

UKRI Agri-food Network Plus - ‘Build a network to research sustainable agri-food for Net Zero’

Network Development Workshop

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*Dr. Derek Craig
Deputy Director EPSRC*



Research and innovation for the discovery, development
and deployment of a resilient and sustainable zero carbon
future for agri-food

UK Net Zero 2050 target

Commitment: bring all UK greenhouse gas emissions to Net Zero by 2050 (does not include imported emissions)



What needs to happen?

A whole-systems approach

Reduce

Reduce demand for GHG-intensive products, processes and services

Improve efficiency to reduce demand through both technical solutions and behaviour change



Remove

The **ability to capture, store and utilise** GHGs from essential processes that cannot be decarbonised.

The Committee for Climate Change estimates that we need to capture **75-175 MtCO₂ by 2050**.



Replace

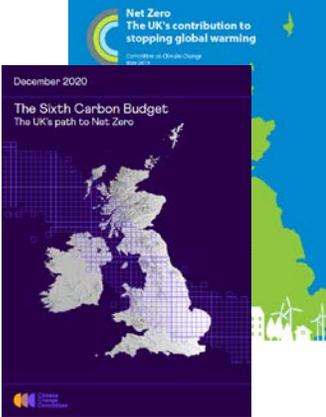
Replace GHG emitting products, processes and services with low and zero carbon solutions. This includes the need for extensive electrification and solutions for needs that cannot be met through electrification.



Where do UK GHG emissions come from?



UK Net Zero 2050 target – what is the role of research and innovation?



What is our role working closely with our partners?

Deploy

Deploying at scale solutions that are ready immediately

Address the **research questions that arise during deployment** and understand the **policy, regulatory, financial, institutional decisions and incentives/disincentives** that will be most effective.



Develop

Developing potential solutions that are not yet ready but which could significantly assist the transition of the agri-food system to net zero.

Create new **scientific insights, innovative technologies, and unlock deployment**



Discover

Discovering solutions to problems that we cannot yet solve.

And deliver the **disruptive science** that contributes to achieving global carbon neutrality in the long-term.

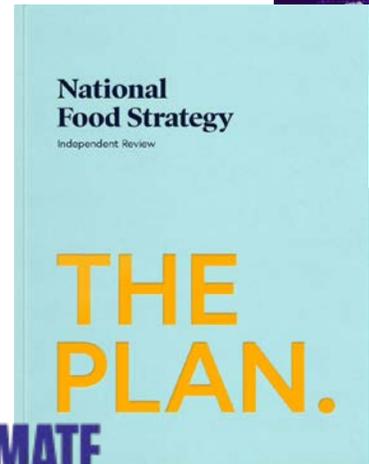


Where do UK GHG emissions come from?



UK Net Zero 2050 – where are we? 2021 is a big year!

- Committee for Climate Change 6th Carbon Budget
- PM's 10 Point Plan for Net Zero
- UK R&D Roadmap and consultation
- Integrated Review
- Innovation Strategy
- National Food Strategy
- UK strategies and plans currently under development or recently published in:
 - Biomass
 - Transport
 - Heat and buildings
 - Hydrogen
- **UK's Presidency of COP26** – opportunity to secure ambitious international commitments, partnerships, showcasing, influence



