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Livestock consumption and climate change

Progress and priorities

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Summary

In September 2009, WWF-UK and the Food Ethics Council published a framework to help producers, policy-makers and environmental groups break out of a stalemate over the role that changing meat and dairy consumption should play in tackling climate change¹. Here we report on how that discussion has progressed.

While some of the heat has dissipated from the public debate, it remains a conversation at cross purposes. Environmentalists and climate scientists are correct to say that meat and dairy consumption is an aspect of most people's lifestyles in the UK that's relatively greenhouse gas (GHG) intensive. So, it's an appropriate focus for efforts to cut our carbon footprint. However, farmers and producer organisations are also right to urge caution over the direct and unintended consequences of trying to mitigate GHG emissions through changes in diet. The former are talking about **GHG accounting** and the latter about **GHG mitigation**. Both aspects are important, and neither has all the answers.

The main message from our 2009 report was that this stalemate served no one. And that, as long as the terms of debate were fair, the industry and NGOs were keen to agree a way forward on this issue. Our discussions over the past year with producer organisations have underlined that UK farmers have a strong economic interest in policies that focus on reducing the nation's consumption footprint, since that addresses concerns that production-focused approaches to accounting encourage the 'off-shoring' of emissions. When it comes to mitigation, the economically rational strategy for producers is to evaluate the costs and benefits of each approach case-by-case, rather than to favour production- or consumption-based approaches on principle. In other words, changes in diet that lower GHG emissions are not automatically a threat to livestock farmers' profitability.

We are delighted that EBLEX, the organisation for beef and lamb levy payers in England, has responded in depth to our 2009 report. It has considered each of 27 potential diet-related mitigation measures that we discussed. For many of the measures, EBLEX endorses and extends our previous analysis of the barriers and potential unintended consequences. Our previous analysis can be found in appendix 1. The response from EBLEX is in appendix 2.

The comments from EBLEX make a very constructive contribution to the dialogue over meat and dairy consumption. They highlight cross-cutting issues that warrant particularly urgent attention, and suggest which avenues are likely to be most fruitful in searching for consumption approaches to mitigating GHG emissions. Building on EBLEX's response, we suggest three priorities for attention:

- Tackling specific structural challenges that frustrate efforts to take a consumption approach to GHG mitigation. This task falls primarily to environmental scientists and to government.
- For environmental advocates to be clearer about their vision for a lower impact livestock sector, particularly what they mean when they say people should eat 'less but better' meat and dairy.
- For the industry, environmentalists and government to explore two areas where there appears to be some scope for immediate progress: supermarket producer groups and import-substitution strategies.

¹ MacMillan, T and Durrant, R (2009) *Livestock consumption and climate change: a framework for dialogue*. FEC/ WWF

Recommendations

We recommend that **government**:

- Brings farmers, environmental groups and animal welfare organisations to the table in an ongoing dialogue to come up with practical ways of reducing our consumption footprint that support rural livelihoods and respect people's liberty.
- Explores with retailers, farmers and NGOs the strengths and limitations of supermarket producer groups as a mechanism for promoting more sustainable diets.
- Focuses research on tackling the knowledge gaps that frustrate practical efforts to reduce GHGs, rather than commissioning further studies that discuss whether action is necessary.
- Reviews whether the UK's position in international trade negotiations is compatible with our commitment to sustainable development.
- Backs the Sustainable Livestock Bill presented by Robert Flello MP, which would provide a structure for further progress on this issue.

We recommend that **producer organisations** and **environmental groups**:

- Participate in constructive dialogue to identify specific, practical ways of influencing the consumption of meat and dairy that reduce our contribution to climate change and support rural livelihoods.
- Comment critically on the emerging priorities suggested in this report. What issues or options have we missed or misunderstood, and where have we got it right?
- Clarify what is envisaged by calls for people to eat 'less but better' meat and dairy. Would a loose meaning of 'better', in the sense of higher quality as seen by consumers, promote efforts to cut total emissions by reducing consumption while supporting rural livelihoods and investment in high-welfare production systems?
- Explore and take a stance on the pros and cons of developing supermarket producer groups or UK export markets as strategies for achieving more sustainable, lower volume and higher value UK meat and dairy consumption.
- Encourage MPs to support the Sustainable Livestock Bill.

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Foreword

WWF-UK launched a One Planet Food programme in 2009. It's part of our vision for a future where the world's natural resources are equitably and sustainably managed, and in which people and nature thrive. Our goal is to lead change in key sectors and accelerate the transition to environmentally sustainable systems of production and consumption in the UK.

If the world lived as we do in the UK, we'd need almost three planets to support us. Our consumption of food is responsible for around a fifth of the UK's greenhouse gas emissions. Food production also has a range of other environmental impacts – for instance on water quality and availability, soil quality, and the health of species and ecosystems. As WWF's latest *Living Planet Report* reports, people are already using natural resources – on which a secure and sustainable food system depends – faster than the Earth can replenish them.

To redress this imbalance, there's a growing body of evidence suggesting that we need to change the types of food we eat. Not least, we need to reduce our consumption of livestock products. Production efficiencies are important, but will not be enough. However, calls to simply cut meat and dairy consumption may have unintended consequences for the environment, nutrition and people's livelihoods. Such calls have understandably alienated producers and government alike.

In September 2009, WWF-UK and the Food Ethics Council published a framework to help producers, policy-makers and environmental groups break out of a stalemate over the role that changing meat and dairy consumption should play in tackling climate change. Subsequently, we've focused on developing dialogue around this framework. Our aim was to present a more comprehensive analysis of the issues that need to be addressed, and outline how to address them – to identify practical consumption approaches to mitigating greenhouse gas emissions. This report is the result.

Our findings highlight that UK livestock producers would benefit from evaluating efforts to encourage sustainable diets case by case, rather than simply opposing consumption-based approaches. There is a cautious acceptance of this among producer organisations, and the government needs to respond to the mandate this implies.

WWF-UK is helping to address the broader complexities of developing a UK food system that can fulfil social and economic needs while reducing key environmental impacts. We work collaboratively with stakeholders including producers, government, retailers, consumers, charities and academics. The livestock dialogues are one part of this. Other initiatives include: research, reports, sustainable solutions for specific commodities, policy development, and bringing together key players to take transformative action through our Tasting the Future project. We welcome contributions from all stakeholders on these important issues.

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WWF-UK

1. Introduction

In September 2009, WWF-UK and the Food Ethics Council published *Livestock consumption and climate change: a framework for dialogue*. The report provided a framework to help producers, policy-makers and environmental groups break out of a stalemate over the role that changing meat and dairy consumption should play in mitigating climate change. We argued that it is in the public interest to engage producers in a dialogue with government over this controversial issue because it will result in better policy. It is in the interests of producers too, because they would otherwise be left on the margins of this increasingly prominent agenda.

This paper reports on how that dialogue has progressed, one year on:

- Section 1 revisits why meat and dairy consumption is an issue for climate change, and explains the differences between consumption and production approaches to mitigation.
- Section 2 summarises the main points in our 2009 report, which outlined the case for UK meat and dairy producers to favour a consumption approach, and the mandate that this offered government to act on this issue.
- Section 3 discusses in greater depth why, on economic and strategic grounds, UK producers would be well-advised to explore consumption approaches to GHG accounting and mitigation, rather than assuming them to be a threat.
- Section 4 reports how EBLEX, the organisation for beef and lamb levy payers in England, has taken a lead in this, engaging constructively with our 2009 report and publishing a detailed response that highlights some of the key challenges associated with consumption approaches.
- In section 5, we reflect on the points raised by EBLEX, and suggest the key issues that they raise for producers, environmental advocates and, in particular, government.
- Section 6 discusses how the change in government since our 2009 paper alters the political context in which these issues must be addressed.
- Section 7 sets out our conclusions and recommendations.

Like our 2009 report, this paper focuses specifically on climate change and greenhouse gas (GHG) emissions. We do not consider these to be the only policy, sustainability or ethical issues relating to livestock production and consumption. Others include environmental concerns relating to water use, pollution and biodiversity loss; social issues, such as working conditions, producer livelihoods, consumer health, freedom of choice and global equity; and questions relating to the animals themselves, such as their physical welfare, behavioural freedom and intrinsic worth. The Food Ethics Council has considered many of these issues in previous publications.²

We focus here on climate change because it is a major area of controversy that we want to help resolve. Our approach in this report is to consider systematically how measures to reduce GHG emissions from livestock could affect this array of wider concerns.

