POLICY LAB 2 Final Report

Introduction

On 9th October 2024, a second EATS co-design workshop was held at Scotland House in London. SRUC hosted the hybrid policy lab, which used creative practices to facilitate contributions from a range of voices involved in agri-food policymaking. It drew together key UK agri-food business and advisory actors, with representatives from industry bodies, policy makers and government. It built on the recommendations from the first Policy Lab and explored lessons learned from the EATS case studies and related projects and programmes from the last 2 years.

EATS (Enhancing Agri-food Transparent Sustainability) is a research project set up to develop and explore opportunities for an actionable information (analysed data) ecosystem whose purpose is to deliver transparent sustainability. The project is taking an interdisciplinary design approach to investigating the future of food, and the uses of innovative technologies including Artificial Intelligence (AI) and the Internet of Things (IoT). Over the past two years we have investigated the role of sensors and carbon reporting tools in capturing data about agri-food processes; developing a trusted digital platform able to manage sustainability data and report it across supply chain actors; and utilising data-analytics and machine learning to support decision-making and action. Leading to decision-making and actionable insights that promote environmental sustainability at supply chain scale.

The agenda can be found in Annex 1, and list of attendees in Annex 2.

EATS: The challenge

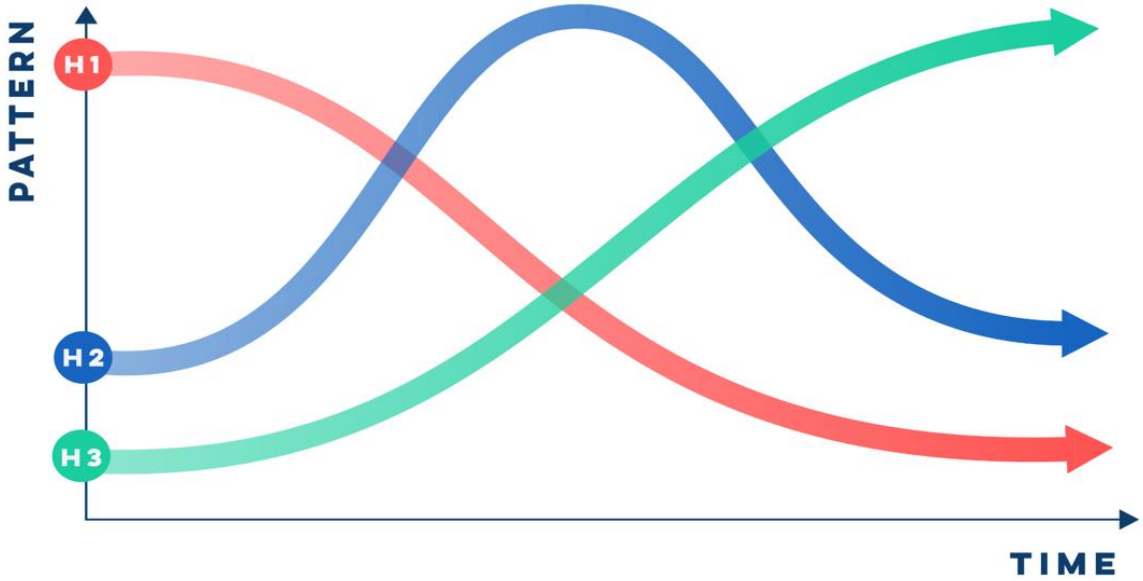
The agriculture food system produces nearly a quarter of the UK's carbon emissions, and the journey from farm to fork has to be made more sustainable to help to meet the UK government's strategy for achieving net zero by 2050.

The Policy Lab discussions

Following the welcome, introduction and background to EATS, participants were presented with the results of the work to date. The project has designed Sustainability Stories, learning from case studies with Angus Growers (soft fruits) and ABInBev (brewing); mapping the data ecosystem required; and exploring what attributes, measures and metrics are important and what existing technology do agri-food businesses use.

Co-design sessions

The co-design sessions made use of the 3 Horizons Model framework, which helps teams envision potential futures, identify ongoing trends, and develop transformative strategies.



