

## Securing environmental benefits from farming while meeting the demand for food

Date and Location: 21st March, 2018 at The Royal Society

Chair: The Earl of Selborne GBE FRS  
The Foundation for Science and Technology

Speakers: Professor Ian Boyd FRSB FRSE  
Chief Chief Scientific Adviser,  
Department for Environment, Food and Rural Affairs  
Minette Batters  
President, National Farmers Union (NFU)  
Helen Browning OBE  
Chief Executive, The Soil Association

Panellists: The Lord Cameron of Dillington  
House of Lords  
Richard Hebditch  
Government Affairs Director, National Trust

Sponsor: Cranfield University

Audio Files: [www.foundation.org.uk](http://www.foundation.org.uk)

Hash tag: #fstfarmsupport

PROFESSOR BOYD said that there were four key challenges for UK agriculture as we left the EU: environmental, productivity, social and strategic. There was much to debate in addressing the challenges and it was essential that the debate was underpinned by evidence. He congratulated the Defra team on the high quality of the Evidence Compendium underpinning the recent Green Paper “Health and Harmony: the future for food, farming and the environment in a Green Brexit”. Other relevant strategy documents included the 25-year Environment Plan, the Industrial Strategy, the Clean Growth Strategy and the forthcoming Resource Efficiency and Waste Strategy.

On the environment, farming had damaged stocks and flows of natural capital, as illustrated by the decline in farmland birds and other environmental indices. Moving to a system of environmentally sustainable

farming would require transformational change, underpinned by high quality science and technology. Meeting the environmental challenges was likely to help address the productivity challenges as well.

Productivity had been stagnant for the last decade. Addressing this involved several factors: innovation, skills, improving animal health and disease protection, and finding better ways of coping with the multiple volatilities faced by farming businesses.

The social challenge was reflected in the fact that around 50% of farms made no profit from agriculture. There was a Pareto effect: 20% of farms produced 80% of output (using 50% of the land). In addition, profitability varied substantially by sector: mixed, grazing livestock and cereal farms made losses overall and relied heavily on subsidies through Direct Payments while others such as poultry and pigs were profitable. The loss-making

---

sectors employed the most people overall, while the most profitable sectors had the highest employment rate per farm. High subsidy rates were associated with some regions (eg the North East) and types of farm (eg tenanted). Agriculture employed 1.5% of the UK workforce.

It was striking that a majority of farming businesses did not do business or cash flow planning – this was especially true of the poorest performing agricultural sectors.

Moving to the strategic challenge, it was important that subsidies did not promote inefficiency, and that UK farmers were not prevented from competing internationally because of an uneven playing field on environmental standards. The Common Agricultural Policy had focused principally on social objectives: the question was whether future UK policy could hit the “sweet spot” and achieve environmental and productivity objectives as well. Outcomes, rather than inputs and outputs, should be rewarded. The transition to the new UK approach would take time, and there would be winners and losers (the latter would require appropriate compensation).

MINETTE BATTERS said that what mattered was the impact of policy on individual farm businesses. She emphasised that UK farming was a success story: food and farming employed 3.9 million people and was worth £112 billion, while delivering major environmental benefits. For example one third of farms were now producing renewable energy, and use of nitrogen fertilisers had declined by 31%.

The key ambition for farmers was to hit all the right price points, recognising the state of retail competition and the importance of low prices for the large majority of consumers. The NFU had launched a refreshed report on innovation in farming and emphasised its importance, from crop breeding to animal health to data and robotics. The NFU was also fully engaged in the Industrial Strategy.

Farmers and others such as vets needed to “go digital”, and use high quality data to good effect. That would make UK agriculture world class as well as helping us tell our story better. There were real success stories – eg we were well within the limits set for antimicrobial resistance, but this was not generally known.

There were two immediate and crucial challenges for Government to address: labour requirements and trading relationships with the rest of the world. Automation was happening but it would take time –

meanwhile flowers and vegetable farms in particular would continue to need large numbers of workers.

As for trade, many countries were talking to us and saw the UK as an attractive market. But we needed to ensure we were not disadvantaged by labour or other regulation. The marketplace must be fair. And one size did not fit all – different approaches were needed for different agricultural sectors. The NFU wanted a more profitable, progressive and sustainable farm sector respected by society for food production, environmental care and animal welfare.

