Early engagement notice – adapting UK's farmed landscapes.

A Pre-Procurement Notice from the Climate Change Committee

Background

The Climate Change Committee (CCC) is an independent, statutory body established under the Climate Change Act 2008. Our purpose is to advise the UK and devolved governments on emissions targets and to report to Parliament on progress made in reducing greenhouse gas emissions and preparing for and adapting to the impacts of climate change.

The UK Climate Change Act 2008 requires that every five years, the UK government must publish a Climate Change Risk Assessment (CCRA). The CCRA seeks to provide an authoritative and up-to-date assessment of the risks and opportunities facing the UK from climate change. The Fourth UK Climate Change Risk Assessment (CCRA4) Government Report is due to be published in January 2027. As with CCRA2 and CCRA3 it will be based on an Independent Assessment that the CCC has been commissioned by Defra to lead; this will be published in mid-2026.

As part of CCRA4, the CCC will be developing a new output to complement the Technical Report. This output – to be known as the 'Well-adapted UK report'– will aim to set out a vision of what a well-adapted UK could look like, and the investment requirements to reach it. This will go on to support the development of effective actions in the next set of national adaptation programmes from governments across the UK.

The 'Well-adapted UK' report will be informed by a set of commissioned, bespoke analysis projects, in-house CCC analysis and wider external evidence. The proposal outlined below will form one of the commissioned projects to inform this report.

We expect this analysis to go out to tender in May 2024 and is due to be completed by summer 2025, to feed into CCRA4 in 2026.

Potential project

This piece of analysis will look to explore climate risk and adaptation in the UK's farmed landscapes with a focus on the adaptation interventions that can reduce climate risks to these landscapes, whilst also providing wider ecosystem and societal benefits.

As farmed land covers over 70% of the UK and produces around 50% of food that we eat, adaptation on farmland represents an important element of ensuring the UK's is resilient under a changing climate. However, there remains a lack of analysis – at a national and local scale – that explores the cost and effectiveness of adaptation interventions within farmed landscapes that will address climate risks to food production and support nature targets, whilst also providing wider ecosystem and societal benefits.

The working draft of an 'exam question' for this analysis will be: 'For 3 contrasting land use archetypes (upland, lowland and coastal) assess what adaptation interventions can cost effectively reduce climate impacts to farmed landscapes and support UK food production, whilst meeting legally binding nature restoration targets'.

The focuses for this analysis will be:

- Projecting and costing the expected impacts experienced on farmed landscapes from climate hazards across UK farmed land archetypes, including impacts on nature and agricultural productivity, without increased adaptation ambition.

- Modelling the scale of benefits and the cost effectiveness of adaptation interventions within the farmed landscape archetypes to protect and enhance nature, secure food production and provide wider ecosystem service benefits. This should be used to build a national scale scenario of cost-effective adaptation out to the 2050s.

This analysis should draw upon existing evidence and generate new analysis to give a more holistic view of the benefits of adaptation in agriculture, as well as some of the co-benefits of adapting at a landscape scale and main trade-offs. Specifically, it will look to cost adaptation interventions and the (avoided) climate impacts.

At a high level, the analysis expects to follow the steps below:

- Step 1: Estimate and cost the present day and 'baseline' future climate risks (including temperature, rainfall and drought) to farmed landscapes across the UK using 3 representative land use archetypes – covering lowland, upland and the coast.

- Step 2: Identify, quantify, and appraise adaptation options that could be deployed by farmers and land managers to address climate risks with a particular focus on interventions that will support agricultural productivity under climate scenarios (as well as providing wider ecosystem and societal benefits).

- Step 3: Assess how changes expected to farmland required to meet legislated nature restoration targets can change the level and type of projected climate risks to UK farmland, whilst reducing climate risks to agricultural productivity and providing wider ecosystem and societal benefits.

- Step 4: Assess the main co-benefits and trade-offs of adaptation interventions.

- Step 5: Build a scenario for what well-adapted agricultural landscapes in the UK might look like.

Step 1: Estimate present day and future 'baseline' risk.

Climate scenarios for assessing future risk will need to be generated for the 2030s and 2050s for a range of climate and socioeconomic futures. Both changes in averages and extremes for temperature, rainfall and drought should be assessed. The 'baseline' future scenario will assume no additional adaptation actions are taken relative to the present day.

