May 2024

Climate change, adaptation, resilience and collaboration

Richard Millar

Head of Adaptation – Climate Change Committee

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1. Climate change risks to Scotland

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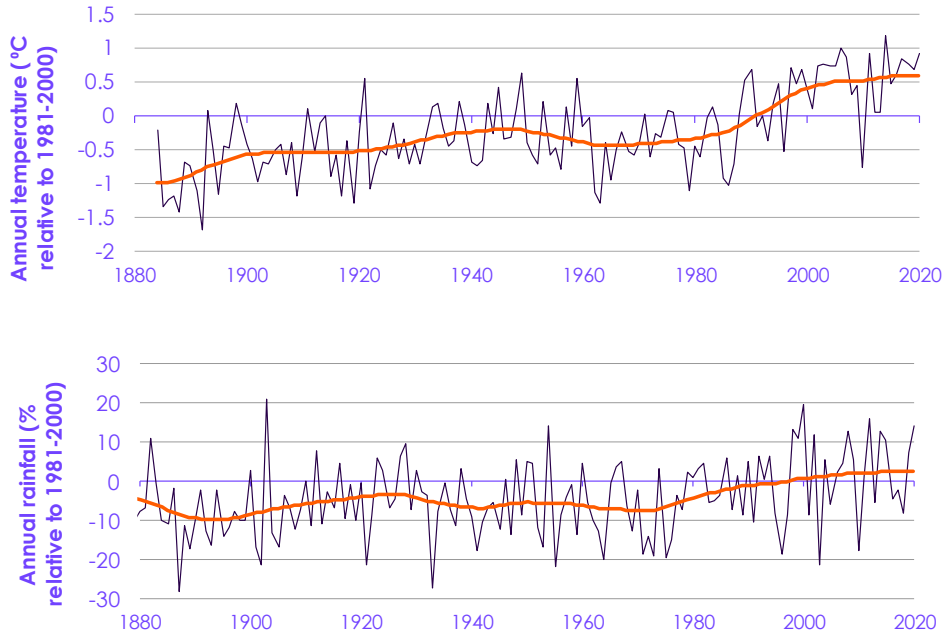
Observed climate change

- Scotland's annual average temperature over the last decade (2013-2022) is now around 0.65°C warmer than it was around 30 years ago
- Scotland's 10 warmest years on record have all occurred since 1997.
- 2022 was the warmest year ever recorded in Scotland with annual average temperatures of 8.5°C. Scotland's hottest ever day was seen in July 2022 with temperatures reaching 34.8°C in the Scottish Borders.
- Summers and winters around 11% and 7.5% wetter respectively.
- In October 2023, Storm Babet hit the UK, with record-breaking rainfall totals and river levels occurring in North-eastern Scotland. Some areas in Angus and Aberdeenshire saw over 150 mm of rainfall in 36 hours.

Observed climate change in Scotland



Source: UK Met Office

1. Climate change risks to Scotland

Climate change poses many risks to Scotland's people, economy, infrastructure and ecosystems

