Department of
Agriculture, Environment
and Rural Affairs
www.daera-ni.gov.uk

DAERA-Directed AFBI Research Work Programme

Call for Applications 2026



1. Background

The 2026 DAERA-Directed AFBI Research Work Programme (DDARWP) call for applications aims to engage researchers in addressing research and development needs across five themes:



The mission of the [DAERA Research and Development Strategy 2022-2026] is *"to get the best R&D (informed, influential science from high quality impartial scientists[1]); at the best value; and make the best use of it to support the achievement of the DAERA vision, 'Delivering a net zero nature positive future, supporting sustainable agriculture and thriving rural communities.'"*

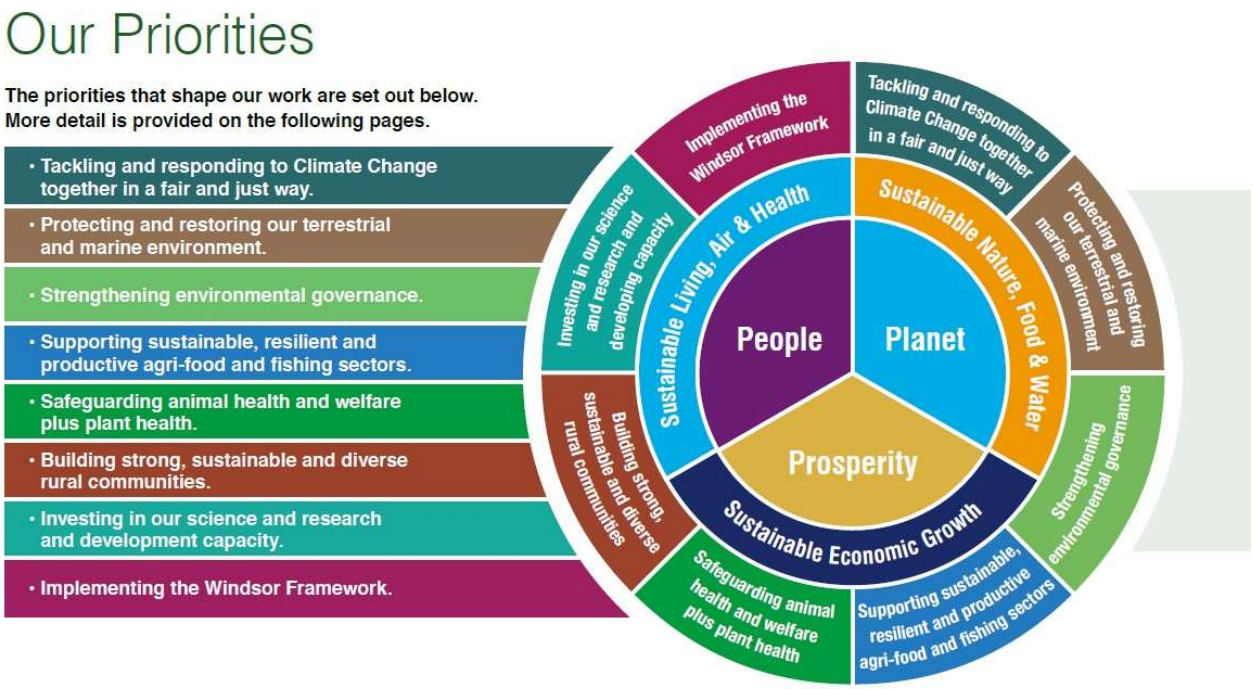


The DAERA Innovation Strategy 2020-2025 outlines the goals and objectives for DAERA to create an enabling environment for innovation to flourish and to enhance the impact of

[1] High quality science is promoted through commissioning from providers who assure the quality of their scientists and science through peer review arrangements and adherence to best practice quality standards.

knowledge generation and science investments to help DAERA deliver Departmental and Programme for Government 2024-2027 objectives and meet our commitments under the UN Sustainable Development Goals.

The DAERA Corporate Plan 2025-2027 contains **eight Priorities** across the areas of: **People**; **Planet**; and **Prosperity** and commits to **10 Key Pledges** by the end of the Assembly mandate in May 2027.



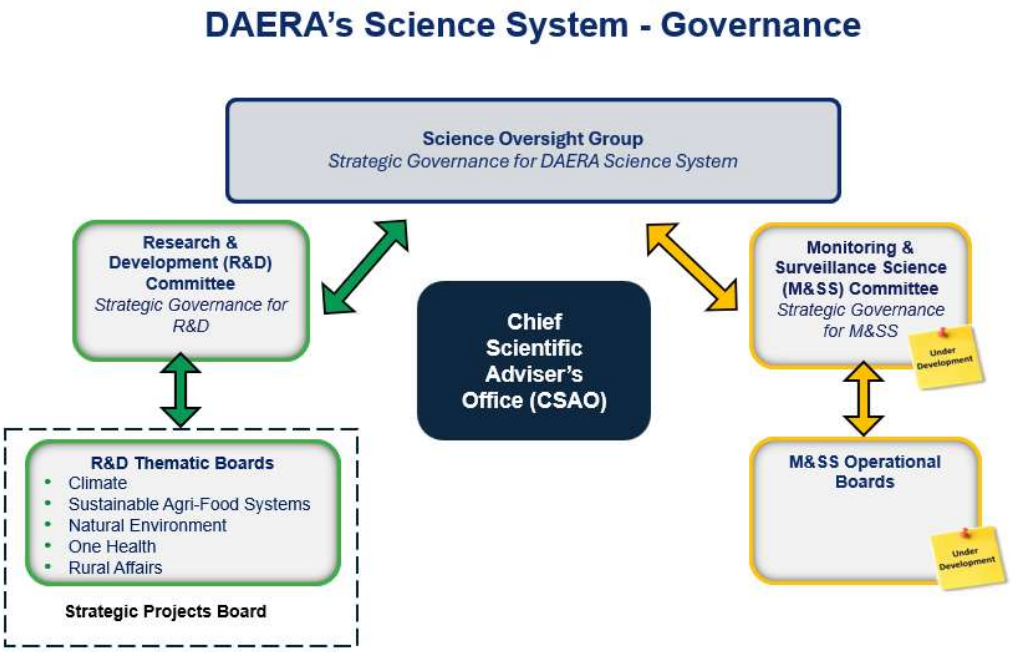
2. Programme Development

DAERA has transitioned to a new science system that includes new governance and oversight structures, along with new policies in relation to the commissioning of science and data management.

Research needs are identified by DAERA on an ongoing basis, informed by both informal and formal engagement with stakeholders. Under the DAERA Research and Development Strategy 2022-2026, a process of evidence planning has been established to help identify and prioritise DAERA's R&D needs.

The evidence plans will support DAERA in identifying and prioritising investment in research and innovation to support policy and delivery needs. This process ensures that DAERA's research portfolio is appropriately aligned and provides a robust evidence base for future policy development, implementation and review, as well as supporting innovation within the scope of DAERA's policy interests.

Evidence plans inform all research projects and activities commissioned across the Department and provide the basis for decision-making by the Thematic Boards (and the R&D Committee). Thematic Evidence Plans are currently in draft, and subject to ongoing stakeholder engagement prior to finalisation and publication. AFBI has access to the current draft versions.



The Science Oversight Group provides strategic leadership, governance and oversight for the entirety of DAERA's science system, ensuring visibility across DAERA's investment in science and alignment with Programme for Government (PfG) and DAERA strategic objectives and priorities.

The Research and Development Committee ensures effective coordination of research across thematic areas and provides challenge on areas of potential duplications. The Committee is responsible for the authorisation of R&D programmes and calls for research, reviewing prioritisation of research commissioning recommendations within each Thematic

Board and approval where appropriate. The Committee provides strategic direction, ensuring effective coordination of research across thematic areas and lessons learned are addressed appropriately.

The Thematic Boards are responsible for all R&D programmes, projects and activities under each relevant theme, ensuring all R&D projects/activities commissioned through the board meet the recommendations of the DAERA R&D Strategy in terms of delivery and impact against agreed targets/objectives/outcomes. The Boards utilise peer review processes, where appropriate (following UKRI peer review guidelines), to support decisions relating to commissioning and monitor the operational delivery of research programmes via quarterly and annual reports, ensuring any necessary change controls are addressed in a timely manner.

The Strategic Projects Board is responsible for all R&D programmes, projects and activities which fall outside the defined remit of the five Thematic Boards. This Board ensures that projects commissioned to provide long-term data platforms are aligned with the DAERA R&D Strategy.

3. 2026 Call Programme Guidelines

Proposals agreed through this annual process form part of the DAERA-Directed AFBI Research Work Programme (DDARWP), delivered by AFBI for DAERA[2].

DAERA research needs for the 2026 DDARWP Thematic Call are set out in the sections that follow.

- It is anticipated that AFBI will submit Full Format Proposals (FFP) to address the thematic evidence needs identified. If AFBI is not able to address a particular theme or evidence need due to capacity or capability reasons, it should highlight this to DAERA at the earliest opportunity.

