

# CLIMATE READY SCOTLAND: Scottish Climate Change Adaptation Programme 2019-2024

A Consultation Draft

February 2019



Scottish Government  
Riaghaltas na h-Alba  
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## Ministerial Foreword



The scale of the global challenge of climate change is clear, data show that average global temperatures over the last five years were 1.1°C higher than the pre-industrial average and the last four years have been the warmest on record.

Scotland's climate has already changed. Ensuring our communities, society, economy and environment are resilient to the expected intensifying impacts of climate change is a crucial step to delivering a greener, fairer and more prosperous country. Adapting to the changing climate will both help to create a better society for everyone who lives here and unlock Scotland's immense potential as a nation.

My vision is that we live in a Scotland where our communities, built and natural places, supporting infrastructure, economy and society are climate ready, adaptable and resilient to climate change.

Programme for Government 2018 and the Climate Change Plan 2018 contain new policies that will strengthen our adaptation response. Scotland's second statutory five year Climate Change Adaptation Programme will be published later in 2019.

I want the second Adaptation Programme to deliver a step change in collaboration, and emphasise the wider co-benefits of climate action. Focusing on results, performance and measurement, we will build on previous sector and risk-based approaches. We propose an outcomes-based approach, derived from both the UN Sustainable Development Goals and Scotland's National Performance Framework. For the first time, Scotland's Adaptation Programme will explore adaptation behaviour change – how individuals, communities and businesses make the most important choices in respect of our changing climate.

We are consulting on our Adaptation Programme and have already talked to some stakeholders using social media and at informal consultation workshops. We now want to consult more widely. We consult because we want better policy – and better outcomes as a result.

I look forward to hearing your views on how we can work together to continue to strengthen our approach to climate change adaptation, securing the benefits of a climate-ready and resilient Scotland for current and future generations. I thank you in advance for your response.

A handwritten signature in black ink, appearing to read 'R. Cunningham'.

ROSEANNA CUNNINGHAM MSP  
Cabinet Secretary for Environment, Climate Change and Land Reform

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## Consultation Process

### Responding to This Consultation

We are inviting responses to this consultation by Tuesday, 9 April 2019.

Please respond to this consultation using the Scottish Government's Consultation Hub, Citizen Space (<http://consult.gov.scot>). Access and respond to this consultation online at <https://consult.gov.scot/energy-and-climate-change-directorate/adaptation-programme-2019-2024/>.

You can save and return to your responses while the consultation is still open. Please ensure that consultation responses are submitted before the closing date of Tuesday, 9 April 2019.

If you are unable to respond using our consultation hub, please complete the Respondent Information Form in Annex F and return it, together with your response to:

Climate Change Adaptation Consultation  
Climate Change Adaptation Team, 3F South  
Scottish Government  
Victoria Quay  
Edinburgh  
EH6 6QQ

### Handling Your Response

If you respond via our online Consultation Hub (<https://consult.gov.scot/>), you will be directed to the About You page before submitting your response.

Please indicate how you wish your response to be handled and, in particular, if you are content for your response to be published. If you ask that your response is not published, we will regard it as confidential, and treat it accordingly.

All respondents should be aware that the Scottish Government is subject to the provisions of the Freedom of Information (Scotland) Act 2002 and would therefore have to consider any request made to it under the Act for information relating to responses made to this consultation exercise.

To find out how we handle your personal data, please see our privacy policy: <https://beta.gov.scot/privacy/>

## **Next Steps in the Process**

Where respondents have given permission for their response to be made public, and after we have checked that they contain no potentially defamatory material, responses will be made available to the public at <http://consult.gov.scot>. If you use the Consultation Hub to respond, you will receive a copy of your response via email.

Following the closing date, all responses will be analysed and considered along with other available evidence. Responses will be published where we have been given permission to do so. An analysis report will also be made available.

## **Comments and Complaints**

If you have any comments about how this consultation exercise has been conducted, please send them to the contact address above or to:

[climatechangeadaptation@gov.scot](mailto:climatechangeadaptation@gov.scot)

## **Scottish Government Consultation Process**

Consultation is an essential part of the policymaking process. It gives us the opportunity to consider your opinion and expertise on a proposed area of work.

You can find all our consultations online: <http://consult.gov.scot>. Each consultation details the issue under consideration, as well as explaining how you can give us your views, either online, by email or by post.

Responses will be analysed and used as part of the decision making process, along with a range of other available information and evidence. We will publish a report of this analysis for every consultation. Depending on the nature of the consultation exercise the responses received may:

- indicate the need for policy development or review
- inform the development of a particular policy
- help decisions to be made between alternative policy proposals
- be used to finalise legislation before it is implemented

While details of particular circumstances described in a response to a consultation exercise may usefully inform the policy process, consultation exercises cannot address individual concerns and comments, which should be directed to the relevant public body.

## Introduction

Scotland's climate is warming, the growing season is getting longer, we are facing more extreme weather and rising sea levels. These trends are expected to continue and intensify. Acting on the risks and opportunities of climate change will bring wide-ranging benefits to everyone in Scotland.

We want to build on the significant achievements of the past decade by continuing to strengthen the resilience of our communities, society, economy and environment to the effects of climate change.

A well-adapted society, economy and environment will bring important benefits to our wellbeing and prosperity, helping deliver a greener, fairer and more prosperous Scotland.

### Scotland's Changing Climate

No matter how successful global measures under the Paris Climate Agreement are in reducing greenhouse gas emissions, it will be necessary to adapt to climate change because many impacts of past emissions are already locked-in and will lead to changes in our climate for decades to come.

The latest Climate Change Projections for the UK (UKCP18), published in November 2018, provide detailed scientific assessment of climate changes to date and expected future trends:

- Temperatures in Scotland have increased in line with global trends. The average temperature over 2008-2017 was around 1 °C warmer than the pre-industrial period.
- Scotland's annual rainfall has increased since the 1970s.
- We can expect milder, wetter winters and hotter, drier summers along with an increase in the frequency and intensity of extremes.
- Sea level around the UK has risen by around 16 cm since the start of the 20th century.

Adaptation Scotland are currently working with Scottish National Heritage, Scottish Environment Protection Agency, Historic Environment Scotland and the MET Office to develop a climate projections summary specifically for Scotland based on UKCP18.

Our pre-consultation social media conversations on Twitter and informal stakeholder workshops reported climate change impacts that are already being observed in Scotland, including changing growing seasons, increased coastal erosion, decreasing snow cover, tarmac and roofs melting in extreme heat, and increased ferry disruption due to strong storms.

The cold winter and hot summer of 2018 indicated some of the challenges that could lie ahead for Scotland, but also signalled the clear benefits of being prepared.

## **Achievements and Progress to Date**

Scotland has been responding to the climate challenge for over a decade. In 2009 the Scottish Government published a non-statutory [Climate Change Adaptation Framework](#) which had twelve sector action plans.

Scotland's first statutory five-year Climate Change Adaptation Programme, [Climate Ready Scotland](#), was published in May 2014. The programme was designed to address over 130 climate impacts through over 150 individual policies.

It is a requirement of the Climate Change (Scotland) Act 2009 that Scottish Ministers [report annually](#) on progress on the current Adaptation Programme; the Fourth Annual Report was published in May 2018.

Adaptation has been increasingly integrated into the Scottish Government's and public bodies' regular business. Adaptation is increasingly included within the core work of the wider public sector, and incorporated into national strategies and guidance. Scottish Environment Protection Agency, Scottish Natural Heritage, Forestry Commission Scotland, Historic Environment Scotland and Marine Scotland have long track records of working on climate change.

This has been accompanied by significant investment, including £42 million invested annually by the Scottish Government and local authorities on flood risk management, one of Scotland's biggest climate risks.

## **Independent Assessment of Scotland's Adaptation Programme**

Under the 2009 Act, Scottish Ministers must commission independent assessments of their Adaptation Programme. An in-depth assessment of how well Scotland is preparing for climate change was commissioned by Scottish Ministers in the [first Independent Assessment of the Scottish Climate Change Adaptation Programme](#) by the Adaptation Sub-Committee of the UK [Committee on Climate Change](#), which was laid before the Scottish Parliament in September 2016.

## Independent Assessment 2016

The opening messages from the first [Independent Assessment](#) of the Scottish Climate Change Adaptation Programme by the Adaptation Sub-Committee of the Committee on Climate Change in 2016 highlights the risks and opportunities facing Scotland:

*“Scotland's unique geography creates both resilience and vulnerabilities to the impacts of extreme weather and climate change. Scotland's iconic industries including timber and whisky, and its fisheries, rely on the abundance of climate-sensitive natural resources. The projected changes in weather patterns combined with sea level rise will test the nation's transport, communication, fuel and energy networks and challenge the delivery of health and social care services. There will also be opportunities for Scottish businesses investing in the products, services and new technologies that will be needed to adapt urban areas and grow rural economies in Scotland.*

*“The Paris Agreement should mark the turning point in the global action needed to limit further warming. Otherwise temperature increases of 4°C or more by the end of the century would remain possible. Even two degrees of warming is associated with severe, pervasive and irreversible impacts for people and the natural environment.”*

The Adaptation Sub-Committee assessed 28 adaptation priorities and made 30 recommendations. Initial progress against these recommendations was set out in the Scottish Government's [third annual report](#) to Parliament.

The Assessment found that the Programme had made a positive start. Many policies and plans already take account of climate change; commitments within the Programme are being fulfilled, and it provides a solid foundation for further progress. The Assessment noted some evidence gaps in important areas that make it difficult to determine whether key vulnerabilities are being suitably addressed and more action is required to address risks highlighted. Likewise, more should be done to take advantage of opportunities that milder winters and warmer summers will bring to Scotland.

A second Independent Assessment by the Adaptation Sub-Committee was carried out in 2018 and is expected to report in March 2019. Its findings will inform the development of the second Adaptation Programme.

In 2016, the Adaptation Sub-Committee recommended that, in preparing the second Scottish Climate Change Adaptation Programme, the Scottish Government should:

- address all urgent risks and opportunities for Scotland;
- identify a senior owner for each objective to be held accountable for its delivery;
- list the specific actions that will be taken to achieve each objective together with appropriate milestones and timescales;
- introduce an effective monitoring regime to allow impact of actions and delivery of each objective to be properly assessed;
- present the actions being taken within each sector together and coordinate their delivery; and
- work with partners and build on the suite of ClimateXChange indicators to develop datasets for those areas where progress is most important and develop outcome-based indicators where this is possible.

The Adaptation Sub-Committee recommends an ambitious, focussed Programme of cost-effective actions and research, addressing all Scotland's priority risks, moving beyond awareness-raising and capacity-building to concrete actions that measurably reduce our climate risks; and with clear ownership, timescales, co-ordination across themes, and mechanisms to track progress.

### **New Climate Change Adaptation Programme 2019**

The second statutory five-year Adaptation Programme will be published in 2019. Under the 2009 Act, the Programme must set out progress on the previous Programme, Scottish Ministers' objectives on adaptation, proposals and policies and their timescales, and arrangements for wider engagement.

