Specifications - Research Study

Requirements & Objectives

WWF-UK is undertaking this project to answer how do the impacts of extreme weather and nature loss (soil degradation, pests and disease outbreaks, loss of pollinators, etc) lead to financial impacts on UK agriculture supply chains.

Project scope:

Recent findings from the Intergovernmental Panel on Climate Change (IPCC) and the World Meteorological Organization (WMO) indicate that the world is on track to exceed the 1.5°C global warming threshold, with a growing likelihood of surpassing 2°C within the coming decades. The WMO reports an 86% chance that at least one of the next five years will temporarily breach 1.5°C[1], while the IPCC warns that current national commitments are insufficient to prevent long-term overshoot without significant intervention[2].

This trajectory has profound implications for UK agriculture. The sector is increasingly exposed to both acute and chronic risks, including extreme weather events, ecological degradation, and systemic vulnerabilities in supply chains. These pressures threaten not only farm-level viability but also national food security and affordability.

WWF-UK is commissioning research to model the cost of inaction in the face of these risks, with a particular focus on UK supply chain, based on key food commodities (to be agreed with WWF-UK). The work will build on existing work conducted for Wales and Scotland, and extend the analysis to England making the dependency connection between UK Food System and the Global Food System.

Drawing on insights from the WWF's Modelling the transition costs and benefits for farmers in the UK | WWF report and other primary literature, this research piece will deepen understanding of the agricultural sector's volatile operating environment and unpack the potential ripple effects on food prices and affordability.

This research proceeds on the assumption that the UK will face escalating climate and nature pressures consistent with a >1.5°C warming scenario and the continued degradation of ecosystems. These conditions are expected to intensify acute and chronic risks to agriculture—such as droughts, floods, heat stress, and loss of ecosystem function —disrupting production, supply chains, and food system resilience.

[1] Climate change: World likely to breach 1.5°C limit in next five years | UN News
[2] Chapter 2 — Global Warming of 1.5 °C

The overarching aim of this project is to build a compelling case for investing in the transition to sustainable management of our natural resources[3] as a pathway to achieving food security[4] in the UK, while remaining aligned with legally binding climate and nature targets. It will examine how extreme weather events—such as droughts, floods, and storm— and nature loss— such as soil degradation, pests and disease outbreaks, loss of pollinators, etc—impact crop yields, farm economics, and food availability and prices. The research will interrogate the policy landscape surrounding agricultural production and management of our natural resources, identifying which existing policies can mitigate chronic risks and which may inadvertently exacerbate them.

The outcome will provide WWF-UK with a robust evidence base to inform policy design, strategic interventions and advocacy. The final deliverable should assess and enhance understanding of the anticipated impacts of climate change and nature loss over the next five and fifteen years under a business-as-usual scenario. This analysis should be conducted at farm, landscape and national levels across England, Wales, and Scotland with interconnections to the Global Food System.

The consultant should ensure that the assessment is coherent across the UK, enabling a unified presentation of findings. This means applying a homogeneous framework for analysis and reporting, so that comparisons and synthesis are possible, while still capturing the unique context, challenges, and opportunities in each nation.

Particular attention should be paid to how these risks may influence yields, farm economics, food prices and access, helping to guide policy, business strategy, and public awareness.

Background

WWF-UK is a board member and key partner on a project called 'Backcasting UK Food System resilience' (BAFR-UK hereafter). The project explores how the UK food system can maintain food security when exposed to stresses and shocks—a concept defined by Global Food Security as "Food system resilience".

The UK's most recent Food Security Report recognises that extreme weather continues to have a significant effect on domestic production, particularly of arable crops and fruit and vegetables. It also warns that long term decline in the UK's natural capital is a risk to food production.

Jared et al. (2023) identify a wide range of types of risks to the UK food system by examining Global Catastrophic Risks (GCRs). Mapping these risks helps pinpoint key threats, improve preparedness, and guide emergency response planning to reduce societal impacts. While this work focuses on the UK, many of the issues identified are relevant globally.

Please see Annex I for a summary of the BAFR-UK Project and Previous Work.

Other considerations

In the recent food strategy announcement, 'Resilient domestic production for a secure supply of healthy food' has also been identified as one of 10 outcome areas. However, the 3rd National

[3] farming_with_biodiversity_towards_nature_positive_production_at_scale.pdf
[4] pb_issue2_final.indd

Adaptation Programme is short in actions and instead expresses that 'levers to enhance the resilience of the food industry sit largely with industry actors'.

Risk and resilience are pressing challenges and at the top of food businesses' concerns given the impacts of extreme weather events brought on by climate change and nature loss on supply, compounded by the context of volatile trade markets and market shocks.

