



Meat insecurity

Should we worry about eating our fair share of meat?

A report of the Business Forum meeting
on Tuesday 18th November 2014

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About the Business Forum

Ethical questions around climate change, obesity 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

Livestock products account for about 8% of the UK's - and 14.5% of global - greenhouse gas emissions¹. The industry has been identified as the 'largest sectoral source of water pollution' (UN, 2006) and uses 70% of agricultural land globally (Gerber et al 2013, 2006). High levels of meat consumption have been linked with chronic health issues. Any discussion about a sustainable food system must therefore include serious debates about meat-eating - in the UK but also in countries like China, where demand for meat has quadrupled in the past 30 years.

Meat isn't just about environmental and health costs. It has an important cultural and economic role in the UK (and worldwide) and many people depend on livestock farming and meat production for their livelihoods. So any transition must take into account the impacts on those working in the livestock industry. The Food Ethics Council and WWF-UK worked on a series called the *Livestock Dialogues*. The case for eating 'less and better meat' appears strong, although it is not universally accepted. Questions still remain as to how best to address 'meat issues' fairly, transparently and at an appropriate pace, given the scale of the challenges faced.

The November 2014 meeting of the Business Forum explored the urgency of the meat challenge, what eating 'less and better' meat means for farmers, food businesses and citizens, and ways to reduce, refine or replace meat eating.

We are grateful to our keynote speakers, Professor Tim Benton (University of Leeds and Global Food Security Champion) and Dr Helen Crawley (First Steps Nutrition Trust). The meeting was chaired by Helen Browning, Chief Executive of the Soil Association and Chair of the Food Ethics Council.

The report was prepared by Dan Crossley 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

- Meat is culturally, ecologically and nutritionally important for many people in many parts of the world at some points in their lives.
- Meat consumption and livestock production can be major contributors to environmental damage (particularly in relation to climate change) and health concerns.
- Livestock products account for a significant proportion of both the UK's and global greenhouse gas emissions. Hence there is a growing movement in high meat-eating countries like the UK to encourage 'less and better' meat consumption.
- Paradoxically, there are strong arguments on health grounds for eating meat (in moderation) while there are also good arguments for not eating meat (including for example processed meat). Similarly there are potential significant *risks* from consuming too much meat, in relation to colon cancer and coronary heart disease in particular.
- Dietary guidance is complicated by the fact that single foodstuff guidance is only of limited value, not least because of the question of what people will replace their meat with. However, the argument about the impacts of high levels of meat consumption on an individual's health remains likely to be more effective in persuading people to change dietary habits than other approaches, including about eating one's 'fair share of meat'.
- Engaging governments, businesses, citizens, food companies and farmers will be vital if the argument is accepted that those eating high levels of meat (or certain types of meat) should move to a 'less and better' meat diet. The uncertainty is in how to move such a 'transition forward' and at what pace.
- The equity argument is extremely difficult in relation to meat consumption. However, adding the 'fairness' dimension to existing arguments may be useful. The 'contraction and convergence' model offers one possible route to bringing fairness into discussions around meat and livestock, but this needs further research.

The value of meat and livestock

Pastureland currently covers about two-thirds of the world's agricultural land area – about 30 million square kilometres¹. Ecologically, extensive grazing systems are hugely important in many parts of the world, not least for managing biodiversity. Many of the iconic grassland species have evolved to live and graze, like bison, cows, zebra and deer. From a social livelihoods perspective, producing meat is a good thing for many systems. Meat is culturally, ecologically and nutritionally important for many people in many parts of the world at some points in their lives.

Demand and inefficiencies

However, the growing demand for meat is driving demand for increased production across agriculture as a whole. Calorifically, enough kilocalories are produced for 11.5 billion people and enough calories to feed 4 billion people are fed to livestock². Hence, there is just as much scope for meeting global food security for 9 or 10 billion people through changing what we eat as there is for growing more food. 20-30% of the food bought is wasted and in the UK (and most of the Global North), calories are over consumed relative to metabolic need.

Diet is now the most important risk factor of global ill-health. There is growing recognition in the policy world that diets will have to change. The question is how? In the UK, significant amounts are paid for healthcare costs – currently around £2,000 per person³. As the strain on the National Health Service increases, it was argued that surely it is going to become more attractive (as a policy option) to deal with the change in diets, rather than simply arguing for greater productivity.

The world seems to be waking up to the fact that poor diet is an enormous issue. However, there does not appear to be any consensus on how to deal with it. When people think about meat, they often associate it with 'protein' and strength, some sort of value which is fundamentally important to human populations.