² Food Ethics Council (2000) *Farming animals for food: towards a moral menu*. FEC, Southwell.
Food Ethics Council (2007) *Meat: facing the dilemmas*. Food Ethics 2(4).

2. Why consumption matters

The UK Climate Change Act, which came into force in 2008, puts in place a legally-binding target of an 80% cut in greenhouse gas (GHG) emissions against 1990 levels by 2050.³ That target is for emissions from production across all sectors of the economy. It covers emissions relating to UK products and services that are consumed in this country, and to those that are exported.

Food accounts directly for just under a fifth of the GHG emissions arising from goods and services produced in the UK. Livestock products are estimated to account for about 7% of total UK emissions by production, or around a third of food-related emissions.⁴ These estimates include non-CO₂ GHGs – methane and nitrous oxide – that account for a large share of the global warming potential of emissions from livestock production. They do not take into account whether permanent pasture acts as a carbon sink.⁵

There is widespread consensus across the food sector on the need to reduce emissions associated with livestock as a central element of efforts to ensure the food sector contributes to meeting wider commitments to a low-carbon economy. Producer organisations have taken an active role in meeting this challenge, leading efforts to develop ‘roadmaps’ for GHG reductions.⁶ These initiatives are intended to ensure that agricultural emissions meet the target set for the sector within the UK’s ‘Low carbon transition plan’.⁷ They focus on improving the GHG efficiency of agricultural production, including livestock farming.

International GHG reduction targets relate to emissions arising from activities within countries, primarily for reasons related to ease of attribution in the context of international trade. But it is now widely accepted that the UK and other wealthy countries should also consider and seek to reduce the GHG emissions arising from the production of goods and services that they import. Globally, of course, production- and consumption-related emissions add up. But, at a national scale, a country’s consumption-related footprint indicates whether it is living beyond its means and using more than its share of global resources. A consumption approach to GHG accounting underpins the concepts of ‘one planet living’ and ‘contraction and convergence’, which define sustainability in terms of sharing global resources more fairly.

Consumption-related GHG emissions exclude those associated with products and services that are produced in the UK for export, and include those associated with products and services produced in other countries and then imported. The UK’s consumption footprint is higher than its production footprint because it is a net importer of carbon-intensive goods, including food. Research for Defra suggests that the UK’s consumption related emissions are 21% higher than its production related emissions.⁸ Food related emissions account for 18%

³ Climate Change Act (2008) www.opsi.gov.uk/acts/acts2008/pdf/ukpga_20080027_en.pdf

⁴ Garnett, T. (2009) *Livestock related greenhouse gas emissions: impacts and options for policy makers*. Food Climate Research Network, University of Surrey.

⁵ Audsley, E., Brander, M., Chatterton, J., Murphy-Bokern, D., Webster, C., and Williams, A. (2009) *How low can we go? An assessment of greenhouse gas emissions from the UK food system and the scope to reduce them by 2050*. WWF-UK.

⁶ Dairy Supply Chain Forum (2008) *The milk roadmap*. Defra. EBLEX (2009) *Change in the air: the English beef and sheep production roadmap*. EBLEX. National Farmers’ Union (2010) *Agriculture industry GHG action plan: framework for action*. NFU.

⁷ HM Government (2009) *The UK low carbon transition plan: national strategy for climate and energy*. TSO.

⁸ Stockholm Environment Institute and the Centre for Integrated Sustainability Analysis (2008) *Development of an embedded carbon emissions indicator*. Defra.

of that higher total UK consumption footprint, with livestock accounting for 8% of the total.⁹ Increases in the GHG-efficiency of production within the UK can contribute to reductions in our consumption footprint, just as changes in consumption behaviour can reduce our production footprint if they have knock-on implications for industry in the UK.¹⁰ Focusing on production or on consumption offers different, complementary perspectives on how to address GHG emissions, and mitigation options for doing so (Table 1). Our 2009 report focused on the part that changes in consumption behaviour can play in mitigating climate change.

Table 1: Perspectives on GHG emissions

	Production	Consumption
Accounting	Production footprint	Consumption footprint
Mitigation	Technical abatement	Dietary change

The contention that changes in consumption behaviour – dietary change – can and should contribute to reducing GHG emissions has proved particularly controversial when it comes to meat and dairy products. Our 2009 report was published in the wake of calls to reduce meat and dairy consumption from Rajendra Pachauri, chair of the Intergovernmental Panel on Climate Change. These were followed by similar comments from Lord Stern, who had led an influential review of the economics of climate change.¹¹ Both were vigorously rejected by the livestock industry and some politicians, with London Mayor Boris Johnson calling Pachauri’s suggestion “a load of bull”.¹² A prominent report by health researchers argued that lower meat and dairy consumption would benefit public health and the climate.¹³ It was first welcomed by the Department of Health and the Department of Energy and Climate Change, and then rejected following pressure from Defra.

While some of the heat from this debate has now dissipated, meat and dairy consumption remains one of the most sensitive issues within UK public and policy discussions about climate change. Part of the reason, we suggest, is that the climate scientists and environmental advocates on the one hand, and the producers and those who speak for them on the other, are talking past each other:

- Those highlighting the need to reduce meat and dairy consumption are talking about **attribution**, focusing on how **to account** for GHG emissions. They are correct in saying that the best estimates available suggest meat and dairy consumption is a relatively GHG-intensive aspect of most people’s lifestyles in the UK, and is an appropriate focus for efforts to cut our climate change footprint.

⁹ Garnett, T (2009) *Livestock related greenhouse gas emissions: impacts and options for policy makers*. Food Climate Research Network, University of Surrey.

¹⁰ MacMillan, T. and Durrant, R. (2009) *Livestock consumption and climate change: a framework for dialogue*. WWF-UK and Food Ethics Council.

¹¹ Jowit, J. (2008) UN says eat less meat to curb global warming. *Guardian*, 7 September.

www.guardian.co.uk/environment/2008/sep/07/food.foodanddrink. Pagnamenta, R. (2009) Climate chief Lord Stern: give up meat to save the planet. *The Times*, 27 October.

www.timesonline.co.uk/tol/news/environment/article6891362.ece

¹² Johnson, B. (2008) Save the planet by cutting down on meat: that’s just a load of bull. *Telegraph*, 9 September. www.telegraph.co.uk/comment/columnists/borisjohnson/3562013/Save-the-planet-by-cutting-down-on-meat-Thats-just-a-load-of-bull.html

¹³ Landale, J. (2009) Whitehall turf war saves cows’ hides. BBC 25 November. <http://news.bbc.co.uk/1/hi/8379759.stm>

- Those rejecting calls to ‘eat less meat’ are talking about the **consequences** – direct and unintended – of efforts **to mitigate** GHG emissions through changes in consumption behaviour. Inasmuch as farmers and producer organisations have a much better understanding of the economics of the livestock sector than climate scientists, including the complexities of carcass use and international trade, they are well-placed to advise on the practical outcomes of potential changes in people’s diets.

Making bigger or more accurate estimates of the share of total emissions attributable to meat and dairy consumption does not address producers’ legitimate concerns about the practical consequences of simplistic mitigation measures. One cannot derive practically plausible mitigation measures simply from an analysis of attribution. Conversely, reiterating the potential unintended consequences of campaigns to ‘eat less meat’ does not change the fact that meat and dairy account for a noteworthy share of the UK’s consumption footprint.

3. A framework for dialogue

Our 2009 report provided a framework to help producers, policy-makers and environmental advocates break out of this stalemate over the role that changing meat and dairy consumption should play in mitigating climate change. We argued that focusing on specific interventions suggested to influence consumption behaviour could provide a constructive focus for debate about the practical consequences of such an approach. The framework put the onus on environmental advocates to be specific about *how* they envisaged consumption changing – by what practical mechanisms. And it put the onus on producers to be specific about the problems they envisaged with each potential intervention, and how those problems might be solved.