The new Programme will address the risks for Scotland set out in the [UK Climate Change Risk Assessment 2017](#) and its [Evidence Report Summary for Scotland](#) which identified six priority risk areas where action is needed in the next five years. More detail is at **Annex A**.

### **Proposed Approach**

We propose an outcomes-based approach, derived from both the UN Sustainable Development Goals and Scotland's National Performance Framework. In going beyond the sector and risk based approaches of our 2009 Framework and 2014 Programme we are proposing a more strategic framework for the new Programme. It will promote co-benefits and integrate adaptation into wider Scottish Government policy development and service delivery. The approach is inherently cross-cutting, engaging sectors which have not yet fully considered climate change adaptation.

### **What is an “Outcomes Based Approach”?**

An outcomes based approach means focusing on what we want the policy to achieve rather than inputs and outputs. It is positive and forward-looking, thinking about what type of Scotland we want in future. It encourages Government to work across traditional boundaries and increases transparency and accountability.

In line with the Paris Agreement and EU Adaptation Strategy, we want to deliver a step change in collaboration and propose establishing a National Forum on Adaptation, similar to Ireland’s National Adaptation Steering Committee. The Forum will include senior representatives of key sectors and will improve both leadership and collaboration.

### **Ireland’s National Adaptation Steering Committee**

Ireland has had a National Adaptation Steering Committee since 2015. The role of the Steering Committee is to provide advice and guidance to the relevant sectors in respect of the development of sectoral adaptation plans. In its 2018 consultation document, Ireland proposes that Government Departments will be required to consult with other sectors through the Steering Committee process as they develop sectoral plans. This will embed cooperation on cross-cutting issues and facilitate the use of consistent and common information on matters such as climate risks, climate change data and analysis in policy development.

We will embed monitoring and evaluation across the Programme, bringing a focus on results, performance and measurement. The new Programme will, for the first time, explore adaptation behaviour change – how we can help people and businesses to make the most important choices in respect of our changing climate.

This approach will place Scotland at the cutting-edge of adaptation practice internationally.

### **Climate Change Adaptation Behaviour Change**

Adapting to the impacts of climate change needs action at all levels of society. That is why we are introducing the concept of climate change adaptation behaviours for the first time. This is where individuals and organisations change their behaviour to help increase their resilience to, and reduce the severity of, negative consequences of climate change.

Adaptation behaviour also includes taking advantage of new opportunities or developing new products and services to respond to changing climate. Adaptation behaviours range in scale and scope: from investing in flood

protection for a home or business, to changing ploughing practices on farms to reduce soil erosion.

To make informed decisions on how to adapt to climate change, individuals, communities and businesses need a greater understanding of climate change and its impacts. This is sometimes referred to as climate literacy. Adaptation behaviours for individuals and organisations will form part of each outcome for the programme. These will be included alongside policies to serve as building blocks to achieve our vision of Scotland able to adapt to the changing climate.

## **Monitoring and Evaluation**

Establishing a comprehensive monitoring and evaluation (M&E) framework for the Adaptation Programme is vital to ensure the effectiveness of Scotland's efforts to adapt to the impacts of climate change, identify whether resilience is increasing and opportunities are being realised, and ensure that reporting on progress and implementation is evidence-based.

The first Adaptation Programme was accompanied by significant developments in adaptation monitoring in Scotland and evaluation of the first Programme was able to draw on:

- Annual Public Sector Climate Change Reporting
- Adaptation Indicators published in 2016 by ClimateXChange (Scotland's centre of expertise on climate change).

The monitoring and evaluation framework for the second Adaptation Programme builds on this monitoring foundation and has been developed in response to specific recommendations from both the Adaptation Sub-Committee (of the UK Climate Change Committee) and ClimateXChange to ensure that we can effectively monitor implementation of the Adaptation Programme and track progress towards the outcomes. Our new approach acknowledges that M&E is integral to an outcomes-focussed Programme and encourages consideration of M&E at all stages of adaptation policy development.

Further details of the principles and practice used in developing the monitoring and evaluation framework are given in **Annex B**.

**Consultation Questions: Proposed Overall Approach**

**Q1. Do you agree with our outcome-based approach to adaptation in Scotland?**

**Q2. Do you agree that a National Forum on Adaptation should be established to facilitate discussion on climate change adaptation?**

**Q3. Do you agree that climate change adaptation behaviours should be included in the Programme?**

**Q4. Do you agree that an integrated approach should be taken to monitoring and evaluation?**

## Programme Vision

Our overarching vision is that we live in a Scotland where our built and natural places, supporting infrastructure, economy and society are climate ready, adaptable and resilient to climate change.

## Programme Outcomes

We have developed a set of seven high level “outcomes” for the Programme, derived from the UN Sustainable Development Goals and the Scottish Government’s National Performance Framework.

A framework for each high level outcome which includes sub-outcomes, policies and proposals, performance indicators and climate change risks is being developed.

### Adaptation Programme Outcomes

- Our communities are inclusive, empowered, resilient and safe in response to the changing climate
- The people in Scotland who are most vulnerable to climate change are able to adapt and climate justice is embedded in climate change adaptation policy
- Our inclusive and sustainable economy is flexible, adaptable and responsive to the changing climate
- Our society’s supporting systems are resilient to climate change
- Our natural environment is valued, enjoyed, protected and enhanced and has increased resilience to climate change
- Our coastal and marine environment is valued, enjoyed, protected and enhanced and has increased resilience to climate change
- Our international networks are adaptable to climate change

### Definitions

**Outcome:** An overarching aim which describes what the Programme is working to achieve at the highest level.

**Sub-outcome:** The building blocks of an outcome, which combined ensure that we fulfil our overarching aims.

**Performance indicator:** A metric which enables us to track progress towards the achievement of the outcomes or to monitor how well the Programme is being implemented.

**Climate Change Risks:** The consequences for Scotland that may occur from the impacts of climate change.

**Policy:** A course of action that is actively in place

**Proposal:** A forthcoming set of actions that is under consideration

**Diagram A: The Adaptation Programme’s relationship to the UN Sustainable Development Goals and Scotland’s National Performance Framework.**



**Diagram B: The Adaptation Programme Vision and Outcomes**



**Consultation Questions: Proposed Vision and Outcomes**

**Q5. Do you agree with our long term vision for adapting to climate change in Scotland?**

**Q6. Does the Programme identify the right outcomes for Scotland over the next five years?**

## **How We Are Developing the Programme**

### **Public Engagement**

The purpose of our engagement with external stakeholders and the public is to:

- raise the profile of climate change adaptation issues across Scotland
- stimulate discussion about the key adaptation issues, risks and opportunities
- engage a wide range of views, examples and approaches in order to develop an evidence-based, Adaptation Programme for Scottish Ministers
- gain support for the process and Programme from partners and stakeholders
- inform the Monitoring and Evaluation Framework for the new Programme

### **Policy Workshops**

In preparation for this consultation, the Scottish Government hosted two policy workshops with officials and public bodies to share experience on adaptation and begin the development of our second five-year Programme.

### **Digital Engagement**

Our external digital media engagement began in autumn 2018 with seven interactive events on Twitter. Their purpose was both to raise awareness of adaptation and gain understanding of wider stakeholder priorities. We held one session for each outcome. Comments then fed into workshops on those topics to aid discussion.

The digital events allowed us to interact with, and hear the perspectives of, a more diverse group of stakeholders. People and organisations from all over the country shared their observations of climate change effects and priorities for climate change adaptation in Scotland. These observations included: changing growing seasons, increased coastal erosion, tarmac and roofs melting due to heat, and increased ferry disruption due to storms.

## Informal Stakeholder Workshops

Informed by the findings of the digital engagement events, in autumn 2018 the Scottish Government hosted a series of stakeholder engagement workshops. Six workshops were held across Scotland, one workshop for each outcome with the international outcome addressed in each workshop. A final wrap-up workshop was held in Edinburgh.

<b>Workshop Theme</b>	<b>Location</b>
<i>Natural Heritage</i>	<i>Inverness</i>
<i>Infrastructure</i>	<i>Glasgow</i>
<i>Communities</i>	<i>Stirling</i>
<i>Climate Justice</i>	<i>Dundee</i>
<i>Coastal/Marine</i>	<i>Oban</i>
<i>Economy</i>	<i>Aberdeen</i>
<i>Conclusions</i>	<i>Edinburgh</i>

Attendees included members of the Scottish Government, public, third and private sectors. Over the course of the workshops, participants reviewed the outcomes and sub-outcomes, proposed and discussed monitoring and evaluation metrics, and suggested current and future actions needed to meet the outcome aims.

Some cross-cutting themes emerged, including the importance of: continued partnership building, place-based approaches as opportunities and solutions, awareness raising and education around adaptation, and the interdependencies across outcomes and policy areas. The workshops also helped to refine the structure of the sub-outcomes. The written outputs of the workshops informed the development of the draft Programme.

## Public Consultation

We consult because we want better policy – and better outcomes as a result. We want to hear from the broadest range of views on the consultation questions. Scottish Ministers look forward to hearing from the public on how we can work together to strengthen our approach to climate change adaptation. This public consultation will be open for eight weeks and closes on Tuesday, 9 April 2019.

## **Climate Conversations**

While the public consultation is underway, we have commissioned a set of ten Climate Conversations to be held with target groups of non-environmentally-focused voluntary and community groups across Scotland between January and March 2019. The original Climate Conversations were created to provide a step-by-step 'how to' guide to facilitate conversations about climate change and mitigation behaviours with a small group of people. The guide for the conversations has been adjusted to focus on adaptation and seeks to discover people's priorities for adaptation, as well as raise awareness of the public consultation. The results of these Climate Conversations will be fed into the development of the Programme.

## **Scotland's Climate Change Adaptation Programme 2019-2024 – The Proposed Framework for Consultation**

The following pages set out an overview of the proposed framework for climate change adaptation on which we are consulting. We would like your views.

The Outcomes and Sub-Outcomes were tested at the digital engagement and consultation workshops and refined based on feedback. The outcomes are cross-cutting and promote collaboration. The policies and proposals that support the achievement of each outcome are listed, together with a short description of how they relate to climate change adaptation. Given the cross-cutting nature of the outcomes, many policies contribute to delivery of more than one outcome.

The Programme draws together existing Scottish Government policies relating to adaptation. Grouping all the relevant policies together will allow Scotland to take a comprehensive approach to adaptation and ensure that policy consistently takes account of climate change. The approach is not to develop stand-alone, new policies, but to draw together existing policies and ensure that they take account of climate change adaptation and the role that policies can play in delivering a more resilient society. All relevant government policies and programmes will be developed and implemented with adaptation in mind.

