language.

## **A globally responsible Wales**

Disasters linked to natural hazards, including the adverse impacts of climate change, are drivers of contemporary displacement. The ten largest displacement events of 2016 were climate-related.<sup>9</sup> Climate change is also a threat multiplier, and may exacerbate conflict over depleted resources. Looking to the future, there is widespread agreement among scientists that the effects of climate change, in combination with other factors, will increase the displacement of people.<sup>10</sup> Persons already displaced for other reasons often reside in climate change hotspots and may be exposed

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<sup>9</sup> Climate change, migration and displacement (Overseas Development Institute and UN Development Programme, 2017): <https://www.odi.org/sites/odi.org.uk/files/resource-documents/11874.pdf>

<sup>10</sup> Climate Change 2014 Synthesis Report Summary for Policymakers (IPCC, 2014): [http://www.ipcc.ch/pdf/assessment-report/ar5/syr/AR5\\_SYR\\_FINAL\\_SPM.pdf](http://www.ipcc.ch/pdf/assessment-report/ar5/syr/AR5_SYR_FINAL_SPM.pdf)

to secondary displacement related to disasters and the effects of climate change. Their ability to return can be limited if their home areas are similarly impacted.<sup>11</sup>

The purpose of the Environment (Wales) Act 2016 Part 2 (“the Act”) is to demonstrate Wales’ commitment to playing its part in global efforts to combat greenhouse gas emissions by requiring Welsh Ministers to set a statutory framework for reducing emissions. Achieving Welsh and global targets will lessen the impact of climate change on populations around the world as well as mitigating the risk to the UK from climate-related international human displacements.

### **Welsh Government well-being objectives and Prosperity for All**

The Climate Change (Wales) Regulations 2018 simply provide the mechanism or framework for meeting the 2050 target. The Regulatory Impact Assessment estimates the costs and impacts of potential policies to achieve the preferred emissions reduction pathway. With these estimates we have tried to explore the impacts of taking decarbonisation action to achieve our targets on our well-being objectives and goals through the Regulatory Impact Assessment. Although the actual impact of meeting our targets on our well-being goals and objectives depends on the measures and policies chosen. These policies will be set out in a report for each carbon budget period, the first being published in March 2019. Policies to deliver our carbon budgets are subject to an engagement process and impact assessments.

However, given that the regulations provide the framework for reducing emissions in Wales it is possible to reflect on how achieving Welsh and global targets might indirectly affect the objectives as they create the framework for action that can reasonably be expected to make a significant contribution to several of the objectives, primarily:

- Drive sustainable growth and combat climate change
- Promote good health and well-being for everyone
- Build healthier communities and better environments
- Build resilient communities, culture, and language
- Deliver modern and connected infrastructure

The regulations deliver the Prosperity for All commitment to “set out a low-carbon pathway, providing clarity and certainty for action and investment...through setting targets for 2020, 2030 an 2040”. In working towards the targets, it will be possible to adopt measures and policies that

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<sup>11</sup> Climate change and disaster displacement: An overview of UNHCR’s role (2017): <http://www.unhcr.org/uk/protection/environment/5975e6cf7/climate-change-disaster-displacement-overview-unhcrs-role.html>

support other Welsh Government priorities and commitments, and bring benefits beyond reducing emissions. Examples of such policies include:

- Replacing private vehicle use with walking or cycling reduces emissions and improves health
- Insulating homes reduces emissions, lowers energy bills and improves health
- Reducing emissions from private vehicle use improves air quality and health

### **7.3 How will the impact of the proposal be monitored and evaluated as it progresses and when it concludes?**

The Climate Change (Wales) Regulations 2018 provide the technical mechanism and governance framework for meeting the 2050 emissions reduction target. The impact of meeting the 2050 target depends on the measures and policies chosen. These policies will be set out in a report for each carbon budget period, the first being published in March 2019. Policies to deliver our carbon budgets are subject to impact assessments where appropriate, which will include discussion of the approach to monitoring and evaluating their impact.