The report:

- Explained the consensus that, in general, it's appropriate for the UK government to seek to reduce GHG emissions relating to what we consume, as well as seeking to meet our legally-binding targets to reduce emissions from production.
- Described how emissions relating to livestock production and consumption have become a focus for attention and controversy.
- Outlined the full range of ways in which emissions relating to the consumption of livestock products could be reduced – including technical abatement to reduce the GHG-intensity of products, and changes in consumption behaviour.
- Highlighted important efforts already under way to reduce the GHG-intensity of livestock products, and explained the relevance of the more controversial question of changing consumption behaviour.
- Identified 27 measures by which government might change consumption behaviour – from ways to influence public preferences to fiscal measures that would change the relative prices of different food products. Many of the interventions would affect all foods to varying degrees, rather than being specific to livestock products.
- Considered the obstacles to rationally implementing each measure. These include knowledge gaps; the risk of 'off-shoring' economic activity to other countries, along with its associated emissions; and potential unintended consequences for the environment, animals, producers and consumers.
- Specified generic ways of addressing each type of obstacle. For example, knowledge gaps can be addressed by undertaking further, targeted research.
- Offered a framework for multi-stakeholder dialogue based on these steps, and recommendations to government.

The overall message from the report was that producers, environmental advocates and government shared an interest in exploring how to reduce emissions associated with the consumption of meat and dairy, and that a constructive dialogue over this controversial issue was possible. We emphasised that governments had a pivotal role to play in facilitating that dialogue and a mandate to act on the recommendations that came out of it.

4. The case for producers to engage

Since publishing our first report on this issue a year ago, we've met numerous times with producer organisations and policy-makers to discuss its implications. These discussions have underlined why it's in the interests of farmers to encourage public and policy debate about GHG emissions associated with the consumption of livestock products, instead of concentrating almost exclusively on measures that improve production efficiency.

We suggest that UK producers have a strong economic interest in encouraging a focus on a consumption approach to GHG **accounting**, balancing the current emphasis in UK and international climate policy on production-based accounting. Whereas a production approach to footprinting points the finger at farmers, a consumption approach focuses on how consumers' diets have changed and the part that international trade has played in allowing this.

Across the economy as a whole our consumption footprint has been rising while our production footprint falls because we are off-shoring our emissions to other countries.¹⁴ Such off-shoring could make a positive contribution to sustainable development if it throws an economic lifeline to poor regions of the world. For the most part, however, we are off-shoring food emissions and economic activity to other parts of Europe and to the world's major agricultural exporters. If you are worried about off-shoring – a concern that unites environmentalists and farmers – then you are focusing on the UK's consumption footprint.

Reducing our consumption footprint means reducing emissions from imports as well as from domestic production. So UK farmers have a direct economic interest in promoting a consumption-based approach to accounting. They should be championing such an approach.

When it comes to **mitigation**, UK producers have no economic interest in preferring production- to consumption-based strategies. Instead, the economically rational approach is for producers to evaluate the costs and benefits of each mitigation option case by case.

This is illustrated by the marginal abatement cost curves commonly used to compare production-based approaches to mitigation (Figure 1): the options above the line are expected to carry a net cost, and those below it to make a net saving. The same principle applies to consumption-based mitigation options: while some are likely to cost UK producers, others may profit from them. UK producers could be unaffected or even profit if:

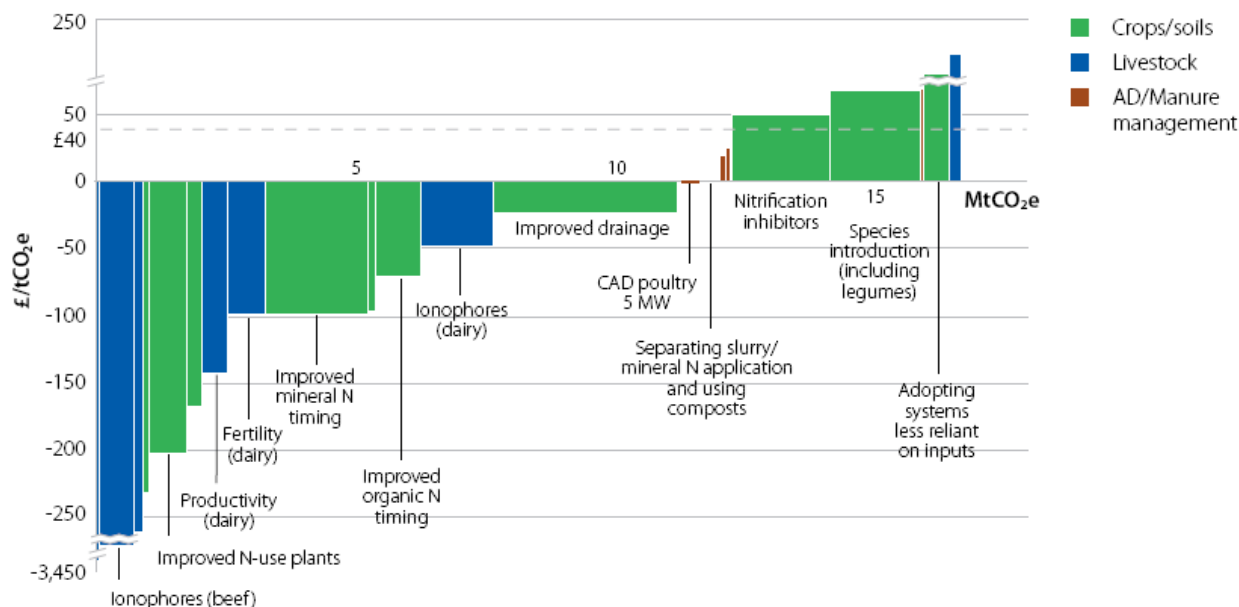
- Reductions in UK consumption only affect imported produce.
- Reductions in UK consumption affect UK produce but are offset by increased exports arising from the UK taking a higher share of the global market. This could be justified if UK farmers can demonstrate an environmental and social comparative advantage compared with livestock producers in other parts of the world.
- Reductions in UK consumption affect UK produce but are offset by increased margins (e.g. by consumers paying more for lower volume but higher quality).
- UK consumption changes in ways that reduce GHG emissions without affecting volumes (e.g. relating to carcass balance or seasonality).

The point of outlining these possibilities is not to suggest that there are clear and well-known ways for the UK livestock sector as a whole to profit from more sustainable consumption practices. Rather, it is to suggest that UK producers have an economic interest in trying to identify such practices and endorsing a balanced approach to GHG accounting, which considers both production and consumption footprints. They also have a strategic interest in

¹⁴ Defra (2010) Measuring Progress: SD Indicators.

constructively shaping this increasingly important political debate. Since farmers and people working directly with them understand better than anyone the practical consequences of changes in the market for meat and dairy products, there is also a strong public interest in ensuring producers are actively engaged in discussing how changes in consumption can contribute to GHG mitigation.

Figure 1: Agriculture marginal abatement cost curve – maximum technical potential (optimistic case) 2020.¹⁵



¹⁵ Reproduced from: Committee on Climate Change (2010) *Meeting carbon budgets: ensuring a low-carbon recovery*. 2nd progress report to Parliament. June.

5. The EBLEX response

The framework that we published in 2009 was designed to provide a structure that would enable producers to debate the pros and cons of specific approaches to changing the consumption of livestock products, with government and environmental groups. The framework has been well received by producer organisations, albeit with understandable caution in light of the heated arguments that have characterised this field in the past.

We are delighted that EBLEX, the organisation for beef and lamb levy payers in England and part of the Agricultural and Horticultural Development Board, has responded in depth to the 27 measures discussed in our 2009 report. Our table of 27 measures can be found in Appendix 1. EBLEX's analysis and response forms Appendix 2. We recognise that EBLEX is one organisation out of a sector that includes many other bodies, businesses and individual producers, and while we value its comments we understand that others involved in meat and dairy production may have a different perspective. So we invite others to build on the comments from EBLEX and respond to the points we draw from them.