HELEN BROWNING said that she was committed to high quality food which promoted biodiversity, energy efficiency and other environmental benefits. Organic farming was central to this approach. Policy needed to reflect the fact that some areas of the UK were harder to farm – eg upland areas, where farmers should be paid for providing environmental benefits. There was also a case for expanding “semi-wild” areas, which could produce a lot of food, as well as agroforestry. Much current farming was arguably not viable; should some agricultural sectors stop producing? A market approach with full internalisation of externalities had much to commend it. However it would be politically hard to achieve in the short to medium term.

She suggested some questions for discussion: How would disruptive technologies take pressure off land? How should we prioritise tackling climate change vs biodiversity vs the need for food? What was the right balance between regulation and incentives? Where was it most economically efficient to put public money into the system – at farm level or elsewhere?

RICHARD HEBDITCH said that the National Trust was fully engaged in contributing to policy. Responding to and managing stakeholder expectations was crucial. Farming was and would continue to be at the heart of delivering positive outcomes for nature, but public money would continue to be needed to support this.

LORD CAMERON OF DILLINGTON said that the UK should set targets for upper and lower bounds of agricultural self-sufficiency. The current UK self-sufficiency figure was 52% compared to 39% in 1939. 45% to 65% might be an appropriate target band. Policy should explicitly address the UK’s nutritional needs, and science should be at the heart of policy. The research agenda needed to broaden, especially in relation to the microbiome in soils and the stomach. Cheap food was a key policy goal, and the WTO’s

---

environmental rules on compensating only for revenue foregone were unhelpful.

## DISCUSSION

A number of contributors raised the question of incentivising the required range of outcomes – environmental, economic, social – at the right scale. For example one might take action at the scale of catchment areas, where deployment of – possibly innovative – financial instruments (perhaps involving the insurance industry) might incentivise farmers and others to work together to achieve the desired range of outcomes. It would be important to ensure that local planning authorities did not work against such arrangements unhelpfully. At the same time it was recognised that it was hard to predict the response at farm level to new policies and incentives, so care would be needed to avoid unintended outcomes.

It was pointed out that agricultural land use was far from optimal in the UK – it often did not reflect latitude, climate and soil variations. More could be done to improve this, and to better inform farmers' choices.

There were different views on market positioning: in particular, should the UK focus on high quality food at a higher price, or on hitting wider UK and global price points? One way or another the UK had to find new global markets for its farmers, and trade agreements should not put barriers (eg environmental) in the way of this.

There was a widespread view that research relevant to agriculture (eg soil science) had suffered in the

UK. Steps were being taken to reverse this, but the outcomes from new research were unlikely to have an effect for 10-20 years. At the same time it was important to maximise the use of new technologies to boost productivity now. Genetics was a good example, where the UK had already benefited in boosting poultry productivity. Perhaps now was the time to transform horticultural productivity including through genetics?

The pros and cons of the radical changes to agricultural policy in New Zealand were discussed. New Zealand had focused on what it was best suited to do and had thereby improved productivity, but the social and environmental costs had been severe.

The question of UK food security was raised – supply chains were vulnerable to disruption from a range of factors including weather, flu pandemics and many other things. Food security was thought to be a public good and Defra were encouraged to give it high priority.

Overall, the discussion recognised the complexity and inter-relatedness of the opportunities and challenges facing UK agriculture as we left the EU. In considering these it was essential to consider both individual actors and aggregate effects. There was general support for an evidence-based approach and for incentivising desired outcomes. At the same time there were a range of views on the details of the desired outcomes and of the means to achieve them.

Jeremy Clayton

---

## Useful URLs

### Context:

Command Paper Cm9577 and Consultation Letter, Defra  
Health and Harmony: the future for food, farming and the environment in a Green Brexit  
[www.gov.uk/government/consultations/the-future-for-food-farming-and-the-environment](http://www.gov.uk/government/consultations/the-future-for-food-farming-and-the-environment)

25 Year Environmental Plan, Defra  
[www.gov.uk/government/publications/25-year-environment-plan](http://www.gov.uk/government/publications/25-year-environment-plan)

### UKRI - Research Councils:

Arts and Humanities Research Council  
[www.ahrc.ac.uk](http://www.ahrc.ac.uk)

---

Biotechnology and Biological Sciences Research Council  
[www.bbsrc.ac.uk](http://www.bbsrc.ac.uk)

