Department for Environment, Food and Rural Affairs

Defra Group Areas of Research Interest

This document sets out the collective high level areas of science, evidence and analysis interest for the Defra group.

Defra is responsible for safeguarding our natural environment, supporting our world-leading food and farming industry, and sustaining a thriving rural economy. Our broad remit means we play a major role in people's day-to-day life, from the food we eat, and the air we breathe, to the water we drink.

These areas of research interest are in response to the recommendations from Sir Paul Nurse's review about government departments communicating clearly with the Research Councils about where their long-term research challenges lie:

"There is a need across the full range of government departments for a more strategic approach in relation to their departmental R&D programmes. This is partly a matter of securing the right levels of resource, but includes maintaining 'statements of need', in terms of the most important research questions confronting the departments. These will require work across the Government analytical professions to develop."

The research needs for Defra are extensive and this statement of research interest cannot be comprehensive. Therefore, in developing this document, Defra has formulated a series of high-level questions which express the evidence challenges the department faces. Defra has intentionally described these as long-term, cross-cutting and large scale, so they are robust to changes over short time scales. Underlying these high level questions are

more detailed sets of issues defined within the department's evidence plans that directly address more immediate policy priorities.

An example of a more detailed question that responds to current ministerial priorities would be:

'How can the Government's commitment to plant 11 million trees by 2020 best be leveraged to produce wider benefits for the environment, public health and the economy, especially air quality?'

Another example of a more detailed policy related question would be for each of the areas below, what the specific evidence needs are in relation to EU Exit for policy development and delivery.

Defra group strategic and cross-cutting issues

How do we achieve growth, value and impact for customers and consumers through better and more effective policy making?

What are the benefits of greater resource efficiency to enable sustainable growth across the economy and Defra's sectors specifically (e.g. food, farming, etc.) and how 'circular' can our economy be?

How do we better understand future risks and opportunities through expert horizon scanning?

How should Defra invest in the development and deployment of new and emerging technologies?

What are the social, economic and health benefits we gain from our environment (how are these changing and how do they interact?)

How effective have policy interventions been in securing positive environmental outcomes across our policy areas, alongside maintaining economic, social and health benefits?

How can we make more effective use of observations, data and processes to better understand risk, uncertainties and complexities in decision making?

Natural environment

How and why is our natural environment changing, and how do UK activities impact on the status of the natural environment globally? What is the relative importance of different pressures and how do they interact?

Which actions by individuals, communities, business and Government, including the use of new technologies, would most effectively and efficiently improve the status of our natural environment and secure economic, social and health benefits at home and overseas? What information, data and tools are required to support effective actions?

Which interventions are most effective in the UK leading progress on tackling illegal wildlife trafficking?

Rural communities

How and why is our rural economy and rural society changing? To what extent are the drivers of change specific to rural areas?

Which actions by individuals, communities, businesses and Government would most effectively and efficiently improve prosperity and life opportunities for people in rural communities? What information, data and tools are required for effective and efficient action?

What is the impact of the range of interventions for people in rural communities?

Floods

How can we design, build and manage assets sustainably to mitigate flooding and coastal erosion taking into account lifetime changes and effects on the environment?

How can we improve our management of incidents by forecasting, modelling, preparing, warning and responding, taking into account societal effects?

Food & farming

How can we identify and remove barriers to encourage investment in UK and global R&D and drive innovation for agriculture, food and drink industries to increase productivity, competitiveness and resilience, across the whole food system?

How can we identify the new and emerging technologies in which to invest, that will provide greatest benefit to our agriculture, food and drink industries?

How can we ensure the uptake of innovation and its translation into use for commercial outcomes, for UK food and farming businesses?

What are the key medium and long-term challenges and threats to our food supply? How can we prepare to respond, to safeguard a viable food supply in the face of climate change and changing demand?

How can we ensure that we (and others) make the most of data from statutory monitoring, statistics and research, including farmers and other businesses across the food chain, to access innovation ,decision support tools and knowledge exchange, whilst removing inefficient regulation?

How can we define the priority markets for exports and boost international trade opportunities, making British food a brand of choice at home and abroad?

How can we support more effective labelling, ensure better detection and combat fraud to ensure consumer confidence in food?

Environmental quality

What are the cost-effective, publically acceptable and practical ways to improve air quality in the short, medium and long term?

How can noise be effectively managed and, where appropriate, mitigated?

How can industrial pollution be controlled and effectively and efficiently managed?

How can we manage existing, new and emerging chemical pollutants to reduce damage to the environment and human health?

How can we minimise food waste and encourage urban recycling?

How will the climate change, what risks will this pose and which risk management actions are urgent and cost effective?

How can we better understand the nature and extent (at local and national levels) of all forms of pollution including chemical and air?

What are the cost-effective, publicly acceptable and practical ways to minimise agriculture's carbon emissions and its impacts on air and water quality?

Marine and fisheries

How do we better understand and manage the protection of the marine environment and how do long-term ocean processes, climate and human activities shape the condition of seas?

How can we achieve and maintain clean and safe seas free from harmful impacts of hazardous substances, nutrients and organic matter, microbial contaminants and litter?

How do we promote technological solutions and practices which drive competitiveness, increase productivity and improve environmental performance across the marine, fisheries, aquaculture and seafood system?

How productive are our seas and what are the impacts of human activities and behavioural practices on productivity, the marine environment and sustainable fisheries?

How can we develop fisheries management to ensure world leadership in sustainable fisheries, environmental protection and a thriving sector?

How can we enhance local decision making through community participation and engagement?

Water

How can we integrate catchment management with all stakeholders, responding to pressures with effective and economic measures to enhance ecosystem services and provide resilience?

How can we enhance productivity and resilience in water and wastewater services in the face of climate and socio-economic change?

How can we promote efficiency, investment and competition in water markets and achieve fair, affordable and cost-reflective water charges that incentivise environmentally responsible behaviour?

Animal health and welfare and plant health

How can we (with industry and other stakeholders) better identify, assess risks and prevent new pests and diseases arriving?

How can we use technology and data to better detect new pests, diseases and threats?

How can we better control and minimise the impact (economic, social, environmental) of disease (eradicate, contain, manage, adapt)?

How can we build systems that are resilient (economic, social, environmental) to introductions of pests and diseases?

What capability and capacity is needed to deliver to policy needs, and what responsibility does Government need to retain in order to manage animal and plant health risks?

If you have any feedback on this document please send to evidence.forum@defra.gsi.gov.uk

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