Objectives

1. **Cost of inaction:** Increase understanding of anticipated financial impacts of extreme weather events and nature loss on UK agriculture supply chains over the next 5–15 years under a business-as-usual scenario (based on 2030 and 2040 projections). This analysis should cover farm-level and landscape-level effects across England, Wales, and Scotland highlighting the interconnection and ripple effect of global value chain disruptions and consider implications for farmers, the food supply chain, and consumers (e.g. through food prices). Both literature review and modelling (where practical) are expected for this section.
   The findings should be communicated in a way that is accessible to diverse audiences including policy makers, business and general public, including millions of people that care about nature and support WWF-UK.
2. **Retrospective and forward-looking analysis of extreme weather and nature loss Impacts:** Analyse the effects of recent extreme weather events—such as droughts, floods, and storm surges— and nature loss on UK food supply chain. This should include impacts on crop yields, farm economics, the availability of major food types, and food prices.
   Project future losses under a small number of climate and nature degradation scenarios, highlighting selected acute risks (agreed with WWF-UK) to illustrate cascading effects across food systems.
3. **Policy landscape assessment:** Identify existing policy instruments—spanning economic tools, regulatory frameworks, public procurement, trade-related measures, information-based approaches, and voluntary initiatives—that may either exacerbate or mitigate the impacts of extreme weather and nature loss on the UK food system.
   This assessment should highlight where current policies are reinforcing vulnerabilities or contributing to resilience across farming, supply chains and consumers outcomes. All recommendations should align with a laddering-up approach, prioritising structured, stepwise progress over reactive or ad hoc responses to emerging legislation.

Methods

The research will adopt a mixed-methods approach, combining quantitative modelling with qualitative analysis to assess the impacts of climate change and biodiversity loss on UK agriculture. Key components include:

Literature and policy review: Review existing reports, including WWF's Modelling the Transition Costs and Benefits for Farmers in the UK, IPCC assessments, and national climate risk studies.

Analyse current UK agricultural, climate, and land-use policies to identify gaps, risks, and opportunities for intervention.

Scenario-based modelling: Develop business-as-usual scenarios aligned with >2°C warming trajectories over 5- and 15-year horizons.

Use proxy indicators (e.g. yield variability, input costs, insurance claims, food prices) to model impacts at farm, landscape, and national levels.

Integrate regional climate projections and biodiversity loss data to simulate acute and chronic risks.

Economic impact assessment: Quantify the cost of inaction using farm-level and supply chain data.

Assess implications for food prices, availability, and nutrition security.

Include sensitivity analysis to test assumptions and uncertainties.

Transparency and reproducibility

Document all modelling assumptions, data sources, and backend code.

Ensure outputs are reproducible and can be integrated into future WWF-UK workstreams.

The successful contractor or consortium researcher(s) are expected to have:

- Proven experience in agricultural economics, climate modelling, and policy analysis.
- Familiarity with UK farming systems and regional dynamics.
- Capacity to integrate ecological, economic, and social dimensions of food systems.
- Strong communication skills and ability to produce accessible outputs for diverse audiences.

Deliverables and Outcome Material

WWF-UK'S provider will deliver:

1. A comprehensive report (using agreed reference style) detailing findings, methodologies, and recommendations.

Analysis and recommendations should demonstrate:

- How supply chain resilience can be achieved, with attention to how food systems can withstand shocks while ensuring they deliver for affordability and stable prices for consumers, farm viability, climate and nature.
- How resilience and food security can be achieved through responsible overseas sourcing, including the UK's reliance on imported foods and the imperative to not further offshore climate and nature impacts.

All recommendations should align with a laddering-up approach, prioritizing structured, stepwise progress over reactive or ad hoc responses to emerging legislation.

2. A summary briefing for policymakers.
3. Visual outputs (e.g., infographics, maps, charts) to support public engagement and advocacy. We encourage consultants to consider a visualisation of UK food production risk and resilience highlighting regional vulnerabilities (map of UK, regional food production, flood risk/ drought risk/ etc).

All visualisations and reports should be WWF branded unless expressed differently by contractors.

4. A presentation of key findings to WWF-UK and partners.

5. Full documentation of any modelling used, including mathematical assumptions, data sources, and backend code or frameworks, to ensure transparency, reproducibility, and potential integration into future WWF-UK workstreams.

All materials and reports will need to be:

- Written in English
- Presented in Microsoft Word, Powerpoint and programs that can support your infographics, giving us access to the information and database used for any exercise included in this process.
- The report will be proofread, to ensure that it is free of spelling mistakes and typos and is formatted correctly.
- Follow the WWF-UK brand guidelines should be followed. N.B. download and share the brand guidelines.

Deliverable due date

Project start: January/February 2026

Interim findings: April 2026 with a potential opportunity for presenting initial findings in a stakeholders' engagement workshop organised by WWF-UK in May 2026

Final report delivery: June 2026

Expressions of interest should be submitted to WWF-UK through portal including:

- A brief proposal outlining methodology and approach.
- Relevant experience and team composition.
- The consultant is encouraged to propose the most effective approach to conduct this research. The formation of consortia is also welcomed if desired; however, payment will be made to a single contracting entity. It is recommended that the financial proposal be structured based on an itemized breakdown of objectives and/or deliverables.