EBLEX welcomes our structured approach to engaging producers, environmental groups and government in dialogue about practical options for mitigating GHGs through changes in consumption. For many of the 27 measures, EBLEX endorses and extends our previous analysis of the barriers and potential unintended consequences. We summarise the main structural challenges highlighted by EBLEX's analysis as follows:

- **Variation and uncertainty.** While it's possible to make broad statements about the share of GHG emissions attributable to different parts of our diet, these are circumscribed by uncertainty and methodological debate in Life Cycle Analysis (LCA). The boundaries of LCA (what is included and excluded) and how to account for GHGs associated with land use change are particularly difficult issues. In spite of these uncertainties, one of the overall messages from LCA studies to date is that GHG emissions for meat and dairy vary greatly depending on the production system. Therefore, the effect of reducing meat and dairy consumption would depend heavily on exactly which products, from which production systems, people were eating more or less of. The *uncertainties* may be reduced by methodological advances in LCA, enabling fine-grained distinctions to underpin supply chain decisions on reformulation and choice editing. The *variation* will not go away, and calls into question the potential efficacy of interventions that rely on aggregating and averaging information on impacts across product types, such as changing dietary advice, restricting advertising of high GHG product types, and environmental labelling.
- **Competition and price pressures.** Strengthening the relationships between retailers and producers offers some potential to enter higher value, lower volume markets. Yet, without government intervention, competition between retailers will prevent this from becoming the norm. EBLEX highlights the influence that supermarkets can exert over production systems and farm gate prices, and the opportunities and barriers this presents to consumption-based mitigation measures. Its comments suggest that greater vertical integration within meat supply-chains, building on the producer groups established by many of the supermarkets, offers opportunities for retailers to encourage and reward investment in more sustainable production systems. By encouraging traceability in the environmental impacts of production from the farm through to the marketplace, such developments could help encourage consumers to place a higher value on meat that is produced with lower environmental impact, and to pay an economically sustainable price for it. However, it is difficult for retailers to go the next step, which is to take the higher impact products off the shelves, directly for cuts of meat and through reformulating processed foods, and reduce overall levels of meat and dairy consumption.

Reformulation is complicated because, unlike the salt or fat content of processed foods, a higher meat content is seen as a sign of quality. Furthermore, according to EBLEX: “The reality of the market is that the supermarket chains monitor each others’ offer in terms of meat range and pricing policy on a weekly basis, and any perceived weakness in a competitor’s position would be mercilessly exploited”. Collaboration between retailers to address this barrier could be challenged under competition law, since it would reduce consumer choice and increase prices.

- **International trade.** One way to circumvent these competition issues would be for government to play an active role through regulation or by brokering collaborative action. But such measures pose a risk of off-shoring, or being challenged under the UK’s international trade commitments. For example, government could tax or restrict the use of highly GHG-intensive inputs, or set GHG-intensity standards for particular product categories. If these applied only to UK producers, then they would probably have little effect on consumption and simply off-shore the UK’s livestock supply chains and the GHGs that those entail. If they applied equally to imported and domestic products, then they could be vulnerable to challenge under European Union and World Trade Organisation (WTO) rules, as they restrict market access on the basis of production process rather than product characteristics. Previous production process standards have been challenged under the WTO.

The combined effect of these structural challenges is that while EBLEX endorses our view that a consumption approach to mitigating GHGs is important, it considers that none of the interventions that we identified in our 2009 paper offers an immediately practical way forward.

Furthermore, and in addition to these structural challenges, EBLEX questions the assumptions that underlie calls for consumers to eat ‘less but better’ meat and dairy. Among environmental advocates, ‘less but better’ has come to stand for the ambition that reducing our consumption of meat and dairy should support the economic, social and environmental sustainability of production, implying a transition to a lower-volume, higher-value sector. EBLEX suggests that the uncertainty and variability in impact assessment noted above will make it difficult to tie consumer-facing attributes (communication, branding, labelling) to higher environmental performance in terms of GHGs: “what consumers consider ‘better’ could be organic, rare breed, hobby farmed, or whatever their prejudice dictates”, and “the disparate voices within the livestock industry will not easily coalesce around a single agreed definition”.

6. Emerging priorities

The analysis provided by EBLEX makes a very constructive contribution to the dialogue over meat and dairy consumption by highlighting cross-cutting issues that warrant particularly urgent attention. And by suggesting which avenues are likely to be most fruitful in searching for consumption approaches to mitigating GHG emissions.

We consider that it raises three priorities for the attention of policy-makers, NGOs, food businesses and producers who are concerned with reducing GHG emissions.

First, it underlines the importance of **tackling structural problems** outlined above that frustrate efforts to take a consumption approach to GHG mitigation:

- **Variation and uncertainty.** Precision in impact assessment and improvements in traceability can reduce the difficulties that diversity in production emissions poses to communicating impacts along the supply chain, but it will not eliminate them. This limits the potential efficacy of interventions such as changes to dietary advice, restrictions on advertising, and environmental labelling. The constraints posed by uncertainties within LCA and other forms of impact assessment can be more readily remedied by investing in targeted research and further methodological improvement and coordination. The credibility of holding off intervention pending such improvements depends on explicit commitment to the need to develop a consumption approach, and clarity on the specific methodological barriers that need to be addressed and the level of improvement that would be considered an adequate basis for intervention. Otherwise, calls for more research look like delaying tactics, or ‘paralysis by analysis’.
- **Competition and price pressures** imply a substantial responsibility on government. While businesses may legitimately cite such pressures as a barrier to consumption approaches to GHG mitigation, it would be utterly inappropriate for government to do so. Government should regulate to address market failures and could seek to create publicly accountable ways of brokering collaboration between competing retailers.
- **International trade.** Government can only credibly participate in efforts to mitigate consumption-related emissions if it is actively seeking through its international trade commitments to promote a fair approach to regulating environmental standards in production.

Second, the points raised by EBLEX show the need for environmental advocates to be clearer about their **vision for a lower impact livestock sector** – particularly what they mean by ‘less but better’ meat and dairy. Does ‘better’ in this context – as a campaign or promotional message to consumers – have to mean ‘lower GHG’, running up against the impact assessment and communication problems highlighted by EBLEX? Instead, campaigning could use a much broader meaning of ‘better’ meat and dairy. This could focus on quality as perceived by consumers, and wouldn’t require the industry to agree on a definition. We suggest that this would be the most effective strategy for ensuring that the consumer behaviour change campaigns result in ‘better’ practical outcomes in terms of environmental, social and economic sustainability of the food sector. By this thinking, calls for ‘less but better’ imply four separate, intersecting developments:

- **Lower levels of consumption.** Most calls for ‘less but better’ imply a scenario in which average levels of meat and dairy consumption are very substantially reduced. This might be akin to what EBLEX describes as an ‘ecological leftovers’ approach, citing Tara Garnett of the Food Climate Research Network, which is to take “ecological capacity as the ultimate constraint and to quantify what level of livestock production and

consumption would be possible”.¹⁶ The main point is that the direct savings in GHG emissions are assumed to come from the ‘less’, not necessary from the ‘better’. The challenge is to make sure changes in consumption behaviour support, rather than stymie, separate efforts to reduce emissions from production.

- **Valued standards of production.** Consuming substantially less meat and dairy reduces the potential trade-off between GHG reduction and other sustainability or animal welfare attributes, making it entirely appropriate for consumers to favour meat and dairy produced in high-welfare, high-biodiversity systems.
- **Lower impact production.** The focus on farm-level GHG mitigation would therefore be on reducing emissions within production systems that can demonstrate high performance on a wide range of sustainability attributes, rather than trading-off biodiversity and animal welfare against GHG efficiency.
- **Higher returns for farmers.** Other attributes besides GHG efficiency are positively valued and rewarded by consumers and provide a basis for higher retail prices. GHG efficiency is not implied to be an attribute for which consumers pay more, circumventing the methodological challenges associated with communicating it along the supply chain. GHG efficiency within otherwise sustainable production systems may contribute to a higher return for farmers inasmuch as it reduces their costs.

If this is an appropriate understanding of what environmental advocates mean by ‘less but better’, then the competitive and trade challenges identified by EBLEX remain. But the methodological difficulties with such an approach are alleviated and there is no need for industry to agree on what is meant by ‘better’. Such an approach would imply a shift in emphasis within mitigation efforts. Instead of driving production towards the most GHG efficient systems and expecting consumers to reward that, efficiency would be pursued within production systems selected against broader sustainability criteria, including animal welfare.