¹http://www.fao.org/ag/againfo/resources/en/publications/tackling_climate_change/index.htm

²<http://www.scidev.net/global/food-security/news/non-food-crops-lock-up-enough-calories-to-feed-4-billion.html>

³ <http://www.nuffieldtrust.org.uk/data-and-charts/health-care-spending-person-uk>

This is problematic, as we don't *need* meat protein. Protein is highly prevalent in lots of foods consumed yet many populations across the centuries have survived, indeed thrived, on 'no meat' or 'very low meat' diets. However, meat has a status, so the issue is complicated by the joining together of cultural and nutritional dimensions.

Meat, livestock and the environment

Livestock systems impact on water quality, nitrogen and many other environmental issues. Currently only 22% of water bodies in Northern Ireland⁴, 24% in England⁵, 36% in Wales⁶ and 65% in Scotland⁷ meet 'good ecological status', as defined by the Water Framework Directive. The biggest impact on those is concentrated pollution from livestock systems.

Conversion of flower-rich meadows to intensively managed pasture is not going to create biodiversity – quite the reverse. Ruminants are increasingly fed concentrated food to speed their growth (or finish their growth ready for slaughter). This can lead to a variety of further issues around land use conversion to produce protein (like soy) for cattle feed (and the associated carbon emissions and biodiversity loss), dietary inefficiency in the rumen, as cattle evolved to eat grass not concentrate, and even changes in gut biology leading to increased ill-health (and associated use of veterinary medicines like antibiotics).

The climate change 'hook'

Global greenhouse gas emissions are 49 gigatonnes of carbon dioxide equivalent⁸. Of these, 24% comes from agriculture and forestry versus 14% from transport. Of

⁴<http://www.doeni.gov.uk/niea/ni-wfd-statistics-december-2014.pdf>

⁵https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/297275/LIT_8869_f916ba.pdf

⁶<http://naturalresourceswales.gov.uk/content/docs/pdfs/newsletters/living-waters-for-wales-update/living-waters-for-wales-update-issue-2-spring-2014.pdf?lang=en>

⁷http://www.google.co.uk/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CCYQFjAA&url=http%3A%2F%2Fwww.epa.org.uk%2Fwater%2Friver_basin_planning%2Ffidoc.ashx%3Fdocid%3Dc2e7861e-4414-4ebd-9867-cfd8d09d392%26version%3D-1&ei=SDS-VPGsEYOI7Qa_x4GYBA&usg=AFQjCNFRDKqxPCBBSNK9zp4Whtadedb30g

⁸http://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR_AR5_LONGERREPORT_Corr2.pdf

the 24% figure, livestock produce 7.1 gigatonnes and forestry 11.76 gigatonnes. These figures are made from methane from cow digestion (44%), land-use conversion to produce feed (27%) and 29% from cattle feed (grain, soya etc). Of this, about 4.6 gigatonnes of carbon dioxide equivalent are from cattle – which are not far off the emissions from the entire transport system.

People in the US on average eat more meat than in the UK, and their meat tends to be more intensively produced. An American family of four driving two cars with average mileage produce slightly less greenhouse gases from their cars than they do from eating meat⁹. Arguably, getting rid of a family car would require more of a lifestyle change than simply eating less meat.

A recent paper¹⁰, looking at production of biomass from land and what it can be used for, developed a range of scenarios. The two key conclusions – based on current yield trajectories – were as follows. Firstly, business as usual following demand growth would account for almost all of Kyoto's two degrees of climate change by 2050; and require 120% more irrigation water; 55% more land for crops and pasture; and significant loss of forest. Secondly, a 'healthy diet' scenario, coupled with changes in waste and sustainable intensification (partial yield gap closure), could allow global reduction in agricultural greenhouse gases of 50% (half a degree of warming) rather than being responsible for almost two degrees of warming. In such a scenario, the estimate is that it would free up 33% of land and only 31% more irrigation water.

Different livestock systems have different impacts. However, this recent paper suggested that if there was a shift to extensive livestock system growing on pasture land not suitable for crops, then that would create about 15% of the current food requirements for livestock system, implying sustainable meat production. With co-products, recycling and other action, that figure could reach about 30%. Hence it

⁹<http://www.foodsecurity.ac.uk/blog/index.php/2014/10/cars-cows-and-carbon/>

¹⁰ Bojana Bajželj, Keith S Richards, Julian M Allwood, Pete Smith, John S Dennis, Elizabeth Curmi, Christopher A Gilligan (2014) Importance of food-demand management for climate mitigation in *Nature Climate Change* 4, 924–929
<http://www.nature.com/nclimate/journal/v4/n10/full/nclimate2353.html>

was argued that reducing about one third of the meat currently produced globally – coupled with what is already wasted and overconsumed – would be both beneficial (from a sustainability and land use perspective) and achievable.