## **Scotland's Climate Change Adaptation Programme**

### **Vision:**

- **We live in a Scotland where our built and natural places, supporting infrastructure, economy and society are climate ready, adaptable and resilient to climate change.**

### **Outcomes:**

- Our communities are inclusive, empowered, resilient and safe in response to the changing climate
- The people in Scotland who are most vulnerable to climate change are able to adapt and climate justice is embedded in climate change adaptation policy
- Our inclusive and sustainable economy is flexible, adaptable and responsive to the changing climate
- Our society's supporting systems are resilient to climate change
- Our natural environment is valued, enjoyed, protected and enhanced and has increased resilience to climate change
- Our coastal and marine environment is valued, enjoyed, protected and enhanced and has increased resilience to climate change
- Our international networks are adaptable to climate change

### **Consultation Question: Policies**

**Q7. Are there any additional policies that should be included in the outcomes set out in the following pages?**

## Outcome 1: Our communities are inclusive, empowered, resilient and safe in response to the changing climate

### Sub-Outcome 1.1: People in Scotland's diverse communities are informed, empowered and adapting to climate change

The Scottish Government believes that empowered and informed communities will be essential for Scotland to adapt to the changing climate. The policies that fall under this sub-outcome aim to deliver this.

Policy Name	Description and Link to Adaptation
Resilient Communities Strategic Framework and Delivery Plan 2017 -2021	The aim of this plan is to support Scotland's communities, individuals and organisations to harness resources and expertise to prevent, prepare for, and recover from emergencies.
Scottish Flood Forecasting Service	As flood risk increases due to climate change, the forecasting service ensures that forecasting and warning information is available to the public and emergency responders.
Scottish Flood Forum	The Scottish Flood Forum is an independent charity that provides immediate support in the event of flooding and helps establish community resilience for areas at risk of flood.
Empowering Communities to Increase Their Resilience	With increased flood risk, it is important to continue investing in novel approaches to enable communities to improve resilience and recover from flooding. Previous projects in this area include Rivertrack community flood warning.
Research and Knowledge Exchange	To ensure policy is based on the latest evidence, the Scottish Government will continue to fund research and pilot projects through Centres of Expertise CREW (water) and ClimateXChange (climate change).
Place Standard Tool	The Place Standard is a tool that can help anyone to evaluate the quality of a place and help communities, public authorities and industry work together to create places that support a high quality of life. Ongoing improvements for the tool will promote the relationships between place-based approaches and climate change adaptation.
The Place Principle	The Place Principle recognises the importance of places at the heart of communities and promotes a more collaborative and participative approach to services, land and buildings

## Sub-Outcome 1.2: Scotland's buildings and places are adaptable to Climate Change

As the climate changes, the built environment will need to be adapted to withstand increased temperatures, rainfall, storminess, and flooding. The historic environment, while being inherently resilient, can be made vulnerable to climate change without regular maintenance and care. The policies that fall under this sub-outcome aim to support the adaptation of Scotland's built environment and places, helping to ensure that our homes, businesses and public buildings are safe and resilient as our climate changes.

Policy Name	Description and Link to Adaptation
Flood Risk Management Strategies and Local Flood Risk Management Plans 2015-2021	The Scottish Government invests £42 million annually in local authority flood risk management. Flood Risk Management Strategies and Plans set out the short and long term ambitions for flood risk management in Scotland, coordinating the efforts to where flood risk and benefits of investment are greatest.
Flood Resilient Properties	The Scottish Government are funding a range of initiatives to improve the resilience of properties to flood risk.
Dynamic Coast 2	Dynamic Coast is Scotland's National Coastal Change Assessment. Phase two will identify resilience of Scotland's natural coastal defences to climate change effects and coastal erosion and develop mitigation, adaptation and resilience plans.
Building with Nature (Interreg)	The objective of this demonstration project is to make coasts, estuaries and catchments of the North Sea Region more adaptable and resilient through partnerships to build the evidence base for nature based solutions.
Energy Efficient Scotland	This is a 20-year programme that will make our homes and buildings warmer, greener and more efficient.
Tolerable Standard & Scottish Housing Quality Standards	This is a minimum standard for houses in Scotland including regulation for insulation, energy efficiency and damp reduction amongst others. Adherence to these standards will help protect against climate change effects.
Building Regulations	Building regulations set standards for new buildings and new work on existing buildings. Provisions are set out to increase the resilience of buildings and limit water and electricity demand.
Research for buildings and heritage sites	Historic Environment Scotland (HES) will continue to undertake research to identify resilience measures for existing buildings and heritage assets.
Historic Environment Scotland's 5-year Climate Change and Environmental Action Plan	This plan set outs Historic Environment Scotland's (HES) approach to addressing the challenges and opportunities presented by climate change to the organisation and to the wider historic environment.

Adapt Northern Heritage (Interreg)	This project supports communities and local authorities to adapt northern cultural heritage to climate change through community engagement and conservation planning.
Our Place in Time: Climate Change Working Group	Historic Environment Scotland has established a working group under this policy to bring together the wide-ranging sectors of the historic environment to coordinate action on climate change.
Historic Environment Policy 2019-2029	This policy includes the care, management and sustainable use of the historic environment and considers the affect that climate change will have on these sites.

### Communities –Adaptation Behaviours:

1. Increase local drainage and be prepared for flood events. Keep greenspace green and clear surface-water drains. Sign up for SEPA Flood Alerts for advance flood warnings. Visit Scottish Flood Forum for extra advice and information.
2. Choose property level flood protection measures. If you live in an area at risk of flooding, there are multiple measures that prevent flood water entering your home, and minimise the damage if it does. Consider investing in these measures to reduce the impact of a flood event.
3. Shop local and get involved in community growing. Purchasing local, seasonal produce can minimise the risk of disruption in the event of extreme weather. Community projects are also a great way to meet people and get socialising.
4. Learn about your historic property. Scotland's historic properties are prone to issues if they are not continually maintained. Historic Environment Scotland have resources to help you to understand your property, learn how to maintain it, and identify any potential issues.

### Associated Risks (from the UK Climate Change Risk Assessment 2017)

<b>PB5:</b> Risks to people, communities and building from flooding	<b>PB7:</b> Risks to building fabric from moisture, wind and driving rain	<b>PB8:</b> Risks to culturally valued structures and the wider historic environment	<b>PB6:</b> Risks to the viability of coastal communities from sea level rise
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## Outcome 2: The people in Scotland who are most vulnerable to climate change are able to adapt and climate justice is embedded in climate change adaptation policy

### Sub-Outcome 2.1: The most vulnerable to climate change in Scotland are informed, empowered and able to adapt to climate change

The negative impacts of climate change are felt most by those who are already vulnerable because of geography, poverty, gender, age, indigenous or minority status, and disability. To ensure that existing inequalities do not widen with climate change, social impacts will need to be addressed in adaptation measures.

Policy Name	Description and Link to Adaptation
National Flood Risk Assessment (NFRA)	In 2018, SEPA published the second NFRA. This gives us the clearest picture yet of flood risk in Scotland, embeds climate change and a comprehensive range of social, environmental and economic impacts into a single assessment.
Mapping Flood Disadvantage Tool	This tool was created to identify and map the communities in Scotland most socially and spatially vulnerable to potential flood events. Alongside Scottish and Southern Energy Network's customer vulnerability mapping, SEPA has used these tools to plan targeted community engagement and awareness raising. It will also inform plans for future work including with partners like Scottish Flood Forum, Citizen's Advice Scotland and Neighbourhood Watch Scotland.
Scottish Flood Forecasting Service	As flood risk increases due to climate change, the forecasting service ensures that forecasting and warning information is available to the public and emergency responders.
Scottish Flood Forum	The Scottish Flood Forum is an independent charity that provides immediate support in the event of flooding and helps establish community resilience for areas at risk of flood. Their Flood Recovery services always seek to support those in greatest need, influenced by a number of factors including disadvantage.
<a href="#">Rivertrack</a>	This website gives people in flood risk areas a local flood alerting tool. The system uses low-cost sensors to send accurate time sensitive information to individuals about water levels in their local watercourse. In 2018, Scottish Flood Forum and SEPA supported community trials of this innovative device.

Place Standard Tool	The Place Standard is a tool that can help anyone to evaluate the quality of a place and help communities, public authorities and industry work together to create places that support a high quality of life. The tool facilitates giving a voice to those who often do not get heard. Ongoing improvements for the tool will promote the relationships between place-based approaches and climate change adaptation.
The Place Principle	The Place Principle recognises the importance of places at the heart of communities and promotes a more collaborative and participative approach to services, land and buildings.

### Sub-Outcome 2.2: Scotland's health and social care is ready and responding to changing demands as a result of the changing climate

Climate change has the potential to impact on people's health and well-being, as well as the delivery of health services and social care. Higher temperatures, extreme weather events, and changes in vector-borne pathogens are some of the ways in which climate change may affect health outcomes.

<b>Policy Name</b>	<b>Description and Link to Adaptation</b>
Our Natural Health Service Programme	The Natural Health Service supports the health sector to embrace green exercise as part of policy and practice. This will see nature-based health programmes used as part of health promotion and improvement, and encourage healthier lifestyle behaviours. Changes to Scotland's climate may support this programme as leisure and other outdoor activities may be taken up autonomously by people as the climate warms.
Physical Activity Delivery Plan (Active Scotland Delivery Plan)	The plan sets out actions being taken to encourage and support people to be more active. It specifically helps people from inactive, disadvantaged and other underrepresented groups enjoy the well-being benefits from being outdoors. Changes to Scotland's climate may support this programme as leisure and other outdoor activities may be taken up by people as the climate warms.
Walking and Cycling Network	This network will close key gaps, upgrade connecting routes, link to public transport and promote shared use of paths to encourage active travel and enjoyment of Scotland's natural landscapes. Changes to Scotland's climate may support this programme as leisure and other outdoor activities may be taken up by people as the climate warms.

### Sub-Outcome 2.3: Scotland's people have equal access to high standards of air quality, ensuring our population's health

Clean air is essential for our health and wellbeing, and helps to protect the environment as a natural asset. Whilst we have made great strides towards tackling air pollution in Scotland over recent years, it must be acknowledged that there are still areas of poorer air quality in many of our towns and cities. The impacts of poor air quality are not distributed evenly across the population: it is the most vulnerable members of society – the elderly, the very young and those with cardiovascular and respiratory conditions – who bear the largest burden. Changes in the climate will also impact on air quality; increases in temperature may affect the formation of ozone, increasing the frequency and severity of summer smog events.

Policy Name	Description and Link to Adaptation
Cleaner Air for Scotland Strategy	A review of the Cleaner Air for Scotland Strategy is due for completion at the end of 2019. The Strategy introduces low emission zones (LEZs) into Scotland's 4 biggest cities between 2018 and 2020 and into other Air Quality Management Areas by 2032. LEZs set an environmental limit on certain road spaces, allowing access to only the cleanest vehicles, therefore improving the overall air quality.
New UK Vehicle Emission Standards beyond 2020	Vehicle emission standards are currently set at a European level. We will work with the EU and UK Government to press for strong future emissions standards beyond those currently in place. Stronger emissions standards will ensure better air quality.
Vehicle Excise Duty (VED)	VED differentials are in place for lower emission vehicles compared to the higher emission petrol and diesel vehicles, in order to encourage their uptake. The VED is set by the UK Government, and we will continue to press the need for VED differentials for ultra-low emission vehicles through the 2020s.
Electric Vehicle Charging Network through ChargePlace Scotland	ChargePlace Scotland will continue to work on growing the electric vehicle (EV) charging network up to 2022. This will enable more widespread adoption of EVs, which are low emission and therefore better for air quality.