Third, the response from EBLEX suggests areas where some **immediate progress** might be made before the sector runs up against the structural problems outlined above:

- **Producer groups.** Further developing supermarkets’ producer groups offers potential to couple production- and consumption-based approaches to GHG mitigation in the livestock sector. The higher levels of traceability and quality assurance that such vertical integration allows means that meat and dairy could command a higher price from consumers and the premium could be channelled back to producers to support more sustainable production systems. The terms of such arrangements will influence whether they are attractive to farmers, since the closer relationship they imply with the retailer may buy security at the expense of autonomy. However, unless such an approach is backed by regulatory intervention or collaboration to price or rule the least sustainable products out of the market, then its impact will be limited to the higher end of the market rather than transforming consumption across the sector.
- **Sustainable exports.** EBLEX suggests that UK producers may have – in the future if not now – an environmental comparative advantage in producing some livestock products, arising from our climate and topography. Thus, efforts to reduce domestic consumption of meat and dairy might go hand in hand with measures to increase the UK’s share of the global market. Import substitution and exports offer ways of protecting the profitability of UK producers while reducing the impact of UK meat and dairy consumption, and may be where the mandate for government to pursue a consumption approach to GHG mitigation is strongest. The credibility of such an approach depends on UK production meeting high sustainability standards in the round, not only for GHGs but also for other environmental, social, economic and animal welfare criteria. It also

¹⁶ Garnett, T. (2009) Livestock-related greenhouse gas emissions: impacts and options for policy makers. *Environmental Science and Policy* 12: 491-503: 499.

depends on export initiatives actively seeking to substitute UK produce for alternatives produced in less sustainable ways, with safeguards to prevent dumping in vulnerable markets or promoting an 'eat more' message. Environmental advocates and other public interest groups should set out the other conditions that such a strategy would need to satisfy in order to be considered a positive contribution to sustainable development.

7. Political context

The priorities implied by the ongoing dialogue over meat and dairy consumption, including our own previous report and the response from EBLEX, require action not only by environmental advocates and producer organisations, but also by government. We published our 2009 report into an environment where government was actively seeking to promote sustainable consumption, yet nervous of discussing the implications for meat and dairy consumption. Promoting a ‘sustainable healthy diet’ was one of the key planks of Defra’s food strategy, then in development and subsequently published as ‘Food 2030’. Yet there was no specific mention of meat and dairy consumption in the final document. A year on, we have a new coalition government and, while ‘Food 2030’ remains in place, there have been shifts in emphasis.

The ministers running Defra are Conservative. The Conservatives are committed to the principle of sustainable consumption, with David Cameron for example saying:

“People recognise that the mindless consumption and materialism of the past decade has neither left them more fulfilled nor served our planet. So they want to enter an age of more mindful consumption – where they think more about the consequences of their consumer behaviour.

“We’re not going to get people to cut every aspect of their consumption. But I believe it is realistic to change the culture of consumption, so we live in a country where it’s not just about the quantity of money, but the quality of life, where we get more value despite using less resources, and where we continue to generate wealth for our economy while also protecting our environment.”¹⁷

When it comes specifically to meat and dairy, however, the Conservatives have been sceptical of efforts to encourage more sustainable consumption behaviour. In opposition, the shadow Defra minister Nick Herbert vocally opposed Lord Stern’s calls for people to eat less meat.¹⁸ One concern was that calls to eat less meat went against the grain of public opinion and would put people off making other changes towards a more sustainable lifestyle. Measures to reduce the impact of food consumption were also seen as a threat to British farmers and rural livelihoods.

As this paper and our 2009 report have outlined, changes in meat and dairy consumption have considerable potential to decarbonise the economy and need not entail telling people what to eat. Depending on how it’s achieved, it could increase profitability for farmers and reduce the need for more costly mitigation measures in production. Politicians would do farmers and other voters no favours by side-stepping this issue.

The opportunity for the new government to address the mandate it has inherited to act on this issue lies in squaring the Conservatives’ recognition that change in our lives is necessary with their commitments to personal freedom and rural prosperity. Bringing farmers and environmental advocates to the table to find ways of reducing our consumption footprint that support the countryside and respect people’s liberty would be a constructive first step on this issue for the new government.

¹⁷ Cameron, D. (2009) The green consumer revolution.

www.conservatives.com/News/Speeches/2009/10/David_Cameron_The_Green_Consumer_Revolution.aspx

¹⁸ Herbert, N. (2009) A world without roast beef: who wants that except McCartney and Stern?

Guardian, 16 November. www.guardian.co.uk/environment/2009/nov/16/mccartney-stern-meat-free-mondays

Such an approach would be in keeping with Defra's new focus on working in partnership with stakeholders in industry and the 'big society', as set out in the department's Structural Reform Plan.¹⁹ It is about mobilising consumers, communities and business around a common purpose. Government acts as a facilitator in this model, convening stakeholders and helping to ensure that competition is focused where it values society and contributes to sustainable development.

Changes in regulation and international trade commitments will be necessary to address some of the structural problems outlined above, and these would not necessarily mean a reduced role for government. However, they would have the benefit of reducing the perverse incentives and impossible expectations facing businesses in the food sector. Furthermore, achieving greater clarity on the role of government through such an approach would allow research effort and spending to be focused more precisely on questions that are pivotal to progress.

A welcome opportunity for government and opposition politicians to engage in the debate about meat, livestock and sustainability is provided by the Sustainable Livestock Bill. A second reading of the bill, presented by Robert Flello MP, will take place on 12 November 2010.²⁰

¹⁹ Defra (2010) Department for Environment, Food and Rural Affairs draft structural reform plan.

Defra. www.defra.gov.uk/corporate/about/what/documents/defra-srp-100716.pdf

²⁰ <http://services.parliament.uk/bills/2010-11/sustainablelivestock.html>

8. Conclusion and recommendations

This report has described how, building on the framework we published a year previously, a constructive dialogue about climate change and the consumption of meat and dairy products has been taking place between producer organisations and environmental groups. We've outlined the priorities we see emerging from that fruitful exchange: to tackle the structural challenges that will otherwise frustrate long-term progress; to be clearer about how a low-impact future for the livestock sector might be sustained; and, in the meantime, to make immediate progress where possible. In this closing section, we recommend how government, producer organisations and environmental groups can pursue those priorities in the current political environment.

We recommend that **government**:

- Brings farmers, environmental groups and animal welfare organisations to the table in an ongoing dialogue to come up with practical ways of reducing our consumption footprint that support rural livelihoods and respect people's liberty.
- Explores with retailers, farmers and NGOs the strengths and limitations of supermarket producer groups as a mechanism for promoting more sustainable diets.
- Focuses research on tackling the knowledge gaps that frustrate practical efforts to reduce GHGs, rather than commissioning further studies that discuss whether action is necessary.
- Reviews whether the UK's position in international trade negotiations is compatible with our commitment to sustainable development.
- Backs the Sustainable Livestock Bill presented by Robert Flello MP, which would provide a structure for further progress on this issue.

We recommend that **producer organisations** and **environmental groups**:

- Participate in constructive dialogue to identify specific, practical ways of influencing the consumption of meat and dairy that reduce our contribution to climate change and support rural livelihoods.
- Comment critically on the emerging priorities suggested in section 5 of this report. What issues or options have we missed or misunderstood, and where have we got it right?
- Clarify what is envisaged by calls for people to eat 'less but better' meat and dairy. Would a loose meaning of 'better', in the sense of higher quality as seen by consumers, promote efforts to cut total emissions by reducing consumption while supporting rural livelihoods and investment in high-welfare production systems?
- Explore and take a stance on the pros and cons of developing supermarket producer groups or UK export markets as strategies for achieving more sustainable, lower volume and higher value UK meat and dairy consumption.
- Encourage MPs to support the Sustainable Livestock Bill.

Appendix 1: Consumption-based mitigation

The following pages reproduce tables 1 and 2 from our 2009 report, *Livestock consumption and climate change: a framework for dialogue*.

Table 1a: opportunities and obstacles associated with different ways government can influence meat and dairy consumption (change preferences 1).