Concerning the regulations themselves, the Act provides for an extensive monitoring and reporting framework. A report must be laid in the Assembly after each budgetary period and interim target outlining if we have met the target or budget. In addition to this Assembly scrutiny we are subject to independent scrutiny by the CCC. The CCC is made up of scientific experts from different sectors and also advises the UK Government and other Devolved Administrations. The Welsh Government values its independent expert advice in the transition to a low carbon economy.

## FULL IMPACT ASSESSMENTS

### A. CHILDREN'S RIGHTS IMPACT ASSESSMENT

#### 1. Describe and explain the impact of the proposal on children and young people.

It is not possible to quantify the impact of the Climate Change (Wales) Regulations 2018 on children or young people as they simply provide the technical mechanism and governance framework for meeting the 2050 emissions reduction target. The impact of meeting the 2050 target on children and young people depends on the measures and policies chosen. These policies will be set out in a report for each carbon budget period, the first being published in March 2019. Policies to deliver our carbon budgets are subject to an engagement process and impact assessments, including a Children's Rights Impact Assessment.

Having said that, in developing the regulations we have made a series of evidence-based assumptions about the types of policy action we can expect to undertake. These actions are likely to fall in the emissions sectors: Power, Transport, Buildings, Industry, Waste, Agriculture and Land use and forestry. Using these assumptions, we can identify a number of high-level impacts that can reasonably be expected to follow from the regulations.

Most homes that suffer from fuel poverty include one or more children. Cold homes affect a child's educational attainment as they may not have a warm place to study and may suffer more illness, requiring more time off school. Improving energy efficiency in homes can be expected to have a positive impact on levels of fuel poverty, thereby having a positive impact on children's health and educational attainment. Improving energy efficiency is also an example of where action to decarbonise can also provide a source of new, local jobs for young people, who may be required to acquire new skills to be able to take advantage of the opportunities.

Increasing active travel not only helps to reduce emissions and improve air quality, but the provision of further green spaces and promotion of active lifestyles helps address childhood obesity. Similarly, increasing the amount of trees and green space contributes to reducing surface water flooding and overheating risks, and also helps to reduce obesity in children through encouraging play and physical activities.

Air pollution is known to have a big impact on respiratory illness and specifically illnesses in babies and children, which can affect them throughout their lives. Reducing emissions across many sectors through low emission vehicles, an increase in tree-planting and a reduction in fossil fuel combustion for energy will improve air quality and can be expected to have a positive impact on children's health.

Tackling climate change and reducing greenhouse emissions can have a positive impact on all ages and can help build resilience in communities to extreme weather events such as extreme

temperatures and flooding. Children are particularly vulnerable to climate change health impacts because of their physiological and cognitive immaturity and their greater potential for long-term exposure.

In spring 2018, we ran a competition with Keep Wales Tidy to engage schoolchildren on decarbonisation. Schools were asked to produce a video exploring what they thought Wales would look like in 2030 due to decarbonisation policies. Over the summer of 2018 we ran a consultation for children and young people on potential policy actions to help us achieve our 2030 target.<sup>12</sup> Half of the nearly 100 respondents thought that climate change is not taken seriously enough in Wales, while over two thirds agreed with the potential actions for reducing emissions to 2030. The overwhelming response was that the potential actions would have a positive impact on children and young people. Several respondents mentioned making them 'happier' or less worried, hinting at possible mental health impacts of climate change. A small number of respondents raised concerns about the cost of decarbonisation in the context of buying an electric car, and about the possible changes in diet that may be required.

In the accompanying 'full' consultation, we asked respondents about the impacts of the potential actions on children's rights. There was a general feeling that tackling climate change was important to protect future generations. Specific comments were submitted relating to increased autonomy for children if active travel infrastructure was improved and better health outcomes as a result of cleaner air.

## **2. Explain how the proposal is likely to impact on children's rights.**

An assessment of the Articles under the UNCRC has been applied and Article 6, 12, 24 and Article 27 are applicable.