#### Vulnerable People – Adaptation Behaviours:

1. Check the weather forecast regularly and always be prepared. Climate change may bring weather that is unexpected for the season, make sure you don't get caught out, by preparing in advance.
2. Check the pollen and pollution forecasts. Changing weather patterns may impact pollen count and pollution levels, which can exacerbate some existing health conditions. Staying aware of levels that are forecasted, and avoiding times of day where pollen or air pollution may be highest can help to keep you healthy.

**Associated Risks** (from the UK Climate Change Risk Assessment 2017)

<b>PB1:</b> Risks to health and wellbeing from increased temperatures.	<b>PB4:</b> Potential benefits to health and wellbeing from reduced cold.	<b>PB9:</b> Risks to health and social care delivery from extreme weather.
<b>PB10:</b> Risks to health from changes in air quality.	<b>PB11:</b> Risks to health from vector-borne pathogens.	<b>PB12:</b> Risk of food borne disease cases and outbreaks.

## Outcome 3: Our inclusive and sustainable economy is flexible, adaptable and responsive to the changing climate

### Sub-Outcome 3.1: Scotland's businesses based on natural resources are informed and adaptable to climate change

Scotland's businesses based on natural resources, such as agriculture, forestry and fishing, form an important part of Scotland's identity, economy and national heritage. With their connection to natural systems, these industries face particular risks as the climate changes, including flooding, new pests, pathogens and invasive species, extreme weather, water scarcity, and higher ocean temperatures. The changing climate may also provide opportunities to Scottish businesses, these opportunities will be considered under sub-outcome 3.3.

<b>Policy Name</b>	<b>Description and Link to Adaptation</b>
Farming For a Better Climate	The Farming for a Better Climate programme works with farmers to find practical ways to move towards a more profitable, low carbon future, adapt to a changing climate and secure farm viability for future generations.
Monitor Farm Programme	The Monitor Farm Programme has established a group of farms to serve as monitor farms to help improve the profitability, productivity and sustainability of producers through practical demonstrations, the sharing of best practice and the discussion of up-to-date issues. This programme is delivered jointly by Quality Meat Scotland (QMS) and AHDB Cereals & Oilseeds.
Future Farming Scotland	Future Farming Scotland aims to showcase the use of low input and sustainable approaches to agriculture, building financial and environmental resilience in a changing climate. This programme is delivered by the Soil Association Scotland.
The Farm Advisory Service	The Farm Advisory Service provides information and resources aimed at increasing the profitability and sustainability of farms and crofts. Including providing farmers with access to free carbon audits, discounted integrated land management plans and specialist one to one advice.
Soil and Nutrient Network	Soil and Nutrient Network farms take a 'before and after' look at how to protect and improve our farm soils and make best use of both organic and inorganic fertilisers, saving money, improving farm efficiency and increasing resilience in a changing climate. This programme is delivered as part of Scotland's Farm Advisory Service.

Farming and Water Scotland	Farming and Water Scotland is predominantly aimed at farmers to help reduce diffuse pollution risk and advise on how this can benefit their farm business. It provides advice and information on actions that can also play a vital role in improving farm resilience in a changing climate. This programme is delivered as part of Scotland's Farm Advisory Service.
Farming with Nature	The Farming with Nature programme focuses on using organic, agroecological and High Nature Value (HNV) production methods, which have a sound scientific evidence-base for protecting and enhancing the natural environment. This programme is delivered by the Soil Association Scotland.
Scottish Forestry Strategy	This Strategy provides a 10-year framework for action to achieve a 50-year vision for Scotland's forests and woodlands with the principles of sustainable forest management at its core. The Strategy supports the expansion and sustainable management of Scotland's forests and woodlands to support thriving forest businesses, develop existing and new markets for wood products and forest based tourism. It seeks to increase the resilience and adaptability of forests and woodlands to ensure that current and future generations continue to derive a wide range of economic, social and environmental benefits.
Land Use Strategy	The Strategy encourages the development of place based partnerships for delivering integrated and sustainable land use at a local, catchment or landscape scale. Integrated land use is important in increasing the resilience of the natural environment and promoting adaptive management.
National Marine Plan (2015)	The National Marine Plan considers how actions in the Plan need to be adapted to take into account the effects of climate change. Offshore and coastal developments should be appropriately sited and designed, and use technologies and equipment appropriate for local conditions, now and in the future. It highlights that fisheries will be managed taking into account changes in species distribution and abundance due to climate change.
Farmed Fish Health Framework	Scotland's Farmed Fish Health Framework includes a Climate Change and Ocean Acidification subgroup. The subgroup aims to monitor, review and assess the impact of climate change and ocean acidification on Scottish waters. This policy creates a framework to support the adaptation of marine aquaculture to climate change.

Inshore Fisheries Strategy	The strategy sets out a vision to support the development of a more sustainable, profitable and well-managed inshore fisheries sector in Scotland. Sustainable management of inshore fisheries improves resilience of habitats and species, giving them more space to respond to the changing climate.
Marine Climate Change Impacts Partnership (MCCIP)	The Scottish Government contributes funds to the MCCIP which collates expertise from across the UK and uses this to present high quality evidence on climate change impacts in the marine environment. The Annual Report Cards summarise impacts on a range of specific environments and ecosystem components, and the Climate Smart Working Reports provide adaptation advice for marine sectors. In addition, the MCCIP have also published Report Cards on climate change and the UK marine leisure industry, and produced a detailed assessment of climate change adaptation in UK seafood.
Future Fisheries Management Strategy	The Scottish Government is undertaking nationwide discussion with stakeholders to help develop Scotland's Future Fisheries Management Strategy. The aim is to develop a range of ideas and proposals to establish Scotland's place as a world leader in responsible, sustainable fisheries management. Sustainable management of fisheries improves resilience of habitats and species, giving them more space to respond to the changing climate.
Crown Estate Scotland	Marine Scotland will work with Crown Estate Scotland to ensure that investment in aquaculture research and coastal projects contributes towards climate change adaptation.

### Sub-Outcome 3.2: Scotland's manufacturing, services and wider economy are informed and adaptable to climate change

Climate change will also impact on Scotland's manufacturing, services and wider economy. Scottish businesses could be affected by issues including flooding, supply chain disruption and reduced employee productivity due to high temperatures. Businesses and industries operating in the coastal zone may also face the loss of premises and infrastructure due to sea level rise and coastal erosion. Scottish businesses will need to adapt their business practices to respond to these challenges.

Policy Name	Description and Link to Adaptation
Adaptation Scotland's Climate Ready Business Guide	Adaptation Scotland supports businesses to build knowledge, confidence and awareness about adaptation, and to work together to adapt. Adaptation Scotland's Climate Ready Business Guide is targeted at small and medium sized enterprises (SMEs) and lays out six key business areas for considering climate impacts, threats and opportunities.
SME Loan Fund & Resource Efficient Scotland SME Support Service	The Scottish Government is committed to supporting small and medium sized Scottish businesses to reduce their energy consumption and resource costs and to encourage the uptake of renewable technologies where appropriate. The resultant savings in operating costs, energy consumption and improvements to building fabric and upgraded energy systems not only improves business efficiency but can make businesses more competitive and resilient to the changing climate.
Scotland's Forestry Strategy	The Strategy supports and enables improvements to the adaptability and resilience of Scotland's forests and woodlands for current and future generations. It encourages innovation, research, development and the adoption of new technologies and practices throughout the wood fibre supply chain. This supports sustainable and inclusive economic growth (including forest-based recreation and tourism).
National Flood Risk Assessment	The revised National Flood Risk Assessment includes classification of property types and infrastructure at risk of flooding. This will allow improved assessments of risks to sectors, businesses and asset types and inform appropriate Flood Risk Management actions.
Scottish Flood Forum	The Scottish Flood Forum provide recovery and resilience support to businesses including postflooding support, advice on property level protection and on business continuity.

Flood Resilient Properties Action Plan	The plan will promote and support property flood resilience actions (like flood resilience repairs and products) and help property owners take action to make their properties more resilient against the impacts of flooding.
Floodline Business Page	Floodline can help businesses to identify if they are at risk of flooding and prepare accordingly. <a href="http://www.floodlinescotland.org.uk/your-business/">http://www.floodlinescotland.org.uk/your-business/</a>
Flood Warning	SEPA's flood warning services can help businesses prepare and respond when floods are about to happen.
Flood Maps	SEPA's flood maps can help businesses avoid exposure to flood risk by locating in appropriate areas where flood risk is low or well managed.
Planning Advice	SEPA provide support for Planning Authorities to ensure that they make informed decisions about appropriate development where flooding impacts are minimised. This assists businesses by promoting development in areas where businesses can thrive without the risk of flooding in the future.
Flood Risk Management Strategies	The second cycle of Flood Risk Management Strategies provide an opportunity to include organisations and businesses that may benefit from taking action to manage the risks to their assets.

### Sub-Outcome 3.3: Scotland's economy is innovative and harnesses the opportunities created as a result of climate change

Climate change will create both risks and opportunities for Scotland's businesses. Potential opportunities for farmers include extended growing seasons, increased crop yield, and varieties of crop species that can be grown. In the forestry sector, the industry may experience improved productivity and a wider availability of species suitable for the Scottish climate. Elsewhere, changing demands for goods and services could provide opportunities for innovation. The policies in this sub-outcome aim to support businesses in harnessing these opportunities.

Policy Name	Description and Link to Adaptation
Scottish Government support for the Scottish Environment Business Awards	The annual Scottish Environmental Business Awards (The VIBES) celebrate and showcase Scottish businesses which are taking significant steps to reduce their impact on the environment and support the wider goals of sustainable development. Since 2018, Adaptation Scotland have sponsored adaptation commendations across all categories. These seek to recognise the innovative work already underway in Scottish businesses to adapt to the impacts of climate change, and to create the tools and services we will need in future.

#### Economy – Adaptation Behaviours:

1. Farmers, make space for water. Move livestock out of flood-prone fields prior to a flood event and allow an area to flood.
2. Businesses, prepare for flood events. Businesses should have flood action plans and be registered to receive flood alerts. There are actions to take to minimise the damage that flooding can cause to property, for example by keeping servers and stock away from basement and ground floor levels.
3. Change farming practices to reduce erosion. Increased rainfall, wind and dry spells could increase erosion from fields. Farmers can help reduce erosion by ploughing horizontally along slopes, maintaining soil cover and limiting livestock access to waterlogged areas.
4. Maintain crops. Crop growth will be impacted by the changing climate. Farmers can help protect crops from extreme weather by planting cover crops, and trees/hedges to provide shade and reduce wind exposure. Having appropriate mechanisms to collect and store water during high rainfall events can also help to maintain crops during times of low rainfall.
5. Protect livestock. Livestock management will need to adapt as the climate changes. Existing buildings can be upgraded to provide shade and ventilation, as well as maintained to reduce damage caused by storm events. Outside, planting trees and shelterbelts can provide shade and act as a wind break.