Horizon 1 Business as usual

- Q1 – What are the key policy outcomes or goals we believe will reasonably be achieved by 2050 under current trends?
- Q2: What are the greatest risks to achieving these policy goals (e.g., economic, environmental, political)?
- Q3 – What policy challenges or objectives will likely remain unmet by 2050?

Horizon 2 Disruptive Innovation

- Q1 – What are innovations (technological, social, economic) that could bridge the gap between Horizons 1 and 3?
- Q2 – What policy changes are necessary to foster and support these innovations?

Horizon 3 Vision - based on the 2050 scenario from IPCCC

https://www.ipcc.ch/srccl/

Discussion Report

Summary

By 2050, businesses are expected to play a central role in sustainability, with increasing adoption of sustainable practices driven by stricter carbon credit regulations, transparency, and financial sector initiatives. Environmental improvements are anticipated, including reduced agrifood carbon emissions, better water quality, and biodiversity gains. However, risks such as greenwashing, policy misalignment, and societal resistance could hinder progress. Innovations like AI, biotech, carbon capture, and digital tools, along with social and economic shifts, hold potential to bridge current gaps. Achieving these goals demands policy changes fostering responsible sourcing, pro-innovation regulations, international collaboration, and investment in research, adoption pathways, and data harmonization.

Key Policy Outcomes or Goals Achievable by 2050 Under Current Trends:

1. **Business Awareness and Adoption:**
    - Widespread awareness and engagement from businesses regarding sustainability.
    - Increasing adoption of sustainable practices, such as big companies purchasing farms for carbon credit purposes.
2. **Regulations and Transparency:**
    - Stricter regulations on carbon credits, including transparency in reporting, driving corporate action.
3. **New Stakeholder Influence:**
    - Financial institutions (e.g., banks) driving initiatives toward achieving net-zero emissions.
4. **Environmental Improvements:**
    - **Carbon Emissions:** Reduction in national and European agrifood-related carbon emissions.
    - **Water Quality:** Enhanced water quality and reduced water usage in the UK/EU.
    - **Biodiversity:** Slowed biodiversity loss in the UK/EU through reduced pesticide use and land-management strategies (land-sparing vs. land-sharing).
    - **Soil Carbon:** Increased soil carbon levels contributing to overall biodiversity net gains.

The Greatest Risks Identified in Achieving the Policy Goals by 2050:

1. **Corporate and Market Risks:**
    - **Greenwashing:** Misleading environmental claims by companies undermining genuine progress.
    - **Climate Smart Farming Risks:** Approaches labeled as "climate-smart" failing to deliver actual environmental benefits.
    - **Food Supply Chain Resilience:** Regulatory changes potentially disrupting food supply stability.
2. **Policy and Governance Risks:**
    - **Abrupt Policy Changes:** Sudden shifts in regulations negatively impacting sectors.
    - **Policy Complexity and Trade-offs:** Interdependencies between policies causing unintended consequences.
    - **Conflicting Policies:** Lack of alignment between regulations and goals.
    - **Spatial Applicability:** Policies failing to address local contexts or specific regions.
    - **Global Political Will:** Insufficient international collaboration and confidence in tackling climate issues.
3. **Societal and Behavioral Risks:**
    - **Public Scepticism:** Distrust in climate initiatives driven by factors like rising food prices, political rhetoric, or media influence.
    - **Lack of Engagement:** Inadequate measures fostering societal detachment and inaction.
    - **Behavioral Change:** Resistance or slow adoption of necessary changes by farmers and consumers.
4. **Environmental and Geopolitical Risks:**
    - **Extreme Events:** Natural disasters or weather extremes disrupting progress.
    - **Crop Diseases:** Threats to food security and agricultural resilience.
    - **Geopolitical Concerns:** Conflicts or instability impacting global and local policies.

Policy Challenges and Objectives Likely to Remain Unmet by 2050:

1. **Net-Zero Challenges:**
    - **Sector-Specific Barriers:** Achieving net-zero may be unfeasible for certain sectors due to differing definitions and inherent limitations.
    - **Agriculture Lagging:** Challenges with agricultural emissions, including resource control, land-use emissions, livestock management, and energy consumption.
2. **Climate and Environmental Goals:**

- **Reduction in Global Agrifood Carbon Emissions:** Increasing population, living standards, and meat consumption counteracting reductions.
- **Reversing Biodiversity Loss:** Limited progress due to systemic and resource constraints.
- **Holistic Approach:** Failure to adopt comprehensive, interconnected metrics, instead continuing with narrow, sectoral approaches.