Engineering and Physical Sciences Research Council  
[www.epsrc.ac.uk](http://www.epsrc.ac.uk)  
Economic and Social Research Council  
[www.esrc.ac.uk](http://www.esrc.ac.uk)

Medical Research Council  
[www.mrc.ac.uk](http://www.mrc.ac.uk)

Natural Environment Research Council  
[www.nerc.ac.uk](http://www.nerc.ac.uk)

Science and Technology Facilities Council  
[www.stfc.ac.uk](http://www.stfc.ac.uk)

UKRI  
[www.ukri.org](http://www.ukri.org)

**Companies, Research Organisations and Academies:**

Association of Innovation, Research and Technology Organisations (AIRTO)  
[www.airto.co.uk](http://www.airto.co.uk)

Agricultural Industries Confederation  
[www.agindustries.org.uk](http://www.agindustries.org.uk)

British Academy  
[www.britac.ac.uk](http://www.britac.ac.uk)

British Cattle Breeders Club  
[www.cattlebreeders.org.uk](http://www.cattlebreeders.org.uk)

Building Research Establishment  
[www.bre.co.uk](http://www.bre.co.uk)

Catapult Programme  
[www.catapult.org.uk](http://www.catapult.org.uk)

Cranfield University  
[www.cranfield.ac.uk](http://www.cranfield.ac.uk)

Department for Business, Energy and Industrial Strategy  
[www.gov.uk/government/organisations/department-for-business-energy-and-industrial-strategy](http://www.gov.uk/government/organisations/department-for-business-energy-and-industrial-strategy)

Department for Education  
[www.gov.uk/government/organisations/department-for-education](http://www.gov.uk/government/organisations/department-for-education)

---

Department for Environment, Food and Rural Affairs  
[www.gov.uk/government/organisations/department-for-environment-food-rural-affairs](http://www.gov.uk/government/organisations/department-for-environment-food-rural-affairs)

Government Office for Science  
[www.gov.uk/government/organisations/government-office-for-science](http://www.gov.uk/government/organisations/government-office-for-science)

Innovate UK  
[www.gov.uk/government/organisations/innovate-uk](http://www.gov.uk/government/organisations/innovate-uk)

Knowledge Transfer Network  
[www.ktn-uk.co.uk](http://www.ktn-uk.co.uk)

Learned Society of Wales  
[www.learnedsociety.wales](http://www.learnedsociety.wales)

Lloyd's Register Foundation  
[www.lrfoundation.org.uk](http://www.lrfoundation.org.uk)

McLaren Technology  
[www.mclaren.com/technologygroup](http://www.mclaren.com/technologygroup)

National Farmers Union (NFU)  
[www.nfuonline.com](http://www.nfuonline.com)

National Physical Laboratory (NPL)  
[www.npl.co.uk](http://www.npl.co.uk)

The National Trust  
[www.nationaltrust.org.uk](http://www.nationaltrust.org.uk)

Natural England  
[www.gov.uk/government/organisations/natural-england](http://www.gov.uk/government/organisations/natural-england)

Nesta  
[www.nesta.org.uk](http://www.nesta.org.uk)

Royal Academy of Engineering  
[www.raeng.org.uk](http://www.raeng.org.uk)

Royal Agricultural University  
[www.rau.ac.uk](http://www.rau.ac.uk)

The Royal Society  
[www.royalsociety.org](http://www.royalsociety.org)

Royal Society for the Protection of Birds  
[www.rspb.org.uk](http://www.rspb.org.uk)

The Royal Society of Biology  
[www.rsb.org.uk](http://www.rsb.org.uk)

---

The Royal Society of Edinburgh  
[www.rse.org.uk](http://www.rse.org.uk)

Russell Group  
[www.russellgroup.ac.uk](http://www.russellgroup.ac.uk)  
Society for the Environment  
<http://socenv.org.uk>

The Tenant Farmers Association  
[www.tfa.org.uk](http://www.tfa.org.uk)

The Soil Association  
[www.soilassociation.org](http://www.soilassociation.org)

University Alliance  
[www.unialliance.ac.uk](http://www.unialliance.ac.uk)

Wellcome Trust  
[www.wellcome.ac.uk](http://www.wellcome.ac.uk)

**Universities:**

For a full list of UK universities go to:  
[www.universitiesuk.ac.uk](http://www.universitiesuk.ac.uk)