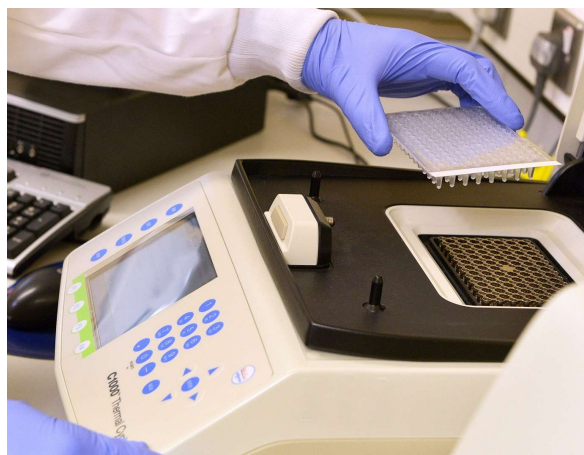
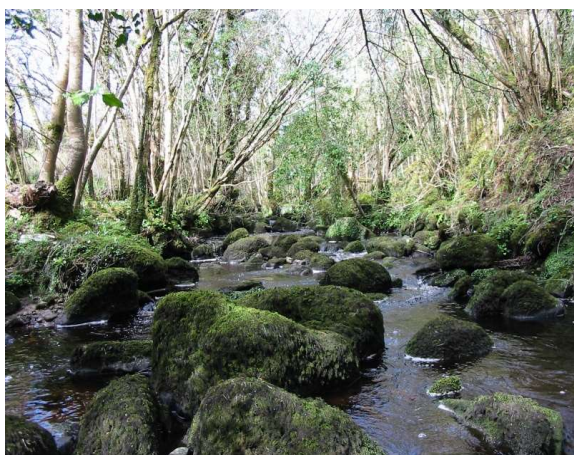


DAERA Directed AFBI Research Work Programme Call for Applications 2024



1. Background

The 2024 DAERA Directed AFBI Research Work Programme (DDARWP) call for applications aims to engage researchers in addressing research and development needs across 5 thematic areas;

Theme 1 – Climate

Theme 2 – Sustainable and Resilient Food Systems

Theme 3 – One Health

Theme 4 – Natural Environment

Theme 5 – Rural Affairs

The mission of the DAERA Research and Development Operational Strategy 2022 is *to get the best R&D (informed, influential science from high quality impartial scientists¹); at the best value; and make the best use of it to support the achievement of the DAERA purpose* and sets the following three goals towards the achievement of this mission:

- DAERA gets the best R&D;
- DAERA gets the best value from its R&D; and
- DAERA gets the best use from its R&D.

The DAERA Innovation Strategy 2020-2025² outlines the goals and objectives for DAERA to create an enabling environment for innovation to flourish and to enhance the impact of knowledge generation and science investments to help DAERA deliver Departmental and PfG objectives and meet our commitments under the UN Sustainable Development Goals.



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.

² See [DAERA Innovation Strategy launched | Department of Agriculture, Environment and Rural Affairs \(daera-ni.gov.uk\)](https://daera-ni.gov.uk/daera-innovation-strategy-launched/)

2. Programme Development

Research needs are identified by DAERA on an ongoing basis, informed by both informal and formal engagement with stakeholders. As part of the implementation of the R&D Operational Strategy, CSA Office is developing evidence plans to identify and prioritise investment in research and innovation in light of policy needs and delivery needs. This process ensures that DAERA's research portfolio is appropriately aligned to policy needs, provides a robust evidence base for future policy development, implements and reviews and/or supports innovation within the scope of DAERA's policy interests.

DAERA is transitioning to a new science system that will include new governance and oversight structures, along with new policies in relation to the commissioning of science and data management. To ensure minimal disruption and a smooth transition, the changes will be implemented through a phased approach, but all projects selected under this call will be eligible for application of the new structures and policies.

Proposals agreed through this annual process form part of the DAERA Directed AFBI Research Work Programme (DDARWP), delivered by AFBI for DAERA³.

3. 2024 Call Programme Guidelines

DAERA research needs for the 2024 DDARWP 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 sub-theme' due to capacity or capability reasons, it should highlight this to DAERA at the earliest opportunity.
- 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.
- DAERA is particularly interested in receiving FFPs which support the development of capability in areas of key strategic importance (e.g. behavioural science; land-use and economic modelling; data mining; genomics).