3. **Policy Design and Implementation:**
   - **Short Policy Timeframes:** Policies take decades to develop and implement, and 25 years may be insufficient given the urgency and impacts expected much sooner.
   - **Climate Adaptation:** Inefficiently defined policies and misalignment with real-world challenges may render them ineffective.
   - **Changing Targets:** Shifting global goals, like the Paris Agreement targets, may undermine long-term consistency.
4. **Food and Nutrition Challenges:**
   - **Affordable and Nutritious Food:** Balancing affordability with sustainability and nutritional needs for all populations.

Innovations (Technological, Social, and Economic) to Bridge the Gap Between Horizons 1 and 3:

1. **Technological Innovations:**
   - **Digital Tools for Consumers:** Tools to guide sustainable consumer choices.
   - **AI and Machine Learning:** Addressing supply chain challenges, enhancing predictions, and integrating data for actionable insights.
   - **Remote Sensing and Biotech:** Advanced monitoring and genetic innovations for sustainability.
   - **Quantum Technologies and Computing:** Applications in complex modeling and problem-solving, such as optimizing food systems or carbon capture.
   - **Automation in Agri-Food:** Developing economically viable, sustainable robotics and automation solutions.
   - **Decoupling Tools and Logic:** Enhancing transparency and standardization in decision-making tools and service delivery.
   - **Digital Twins:** Creating virtual models to simulate and optimize policies, particularly in finance, economics, and landscape decision-making.
   - **Carbon Capture and Storage:** Technologies to sequester and repurpose carbon emissions effectively.
2. **Social Innovations:**

- **Behavioral Change:** Encouraging sustainable consumer choices and fostering societal shifts toward climate-positive actions.
- **Citizen Science and Public Participation:** Engaging citizens in data collection and decision-making processes.
- **Shared Ownership Models:** Promoting community-led initiatives and co-ownership of solutions.
- **Government-Led Innovation:** Examples from global leaders (e.g., China, Denmark) optimizing government roles in driving dietary and societal changes.

3. **Economic Innovations:**
   - **Data Access and Integration:** Making data widely accessible and interoperable to drive decision-making.
   - **AI for Data Processing:** Streamlining data at input and reporting levels to reduce complexity and support regulatory adherence.
   - **Use of Government Data:** Leveraging existing datasets for predictive analytics and decision-making.
   - **Landscape Decision-Making:** Linking economic incentives and policies with sustainable land use to achieve net-zero.

Necessary Policy Changes to Foster and Support Innovations:

1. **Promoting Responsible Practices:**
   - **Responsible Sourcing:** Educate consumers on how and where food is sourced, fostering closer connections and informed choices.
   - **Responsible Innovation:**
     - Encourage open innovation by involving diverse stakeholders in the innovation process.
     - Enhance public engagement to ensure societal buy-in and relevance.
     - Address bias in AI by promoting explainable and transparent AI systems.
2. **Encouraging International Collaboration:**
   - **Close Border Integration:**
     - Strengthen international diplomatic efforts for collaboration, accounting for diverse cultural contexts.
     - Harmonize policies and practices across borders to ensure compatibility and scalability of innovations.
3. **Financial and Regulatory Support:**
   - **Access to Finance:**
     - De-risk investments through incentives and guarantees (e.g., insurance industry support).

        - Facilitate early adoption through fiscal tools and direct funding.
    - **Pro-Innovation Regulation:**
        - Develop flexible regulatory frameworks that enable innovation without overly restrictive compliance burdens.
        - Align regulations to support data harmonization and transparency, avoiding a "regulatory straight-jacket."
4. **Research and Development Alignment:**
    - **Mission-Driven Research:**
        - Define clear objectives and outcomes for research funding to target transformative goals.
        - Emphasize outcomes-led research to ensure practical, measurable impacts.
    - **Adoption Pathways:**
        - Prioritize policies that incentivize early adoption and provide clear innovation pathways.
        - Embrace “braver” policy experiments to motivate systemic change.
5. **Market and Consumer Dynamics:**
    - **Market Demand:** Stimulate demand for sustainable products through public awareness campaigns and incentives.
    - **Investment Support:** Facilitate private and public investment in promising innovations and infrastructure.
6. **Innovation Ecosystem Development:**
    - Create an environment that fosters data harmonization, transparency, and consistency across sectors.
    - Align policies around data management for smoother transformation and innovation scaling.