Strategy	Approach	Intervention	Opportunities	Obstacles	Examples
Change preferences (continues overleaf)	Inform and educate (continues overleaf)	1. Adapt FSA 'eatwell plate' and dietary advice to reflect a sustainable balanced diet	FSA due to co-ordinate integrated government advice to consumers, as recommended by Cabinet Office [a]	Finding agreement between competing visions of a sustainable diet	Defra's Council of Food Policy Advisors is considering sustainability metrics for the low impact healthy diet 'plate' [b] Sustainable Development Commission is undertaking a review for Defra [c] Swedish authorities put advice to eat less meat and rice out to consultation [d]
		2. Public health campaign to reduce consumption of some livestock products on disease risk grounds	Personal health is a common motivator for changing behaviour [e]	Diet data may overestimate meat consumption and the reduction in disease risk is smaller than for some other potential changes in diet May hit meat cuts harder than processed products People may change their diets in ways that cause other nutritional problems Producers are concerned about being demonised	The Scientific Advisory Committee on Nutrition advises high consumers of red and processed meat to reduce intakes [f] The FSA salt campaign combined partnership work on reformulation with information and advice about salt on packets and in advertising [g]
		3. Campaign directly to promote lower impact diets by encouraging people to consume 'less but better' meat	Implies a shift to lower volume, higher value production systems, potentially maintaining profitability for producers while reaping other benefits to biodiversity, animal welfare and disease control	Defra research on pro-environmental behaviour shows that people are less willing to eat a lower impact diet than change their lifestyles in other ways [h] Meat processors are unlikely to favour this approach as their business is volume driven May reduce carcass utilisation	Local government in Ghent and Camden, Oxfam and Sir Paul McCartney are among those who have called for meat-free days [i]
		4. Encourage people to substitute lower-impact livestock products	Potentially easier to encourage people to eat different meat instead of less meat	The type of product may be less important than the production system in determining GHG-intensity No agreed method of accounting for land use change and sequestration, which would affect advice Highly intensive production systems may reduce GHGs but have other environmental impacts and raise animal welfare concerns Politically difficult to promote one sector only Public health not a direct consideration	BBC Bloom climate change advice recommends eating more pork and chicken [j]
		5. Promote consumption of less popular meat cuts	Creates higher value markets for more of the whole animal, potentially increasing profitability	The effects depend on promoting the right cuts, on what foods these cuts replace in consumers' diets and on how the lower value markets currently receiving 'less used' cuts (exports, pet food) substitute for them	Jamie Oliver's 'Jamie saves your bacon' campaign promoting pork shoulder, belly and neck [k]

Table continues overleaf

- a The Strategy Unit (2008) Food matters: towards a strategy for the 21st century. Cabinet Office, London.
- b Defra (2009) Council of Food Policy Advisors: work programme/priorities. www.defra.gov.uk/foodrin/policy/council/priorities.htm
- c Sustainable Development Commission (2009) Sustainable healthy diet workshop, Reading.
- d National Food Administration (2009) Environmentally effective food choices: proposal notified to the EU 15.05.09. http://www.slv.se/upload/dokument/miljo/environmentally_effective_food_choices_proposal.pdf
- e Defra (2008) A framework for pro-environmental behaviours. Defra. <http://www.defra.gov.uk/evidence/social/behaviour/pdf/behaviours-jan08-report.pdf>.
- f Scientific Advisory Committee on Nutrition (2009) Iron and health (draft). SACN, London. http://www.sacn.gov.uk/pdfs/draft_iron_and_health_report_complete_june_2009_consultation.pdf
- g FSA (2009) Salt timeline of key events. <http://www.food.gov.uk/healthiereating/salt/salttimeline>
- h Defra (2008) A framework for pro-environmental behaviours. Defra. <http://www.defra.gov.uk/evidence/social/behaviour/pdf/behaviours-jan08-report.pdf>.
- i See section 3 of this report.
- j BBC Bloom (2009) Cutting down on meat and dairy. <http://www.bbc.co.uk/bloom/actions/eatinglessbeef.shtml>
- k Channel 4 (2009) Jamie saves our bacon. http://www.channel4.com/food/on-tv/jamie-oliver/jamie-saves-our-bacon/jamie-saves-our-bacon-08-12-12_p_1.html

Table 1b: opportunities and obstacles associated with different ways government can influence meat and dairy consumption (change preferences 2).

Strategy	Approach	Intervention	Opportunities	Obstacles	Examples
Change preferences (continued)	Inform and educate (continued)	6. Promote more seasonal consumption and lower-impact forms of storage	May support innovation and restructuring towards less GHG-intensive and lower impact production systems Research shows that consumers aspire to eat with the seasons [a]	More extensive seasonal production systems for beef and dairy may have lower total factor productivity Heavy capital investment in processing for year-round availability Consumers may consider lower-impact forms of storage (e.g. UHT milk) to compromise taste or quality	Dairy roadmap considered the implications of a liquid milk market that was predominantly UHT [b]
		7. Facilitate community action by providing information or funds to group processes or movements promoting low-carbon living	Supports and extends initiatives that are already operating Encourages a balanced approach to lower carbon living in which eating a lower impact diet is only one component	Unless community initiatives are based on robust evidence they have small or unexpected consequences Government support for third sector can make it look like government is shirking responsibility	Group and community behaviour change programmes have been tried and tested by organisations including Global Action Plan. Examples include Action at School, Environment Champions, Ecoteams and the Transition Town movement [c] The Scottish government's Climate Challenge Fund is preparing information for community groups about the carbon impacts of food and will be introducing people to issues around livestock consumption [d]
		8. Education on lower carbon living in schools delivered through the national curriculum	Complements school programmes on environmental issues and various attempts to change school dinner menus to promote healthy eating Children take messages home to their families	A systematic approach would require this to be routine school practice, inspected by Ofsted, increasing the audit burden on schools	Sustainable development is one of seven cross-curriculum themes [e]
	Regulate advertising	9. Extend nutrient profiling on advertising to children to restrict advertising for highly GHG-intensive or high environmental footprint foods	High fat products and marketing are becoming socially less acceptable, so it might be possible to achieve the same for highly GHG-intensive foods	Nutritional deficits (e.g. of calcium) if alternative sources are not communicated Environmental profiles would need to consider wider issues (e.g. animal welfare)	Television advertising to children of foods that are high in fat, salt and sugar, potentially including some meat and dairy products, is already restricted [f]
	Promote other foods	10. Work with retailers and caterers to increase the number of meat- and dairy-free SKUs, recipe suggestions and promotions	Potential health benefits from higher fruit and vegetable consumption	Limited success in increasing fruit and vegetable consumption in spite of increased public awareness of 5 a day Concern about fulfilling iron and other nutritional needs and over safety of soya and rice-based dairy substitutes	M&S and Sainsbury's have been increasing their range of vegetables, while other retailers have launched promotional campaigns such as Aldi's 'super six' and The Co-operative's 'mix your colours' [g]
	Lead by example	11. Government explicitly reduces its own consumption of high environmental impact products, especially at public functions	This would gain publicity for the issue and give legitimacy to wider initiatives to promote low-impact diets	Risk of penalising highly visible sectors out of proportion with the potential for GHG savings	Cabinet Secretary announces phasing out of bottled water across government estate [h]

a IGD (2005) Connecting consumers with farming and farm produce. Cited in Hampson, S (2006) Differentiation: a sustainable future for UK agriculture. RASE, Stoneleigh.

b Dairy Supply Chain Forum SCP Taskforce (2008) The milk roadmap. Defra. <http://www.defra.gov.uk/environment/business/pdf/milk-roadmap.pdf>

c E.g. Global Action Plan (2009) Ecoteams. www.ecoteams.org.uk

d Scottish Government (2009) Climate challenge fund. <http://www.scotland.gov.uk/Topics/SustainableDevelopment/funding/ClimateChallengeFund>

e Teachernet (2009) Teaching sustainable development. <http://www.teachernet.gov.uk/sustainable/schools/about/about.cfm?levelselected=4&id=4>

f FSA (2007) Restrictions on TV advertising of foods to children come into force. <http://www.food.gov.uk/news/newsarchive/2007/mar/tvads>

g e.g. Aldi (2009) Super 6. http://www.aldi.co.uk/uk/html/product_range/4862.htm

h Cabinet Office (2008) Cabinet Secretary announces phasing out of bottled water across government estate. www.cabinetoffice.gov.uk/newsroom/news_releases/2008/080306_bottled_water.aspx?rss=yes

Table continues
overleaf

Table 1c: opportunities and obstacles associated with different ways government can influence meat and dairy consumption (change knowledge).

