

## Scottish Climate Change Adaptation Programme – Water

### Purpose of this briefing

This LINK briefing from the Climate Adaptation Taskforce (CATF) is intended as a resource and reference to be used by LINK colleagues for information regarding Scottish Government policies relating to adaptation of interest to specific taskforce sectors. **Please note this briefing does not include any analysis of the specific adaptation policies**, although the CATF general concerns are detailed below, alongside links to our previous consultation response. The full Adaptation Programme can be viewed here: <http://www.scotland.gov.uk/Resource/0045/00451392.pdf>

### Scottish Climate Change Adaptation Programme (SAP) background

Climate change impacts are being felt now in Scotland, particularly in the natural environment. Scotland needs to act urgently to address the consequences and impacts of our changing climate. Scotland must reduce GHG emissions but also adapt how we run our economy, our society and how we look after our environment. Adaptation is the term used to describe our responses to a changing climate and its impacts – including building resilience. Adaptation is inevitable – the important thing is to plan early and to do it in the right way. With the publication of the SAP, it's essential that climate adaptation becomes a higher priority within Government - **building the resilience of Scotland's environment to climate change must be a priority at a time when our natural resource base needs to be valued as an important asset.**

The Climate Change (Scotland) Act 2009<sup>1</sup> requires Government to lay before the Scottish Parliament 'programmes for adaptation to climate change'. The Scottish Government has developed measures based on risks identified for Scotland in the UK Climate Change Risk Assessment (CCRA) 2012. The CCRA is however limited and does not adequately cover some impacts, such as sea-level rise or extreme weather events. Publication of the first Scottish Climate Change Adaptation Programme brings into force the adaptation requirement of the public bodies climate change duties, which requires that a public body must, in exercising its functions, act in the way best calculated to help deliver the Programme.

The programme contains an overall **Aim** – to increase the resilience of Scotland's people, environment and economy to the impacts of a changing climate. Within this are three **Themes** and relevant **Objectives** for the long-term (up to 2050), to facilitate achieving the Aim:

<b>Natural Environment</b>	<b>Buildings and Infrastructure</b>	<b>Society</b>
<i>Outcome: productive, healthy, diverse natural environment able to adapt to change</i>	<i>Outcome: well-managed, resilient infrastructure and buildings providing access to amenities and services needed</i>	<i>Outcome: strong, healthy, resilient communities which are well informed and prepared for changing climate</i>
N1: understand effects of climate change and impacts on the natural environment	B1: understand effects of climate change and impacts on buildings and infrastructure	S1: understand effects of climate change and impacts on people, homes and communities
N2: support a healthy and diverse natural environment with capacity to adapt	B2: provide knowledge, skills and tools to manage climate change impacts on buildings and infrastructure	S2: increase awareness of impacts of climate change to enable people to future extreme weather events
N3: sustain and enhance the benefits, goods and services the natural environment provides	B3: increase resilience of buildings and infrastructure to sustain and enhance benefits and services	S3: support health and emergency services to respond effectively to increased CC pressures

<sup>1</sup> <http://www.legislation.gov.uk/asp/2009/12/part/5/chapter/1>

## LINK'S general concerns with SAP

Some of our initial main concerns that the SAP contains few *new* policies or *new* resources and funding still stand - it is predominantly a collection of existing policies collected together to address the risks highlighted by the UKCCRA. In general there are also no specific **targets** and **timescales** attached to the programme, making progress difficult to assess. The CATF principle concerns are detailed below and our consultation response can be viewed here - many of our comments still apply: <http://www.scotlink.org/files/policy/ConsultationResponses/LINKResponseDraftSCCAP13.pdf>