**Associated Risks** (from the UK Climate Change Risk Assessment 2017)

<p><b>Ne3:</b> Risks and opportunities from changes in agricultural and forestry productivity and land suitability.</p>	<p><b>Ne6:</b> Risks to agriculture and wildlife from water scarcity; and flooding</p>	<p><b>Ne8:</b> Risks of land management practices exacerbating flood risk.</p>	<p><b>Ne9:</b> Risks to agriculture, forestry, landscapes and wildlife from pests, pathogens and invasive species.</p>
<p><b>Ne10:</b> Risks to agriculture, forestry, wildlife and heritage from changes in frequency and/or magnitude of extreme weather and wildfire events.</p>	<p><b>Bu1:</b> Risks to business sites from flooding.</p>	<p><b>Bu2:</b> Risks to business from loss of coastal locations and infrastructure.</p>	<p><b>Bu3:</b> Risks to business operations from water scarcity.</p>
<p><b>Bu4:</b> Risks to business from reduced access to capital.</p>	<p><b>Bu5:</b> Risks to business from reduced employee productivity, due to infrastructure disruption and higher temperatures.</p>	<p><b>Bu6:</b> Risks to business from disruption to supply chains and distribution networks.</p>	<p><b>Bu7:</b> Risks and opportunities for business from changes in demand for goods and services.</p>

## Outcome 4: Our society's supporting systems are resilient to climate change

### Sub-Outcome 4.1: The interdependencies of Scotland's infrastructure assets, systems and sectors are understood, and the risk of cascading failures is managed

Infrastructure networks do not operate in isolation. If one network becomes damaged or fails, it could lead to cascading failures throughout the wider infrastructural system. In order to protect our supporting systems from the effects of climate change, it is important that we consider the interdependencies inherent in the system.

Policy Name	Description and Link to Adaptation
Electricity and Gas Networks Vision Statement (due February 2019)	Alongside the Scottish Government's Energy Strategy, the Electricity and Gas Networks Vision Statement (due February 2019), will take a more detailed look at the role and evolution of Scotland's energy networks. This will include the ways in which Scotland's energy network will need to change to remain resilient and effective, to support our energy and climate change goals.
National Transport Strategy (Refresh)	<p>Scotland's National Transport Strategy sets out the high level policy for transport in Scotland over the next 20 years. This Strategy takes into account targets for decarbonisation of transport, accessibility, and elimination of poverty. This aligns the Strategy with broader objectives of the Scottish Government.</p> <p>The Strategy states that: "Adaptation of the strategic transport network to cope with effects of climate change is also vital to ensure the continued health of the Scottish economy." The National Transport Strategy promotes walking, cycling, public transport and bike, car and ride sharing in preference to single occupancy car use. We are investing in a fully sustainable transport network, cleaning up, joining up and raising the visibility of the full range of transport options whilst encouraging people to think about how they make their journeys and supporting the development of quality place-making for Scotland's communities.</p>
The Strategic Transport Projects Review	The Strategic Transport Projects Review (STPR), published in December 2008, sets out the Scottish Government's 29 transport investment priorities over the period to 2032. To be reviewed after publication of National Transport Strategy refresh.
ScotRail Franchise	The ScotRail franchise operates around 2,300 train services each day and delivers over 93 million passenger journeys per year. It is the single biggest contract let by Scottish Ministers, worth a total value of over £7 billion over 10 years.

<p>Scottish Road Network Landslides Study and Implementation Report</p>	<p>Transport Scotland published the Scottish Road Network Landslides Study in 2005, following severe road closures after landslides in the previous year. In 2009, we published an Implementation Report and we continue to study landslides in the country. Landslides affect more rural and more vulnerable parts of the country, and climate change will increase the likelihood of landslides. This report explains what landslides are, how they can be assessed in terms of the hazards they create and the exposure to road users. It identifies areas of high hazard that currently exist in Scotland and makes recommendations as to how the future detailed assessment of the Scottish road network could be undertaken and the management approaches which could be adopted to mitigate the effects.</p>
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**Sub-Outcome 4.2: Scotland's critical national infrastructure, including essential services, is resilient to climate change**

Within the sectors of supporting systems, there is a sub-category known as Critical National Infrastructure, where the loss or compromise of these systems would have a major detrimental impact on the availability or integrity of essential services, leading to severe economic or social consequences. As climate change increases the severity of storms and likelihood of floods, it is important that our critical national infrastructure and lifeline services are resilient to these effects.

<b>Policy Name</b>	<b>Description and Link to Adaptation</b>
<p>Electricity and Gas System Security and Flexibility</p>	<p>UK wide electricity and gas networks are reserved to the UK Government. The Scottish Government works closely with the UK Government, electricity network operators and owners to ensure the resilience of Scotland's energy networks (to climate change and other factors), and their restoration in the event of a nationwide system failure and power loss.</p>
<p>Scottish Road Network – Climate Change Study (2005) and Implementation Plan (2008)</p>	<p>The Scottish Road Network – Climate Change Study and Implementation Plan gives direct recommendations to adapt the Scottish road network to cope with climate change. This study and implementation plan was updated following UK Climate Projections 2009 and consideration is being given to update following the UK Climate Projections 2018.</p>
<p>Transport Scotland winter service</p>	<p>Transport Scotland winter service operations allow the safe movement of users of the trunk road network and minimizes delays and disruption to users caused by snow or ice.</p>

<p>Scottish Trunk Road Network Asset Management Policy</p>	<p>The trunk road and motorway network is 3,507 km (2,179 miles) long, including slip roads and roundabouts. It has a gross asset value of over £20.8 billion and represents 6% of the total Scottish road network. It carries 35% of all traffic and 60% of heavy goods vehicles. The trunk road network is a fundamental part of the transport system in Scotland, and it is essential that it is maintained to the highest possible standard with the resources available. We will enhance, manage and maintain a resilient transport network with reliable journey times and enhanced connections which promotes building and sustaining economic growth.</p>
<p>Water Infrastructure</p>	<p>As proposed in the Programme for Government 2018, Scottish Water will invest around £600 million in Scotland's water infrastructure, providing 1.35 billion litres of fresh, high quality drinking water every day, improving quality and resilience, and treating our wastewater before returning it safely to the environment. We are consulting on the priorities for future investment by Scottish Water in the regulatory period 2021-27 and beyond. Among significant issues that must be addressed in the need to revise the approach to the management of surface and storm water. Ageing assets, population growth and climate change will all pose challenges. By working together, Scottish Water, local authorities and others can develop approaches to drainage which will reduce the burden on the sewerage network, reducing the need for costly new infrastructure and reducing flood risk. By retaining more water in rivers and soils, we can improve the environment and support biodiversity while increasing leisure and activity potential and take steps to join the international trend towards Blue-Green cities. We will build on examples of work underway in Glasgow and elsewhere to establish new pilots of this approach.</p>

### Sub-Outcome 4.3: Scotland's other non-critical infrastructure is adaptable to climate change

There are thirteen national infrastructure sectors which work together to deliver essential services. They include: Chemical, Civil Nuclear, Communication, Defence, Emergency Services, Energy, Finance, Food, Government, Health, Space, Transport and Water. Not all of these services are fully devolved, many remain reserved to the UK Government. It is important that all infrastructure networks and assets, not just the critical national systems, are adaptable to the effects of the changing climate.

Policy Name	Description and Link to Adaptation
Active Travel Targets	The Active Travel vision enables walking and cycling to be the most popular mode of travel for short, everyday journeys. We want to make Scotland's towns and cities friendlier, safer and more accessible. Active Travel is fundamental to the development of a sustainable travel network and a key priority for the Programme for Government and the budget was doubled in 2018-19. Climate change will increase disruption to network affecting the ability of the population to access active travel options. The Scottish Government has doubled its investment in active travel, improving Scotland's active travel infrastructure and as a result its ability to adapt to the changing climate.
Reaching 100% programme	The Reaching 100% programme will deliver superfast broadband access to 100% of homes and business in Scotland. Connectivity is a vital part of our national infrastructure. Businesses depend on it to improve productivity, support customers and open new markets. Fibre broadband is generally more resilient than copper. Fibre has the potential to allow businesses and individuals more flexibility to adapt to climate change by supporting remote working and reducing the need to travel during extreme weather events.
Scottish 4G Infill Programme	The S4GI programme's aim is to deliver 4G infrastructure and services to selected mobile "not spots" in Scotland. Greater access to 4G has the potential to allow businesses and individuals more flexibility to adapt to climate change by supporting remote working and reducing the need to travel during extreme weather events.

### Supporting Systems – Adaptation Behaviours:

1. Get involved in community energy. Having a diverse range of local energy sources can help increase resilience to extreme weather and disruption of energy supplies.
2. Conserve water. Increasing temperatures and lower rainfall in summer months may lead to water scarcity. Simple steps like using a water butt for rainwater harvesting and gardening, and not leaving taps running can help.
3. Know your transport options. Being knowledgeable about alternative transport routes can make it easier to deal with disruption. If you can, choose to work from home if extreme weather is forecast.
4. Take care of your drains. Keeping your surface water drains free from leaves, litter and debris can speed up the drainage process. Be mindful about the items you flush down the toilet or put down the sink.

### Associated Risks (from the UK Climate Change Risk Assessment 2017)

<b>In1:</b> Risks of cascading failures from interdependent infrastructure networks	<b>In2:</b> Risks to infrastructure services from river, surface water and groundwater flooding	<b>In3:</b> Risks to infrastructure services from coastal flooding and erosion	<b>In4:</b> Risks of sewer flooding due to heavy rainfall
<b>In5:</b> Risks to bridges and pipelines from high river flows and bank erosion	<b>In6:</b> Risks to transport networks from slope and embankment failure	<b>In7:</b> Risks to hydroelectric generation from low or high river flows	<b>In8:</b> Risks to subterranean and surface infrastructure from subsidence
<b>In9:</b> Risks to public water supplies from drought and low river flows	<b>In10:</b> Risks to electricity generation from drought and low river flows	<b>In11:</b> Risks to energy, transport and ICT infrastructure from high winds and lightning	<b>In12:</b> Risks to offshore infrastructure from storms and high waves
<b>In13:</b> Risks to transport, digital and energy infrastructure from extreme heat	<b>In14:</b> Potential benefits to water, transport, digital and energy infrastructure from reduced extreme cold events	<b>PB2:</b> Risks to passengers from high temperatures on public transport	<b>PB13:</b> Risks to health from poor water quality.
<b>PB14:</b> Risk of household water supply interruptions			

## Outcome 5: Our natural environment is valued, enjoyed, protected and enhanced and has increased resilience to climate change

### Sub-Outcome 5.1: Scotland's biodiversity, ecosystems and landscapes are adaptable to the changing climate

Helping nature to adapt provides us with benefits such as clean water, flood prevention, biodiversity and carbon storage. We will need these benefits increasingly as our climate changes. The policies under this sub-outcome work to support the biodiversity, ecosystems and landscapes of Scotland's natural environment.