Strategy	Approach	Intervention	Opportunities	Obstacles	Examples
Change knowledge	Highlight opportunities	12. Inform industry about consumer preferences as business community underestimates support for the green agenda compared with evidence from consumer research	Serve latent market for greener products	Public preferences for lower impact products are not necessarily reflected in willingness to pay	Department for Business, Innovation and Skills market intelligence on Low-Carbon Business Opportunities [a]
	Improve labelling	13. Introduce a numerical or colour-coded GHG labelling system on food products sold by retailers	GHG audit process drives carbon reduction throughout supply chain	Requires accelerated LCA, particularly complex for products with multiple ingredients Unless labels applied to imports, production could be offshored Unless other environmental and animal welfare factors are included, scope for negative sustainable development outcomes Costs of implementation passed to producers Labelling may not affect purchasing behaviour because supermarkets arrange foods by product groups, so the difference between livestock and non-livestock products may not be apparent	The Carbon Trust's carbon reduction label [b] Sustain's proposed omnistandard label [c]
		14. Introduce a numerical or colour-coded GHG labelling system on menus in catering outlets	Raises awareness at the time of consumption allowing direct choices in favour of a lower impact diets	As for retail labelling (above) Even basic nutritional information is only starting to appear on menus The food service sector is fragmented, so the cost to business would be high and enforcement could be difficult	FSA to trial nutrition information on restaurant and takeaway menus [d]
		15. Tighter rules and enforcement of country of origin labels for livestock products	Enables consumers to express more accurately any preference for British produce, potentially supporting unilateral increases in production standards and higher value, lower volume business models	EU rules are currently said by some decision-makers to constrain the UK's freedom to tighten rules on country of origin labelling The production system is the major factor in GHG emissions, so country of origin is only relevant if the UK regulates to ensure domestic production is low-GHG	Government claims to be working in Europe for a new directive that makes this possible, while the Conservatives have a Bill calling for greater country of origin information to be published on labels [e]

a BIS (2009) Low carbon business opportunities: market intelligence. <http://www.berr.gov.uk/whatwedo/sectors/lowcarbon/marketintelligence/page50106.html>

b Carbon Trust (2008) Product carbon labelling case study: Walkers. <http://www.carbontrust.co.uk/Publications/publicationdetail.htm?productid=CTS058&metaNoCache=1>

c Sustain (2007) Pictorial representations for sustainability scoring. Sustain, London. http://www.sustainweb.org/pdf/sustainability_labelling_flowers.pdf

d FSA (2009) FSA announces first steps to introduce nutrition information for consumers when eating out of home. <http://www.food.gov.uk/news/pressreleases/2009/jan/nutinfoeatingout>

e Conservatives (2009) Food labelling regulations (amendment) bill. http://www.conservatives.com/Campaigns/~/_media/Files/Downloadable%20Files/Honest%20Food/bill.ashx

Table continues
overleaf

Table 1d: opportunities and obstacles associated with different ways government can influence meat and dairy consumption (change availability).

Strategy	Approach	Intervention	Opportunities	Obstacles	Examples
Change availability	Create production standards	16. Introduce a maximum standard for the GHG intensity of all foods, e.g. measured in gCO ₂ e/kg or gCO ₂ e/kj	Stimulates innovation in production and supply chains to ensure products can remain available	Ignores that highly GHG-intensive foods could potentially be consumed in small quantities in a low carbon world Tighter legal standards might be required on sustainable development issues and animal welfare to avoid trade-offs Applying to imports may violate WTO rules and be challenged by large meat exporting countries such as US and Brazil	Cf. maximum residue levels/limits for pesticides and veterinary drugs, which relate to health risks rather than production practices [a]
		17. Apply very high animal welfare standards that require extensive, higher cost production systems	Producers raise animal welfare standards, which is good in itself, while being protected from lower-welfare imports	GHG reductions would depend on significant reductions in consumption, which would be price driven and fall on poorer consumers Applying to imports may violate WTO rules and be challenged by large meat exporting countries such as the US and Brazil	The UK's unilateral ban on sow stalls, without comparable standards on imports, left the industry feeling very exposed [b] EU ban on the use of hormone growth promoters [c]
	Voluntary agreements or bans	18. Encourage or require major retailers to reduce the average GHG intensity of their product ranges	Exploits retailers' power to change their supply chains The prospect of naming and shaming by government has proved sufficient to stimulate product reformulation	Depends on major LCA effort Other criteria besides GHG intensity needed to avoid unintended consequences As retailers start with different ranges it may be difficult to operate fairly	Some retailer environmental commitments (e.g. waste reduction) apply across their entire range [d]
		19. Encourage or require retailers to remove the most GHG intensive products from sale	Research shows consumers do not expect to be able to buy products that are environmentally damaging [e]	Even retailers that have actively edited their customers choices on environmental grounds are wary of intervening where there are complex trade-offs	Wyvale have stopped selling patio heaters [f]
		20. Work with processors, caterers and retailers to reformulate food and meals to reduce their GHG intensity, including by reducing meat and dairy content	Can ensure products remain nutritionally balanced by compensating for changes Gradual changes transform consumer tastes	Reduces volume demand for livestock products without increasing quality and margins, so producers lose Consumers may regard portion size reductions as a swindle	Reformulation to reduce salt, sugar and fats led by the Food Standards Agency [g]
	Improve public procurement	21. Change procurement rules and practices to favour lower impact diets, including by increasing the availability and promotion of vegetarian and vegan meals	Directly reduces the footprint of up to 1 billion meals a year Offers an opportunity to communicate with consumers about climate change Increases the credibility of voluntary standards with retailers	Past improvements in public procurement have proved difficult to put into practice in a sector that has become fragmented and deskilled Careful menu planning would be needed to ensure meals remained nutritionally balanced Potential trade-offs with animal welfare and other sustainable development objectives Reduces volume demand for livestock products without increasing quality and margins, so producers lose	The director of the NHS sustainable development unit was reported as saying in January that "we should not expect to see meat on every menu" served by the NHS [h]

a Pesticides Safety Directorate (2009) Maximum residue levels. <http://www.pesticides.gov.uk/prc.asp?id=956>

b The Pig Site (2007) Cross-compliance gold-plating. <http://www.thepigsite.com/swinews/15116/crosscompliance-goldplating>

c Farmers Weekly (2009) EU and USA settle hormone beef dispute. <http://www.fwi.co.uk/Articles/2009/05/14/115625/eu-and-usa-settle-hormone-beef-dispute.html>

d E.g. Marks & Spencer (2007) Plan A. <http://plana.marksandspencer.com/about/the-plan/>

e Sustainable Consumption Roundtable (2006) I will if you will: towards sustainable consumption. SDC, London. http://www.sd-commission.org.uk/publications/downloads/I_Will_if_You_Will.pdf

f Osborne, H. (2007) Garden chain drops patio heaters. Guardian. <http://www.guardian.co.uk/business/2007/apr/05/energy.environment>

g FSA (2009) FSA launches saturated fat campaign to help prevent heart disease, the UK's biggest killer. <http://www.food.gov.uk/news/pressreleases/2009/feb/launchsatfatcampaign>

h Jowitt, J. (2009) Hospitals will take meat off menus in bid to cut carbon. Guardian. <http://www.guardian.co.uk/society/2009/jan/26/hospitals-nhs-meat-carbon>

Table continues overleaf

Table 1e: opportunities and obstacles associated with different ways government can influence meat and dairy consumption (change price).

