

SENATE

Title of paper: Proposed Centre for Food Systems (NUCoRE)

Main purpose of the paper: For decision

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Date of paper: 6th January 2026

Purpose of the paper

This paper presents a proposed NU Centre of Research Excellence in Food Systems (NUCoRE). It is intended that this NUCoRE will join a portfolio of 20 NUCoREs, which will enable the University to offer a coherent and distinctive narrative of our collective excellence in this area of food systems research and education and seize external opportunities.

Relation to strategy and values

NUCoREs are a transformative initiative within the University Research for Discovery and Impact strategy. The proposed NUCoRE advances a priority area within our NUCoRE portfolio, providing a clear mission for Food Systems research, strengthening cross-faculty and external collaboration, creating opportunities for researchers to succeed, and coordinating Newcastle's response to major global challenges.

Recommendations:

Senate is asked to discuss the NUCoRE proposal for endorsement and provide any feedback to the NUCoRE leads.

Consultation to date (including any previous committee consideration and its outcome):

3 x community workshops throughout 25/26, including a Horizon EU funding workshop.

Discussion with Research Strategy Implementation Group, July 2025.

FEBs approval, November 2025

UEB approval, December 2025

NUCoRE name: Food Systems

Leads: Jane Midgley & Yit Arn Teh

Lead Faculty: HaSS

1. What?

What is the topic and mission of the NUCoRE?

What specific research advances will it aim to deliver in the next 5 years?

What work packages or sub-themes/groupings might make up the NUCoRE?

The mission of this NUCoRE is to **co-produce real-world solutions to complex Food Systems challenges** and **conduct leading-edge research** through meaningful collaborations with cross-sectoral partners. We define **Food Systems** as the intricate networks of human and non-human actors, activities, processes, resources, and institutions involved in the production, consumption, and disposal of food. These systems are shaped by a diverse array of **environmental, socio-economic, historical, cultural, and political** factors (Figure 1). As such, addressing Food Systems challenges requires a strongly **interdisciplinary or transdisciplinary** approach.

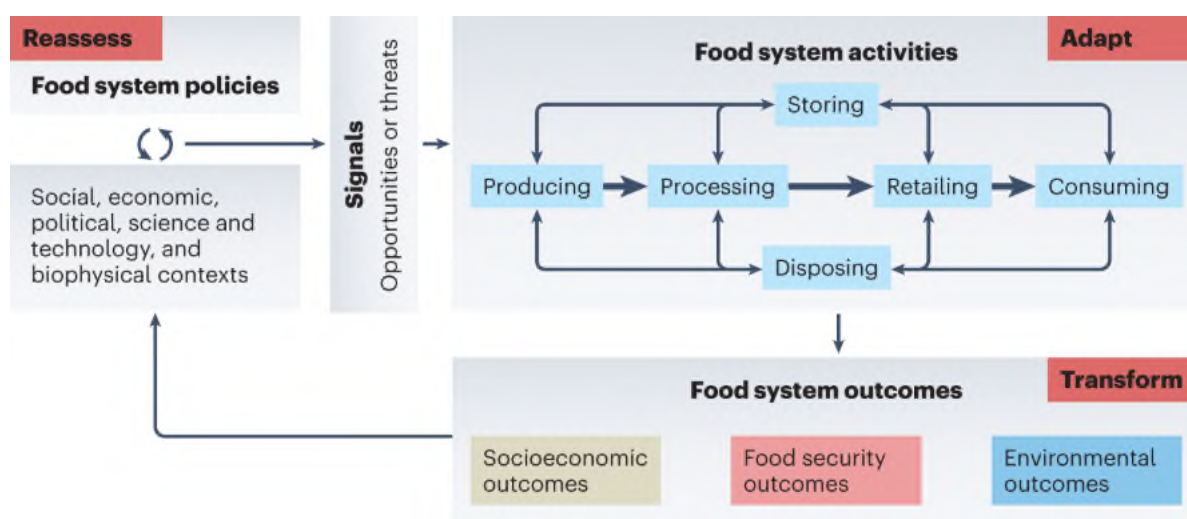


Figure 1: Transforming food system outcomes. This requires Food System actors to adapt their activities which they will do in response to changed signals. Policy signals need to be reassessed in the context of how the changed Food System outcomes feed back to the broader Food System contexts. Source: [Ingram & Thornton \(2022\) *Nature Food*](#)

Key Challenge Areas

The Food Systems NUCoRE (FS NUCoRE) will advance research on, and solutions to, several urgent, complex challenges:

1. Reducing Food System Inequalities

People, communities, and societies both shape and are shaped by Food Systems at local, national and global scales. Interactions with and between these systems are structured by intersecting inequalities such as those related to gender, age, class, ethnicity and place. This impacts on labour market conditions through to consumers' access to food. This NUCoRE will explore how we can foster fairer and more just Food Systems.

2. Resolving Conflicts Between Competing Policies

National and international policies on food security, biodiversity conservation, and Net Zero often pursue goals that are not easily aligned. Progress in one area can sometimes undermine others. This NUCoRE will explore innovations in **policy, technology, and practice** that can help reconcile these objectives or mitigate the trade-offs between them.

3. **Enhancing Food System Resilience**

Food Systems face increasing exposure to external stressors such as **climate change, resource scarcity, energy costs, and market volatility**. The NUCoRE will investigate ways to strengthen resilience through strategic innovations that enhance adaptability and long-term sustainability.

4. **Leveraging Technology for a Sustainable and Green Economy**

Emerging innovations—such as **precision agriculture, biotechnology, robotics, AI and big data, intensified process technology, energy integration and circular economy models**—offer transformative potential for improving Food System sustainability while driving economic growth. However, they also raise critical questions, for example:

- What barriers exist for commercial implementation or scalability?
- How can these technologies be effectively integrated into existing systems and value chains?
- What are the implications for various stakeholders across the food system?

The NUCoRE will work to support the **development, deployment, and equitable adoption** of innovations that contribute to a more sustainable and inclusive Food Systems.