N1 Risks to terrestrial species and habitats	**N2** Risks to terrestrial species and habitats from pests, pathogens and INNS	**N4** Risk to soils from changing conditions, including seasonal aridity and wetness	**N5** Risks to natural carbon stores and sequestration from changing conditions	**N6** Risks to and opportunities for agricultural and forestry productivity	**N7** Risks to agriculture from pests, pathogens and INNS	**N8** Risks to forestry from pests, pathogens and INNS	**N11** Risks to freshwater species and habitats
N12 Risks to freshwater species and habitats from pests, pathogens and INNS	**N14** Risks to marine species, habitats and fisheries	**N16** Risks to marine species and habitats from pests, pathogens and INNS	**N17** Risks and opportunities to coastal species and habitats	**I1** Risks to infrastructure networks from cascading failures	**I2** Risks to infrastructure services from river and surface water flooding	**I5** Risks to transport networks from slope and embankment failure	**I8** Risks to public water supplies from reduced water availability
I12 Risks to transport from high and low temperatures, high winds, lightning	**H1** Risks to health and wellbeing from high temperatures	**H3** Risks to people, communities and buildings from flooding	**H4** Risks to people, communities and buildings from sea level rise	**H6** Risks and opportunities from summer and winter household energy demand	**H8** Risks to health from vector-borne diseases	**H11** Risks to cultural heritage	**H12** Risks to health and social care delivery
H13 Risks to education and prison services	**B1** Risks to business sites from flooding	**B2** Risks to business locations and infrastructure from coastal change	**B6** Risks to business from disruption to supply chains and distribution networks	**ID1** Risks to UK food availability, safety, and quality from climate change overseas	**ID5** Risks to international law and governance from climate change overseas that will impact the UK	**ID4** Risks to the UK from international violent conflict resulting from climate change	**ID9** Risk to UK public health from climate change overseas
ID7 Risks from climate change on international trade routes	**ID10** Risk multiplication from the interactions and cascades of named risks across systems and geographies	**N3** Opportunities from new species colonisations in terrestrial habitats	**N9** Opportunities for agricultural and forestry productivity from new species	**N10** Risks to aquifers and agricultural land from sea level rise, saltwater intrusion	**N15** Opportunities for marine species, habitats and fisheries	**N18** Risks and opportunities from climate change to landscape character	**I3** Risks to infrastructure services from coastal flooding and erosion
I4 Risks to bridges and pipelines from flooding and erosion	**I6** Risks to hydroelectric generation from low or high river flows	**I7** Risks to subterranean and surface infrastructure from subsidence	**I9** Risks to energy generation from reduced water availability	**I10** Risks to energy from high and low temperatures, high winds, lightning	**I13** Risks to digital from high and low temperatures, high winds, lightning	**H2** Opportunities for health and wellbeing from higher temperatures	**H5** Risks to building fabric
H7 Risks to health and wellbeing from changes in air quality	**H9** Risks to food safety and food security	**H10** Risks to health from poor water quality and household water supply interruptions	**B3** Risks to businesses from water scarcity	**B5** Risks to business from reduced employee productivity – infrastructure disruption and higher temperatures	**B7** Opportunities for business - changing demand for goods and services	**N13** Opportunities to marine species, habitats and fisheries	**I11** Risks to offshore infrastructure from storms and high waves
B4 Risks to finance, investment, insurance, access to capital	**ID8** Risk to the UK finance sector from climate change overseas	**ID2** Opportunities for UK food availability and exports	**ID3** Risks to the UK from climate-related international human mobility	**ID6** Opportunities (including Arctic ice melt) for international trade routes			