- **A Concept Note is required for all proposals.**

- Proposals which do not address DAERA's research needs or are outside DAERA's strategic remit will not be approved for funding.

- All FFPs should be developed in accordance with the DAERA Science Data Policy[3].

- DAERA is particularly interested in receiving FFPs that support the development of capability in areas of key strategic importance as set out in the Business and Corporate Plans.

- All FFPs should be complementary to ongoing research[4].

Project Funding Categories

- Proposals should fall within one of the five Project Funding Categories below which accommodate for a range of scale and complexity of projects depending on the nature and purpose of the project to address the thematic need.

- The appropriate FFP Template must be used for each funding category with additional supporting information on benefits analysis required for projects over £500k.

Project Funding Category	Duration	Maximum Cost	Full Format Proposal Template
Small Project	<2 years	£300,000	Small/Standard
Standard Project	<3 years	£500,000	Small/Standard
Large Project	<4 years	£1,500,000	Large/Sub-Programme
Sub-Programme	<4 years	£3,000,000	Large/Sub-Programme
Strategic	-	£5,000,000	Large/Sub-Programme

[2] See http://www.legislation.gov.uk/nisi/2004/3327/article/6/made

[3] See DAERA Science Data Policy | Department of Agriculture, Environment and Rural Affairs

[4] This includes but is not limited to research in the Co-Centre for Sustainable Food Systems, the Agri Food for Net Zero, the Climate +Biodiversity + Water Co-Centre, Land Use for Net Zero Hub, the Maximising UK Adaptation to Climate Change (MACC) hub, the UKRI Green_Ag - Towards Clean, Green and Net-Zero Agriculture (AgZero+), other Research Council funded work and work in ROI including through Department of Agriculture, Marine and Fisheries, Research Ireland and the Environmental Protection Agency.

Completion of Concept Note

- Following engagement with relevant DAERA Policy Leads, AFBI should submit a Concept Note for all proposals by 21 July 2026 outlining the purpose of the project, objectives and potential outcomes.

- Feedback will be provided by DAERA within 15 working days (11 August 2026) of submission to indicate whether the proposal should be worked up into an FFP.

- The Concept Note may also be used to identify potential peer reviewers

Completion of FFPs

- All FFPs should be completed in Arial font size 12.

- All sections of the form should be completed accurately and in full (including Y/N questions).

Liaison with DAERA Policy

- To help with co-design of projects and completion of the FFP proforma, AFBI Project Leads are strongly encouraged to build upon engagement established at the Concept Note stage and maintain contact with the appropriate DAERA Policy Leads.

Proposal Assessment & Timetable

- Only those FFPs which are received by the closing date will be assessed by DAERA.

- The proposal window will open on 22 June 2026 and will close on 6 October 2026. All FFPs received up to this date will be subject to an external peer review process.

- To meet the overall timetable, submission deadlines will be strictly applied.

- FFPs received after the closing date will not be accepted, unless prior approval for delayed submission is agreed with the Chief Scientific Adviser's (CSA) Office.

- Introduced in 2025, the Independent External Peer Review is a crucial mechanism for ensuring that research commissioned is of the highest quality and provides value for money.

- Projects cannot commence until AFBI receives a commissioning letter from DAERA CSA's Office.

- Publicity or marketing of any of successful projects must acknowledge DAERA as the primary funder.

All completed FFPs should be submitted via the AFBI central contact point by the closing date to: RandD@daera-ni.gov.uk

Date	Activity/Assessment Stage
22 June 2026	Proposal window opens
21 July 2026	Closing date for Concept Note submission
11 August 2026	Feedback on Concept Note
6 October 2026	Closing date for FFP submission
Proposal Assessment Window • Independent Expert peer review. • Thematic Board review. • R&D Committee consideration.	
by 27 November 2026	Update provided to AFBI on initial feedback on project proposals
by 29 January 2027	Feedback issued for all proposals; and where required, requests issued for a revised FFP
From March 2027	FFPs commissioned & projects commence from 1st April 2027

Feedback

- Feedback on all proposals will be coordinated by DAERA CSA's Office and passed to a central contact in AFBI.

Themes

- Research proposals are invited to address the sub-themes within each of the five thematic areas as follows:

Theme 1 – Climate Page 9

Theme 2 – Sustainable Agri-Food Systems Page 13

Theme 3 – One Health Page 22

Theme 4 – Natural Environment Page 31

Theme 5 – Rural Affairs Page 36

Strategic Projects Page 39

Theme 1 – Climate

The Climate Change Act (Northern Ireland) 2022 sets a series of legal targets, including a 48% reduction in net Greenhouse Gas (GHG) emissions by 2030 and net zero by 2050 and 70% waste recycling rates by 2030. The Act also requires DAERA to set 5-yearly carbon budgets, publish corresponding Climate Action Plans, establish a Just Transition Commission and a Just Transition Fund for Agriculture as well as establishing Public Body Reporting arrangements in respect of climate adaptation and mitigation measures. Meeting these commitments and those set out in the draft Green Growth Strategy has created an unprecedented need for science and innovation to direct our policy decisions and inform those climate mitigation and adaptation actions.

As such, the goal of Research Theme 1 is to help deliver evidence and new innovations to assist in the delivery of a pathway to net zero and underpin resilient sectors through resource efficient and sufficient circular economies which are resilient and adapted to the current and projected effects of climate change, as well as providing good green jobs for globally competitive and resilient industries. We need research to support new policies to guide how the agriculture, land use, land use change and forestry, marine and fisheries and waste sectors adapt to climate change and mitigate its impact and in doing so help these sectors contribute to meeting those Climate Change Act commitments.

Research is needed to refine the national inventories for the agri-food and land use sectors and to reduce GHG emissions from agri-food systems. It is vital that new mitigation measures are developed with cognisance of the need for these to be able to be reflected in the NI GHG inventory, and that science continues to improve the activity data and emissions factors these rely on. Research will help support policy makers to assess our vulnerability to the negative impacts of climate change and develop mitigation measures to increase resilience to climate change in NI.

Contact details for the Climate Portfolio Adviser:
John McKillen, John.McKillen@daera-ni.gov.uk

Theme 1 – Climate	
Description of Research Need	**DAERA contact**
Peatland Condition Monitoring Northern Ireland's peatlands are a critical carbon store and play a central role in climate mitigation, biodiversity and water regulation. There is a need to develop robust, scalable approaches to monitoring peatland condition and restoration outcomes, moving beyond site-level assessments to nationally consistent, spatially explicit monitoring. Emerging Earth Observation techniques such as Bog Breathing offer potential to support improved targeting and evaluation of restoration interventions. The bog breathing methodology uses satellite data to determine how healthy a peatland is by measuring its expansion between wet and dry weather. **Evidence Need:** • How can innovative Earth Observation approaches be developed and validated to assess peatland condition and restoration outcomes at scale in Northern Ireland? How can these data be	Mark.preston@daera-ni.gov.uk John.McKillen@daera-ni.gov.uk

Theme 1 – Climate	
Description of Research Need	**DAERA contact**
integrated into inventories, spatial planning tools and monitoring frameworks to support peatland policy delivery?	
Identification of barriers and incentives to long-term land use change in areas of high biodiversity and sensitive land habitats. **Evidence Need:** • There is a need for research to ensure that the right policy levers are designed to support future land use that can deliver multiple outcomes around food production, carbon sequestration and biodiversity.	Astrid.Hamilton@daera-ni.gov.uk Zita.Hale@daera-ni.gov.uk John.McKillen@daera-ni.gov.uk
Identification of effective strategies to build knowledge and understanding in the agriculture sector of the science around climate change. **Evidence Need:** • Improved knowledge exchange in the sector can help drive uptake of Just Transition policies and challenge misconceptions.	Astrid.Hamilton@daera-ni.gov.uk Zita.Hale@daera-ni.gov.uk John.McKillen@daera-ni.gov.uk
Increasing precision of the LULUCF inventory A strengthened evidence base is required to support greenhouse gas inventory development and climate policy. This includes improving emissions factors, activity data and understanding of carbon sequestration across key land uses such as peatlands, grasslands and forestry. **Evidence Need:** • How can LULUCF emissions factors and activity data be further improved to better reflect Northern Ireland conditions? Pre-concept note engagement is requested to ensure that any project meets policy needs and is cognisant of the outputs of current projects (including the PeatNI project and the Co-Centre Programme).	Taryn.McHenry@daera-ni.gov.uk John.McKillen@daera-ni.gov.uk
Horizon scanning - Novel on-farm interventions for GHG mitigation. The drive for net zero and agri-food sustainability will require engagement with the latest state-of-the-art technologies and innovation. A number of technological solutions are currently being deployed/researched including genetics and feed additives. **Evidence Need:** • There is a need for a horizon scanning project to develop a comprehensive understanding of the next generation of technological tools that may become available to support policy targets. This project would require wide local, national and international engagement and the outputs will be used to inform future commissioning of projects.	Zita.Hale@daera-ni.gov.uk John.McKillen@daera-ni.gov.uk

