



Embracing science?

How can food and farming businesses engage with science to tackle global food challenges?

A report of the Business Forum meeting on Wednesday 18th May 2016

Contents

Introduction	3
Key points	3
Global food challenges	4
What role for food companies?	4
Translating science and sharing knowledge	4
Science and values	4
Public dialogue, acceptability and trust	5
Science is only one policy lens	5
The case for a scientific approach	5
Final thoughts	6
Speaker biographies	7

About the Business Forum

Ethical questions around climate change, obesity, food security, people and animal welfare, and new technologies are becoming core concerns for food businesses. The Business Forum is a seminar series intended to help senior executives learn about these issues. Membership is by invitation only and numbers are strictly limited.

The Business Forum meets six times a year for an in-depth discussion over an early dinner at a London restaurant.

To read reports of previous meetings, visit foodethicscouncil.org/businessforum.

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Introduction

“Innovation is not so much about a race to optimise a single pathway, but a collaborative process for exploring diverse alternatives - as such, we need to nurture a more realistic, rational and vibrant innovation democracy.”
(Andy Stirling¹)

Scientific progress is unquestionably hugely important in helping tackling global and local challenges. And scientific evidence is vital for food and farming businesses to help strengthen business policy and practice. But deciding what counts as ‘progress’ and which particularly scientific questions to investigate are ethical questions and as such they require input from all stakeholders in society. Arguably the food industry now has greater influence on scientific research than it has ever had. Industry has a significant influence on the setting of research priorities for publicly funded research in the UK² and also funds a great deal of research itself. This begs the question: is there an inherent conflict of interest in food companies shaping the agenda for their own interests?

There are different views in the industry: those who see research as ‘problem solving’ to help the financial bottom line; and those who want knowledge generated through high quality ‘basic science’ conducted by public bodies which they can then pick up and exploit.

The May 2016 meeting of the Business Forum considered roles and responsibilities in tackling global food challenges, and where the most significant opportunities for business lie; how science should inform progressive business practice and vice versa; what a fair process for determining food and farming research priorities should be; and ‘ownership’ and ‘influence’, including what scientific research is in the public good.

We are very grateful to our speakers Sir Mark Walport (Chief Scientific Adviser to HM Government and Head of the Government Office for Science) and Dr Claire Marris (Senior Lecturer, Centre for Food Policy, City University London). The event was chaired by David Pink, Emeritus Professor of Crop Improvement at Harper Adams University and Trustee of the Food Ethics Council.

The report was prepared by Dan Crossley and Anna Cura, and outlines points raised during the meeting. The report does not necessarily represent the views of the Food Ethics Council, the Business Forum, or its members.

Key Points

- Scientific progress is hugely important in helping tackle global and local challenges. Scientific evidence is vital for food and farming businesses to help strengthen business policy and practice. However, there are often issues in applying scientific research in to the farm environment, and to other parts of the food chain.
- Evidence is often partial or incomplete. There is too much promotion of single research papers, rather than evidence synthesis. This is fuelled by much of the mainstream media, which too often oversimplifies research findings.
- Scientific evidence is not the only consideration for policymakers, who must look through three lenses in relation to any policy decision. Firstly, what does the science say? Secondly, is such a policy deliverable? And thirdly, there is a political lens - individual policymakers’ political, personal and religious values, and what they think the values of the electorate might be.
- It was argued that for food, there are a further three additional lenses to apply: security of supply; affordability; and sustainability. To integrate those – sometimes competing – lenses at the same time is challenging.
- The relationship between science and values is contested. On the one hand, it was suggested that people often confuse *scientific* discussions with discussions about *values*. Within this, there are areas where values are far from absolute – hence questions about whose values trump others. On the other hand, it was argued that science and values cannot, and should not, be treated separately. Scientists have their own values, work for institutions with particular interests and are often funded by other institutions. Values and science are arguably inextricably linked.
- It is vital to recognise the huge contribution that scientific research has already made – and is likely to make in the future – towards addressing food system challenges, both global and local. At the same time, it is important to continue to interrogate and scrutinise the relationship between science and food businesses, and vice versa.

¹ Annual Report of Government Chief Scientific Adviser 2014 <http://is.gd/WdmdOh>

² <http://www.sciencewise-erc.org.uk/blog/?p=1473>

Global food challenges

There are a suite of global issues relating to food, health and the environment. These include malnutrition – obesity as well as undernutrition (often concurrently), antimicrobial resistance, land use, deforestation, biodiversity loss, water scarcity, climate change impacts of food and farming systems, and much more. Health and environmental challenges are very much interconnected. These are compounded by population growth.