These policy shifts aim to create an enabling environment for technological, social, and economic innovations critical to achieving long-term sustainability goals.

Annex 1. Agenda

Time	Activity
10.30 *Arrivals*	Coffee, tea, water served. Networking
11.00 – 11.05 (*5 mins*) *Welcome*	Setting the Scene: Introduction and welcome from SRUC host Dr Susannah Bolton.
11.05 – 11.15 (*10 mins*) *Introduction and background*	Introduction to EATS Professor Georgios Leontidis Professor Mel Woods: Sustainability Stories from 2 case studies
11.15 – 12.30 (*75 mins)* *Case studies and experiences*	Case Study 1 – Soft Fruit Questions Case Study 2 - Brewing Questions
12.30 – 13.15 (*45 mins)* *Lunch*	Lunch
13.15 – 14.00 (*45 mins*) *Facilitated session*	Co-design session Introduction to the **3 Horizons model** and its application for policy planning toward the 2050 timeframe – Prof Mel Woods **Horizon 1 Business as usual** • Q1 – What are the key policy outcomes or goals we believe will reasonably be achieved by 2050 under current trends? • Q2: What are the greatest risks to achieving these policy goals (e.g., economic, environmental, political)? • Q3 – What policy challenges or objectives will likely remain unmet by 2050? Small group facilitators: TBC
14.00 – 14.15 (*15 mins*)	Feedback session

Feedback	Coffee, tea, water served.
14.15 – 15.00 (*45 mins*) *Facilitated session*	Co-design session 2 Examining innovations or disruptions that could transform the policy landscape. What needs to change in the policy environment to support these transformations? **Summary of Horizon 3 based on the 2050 scenario from IPCCC** https://www.ipcc.ch/srccl/ **Horizon 2 Disruptive Innovation** – the same 2 questions for all tables • Q1 – What are innovations (technological, social, economic) that could bridge the gap between Horizons 1 and 3? • Q2 – What policy changes are necessary to foster and support these innovations?
15.00 – 15.45 (*45 mins*) *Group discussion*	Reporting back and group discussion on how could this project's technical developments support emerging policy?
15.45 – 16.00 *Next steps*	Actions, thanks and goodbyes

Annex 2: Attendees

Susannah Bolton	SRUC
Richard Tiffin	Agrimetrics
Kim Matthews	AHDB
Andy Cureton	Innovate UK
Kaustav Dey	BBSRC
Julian Gairdner	Farm Data Principles
Tina Barsby	British Farm Data Council
Chris Baker	Rothamsted Research
Alex Hann	YARGO
Michael Cummins	DEFRA
Nik Watson	University of Leeds
Mel Woods	University of Dundee
Georgios Leontidis	University of Aberdeen
Milan Markovic	University of Aberdeen
Rachael Ramsey	Agrecalc Ltd
James Schutte	DEFRA
Nahida Abdulhamid	DEFRA
Carlos Floresortiz	Vertical Future
Matthew Barker	WRAP

Annex 3. Co-design Session Feedback

Horizon 1

Question	Table 1	Table 2	Table 3

1. What are the key policy outcomes or goals we believe will reasonably be achieved by 2050 under current trends?	• Every business is aware and talking about it. Expect the businesses to keep adopting measures.
	• Big companies buying farms e.g. for carbon credits
	• Regulation on carbon credits for example prompting action from big companies – transparency on carbon credit reporting.
	• New stakeholders like banks will drive towards net zero
		• Reductions in national/ European C emissions from agrifood
		• Improvements in UK/ EU water quality and use
		• Reduction in rate of biodiversity loss (UK/EU) due to:
		  ○ Reduction in use of pesticides
		  ○ Decision-making around land-sparing/ land-sharing
			• Soil carbon increase
			• Biodiversity loss reduction – biodiversity net gain