Climate change and extreme weather may also drive the need to change the food system in the years ahead. Currently nearly two-thirds of the world's agricultural calories are maize, rice and wheat. 86% in total comes when you add in sugar, soy, barley, palm and potato. The combination of global homogenisation of crops, climate change impacts, and pest and diseases, leaves the world's farming systems appearing fragile.

Spatial politics?

The world is increasingly globalised. Where food is grown and what is grown versus who consumes what is grown has decoupled. Forecasts suggest that North Western Europe is likely to be (relatively) less directly impacted by climate change than many other parts of the world. One line of argument would say why should not production be accelerated in the UK and EU, with surplus food being exported around the world – i.e. that it is a good opportunity for the UK. However, this is fraught with difficulties. In a world where the UK exports a lot of food, nutritional policy is going to be very difficult to align with agricultural policy, because they will be pushing in different directions. In such a scenario, globally there might be a really strong drive to reduce meat, but locally there might be a very strong drive to increase production, even if high-meat eaters in the UK are 'successfully' encouraged to eat less meat.

The challenges of nutrition advice

The first problem with looking at individual components of diets is that if you change one aspect, then you are likely to change another. Hence some will ask whether it is helpful for nutritionists (and policymakers) to make recommendations about one particular food type. So, in the context of meat, if people eat less meat, what will they eat instead – and what are the health (and environmental and equity) implications of that?

A second challenge is about what 'average' really means and to whom should public health nutrition be targeted? Which is the greatest concern - improving

‘average’ diets or reducing inequalities in the system for example? Whilst many people in countries like the UK are eating high levels of meat, there are equally people who are eating very small amounts (particularly in some countries in the Global South) – and it is important that policy changes do not disproportionately disadvantage the more vulnerable.

Many citizens find that dietary guidance makes little sense. For example in the UK the recommended maximum of processed meat is 70 grams per day (based on colon cancer risk). However, most people do not readily understand guidelines in terms of ‘numbers of grams per day’. It was argued that ‘servings’ may be a better way to guide people as to what constitutes an ‘appropriate quantity to eat’.

There is also a question about guidance on eating different parts of animals. Many internal organs are incredibly nutritious, but the recommendation on liver in the UK for example is for people to limit their consumption because of potential risk to the very vulnerable¹¹ – even though for some it may be beneficial to increase their uptake.

There are several different arguments or approaches when considering meat consumption and health issues, which depend on a range of factors including age, socio-economic status and geography. These include, but are not limited to, the health benefits of meat-eating, the health benefits of non meat-eating, the health risks of meat-eating and the health risks of non meat-eating.

Health benefits of meat-eating

Meat is a very good nutrient-dense food which has high bioavailability of lots of nutrients. If people have a little bit of meat in their diets, they will absorb the nutrients better from that food and they will also help some other nutrients be absorbed better. This is particularly important in vulnerable populations e.g. older people. There are some nutrients in meat that are particularly important, notably iron, vitamin A and

¹¹Guidance from NHS Choices is “People who eat liver or liver pâté once a week may be having more than an average of 1.5mg of vitamin A per day. If you eat liver or liver products every week, you may want to consider cutting back or not eating them as often” (from <http://www.nhs.uk/Livewell/Goodfood/Pages/meat.aspx#liver>)

zinc. In the UK, more than a third of people’s zinc intake comes from meat products. Whilst there are many other foods containing those ingredients, if people ate less meat, would their diet compensate in terms of these other micro nutrients?

Conversely, there is a line of argument that says you can have a healthy lifestyle and not eat meat at all. If you have a non-meat diet, evidence says you can do well from a health outcome perspective (however the extent to which this is also related to other aspects of people’s lifestyles is difficult to quantify). Fewer than 10% of the UK population are meat-avoiders, so it is very difficult to measure.

Health risks of meat-eating

Studies that track the health risk of populations eating high levels of meat show there is clear evidence between high meat intake, particularly processed meat, and colon cancer. The case to link high meat consumption and coronary heart disease is also convincing. However, there are a whole range of factors that influence coronary heart disease – and people eating high levels of meat may also have different lifestyles and do things differently to those eating lower levels of meat. Hence while there may be correlation, it’s often very difficult to demonstrate causality.