Cross-Cutting Themes

The NUCoRE's work will be framed by three interrelated and cross-cutting themes:

- **Sustainability**
Focused on the environmental and social sustainability of the Food System, including its impact on people and nature, and its alignment with **UN SDG 12: Responsible Consumption and Production, UN SDG 13: Climate Action, and UN SDG 15: Life on Land**
- **Security**
Concerned with the stability and resilience of food supply chains, and how technological, policy, and practice innovations can help achieve **UN SDG 2: Zero Hunger and UN SDG 3 Good Health and Well-being** in the face of global threats.
- **Society**
Recognising society both as a driver that shapes Food Systems and as a beneficiary of system innovations. The NUCoRE will consider the social dimensions of Food Systems transformation, including equity (e.g. **UN SDG 1: No Poverty, UN SDG 10: Reduced Inequalities**), inclusivity (e.g. **UN SDG 5: Gender Equality**), and justice.

2. Why

What are the external drivers and horizon scanning that tell us this is timely?

What is our distinctive competitive advantage in this domain? How do we differ from other centres of excellence?

What major contributions have we already made?

Relevance and Timeliness

This NUCoRE is important and timely because Food Systems are under unprecedented pressure to deliver multiple benefits for people and nature, while themselves under threat from external factors, such as climate change, invasive pests and disease, environmental degradation, geopolitics, and the rising cost of energy and external inputs impacting the vulnerability of supply chains.

Shifts in government policy and consumer preferences are forcing growers and agri-food businesses to change and innovate, while simultaneously maintaining profitability and producing high quality, nutritious food. This is being made increasingly explicit in recent government policies and funding opportunities, and this NUCoRE pivots to address these priority areas. For example, the UK Government's recent *Modern Industrial Strategy* focuses attention on Agri-tech to boost productivity, improve climate resilience, and reduce emissions from the agri-food sector, with funding available through UKRI, Innovate UK, Local Innovation Partnerships, Defra, DESNZ, DSIT, and FCDO (Global Research and Technology Development's focus on agriculture). Prioritising Agri-tech as a frontier industry was echoed in the recent Government *Food Strategy*. The NUCoRE will enable us to effectively respond to the forthcoming Government *Circular Economy Strategy* (where the agri-food sector is identified as a priority area) and the *Food and Farming Decarbonisation Plan*. More locally, Newcastle City Council has this year (summer 2025) for the first time established a Food System Strategic Group working to identify synergies across the council's activities and advance policy development in this area.

Outside the UK, industry bodies and international funders are prioritising research and innovation in the agri-food sector, with the recent COP30 placing [agri-food systems at the centre of global efforts to simultaneously address multiple UN SDGs](#), such as 1 – No Poverty, 2 – Zero Hunger, 13 – Climate Action, 15 – Life on Land, and 12 – Sustainable Consumption and Production. Major funders, such as the UN (e.g. [UNEP](#), [UN Fund for Agricultural Development](#)), [Microsoft](#), [Frontier Climate](#) (an industry alliance including Stripe, Google, Shopify, Meta, McKinsey), the Gates Foundation, EU Horizon Europe, ERA-NET+, the Green Climate Fund, and the Global Agriculture & Food Security Program, are directing funds towards climate-smart agriculture, nature-based CO₂ removal, sustainable land-use, and circular economy. For example, the recent work [Horizon Europe Work Programme for 2026-2027](#) has several work streams (i.e. 'Destinations') that align with this NUCoRE's interests, such as 'Fair, Healthy and Environmentally Friendly Food Systems from Primary Production to Consumption,' 'Circular Economy and Bioeconomy,' and 'Land, Ocean and Water for Climate Action.'

Track Record and Competitive Advantage

Newcastle is uniquely placed to address these Food Systems challenges because we have colleagues working across all aspects of Food Systems, with a proven track record of inter-, multi- and trans-disciplinary funding in all aspects of the Food System, from Farm to Fork (Appendix 1). Our colleagues have made major contributions to topical issues, such as:

- Sustainable intensification
- New production methods (e.g. regenerative farming techniques, vertical farming, circular systems)

- Technological innovation (e.g. AI, process intensification, IoT sensing, robotics)
- Advancements in animal welfare (e.g. using advanced AI, IoT and sensing techniques)
- Sustainable management of pests and disease (e.g. integrated pest management, changing stakeholder behaviour)
- Combatting antimicrobial resistance
- Overcoming barriers to the adoption of new innovations (e.g. agroforestry, regenerative farming, biomass crops),
- Improving the resilience of Food Systems to external shocks (e.g. diversified farming, labour supply issues)
- Increasing the sustainability of food supply chains (e.g. changes to food standards and public sector procurement and reducing food waste)
- Reducing food poverty
- Innovations in greenhouse gas management and carbon removal (e.g. enhanced rock weathering, low input farming techniques)
- Valorisation of food-derived products and food waste (e.g. circular innovations and civil society responses)

Importantly, our colleagues are also engaged with external partners across government, industry, and the third sector (Appendix 2), and have extensive experience delivering impact, co-developing new innovations with industry partners, and co-producing solutions with stakeholders. Our additional experience of working with N8 research partners through the N8 AgriFood grouping will be leveraged to develop joint bids and the potential to reach into wider regional, national and global networks and partners. This enables us to tackle applied research questions with direct societal, economic and policy relevance, in-line with the values of a 4GU. Notably, Newcastle University has recently been announced as the new Vice-Chair for Research for Sustainable Development Goal (SDG) 2: Zero Hunger by the United Nations Academic Impact (UNAI) initiative, which the Food Systems NUCoRE can support in terms of research and education contributions.