2. What are the greatest risks to achieving these policy goals (e.g., economic, environmental, political)?	• Greenwashing by big companies • Regulation risks for resilience of food supply chain • Climate smart farming not really climate smart • Abrupt change in policy and regulation impacting the sector negatively • Interlinkages/ interdependencies between policies/policy drivers	• Complexity and interdependency – trade-offs and unintended consequences • Political will internationally (globally lacking confidence) • Conflict • Societal will/ scepticism re climate change driven by e.g. food prices; politics; media… • Inadequacy of current measures to make a	•Behavioural change •Farmers adapting •Extreme events •Crop diseases •Geopolitical concerns •Decision-making around specific crops (systems) •Conflicting policies •Spatial applicability of policies

		difference feeds lethargy and lack of enthusiasm/ detachment from the problem e.g. recycling	

3. What policy challenges or objectives will likely remain unmet by 2050?	• Some businesses impossible to meet net-zero – just a definition means different for different sectors
	• Not taking a holistic approach and continuing to look in a singular lens/ metrics
	• 2050 is a short timescale considering the resources
		• Reduction in global C emissions from agrifood (increase in population/ living standards/ meat consumption)
		• Paris target – goal posts will change
		• Climate adaptation:
		  ○ Policy challenge – is it efficiently defined?
		  ○ Are policies identified previously fit for purpose?
		  ○ Policy takes a long time to develop and enact – 25 years not that long and we will start to feel the impacts much sooner. How long is our timeframe for policy response?
		• Cheap, affordable, nutritious food for all – how
			• Reversing biodiversity loss
			• Nutritious diets
			• Agriculture not on track to achieve net-zero:
			  ○ Underlying factors
			  ○ Control of resources
			  ○ Land emissions
			  ○ Livestock
			  ○ Energy consumption

		much should it cost? • Food security	

Horizon 2

Question	Table 1	Table 2	Table 3
1. What are innovations (technological, social, economic) that could bridge the gap between Horizons 1 and 3?	• Technical ○ Digital consumer tools ○ AI to address challenges pertaining to food supply chain ○ Machine learning ○ Remote sensing ○ Biotech ○ Quantum technologies/ computing ○ Automation – needs more technical innovation to be economically viable and more sustainable ○ De-coupling logic of the calculations from the tools delivering services – to support transparency and standardisation • Social ○Change in consumer behaviour to make sustainable choices ○Citizen science ○Shared ownership model	• Need to address a significant behaviour-change issues. AI has huge potential to provide actionable insight and make things easier. • Potential for AI to "sort out" the data ○ At the input level – automation to help with recording/ predicting/ making it less messy ○ At the reporting level – better link to key decisions/ reporting requirements for adherence to regulation or QA ○ Using existing government data • The use of digital twins in policy design and implementation. (Likely to happen in finance and economics first but should not be limited to that) • Social innovation to deliver 2050 targets and dietary	• Agri-food robotics • Quantum • Landscape decision-making (link to UKRI/Defra Land-Use for Net-Zero) • Carbon capture, use and storage

	○Improve public participation in innovation • Economic ○Data access ○Data integration	change. Optimising the role of Government (China c.f. Denmark)	
2. What policy changes are necessary to foster and support these innovations?	• Promoting responsible sourcing – bring consumer closer and inform how and where food is sourced • Promoting responsible innovation ○Open Innovation ○Public engagement ○Machine learning tools (AI is biased) •Transparency – explainable AI •Close border integration ○Diplomatic effort ○Collaborate internationally (cultural context) •Finance access ○De-risking ○Insurance industry •Regulation – pro-innovation •Government funding •Innovation environment for data harmonisation	• Outcomes-led research funding. Better definition of the mission and associated outcomes • More work on adoption pathways, including innovation approaches and "braver policy" to incentivise and motivate change • Alignment around the way we manage data for transformation – creating an environment for innovation through transparency and consistency vs. a regulatory straight-jacket	• Market demand • De-risking/ incentivising early adoption • Support investment • Fiscal instruments

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