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

³ See <http://www.legislation.gov.uk/nisi/2004/3327/article/6/made>

Project Funding Category	Duration	Maximum Cost	Full Format Proposal Template
Small Project	<2 years	£275,000	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
Long Term Strategic	3 years		Large/Sub-Programme

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, AFBI Project Leads should consider submitting outline proposals to the DAERA Policy Lead, copied to e&i@daera-gov.uk, using the Concept Note pro-forma which is available on the DAERA website prior to submitting a FFP.

Proposal Assessment & Timetable

- Only those FFPs which are received by the closing date will be assessed by DAERA.
- The proposal window will open on 10th April 2024 and will close on Friday 21st June 2024 and all FFP(s) received up to this date will be reviewed by DAERA.
- To meet the overall timetable, submission deadlines will be strictly applied. In some instances, a fast track process will be developed for high priority proposals and DAERA will engage with AFBI regarding any revised timelines or these proposals where applicable.
- FFPs received after the closing date will not be accepted unless prior approval for delayed submission is agreed.
- Projects cannot commence until AFBI receives a commissioning letter from DAERA Chief Scientific Adviser'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:-

e&i@daera-ni.gov.uk

Date	Activity/Assessment Stage
10th April 2024	Proposal window opens
21st June 2024 (10 weeks)	Closing date for FFP submission
30th August 2024 (10 weeks)	FFP assessment & feedback on required revisions issued to AFBI
27th September 2024 (4 weeks)	Closing date for revised FFP submission, if requested
15th November 2024 (7 weeks)	AFBI notified of outcome of FFP evaluation
From 1st December 2024	Commissioning of approved projects
From 1st January 2025	Commissioned projects commence

Feedback

- Feedback on proposals will be coordinated by DAERA Chief Scientific Adviser'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 5
Theme 2 – Sustainable and Resilient Food Systems	Page 7
Theme 3 – One Health	Page 9
Theme 4 – Natural Environment	Page 11
Theme 5 – Rural Affairs	Page 13

Theme 1 – Climate

DAERA is leading the development of a new Green Growth Strategy for consideration by the new Executive, working in partnership with other Departments, local government, and key stakeholders from across the business, voluntary and community sectors. The draft strategy, if agreed, would be a new Executive's multi-decade strategy for climate, the environment, and the economy. It could help ensure that future government policy making here has climate and environmental action at its core, embracing and enabling science and innovation to drive solutions. Climate change has presented an unprecedented need for innovative approaches to address the climate emergency and rapid degradation of the natural environment (air, water, soil and biodiversity).

The goal of Research Theme 1 is to develop climate neutral and resilient economies through resource efficient and sufficient circular economies which are resilient and adapted to the expected effects of climate change and also provide green jobs for globally competitive and resilient industries. We need research to support new policies for agriculture, land use, land use change and forestry which help us adapt to climate change and mitigate its impact.

In particular, research is needed to refine the national inventories for the agri-food and land use sectors and to reduce its greenhouse gas emissions from ruminants. It is vital that these are reflected in the GHG and LULUCF inventories, 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.

Theme 1 – Climate
Sub Themes <ul style="list-style-type: none"> - GHG Inventory refinement - Climate change mitigation - Climate change adaptation
Climate change mitigation – emissions scenario modelling (complimentary to Climate+ Co-Centre and LUNZ Hub) Research is required to develop a scenario model tool which could be used at farm scale to assess the GHG and ammonia emissions mitigation potential and associated costs of a range of management options using Life Cycle assessment (LCA). Standard Project
Climate change adaptation – scenario modelling (complimentary to Co-centre for Sustainable Food) A scoping-study is required to consider novel, high value crops that NI landowners could consider diversifying towards which take advantage of NI's current and projected future climate as well as soil conditions. The study should consider, ideally through economic and environmental modelling, the relative merits of a range of options along with barriers to adoption. Overall, the goal is to identify alternative food systems applicable for adoption in NI in the short, medium and long term to support the economy, food security while lowering the environmental impact of the NI agriculture sector. Small Project
Climate Change adaptation - Insect Vectors (Strategic Project) A long-term research project is requested on the three main vector species associated with livestock in NI: biting midges, mosquitoes and Tabanidae. A proposal should consider vector dynamics in NI, including seasonality and how populations may be changing; what might be causing changes and the potential for an increased disease risk in animal and human populations. Standard Project

Climate Change adaptation - Impact assessment for NI aquaculture:

A NI specific assessment of the potential risks/threats and opportunities facing the aquaculture industry from climate change. A proposed study should include assessments/data gathering/ modelling to examine and assess the risks, make predictions and develop a detailed risk analysis, with recommendations to reduce threats.