Policy Name	Description and Link to Adaptation
Scottish Biodiversity Strategy and Route Map to 2020	The Strategy and Route Map aim to protect and restore biodiversity and support healthy ecosystems. Maximising the benefits for Scotland of a diverse natural environment and the services it provides also contributes towards sustainable economic growth.
Scottish Forestry Strategy	The Strategy provides a 10-year framework for action to achieve a 50-year vision for Scotland's woodlands and forests with the principles of sustainable forest management at its core. It will continue to support expansion and management of forests to positively contribute to the quality of our landscapes and to support the functioning of healthy ecosystems and their biodiversity.
Scotland's National Peatland Plan	Published in 2015, this plan proposes building on existing initiatives to secure the sustainable use, management and restoration of peatlands, including proposals for research and awareness raising as well.
Pollinator Strategy for Scotland 2017-2027	The Strategy sets out how Scotland can continue to be a place where pollinators thrive, along with the actions that are needed to help achieve that objective. Support of pollinators helps support biodiversity in general and increases ecosystem resilience.
Land Use Strategy	The Strategy encourages the development of place-based partnerships for delivering integrated and sustainable land use at a local, catchment and landscape scale. Integrated land use is important in increasing the resilience of the natural environment and promoting adaptive management.

<b>Proposal Name</b>	<b>Description and Link to Adaptation</b>
National Nature Reserves	A proposal to increase understanding and awareness of climate change by engaging people on-site as visitors or volunteers, through social media, and through conservation action such as peatland restoration and native woodland expansion.
National Environmental Monitoring Strategy	A proposal to support the maintenance of long-term monitoring datasets, including the Environmental Change Network sites and initiatives that encourage citizen science.
Protected Areas	A proposal to promote an ecological network approach and improved health of protected sites through collaboration.

Sub-Outcome 5.2: Scotland's natural environment and its contribution to wider societal adaptation is enjoyed, valued and maintained.

As well as providing physical benefits, our natural environment also contributes social benefits. It contributes to our health and well-being, enjoyment of the outdoors, sense of place and who we are as a nation. The policies under this sub-outcome support the wider benefits of the natural environment to the people of Scotland.

Policy Name	Description and Link to Adaptation
Scottish Biodiversity Strategy and Route Map to 2020	The Strategy and Route Map aim to protect and restore biodiversity and support healthy ecosystems. These policies will work to connect people with the natural world, enhancing their health and well-being.
Scottish Forestry Strategy	The Strategy provides a 10-year framework for action to achieve a 50-year vision for Scotland's woodlands and forests with the principles of sustainable forest management at its core. It will continue to encourage the use of these places in improving health and well-being, supporting education and encouraging community participation in forestry.
Land Use Strategy	The Strategy encourages the development of place-based partnerships for delivering integrated and sustainable land use at a local, catchment or landscape scale. It includes a focus on connecting communities to the land and positively influencing land use.
Green Infrastructure Fund	The Green Infrastructure Fund aims to improve Scotland's urban environment by increasing and enhancing greenspace in our towns and cities, especially close to areas of multiple deprivation. The Green Infrastructure Fund's vision is that greenspaces in Scotland are multifunctional. They provide improved benefits for communities, help us adapt to and mitigate climate change, increase biodiversity, improve our air quality, manage surface water runoff and reduce flooding.
Walking & Cycling Network	This network will close key gaps, upgrade connecting routes, link to public transport and promote shared use of paths to encourage active travel and enjoyment Scotland's natural landscapes. Changes to Scotland's climate may support this programme as leisure and other outdoor activities may be taken up increasingly by people as the climate warms.
Physical Activity Delivery Plan (Active Scotland Delivery plan)	The Plan sets out actions being taken to encourage and support people to be more active. It specifically helps people from inactive, disadvantaged and other underrepresented groups enjoy the well-being benefits from being outdoors.

Our Natural Health Service Programme	The Natural Health Service supports the health sector to embrace green exercise as part of policy and practice. This will see nature-based health programmes used as part of health promotion and improvement, and encourage healthier lifestyle behaviours. Changes to Scotland's climate may support this programme as leisure and other outdoor activities may be taken up increasingly by people as the climate warms.
Outdoor Learning in Nature	This programme will work with at least 100 schools serving disadvantaged communities to improve local greenspace for regular outdoor learning.

Proposal Name	Description and Link to Adaptation
National Nature Reserves	A proposal to increase understanding and awareness of climate change by engaging people on-site as visitors or volunteers, through social media, and through conservation action such as peatland restoration and native woodland expansion.

**Natural Environment – Adaptation Behaviours:**

1. Check the weather forecast regularly and always be prepared. Bring plenty of water and seek shade during hot days. Be aware that you may have to adjust your plans in the event of extreme weather events.
2. Get involved in gardening. Increasing or maintaining greenspace can have huge benefits for adaptation. Greenspace increases surface water drainage, and encourages pollinators like bees.
3. Be a sustainable tourist. Enjoy the natural environment that Scotland has to offer and make the most of the opportunities from the changing climate.

**Associated Risks** (from the UK Climate Change Risk Assessment 2017)

<b>Ne1:</b> Risks to species and habitats due to inability to respond to changing climatic conditions	<b>Ne2:</b> Opportunities from new species colonisations	<b>Ne4:</b> Risks to soils from increased seasonal aridity and wetness	<b>Ne5:</b> Risks to natural carbon stores and carbon sequestration	<b>Ne6:</b> Risks to agriculture and wildlife from water scarcity; and flooding
<b>Ne7:</b> Risks to freshwater species from higher water temperatures	<b>Ne9:</b> Risks to agriculture, forestry, landscapes and wildlife from pests, pathogens and invasive species	<b>Ne10:</b> Risks to agriculture, forestry, wildlife and heritage from changes in frequency and/or magnitude of extreme weather and wildfire events	<b>Ne14:</b> Risks and opportunities from changes in landscape character	<b>PB3:</b> Opportunities for increased outdoor activities from higher temperatures

## Outcome 6: Our coastal and marine environment is valued, enjoyed, protected and enhanced and has increased resilience to climate change

### Sub-Outcome 6.1: Scotland's coastal and marine biodiversity, ecosystems and landscapes are adaptable to the changing climate.

Helping nature to adapt will provide us with benefits such as clean water, flood prevention, biodiversity and carbon storage. We will need these benefits increasingly as our climate changes. The policies under this sub-outcome work to support the biodiversity, ecosystems and landscapes of Scotland's coastal and marine environment.

Policy Name	Description and Link to Adaptation
Scottish Biodiversity Strategy and Route Map to 2020	The strategy and route map aim to protect and restore biodiversity and support healthy ecosystems. Maximising the benefits for Scotland of a diverse natural environment and the services it provides also contributes towards sustainable economic growth.
Scotland's National Marine Plan and Marine Atlas	The plan sets out how marine resources are to be used and managed. It applies to all decisions taken by public authorities that affect Scotland's marine area. The plan stipulates that developments in coastal and marine areas should protect the health of the marine area, be resilient to coastal change and flooding, and not negatively impact on coastal processes or contribute to coastal flooding. The plan also promotes the management of non-native invasive species in Scotland's marine environment.
Marine Protected Areas (MPAs) Network and Monitoring Strategy	Approximately 22% of Scotland's seas are covered by the Marine Protected Areas network. The network aims to maintain or enhance marine biodiversity. By doing so, resilience of habitats and species is improved, giving them more space to adapt to a changing climate.
Monitoring Climate Change Impacts in Scottish Seas	Marine research strategies and monitoring programmes will be used by Marine Scotland to gather data on the impact climate change is having within Scottish seas. This data will inform future policy development.
Marine Climate Change Impacts Partnership (MCCIP)	MCCIP collates expertise from across the UK and uses this to present high quality evidence on climate change impacts in the marine environment. The Annual Report Cards summarise impacts on a range of specific environments and ecosystem components, and the Climate Smart Working Reports provide adaptation advice for marine sectors.

Farmed Fish Health Framework	Scotland's Farmed Fish Health Framework includes a Climate Change and Ocean Acidification subgroup. The subgroup aims to monitor, review and assess the impact of climate change and ocean acidification on Scottish waters. This policy creates a framework to support the adaptation of marine aquaculture to climate change
Inshore Fisheries Strategy	The strategy sets out a vision to support the development of a more sustainable, profitable and well-managed inshore fisheries sector in Scotland. Sustainable management of inshore fisheries improves resilience of habitats and species, giving them more space to respond to the changing climate.

<b>Proposal Name</b>	<b>Description and Link to Adaptation</b>
Future Fisheries Management Strategy	The Scottish Government is undertaking nationwide discussion with stakeholders to help develop Scotland's Future Fisheries Management Strategy. The aim is to develop a range of ideas and proposals to establish Scotland's place as a world leader in responsible, sustainable fisheries management. Sustainable management of fisheries improves resilience of habitats and species, giving them more space to respond to the changing climate.
Develop and implement conservation strategies for the marine environment	Proposed conservation strategies include the Scottish Seabird Conservation Strategy, UK Small Cetacean Conservation Strategy and an update to the Scottish Marine Nature Conservation Strategy. These strategies will aim to enhance the status of habitats and species and increase their resilience to climate change impacts.
Support work to better understand the vulnerability of coastal habitats to climate change	An ongoing project on intertidal sediments will help to identify sites experiencing significant climate change effects. This will inform prioritisation of SNH's future monitoring and management advice.
Respond to marine invasive non-native species (INNS)	Marine Scotland will work in partnership with SEPA and SNH to respond, where feasible, to marine invasive non-native species in Scottish waters. The response will aim to minimise negative impacts on biodiversity and promote ecological resilience.
Crown Estate Scotland	Marine Scotland will work with Crown Estate Scotland to ensure that investment in aquaculture research and coastal projects contributes towards climate change adaptation.

**Sub-outcome 6.2: Scotland's marine and coastal environment and its contribution to wider societal adaptation is enjoyed, valued and maintained.**

As well as providing physical benefits, our natural environment also contributes more intangible benefits. It contributes to our health and well-being, enjoyment of the outdoors, sense of place and who we are as a nation. The policies under this sub-outcome support the wider benefits of the natural environment to the people of Scotland.

<b>Policy Name</b>	<b>Description and Link to Adaptation</b>
Scottish Biodiversity Strategy and Route Map to 2020	The strategy and route map aim to protect and restore biodiversity and support healthy ecosystems. These policies will work to connect people with the natural world, enhancing their health and wellbeing.
Dynamic Coast 2 (Scotland's National Coastal Change Assessment) and Coastal Change Guidance	Rising sea levels, increased coastal erosion and erosion enhanced flooding will progressively impact Scotland's soft coastlines, assets and communities. Phase 2 of Dynamic Coast will investigate the resilience of Scotland's natural coastal defences, estimate how future climate change may exacerbate erosion, and develop adaptation plans at super sites around Scotland.
Marine Litter Strategy for Scotland	The strategy aims to develop measures to ensure that the amount of litter entering the coastal and marine environment is minimised. This helps to reduce pressure on coastal and marine ecosystems, leaving more room to adapt to climate change.
Scottish Coastal Forum	The forum exists to facilitate understanding of Scottish Government policy with internal and external stakeholders. The forum is able to work with Local Coastal Partnerships (LCPs) to highlight climate change issues with local, geographically disparate coastal communities.