Theme 1 – Climate	
Description of Research Need	**DAERA contact**
Greenhouse Gas Removal Carbon dioxide removal approaches are likely to play an important role in achieving net zero targets in NI and the CCC advisory pathways have included significant engineered removals. Enhanced rock weathering (ERW) represents a promising but relatively untested option in Northern Ireland. There is a need to evaluate feasibility, environmental impacts and mitigation potential under local conditions. There is a need to understand the feasibility of deploying ERW at scale in NI, including material supply, land suitability, measurable carbon sequestration outcomes, co-benefits and trade-offs under NI conditions. A research project proposal is requested, including: 1) Field trails for ERW on grassland, focusing on GHG removal and agricultural production, cognisant of the UKRI GHG demonstrator project (https://co2re.org/ggr-projects/enhanced-rock-weathering/). 2) Modelling of potential GHG sequestration potential based on availability of land. The project proposal should explore engagement with the Leverhulme Centre for Climate Change Mitigation. 3) Consideration of wider environmental issues, particularly heavy metal toxicity. **Evidence Need:** • Projects will be considered that look at developing a practical understanding of other GHG removal methods with potential to deliver DAERA policy targets.	Kristopher.Todd@daera-ni.gov.uk John.McKillen@daera-ni.gov.uk
Integrated Modelling and Decision Support Effective climate policy requires modelling approaches that capture interactions between agriculture, land use and wider economic drivers. There is a need to enhance modelling capability to support scenario analysis, policy appraisal and long-term planning. AFBI is currently engaged in a number of modelling projects to support policy in DAERA, including a landscaping project (MX-ANTE) to understand the extent, capabilities and interactions of all decision-making tools available to AFBI. Concurrently, the CSA's Office has developed a Land Use and Agriculture Modelling Working Group to help oversee the development of an integrated suite of land use and agriculture models. **Evidence Need:** • There may be a need to develop modelling projects to support urgent policy needs, prior to the completion of MX-ANTE. AFBI will have representation on the Land Use and Agriculture	Jim.Blee@daera-ni.gov.uk John.McKillen@daera-ni.gov.uk

Theme 1 – Climate	
Description of Research Need	**DAERA contact**
Modelling Project Board and the AFBI Modelling Sub-Working Group and any project proposals should result from discussions of these groups.	

Theme 2 – Sustainable Agri-Food Systems

A sustainable agri-food system delivers food security and improved dietary health outcomes for all in such a way that economic, social and environmental bases are not compromised for future generations.

The goal of research Theme 2 is to develop agri-food systems that are more sustainable with respect to environmental, economic and social aspects on a global platform. Research and innovation are needed to help deliver a transformed food system - one that delivers healthy diets from sustainable sources, enhanced animal welfare, improved environmental outcomes and a low carbon, circular agricultural sector which is resilient to external shocks, supports development of the bioeconomy and uses resources efficiently.

Research will play a vital role in providing the scientific data needed to inform policy development and delivery, and so it is paramount that there is a sound understanding of the complex social, political, environmental and economic interactions within the Agri-Food sector. Consequently, it is important that proposals, wherever appropriate, consider practical implementation, economic viability and management practice change factors alongside the scientific and policy dimensions of the work.

Contact details for the Sustainable Agri-Food Systems Portfolio Adviser:
Joanne Lemon, Joanne.Lemon@daera-ni.gov.uk

Theme 2 – Sustainable Agri Food Systems	
Description of Research Need	**DAERA contact**
Decision-support tools to integrate farm woodlands into productive agriculture and deliver measurable farm-business value How can decision-support tools be developed and validated to demonstrate where and how farm woodlands (including agroforestry and riparian buffers) can be integrated into Northern Ireland farming systems to underpin sustainable agricultural practice, strengthen resilience and productivity, and deliver credible economic benefits to farmers—thereby supporting land-use planning decisions and increasing landowner uptake of woodland creation? Northern Ireland's woodland cover remains low relative to the ambition set out in forestry policy and climate delivery planning. The Forest Service business planning context explicitly frames the strategic objective of increasing woodland cover from around 8.5% to 12% by 2050, and links delivery to actions taken forward under the Climate Change Act (Northern Ireland) 2022. Independent and stakeholder-facing material similarly notes woodland cover of 8.6% and positions NI as the lowest in the UK, reinforcing the strategic gap between ambition and delivery. Increasing woodland creation is not just a technical or ecological challenge; it is a landowner decision and land-use trade-off challenge. This research area is therefore best framed as a practical "decision-support and implementation" project: it should generate tools and	Aoife.Smith@daera-ni.gov.uk Joanne.Lemon@daera-ni.gov.uk

Theme 2 – Sustainable Agri Food Systems	
Description of Research Need	**DAERA contact**
evidence that help farmers, advisers, and policymakers answer where woodland fits, what it delivers, what it costs/returns, and what trade-offs it entails, in a way that is credible for land-use planning and persuasive for landowners making real business decisions. This aligns with the wider land-use framing that NI faces competing demands on a finite land base and needs a more multifunctional approach to land use decision-making.	
Modelling the Economic Contribution of Sustainable Forestry, Timber Flows and SME Supply Chains to Rural Sustainability An in-depth modelling project to quantify how sustainably managed forests and forest products contribute to rural sustainability and the NI economy, using supply chain and product-flow analysis down to SME level and identifying evidence-based opportunities to expand and diversify the forest-based economy. **Evidence Need:** • What are the opportunities and constraints for sustainable forest management and expansion to contribute to climate mitigation, circular bioeconomy development, and upland land use transformation in Northern Ireland, and how can these be realised through local timber markets and carbon sequestration strategies?	Aoife.Smith@daera-ni.gov.uk Joanne.Lemon@daera-ni.gov.uk
Trees, Woodlands and Farm Biosecurity: Modelling and Field Validation of Animal Welfare and Disease-Risk Benefits Modelling and field-based research on the relationship between trees and woodlands with respect to animal welfare and biosecurity. Research is required to demonstrate how on farm woodlands can be integrated within and underpin productive agricultural including benefits to biosecurity and animal welfare informing strategic land use planning decisions and scheme design. **Evidence Need:** • How can animal welfare outcomes be improved through integrated, interdisciplinary research, encompassing a one health approach?	Aoife.Smith@daera-ni.gov.uk Joanne.Lemon@daera-ni.gov.uk

Theme 2 – Sustainable Agri Food Systems

Description of Research Need	DAERA contact
Behavioural drivers of collaboration in NI agri-food supply chains What attitudes, motivations, and behavioural factors shape primary producers' willingness and ability to collaborate (within and across supply chains) in Northern Ireland, and how can these insights be used to design and target interventions that increase trust, coordination, and sustained collective action? Northern Ireland's agri-food system relies on collaboration to deliver outcomes that matter to DAERA and industry alike - resilience, sustainability, transparency, and improved value-chain performance. This research area therefore focuses on the human and behavioural determinants of collaboration: not only whether producers are "willing" to collaborate, but whether they feel able to do so in practice given risk perceptions, trust, past experience, norms, incentives, and the perceived fairness and feasibility of collaborative models. A key value of the research is that it should be explicitly design-oriented: it is not solely a descriptive study of attitudes, but a project that generates usable insight for intervention design. That means moving beyond "what do people think?" to identifying which behavioural barriers and enablers are most material (and for whom), and translating these into targeted options for government, supply-chain actors, and advisory/knowledge exchange systems. This aligns with the wider Sustainable Agri-Food Systems evidence framing that calls for robust, policy-relevant evidence that can guide practical programme and scheme development.	Roisin.Lagan@daera-ni.gov.uk Joanne.Lemon@daera-ni.gov.uk
Collaboration models that improve information exchange and outcomes across NI agri-food supply chains What forms of collaboration across the agri-food sector are most effective in improving information exchange, and what outcomes do they deliver in terms of sustainability and resilience? **Evidence Need:** • What forms of collaboration across the agri-food network are most effective in improving transparency and information exchange, and what outcomes do they deliver in terms of sustainability, resilience, and value chain performance?	Roisin.Lagan@daera-ni.gov.uk Joanne.Lemon@daera-ni.gov.uk