More Action Needed

Further Investigation

Sustain Current Action, Watching Brief

2. Scotland's preparedness for climate change

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Progress report 2023

Climate Change Committee

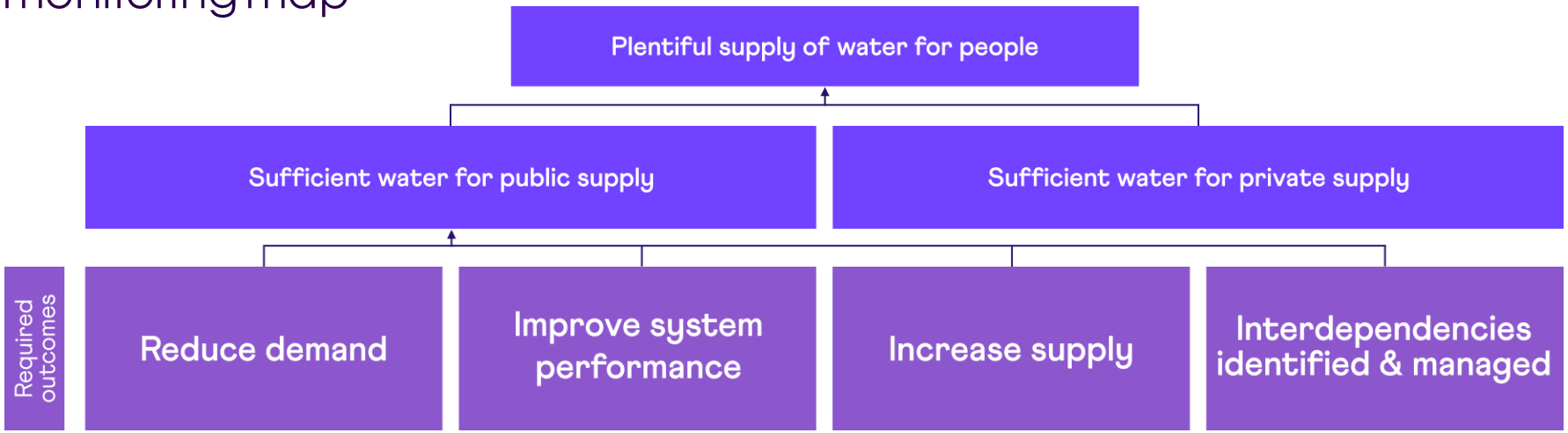
November 2023

Adapting to climate change
Progress in Scotland

Climate Change Committee

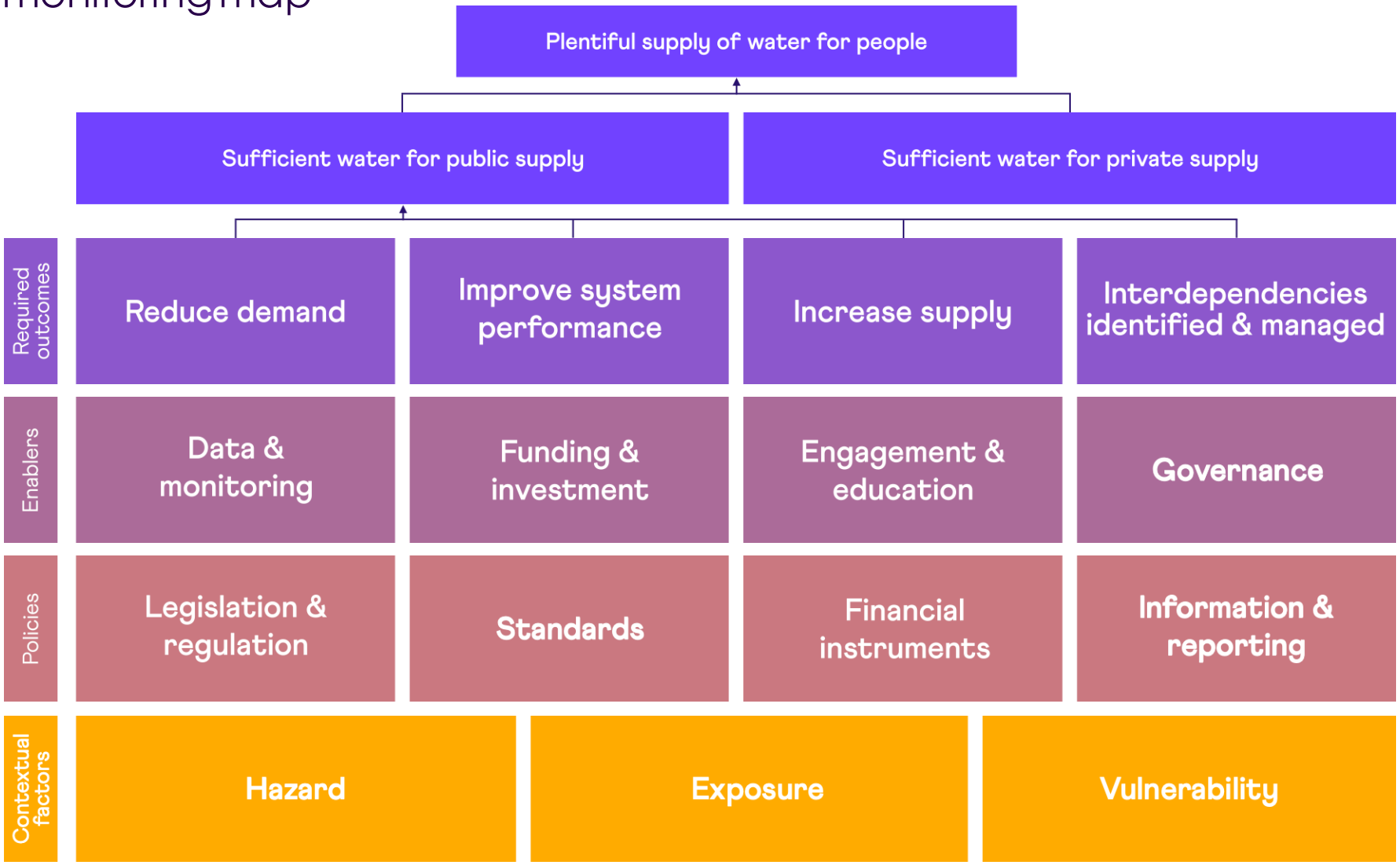
2. Scotland's preparedness for climate change