Conversely, depending on who – and where – you are, there can be significant risks to people who do not eat any meat at all. In a country like the UK, a small child can eat well as a vegetarian because we have an abundance of food. However, a child’s diet in the Global South may be very limited and, in such a situation, not eating meat can leave her at risk, to the extent that she might die. Therefore World Health Organisation advice is that it isn’t appropriate for children under five to follow a vegetarian diet.

It is not just about geography or ‘accident of birth’. From a nutritional perspective, the elderly can also potentially be vulnerable if they do not eat any meat at all. This is because when someone’s appetite is smaller and the amount they eat is smaller, they become more nutritionally precarious.

Alternatives to meat?

Some people argue that novel proteins should be an important part of future diets if there is to be a weaning off high levels of meat consumption in countries like the UK. Equally many disagree and some question the need for, and ethics of, for example cultured (in vitro) meat. Insects are increasingly being talked about, not least because people in many parts of the world already eat significant quantities. Some businesses are exploring the possibilities not just of serving whole insects, but also of ground insects in biscuits or insects in animal feed (although there are hurdles here, not least it was noted, with insects not being currently cleared for farm animal consumption in the UK).

It was suggested that there is already a wide range of alternative, cheap, scalable, plant-based protein – in the UK at least - so some challenged why ‘future foods’ like cultured meat get so much attention in the (some would argue futile) search for a ‘silver bullet’ to solve food security’.

A growing number of part-time carnivores or ‘flexitarians’ are eating non-meat products - which were once called ‘meat substitutes’ but are sometimes now referred to as ‘alternative protein’ sources.

If many people *should* eat less meat, the question was raised about whether and how much *fish* people should eat (instead or as well). There are clearly challenges about the long-term sustainability of some fish species, plus both benefits and risks from the huge growth in farmed fish (aquaculture) in recent years. Sustainability and nutrition advice are not currently very well-aligned in the UK (and in most countries around the world), particularly in relation to fish.

How to engage on the ‘transition’

It was argued that there is a growing need to engage politicians (at different levels), business leaders, the general public, food companies and – crucially – farmers on this issue. There was a strong sense that the debate has moved forward in recent years, including through the work of a number of civil society organisations working on ‘less and better’ meat. Indeed, new research indicates that a significant proportion (35%) of the population is willing to

consider eating less meat¹². However, there remain barriers to dialogue about the need for change in some quarters, and there is a lack of agreement on *how* to change.

Some important points were noted about such engagement. Firstly, it needs to involve a focus on how to support farmers on the ‘transition’ if there is to be a shift to ‘less and better’ meat eating in countries like the UK. Secondly, it needs to be framed positively, rather than anti-meat or anti-farmer. More work is needed to better demonstrate how a well-managed ‘transition’ can be better for health, for animal welfare, for the environment *and* for producers.

It was suggested that we need to change the market to create a suite of values that go along with production of food that are not just about price. If price per kilo is the only indicator focused on, society is in serious trouble. The market needs to be stimulated so that farmers get proper value and that extensification becomes relatively more profitable.

It is difficult to imagine a sizeable shift happening through ‘consumer demand’ on its own. In reality, lots of different aspects need to happen together, much as they did for smoking for example. The question was asked as to what lessons can be learned from smoking, such that *not* smoking has become normalised and has been accepted incredibly quickly, following the introduction of the smoking ban, alongside many other measures (including public health campaigns).

This begs questions as to what measures could be introduced for meat. This is not to suggest that smoking and meat eating are necessarily related, just that there may be some useful parallels to draw. So, could public health advertising campaigns work, what environmental taxes and incentives might be acceptable to citizens? Beyond the UK, it is important to consider what should happen at EU-level (for example the Common Agricultural Policy) and globally. So, it was argued, some blend of firmer intervention by governments - and businesses – would be needed for any meaningful shift to happen.

It was suggested that one potential policy route might be to develop more thinking about carbon taxes. Adding a carbon tax component (like petrol) to meat

¹² <http://www.eating-better.org/uploads/Documents/Let'sTalkAboutMeat.pdf>

may serve to position it as an occasional treat and encourage people to explore other diets.

The global equity argument

It is difficult to ask people what they think is their ‘fair share’ of meat. It immediately begs questions such as ‘what is meant by a fair share’ and ‘fair for whom?’ Even if such questions can be answered, any potential (policy) responses would ideally be at a global level rather than a local or national level. It was suggested that conversations around global agricultural policy are so tied up with poverty reduction that ‘fair share of meat’ discussions may be difficult.