Compared to our competitors, Newcastle's expertise, experience and reach make us exceptionally well-placed to lead complex Food Systems bids, industry-funded research projects, or to co-develop pathways to impact with key stakeholders. While other institutions struggle to facilitate interdisciplinary working or applied research, our colleagues have successfully led or co-led many large, interdisciplinary R&I, innovation and impact projects (i.e. >£1M to £20M size projects), funded by external bodies such as UKRI, the BBSRC Strategic Priorities Fund, Innovate UK, the Department of Energy Security and Net Zero (DESNZ), the Department of Science, Innovation and Technology (DSIT), EU Horizon Europe, the Food Standards Agency, the Wellcome Trust, and Genome Canada (Appendix 1). However, because **Food Systems research at Newcastle is not integrated across different Faculties, Schools and Institutes, we are not able to fully exploit our institutional expertise when competing for external funds.** A FS NUCoRE will integrate expertise across the university and enable us to respond strategically to emerging opportunities. It will **make Food Systems research more visible** and clearly represent this expertise to the wider research community, enabling us to **fully realise our potential as an international leader** in Food Systems research, innovation and impact.

3. Plans for consultation/development

How will you capture the diversity of potential contributors across the host Faculty, University, international campuses and external partners?

What consultation/workshops are you planning as part of the development process?

We have held two community workshops (autumn 2024), an open leadership team call, and subsequent meetings (spring and summer 2025) where we have: established that a FS NUCoRE is needed, that this title reflects the interests and activities of members, identified areas of expertise, cross-cutting research themes, important university assets (e.g. NU Farms), potential external partners (e.g. companies, NGOs, local/combined authorities, national governments and public agencies, such as Food Standards Agency), and future funding opportunities. We also convened a community workshop in June 2025, with the support of Jarlath McKenna from the International Research Funding Development team, to identify upcoming EU Horizon Europe funding opportunities and to share experiences and best practice among colleagues.

The workshops determined that while centres of excellence exist for Water, Climate and Environmental Resilience, Energy, Healthier Lives, the rural economy (i.e. CRE and NICRE), and a virtual centre for agri-food innovation (i.e. IAFRI), none explicitly focus on Food Systems *per se*. This compromises Newcastle's ability to respond strategically to funding or impact opportunities and inhibits inter-disciplinary R&I. Establishing the FS NUCoRE will enable us to offer a distinct yet complementary presence in the NUCoRE landscape. This will also uniquely situate NU in the UK HE food research environment: comparatively few institutions offer an explicit focus on Food Systems – the exceptions being the National Resources Institute (University of Greenwich), Sustainable Food (University of Sheffield), and the Oxford Martin Programme on the Future of Food (University of Oxford) – as opposed to more commonly found specialist centres (e.g. crop science technology or food security).

Early meetings explored the potential for joining with Healthier Lives, but the breadth of activities and interests of our membership went beyond what could be captured and supported by a focus on nutrition and health. The proposed FS NUCoRE concentrates on Farm to Fork research questions, whereas Healthier Lives explores the effects of diet and nutrition on human health and wellbeing (i.e. "Fork to Function"). The consensus which emerged was that the University was not fully realising its potential, given the breadth of its expertise, to obtain funding or deliver impact for major Food Systems challenges. Our conversations with Healthier Lives continue and in their renewed focus on Nutrition and Exercise we believe that a distinction between our respective excellence in matters pre and post human-consumption is made. Each NUCoRE's director continues to discuss possible research synergies that help signal NU's strength in Food Systems and Nutrition research.

In addition, the FMS research theme of Ageing and Geroscience and its focus on social and spatial determinants of health and life expectancy closely align with our focus on equitable Food Systems. We are seeking to identify synergies with this and the NUCoRE for Ageing and Inequalities following initial discussion with the NUCoRE leads.

The community workshops identified several follow-on activities that will enable us to further develop the NUCoRE and its strategy. Whilst advancing our NUCoRE's

mission, these activities also align closely with NU's commitments as a leading 4GU and its catalysing role through which we have the potential to build further connections between sector actors to address current and future challenges in the region and beyond. These include:

- A **mapping exercise** to develop a more comprehensive picture of which food organisations Newcastle academics collaborate with and on what topics or issues. We are in discussion with Food Newcastle (via Dr Jane Midgley) for an event bringing together researchers, Food Newcastle's partners and members to explore mutual interests, identify third sector research needs, initiate new collaborations, and co-produce projects and/or proposals.
- **Engagement events with the food industry** for network building and to facilitate collaboration. For example, NU Farms are part of formal and informal local practitioners' networks, and one proposed event is to connect academics with practitioners with common interests around nature-positive farming and innovations in production methods and sustainable food supply chains. Likewise, colleagues in the Process Intensification Group in SEng/SAGE (e.g. Prof Adam Harvey, Prof Anh Phan, Dr Fernando Russo Abegao) work collaboratively with key industrial partners (e.g. Nestle) on reducing the carbon footprint of food production and valorising food and food waste. One proposed workshop is to explore university-industry collaborations on circular Food System innovations building from these ongoing industry collaborations.
- **Engagement events with local and combined authorities** to determine their needs and priorities, facilitate relationship building, and identify opportunities for collaboration. We are currently working with FS NUCoRE team member Scott Lloyd (NIHR Doctoral Local Authority Fellow and Advanced Public Health Practitioner FMS/ Middlesbrough Council and Redcar & Cleveland Borough Council) to share his expertise and build an event focusing on healthy weight agendas and the challenges and opportunities this brings for the region.
- A **workshop to explore potential collaboration with our Southeast Asia campuses** and to **identify international research opportunities**. Prof Yit Arn Teh (SNES/SAGE) and Prof Anh Phan (SEng/SNES) have prior track records conducting basic and applied research in SE Asia. More recently, they have worked with Prof Dennis Wong (Provost and Group CEO ASEAN) to expand Newcastle's R&I presence in the region focusing on agri-food, circular economy, biodiversity, energy and water. The proposed FS NUCoRE will hold a joint event with NU Singapore and NU Malaysia colleagues to explore opportunities to better connect Newcastle researchers across all 3 campuses and identify opportunities for cross-campus collaboration and engagement with key ASEAN actors.

4 Who?

Which researchers, research groups, networks, existing University Research Centres or other Newcastle 'assets' will contribute to the NUCoRE?