### **Article 6 (life, survival and development) and Article 27 (adequate standard of living)**

The regulations set the framework for Welsh action to minimise the climate-related risks to the environment children are growing up in. They allow for actions to ensure children achieve their full potential and have a standard of living that is good enough to meet their physical and social needs.

### **Article 12 (respect for the views of the child)**

The actions to deliver our carbon budgets are subject to an engagement process and impact assessments, including a Children's Rights Impact Assessment. This will allow for children to

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<sup>12</sup> <https://beta.gov.wales/low-carbon-pathway-wales>

express their views, feelings and wishes and for the Welsh Government to take their views seriously when developing policy.

**Article 24 (health and health services)**

The regulations allow for actions that will provide a cleaner environment, including cleaner air and water, as well as greater access to cycling and walking. Such actions will provide children with opportunities to achieve the best possible health.

## B. EQUALITY IMPACT ASSESSMENT

### 1. Describe and explain the impact of the proposal on people with protected characteristics as described in the Equality Act 2010.

The Climate Change (Wales) Regulations 2018 simply provide the mechanism or framework for meeting the 2050 target. The Regulatory Impact Assessment estimates the costs and impacts of potential interventions to achieve the preferred emissions reduction pathway, although the actual impact of meeting our targets on people with protected characteristics will depend on the measures and policies chosen. These policies will be set out in a report for each carbon budget period, the first being published in March 2019. Policies to deliver our carbon budgets are subject to an engagement process and impact assessments.

However, it is possible to explore some of the possible effects of achieving Welsh and global targets. There would be a significantly positive impact on people and communities across Wales through reducing the impacts of climate change, which affect those that are most vulnerable.

Groups of people at risk of discrimination are susceptible to increased levels of systemic or individual inequality as a result of climate change, whether directly or indirectly (WHO, 2011; Neumayer and Plümper, 2007). The most vulnerable people are at risk of becoming even more vulnerable (Waldinger and Fankhauser, 2015; IPCC, 2014).

Protected characteristic or group	What are the positive or negative impacts of the proposal?	Reasons for your decision (including evidence)	How will you mitigate impacts?
Children and young people up to the age of 18	<p><b>Positive</b></p> <p>The regulations allow for actions that could deliver health-related benefits for children, but also</p>	See Children's Rights Impact Assessment at <a href="#">Annex A</a> .	Mitigating the impacts of the regulations depends on the measures and policies chosen. These policies will be set out in a report for each carbon budget period, the

	educational attainment and new employment opportunities		<p>first being published in March 2019. Policies to deliver our carbon budgets are subject to impact assessments by the relevant policy department.</p> <p>However in addition we are also looking at the impacts of climate change through our adaptation plan.</p>
Age (think about different age groups)	<p><b>Positive</b></p> <p>The regulations allow for actions to help reduce the impacts of climate change, which older people are more vulnerable to.</p>	<p>Older people’s vulnerability to climate change derives from a complex mix of factors such as multiple chronic diseases, poverty, isolation, household characteristics, lack of access to transportation and other mobility issues (Aubrecht et al., 2013; Watts et al., 2015).</p>	As above.
Disability (think about different types of disability)	<p><b>Positive</b></p> <p>The regulations allow for actions to help reduce the global impacts of climate change, which would help reduce the impact of flooding. Mobility issues in flooding are a particular concern, which</p>	<p>Zero Carbon Britain: Making it happen (p.30)</p> <p><a href="http://www.zerocarbonbritain.org/images/pdfs/ZeroCarbonBritain-MakingItHappen.pdf">http://www.zerocarbonbritain.org/images/pdfs/ZeroCarbonBritain -MakingItHappen.pdf</a></p> <p>One study found that 24% of households including a disabled person suffered fuel poverty, compared to 16% of households with no disabled person (DWP, 2015) in Zero</p>	As above.