- **Ecosystem approach:** We welcome that the SAP recognises that the natural environment provides benefits to Scotland in terms of resilience to climate change. However, we believe an ecosystem approach of 'working with nature' should be central to the SAP to; avoid maladaptation, ensure appropriate scale of action and provide a sustainable flow of benefits from ecosystems, such as flood attenuation (LINK Consultation: Section 1a/2a)
- **Greater clarity:** We welcome the long list of policies in the SAP, however, too many are vague, lack sufficient detail, and fail to outline the actions to be taken. This makes it difficult to confidently assess whether the SAP Objectives will be met. We recommend effort to further develop the policies (LINK Consultation: Section 2b/d).
- **Implementing existing legislation:** Whilst the SAP does include existing policies to improve the natural environment, LINK wants to see the SAP emphasise the need to fully implement all existing environmental legislation. Improving our environment will increase the resilience of the natural environment, society and economy to climate change impact (LINK Consultation: Section 2c).
- **Demonstrating action:** We welcome efforts to embed adaptation across Government but it is vital that adaptation is embedded throughout wider society too. Demonstration projects and an effective communication strategy must be included in the SAP to allow wider society to understand the need for effective adaptation and ensure appropriate adaptation action (LINK Consultation: Section 5b).

## Major climate impacts on water in Scotland

### *The quality of our soils*

We rely on soils to sustain biodiversity, support agriculture and forestry, regulate the water cycle and store carbon. Soils also have an historic environment value, as a proxy record of environmental change and for the preservation of archaeological deposits and artefacts. Soils and vegetation may be altered by changes to rainfall patterns and increased temperatures - as well as the way we use the land.

### *The health of our natural environment*

Climate change may affect the delicate balance of Scotland's ecosystems and transform Scotland's habitats and biodiversity, adding to existing pressures. Invasive non-native species may thrive, while a degraded environment may not be able to sustain productive land or water supply.

### *The availability and quality of water*

As our climate warms and rainfall patterns change, there may be increased competition for water between households, agriculture, industry and the needs of the natural environment. Summer droughts may become more frequent and more severe causing problems for water quality and supply.

### *The increased risk of flooding*

With climate change likely to alter rainfall patterns and bring more heavy downpours, we expect flood risk to increase in the future. This could impact on properties and infrastructure - with serious consequences for our people, heritage, businesses and communities.

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Registered HQ office: 2 Grosvenor House, Shore Road, Perth PH2 8BD tel 01738 630804 email [enquiries@scotlink.org](mailto:enquiries@scotlink.org)  
 Parliamentary office: 3rd Floor, Gladstone's Land, 483 Lawnmarket, Edinburgh EH1 2NT tel 0131 225 4345 email [parliamentary@scotlink.org](mailto:parliamentary@scotlink.org)

### *The performance of our buildings*

Climate change will have an impact on the design, construction, management and use of our buildings and surroundings. Whether retrofitting existing or building new, it is likely that there will be issues with water management (in flood and drought), weather resistance and overheating.

### *Infrastructure – network connectivity and interdependencies*

Our energy, transport, water, and ICT networks support services are vital to our health and wellbeing and economic prosperity. The effect of climate change on these infrastructure systems will be varied. They are likely to be impacted by an increase in disruptive events such as flooding, landslides, drought, and heatwaves. Our infrastructure is closely inter-linked and failure in any area can lead to wider disruption across these networks.

## **Areas of the SAP relevant to the Water Taskforce**

Relevant sections of the Programme are reproduced, verbatim, below. SAP references are included and, where applicable, the LINK consultation response references.

### **Role of Scottish Government**

It is vital that the Scottish Government provides clear leadership in promoting a sustainable approach to climate change adaptation (p24).

The Scottish Government is building partnerships to co-ordinate action across boundaries of organisations' responsibilities, through establishment of forums such as the Scottish Flood Forum and support for working partnerships such as the Scottish Flood Forecasting Service (SFFS)<sup>2</sup>, a joint initiative between the Scottish Environment Protection Agency (SEPA) and the Met Office so that both organisations can share their expertise to improve the accuracy of flood forecast for the whole of Scotland.