Theme 2 – Sustainable Agri Food Systems

Description of Research Need	DAERA contact
Baselines for Generational Renewal in NI farm businesses To support effective monitoring and evaluation of the Generational Renewal policy, there is a research need to establish a clear demographic and structural baseline for Northern Ireland farm businesses. This baseline would describe the current profile of the farming population and farm business management structures, demographics and resilience for succession planning against which future change can be tracked. **Evidence Need:** • What are the demographic trends (e.g. ageing, youth out-migration, migration inflows) in rural Northern Ireland, and how do these affect housing, service needs, employment patterns, and community cohesion?	Lorna.Christie@daera-ni.gov.uk Joanne.Lemon@daera-ni.gov.uk
Beef system innovations to sustain reduced age at slaughter, improved suckler cow fertility and lower emission in NI (post Beef Carbon Reduction and Suckler Cow Scheme) • Research to identify suitable beef systems that ensure reduction in age at slaughter, improved suckler cow performance and lower emissions are sustained beyond the lifetime of the BCR & Suckler Cow Schemes. • Evidence-based identification of feed, genetics, health and management practices that lock in earlier finishing and improved suckler cow fertility and deliver sustained productively and lower emissions intensity in NI beef systems with interventions. • Provision of robust evidence to support future policy and advisory services that deliver permanent emissions reductions, improved farm resilience and a more sustainable NI beef sector. **Evidence Need:** • What production-level innovations in feed, genetics, nutrient management, waste handling, disease control, and labour efficiency can improve input / output performance in livestock sectors while delivering neutral or net-positive environmental outcomes under Northern Ireland farming conditions?	Aveen.McMullan@daera-ni.gov.uk Joanne.Lemon@daera-ni.gov.uk

Theme 2 – Sustainable Agri Food Systems	
Description of Research Need	**DAERA contact**
Health-led approaches for improved productivity and reducing emissions in NI sheep systems There is a clear evidence gap on how health led production level approaches can deliver emission reductions while sustaining viable sheep production The project will generate NI specific evidence quantifying how improved disease control and preventative health management influence productivity and emission intensity **Evidence Need:** • What production-level innovations in feed, genetics, nutrient management, waste handling, disease control, and labour efficiency can improve input / output performance in livestock sectors while delivering neutral or net-positive environmental outcomes under Northern Ireland farming conditions?	Aveen.McMullan@daera-ni.gov.uk Joanne.Lemon@daera-ni.gov.uk
Evaluation of the Beef Carbon Reduction and Suckler Cow Schemes to assess the impacts on farmer behaviour, emission reduction and sustainability of NI Beef productions **Evidence Need**: • How effective is the Beef Sustainability Package, (Beef Carbon Reduction and Suckler Cow Schemes), at reducing emissions and improving sustainability in Northern Ireland's livestock sector, and what lessons can be learned regarding impact, uptake, cost effectiveness, and future scheme integration? • A robust evaluation is required to understand the effectiveness, cost efficiency and emissions impact of the BCR & Suckler Cow Schemes across different farm types and to identify which elements of the scheme were most effective in driving long-term production management change. • The evaluation will identify which elements of the schemes most effectively lead to behavioural change and delivered sustained efficiency and emission reductions. • Findings will inform the design of future schemes and support long-term planning for a more productive, resilient and environmentally sustainable NI beef sector.	Aveen.McMullan@daera-ni.gov.uk Joanne.Lemon@daera-ni.gov.uk

Theme 2 – Sustainable Agri Food Systems	
Description of Research Need	**DAERA contact**
Metrics for monitoring and evaluating Farming with Nature (FwN) across NI agricultural land types What other metrics, apart from condition of features (of designated sites) and wild birds/wild birds by habitat type, would inform an effective monitoring and evaluation of FwN across all agricultural land types (within and outside designated sites)? **Evidence Need:** • How can innovative, scalable and behaviourally informed metrics be developed to evaluate the real-world impacts of agri-food schemes in Northern Ireland, and support the transition towards outcomes-based policy? • FwN aims to increase the extent and improve the quality and connectivity of habitats across all agricultural land types in NI. We require a metric to measure ecological connectivity.	Devina.Park@daera-ni.gov.uk Joanne.Lemon@daera-ni.gov.uk
Alternative (non–face-to-face) engagement approaches to maximise training reach and scheme uptake To identify and evaluate alternative (non–face-to-face) engagement approaches for delivering effective and efficient training that maximises awareness, accessibility, and uptake of support schemes. **Evidence Need:** • How can training, advisory, and incentive systems be designed and delivered to effectively drive positive behavioural change among farmers and land managers, enabling the successful adoption of sustainable practices in Northern Ireland?	Devina.Park@daera-ni.gov.uk Joanne.Lemon@daera-ni.gov.uk

Theme 2 – Sustainable Agri Food Systems

Description of Research Need	DAERA contact
Local Food Partnerships: evaluating the potential of community initiatives to drive food-system change This project will explore and evaluate the role of local food partnerships (including community growing initiatives in both rural and urban settings) as practical mechanisms to: (i) connect people to where food comes from; (ii) strengthen community cohesion and reduce isolation; (iii) build shorter, more resilient local supply chains; and (iv) support positive shifts in nutritional and climate/environment attitudes and behaviours. The work will identify which partnership models are most effective, for whom, and under what enabling conditions, and will translate findings into guidance to support scaling through programme and policy levers. **Evidence Need:** • How can local food partnerships, community growing schemes, and other grassroots food initiatives contribute to equitable and sustainable food systems in Northern Ireland, and what evidence is needed to support their wider adoption? The project proposal should be complementary to the work of the Co-Centre Programme.	Fiona.Ferguson@daera.ni.gov.uk Joanne.Lemon@daera-ni.gov.uk

Theme 2 – Sustainable Agri Food Systems

Description of Research Need	DAERA contact
Evaluation of interventions to improve fruit and vegetable intake among children and young people in Northern Ireland (and associated agri-food supply-chain benefits) This project will identify, compare and evaluate strategies used across the UK and EU to increase fruit and vegetable consumption among children and young people, and assess which interventions are most effective, feasible and scalable in a Northern Ireland context. It will synthesise evidence on what works, for whom, and under what delivery conditions (including schools, retail settings, and out-of-home food environments), and translate findings into options and guidance for policy and programme design under the Northern Ireland Food Strategy Framework Action Plan's Mission One ("To Use Food to Improve Lifelong Health and Wellbeing"). In parallel, the project will examine the potential economic and resilience implications for NI agri-food supply chains of increased fruit and vegetable demand (e.g., opportunities for local producers/processors, distribution and procurement pathways), including identifying constraints and enabling actions that would support a reliable, affordable supply response. **Evidence Needs:** • What lessons can be learned from national and international food system strategies in terms of their environmental, health, economic and equity outcomes, and how can best practices and implementation failures inform food system transformation in Northern Ireland? • What are the relationships between diet quality, food affordability, and environmental impact in Northern Ireland, and how do these dynamics affect the nutrition and health of children and young people in the context of rising economic pressures? • What are the most effective behavioural change strategies for key actors in the food system (including producers, manufacturers, retailers and consumers), and how can targeted interventions deliver co-benefits for public health, environmental sustainability, and economic resilience? The project proposal should be complementary to the work of the Co-Centre Programme.	Fiona.Ferguson@daera.ni.gov.uk Joanne.Lemon@daera-ni.gov.uk

Theme 2 – Sustainable Agri Food Systems	
Description of Research Need	**DAERA contact**
Farm systems research to demonstrate optimal N and P management on farm. Research is needed to develop a Farm System Research Platform to demonstrate optimal Nitrogen and Phosphorus management farming systems which optimise farm output and profitability while minimising the known pressures to water quality and other environmental impacts. Coupled with on farm studies, this should include research to further develop and improve nutrient management and lower soil P status on high-P soils through factors such as optimising grass growth and utilisation, and exploring grass species and varieties with enhanced phosphorus uptake potential, building on previous work such as the SALMS report.	Paul.Devine2@daera-ni.gov.uk Joanne.Lemon@daera-ni.gov.uk
Developing Carbon, Nitrogen and Phosphorus Marginal Abatement Cost Curves (MACCs) for Northern Ireland Agriculture Northern Ireland needs an integrated, policy-ready evidence base on the relative costs, abatement potential and co-benefits / trade-offs of measures affecting carbon emissions, nitrogen use / losses and phosphorus losses across agricultural systems. This project would rank different agricultural mitigation measures according to their cost per unit of pollution reduction (e.g. greenhouse gas emissions, nitrogen and phosphorus losses), alongside the total potential of those measures to reduce emissions and improve water and air quality.	Paul.Devine2@daera-ni.gov.uk Joanne.Lemon@daera-ni.gov.uk
The making of a low pollutant pig Feed efficiency is a key determinant of both carbon emissions and nutrient excretion in pig production, yet substantial variability exists between animals within the same batch or litter. Pigs with similar genetics can diverge into slow- and fast-growing individuals, with implications for environmental impact. Research is required to understand the factors influencing feed efficiency under commercial conditions, including early-life indicators, gene expression, and gastrointestinal microbiota. There is also a need to assess the role of subclinical disease and its effects on feed efficiency and feeding behaviour, to inform management, health and dietary interventions that reduce environmental impact. **Evidence Need:** • What production-level innovations in feed, genetics, nutrient management, waste handling, disease control, and labour efficiency can improve input / output performance in livestock sectors while delivering neutral or net-positive environmental outcomes under Northern Ireland farming conditions?	Joanne.Lemon@daera-ni.gov.uk

Theme 3 – One Health

The One Health concept recognises that the health of people is closely connected to the health of animals and our shared environment. An understanding of the changing interdependent links between people, animals, plants and our environment is becoming increasingly important in the context of growing and expanding world populations, climate change and land use, and the spread of endemic and zoonotic diseases.