	<p>disproportionately affect and disabled people.</p> <p>Many measures to reduce emissions of greenhouse gases and mitigate climate change have benefits for air quality and thus also for people with respiratory disabilities.</p> <p>People with disabilities are more likely to be in fuel poverty. Those who are housebound face larger energy bills as they tend to spend more time at home, and are more reliant upon powered devices.</p>	<p>Carbon Britain: Making it happen</p> <p><a href="http://www.zerocarbonbritain.org/images/pdfs/ZeroCarbonBritain-MakingItHappen.pdf">http://www.zerocarbonbritain.org/images/pdfs/ZeroCarbonBritain-MakingItHappen.pdf</a></p>	
Gender Reassignment (the act of transitioning and Transgender people)	None.		As above.
Pregnancy	<b>Positive</b>	Source: World Health Organization document	As above.

and maternity	<p>The regulations allow for actions to help reduce the global impacts of climate change, which would help reduce the impact of flooding. Pregnant women are more vulnerable to the health effects of flooding, the impacts of which will be lower if emissions are reduced.</p>	<p>‘Protecting health in Europe from climate change: 2017 update’</p> <p><a href="http://www.euro.who.int/en/health-topics/environment-and-health/Climate-change/publications/2017/protecting-health-in-europe-from-climate-change-2017-update">http://www.euro.who.int/en/health-topics/environment-and-health/Climate-change/publications/2017/protecting-health-in-europe-from-climate-change-2017-update</a></p>	
Race (include different ethnic minorities, Gypsies and Travellers and Migrants, Asylum seekers and Refugees)	<p><b>Positive</b></p> <p>The regulations allow for actions to help limit the global impacts of climate change, which would help reduce the frequency and/or severity of natural hazards. This would lessen climate-related displacement, asylum seekers and refugees.</p>	<p>Climate change, migration and displacement (Overseas Development Institute and UN Development Programme, 2017):</p> <p><a href="https://www.odi.org/sites/odi.org.uk/files/resource-documents/11874.pdf">https://www.odi.org/sites/odi.org.uk/files/resource-documents/11874.pdf</a></p> <p>Climate Change 2014 Synthesis Report Summary for Policymakers (IPCC, 2014):</p> <p><a href="http://www.ipcc.ch/pdf/assessment-report/ar5/syr/AR5_SYR_FINAL_SPM.pdf">http://www.ipcc.ch/pdf/assessment-report/ar5/syr/AR5_SYR_FINAL_SPM.pdf</a></p> <p>Climate change and disaster displacement: An overview of UNHCR’s role (2017):</p> <p><a href="http://www.unhcr.org/uk/protection/environment/5975e6cf7/climate-change-disaster-displacement-overview-unhcrs-role.html">http://www.unhcr.org/uk/protection/environment/5975e6cf7/climate-change-disaster-displacement-overview-unhcrs-role.html</a></p>	As above.

Religion, belief and non-belief	None.		As above.
Sex / Gender	<p><b>Positive</b></p> <p>The regulations allow for actions to help reduce the global impacts of climate change, which would help reduce the impact of flooding. In Britain, the impact of severe flooding has been shown to substantially increase the burden of care for women.</p>	<p>Fordham, 1998 in Zero Carbon Britain: Making it happen</p> <p><a href="http://www.zerocarbonbritain.org/images/pdfs/ZeroCarbonBritain-MakingItHappen.pdf">http://www.zerocarbonbritain.org/images/pdfs/ZeroCarbonBritain-MakingItHappen.pdf</a></p>	As above.
Sexual orientation (Lesbian, Gay and Bisexual)	None.		As above.
Marriage and civil partnership	None.		As above.