It was suggested that at a global level more than enough food is being produced, but that all too often it is unhealthy foods being produced in unsustainable ways. Globally a food system has emerged that offers ‘cafeteria food’, predominately in the Global North but increasingly in the Global South. Business as usual is not an option.

It was claimed there is currently no unbiased advice for farmers who are faced with sales speeches of agricultural companies trying to sell them everything from machinery to pesticides. Farmers – like others in the food system - need to have access to information and options to be able to make informed decisions about their farming practices. Research findings need to be better transmitted to farmers – and they need better platforms to share the knowledge they generate.

Peer to peer learning is hugely important, and can be informed and improved with scientific research. The Innovative Farmers³ network was cited as a strong example. This involves farmers meeting in small groups to test out new techniques and tools in practical field labs – crucially with support from an independent researcher. Lessons from these field labs are then shared publicly for other farmers to use.

What role for food companies?

Serious questions remain about the responsibility of the food industry, both in creating and helping solve the world’s food challenges.

It was claimed that some large agri-businesses are promoting ‘silver bullet’ approaches to complex global problems when in reality there will never be a single solution to global food issues.

One question that remains unresolved is the extent to which agri-food companies *should* be involved in asking the research questions that scientists should be exploring. One line of argument is that there should not be any food industry involvement in influencing scientific research, because – it is argued – vested corporate interests will trump the long-term public good. The converse argument is that for scientific research to be effective and applied, there needs to be a close connection between food companies (small and large) and research institutes.

Science and values

There was debate about the relationship between science and values.

On the one hand, it was suggested that people often confuse *scientific* discussions with discussions about *values*, and that there are areas where values are far from absolute – hence questions about whose values trump others’. It was argued that it should be made clear when someone is talking about values as opposed to the science of whether e.g. a particular genetically modified organism is safe or not.

The counter argument was that science and values cannot, and should not, be treated separately. Scientists have their own values, work for institutions with particular interests and are often funded by other institutions. Hence they have a range of reasons why they do some things and not others – and why values and science are inextricably linked.

Translating science & sharing knowledge

Currently science gets translated by the media, which too often distorts messages reaching the general public.

³ <https://www.soilassociation.org/farmers-growers/innovative-farming/how-it-works/>

Public dialogue, acceptability and trust

Recent work from Which? and the Government Office for Science⁴ explored public acceptability of different solutions in relation to food amongst UK citizens. This work found that on the whole people preferred behavioural (to more technological) solutions, but that such approaches are not always effective or sustained.

Currently, public dialogue and participation in food systems too often involves approaching the public late in the discussion, offering a series of options – and seeing which one they want – as opposed to earlier in the process of deciding what should be researched. In such a scenario, those designing and conducting the research have already identified the solutions, including the technological options. It was argued that this has been part of the problem. With the debate on genetically modified food and feed for example, the question is often ‘is GM technology good or bad’ or ‘we’ve developed this particular GM technology; do you want it or not?’ Instead, the questions that should be asked include ‘which GM’ and ‘what is it for?’ To add to the complexity, there is difficulty in agreeing exactly what constitutes GM and what does not.

In public dialogue work, public concerns are often around issues that come out of traditional plant breeding – e.g. is it food that travels further, is it food that allows us to breed animals faster – rather than whether or not it is GM food.

People’s opinions on GM food are sometimes confused with their opinions on animal welfare or food safety. In the Global North, many people feel a lack of connection between the food they buy and where it comes from or how it is produced. It was suggested that large sections of the general public have a profound distrust of conventional food and farming systems. When asked, they cannot necessarily elucidate a precise reason for that or give specific details; it’s just a broader sense of distrust and a feeling that they do not want the food they eat to have been ‘mucked around with too much’.

In the minds of the public, such ‘mucking about’ with food does not necessarily entail inserting a gene into crops – it can be vaguer than that. However, that does not make it irrational or mean that such a view cannot still be evidence-based. The view may derive from an evidence base that non-scientists know about, e.g. that the big seed companies care about making money, that the government cares about being re-elected, that major supermarkets care about selling as many products as possible. It was argued that such knowledge is evidence, just different from what is conventionally thought of in many scientific circles as ‘evidence’.

Science is only one policy lens

It was suggested that policymakers – in relation to food and beyond – have not always been very good at acting on evidence. Climate change is almost unanimously acknowledged by leading scientists, yet action to mitigate the greenhouse gas impacts from the food produced, bought, eaten and thrown away has been lacklustre at best.

Policymakers look through three lenses in relation to any policy decision. Firstly, what is known about the issue and what does the science tell us? Secondly, if the policy is made, will it be deliverable? And thirdly, a political lens, the policymakers’ political, personal and religious values and what they think the values of the electorate might be.