The goal of Research Theme 3 is to develop strategic approaches to protecting and enhancing animal and plant health and animal welfare supported by sound scientific evidence. Information, gathered through targeted research, on the wider implications of animal / plant disease control strategies and interventions and animal welfare issues is needed to evaluate and inform the direction of future policy within Northern Ireland and to inform discussions with other Government bodies.

AMR-related proposals should, where appropriate align with The UKRI AMR flagship programme (part of the UKRI 'tackling infections' strategic theme): Antimicrobial resistance – UKRI. Likewise, proposals on vector-borne diseases should align with the UKRI-Defra One Health Vector Borne Diseases Hub: Vector-Borne Diseases Hub.

Contact details for the One Health Portfolio Adviser:
Grant Mills, Grant.Mills@daera-ni.gov.uk
Denise McLean, Denise.McLean@daera-ni.gov.uk

Theme 3 – One Health	
Description of Evidence Need	**DAERA contact**
eDNA-enabled plant health surveillance from points of entry to the wider environment (early warning for regulated pests/pathogens) Northern Ireland's plant health status is increasingly vulnerable to regulated pests and pathogens entering through trade pathways. Strengthening early detection from points of entry through to inland distribution and surrounding environments will help DAERA target scarce inspection resources proportionately and improve confidence in rapid response decisions. The project should develop and validate end-to-end eDNA workflows (sampling design, laboratory/analytical methods, confirmation triggers and data standards) for pest and pathogen surveillance, and set out how results can be integrated into routine M&S / reporting. Outputs should be directly usable for operational Monitoring & Surveillance. **Evidence Needs:** • What future risks are likely to impact tree and plant health in Northern Ireland, and how can innovative methods (e.g. environmental DNA metagenomics), predictive tools and horizon scanning inform surveillance, risk prioritisation and biosecurity planning? • How can environmental (e)DNA-based surveillance be used to detect early biological threats (including pests and pathogens), and what infrastructure, sampling strategies and analytical tools are needed for an integrated One Health observatory system?	Diane.Stevenson@daera-ni.gov.uk Grant.Mills@daera-ni.gov.uk Denise.McLean@daera-ni.gov.uk

Theme 3 – One Health	
Description of Evidence Need	**DAERA contact**
Risk-based pathway analysis and targeted surveillance for regulated timber-borne pest Agrilus bilineatus (two-lined chestnut borer) International timber trade presents a credible pathway for introducing regulated forest pests, with potentially severe impacts on native tree species, ecosystem services and the wider economy. A risk-based understanding of the highest-likelihood pathways is essential to design proportionate inspection and surveillance that meets regulatory duties and improves interception success. The project should characterise the trade pathway(s) most relevant to Northern Ireland, refine the pest risk assessment for local conditions, and translate this into targeted surveillance and inspection protocols (including sampling locations, frequency and decision thresholds). Outputs should support DAERA's operational planning, compliance reporting and contingency readiness for a rapid response if detection occurs. **Evidence Needs:** • What future risks are likely to impact tree and plant health in Northern Ireland, and how can predictive tools and horizon scanning inform risk prioritisation and biosecurity planning? • How can environmental monitoring approaches support early warning and interception of biological threats, and how should surveillance be targeted based on pathway risk?	Diane.Stevenson@daera-ni.gov.uk Grant.Mills@daera-ni.gov.uk Denise.McLean@daera-ni.gov.uk

Theme 3 – One Health	
Description of Evidence Need	**DAERA contact**
Predictive risk modelling and integrated pest management for priority forest pests under future climate scenarios (EAB, ALB) Priority quarantine pests such as emerald ash borer and Asian long-horned beetle pose major risks to forests and the wider landscape, and those risks may change as climate and land use shift. Predictive models can help DAERA anticipate where establishment is most likely and design surveillance and mitigation that are timely and cost-effective. This project should develop spatially explicit risk models using relevant drivers (climate variables, host distribution, trade/transport pathways and habitat suitability) and translate these into a practical decision-support product (e.g. a dashboard for surveillance targeting). It should also deliver an evidence-based appraisal of integrated pest management options used elsewhere, with a clear assessment of feasibility and proportionality under NI conditions. **Evidence Needs:** • What future risks are likely to impact tree and plant health in Northern Ireland, and how can predictive tools inform surveillance, risk prioritisation and biosecurity planning under a One Health framework? • How will climate change and associated shifts in ecosystem composition and function influence the potential of pests and pathogens to emerge or expand, and how can this inform preparedness?	Diane.Stevenson@daera-ni.gov.uk Grant.Mills@daera-ni.gov.uk Denise.McLean@daera-ni.gov.uk

Theme 3 – One Health	
Description of Evidence Need	**DAERA contact**
One Health assessment of AMR introduction via imports (food, animals, feed/ingredients, raw pet food) and human travel, including environmental transmission pathways AMR risks can be introduced through multiple routes beyond on-farm use, including imported foods, animal by-products and ingredients, raw pet food, and human travel. A structured assessment is needed to understand which routes are most relevant to Northern Ireland and where risk-based surveillance and mitigations would be most effective. The project should compile and assess available evidence to produce a risk-based register of introduction pathways, identify priority organism–commodity-supply chain combinations, and describe how environmental transmission (wastewater, water bodies and other interfaces) may amplify or reveal these risks. Outputs should inform proportionate import surveillance, cross-agency coordination and targeted stakeholder communications. **Evidence Need:** • What is the prevalence of AMR in imported food and animal by-products from high-risk source countries, and how can this inform risk-based import surveillance, One Health risk assessment and AMR mitigation strategies in Northern Ireland?	Hilary.Glasgow@daera-ni.gov.uk Grant.Mills@daera-ni.gov.uk Denise.McLean@daera-ni.gov.uk

Theme 3 – One Health

Description of Evidence Need	DAERA contact
Anthelmintic resistance in Northern Ireland ruminants: prevalence, drivers, impacts and policy-relevant mitigation options Anthelmintic resistance threatens animal health and welfare, farm productivity and the sustainability of parasite control. A consolidated, policy-facing evidence base is needed to understand the scale of the risk under NI conditions, the main drivers of resistance, and which mitigations are both effective and implementable in practice. This project should synthesise NI and international evidence on prevalence and trends, quantify welfare and economic impacts where possible, and critically appraise mitigation approaches (e.g. targeted selective treatment, grazing management, diagnostics and advisory interventions). It should conclude with a set of realistic policy and industry options, including priority evidence gaps that would justify subsequent primary research or surveillance investment. **Evidence Need:** • What on-farm intervention measures are most appropriate, implementable and cost-effective for improving or maintaining animal health in Northern Ireland, and how can these be evaluated across different production systems and scaled through advisory and policy mechanisms?	Hilary.Glasgow@daera-ni.gov.uk Grant.Mills@daera-ni.gov.uk Denise.McLean@daera-ni.gov.uk
Integrating AMR datasets to model transmission pathways across farms, wildlife and the environment (advanced analytics / modelling) Multiple AMR-related datasets already exist across AFBI research and monitoring streams, but their value is reduced if they cannot be combined to test transmission hypotheses and identify high-leverage intervention points. Integrated analytics can strengthen One Health understanding and improve the targeting of surveillance, stewardship and environmental mitigations. The project should define a reusable data architecture (metadata standards, linkage variables, governance and quality considerations) and apply advanced analytics/modelling to evaluate plausible transmission routes across farms, wildlife reservoirs and environmental compartments. Outputs should include clear, policy-relevant indicators and analytical products that can be operationalised for routine reporting and decision support.	Hilary.Glasgow@daera-ni.gov.uk Grant.Mills@daera-ni.gov.uk Denise.McLean@daera-ni.gov.uk

Theme 3 – One Health	
Description of Evidence Need	**DAERA contact**
Linking syndromic disease indicators with antimicrobial use and AMR data to target interventions and quantify economic impacts (cattle and sheep) Reducing antimicrobial use without compromising welfare requires a better understanding of when and why antibiotics are used, and which disease contexts account for the greatest burden. Linking syndromic indicators with antimicrobial use and AMR signals can help identify priority intervention points and design targeted, credible stewardship measures. This project should develop an agreed set of syndromic indicators for cattle and sheep that can be linked to antimicrobial use data (and, where feasible, AMR outcomes such as laboratory results or post-mortem findings). It should assess behavioural and economic drivers of use in high-burden contexts and propose targeted intervention packages, alongside an approach to evaluating impacts on animal health, farm economics and AMR outcomes. **Evidence Need:** • How do veterinary farm visits contribute to antimicrobial use patterns and AMR transmission risks across livestock systems in Northern Ireland, and what indicators such as syndromic data should be monitored to inform risk mitigation and AMR surveillance?	Hilary.Glasgow@daera-ni.gov.uk Grant.Mills@daera-ni.gov.uk Denise.McLean@daera-ni.gov.uk
Molecular Surveillance of Hepatitis E Virus and Emerging Porcine Coronaviruses. Hepatitis E Virus (HEV) is an important zoonotic pathogen with established animal reservoirs and multiple transmission pathways linking livestock, wildlife, food systems and the environment to human infection. Recent increases in HEV detections, alongside growing recognition of emerging porcine coronaviruses, highlight a need for integrated molecular surveillance to understand pathogen dynamics, transmission routes and zoonotic risk under Northern Ireland conditions. This project will use existing livestock, wildlife and environmental sample biobanks, alongside human clinical sequencing data, to deliver a unified One Health molecular epidemiology framework. It will generate evidence on prevalence, genotype distribution and cross-species transmission of HEV, while applying the same surveillance infrastructure to emerging porcine coronaviruses and the wider pig virome.	Ignatius.McKeown@daera-ni.gov.uk Grant.Mills@daera-ni.gov.uk Denise.McLean@daera-ni.gov.uk