One proposed approach put forward was that of the international carbon reduction proposal from Aubrey Meyer - namely ‘contraction and convergence’, which stated that everyone has an equal right to emit carbon. Whilst this model has received some attention in the context of climate change, it has received relatively little research attention in the context of climate change and meat. There are only a handful of papers, including one¹³ that explicitly argues for a contraction and convergence strategy with regard to meat consumption. However, further research in this area would be needed to update the evidence and to reconsider the feasibility of this approach.

Mirroring the ‘contraction and convergence’ approach is the idea of personal carbon allowances, which it was argued could be an equitable and effective measure, albeit it is difficult to imagine their introduction in the foreseeable future. However, the desire to decarbonise and address diet-related diseases is likely to grow. The economic costs of climate change are spiralling so rapidly out of control that governments will have to seriously mitigate and very soon. Lots of other industries are decarbonising because it is arguably easier to do so for sectors like energy. However, with the agri-food sector, emissions are still growing, while other sectors’ emissions are shrinking. That difference will get bigger and at some point it was suggested that it will become very obvious that meat consumption is an important place for government to intervene. There are also likely to be some shocks to the system over the next few decades.

¹³ McMichael AJ, Powles J, Butler CD, Uauy R. (2007) - Food, livestock production, energy, climate change, and health in the Lancet, 2007; 370; 1253-63

Reflections

- **Appropriate framing is important.** More research is needed to work out how messages to consumers/citizens should be framed in relation to consuming different types of meat (and different parts of animals).
- **A long-term transition is required, but it must start now.** The benefits of such a shift may not be seen for decades; hence this is truly an intergenerational issue. The question could be posed as to whether people want to leave their grandchildren a world which is riddled with global discord, global famine, global problems, wars, fighting over access to a much lower carrying capacity – or to leave them a better world? If the latter, then surely everyone needs to eat a much ‘fairer share’ of meat (if that can be defined). These arguments are likely to become more powerful once the impacts of climate change become more visible.
- The Food Ethics Council’s previous work on The **Livestock Dialogues** series¹⁴ (jointly with WWF-UK) is important to reflect on here and the suite of policy options developed are equally relevant today.
- The **equity argument is extremely difficult** in relation to meat consumption. Health in particular and, to a lesser extent, environment, is likely to be more effective in persuading people to change dietary habits than arguments around ‘inequity’ per se. However, adding the ‘fairness’ dimension to existing arguments may help strengthen the case for change and may be a useful lens when considering potential measures.
- **Arguing for a ‘fair share’ is perhaps likely to be more powerful in the context of leaving a fair share for future generations** (and planetary resources/ boundaries) than for a ‘fair share’ in the world today.

¹⁴ <http://www.foodethicscouncil.org/planet/meat-facing-the-dilemmas.html>

Speaker biographies



Professor Tim Benton is the “Champion” for the UK’s Global Food Security programme, leading, facilitating and coordinating its activities. The Global Food Security programme is a partnership of the UK’s main public funders of research in food security, including the research councils and government departments (such as the Department of Environment, Farming and Rural Affairs, the Department for International Development, the Department of Health, the Department for Business, Innovation and Skills, the Food Standards’ Agency and the devolved administrations in Scotland and Wales). The role of the Global Food Security programme is to ensure that strategically important research in this area is undertaken, and to add value to research via interdisciplinary collaboration, alignment and engagement of different communities of stakeholders. Tim is also a researcher on the sustainability of agricultural production.



Dr Helen Crawley is a registered public health nutritionist and dietitian with over 30 years’ experience in human nutrition, research, policy development and teaching. Helen is currently director of the public health nutrition charity First Steps Nutrition Trust and is honorary research fellow at the Centre for Food Policy, City University. First Steps Nutrition Trust is an independent charity that provides expert, evidence based resources on nutrition from pre-conception to five years and which has no commercial links. Helen is also on a WHO group looking at marketing of foods for infants and children, lobbies at CODEX for standards for foods for infants and children worldwide, and is on NICE panels on maternal and infant nutrition and Healthy Start vitamins. Helen supports and advises a range of NGOs on nutrition and sustainable food issues.



Helen Browning farms 1,350 acres in Wiltshire, as a tenant of the Church of England, with dairy, beef, pig, sheep and arable enterprises. Her business ‘Helen Browning’s Organic’ supplies organic meat to multiple and independent retailers...and also runs the village pub. Helen became Chief Executive of the Soil Association in March 2011, and prior to that was Director of External Affairs at the National Trust. Helen is also Chair of the Food Ethics Council and has been a member of several important commissions concerning British agriculture and food, including the Curry Commission on the Future of Farming and Food; the Agriculture and Environment Biotechnology Commission; and the Meat and Livestock Commission. She was awarded an OBE in 1998 for services to organic farming.