**UN CLIMATE
CHANGE
CONFERENCE
UK 2021**

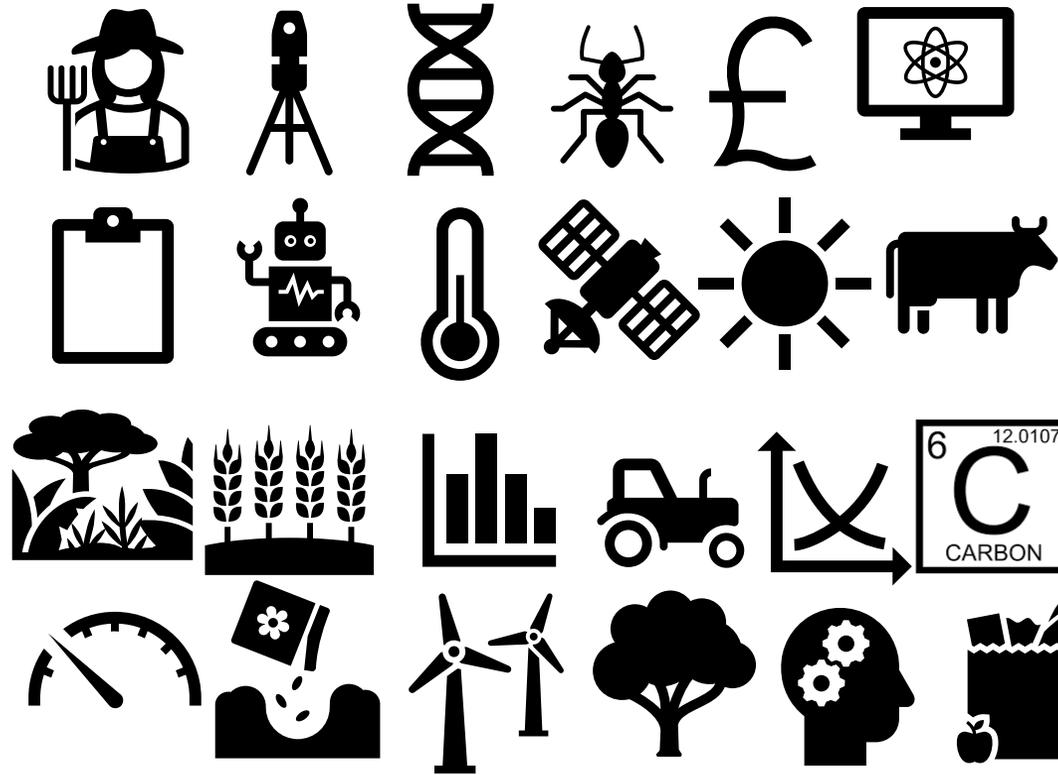
IN PARTNERSHIP WITH ITALY



A Network Plus to accelerate the transition of agri-food towards a sustainable net zero future

The challenges are interdisciplinary

-  sustainable environment
-  sustainable primary production
-  sustainable processing manufacturing and consumption
-  agri-food systems and bioeconomy



The approach needs to be whole system

-   Biotechnology and Biological Sciences Research Council
-   Economic and Social Research Council
-   Engineering and Physical Sciences Research Council
-   Natural Environment Research Council

This is a key UKRI investment to guide future sustainable agri-food for net zero research



- Build a net zero agrifood community
- Bring in new research
- Integrate with existing landscape
- Ensure the transition is sustainable considering biodiversity and changing land use
- Support feasibility projects to guide future research
- Develop a roadmap for supporting the transition
- Use a whole system data informed approach

Aim of the call

Establish a single Network Plus (network plus research) on sustainable agri-food for net zero

Convene and catalyse an interdisciplinary multi-stakeholder community

Provide research and innovation evidence in support of strategies to sustainably reduce or mitigate greenhouse gas emissions from the agri-food sector

Consider approaches to adapt UK agri-food systems to ensure sustainability and increased resilience to climate change and the resulting environmental impacts

Support the radical transformation of the agri-food system required to enable the UK to meet its net zero target.

Encourage a coordinated and interdisciplinary research and innovation approach that covers the wider agri-food system and agri-based ecosystem services, as well as consumer and producer behaviour changes.

Development of supporting digital technologies and coordinated, reliable datasets

Alignment of stakeholders expertise and priorities across the UK agri-food landscape.

UKRI Priorities in Agri-Food

sustainable environment:

- climate change and planning for resilience
- biodiversity and other environmental co-benefits
- soil health and function
- land management and use from field to landscape scale

sustainable primary production:

- livestock and management of emissions
- plant and animal breeding and genetics for adaptation and resilience
- novel agricultural systems and technologies, for example alternative protein production, controlled environment, precision farming and use of robotics and autonomous systems
- reducing fertiliser, manure, slurry and organic matter related emissions

sustainable processing manufacturing and consumption, for example:

- decarbonising food and drink manufacture (for example refrigeration)
- consumer behaviour and dietary preferences
- Food safety and nutrition
- producer response to changing consumer preferences
- understanding cultures, traditions and social movements around food and farming that can be barriers to adoption and influence social acceptability

agri-food systems and bioeconomy, for example:

- decarbonising farms (including machinery and vehicles), on farm energy generation, bioenergy crops
- net zero agri-food business models and policy, facilitate adoption of new production practices
- circular economy for agri-food system to better make use of waste streams
- sensing, efficient, and effective measurements to better understand the production of GHG in the agri-food system
- complex system modelling, data analysis, artificial intelligence, digital twin development to inform the necessary changes in agri-food.

Aims of the day

- To hear perspectives from a variety of key stakeholders relating to:
 - the challenges faced in transitioning to net zero across the agri-food system
 - Tips and advice on key aspects of the network design
- Jointly begin to address key issues for an application
- To pitch your vision for the network and begin to build interdisciplinary connections



Network+ research priorities - how might we refine and focus to make the greatest difference?

- Pilot Research: prioritizing for impact whilst ensuring a systems level perspective
 - Co-design
- Generating a road map for future Research and innovation investment in agri-food
 - Policy engagement
 - Sharing of findings



The Opportunity



- **Build a network to research sustainable agri-food for Net Zero**
- £4M investment to fund a single Network Plus (network and research) from BBSRC, EPSRC, ESRC and NERC
- 36 months
- Each institution may lead on only one application
- Individuals may only be on one full proposal application in total as either a principal investigator or a co-investigator.

The Timeline