Water supply monitoring map



2. Scotland's preparedness for climate change

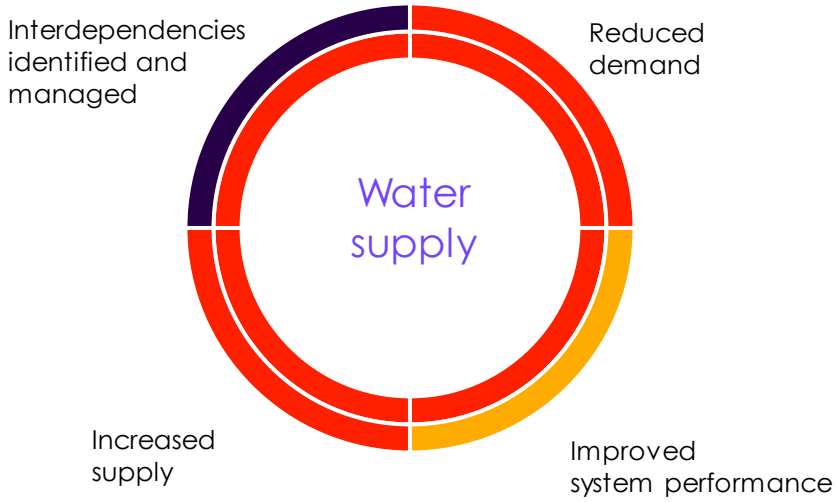
Water supply monitoring map

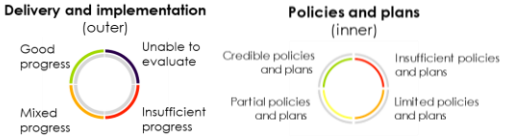


2. Scotland's preparedness for climate change
Evaluating progress in adapting water supply

- Household per capita water consumption remains high. The commitment to bring forward legislation to modernise the water industry may improve the score in future.
- There was a small reduction in leakage and fewer disruptions but no progress on revising leakage targets.
- Water deficits are projected for some resource zones in Scotland by 2050 but there are currently no plans to address this.
- There is no systematic tracking of cascading impacts to the water system and no consideration of interdependencies in existing policy.