### Coastal and Marine Environment –Adaptation Behaviours:

1. Try new fish. Changing sea temperatures may put pressure on fish that traditionally inhabit Scottish waters. You can help to reduce pressure on these species by choosing to purchase different fish in the supermarket.
2. Reduce plastic consumption. Ocean plastics are causing significant damage to our marine environment and climate change adds additional stress. By reducing the amount of plastic you use and throw away, you can help to reduce the pressure on marine ecosystems.

### Associated Risks (from the UK Climate Change Risk Assessment 2017)

<b>Ne11:</b> Risks to aquifers, agricultural land and freshwater habitats from saltwater intrusion.	<b>Ne12:</b> Risks to habitats and heritage in the coastal zone from sea-level rise; and loss of natural flood protection.	<b>Ne13:</b> Risks to, and opportunities for marine species, fisheries and marine heritage from ocean acidification and higher water temperatures.
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## **Outcome 7: Our international networks are adaptable to climate change**

Sub-Outcome 7.1: Scotland's international food supply networks are resilient to the effects of climate change.

As the climate changes, trade patterns and international food production will increasingly be affected. Sea level rise, and the increasing frequency of extreme weather events like storms, will modify transport routes and infrastructure. As a result, this will change the access and availability for the international transport of goods and services.

In certain parts of the world, increasing heat and water scarcity may reduce the capacity and type of crops grown, as well as the productivity of the workforce. Extreme weather events such as storms can also significantly reduce crop yields. These impacts may result in a reduction in the range of foods available for Scotland to import and for people to purchase.

Scotland's domestic food production may benefit from climate change due to warmer temperatures and increasingly long growing seasons. Taking advantage of this may increase the resilience of Scotland's food supply.

As part of the Scottish Government's preparation for EU exit, project work is being undertaken to understand how leaving the EU without a deal may impact on the price, availability and source of food for Scottish people. This work will increase overall resilience in the event of disruption to food supplied to Scotland, and can be applied to instances of disruption due to extreme weather.

Sub-Outcome 7.2: Scotland has an internationally open and connected economy which is adaptable to the changing climate.

Climate change will impact on Scotland's ability to import and export goods and services. Food and drink exports, including beverages (particularly whisky), fish, crustaceans and molluscs are significant for Scotland's economy and are often important livelihoods for people living in rural and coastal communities. Maintaining our international connections, despite the disruption to trade that climate change may cause, will be vital to ensure Scotland's economy remains open and connected.

As part of the Scottish Government's preparation for EU exit, project work is being undertaken to understand how leaving the EU without a deal may impact food supplies and food and drink exporters in Scotland. This work aims to increase overall resilience in the event of disruption, and the learning can be applied to instances of disruption due to extreme weather.

Sub-Outcome 7.3 Scotland is active in international governance, helping to manage the potential international instability caused by climate change. Climate change acts as an additional stress on systems that are already under pressure. Countries already suffering from water scarcity, drought and crop failure may see these problems being exacerbated by climate change, through increased temperatures, aridity and storm frequency. As a result, higher numbers of people may leave their home country to make a new life elsewhere. Conflict prone countries may also see worsening issues as climate change restricts access to resources, and increases the movement of people. It is vital for Scotland to remain an active partner on the international stage, to support other countries where possible.

<b>Policy Name</b>	<b>Description and Link to Adaptation</b>
Climate Justice Fund	The Scottish Government champions a climate justice approach, recognising that those most vulnerable to climate change are also those who have contributed least to the problem. The Climate Justice Fund was launched in 2012, with a £3 million budget, to help tackle the effects of climate change in the world's poorest, most vulnerable countries. In 2015, at COP21 in Paris, the Scottish Government committed to providing £3 million per year from 2016 to 2021 through the Climate Challenge Fund Malawi and the Climate Justice Innovation Fund. This is in addition to our annual £10 million International Development Fund. By supporting and empowering communities to tackle the impacts of climate change in their home countries, Scotland can help to promote climate change action and international stability, increasing capacity to adapt to the changing climate.
Support for Kasisi Agricultural Training Centre	The Scottish Government Adaptation Team and International Development Team alongside SCIAF (Scottish Catholic International Aid Fund) are supporting the Kasisi Agricultural Training Centre in Zambia which contributes to adaptation objectives through promoting sustainable organic agriculture.
Traction Learning Exchange Project	The Scottish Government is supporting the Traction project for international knowledge exchange on national adaptation efforts. This links peers and counterparts in Malawi and among the LDC (Least Developed Countries) group at the UNFCCC. It works to understand their approaches and establish new opportunities to promote international collaboration, enhancing adaptive capacity for all involved.
British-Irish Council Environment Work Programme	The Scottish Government shares information and best practice with the British-Irish Council governments. Adaptation Scotland and the Scottish Government have both taken part in bilateral exchange with Ireland.

Other international connections on adaptation.	Adaptation initiatives across the Scottish Government also have international connections. Through the Horizon 2020 EU project, Scotland's Rivertrack flood warning technology is being piloted in campsites across Catalonia. This will help campsite owners fulfil their obligations to have flood plans and alert owners and holiday makers to rising water levels. Scottish Government is also involved in the EU Interreg Building with Nature project and leads a work stream looking at how catchment-based building with nature (natural flood management) can help manage fluvial flood risk. The Dynamic Coast project team has also been engaging with the Interreg coastal work stream led by the Netherlands.
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**Associated Risks** (from the UK Climate Change Risk Assessment 2017)

<b>I11:</b> Risks from weather related shocks to international food production and trade.	<b>I12:</b> Imported food safety risks.
<b>I13:</b> Risks and opportunities from long term, climate-related changes in global food production.	<b>I14:</b> Risks to the UK from climate-related international human displacements.
<b>I15:</b> Risks to the UK from international violent conflict.	<b>I16:</b> Risks to international law and governance.
<b>I17:</b> Opportunities from changes to international trade routes.	

## Climate Change Adaptation Programme – UK Climate Change Risk Assessment

The UK Government is required under the 2008 Climate Change Act to publish a UK wide Climate Change Risk Assessment (UKCCRA) every five years, assessing the 'risks for the UK from the current and predicted impacts of climate change'. The first UKCCRA was published in 2012.

In 2016, the [Committee on Climate Change](#) published the [UK Climate Change Risk Assessment Evidence Report](#) and [Synthesis Report](#), and a [National Summary for Scotland](#). In January 2017 the UK Government published the (second) [UK Climate Change Risk Assessment 2017](#) including a contribution from Scotland.

The Evidence Report used the concept of urgency to summarise the findings of the analysis, variously identifying 'more action needed', 'research priority', 'sustain current action' and 'watching brief' categories. It highlighted:-

- The need for more action to address flood risks;
- The potential for water scarcity;
- Heat related impacts on health and wellbeing;
- Risks to the natural environment;
- Risks of food price volatility; and
- New and emerging pest and disease risks, especially for Scotland's forestry.
- Some actions identified as priorities for other parts of the UK have been shown to have a different urgency category for Scotland at this stage.
- UKCCRA2 will feed into the development of the next UK National Adaptation Programme as well as the national adaptation programmes of the devolved administrations.

UK Climate Change Risk Assessment: risks summary Source - ADAPTATION SUB-COMMITTEE

<b>Flooding and coastal change risks to communities, businesses and Infrastructure (Ch3, Ch4 Ch5, Ch6)</b>	<b>MORE ACTION NEEDED</b>
<b>Risks to health, well-being and productivity from high temperatures (Ch5, Ch6)</b>	
<b>Risk of shortages in the public water supply, and for agriculture, energy generation and Industry (Ch3, Ch4, Ch5, Ch6)</b>	
<b>Risks to natural capital, including terrestrial, coastal, marine and freshwater ecosystems, soils and biodiversity (Ch3)</b>	
<b>Risks to domestic and international food production and trade (Ch3, Ch6, Ch7)</b>	
<b>New and emerging pests and diseases, and Invasive non-native species, affecting people, plants and animals (Ch3, Ch5, Ch7)</b>	<b>RESEARCH PRIORITY</b>
<b>NOW</b> -----> <b>RISK MAGNITUDE</b> -----> <b>FUTURE</b> <b>LOW</b> <b>MEDIUM</b> <b>HIGH</b>	

## Climate Change Adaptation Programme – Monitoring and Evaluation Framework

Monitoring and Evaluation is integral to the outcomes based approach and encourages M&E to be considered at all stages of adaptation policy development.

The following principles will guide the development of the framework:

**PRINCIPLE 1:** Indicators to measure progress will be considered *at the same time* that planned outcomes are identified. This will encourage the development of *measurable* objectives to enable:

- external evaluation of progress
- internal evaluation of delivery and progress
- timely changes to the programme in response

**PRINCIPLE 2:** The adaptation process will be monitored to assess whether the programme actions are taking place and that policies and interventions are on track. Process indicators support accountability in the short term, but also monitor the implementation of actions which are aimed at achieving long-term outcomes out-with the usual programme timeframes.

**PRINCIPLE 3:** The framework will link the adaptation process to adaptation outcomes and discourage the listing of policies and actions without considering their potential effectiveness.

**PRINCIPLE 4:** The identification of outcome and process milestones will be encouraged to assess interim progress. Routinely identifying milestones and targets, specifying a timetable and considering potential effectiveness, will aid the reporting process and enable the delivery of flexible adaptation strategies.

**PRINCIPLE 5:** Existing indicators and monitoring frameworks will be utilised where appropriate. This will facilitate integration of adaptation across other policy areas, help to align M&E mechanisms and minimise reporting effort.

**PRINCIPLE 6:** Improvement and learning underpins the framework- by identifying what we *need* to measure not just what we know we *can*, the framework can be used as a tool to highlight monitoring gaps which could be filled by future adaptation measures.

**Indicators to monitor progress towards high-level outcomes:** These indicators will capture key elements at the heart of each of the Programme's outcomes. Indicators at this high level will have a clear relationship to Scotland's National Performance Framework.

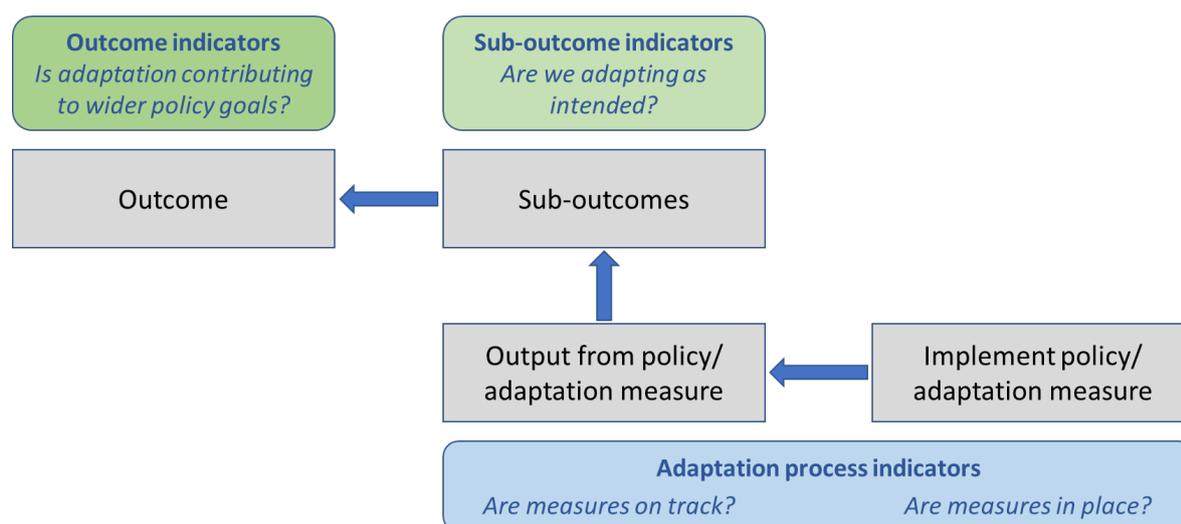
Monitoring allows us to evaluate the ability of the adaptation programme to increase adaptive capacity and reduce Scotland’s vulnerability to climate change, and evaluate the adaptation programme in the context of contribution to wider government goals and performance framework.