<p>Low-income households</p>	<p><b>Positive</b></p> <p>The regulations allow for actions that could tackle climate change and reduce the role it plays in poverty and economic inequality.</p> <p>People in sea flood zones are 122% more likely to be in the two lowest deprivation categories.</p> <p>Low-income households are more vulnerable to increases in food prices.</p> <p>Low-income households will face proportionately greater impacts on the cost of living, for example in relation to higher food prices and flood risks, though they will also benefit most from reduced heating demand. For some low-income households, even the modest changes expected in future decades could have important impacts on household budgets, especially under</p>	<p>Climate change contributes to economic inequality, promotes poverty and slows down economic development in a variety of ways. It has adverse effects on economic growth, as shown by several estimates of gross domestic product (GDP). It is estimated that global mean losses could be between 1% and 5% of GDP for 4 °C of warming, with substantial regional differences.</p> <p>Climate-related hazards affect poorer populations – for example, through increased food prices and food insecurity.</p> <p>Source: World Health Organization document ‘Protecting health in Europe from climate change: 2017 update’</p> <p><a href="http://www.euro.who.int/en/health-topics/environment-and-health/Climate-change/publications/2017/protecting-health-in-europe-from-climate-change-2017-update">http://www.euro.who.int/en/health-topics/environment-and-health/Climate-change/publications/2017/protecting-health-in-europe-from-climate-change-2017-update</a></p> <p>(Hutton &amp; Menne, 2014; Martinez, Williams &amp; Yu, 2015)</p>	<p>As above.</p>
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	<p>higher warming scenarios. Moreover, for some impacts, there will be very large individual impacts to low income households, such as from uninsured flood losses, which will have major (life-changing) consequences for those affected.</p>	<p>(Pachauri &amp; Meyer, 2007)</p> <p>(Olsson et al., 2014)</p> <p>Walker, 2011 in Zero Carbon Britain: Making it happen <a href="http://www.zerocarbonbritain.org/images/pdfs/ZeroCarbonBritain-MakingItHappen.pdf">http://www.zerocarbonbritain.org/images/pdfs/ZeroCarbonBritain-MakingItHappen.pdf</a></p> <p>DEFRA, 2015b in Zero Carbon Britain: Making it happen <a href="http://www.zerocarbonbritain.org/images/pdfs/ZeroCarbonBritain-MakingItHappen.pdf">http://www.zerocarbonbritain.org/images/pdfs/ZeroCarbonBritain-MakingItHappen.pdf</a></p> <p><a href="http://www.paulwatkiss.co.uk/documents/FINAL%20Watkiss%20report%2030032016.pdf">http://www.paulwatkiss.co.uk/documents/FINAL%20Watkiss%20report%2030032016.pdf</a></p>	
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## Human Rights and UN Conventions

Do you think that this policy will have a positive or negative impact on people's human rights? (*Please refer to point 1.4 of the EIA Guidance for further information about Human Rights and the UN Conventions*).

	What are the positive or negative impacts of the proposal?	Reasons for your decision (including evidence)	How will you mitigate negative Impacts?
<b>Human Rights</b>	<p><b>Positive</b></p> <p>The regulations can be seen in the context of supporting Article 2 of the Human Rights Act 1998 (the right to life) because they provide the framework for protecting people in Wales from the worst effects of runaway climate change.</p>		<p>Mitigating the impacts of the regulations depends on the measures and policies chosen. These policies will be set out in a report for each carbon budget period, the first being published in March 2019. Policies to deliver our carbon budgets are subject to impact assessments by the relevant policy department.</p>

## C. WELSH LANGUAGE IMPACT ASSESSMENT

1. Welsh Language Impact Assessment reference number: **04/10/2018**
2. Does the proposal demonstrate a clear link with the Welsh Government's strategy for the Welsh language? – *Cymraeg 2050 A million Welsh speakers* and the related Work Programme for 2017-2021?

There is no direct, clear link with the Cymraeg 2050 strategy.

The Climate Change (Wales) Regulations 2018 simply provide the mechanism or framework for meeting the 2050 target. The Regulatory Impact Assessment estimates the costs and impacts of potential interventions to achieve the preferred emissions reduction pathway, although the actual impact of meeting our targets on the Welsh language depends on the measures and policies chosen. These policies will be set out in a report for each carbon budget period, the first being published in March 2019. Policies to deliver our carbon budgets are subject to an engagement process and impact assessments.

3. Describe and explain the impact of the proposal on the Welsh language, and explain how you will address these impacts in order to improve outcomes for the Welsh language. How will the proposal affect Welsh speakers of all ages (both positive and/or adverse effects)?