Progress in adapting Scotland's water supply to climate change





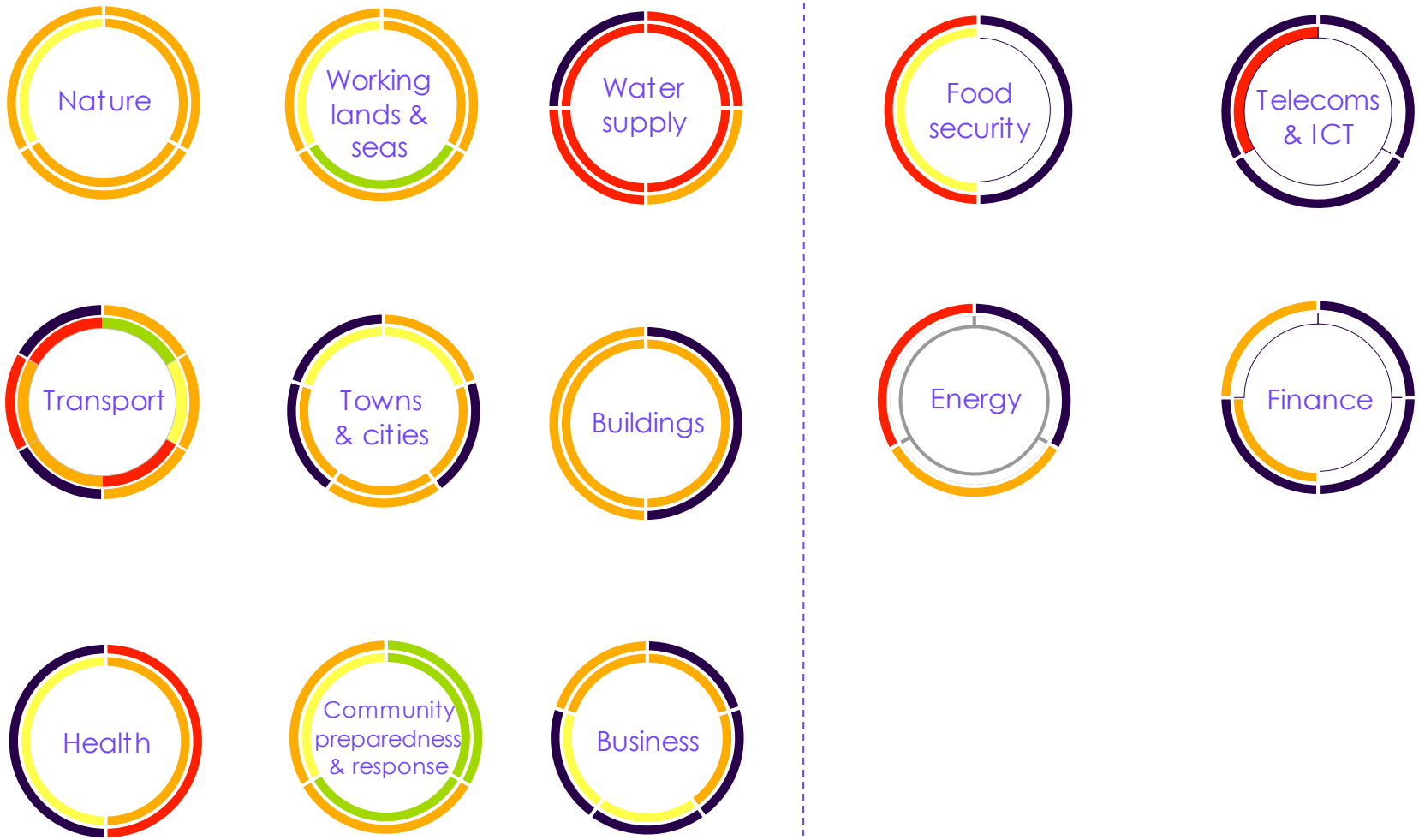
Source: CCC (2023) *Adapting to climate change – Progress in Scotland*

2. Scotland's preparedness for climate change

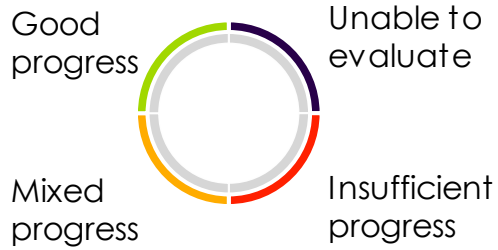
Overview of preparedness

Devolved policy areas

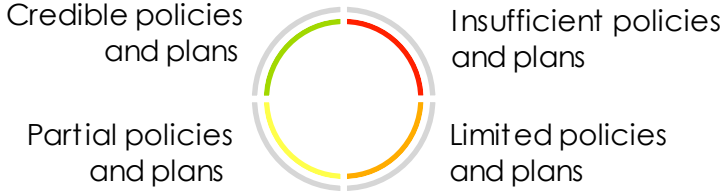
Largely reserved policy areas



Delivery and implementation (outer)