Which external partners will be involved?

How have you captured the diversity of potential contributors across the host Faculty, University, international campuses and external partners?

Who will make up the senior leadership team?

The NUCoRE is designed to be as open and inclusive as possible, welcoming involvement from any research group, network, or individual researcher engaged in Food Systems-related work.

Key University Assets

Several established research centres and assets are already involved in the NUCoRE's development and leadership, including:

- NU Farms
- CRE
- NICRE
- IAFRI
- Population Health Sciences Institute
- NUCoRE for Human Nutrition and Exercise Research Centre (i.e. Healthier Lives)
- NUCoRE for Energy
- NUCoRE for Climate and Environmental Resilience
- NUCoRE for Landscape
- NUCoRE for Water

The proposed NUCoRE benefits from access to the 800ha of NU Farms, encompassing mixed arable, biomass and grazing operations, with a commercial dairy/beef herd (250 cows), and a planned bed-and-breakfast pig enterprise. Spread across three sites in Northumberland (Nafferton: 314ha; Cockle Park: 271ha; and Ouston: 207ha), the farms marry commercial activity, research, teaching and civic objectives, underpinning a vision to “provide an open innovation platform enabling researchers to work with farmers, industry, and environmental and government stakeholders”. Led by complementary and co-developed commercial and academic strategies, the Farms facilitate evidence-based innovation in core areas that align to wider university priorities in data and digital technologies, biosystems and health, future energy, and environmental sustainability and resilience, annually underpinning >£7m of R&D funding awarded to NU across >35 separate projects (3yr average). Eighteen experimental ‘platforms’ are present across NU Farms which focus on strategically important topics, where, following £2m of investment in 2014, these are supported by on-farm laboratories, glasshouses and events facilities, utilised for teaching, research and knowledge exchange by NU and our partners. Linking to our commercial dairy at Nafferton, Cockle Park is also home to a suite of animal science facilities, as well as protected cropping infrastructure (i.e. glasshouse and polytunnel space), the latter of which has recently been expanded through the creation of a ‘VertiTech Hub’ on the main campus in collaboration with Fyto Ltd. Integration between NU Farms and the proposed NUCoRE will be achieved through cross-membership of the leadership teams; e.g. the proposed NUCoRE’s Co-Directors are both members of the NU Farms Agri-Innovation Hub Working Group.

In addition to NU Farms, Newcastle also hosts several applied research centres that work in the Food Systems space, such as the Institute for Agri-Food Innovation (IAFRI), the Centre for Rural Economy (CRE), and the National Innovation Centre for Rural Enterprise (NICRE). These centres further enhance our capacity for innovation, accelerate impact, promote civic engagement, consultancy activities, and training (e.g. CPD) through the concentration of skilled staff, institutional know-how, and engagement in trusted professional networks. These complement research strengths across schools and institutes in all three faculties.

Relationship with the Human Nutrition and Exercise Research Centre

The FS and HNERC NUCoREs are complementary given that the proposed FS NUCoRE addresses Farm to Fork questions whereas HNERC explores questions from Fork to Function. To facilitate integration, collaboration, and coordination with the HNERC NUCoRE, we will appoint a common member of both NUCoREs to a liaison role (e.g. Scott Lloyd/FMS, Tom Hill/FMS). This will facilitate cross NUCoRE communication, the preparation of joint funding bids or impact activities, where common interests among the membership align.

External Partners

Newcastle actively collaborates with at least **55** different external partners, including actors from government, industry and the third sector (Appendix 2). We are also involved in cross-sectoral bodies, that bring together multiple private and public actors to address common Food Systems challenges (Appendix 2). Food Newcastle is one examples of a cross-sectoral partnership that brings together private, third and public sector actors with city residents to create a healthier, more sustainable and equitable food culture in Newcastle. Likewise, the DESNZ-funded Biomass Connect and AWBD (Advancing Willow Breeding and Development Demonstrator) initiatives bring together industry innovators, academic and non-academic researchers to share information and best practice with industry stakeholders. The FS NUCoRE will build on our existing collaborations and work to support the maintenance and building of trusted and equitable relationships with external partners from the public sector, industry and civil society and act as a key catalyst to help deliver shared responses to problems facing the region and beyond.

Leadership and Governance

The NUCoRE leadership team was formed through an open invitation process following the second community workshop. The leadership team currently includes colleagues from all three Faculties and a range of career stages. Jane Midgley (Reader in Urban Social and Economic Practice, APL/HaSS) and Yit Arn Teh (Prof of Soil Science, SNES/SAgE) will serve as Co-Directors, supported by a Steering Group consisting of: Lynn Frewer (Prof of Food and Society, SNES/SAgE), Kate Gibson (Lecturer in Social Sciences, PHSI/FMS), Adam Harvey (Prof of Process Intensification, Engineering/SAgE) and Carmen Hubbard (Reader in Agricultural Economics and Policy, SNES/SAgE). We will also appoint two to three ECR and/or mid-career researcher (MCR) colleagues to the Steering Group to ensure more balanced representation of different career stages and areas of expertise in the leadership team and being mindful of the balance of faculty representation.

This collaborative model reflects the integrated nature of the NUCoRE's core themes—Sustainability, Security, and Society—which are inherently interlinked and cross-disciplinary. By pooling our diverse expertise, we aim to tackle complex inter- and trans-disciplinary challenges holistically. This inclusive approach also fosters mutual support for professional growth and development across different disciplines and career stages.

5. How?

[What work packages or sub-themes/groupings might make up the NUCoRE?](#)

What external grants and contracts and/or philanthropic donations can be leveraged by the NUCoRE?

What thematic doctoral training programmes will align with the NUCoRE mission and how will these be funded?

What research-led teaching will be developed from the NUCoRE? How will the sustainability of the NUCoRE be enhanced through research-led teaching?