It is reasonable to assume that achieving Welsh and global targets will lessen the impact of climate change on communities across Wales, including Welsh speaking communities. Opportunities arising from action to reduce emissions, for example farm diversification and new, local jobs in energy efficiency or community renewables, may encourage people in rural areas where there is a high proportion of Welsh speakers to remain in their communities, helping to sustain the language in those areas.

## D. BIODIVERSITY IMPACT ASSESSMENT

The Climate Change (Wales) Regulations 2018 simply provide the mechanism or framework for meeting the 2050 target. The Regulatory Impact Assessment estimates the costs and impacts of potential interventions to achieve the preferred emissions reduction pathway, although the actual impact of meeting our targets on biodiversity depends on the measures and policies chosen. These policies will be set out in a report for each carbon budget period, the first being published in March 2019. Policies to deliver our carbon budgets are subject to an engagement process and impact assessments.

Having said that, if Welsh and global targets are achieved we can expect a significantly positive impact on biodiversity through mitigating the negative outcomes associated with climate change detailed below. The findings in this section are drawn from the Joint Nature Conservation Committee document 'Biodiversity and Climate Change – a summary of impacts in the UK'.<sup>13</sup> All references in brackets are available in the original document.

Climate change affects biodiversity in many ways (Hopkins et al. 2007, Walmsley et al. 2007). Impacts on species include changes in distribution and abundance, the timing of seasonal events and habitat use and, as a consequence there are likely to be changes in the composition of plant and animal communities. Habitats and ecosystems are also likely to change character by, for example, showing altered water regimes, increased rates of decomposition in bogs and higher growth rates in forests. Indirect impacts may become just as significant as a result of climate-induced changes in land use having knock-on effects on biodiversity. For example, growing new crops, increases in summer watering and geographical shifts in arable and livestock production could well occur, but how these indirect changes may affect biodiversity remains less certain.

An analysis of the best available data from rivers in England and Wales shows an upward trend in mean annual river water temperatures over the last 35 years, with greater rises in the lower reaches of rivers, particularly in southern England (Hammond & Pryce 2007). In Scotland there is evidence that small streams have shown an increase in winter temperature maxima (Langan 2001). Overall evidence suggests that headwaters are warming in winter and spring, whereas the lower reaches are warming in summer (Hammond & Pryce 2007).

Climate change projections for the UK indicate that average temperatures and winter precipitation will both increase, and summer precipitation will decrease, especially in the south (Murphy et al. 2009). In freshwater systems the most potentially significant effect of this will be an increased risk of deoxygenation associated with hotter summers and lower rainfall (Everard 1996). Middle and

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<sup>13</sup> [http://jncc.defra.gov.uk/PDF/Pub10\\_Bio\\_&\\_CC\\_IACCF\\_2010\\_Web.pdf](http://jncc.defra.gov.uk/PDF/Pub10_Bio_&_CC_IACCF_2010_Web.pdf)

lower river sections and standing waters are thought to be most at risk (Conlan et al. 2007a). Greater fluctuations in climate are also likely to result in altered water levels that will change local hydrological conditions, impacting on habitat suitability and connectivity between habitats (Conlan et al. 2007a). Nitrate leaching from upland catchments to surface and groundwaters is more likely under a changing climate with increased runoff events and higher temperatures having implications for water quality (Wessel et al. 2004).

Climate change has significant impacts on hydrology which will ultimately result in changes to habitat composition and distribution. In the short-term, changing rainfall patterns with drier summers causing lowering of the water table and drying out of upland soils, combined with more frequent extreme rain events, are increasing soil erosion. Freshwater ecosystems are very vulnerable to climate change because the metabolic rates of organisms and overall rate of productivity of ecosystems are directly regulated by temperature (Clarke 2009). The effects of climate change appear to be variable between river types, with species rich, unpolluted (non-acidified) shallower rivers and their biodiversity most at risk (Conlan 2007b). One of the primary observed impacts of climate change upon species within the UK has been a northward movement of many warmth-loving species, and some retreat of northerly distributed species. There is increasing evidence for changes in the timing of many natural events which are closely correlated with changing temperature. For example, many plants are coming into leaf and flowering earlier in the year, migratory birds are arriving earlier in the UK and leaving later, butterflies are appearing earlier in the spring, and many birds are laying eggs earlier in the year. These phenological changes may mean that the life cycles of some species are no longer synchronised with those of species on which they depend (e.g. food plants and prey species) with potential changes in competitive advantage arising between species (Morecroft et al. 2009, Sparks et al. 2006).