Policies and plans (inner)



Note: White is for mainly reserved policy areas

3. Priorities for the next Scottish National Adaptation Plan

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Learnings from our 2023 progress report

Vision

- Adaptation plans need a clear vision for what 'good' looks like.
- Should be co-developed with stakeholders and practitioners.
- Encourages a step-wise approach to achieving overall outcomes.
- Creates a target which progress can be measured towards.

Ambition and urgency

- Vision must be of sufficient ambition and address the urgency of delivery.
- Links to delivery should be clear.
- Priorities should be highlighted.
- Policy must support actors to go 'above and beyond'.

Enablers

- Plans should recognise and assess key enabling factors and barriers.
- Effective governance mechanisms should be considered.
- Roles and responsibilities should be clear.
- Plans should be clearly linked to funding and investment.
- Research and data should be included.

Framework

- Plans should work off a framework aligned across national policy goals (e.g. Nature, Net Zero, social justice).
- Clear framework allows goals, plans and delivery to be joined-up.
- Monitoring and evaluation should be a key component.
- Flexibility in the policy framework embeds adaptability.

3. Priorities for the next Scotland National Adaptation Programme

Programme-level asks for SNAP3

In our 2023 progress report we identified four programme level asks for SNAP3:

- Quantified targets for climate resilience
- Clear linkages between SNAP activities and outcomes
- Clear ownership for outcome delivery
- Strengthened monitoring and evaluation

We provided feedback on the draft SNAP3 in April 2024 on the extent to which these are delivered.

Climate Change Committee

Climate Change Committee

The UK's independent adviser on tackling climate change

Màiri McAllan MSP
Cabinet Secretary for Wellbeing Economy, Net Zero and Energy
Scottish Government
St. Andrew's House
Regent Road
Edinburgh
EH1 3DG

Climate Change Committee
1 Victoria Street,
Westminster, London,
SW1H 0ET
w theccc.org.uk

Date 23 April 2024

Dear Cabinet Secretary,

This letter sets out the Climate Change Committee's response to the draft third Scottish National Adaptation Plan (SNAP3), as requested by the Scottish Government as part of their consultation concluding on 24 April. This builds on our Scottish Adaptation Progress Report, published in 2023, that summarised evidence of progress on adaptation at the end of the Second Scottish Climate Change Adaptation Programme.

In our progress report, we identified four key programme-level recommendations for SNAP3. Based on the draft plan, there remain important gaps in the structure of the programme. We recommend that these should be rectified in the final programme.

- **Quantified targets for climate resilience:** Specific and quantified targets for levels of resilience across Scottish society under each outcome of SNAP would allow the Scottish Government to set appropriate budgets, measure progress against targets and increase accountability for their delivery. Each outcome sub-objective sets out a qualitative 'vision' statement, but there are no new quantified targets for climate resilience identified throughout the draft plan. This limits the ability for the plan to drive measurable change. We encourage the Scottish Government to strengthen the draft plan with measurable targets tied to specific dates, wherever possible.

- **Clear linkages between SNAP activities and outcomes:** A clear framework is needed to link SNAP activities to outcomes. The draft SNAP3 does not currently provide a compelling theory of change within each outcome area to help understand how and why the proposed policy actions will deliver a more climate-resilient Scotland. Without this the SNAP risks being a seemingly arbitrary set of policies with their ability to deliver on the stated objectives unclear.

- **Clear ownership for outcome delivery:** Ownership of each outcome should be clearly assigned to a specific directorate, government agency