We would ideally like the spatial analysis for this project to build upon the CCC's Land Use Archetypes work. There are a couple of options for how this could be done, including grouping the archetypes into the main themes (upland and lowland), or choosing representative archetypes based on characteristics such as spatial extent or climate vulnerability. An additional coastal archetype will need to be created to explore climate risk and adaptation interventions at this spatial scale.

Step 2: Identify and appraise adaptation options.

This step will produce a shortlist of adaptation options by assessing their costs and benefits. The focus will be on those interventions that address climate risks to farmed landscapes whilst supporting future agricultural productivity. The wider ecosystem and societal benefits of these interventions should also be assessed as well as the main co-benefits and trade-offs with respect to identified nature restoration targets.

Examples of the types of adaptation interventions that could be assessed include those that will:

- Reduce soil erosion and runoff from heavy rainfall such as hedgerow planting and buffer strips.
- Help prevent flooding of farmed land through natural flood management measures.
- Increase crop and livestock yields under increased temperatures such as changing crop selection or creating cool spaces/refugia for livestock.
- Increase resilience to drought such as through crop selection or on-farm water storage.

We would welcome any views on potential approaches for assessing the risk reduction benefits of adaptation interventions on farmed landscapes, dealing with the spatial heterogeneity of costs and benefits of adaptation and the uncertainty in all properties of adaptation deployment.

Step 3: Assess benefits from nature restoration.

Analysis will be undertaken which will take into account how meeting legislated nature restoration targets or goals on farmed landscapes in the UK and Devolved Administrations can contribute to reducing climate risks and providing wider benefits including reducing climate risks to agricultural productivity. For example, targets under the Environment Act (2021) such as to 'restore or create more than 500,000 hectares of wildlife-rich habitat by 2042' and to 'increase tree and woodland cover to 16.5% of total land area in England by 2050', as well as international commitments the UK has signed up to such as to protect 30% of land and ocean by 2030 (30 by 30) under the Convention on Biological Diversity.

This is likely to require a level of judgement in how these targets will be delivered across the land archetypes/spatial analysis. We would welcome views on how this could be best done, or any other relevant research or analysis that could support this assessment.

Step 4: Assess the main co-benefits and trade-offs.

This step will provide some analysis (quantitative or qualitative) which will assess the main co-benefits and trade-offs from addressing climate risks to farmed landscapes through interventions that support nature and ecosystems and enhance agricultural productivity.

Step 5: Build a scenario for well-adapted UK farmed landscapes.

In developing a cost-optimal adaptation scenario, the total adaptation investment required, and the residual level of climate risk (by the 2030s and 2050s – after deployment of adaptation) should be assessed. Eventual bids will need to set out details of the intended approach to how this will be calculated.

Calculating the cost-optimal level of investment might be challenging for this analysis and we would welcome views on how this could be best approach to ensure that a national-level picture of investment in adaptation on UK farmland can be generated.

Areas we would particularly welcome suggestions on:

Drawing on your expertise, we would be interested in feedback on the questions below to help us develop a robust analysis.

- How best to map existing nature goals and legislation to changes in the farmed landscapes at a spatial scale (using land use archetypes as a template for spatial representation) across the UK.

- How to assess the effectiveness of adaptation interventions in reducing climate risks to farmed landscapes? What are the sources of data that will enable this and how can challenges of uncertainty and spatial heterogeneity be overcome?

- How best to capture off-farm or catchment-scale adaptation interventions that will reduce climate risks to farmed landscapes within a land use archetype framing?

- How best to assess the cost-effectiveness of adaptation interventions and build a scenario of cost-effective adaptation on farm landscapes right across the UK?

- What metrics and data sets, or existing research exists to assess any of the analysis above?

We are inviting interested suppliers to respond to the above questions by completing this questionnaire https://forms.office.com/e/x08KCG3adp by Friday 03rd May 2024. We would also welcome feedback on how to refine or tighten the project scope, or suggestions on the resources (including data) and necessary timelines that would be required to deliver the project.

By responding to the questionnaire you will be engaging in non-competitive dialogue which will enable the CCC to develop and assess the market's appetite, concerns and view on the formulation of its requirements. The CCC may consider the information and responses received as part of the questionnaire to help inform the specification and further decision making in relation to the planning and conduct of the procurement, ensuring all valid options are considered.

For the avoidance, this notice is not a Call for Competition; a Contract Notice will be issued as a call for competition. Not providing a response to the questionnaire shall not prevent any supplier from participating in a future procurement, nor is it intended that any information suppliers as part of the market consultation place any supplier at an advantage in a potential procurement process.