Scottish Environment LINK

Scottish Climate Change Adaptation Programme - Agriculture

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[1] 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:

Natural Environment	**Buildings and Infrastructure**	**Society**
Outcome: productive, healthy, diverse natural environment able to adapt to change	*Outcome: well-managed, resilient infrastructure and buildings providing access to amenities and services needed*	*Outcome: strong, healthy, resilient communities which are well informed and prepared for changing climate*
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

1 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 Agriculture in Scotland

The productivity of our agriculture
A warming climate has the potential to improve growing conditions in Scotland and increase the productivity of our agriculture and forestry. However, climate change will also pose a number of threats, from more variable and extreme weather to the spread of pests and diseases, which may limit this potential.

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.

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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.

Areas of the SAP relevant to the Agriculture 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 has invested in a number of initiatives to encourage agricultural businesses to work collectively to adapt to the impacts of a changing climate. Through programmes such as Farming for a Better Climate[2], Future Proofing Scotland's Farming[3], and Cheviot Futures[4], farmers are provided with on-going technical advice and supported by industry experts to strengthen their businesses to make them more resilient to climate change.

Agriculture – Scottish agriculture may experience positive change in some areas and negative change in others (p40).

Primary producers in Scotland may benefit from both improved growing and grazing conditions and higher global food prices. However, these positive impacts could be largely or partially offset by negative impacts. These include an 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. An alteration in the prevalence and spread of pests and diseases affecting either livestock or crops may also occur, lowering yields. Intense rainfall events may lead to crop damage, soil compaction and erosion and inflict longer term damage to agricultural land.

The variability in weather conditions is already making farming more of a challenge. Farmers have always had to work with the weather and adapting to climate change is already becoming part of routine farming business. By taking steps now, such as securing water supplies for irrigation or reducing soil erosion risks, farming businesses are reducing the threats from the impacts of climate change.

Land based businesses are also well placed to help wider society adapt to climate change. For example, 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. Additional benefits include the prevention of soil poaching by livestock and the control of livestock parasites, such as the snail that causes liver fluke, that thrive in waterlogged soil. Many adaptation measures that can be implemented on farm also provide cross-cutting benefits to water and air quality and biodiversity. For example, the use of cover crops to improve soil structure by increasing soil organic matter has benefits for biodiversity. They provide a habitat for many different species above ground as well as improving the activity of microbes in the soil.

[2] FFBC http://www.sruc.ac.uk/info/120175/farming_for_a_better_climate
[3] FPSF http://www.soilassociation.org/innovativefarming/futurefarminginscotland/futureproofingscotlandsfarming
[4] Cheviot Futures http://www.cheviotfutures.co.uk/

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The pattern of land use may also change, for example the expansion of land used for agriculture – and potential displacement of other land uses to new areas – could have a potentially negative impact on biodiversity. Efforts to increase agricultural yields could have damaging effects on soils, contributing to ecosystem degradation. Increased demand for water by the agricultural sector may lead to over abstraction – reducing water flow and quality which is detrimental to habitats.

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 agricultural sector:

Policy: Continue to fund the **Strategic Research Portfolio in Rural and Environmental Science** to improve the evidence base on the likely impacts of climate change on Scottish agriculture and ensure effective knowledge transfer of research outputs.
How it will deliver: Research results will reduce uncertainty and provide the basis of future policy development and advisory activity for the agricultural sector (N1-11, p48; LINK 2d).

Policy: Deliver the current programme of research work on the effects of climate change on **Scottish food security**.
How it will deliver: Research will assess the impacts of climate change on agriculture and food production in Scotland and ways in which impacts can be mitigated against and or adapted to (N1-12, p48).

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 in Scottish Borders and Aberdeenshire 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: 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 which includes web- based advice & guidance, demonstration farms, farm events, seminars, conferences and raising awareness through publications in farming press.
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. Topics covered include soil aeration and drainage maintenance, sheep health and breed choice, 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. Topics covered include building soil fertility, effective field drainage, reducing flood risk and improving soil performance and planting trees for shelter belts and to protect water courses (N2-22, p56).

Policy: **Implement the EU reform of the Common Agricultural Policy** post 2014 to ensure that climate change adaptation objectives are considered.
How it will deliver: There are a number of options that could be used to support adaptation in agriculture including, capital grants for resilience measures such as improved farm infrastructure and buildings, funding for skills initiatives that provide training and guidance on adaptation and

financial incentives to support the uptake of adaptation measures on farm to encourage uptake and improve farm business performance (N3-1, p58; LINK 2d).

Policy: **Support Scotland's Animal Health Regime** to help prevent the introduction and spread of harmful organisms. Climate change may lead to the introduction and spread of livestock diseases and threats to public health.
How it will deliver: Animal Health Regime Veterinary Surveillance programme has an important role for early detection of new and emerging diseases in livestock. Contingency plans set out actions to be taken in the event of a serious outbreak of an animal pest or disease (N3-2, p58).

Policy: **Sourcing For Growth Initiative** A knowledge hub to match food manufacturing companies with producers of quality Scottish produce has been set up to build on the nation's growing gourmet reputation.
How it will deliver: The Sourcing for Growth initiative will help Scottish producers prepare to meet manufacturers' demands for raw materials. It will enable manufacturers and farmers to work together to take advantage of the opportunities of Scotland's growing food industry. This will encourage local businesses to work together therefore reducing supply chains and help protect Scotland's food producing markets (N3-16, p61).

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 agricultural 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).

UK Climate Change Risk Assessment

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

Risk Not Addressed	Reason for Exclusion
Agricultural land lost due to coastal flooding	Low risk – although may present local issues
Changed recharge and groundwater levels	Not a current risk for Scotland – defer to future Programmes
Reduction in milk production due to heat stress	Low risk for Scotland – defer to future Programmes
Livestock heat stress factors	Low risk for Scotland – defer to future Programmes
Increase in prevalence of certain vector-borne diseases (ticks and lymes)	Overall low risk, may present local issues due to changes in ecosystems

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[5] 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.

[5] http://www.scotlink.org/files/policy/ConsultationResponses/LINKResponseDraftSCCAP13.pdf