How will the NUCoRE address the guiding principles:

- Visibly leading
- Working together
- Freedom & opportunity to succeed
- Responding to challenges

The NUCoRE will be structured around three cross-cutting and interrelated themes: **Sustainability**, **Security**, and **Society**. To advance these themes, key actions will include:

- **Supporting interdisciplinary research:** Facilitating the development of inter-, multi-, and trans-disciplinary funding bids by leveraging Newcastle's distinctive strengths across all aspects of the Food System. The NUCoRE will be live to evolving funding opportunities and the needs of colleagues, including building connections between members. A key aspect of this will be the sharing of our respective expertise and experiences to support the development of proposals and career aspirations of NUCoRE members. This spans the sciences, social sciences and humanities. For example, our recent EU Horizon Europe event (June 2025) was designed to identify potential research opportunities and for colleagues with experience of obtaining EU funding to share their insights. The expert panel at this meeting included Lynn Frewer, Barbara Tocco, Matthew Gorton and Fernando Russo Abegao. In addition to focusing on research, innovation and impact, we value the expertise and insights brought from colleagues working in different professional contexts, such as Scott Lloyd who works with regional public health teams and Dr Fritha Langford, who has experience in supporting CPD and lifelong learning efforts among agricultural practitioners.
- **Co-producing impactful research:** Building strategic partnerships with external stakeholders to co-create applied research solutions. These collaborations will aim to generate meaningful impact across civil society, public policy, the agri-food industry, natural ecosystems, and human health—both locally and globally. Newcastle colleagues, across all Schools and Faculties, have extensive experience working collaboratively with external partners using participatory methods (Appendix 2). We will draw on this depth of experience not only to produce meaningful pathways to impact, but to also support and enable colleagues to develop more impactful research. Opportunities for contributions from the arts and humanities in HaSS includes creative support for communications for public health, and creative practice for public engagement.
- **Transforming education and training:** Working with Faculties and Schools to design innovative undergraduate modules, postgraduate programmes, and continuing professional development (CPD) opportunities that prepare the next generation of sustainability professionals. CPD activities will build on our experience delivering professional training and skills through our public-facing assets, such as NU Farms, that partner with industry bodies, such as the

Linking Environment And Farming (LEAF) Innovation Centre and Agriculture and Horticulture Development Board (AHDB), to deliver short-courses to practitioners, but could develop much more widely beyond these areas. There is also potential for using i-lab in HaSS and their interactive kitchen spaces.

Strategic Alignment and Funding Landscape

The NUCoRE's research priorities align with major national and international funding agendas, including:

- **Defra** e.g. Land Use for Net Zero, Nature for Climate Fund
- **UKRI** e.g. Transforming UK Food Systems
- **Innovate UK** e.g. Farming Futures R&D Fund
- **EU Horizon Europe** e.g. Cluster 6: Food, Bioeconomy, Natural Resources, Agriculture and Environment
- **UN Environment Program and Green Fund**
- **UN Fund for Agricultural Development**
- **Gates Foundation** e.g. Agricultural Development programme
- **Microsoft Climate Innovation Fund**
- **Frontier Climate**

Recent funding calls have emphasised food system resilience, health inequality reduction, climate-smart and nature-positive agriculture, and biodiversity valuation. The establishment of the NUCoRE will position Newcastle so that it has the credibility to lead and coordinate competitive, large-scale bids in collaboration with external partners.

Training and Capacity Building

The NUCoRE will be closely linked with existing doctoral training opportunities, including the **ESRC NINE DTP**, the **EPSRC PINZ CDT** (Process Industries: Net Zero) and **IAFRI DTP** (jointly funded by FERA Science Ltd). Its creation will also strengthen NU's positioning for future UK Food Systems CDT funding, including potential participation in any renewal of the current CDT led by the University of Greenwich (2021–2027) and early development of a Leverhulme CDT bid with the HNERC NUCoRE on Food Insecurity.

SNES currently offer several Food Systems related UG and PGT courses, including:

- Environmental Science BSc
- Agriculture BSc Honours
- Agriculture with Farm Business Management BSc Honours
- Animal Science BSc Honours
- Agri-Business Management BSc
- Food Business Management and Marketing BSc
- Sustainable Land and Business Management BSc
- Sustainable Agriculture and Food Security MSc

However, none of these courses focus specifically on Food Systems *per se* but rather concentrate on different aspects of Food Systems. An early priority for the NUCoRE will be to map the current research-led teaching related to Food Systems at undergraduate (UG) and postgraduate taught (PGT) levels across all three Faculties. Based on this mapping, the NUCoRE will assess and refine the current UG and PGT offer. We will also explore the potential development and market demand for an interdisciplinary **Food Systems MSc**, featuring a shared core curriculum with specialist pathways. This programme would support postgraduate research (PGR)

recruitment both within and beyond existing DTP/DTC/CDT structures. In FMS, BNSS has previously explored the potential of an MSc around Food Science. There was not enough capacity at that time, so there would be a lot of interest from members of the school on this.

Additionally, the NUCoRE will enhance Newcastle's CPD portfolio by drawing on CPD courses currently in development by SNES and NU Farms, expanding training opportunities for professionals across the Food Systems landscape.