Theme 3 – One Health	
Description of Evidence Need	**DAERA contact**
The spatial distribution and impact of Aphids in the NI seed potato plant breeding sector Data on the aphid population in NI exists from 2009. This project will analyse this data to determine a) the spatial and temporal distribution of aphids b) the yield and quality impacts on seed potatoes c) identifying high-risk zones and drivers such as climate, landscape, agronomy. The project will assess the main seed potato regions (Down, Antrim, Londonderry) and the impact of cropping intensity and virus spread. As seed potato value depends on disease free status virus infection can subsequently affect crops and reputation. The seed certification system and integrated pest management strategies will benefit from policy developments resulting from this research.	Diane.Stevenson@daera-ni.gov.uk Grant.Mills@daera-ni.gov.uk Denise.McLean@daera-ni.gov.uk
Immune function perturbation in *Mycobacterium bovis* infection (scoping project) A coordinated understanding of host immune responses to *Mycobacterium bovis* is required to inform improved diagnostics, surveillance and disease control policy. Existing evidence spanning host genetics, immune phenotypes, environmental and nutritional drivers, and pathogen variation remains fragmented and not yet synthesised for Northern Ireland policy needs. This project will deliver a desk-based scoping study, combining structured literature review with interrogation of relevant AFBI pilot datasets, to assess how these factors interact to influence disease outcomes. It will identify key knowledge gaps and define priorities for a coherent, feasible and sustainable long-term research programme on immune function in bovine tuberculosis. The project will also assess the feasibility of integrating datasets under a One Health framework, and define required expertise, collaborations and enabling infrastructure. Outputs will provide clear recommendations to inform future research commissioning and policy development.	Lee.Williamson@daera-ni.gov.uk Maria.OHagan@daera-ni.gov.uk Grant.Mills@daera-ni.gov.uk Denise.McLean@daera-ni.gov.uk

Theme 3 – One Health	
Description of Evidence Need	**DAERA contact**
Bovine tuberculosis in deer: epidemiology and transmission dynamics Wild and peri-domesticated deer may contribute to the persistence and transmission of bovine tuberculosis (bTB) in Northern Ireland, but their epidemiological role remains poorly characterised. This project will improve understanding of deer populations, including species distribution, density and temporal trends, to better define the wildlife–livestock interface. This evidence will underpin the design of a targeted phylodynamic study to investigate transmission pathways between deer and cattle. The project will adopt an interdisciplinary, ecologically led approach, with academic collaboration where appropriate, to strengthen the evidence base for disease control and policy development.	Lee.Williamson@daera-ni.gov.uk Maria.OHagan@daera-ni.gov.uk Grant.Mills@daera-ni.gov.uk Denise.McLean@daera-ni.gov.uk

Theme 4 – Natural Environment

Our landscape is a valued part of our national heritage and is reflected in the abundance and diversity of our wildlife and habitats, from our diverse marine life and internationally significant coastal waters, river and lake systems, to our important peatlands, oak woodlands, semi-natural grasslands and coastal habitats. Our natural environment contributes to our prosperity and well-being in numerous ways. It provides the essential services for our life and work, from the air we breathe, the food we eat and the water we drink, to the resources for building our infrastructure. It protects our communities from flooding and extreme weather and supports our health and quality of life, providing open spaces for exercise, social engagement and mental well-being

The goal of Research Theme 4 is to develop a better appreciation of the interaction between land/marine based industries and how the natural environment and the regulatory compliance within and between these industries will help promote enhanced policy making and regulatory capabilities. Research will support actions to reduce the significant pressures our agri-food and forestry sectors have on water quality and soil health; to reverse the loss of biodiversity; and to restore and protect the environment.

Natural Environment Portfolio Adviser:
Paul Devine, Paul.Devine2@daera-ni.gov.uk

Theme 4 – Natural Environment	
Description of Evidence Need	**DAERA contact**
Impact of Persistent Organic Pollutants (POPs) policy and regulation Research to consider the impact of changes to Persistent Organic Pollutant (POP) legislation and international obligations under the Stockholm Convention. **Evidence Need:** A project on this topic would address need 77 in the current Natural Environment Evidence Plan. • What are the major point and diffuse pollution sources contributing to environmental degradation in Northern Ireland, and how do their individual and combined impacts affect ecosystems and public health? What are the most effective and achievable first steps in source-specific or cumulative remediation?	Caroline.Barry@daera-ni.gov.uk Paul.Devine2@daera-ni.gov.uk

Theme 4 – Natural Environment	
Description of Evidence Need	**DAERA contact**
Sustainable Catchments programme – Monitoring and Evaluation Monitoring & Evaluation programme for the Sustainable Catchments programme. This project would further develop the current AFBI NAP-BMP project (24/T4/05). A project on this topic would assess the long-term impacts of interventions funded through the Sustainable Catchments Programme. **Evidence Need:** A project on this topic would address need 42 in the current Natural Environment Evidence Plan. • How do current agricultural and nutrient management policies in Northern Ireland contribute to nutrient losses into aquatic environments, and what are the associated ecological and socio-economic risks for fisheries, recreation, and water-dependent industries?	Stephen.Archer@daera-ni.gov.uk Paul.Devine2@daera-ni.gov.uk
Lough Neagh fish stock change Impacts of the current ecology / water quality of Lough Neagh on fish stocks and their behaviour. This research could consider trends in invertebrate numbers and the impact these may have on food chains. A project in this area would help inform fisheries policy on management of fish species in Lough Neagh. **Evidence Need:** A project on this topic would address need 42 in the current Natural Environment Evidence Plan. • How do current agricultural and nutrient management policies in Northern Ireland contribute to nutrient losses into aquatic environments, and what are the associated ecological and socio-economic risks for fisheries, recreation, and water-dependent industries?	Mary.Toland@daera-ni.gov.uk Paul.Devine2@daera-ni.gov.uk

Theme 4 – Natural Environment	
Description of Evidence Need	**DAERA contact**
Economic modelling of environmental policy measures. Economic modelling of environmental policy measures. This research could consider potential policy and regulatory options for nutrients and biodiversity (30 by 30 targets). A project on this topic could help to inform options for future policy and regulations, including those in the Environmental Improvement Plan. **Evidence Need:** A project on this topic would address need 12 in the current Natural Environment Evidence Plan. • What are the economic, social, and wider benefits of nature's contributions to people in Northern Ireland, and how can these be effectively defined, quantified, and incorporated into policy and investment decisions?	Brian.Ervine@daera-ni.gov.uk Fiona.Dickson@daera-ni.gov.uk Paul.Devine2@daera-ni.gov.uk
Opportunity mapping for Nature Based Solutions Research to develop new opportunity maps and spatial models for potential nature-based solutions which would deliver multiple ecosystem services benefits including flood alleviation and run-off risk mitigation. A project on this topic could help inform options for future policy and regulations, including those in the Environmental Improvement Plan Environmental Improvement Plan for Northern Ireland - *By 2026 develop and implement nature recovery plans and programmes, including nature-based solutions, for protected areas, priority habitats and species, nature recovery networks and other effective conservation measures (OECMs). Develop and agree a framework for delivering the 30x30 target and Nature Recovery Networks, incorporating key areas for Nature-based Solutions for climate action and implement through a range of delivery mechanisms and conservation programmes*. **Evidence Need:** A project on this topic would address need 86 in the current Natural Environment Evidence Plan. • What are the economic, social and environmental benefits of nature's contributions to people in Northern Ireland, and how can ecosystem services be effectively integrated into landscape, seascape and freshwater planning and management strategies?	Sara.McGuckin@daera-ni.gov.uk Paul.Devine2@daera-ni.gov.uk