Small Project

Climate Change adaptation - Identify and assess the increasing risk to NI potato sector from aphids and viruses.

Climate change and other environmental factors are increasing the risk of pests and pathogens impacting the NI potato sector. Research is required to identify the potential future risks likely to impact on potatoes and develop control strategies for managing those high-risk pests and pathogens identified. The spatial distribution of pests and pathogen risks should be identified. This work could also align with the work undertaken by the James Hutton Institute on risks to the Scottish potato sector.

Standard Project

Climate change mitigation - Economic modelling

Using economic modelling frameworks to develop and test policy interventions and to assess their impacts – evaluating policies and proposals within the draft Climate Action Plan on the NI economy. Quantitative macro-economic modelling studies are required to estimate the impact of a range of policies and proposals being considered within the draft Climate Action Plan.

Standard Project

Theme 2 – Sustainable and Resilient Food Systems

A sustainable food system delivers food security and nutrition for all in such a way that the economic, social and environmental bases to generate food security and nutrition for future generations are not compromised.

The goal of Research Theme 2 is to develop food systems which are more sustainable with respect to environmental, economic and social aspects on a global platform. Research and innovation are needed to help deliver a food system that supports animal welfare, a healthy planet, including a climate neutral agricultural sector resilient to external shocks, which incorporates circularity, bioeconomy development and resource efficiency and delivers nutrition for sustainable and healthy diets. Research will play a vital role in order to inform policy development and delivery, it is paramount that there is a sound understanding of the complex social, political and economic interactions which affect the operating environment in which these industries function.

Theme 2 – Sustainable and Resilient Food Systems	
Sub Themes <ul style="list-style-type: none"> - Sustainable agriculture policy - Sustainable agriculture improvement 	
Sustainable Agriculture policy - Improving forest productivity and exploiting opportunities. Research is required to better understand landowner attitudes to, and cultural impacts arising from, the Forests for our Future programme forest has a target to create 9,000 ha of new forests and woodlands over the next 10 years. <i>Small Project</i>	
Sustainable agriculture policy - Supply chain collaboration (complimentary to Co-centre for Sustainable Food) Research is required to more deeply understand NI producer attitudes, behaviours and motivations in relation to supply chain collaboration in the horticulture sector, and to consider the effectiveness of 'clusters' as a model to solve strategic supply chain issues. <i>Small Project</i>	
Sustainable agriculture policy- Dairy production Research is needed to consider the potential for unintended consequences of sustainable intensification initiatives in dairy enterprises and how these might be avoided. This research should consider medium to long term scenarios (to 2050). <i>Standard or Large Project</i>	
Sustainable agriculture improvement – Input and output efficiency Research is required to improve the efficiencies of primary production (productivity, sustainability and resilience), with either neutral or net-positive environmental impacts e.g. feed optimisation; nutrient use efficiency; soil health; slurry management systems; biosecurity and disease control; genetic (including genomic) selection; technological innovations to reduce labour requirements. <i>Standard or Large Project</i>	
Sustainable agriculture improvement Research is required to develop a monitoring and evaluation framework to measure the financial and environmental impacts of protein crops, supported through the Protein Crops Scheme. <i>Small Project</i>	

Sustainable agriculture improvement - Porcine Reproductive Respiratory Syndrome (PRRS)

Building on work undertaken within the recent European Innovation Partnership on PRRS, research is required to support action which will substantially reduce the disease burden associated with PRRS. Deliverables would include high resolution country-wide data relating to PRRS prevalence, genetic sequences and disease outbreaks.

Standard Project

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 ecosystem. 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 a strategic approach to protecting 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. In particular, there will be a focus on understanding emerging animal disease risks and the growing threats posed by antimicrobial resistance (AMR).