**Water** – increased risk of extreme weather events such as droughts or floods, resulting in a decline in agricultural productivity and damage to farm buildings and infrastructure. Intense rainfall events may lead to crop damage, soil compaction and erosion and inflict longer term damage to agricultural land. Working with land managers to consider natural flood management measures to reduce surface water runoff rates have a positive effect by decreasing water levels and increasing resilience to damage. Increased demand for water by the agricultural sector may lead to over abstraction – reducing water flow and quality which is detrimental to habitats. Drying of soils and peat bogs could limit their ability to regulate and purify water, leading to a decline in water quality. An increase in flooding and erosion is likely to affect water quality, as potential pollutants, such as sediment and nutrients, are transported into water courses (p40).

### **What's already being done**

The below sets out what is already being done to achieve the natural environment objectives in relation to impacts on the water sector:

***Policy:*** Understand the risks associated with coastal flooding through **development and implementation of local flood risk plans.**

***How it will deliver:*** Through development of local flood risk plans SEPA, local authorities and other responsible authorities will identify potential causes and consequences of flood risk and prioritise appropriate mitigation measures (N1-8, p47).

***Policy:*** **Developing datasets to support flood risk, river and coastal management.** A requirement of the Flood Risk Management (Scotland) Act is to develop a programme to integrate necessary data.

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<sup>2</sup> SFFS [http://www.sepa.org.uk/flooding/flood\\_forecasting\\_service.aspx](http://www.sepa.org.uk/flooding/flood_forecasting_service.aspx)

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***How it will deliver:*** Datasets of flood risk and coastal change information available to all flood risk management practitioners to inform effective flood risk, river and coastal management practitioners, including a programme of data capture using Light Detection and Ranging (LiDAR) and Scottish Detailed River Network (SDRN), will inform effective decision making (N1-10, p48).

***Policy:*** **The Scottish Planning Policy** includes green networks, green space, street trees and other vegetation, green roofs, wetlands and other water features, and coastal habitats in helping Scotland to mitigate and adapt to climate change.

***How it will deliver:*** Helps people to adapt by providing other benefits like sustainable drainage, flood alleviation (N2-2, p50).

***Policy:*** **Implement the Land Use Strategy (LUS) and associated action plan** - incorporates principles for sustainable land use and includes a commitment to investigate the relationship between land use change and ecosystems processes to identify adaptation priorities.

***How it will deliver:*** The LUS regional pilots will be utilising the LUS Principles and taking an ecosystems approach to consider land use and land use change in their area (N2-8, p52).

***Policy:*** **Implement River Basin Management Plans (RBMP).** The RBMPs set out how we can enhance the environmental quality of rivers, lochs and seas, delivering greater benefits for the environment, and safeguarding them for future generations.

***How it will deliver:*** These will help ensure resilience to climate impacts in terms of maintaining and improving water quality (N2-17, p54; LINK 2c).

***Policy:*** **Support the development of Local Flood Risk Management Plans.** This will manage waters and coasts at a river catchment level and include local flood risk management plans. Some aspects of this plan-led approach are innovative, particularly the heightened approach to sustainable flood risk management. This work will include research demonstration projects to assess the benefits of working with nature to lower flood risk.

***How it will deliver:*** Local plans will include opportunities to slow or store flood water by enhancing, altering or restoring natural features and characteristics across catchments (natural flood management). This will give us robust evidence to encourage local authorities to implement natural flood management and build in a level of protection that over the years could mitigate the future impacts of climate change (N2-18, p55; LINK 2c).

***Policy:*** **Improve the condition of rivers Special Areas of Conservation** as part of River Basin Management Plans.

***How it will deliver:*** Implementing river basin management plans will be critical in ensuring that inland water bodies achieve good or better status. Special Areas of Conservation are a mechanism for helping nature adapt (N2-19, p55; LINK 2c).

***Policy:*** Promote the **Farming For A Better Climate Programme.** This is an advisory programme for land managers to help them mitigate climate change and adapt to the impacts of climate change.

***How it will deliver:*** **Raising awareness** of the challenges and opportunities that climate change will bring to land managers. **Transfer knowledge and practical skills** to increase adaptive capacity of Scottish farming. Topics covered include soil aeration and drainage maintenance, better use of water for irrigation and opportunities for natural flood management (N2-21, p56).