Theme 4 – Natural Environment	
Description of Evidence Need	**DAERA contact**
NI specific biodiversity indicators Research is needed to develop new NI specific biodiversity indicators for priority species. Measurement of these indicators would be used to report on progress against biodiversity targets, and to meet Environment Act, Kunming-Montreal Global Biodiversity Framework, Climate Change Act and NICCAP, and Green Growth Strategy reporting requirements. A project on this topic could help inform options for future policy and regulations, including those in the Environmental Improvement Plan Environmental Improvement Plan for Northern Ireland (Publish a suite of annual biodiversity indicators to report on progress against biodiversity targets, and to meet Environment Act, Kunming-Montreal Global Biodiversity Framework, Climate Change Act and NICCAP, and Green Growth Strategy reporting requirements. **Evidence Need:** A project on this topic would address need 88 in the current Natural Environment Evidence plan. • What restoration methods are most effective for enhancing biodiversity across Northern Ireland's terrestrial and aquatic ecosystems, and how can novel spatial and ecological approaches be developed to improve restoration outcomes?	Sara.McGuckin@daera-ni.gov.uk Paul.Devine2@daera-ni.gov.uk
Economic consequences of the blue green algae blooms in Lough Neagh Research is required to assess the economic consequences of blue green algae blooms in Lough Neagh and interventions to reduce nutrient pollution. **Evidence Need:** A project on this topic would address need 43 in the current Natural Environment Evidence plan. • Develop a Marginal Abatement Cost Curve (MACC) for nutrient pollution reduction in the Lough Neagh catchment to support prioritisation of cost-effective interventions.	Craig.Hartin@daera-ni.gov.uk Adele.Willis@daera-ni.gov.uk Claire.Vincent@daera-ni.gov.uk Paul.Devine2@daera-ni.gov.uk

Theme 4 – Natural Environment	
Description of Evidence Need	**DAERA contact**
Emissions factor validation in housed systems. Research is required to evaluate emissions associated with conventional slatted vs solid floors to help improve the precision of the ammonia and GHG inventories for Northern Ireland. This proposal should also consider emissions associated with novel floor designs and scraper types. **Evidence Need:** A project on this topic would address need 67 in the current Natural Environment Evidence plan. • How do different local and transboundary emission sources contribute to ambient air pollutant concentrations in Northern Ireland, and how can this information guide targeted mitigation actions?	Iain.Johnston@daera-ni.gov.uk Paul.Devine2@daera-ni.gov.uk
Maximising the value of Soil Nutrient Health Scheme data Research is needed to consider the potential to maximise the value of data and/or new LIDAR maps created as part of the Soil Nutrient Health Scheme. **Evidence Need:** A project on this topic would address need 20 in the current Natural Environment Evidence plan. • Identify high-risk areas for soil degradation across Northern Ireland and develop targeted strategies to embed soil management best practices through education, incentives, and demonstration.	Stephen.Archer@daera-ni.gov.uk Paul.Devine2@daera-ni.gov.uk

Theme 4 – Natural Environment	
Description of Evidence Need	**DAERA contact**
Nitrogen inputs from organic manures Since Northern Ireland's first Nutrients Action Programme in 2007, farms have been required to manage livestock manure within an annual nitrogen loading limit which takes account of both manure spread on the land and nutrients deposited directly by grazing animals. Research is needed to undertake a whole-system evaluation of the role of slurry and manure in NI farm systems with a focus on nitrogen. **Evidence Need:** A project on this topic would address need 42 in the current Natural Environment Evidence Plan. • How do agricultural and nutrient management policies in Northern Ireland help to protect aquatic environments from nutrient enrichment, and what are the associated ecological and socio-economic risks to manage for fisheries, recreation, land-based and water-dependent sectors?	Brian.Ervine@daera-ni.gov.uk Paul.Devine2@daera-ni.gov.uk

Theme 5 – Rural Affairs

The overarching aim for the Rural Policy Framework for NI is *to create a rural community where people want to live, work and be active in a sustainable and environmentally responsible way.*

Thriving rural communities that contribute to prosperity and wellbeing through a strong, competitive, regionally balanced economy and have more people working in better jobs.

The goal of Research Theme 5 is to build the evidence base to inform DAERA' s broad rural policy agenda. It is seeking to use research to develop a more robust and sophisticated understanding of the social and economic characteristics of rural areas, with a particular focus on identifying the specific needs of disadvantaged groups and what this means for the development and equitable delivery of government policy for both the farming and non-farm sector.

This theme also includes cross-cutting economic research that will provide a deeper insight into the impact of policy options right across the Department's remit and inform future policy development on agri-food industry competitiveness, animal health and welfare, and environmental sustainability.

Rural Affairs Portfolio Adviser:
Sam Maybin, Samuel.Maybin@daera-ni.gov.uk

Theme 5 – Rural Affairs	
Description of Evidence Need	**DAERA contact**
Understanding the Extent, Drivers and Future Trajectories of Rural Depopulation A project is required to determine the reality and extent of rural depopulation, identify drivers, implications and future trajectories. This work should be place-based (not an "average rural vs average urban" comparison) and with emphasis on demographic trends (including youth out-migration, migration inflows etc) as well as settlement-type variation across NI. The proposal should: (i) Quantify population change across rural areas and compare patterns with urban areas. (ii) Test whether the drivers (e.g., housing, employment, service access, transport/digital connectivity etc) are the same or different in rural vs urban contexts and across rural settlement types.	Brenda.Kelly@daera-ni.gov.uk Samuel.Maybin@daera-ni.gov.uk

Theme 5 – Rural Affairs	
Description of Evidence Need	**DAERA contact**
Understanding the Differential Impacts of an Ageing population on Rural Areas, Services, and Community Resilience A project focussing specifically on the impacts of population ageing on rural areas is required, recognising that ageing is a nationwide issue but may have different consequences for rural communities due to settlement patterns, access to services, workforce availability, and viability thresholds for local provision. Recent NISRA projections (as reflected in public reporting) indicate that people aged 65+ are projected to outnumber children by mid-2027, the 85+ population is projected to more than double over 25 years, and demographic change is expected to increase pressure on public services and the dependency balance; reporting also highlights that smaller rural schools may face particular viability challenges as pupil numbers fall. This need aligns with the Rural Affairs Evidence Plan focus on how demographic change affects service needs, community cohesion and place-based policy delivery. Proposals should quantify how ageing alters rural population structure and natural change (births/deaths) relative to migration effects, and assess the implications for: (i) Service sustainability (e.g., education and health access). (ii) Labour markets and the pool of working-aged people. (iii) Rural wellbeing and resilience, using settlement-type analysis consistent with DAERA/NISRA classifications and data sources.	Brenda.Kelly@daera-ni.gov.uk Samuel.Maybin@daera-ni.gov.uk

Strategic Projects

New in 2026, these evidence needs are designed to deliver strategic, sustainable and impactful benefits, not just outputs or short-term gains. Data captured will build resilience, improve performance and drive meaningful change.

DAERA's diverse and cross-cutting activities protect, support and address issues with natural environment; climate change; sustainable agri-food and fishing sectors; rural communities; and animal health and welfare. A strategic, collaborative and innovative research approach will yield crucial scientific evidence to strengthen risk management, enhance decision making and maximise return on investment as policies are developed and implemented.

Needs identified include establishing a National eDNA Observatory; a NI Farm Woodlands field-based and modelling evidence base; a Rumen function evidence base; a Northern Ireland Trend Deck for Futures / Horizon Scanning; a Systems-level One Health decision support framework and policy trade-off analysis; research to analyse and interpret long-term and standardised nutrients and biology data on Lough Neagh and Lough Erne; and effects of Long-Term Slurry dressings on grasslands.

Strategic Projects Contacts:
Johnathan Dalzell, Johnathan.Dalzell@daera-ni.gov.uk
Larissa Strutt, Larissa.Strutt@daera-ni.gov.uk

Strategic Projects	
Description of Evidence Need	**DAERA contact**
National eDNA Observatory for Northern Ireland: centralised genomic sequencing facility and coordinated eDNA monitoring capability Environmental DNA (eDNA) provides a non-invasive, species-agnostic approach to detect organisms (including pathogens, pests, invasive and native species) through genetic material present in environmental samples (e.g. water, soil, and air). Establishing a National eDNA Observatory will create a cutting-edge capability to expand routine monitoring and early warning across terrestrial, freshwater and marine environments, while also supporting plant / animal / environmental health surveillance under a One Health approach. This strategic project will support the development of a centralised genomic / eDNA sequencing facility for Northern Ireland, allowing rapid turnaround from sample collection to data analysis and actionable insight. The project should support the provision of appropriate laboratory hardware, quality management processes, compute capacity (bioinformatics pipelines, data storage and secure access), and specialist expertise to deliver standardised end-to-end eDNA workflows (sampling design, laboratory processing, sequencing, analytics, interpretation and reporting). The facility should enable interoperable data standards and scalable deployment across priority R&D and future M&S programmes.	Grant.Mills@daera-ni.gov.uk Johnathan.Dalzell@daera-ni.gov.uk