It was argued that for food, there are a further three lenses: (i) security of supply (ii) affordability and (iii) sustainability. To integrate those – sometimes competing – lenses at the same time is challenging.

The case for a scientific approach

It was argued that many of the problems society and the environment have faced – and that enable more than seven billion to live on the planet – have been solved through the application of science. If future generations are to be able to live in a healthy equilibrium with other species and with the planet, then we need to apply all the

⁴ Which? and the Government Office for Science (2015) *Food System Challenges: Public Dialogue on food system challenges and possible solutions*
<http://www.which.co.uk/documents/pdf/food-system-challenges---public-dialogue-on-food-system-challenges-and-possible-solutions-445299.pdf>

science we have and some that we do not yet have.

One challenge is that evidence is often partial or very incomplete. It was suggested that there is too much promotion of single research papers, rather than evidence synthesis.

It was suggested that evidence is not always acted on. To take the example of campylobacter, there have been steps forward from sections of the food industry in tackling campylobacter in recent years. However, levels of campylobacter remain high and it was claimed that there are many low tech solutions available that have not yet been embraced by food companies.

It was argued that science and technology has helped feed the world (or at least most people in the world). It is vital to recognise the huge contribution that scientific research has already made – and is likely to make in the future – towards addressing food system challenges, both global and local. At the same time, it is important to continue to interrogate and scrutinise the relationship between science and food businesses, and vice versa.

Final thoughts

It was argued that the UK does have extremely good basic science. Worldwide, the UK is held in high esteem, including in disciplines like plant science. However, there are often issues in translating scientific research onto the farm, and into other parts of the food chain.

Short-termism is a problem – both in the funding of science and in defining the problems. A good business will be trying to address short-term problems, as well as long-term, strategic issues. Strategic engagement with teams of scientists that they have built up a relationship with over a long period of time can be hugely beneficial for food companies.

There is a role for science research in reducing inputs, costs and externalities. Research is needed to break complex challenges down – whether that be antimicrobial resistance or soil fertility.

Engineering will also have a major role to play – and information will be collected more and more, and made available to all actors in the supply chain. This will change the power dynamics – if citizens can access the information. This does raise questions about ownership of intellectual property – including what happens to individual's data.

Climate change was felt to be perhaps the number one global challenge facing society – and our food systems. It was argued that regulation is needed to ensure there is a level playing field for food and farming in mitigating, and adapting to the effects of, climate change.

Speaker biographies



Sir Mark Walport is the Chief Scientific Adviser to HM Government and Head of the Government Office for Science. Previously, Sir Mark was Director of the Wellcome Trust, which is a global charitable foundation dedicated to achieving extraordinary improvements in human and animal health by supporting the brightest minds. Before joining the Trust he was Professor of Medicine and Head of the Division of Medicine at Imperial College London. He is Co-Chair of the Prime Minister's Council for Science and Technology and has been a member of this since 2004. He has also been a member of the India UK CEO Forum, the UK India Round Table and the advisory board of Infrastructure UK and a non-executive member of the Office for Strategic Coordination of Health Research. He is a member of a number of international advisory bodies. He has undertaken independent reviews for the UK Government on the use and sharing of personal information in the public and private sectors: 'Data Sharing Review' (2009); and secondary education: 'Science and Mathematics: Secondary Education for the 21st Century' (2010). He received a knighthood in the 2009 New Year Honours List for services to medical research and was elected as Fellow of the Royal Society in 2011.



Dr Claire Marris is Senior Lecturer at the Centre for Food Policy at City University London. She is a sociologist of science with a 20-year track record of research and policy advice on interconnections between biosciences and society. She has studied the use of scientific evidence for policy decisions regarding genetically modified crops and foods. Her research has shown the important role played by businesses in the dynamics of public controversies around GM food, in the UK, France and the USA. She also has a special interest in public understanding of science and her research demonstrates that scientists and policy makers generally tend to misunderstand the basis of public concerns about science. She believes that in order to tackle pressing global challenges, businesses and other actors in the food system need to take on board a broader range of perspectives when engaging with science and when setting determining research priorities.



David Pink is Emeritus Professor of Crop Improvement at Harper Adams University and is a trustee of the Food Ethics Council. David is an expert in plant breeding and crop genetics with 30 years' experience of breeding research. Until September 2010 he led the crop improvement group at Warwick HRI, University of Warwick in multidisciplinary research in field vegetables, narcissus and oil seed rape, funded by Defra, the Biotechnology and Biological Sciences Research Council and breeding companies. He is a member of various organisations including the steering group for the BBSRC's horticulture and potato initiative, and the LEAF advisory board and is an assessor for the TSB agritech catalyst fund.

(David chaired the meeting)