Theme 3 – One Health
Sub Themes <ul style="list-style-type: none"> - Protecting the health and welfare of our animals - Protecting the health of our plants - Understanding antimicrobial resistance
Protecting the health and welfare of our animals - Wildlife reservoirs of Highly Pathogenic Avian Influenza (HPAI) Research to study potential non-avian wildlife reservoirs for HPAI. This should include red-foxes and extend to other species of interest. Standard Project
Protecting the health and welfare of our animals - Alternative tests and method improvements for identifying bovine TB. Research is required to define and establish a framework for validation and implementation of appropriate novel diagnostic tests and improvements to existing tests. This framework should be designed to enable rapid responses to emerging technologies and be based on statistically robust validation strategies. Standard or Large Project
Protecting the health and welfare of our animals- Improving bovine TB disease resistance Research is required to further investigate the role of vitamin D in the activation of an effective immune response against <i>M. bovis</i> . This study should consider the vitamin D status of TB-infected herds in NI. Standard Project
Protecting the health and welfare of our animals- Bovine TB genomic information Research is required to develop new whole genome sequencing approaches to distinguishing local sources of bTB infection, and to identify transmission pathways between cattle herds. Standard Project

Understanding antimicrobial resistance – Wastewater and bathing waters

A proposal is requested to investigate the use of wastewater for early pathogen detection, including AMR genes. This research should look to expand knowledge on the understanding of the wastewater biome and investigate AMR transfer risks from farming/food production to environment and potential interventions.

Standard Project

Understanding antimicrobial resistance- Wildlife and environment :

Research is required to understand antimicrobial resistance (AMR) in wildlife and the environment through testing of faecal samples collected from foxes and badgers for other surveillance purposes. The proposal should look to expanding the current surveillance work to 12 months to remove seasonal bias and develop the pathogen range, including further Whole Genome Sequencing, to link aquatic AMR environmental studies and human and farm animal AMR surveillance.

Standard Project

Protecting the health and welfare of our animals - Future Bovine Viral Diarrhoea (BVD) surveillance strategies.

Research to inform the development of an optimal, cost-effective, future surveillance strategy for Bovine Viral Diarrhoea using novel testing strategies (e.g. targeted testing based on risk analysis).

Standard Project

Protecting the health and welfare of our animals- quantification of Bovine Viral Diarrhoea (BVD) infection risk

Research is required to develop and validate new infection risk metrics for BVD based on data from the NI BVD Eradication programme together with APHIS/NIFAIS data. If validated, these risk metrics could be used to identify high risk herds and to provide herdowners with information that could be used to mitigate infection risk.

Standard Project

Protecting the health and welfare of our animals - trade effects of EU recognition of BVD freedom for Northern Ireland.

A proposal is requested for a desk-top study to assess the potential for trade disruption if there are differences in 'BVD-free' status in NI, GB and ROI.

Small Project

Protecting the health of our plants - bee disease risks in NI

Research is needed to assess the potential impact of foul brood diseases in bees in NI. The outputs of this work should allow policy makers to make informed decisions about the most appropriate control measures to apply in terms of likely efficacy and value for money.

Standard Project

Protecting the health of our plants - predicting and managing future plant health risks.

Research is required to determine the best approaches to plant health and crop protection surveillance, to ensure cost effective use of staff time and to provide assurance to policy makers about the accuracy (including error estimates) of survey, sampling and monitoring programmes.

Standard Project

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.

Theme 4 – Natural Environment
Sub Themes <ul style="list-style-type: none"> - Healthy seas and oceans - Safeguarding our natural wealth - Pure air, clean rivers and resilient water supply - Resource efficiency and waste reduction
Resource efficiency and waste reduction – Potential for novel alternative fertilisers A desktop study is required to evaluate the environmental implications (including ammonia and GHG emissions and nutrient losses) of replacing inorganic nitrogen fertiliser with ‘bio fertilisers’ resulting from nutrient recovery from slurries and digestates generated in NI. Small Project
Safeguarding our natural wealth – Soil Health indicators Research is needed to consider further evaluation of soil biological health parameters, in particular low cost, accessible testing for landowners. Standard Project
Safeguarding our natural wealth – Land use economic model (complimentary to Climate+ Co-Centre and LUNZ Hub). Research is needed to explore the development of economic land use models to support policy makers in Northern Ireland. The research would assess the extent to which economic modelling could meet policy need across NICS covering areas that are included in the LULUCF GHG inventory such as bioenergy (DfE), settlement/built environment (DfI, DoF) and forestry, agriculture and peatlands (DAERA). The modelling platform should also consider the natural environment (biodiversity, water and air quality, carbon storage and sequestration). The study should explore the spatial data currently available in Northern Ireland, including issues of resolution and compatibility, and the scope to unify it within a single economic model. Standard Project

Healthy seas and oceans - Predictive water quality modelling

Research is needed to underpin the development of predictive water quality models and validation for six bathing water sites. This should involve generating daily predictions which can be readily accessed by the public.