Table 1. Relevant Food Systems Research Grants

Investigator(s)	Project	Activity	Funder	Collaborators	Award Value
Abigail Schoneboom	Compost on the Block	Research & Innovation, Impact	ESRC IAA	45th Street Green Space, NY1110 York, North East of England Process Industry Cluster (NEPIC), Procter & Gamble, SSE, Nestle, Northumbrian Water and 20 other industrial actors.	£5K
Adam Harvey	"Process Industries: Net Zero" (PINZ) Centre for Doctoral Training	Research & Innovation, Training	ESRC	UKHSA, PHS, PHW, Liverpool Univeristy, Liverpool Clinical Labs	£11M
Aileen Mill	IID3 - the Third Study of Infectious Intestinal Disease in the UK	Research & Innovation	Food Standards Agency		£8M
Albert Boaitey	Calf Management Practices and the Social Sustainability of the Dairy Industry	Research & Innovation	US Department of Agriculture		
Albert Boaitey	Calf Management Practices, Animal Welfare and the Social Sustainability of the Dairy Industry	Research & Innovation	NIFA	N/A	USD150K
Albert Boaitey	Integrating Genomic Approaches to Improve Dairy Cattle Resilience: A Comprehensive Goal to Enhance Canadian Dairy Industry Sustainability	Research & Innovation	Wisconsin Dairy Innovation Hub	N/A	USD50K
Alex Hughes	Confronting Antimicrobial Resistance in Malawian Poultry Farming: Policy and Practice Post Pandemic	Research & Innovation	Genome Canada	N/A	CAD12.1M
Alex Hughes	Sustainable Industrial Futures Research Centre on 'Great British Chemicals'	Research & Innovation, Policy	British Academy	University of Malawi	£197K
Alex Hughes	The Role of Traditional Food Systems in Rapid Urbanization	Research & Innovation	UKRI	Large consortium including 10 universities and over 33 industrial partners	£18M
Amy Proctor	RESPECT - Rapid Engagement with Stressed Peatland Environments and Communities in Transformation	Research & Innovation	British Academy	Human Sciences Research Council in South Afrca and University of York	£199K
Amy Proctor, Beth Clark, Sue Bradley	FIELD - Farm-level Interdisciplinary Interventions to Endemic Livestock Disease	Research & Innovation, Policy, Impact	UKRI	Large consortium consisting of 16 cross-sectoral partners, including universities, arms-length bodies, third sectoe and industry bodies.	£4.5M
Ana Bogdanovic, Matthew Gorton, Cezara Nicoara, Luca Panzone, Jeremy Phillipson, Stuart Barnes, Barbara Tocco, Xinyi Wang	Hort2thefuture - Horticultural Innovations in Soil-Friendly Practices to Ensure a Sustainable Future	Innovation	Wellcome Trust	Lincoln, Hull, Edinburgh, Glasgow, Leeds Trinity University, and the Museum of English Rural Life	£1.5M
Andrew Walton	Promoting Plant-based Diets as a Sustainability Strategy	Research & Innovation, Policy	EU Horizon Europe	Large consortium including 28 cross-sectoral (academic, industry) European partners.	€6.5M
Anh Phan	Agri-RicH: Aerogel from Rice Straw and Stubble and Water Hyacinth for Water Treatment and Insulation Applications	Research & Innovation	SAP	N/A	Not Available
Anh Phan	Cellulose Aerogel from Agricultural Residues for Water Treatment	Research & Innovation	Royal Academy of Engineering	N/A	£225K
Anh Phan	Hydrogen Production from Waste and Residues	Research & Innovation	Royal Academy of Engineering	N/A	£314K
			NetZero Research and EPSRC		
			IAA	N/A	£40K

Anh Phan	Hydrothermal Processing of Food Waste for Biofuel and Nutrient Recovery	Research & Innovation	Saudi Arabian Cutural Bureau (SACB)	N/A	£100K
Anh Phan	Technology Assessment and Capacity Building for High-Moisture Waste Management in Thailand and Southeast Asia	Research & Innovation	British Council-ISPF	University and industry partners in Thailand	£100K
Anh Phan	Waste Gasification for Hydrogen Production	Research & Innovation	Thai Goverment	University and industry partners in Thailand	£100K
Ankush Prashar, Dave George	Enhanced Health and Nutrition through Vertical Farming	Research & Innovation	Innovate UK	Fyto Ltd	£500K
Barbara Tocco, Matthew Gorton	EU4Advice - The Network of Advisors in Short Food Supply Chains across Europe	Community Support Action	EU Horizon Europe	Large consoritum inlcuding 21 cross-sectoral (academic, industry) European partners	€4M
Beth Clark	Developing Across-organisation Social Science Resources for Non-social Scientists within Environmental Organisations	Research & Innovation, Training	ACCESS Flex Fund	Natural England, Nature Scot, Forest Research, ESRC Naional Centre for Research Methods	£28K
Beth Clark, Fritha Langford	Pig Perspectives on Animal Welfare	Research & Innovation	Animal Welfare Foundation	N/A	£14K
Carmen Hubbard	HealthyLivestock: Tackling Antimicrobial Resistance through Improved Livestock Health & Welfare	Research & Innovation	EU Horizon Europe	Large consortium including 14 cross-sectoral (academic, industry) European partners.	€7M
Carmen Hubbard, Matthew Gorton	Strength2Food - Strengthening European Food Chain Sustainability by Quality and Procurement Policy	Research & Innovation	EU Horizon Europe	Large consortium including 18 cross-sectoral (academic, industry) European, Thai and Vietnamese partners.	€6.9M
Carmen Hubbard	SusPigSys - Sustainable Pig Production Systems	Research & Innovation	ERA-NET	Consortium including 7 cross-sectoral (academic, industry) European partners.	£100K
Carmen Hubbard, Sally Shortall	The UK and Ireland Rural Futures Network: Preparing for Social and Economic Transitions Post Brexit and Covid-19	Research & Innovation	ESRC-IRC UK/Ireland Networking Grants	Northern Ireland Department of Agriculture, Environment and Rural Affairs (DAERA)	£10K
Darren Evans, Neil Boonham	Benign Infections of Damaging Epidemics: the Influence of Biology, the Environment and Agricultural Practice on Vector-borne Phytobacteria (CALIBER)	Research & Innovation	BBSRC Strategic Priorities Fund	Consortium including Fera Science Ltd and 7 other European and North American partners	£1.8M
Darren Evans	Developing Network Ecology to Understand and Secure Resilient Food Systems	Research & Innovation	Royal Society	University of São Paulo; University of Buenos Aires	£440K
Darren Evans	Stacking of Ecosystem Services: Mechanisms and Interactions for Optimal Crop Protection, Pollination Enhancement, and Productivity (EcoStack)	Research & Innovation	EU Horizon Europe	Large consortium including 24 cross-sectoral (academic, industry) partners.	€10M
Dave George	A Farmer Led Guide to Cover Cropping	Innovation, Impact	Defra Farminig Innovation Programme	Angus Gowthorpe	£50K
Dave George	Commercial Testing of a Novel Acaricide	Innovation	Meji Pharma Ltd	N/A	£200K
Dave George	Crop Health North	Innovation	Rural Payments Agency/EIP-Agri	Yorkshire Agricultural Society	£80K
Dave George	Designing InnoVative Plant Teams for Ecosystem Resilience and Agricultural Sustainability	Research & Innovation	EU Horizon Europe	James Hutton Institute	€5M
Dave George	Regenerative Agriculture in Challenging Circumstances	Research & Innovation	BBSRC/AHDB	N/A	£50K
Dave George	Regenerative Lupin Production	Research & Innovation	Innovate UK	Reka Haraszi	£400K