***Policy:*** Support the projects **Future Proofing Scotland's Farming, Scotland's Farming Innovation Network** and **Planning for Profit.** These are skills development programmes that aim to prepare agricultural businesses for the impacts, opportunities and risks that both climate and economic change present.

***How it will deliver:*** **Raising awareness** of the challenges and opportunities that climate change will bring to land managers. **Transfer knowledge and practical skills** to increase adaptive capacity of Scottish farming, as well as developing greater business resilience across the sector.

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Topics covered include building soil fertility, effective field drainage, reducing flood risk and improving soil performance and to protect water courses (N2-22, p56).

***Policy:*** **Gather data to inform Scottish Water's investment programme** from 2015 onwards which will address adaptation needs of water infrastructure.

***How it will deliver:*** Understand how future and existing assets and operations should be adapted to minimise the threats from climate change. Information on the programme and how the water industry operates is available from the Scottish Government website (B2-16, p74)

***Policy:*** **Integrated approach to catchment modelling.**

***How it will deliver:*** Improved monitoring of rainfall, river and surface water flows (B2-17, p75).

***Policy:*** **Manage leakage to water distribution network.** Annual leakage levels agreed between Scottish Water, Scottish Government and Regulators.

***How it will deliver:*** Reducing leakage reduces the overall demand on available water and energy supplies giving greater resilience should there be either water or energy constraints (B2-18, p75; LINK 3c).

***Policy:*** **Review and consolidate planning advice notes (PAN).** Revised PANs are to be underpinned by the principles of sustainable flood risk management.

***How it will deliver:*** The consolidated PAN on flooding, water and drainage will provide advice and guidance for applicants, developers and local authorities on the role of sustainable flood risk management. It will highlight the role of climate change adaptation with regards to flood risk and the water environment and promote the avoidance of development in medium to high flood risk areas. It will also provide guidance on sustainable drainage systems (SUDS) (B3-2, p76)

## Research

The Scottish Government is funding research into the resilience of Scotland's biodiversity to climate change and land-use change. There are currently no specific research programmes investigating water adaptation detailed in the SAP (p62).

## Proposals - potential new policies

There are currently only 3 proposals detailed which may become policies if needed during the lifetime of the SAP, only 1 of which is relevant to this sector:

**1) Greater recognition of the role of integrated land management in tackling climate change** (as opposed to sector-based responses) and this being backed up by Scottish Government policy and support mechanisms. Land Use Strategy Regional Land Use Framework pilots will be utilising the LUS principles and taking an ecosystem approach to consider land use and land use change in their area in an integrated manner (N3-17, p63).

The CATF specifically raised the following during consultation, which is absent from the SAP: Review of Water Framework Directive (WFD) targets. We believe that there is also a need to understand how climate change is likely to affect the achievement of WFD targets e.g. how it is likely to impact on changes to river flows and consequent effects on pollutant dilution capacity, and many other factors. We recommend that this is included in the SAP (LINK 2b, p11).

## UK Climate Change Risk Assessment

There are several specific UKCCRA water impacts not being addressed by this Programme (technical annex p105):

<b>Risk Not Addressed</b>	<b>Reason for Exclusion</b>
Biodiversity risks due to warmer rivers and lakes	This is a prediction rather than a risk.
Saline intrusion	Too uncertain - await second UKCCRA to establish if evidence base has improved.
Impacts on angling, gaming or coarse fishing	Low risk until 2080s – defer to future Programmes.
Demand by water suppliers	Low risk for Scotland – defer to future Programmes.
Raw water quality	Science base limited, await second UKCCRA to establish if evidence base has improved.

However, risks that are not considered an issue now in Scotland may become problems in the future, one reason why LINK called for the SAP to set a long-term direction (LINK Consultation<sup>3</sup> Section 2). There may also be other potential climate change risks to your sector that are not addressed on top of the above, especially those not identified in the UKCC Risk Assessment. Of those risks that are addressed in the programme, many may be inadequately dealt with.

<sup>3</sup> <http://www.scotlink.org/files/policy/ConsultationResponses/LINKResponseDraftSCCAP13.pdf>

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