Standard Project

Pure Air, clean rivers and resilient water supply- Lough Neagh science platform – (Strategic Project).

A proposal is requested for a long-term Strategic Research Project to inform, monitor and evaluate water quality related policies and operational activities related to water quality in Lough Neagh include the following elements:

- Collation of data sets for Lough Neagh and its tributaries into a single accessible IT enabled platform.
- A programme of water quality sampling in Lough Neagh and its tributaries, fully co-ordinated with WFD related surveillance and the Climate Plus Co-Centre research programme, to guide the development and validation of new catchment based models.
- Development of a new monitoring programme for cyanobacteria and cyanotoxins.
- Research to develop an in-depth understanding of Blue-Green bloom cycle; environmental conditions, bloom species composition, toxicity, longevity and decline.

Sub-Programme

Pure Air, clean rivers and resilient water supply- Lough Neagh science platform – Model development

Research is required to evaluate options and to recommend the most appropriate modelling approach to develop an integrated catchment model for Lough Neagh and its catchments.

Standard Project

Pure Air, clean rivers and resilient water supply- Lough Neagh science platform- In-lake management options

Research is required to evaluate in-lake options to manage Blue Green Algal blooms in Lough and help reduce the risk of re-occurrence. Proposals, informed by the work of the DAERA Water Quality Science Advisory Group, should be based on piloting shortlisted options in selected areas within Lough Neagh, commencing spring 2024, evaluating costs and benefits of proposed solutions. The proposal should be staged, include relevant stakeholders, and provide scientific information relative to inform potential scaling-up lake-wide.

Large Project

Pure Air, clean rivers and resilient water supply- Maintaining a long term strategic water quality data set for Upper Bann and Balinderry (Strategic Project)

Strategic research is required to assess the long-term benefits of agri-environment measures on improving water quality in the Upper Bann and Balinderry test catchments.

Large Project

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 the DAERA's broad rural policy agenda. In particular, 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.

Theme 5 – Rural Affairs
Sub Themes <ul style="list-style-type: none"> - Thriving, resilient rural economies and communities - Rural health and well-being. - Economic modelling frameworks to develop and test policy interventions and to assess their impacts
Using economic modelling frameworks to develop and test policy interventions and to assess their impacts – Farm income stability A study is required to investigate the driving factors of fluctuations in beef and sheep farming incomes. Using the Farm Business Survey (FBS) data, this study should explore modelling approaches to investigate measures of income stability. Standard Project
Using economic modelling frameworks to develop and test policy interventions and to assess their impacts – evaluating policies and proposals within the draft Climate Action Plan on the NI economy Quantitative macro-economic modelling studies are required to estimate the impact of a range of policies and proposals being considered within the draft Climate Action Plan. Standard Project
Rural health and well-being - Rural Poverty and Social Isolation A study is needed to help develop a better understanding of poverty and social isolation in rural areas including the impact of Covid-19 and the cost of living crisis in rural areas and on vulnerable groups. This study would inform the future of DAERA's Tackling Rural Poverty and Social Isolation Framework. Standard Project

Rural health and well-being - Rural Tourism

A study is need to help develop a better understanding of the impact of tourism on rural communities and how rural tourism can be developed in an environmentally sustainable manner which benefits local communities, helps conserve and protect cultural and natural heritage and supports green growth. This study would help inform the Sustainable Tourism pillar of the Rural Policy Framework

Standard Project

Using economic modelling frameworks to develop and test policy interventions and to assess their impacts - Evaluating the costs and benefits to the economy plant disease prevention and control- tree diseases.

Research is required to develop a better understanding of the wider economic factors of tree disease control measures to ensure that policies implemented for plant health protection achieve value for money outcomes.

Standard Project