Diogo de Souza Monteiro	Behavioural Testing: the impact of Advice on Farmers' Agri-environmental Scheme Applications	Research & Innnovation, Policy	Defra	N/A	£50K
Diogo de Souza Monteiro	Building Smart Urban Farming Data Systems: A Case Study in Yogyakarta	Research & Innovation	STFC Food Network+ (SFN) Collaborative Scoping Project	N/A	£6K
Diogo de Souza Monteiro	Fight Hunger: Strategies and Public Policies for Realizing the Human Right to Adequate Food - A Transdisciplinary Approach to Food Systems with the Support of Artificial Intelligence	Research & Innnovation, Policy	Science & Technology Facility Council (STFC)	Centre for Transdisciplinary Studies	£320K
Diogo de Souza Monteiro	Increasing Resident Participation in Newcastle's Food Waste Collection Scheme	Impact, Policy	INE	N/A	£20K
Fritha Langford	Devlopment of Dental Score for Sheep Teeth	Research & Innovation	Australian Merino Sheep Sire Evaluation Association	N/A	£150K
Guy Garrod, Beth Clark, Albert Boaitey, Thao Nguyen	Understanding Socio-economic Impacts in Rural Communities of Land use Change	Research & Innnovation, Policy	Defra	CCRI	£175K
James Standen, Hannah Davis, Elisa Lopez-Capel, Marion Pfeifer, Jeremy Phillipson, Ankush Prashar, Yit Arn Teh, Sam Wilson	5G Innovation Regions (5GIR)	Innovation, Impact	DSIT	The Council of the City Of Sunderland - North East Combined Authority	£5M
Jane Midgley	Food Waste Futures	Research & Innovation, Impact	ESRC IAA	N/A	£3.5K
Luca Panzone	FoodShock2020 – Intelligent Data Analytics to Understand Food Consumer Practice During a Food System Shock - the Case of COVID-19	Research & Innovation	Science & Technology Facility Council (STFC)	Swansea, Liverpool, Surrey	Not Available
Lynn Frewer	Financial Rewards for Improved Biodiversity Outcomes (FRIBO)	Research & Innovation	UKRI	Queen's University Belfast	£163K
Lynn Frewer	Integrating Finance and Biodiversity for a Nature Positive Future	Research & Innovation	UKRI	Large consortium including 16 UK universities and research institutes	£3M
Lynn Frewer, Yit Arn Teh, Beth Clark	Agroforestry Futures	Research & Innovation, Policy	UKRI	Consortium including 8 universities and 3 artists	£630K
Marion Pfeifer	What Evidence is Required for Wildlife Corridor Restoration Interventions in Human-inhabited Landscapes, and How Do We Include these in the Restoration Management Process?	Research & Innovation	Science for Nature and People Partnership	N/A	USD149K
Marion Pfeifer	What to Plant, When and Where? - Designing Integrated Forest-agricultural Landscapes to Enhance Multiple Livelihood Benefits to and from Agriculture	Research & Innovation	UKRI	Leeds, Sokoine University of Agriculture, National Museums of Kenya	£675K
Matthew Gorton, Cezara Nicoara, Barbara Tocco	GI SMART - Geographical Indications' Contribution to Smart Territorial Development and Sustainability	Research & Innovation, Impact	EU Horizon Europe	Large consortium including 17 Euroopean partners	€3M
Neil Boonham, Dave George	Combined Imaging, Spore Sensing and Robotic Application Platform, to Improve the Precision Application of Fungicides and Biopesticides	Innovation	Innovate UK	CHAP, Small Robot Company, Fotenix	£1.5M
Preti Taneja	Oral Histories of Food Industry Workers UK	Research & Innovation, Impact	Philip Leverhulme Prize	N/A	£100K

Ruth McAreavey	Impact of Labour Shortages on UK Food Availability and Safety	Research & Innovation	Food Standards Agency	York, Manchester, Leeds, Sheffield, LeanSig Ltd, Scottish Government	Not Available
Sally Shortall	Grass Ceiling - Gender Equality in Rural and Agricultural Innovation SystemS	Research & Innovation	EU Horizon Europe	Large consortium including 20 European partners from academia, industry and policy institutes.	€2.8M
Sally Shortall	SafeHabitus - Strengthening the Farm Health and Safety Knowledge and Innovation Systems in Europe	Research & Innovation	EU Horizon Europe	Large consortium including 20 European partners from academia, industry and policy institutes.	€4.7M
Scott Lloyd, Ashley Adamson, Sarah Sowden	Exploring the Implementation and Impact of New Advertising and Sponsorship Policies in Local Government	Research & Innovation	NIHR	Teesside University, Liverpool, Sustain, Swindon Borough Council	£288K
Tom Reershemius, Yit Arn Teh	Hydrologically Isolated Plots	Research & Innovation, Impact	Microsoft & UNDO Carbon Ltd	UNDO Carbon Ltd, UCL	USD1M
Yit Arn Teh	Ecosystem Carbon and Nitrogen Dynamics of Tropical Peatlands	Research & Innovation, Impact	Malaysian Palm Oil Board	Malaysian Palm Oil Board, Exeter, Aberdeen	£2.6M
Yit Arn Teh, James Standen	Biomass Connect - Biomass Innovation and Information Platform	Research & Innovation, Impact	Department of Energy Security & Net Zero	Consortium including 9 cross-sectoral (academic, industry, research institute) partners	£5M