**Indicators to monitor progress towards sub-outcomes:** These indicators will focus on the critical components that are required to progress towards the outcome. Initial focus will consider what evidence is needed to properly assess progress (identifying what we *need* to measure not just what we know we *can* measure). The emphasis should not be on ‘what we are doing?’ but on ‘is it working?’

This monitoring allows us to evaluate outcome progress and the contribution of adaptation measures to that progress.

**Indicators to monitor the adaptation process:** These indicators will monitor ‘what is being done?’ to address the critical outcome components. They will capture the qualitative and quantitative evidence needed to ascertain if the adaptation measures are being adequately implemented.

This monitoring allows us to evaluate the potential for measures to effectively and efficiently deliver the adaptation outcomes. In the absence of outcome indicators or where changes to outcomes will only be detectable over a long timeframe, these may act as proxy indicators for adaptation progress (with the assumption that successful implementation will contribute to programme outcomes in the long-run).



Overview of the planned monitoring and evaluation framework for the second SCCAP

Where appropriate, the indicators will draw upon the monitoring frameworks in all relevant policy areas which are already in place or being developed. In some sectors, there is currently limited data available but as more data and

associated monitoring arrangements are being developed, these will be incorporated into the monitoring framework where appropriate. We will continue to develop the approach as we learn from the implementation process.

## **Governance of the Monitoring Framework**

As with the commitment in the Climate Change Plan, we will set up a Governance Body to oversee the monitoring and implementation of the Adaptation Programme.

The Governance Body will have an important role in ensuring that we remain on track towards delivering our outcomes and continue to improve policy design and implementation. The key functions will be:

- Reviewing monitoring information and other relevant data to assess progress against outcomes in the Programme.
- Providing advice to Scottish Ministers on the monitoring information.
- Producing an annual monitoring report for inclusion in the annual progress report published by the Scottish Government.

This Body will be made up of senior Scottish Government officials representing the key sectors in the Programme, and a non-Scottish Government representative to provide an independent overview and external scrutiny of the monitoring process.

The Body will report to the Scottish Ministers and may engage with and seek input or advice as appropriate from any external body including the Committee on Climate Change Adaptation Sub-Committee, who will continue to provide independent advice to the Scottish Government.

The suite of monitoring indicators in this Programme and our overall monitoring approach will be subject to ongoing review and we will continue working with the Committee on Climate Change Adaptation Sub-Committee and the Scottish Parliament to ensure robust and effective monitoring of the Plan's implementation.

## Strategic Environmental Assessment

The Environmental Report concludes that the draft Programme is likely to have significant positive environmental effects on climatic factors, by drawing together relevant adaptation measures to maximise their impact, capitalise on synergies and addressing any gaps. This approach to climate change adaptation can also optimise environmental benefits more widely, with likely positive environmental effects to biodiversity, population and human health, air, soil, water, material assets, cultural heritage and landscape.

The environmental assessment has also identified the potential for mixed / uncertain effects arising from future adaptation measures at the local level. Individual projects would however be subject to consideration through the relevant regulatory regimes and appropriate mitigation applied.

Finally, the Environmental Reports sets out opportunities for enhancement linked to the 7 draft programme outcomes.

The full Strategic Environmental Assessment is available on the Scottish Government website.

**Q8. What are your views on the accuracy and scope of the information used to describe the SEA environmental baseline set out in the Environmental Report? (Please give details of additional relevant sources)**

**Q9. What are your views on the predicted environmental effects as set out in the Environmental Report?**

**Q10. What are your views on the findings of the SEA and the proposals for mitigation and monitoring of the environmental effects set out in the Environmental Report?**

## Consultation Questionnaire

**Q1. Do you agree with our outcome-based approach to adaptation in Scotland?**

**Q2. Do you agree that a National Forum on Adaptation should be established to facilitate discussion on climate change adaptation?**

**Q3. Do you agree that climate change adaptation behaviours should be included in the Programme?**

**Q4. Do you agree that an integrated approach should be taken to monitoring and evaluation?**

**Q5. Do you agree with our long term vision for adapting to climate change in Scotland?**

**Q6. Does the Programme identify the right outcomes for Scotland over the next five years?**

**Q7. Are there any additional policies that should be included in the outcomes?**

**Q8. What are your views on the accuracy and scope of the information used to describe the SEA environmental baseline set out in the Environmental Report? (Please give details of additional relevant sources)**

**Q9. What are your views on the predicted environmental effects as set out in the Environmental Report?**

**Q10. What are your views on the findings of the SEA and the proposals for mitigation and monitoring of the environmental effects set out in the Environmental Report?**

## Responding to this Consultation

1. Please respond to this consultation by **Tuesday, 9 April 2019**.
2. You can view and respond to this consultation online at:  
<https://consult.gov.scot/energy-and-climate-change-directorate/adaptation-programme-2019-2024/>
3. You can save and return your responses while the consultation is still open. Please ensure that consultation responses are submitted before the closing date of **Tuesday, 9 April 2019**.
4. If you are unable to respond online, please complete the Respondent Information Form at Annex (see 'Handling your Response' below) and send with your completed questionnaire to:

Climate Change Adaptation Team  
Scottish Government  
Area 3F South  
Victoria Quay  
Edinburgh  
EH6 6QQ

Or by email to [climatechangeadaptation@gov.scot](mailto:climatechangeadaptation@gov.scot)

5. Questions are raised throughout the consultation but they can all be found and answered in the questionnaire at the Annex to this consultation paper.

## Handling your Response

6. If you respond online using the Scottish Government's consultation platform, Citizen Space (<http://consult.scotland.gov.uk>), you will be directed to the Respondent Information Form. Please indicate how you wish your response to be handled and, in particular, whether you are happy for your response to be published.
7. If you are unable to respond through Citizen Space, please complete and return the Respondent Information Form which is also included in the Annex to this document. If you ask for your response not to be published, we will regard it as confidential, and we will treat it accordingly.
8. All respondents should be aware that the Scottish Government is subject to the provisions of the [Freedom of Information \(Scotland\) Act 2002](#) and would therefore have to consider any request made to it under the Act for information relating to responses made to this consultation exercise.

## Next Steps in the Process

9. Where respondents have given permission for their response to be made public, and after we have checked that they contain no potentially defamatory material, responses will be made available to the public at <https://consult.gov.scot/>.

10. If you used Citizen Space to respond, you will receive a copy of your response via email.

11. Following the closing date, all responses will be analysed and considered along with any other available evidence to help us. Responses will be published where we have been given permission to do so.

## Comments and Complaints

12. If you have any comments about how this consultation exercise has been conducted, please send them by email to [climatechangeadaptation@gov.scot](mailto:climatechangeadaptation@gov.scot).

## Scottish Government Consultation Process

13. Consultation is an essential part of the policy-making process. It gives us the opportunity to consider your opinion and expertise on a proposed area of work. You can find all our consultations online: <https://consult.gov.scot/>.

14. Responses will be analysed and used as part of the decision making process, along with a range of other available information and evidence. We will publish a report of this analysis within three months of the closing date of the consultation.

15. The consultation is also available in Easy Read and BSL. Alternative versions can be obtained by emailing [climatechangeadaptation@gov.scot](mailto:climatechangeadaptation@gov.scot) or writing to Climate Change Adaptation Team at the address in paragraph 4 above.

## Consultation on Scotland's Climate Change Adaptation Programme 2019-2024

### RESPONDENT INFORMATION FORM

**Please Note** this form **must** be completed and returned with your response.  
To find out how we handle your personal data, please see our privacy policy:  
<https://beta.gov.scot/privacy/>

Are you responding as an individual or an organisation?

Individual

Organisation

Full name or organisation's name

Phone number

Address

Postcode

Email

The Scottish Government would like your permission to publish your consultation response. Please indicate your publishing preference:

Publish response with name

Publish response only (without name)

Do not publish response

**Information for organisations:**

The option 'Publish response only (without name)' is available for individual respondents only. If this option is selected, the organisation name will still be published. If you choose the option 'Do not publish response', your organisation name may still be listed as having responded to the consultation in, for example, the analysis report.

We will share your response internally with other Scottish Government policy teams

who may be addressing the issues you discuss. They may wish to contact you again in the future, but we require your permission to do so. Are you content for Scottish

Government to contact you again in relation to this consultation exercise?

Yes

No

## Questionnaire Scotland's Climate Change Adaptation Programme 2019-2024

Respondents should take into consideration the information provided in this document alongside any other knowledge or personal experiences that could be relevant. All opinions are welcome.

We ask that you try to answer all the questions in each section, however, if you are unable to answer any question then please feel free to move on to the next.

There is a comments box below each question to allow you to set out your reasoning and provide general comments

### Q1. Do you agree with our outcome-based approach to adaptation in Scotland?

(Please tell us why in the comments box.)

Yes

No

Unsure

Any comments

**Q2. Do you agree that a National Forum on Adaptation should be established to facilitate discussion on climate change adaptation?**

**(Please provide details in the comments box below.)**

Yes

No

Unsure

Any comments

**Q3. Do you agree that climate change adaptation behaviours should be included in the Programme?**

**(Please provide details in the comments box below.)**

Yes

No

Unsure

Any comments

**Q4. Do you agree that an integrated approach should be taken to monitoring and evaluation?**

**(Please provide details in the comments box below.)**

Yes

No

Unsure

Any comments

**Q5. Do you agree with our long term vision for adapting to climate change in Scotland?**

**(Please tell us why in the comments box below.)**

Yes

No

Unsure

Any comments

**Q6. Does the Programme identify the right outcomes for Scotland over the next five years?**

**(Please provide details in the comments box below.)**

Yes

No

Unsure

Any Comments

**Q7. Are there any additional policies that should be included in the outcomes?**

**(Please provide details in the comments box below.)**

Yes

No

Unsure

Any comments

**Q8. What are your views on the accuracy and scope of the information used to describe the SEA environmental baseline set out in the Environmental Report? (Please give details of additional relevant sources)**

**(Please tell us why in the comments box.)**

Any comments

**Q9. What are your views on the predicted environmental effects as set out in the Environmental Report?**

**(Please tell us why in the comments box.)**

Any comments

**Q10. What are your views on the findings of the SEA and the proposals for mitigation and monitoring of the environmental effects set out in the Environmental Report?**

**(Please tell us why in the comments box.)**

Any comments



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