Oceans are a major driver of the Earth's climate, operating over time periods of decades to centuries. Ocean climate is largely defined by its temperature, salinity, ocean circulation patterns and the exchange of heat, water and gases (including carbon dioxide) with the atmosphere. Marine air and sea surface temperatures (SST) have been rising at a similar rate to land air temperature, but with strong regional variations. Average sea surface temperatures around the UK coastline increased by 0.7°C over the past three decades (Met Office 2009). Surface waters to the north and west of the UK have become relatively more saline since the 1970s (MCCIP 2008).

The world's oceans absorb around 25% of atmospheric carbon dioxide produced by human activity. This has caused acidification of marine waters as carbon dioxide uptake has led to a 0.1 unit reduction in the pH of surface sea water that is equivalent to a 30% increase in the concentration of hydrogen ions. If global emissions of carbon dioxide continue to rise on current trends then the average pH of the oceans could fall by 0.5 units (equivalent to a three-fold increase in hydrogen ions) by 2100. The pH of the oceans is probably lower than for hundreds of millennia and the rate of change is 100 times greater than at any time over this period (The Royal Society 2005, Ocean Acidification Reference User Group 2009).

Rising sea temperatures and acidity appear to be associated with various changes in biodiversity in UK marine and coastal ecosystems. Climate driven changes to salinity, wind, waves and currents are also having an impact (MCCIP 2008, Turley et al. 2009).

Rising sea levels and increased storminess are affecting coastal habitats such as saltmarsh, sand dunes, shingle and cliffs. This can alter the distribution of sediment and so potentially affect natural habitat processes and their ability to adapt to climate change (MCCIP 2008). In some cases, climate change is contributing to habitat loss through a process known as 'coastal squeeze', as coastal habitats are unable to move inland in response to rising sea levels because of fixed man-made structures such as seawalls.

The UK Climate Change Risk Assessment 2017 identified the following risks for our natural environment:<sup>14</sup>

- Risks to species and habitats due to inability to respond to changing climatic conditions
- Opportunities from new species colonisations
- Risks and opportunities from changes in agricultural and forestry productivity and land suitability
- Risks to soils from increased seasonal aridity and wetness
- Risks to natural carbon stores and carbon sequestration
- Risks to agriculture and wildlife from water scarcity and flooding
- Risks to freshwater species from higher water temperatures
- Risks of land management practices exacerbating flood risk
- Risks to agriculture, forestry, landscapes and wildlife from pests, pathogens and invasive species
- Risks to agriculture, forestry, wildlife and heritage from change in frequency and/or magnitude of extreme weather and wildfire events
- Risks to aquifers and habitats from salt water intrusion
- Risks to habitats and heritage in the coastal zone from sea-level rise; and loss of natural flood protection
- Risks to and opportunities for marine species, fisheries and marine heritage from ocean acidification and higher water temperatures
- Risks and opportunities from changes in landscape character

Climate change is only one source of pressure for nature, although it can contribute to others such as habitat loss, the spread of non-native species and the acidification of seas and oceans. It is

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<sup>14</sup> <https://www.theccc.org.uk/wp-content/uploads/2016/07/UK-CCRA-2017-Wales-National-Summary.pdf>

reasonable to expect that policies to deliver our carbon budgets will support the following objectives in the Nature Recovery Plan for Wales:

- Objective 2: Safeguard species and habitats of principal importance and improve their management
- Objective 3: Increase the resilience of our natural environment by restoring degraded habitats and habitat creation
- Objective 4: Tackle key pressures on species and habitats