Table 2. Active External Partnerships with Cross-sector, Government, Industry and Third Sector Actors

Partner	Type of Actor	Activity	Newcastle Participants
AWBD - Advancing Willow Breeding and Development Demonstrator	Cross-sector (i.e. government, industry, third-sector, academic)	Innovation	Dave George, James Standen
Biomass Connect Demonstrator	Cross-sector (i.e. government, industry, third-sector, academic)	Innovation	Yit Arn Teh, James Standen
Food and Drink North East	Cross-sector (i.e. government, industry, third-sector, academic)	Teaching, Research & Innovation	Toby Price, Beth Clark, Matt Knight, Barbara Tocco
Food Newcastle	Cross-sector (i.e. government, industry, third-sector, academic)	Impact, Policy Advice	Jane Midgley, Barbara Tocco, Diogo de Souza Monteiro
Catchment Sensitive Farming	Government	Policy Advice	James Standen
Dairy Carbon Network (Defra/AFBI)	Government	Research & Innovation	Hannah Davis, Sam Wilson
Defra	Government	Research & Innovation, Policy Advice	Yit Arn Teh, Lynn Frewer, Beth Clark, Amy Proctor, Diogo de Souza Monteiro, Guy Garrod, Albert Boaitey, Thao Nguyen, Luca Panzone, Barbara Tocco
Food Standard Agency	Government	Policy Advice	Luca Panzone
Middlesbrough Council	Government	Research & Innovation, Policy Advice	Scott Lloyd, Ashley Adamson, Angela Jones, Suzanne Spence, Frances Hillier-Brown, Laura Basterfield
Newcastle City Council	Government	Research & Innovation, Policy Advice	Jane Midgley
North East Combined Authority	Government	Innovation, Demonstration	Central contacts plus through the 5G project
Redcar & Cleveland Borough Council	Government	Research & Innovation, Policy Advice	Scott Lloyd, Ashley Adamson, Angela Jones, Suzanne Spence, Frances Hillier-Brown, Laura Basterfield
Scottish Government - Food & Drink Division	Government	Research & Innovation, Policy Advice	Barbara Tocco
Welsh Government - Food Division	Government	Research & Innovation, Policy Advice	Barbara Tocco
Agri-Tech East	Industry	Innovation, Networking, Demonstration	Dave George
AHDB	Industry	Policy Advice	James Standen, Dave George
Arla Foods Ltd	Industry	Research & Innovation	Sam Wilson, Hannah David, James Standen
C-Minus Ltd	Industry	Research & Innovation, Innovation	Yit Arn Teh, Ankush Prashar, Tom Reershemius
Cope Seeds Ltd	Industry	Research & Innovation	James Standen
DLF Seeds Ltd	Industry	Innovation, Demonstration	James Standen
Eco Crops Ltd	Industry	Demonstration	James Standen
Enable IoT Ltd	Industry	Research & Innovation	Marion Pfeifer
Eurofins Ltd	Industry	Innovation	Dave George, James Standen
Future Food Solutions Ltd	Industry	Innovation	Dave George
Fyto Ltd	Industry	Research & Innovation	Ankush Prashar
Germinal Seeds Ltd	Industry	Innovation, Demonstration	James Standen
Gorse Consultancy Ltd	Industry	Innovation, Consultancy	Hannah Davis
Hepple Wild	Industry	Innovation	Darren Evans, Yit Arn Teh
I2L Ltd	Industry	Innovation	Dave George, James Standen, Gavin Hall
Lakes Eggs Ltd	Industry	Research & Innovation, Innovation	Lucy Asher
LEAF - Link Environment And Farming	Industry	Demonstration	Dave George
Mirico Ltd	Industry	Research & Innovation, Innovation	Hannah Davis, Yit Arn Teh, Sam Wilson
National Farmers Union	Industry	Policy Advice	James Standen
National Sheep Association	Industry	Research & Innovation, Policy Advice	Beth Clark, Amy Proctor
North East Grazing Discussion Group	Industry	Demonstration, Networking	James Standen
Nestle UK Ltd	Industry	Research & Innovation, Innovation	Adam Harvey
North East of England Process Industry Cluster (NEPIC)	Industry	Research & Innovation, Innovation	Adam Harvey
Organic Research Centre	Industry	Innovation, Networking, Demonstration	Dave George, James Standen, Gavin Hall, Hannah Davis

REWE / REWE International	Industry	Research & Innovation	Matthew Gorton Dave George, James Standon, Lynn Frewer, Mark Whittingham, Hannah Davis
RSK ADAS Ltd	Industry	Research & Innovation	Yit Arn Teh, Marion Pfeifer
Sarawak Oil Palms Berhad	Industry	Research & Innovation, Innovation	Dave George, James Standen
Soya UK Ltd	Industry	Innovation	Dave George
UK Agri-Tech Centres (i.e. CHAP, CIEL)	Industry	Innovation, Networking	George
UNDO Carbon Ltd	Industry	Research & Innovation	Dave George
Viterize Ltd	Industry	Innovation Innovation, Networking,	Dave George
Yorkshire Agricultural Society	Industry	Demonstration	Dave George
BIND CIC	Third Sector	Research & Innovation	Jane Midgley
Handcrafted	Third Sector	Research & Innovation, Teaching	Kate Gibson
Newcastle Food Bank	Third Sector	Research & Innovation	Jane Midgley
Pasture for Life	Third Sector	Innovation	Hannah Davis
Rare Breed Survival Trust	Third Sector	Research & Innovation	Hannah Davis
Search Newcastle	Third Sector	Research & Innovation	Kate Gibson
West End Women and Girls Centre	Third Sector	Teaching, Research & Innovation	Hannah Davis
Nourish Food School	Third-sector	Research & Innovation	Barbara Tocco