Strategic Projects

Description of Evidence Need	DAERA contact
The project should also support engagement and integration with broader eDNA networks and collaborations across the UK and Ireland, supporting knowledge transfer. It should also seek to incorporate a development strand to align eDNA surveillance with emerging approaches in AI / machine learning for pattern detection and predictive risk frameworks, particularly as a factor of climate trends, and land use change. **Relevant evidence needs:** • How can environmental (e)DNA-based surveillance be used to detect early biological threats across sectors, including pests, pathogens and AMR, and what infrastructure, sampling strategies, and analytical tools are needed to develop an integrated One Health observatory system in Northern Ireland? • How can eDNA surveillance be deployed to improve detection of biodiversity change, invasive species, and ecosystem health across Northern Ireland's terrestrial, freshwater and marine ecosystems? • How can wastewater-based surveillance or other innovative environmental surveillance (e.g. air, soil sampling) and metagenomic sequencing support predictive environmental monitoring for zoonotic or emerging diseases and AMR?	
NI Farm Woodlands for Carbon Sequestration, Biodiversity and Water Quality Northern Ireland needs a robust, field-based and modelling evidence base on where, how, and under what management conditions woodland creation delivers measurable carbon sequestration, biodiversity net gain and water quality benefits in working agricultural landscapes; particularly intensive grassland systems. This project will generate practice-relevant evidence to support strategic, "right measure, right place" targeting logic consistent with emerging catchment-scale delivery models, including a prospective *Sustainable Catchment Programme* approach that emphasises risk-based targeting (supported by run-off risk mapping) and comprehensive water quality and hydrological monitoring feeding into accessible data platforms. The research will establish a set of coordinated field trials and paired-catchment evaluation components to test woodland design and management options that plausibly intercept nutrient and sediment pathways (e.g., strategic positioning, planting density, species mix and species genotype) while also delivering carbon and biodiversity outcomes. The project should also develop and validate a modelling framework that quantifies carbon sequestration and nutrient interception outcomes from woodland creation and management options across key NI farming systems (including intensive grassland).	Aoife.Smith@daera-ni.gov.uk John.McKillen@daera-ni.gov.uk Larissa.Strutt@daera-ni.gov.uk Johnathan.Dalzell@daera-ni.gov.uk

Strategic Projects	
Description of Evidence Need	**DAERA contact**
The modelling component should exploit existing UK and European empirical datasets (forest inventory, carbon accounting tables, Earth Observation and flux networks) combined with NI climate, soils, land-use and management data to produce decision-ready outputs for policy development and grant scheme design, including scenario testing for CAP-style interventions and EIP demonstration packages. The project should also incorporate Earth Observation elements with high resolution ground-truthing to support future modelling and decision-support tools. To ensure the project also strengthens biodiversity monitoring and aquatic ecosystem recovery evidence, it will need to integrate an eDNA-enabled monitoring strand aligned with the proposed National eDNA Observatory concept for Northern Ireland. eDNA methods (across water/soil/air samples) can provide species-agnostic baselining and repeat surveillance that supports biodiversity monitoring, detection of invasive species/pathogens, and assessment of aquatic biodiversity response alongside water quality outcomes.	
Northern Ireland Trend Deck for Futures / Horizon Scanning This project will develop a Northern Ireland–specific "Trend Deck" and supporting analyses to strengthen DAERA and AFBI's strategic foresight capability by integrating key NI datasets and expert insight. The work should be based on datasets held by AFBI, DAERA, NISRA and other authoritative sources to identify and synthesise priority data trends, drivers and emerging risks relevant to outcomes within DAERA's remit (e.g. natural environment, climate, sustainable agri-food, one health and rural affairs), and translate these into a Trend Deck that will support formal futures and horizon scanning programmes. The project should then build on this resource by supporting the delivery of a collaborative futures / horizon scanning programme, based on a Delphi prioritisation exercise led by the DAERA CSA's Office. **Relevant evidence need**: • How can analytical tools and foresight systems be improved to support future policy development in Northern Ireland, particularly in the face of complex climate and geopolitical risks.	Una.Clarke@daera-ni.gov.uk Johnathan.Dalzell@daera-ni.gov.uk
Systems-level One Health decision support framework and policy trade-off analysis (NI) Research to strengthen Northern Ireland's capability for transparent, systems-level One Health governance and policy appraisal, i.e., approaches that can explicitly assess trade-offs across animal health, environmental protection, public health, economic viability, and animal welfare, rather than treating these objectives in isolation.	Hilary.Glasgow@daera-ni.gov.uk Grant.Mills@daera-ni.gov.uk Johnathan.Dalzell@daera-ni.gov.uk

Strategic Projects	
Description of Evidence Need	**DAERA contact**
One Health decisions frequently involve competing outcomes and distributional effects (costs/benefits falling across different sectors and groups). A structured, system-wide governance and decision-support approach can improve transparency, strengthen the audit trail from evidence to policy choice, and support clearer communication of uncertainty and assumptions. The commissioned research would develop and test an integrated governance, modelling and decision support framework suitable for DAERA's One Health context, including (i) a transparent set of cross-domain criteria/metrics spanning the five outcome areas above, and (ii) a practical method for comparing policy options or option "packages" against those criteria, with explicit handling of uncertainty and sensitivity. The wider evidence base indicates that multi-criteria decision analysis (MCDA) and decision science approaches are widely used to structure complex, multi-objective decisions, including One Health–relevant prioritisation contexts, and that stakeholder engagement and clarity on criteria/weighting are central to legitimacy and usability.	
Priming Rumen Function for One Health Outcomes Rumen function underpins animal health, welfare and productivity, whilst also representing a source of biogenic methane, with consequences for climate and environment. A wide range of approaches to modifying rumen function and whole-animal outcomes are now known and emerging, including: (i) bacterial supplementation / direct-fed microbials intended to shift fermentation patterns or compete for hydrogen; (ii) phage-based approaches that may selectively suppress specific bacterial groups and help influence early-life microbiome assembly away from methanogenic assemblages; (iii) small-molecule interventions that inhibit methanogenesis directly or shift fermentation and microbial activity; and (iv) dietary interventions including mixtures of grassland species and varieties on pasture. This project will develop an evidence base for DAERA on which approaches (alone or in combinations) are most likely to deliver practical, welfare-safe GHG and ammonia emissions reductions and productivity, and hence financial performance benefits under NI livestock systems. It will (a) identify the most policy-relevant microbial and fermentation indicators linked to GHG and ammonia emissions and health/welfare proxies; (b) test candidate intervention classes (dietary, bacterial, phage, small molecule) in a structured way to compare one health outcomes against fermentation stability and productivity; and (c) define the	Astrid.Hamilton@daera-ni.gov.uk Joanne.Lemon@daera-ni.gov.uk Grant.Mills@daera-ni.gov.uk Johnathan.Dalzell@daera-ni.gov.uk

Strategic Projects	
Description of Evidence Need	**DAERA contact**
monitoring, assurance and stakeholder considerations needed for credible progression to applied trials, recognising the need for an agile research strand capable of evaluating new candidate measures over time.	
Environmental Change Network - Freshwater – Lough Neagh / Lough Neagh Rivers / Lough Erne Research to analyse and interpret long-term and standardised data on Lough Neagh and Lough Erne with respect to nutrients and biology in order to facilitate the development of management strategies for improving river and lake water quality for the maintenance of local fisheries, amenity and drinking water industries. **Relevant evidence need**: A project on this topic would address need 42 in the current Natural Environment Evidence Plan. • How do current agricultural and nutrient management policies in Northern Ireland contribute to nutrient losses into aquatic environments, and what are the associated ecological and socio-economic risks for fisheries, recreation, and water-dependent industries?	Martin.McAleese@daera-ni.gov.uk Paul.Devine2@daera-ni.gov.uk
Effects of Long-Term Slurry dressings on grasslands The Long-Term Slurry (LTS) Experiment as a multifunctional research platform and unique resource, which provides baseline data on sward yields, forage quality, plant species composition, soil nutrient status, soil biology, and multiple soil biogeochemical processes. E&I Project 21/5/02 is due to complete so a proposal is requested to consider potential future research on this platform. **Relevant evidence need:** A project on this topic would address need 17 in the current Natural Environment Evidence Plan. • What land management approaches support the optimal use of soil and water resources to deliver productive and resilient agricultural systems in Northern Ireland.	Brian.Ervine@daera-ni.gov.uk Linda.McGoldrick@daera-ni.gov.uk Paul.Devine2@daera-ni.gov.uk
Habitat change on the CAFRE Glenwherry Hill Farm A habitat monitoring programme was initiated in 2008-09 at the CAFRE Hill Farm to provide a detailed habitat map of the Hill Farm and conduct regular habitat condition assessments (at 3 years intervals) to assess change in habitat status in relation to management and other extrinsic factors. A research project would analyse trends in vegetation change and evaluate the effectiveness of heather re-seeding trials and the recovery of a blanket bog that was previously a commercial conifer plantation.	Gary.Haslem@daera-ni.gov.uk Paul.Devine2@daera-ni.gov.uk

Strategic Projects	
Description of Evidence Need	**DAERA contact**
Relevant evidence need: A project on this topic would address need 81 in the current Natural Environment Evidence Plan. • How do managed field margins compare to natural succession margins in delivering biodiversity, ecosystem services, and agricultural co-benefits in Northern Ireland, and what are the implications for future land management policies?	