Strategy	Approach	Intervention	Opportunities	Obstacles	Examples
Change price	Tax GHG-intensive practices	22. Introduce VAT-style taxes on the sale of GHG-intensive foods	Taxation can stimulate rapid changes in behaviour and in the marketplace	Taxation may need to be set at high levels to change behaviour Reduces volume demand for livestock products without increasing quality and margins, so producers lose Disproportionately affects poorer consumers Intervening only on GHGs risks trade-offs with other aspects of sustainable development and with animal welfare	The Irish government's levy on plastic bags in 2002 cut use by over 90% per person [a]
		23. Introduce taxes on the sale or trade of GHG-intensive agricultural inputs including fertiliser and animal feed	Taxes could be designed also to address other environmental issues such as biodiversity loss Tariffs on feed trade could complement efforts to rebuild grain stocks, regulate the impact of first-generation biofuels of food prices and improve global food security	Unilateral taxation could offshore production or be vulnerable to challenge through the WTO if applied to imports Product or sector-specific taxes risk irrational or unfair outcomes compared with cross-sector taxation or emissions trading 'Feed' is moving target - animals will be fed other human food if their value is high enough	Sweden and Norway have taxed nitrogen fertiliser to control pollution [b]
	Subsidise lower-impact practices	24. Provide tax advantages or direct support for low-impact production systems	Helps producers and processors to carry the cost of restructuring towards a low-carbon economy Support for innovation and restructuring is potentially less regressive for consumers than price support or VAT changes	Demands public spending at time of budget cuts Would need to comply with WTO 'green box' criteria	Rural development support under pillar II of the Common Agricultural Policy, including production-related initiatives which compensate for income foregone such as the Organic Entry Level Stewardship [c]
		25. Eliminate direct subsidies or price support that promotes high-impact production systems	Support better regulation by joining up policy across government	Though much of livestock policy is the responsibility of EU member states, the Common Agricultural Policy sets the existing framework, so the UK cannot change all policies unilaterally	Previous rounds of CAP reform have eliminated some incentives for environmental pollution and biodiversity loss, though Defra considers that much of the CAP still has a negative impact on the environment [d]
	Price natural resources	26. Cap and trade systems at EU for all GHGs	Promotes a fair and balanced approach based on the 'polluter pays' principle	Accurately assessing and pricing emissions from agriculture presents a major technical challenge Depends on international framework about the allocation of responsibility for emissions UK emissions targets for agriculture not expected until 2018	Agriculture fully enters New Zealand's emissions trading scheme in 2013 [e] Methane and nitrous oxide are included in UK carbon budgets, and the UK government committed in Food Matters to take a lead in Europe on this issue [f]
			27. Value forest to limit deforestation, which contributes to the global footprint of livestock products	Recognises that our consumption indirectly drives unsustainable production internationally, even if the methods used to produce the food we eat are environmentally efficient	Incentive frameworks may ignore the needs of marginal producers and communities

a KPMG (2008) More green taxes may not be best route to environmental protection, says KPMG. Press release. <https://www.kpmg.com/global/pressroom/pressreleases/Pages/Moregreentaxes.aspx>

b Shortle, J.S. and Abler, D.G. (2001) Environmental policies for agricultural pollution control. CABI, Wallingford.

c Defra (2009) The Rural Development Programme for England 2007-2013. <http://www.defra.gov.uk/rural/rdpe/index.htm>

d Defra (2009) CAP reform. <http://www.defra.gov.uk/farm/policy/capreform/>

e Ministry of Agriculture and Forestry (2009) Agriculture in a New Zealand emissions trading scheme. <http://www.maf.govt.nz/climatechange/agriculture/>

f The Strategy Unit (2008) Food matters: towards a strategy for the 21st century. Cabinet Office, London.

g SciDevNet (2009) Reducing forest emissions. <http://www.scidev.net/en/climate-change-and-energy/reducing-forest-emissions>

Table 2: a framework for dialogue.**Table 2a: types of obstacle.**

Unintended consequences/unfair treatment: environment, animals or people
Problems of scope: risk of off-shoring emissions
Knowledge gaps: not enough known to be confident of successful intervention

Table 2b: which interventions face which obstacles (Table 1 for detail).

Strategy	Approach	Intervention	Knowledge	Scope	Environment	Risk to		
						Animals	Producers	Consumers
Change preferences	Inform and educate	1. Adapt dietary advice	●					
		2. Public health campaign	●	●			●	●
		3. Less but better meat campaign						●
		4. Eat different meat campaign	●	●	●	●	●	●
		5. Promote less used cuts		●				●
		6. Seasonality and storage	●					●
		7. Facilitate community action	●	●				
		8. Education in schools						
	Regulate advertising	9. Restrict advertising			●	●		●
	Promote other foods	10. Meat- and dairy-free SKUs					●	●
Lead by example	11. Government reduces consumption		●			●		
Change knowledge	Highlight opportunities	12. Promote green markets to business					●	
	Improve labelling	13. GHG labels in retail	●	●	●	●	●	●
		14. GHG labels in catering	●	●	●	●	●	●
		15. Tighter on country of origin		●				
Change availability	Create production standards	16. Maximum limit on GHG intensity		●	●	●		
		17. Higher animal welfare standards		●				●
	Voluntary agreements or bans	18. Reduce GHG-intensity of ranges	●		●	●	●	
		19. Remove most GHG-intensive						●
	Improve public procurement	20. Reformulate foods and meals					●	●
	21. Low-impact procurement		●	●	●	●	●	
Change price	Tax GHG-intensive practices	22. Tax GHG-intensive foods			●	●	●	●
		23. Tax GHG-intensive inputs		●				
	Subsidise lower-impact practices	24. Support low-impact production		●				
		25. No support for high-impact systems		●				
	Price natural resources	26. EU cap and trade for all GHGs	●	●				
	27. Value forests						●	

Table 2c: how to address obstacles.

Commission research and knowledge transfer
Agree sector boundaries and GHG allocations
Lead international negotiations
Enforce rules fairly across full scope
Assess consequences by environmental, welfare or social impact assessment
Regulate or compensate to address specific side-effects

Appendix 2: Comments from EBLEX

Comments on *Livestock Consumption and Climate Change: a framework for dialogue*, published September 2009 by FEC and WWF.

Re: Tables 1a/1b. Change Preferences

Intervention 1. Adapt Eatwell plate and dietary advice to reflect a sustainable balanced diet.

The problem we see here is over the difficulty of establishing a single tariff for the carbon-equivalent cost of each meat species. All published research in this area shows a range of emissions per kg of meat dependent upon the production system used. For example intensively finished dairy bull beef can have a lower GHG cost per kg of meat than extensively grazed suckler animals, notwithstanding the embedded carbon cost of the higher volume of animal feeds used. (For the sake of this example we are leaving aside for the moment the issue of carbon sequestration on different types of grazing land.) This is a function both of the lifespan of the respective animals, leading to different lifetime methane emissions, and of the attribution of the mother's emissions to liquid milk in the case of dairy calves raised for meat.

Land use issues are commonly bundled together to provide media-friendly soundbites such as 'beef production causes the destruction of the rainforest'. This is hardly apposite when considering the environmental impact of cattle grazing on the UK's uplands, on land which has little alternative use for food production.

Essentially any mean average figure used as a tariff for all beef, lamb, pork or chicken is exactly that, a mean average, and it disguises the spread of LCA results between different production systems for the same species. Importantly, such an approach takes away the incentive for individual production system managers to improve their own emissions profile, and potentially to differentiate for marketing advantage.

Intervention 2. Public health campaign to reduce consumption on disease risk grounds.

You identify the obstacles to this approach well. Much of the scientific data drawn from epidemiological studies is inconclusive or incomplete, witnessed by the factual errors identified in the World Cancer Research Fund's Report of 2008. The relationship between red meat's overall nutritional benefit and the quantity consumed is not a linear one whereby any consumption at all is detrimental. Indeed very low consumption of meat can clearly in some circumstances be detrimental to health, unless the diet is managed to cope, and can lead to iron deficiency most notably. It is also worth noting that contrary to media belief the UK has levels of red meat consumption per capita well down the European league table. (The French may call us 'les rosbifs' but actually their per capita consumption of beef is higher than that in the UK. Source: FAO.)

Intervention 3. Campaign directly to promote lower impact diets by encouraging 'less but better'.

Recent consumer survey work conducted by the [Agricultural and Horticultural Board] AHDB (EBLEX & BPEX) has reaffirmed that consumers are generally unwilling to change their diets in comparison to other lifestyle behaviours. Our intuition, based on many years of tracking/understanding consumers' attitudes towards meat, is that a 'less but better' message may not easily be associated by consumers with production methods but could be misinterpreted as being about meat cuts; a simple hierarchy whereby steak/loin/topside is deemed better than mince or brisket/belly could lead to a distortion of demand and carcase imbalance. Alternatively what consumers consider as 'better' could be organic, rare breed, hobby farmed, or whatever their prejudice dictates.

This approach, as is pointed out, also implies an assumption that extensive, lower volume production systems are necessarily lower emitters of ghg per kg of meat produced. This may be the case in some

scenarios, but it is also very possible (some would say probable) that larger more efficient production units result in meat with a lower carbon cost per kg.

Our own research conducted at Cranfield and co-funded by Defra indicates that NZ lamb *may* have a lower carbon footprint than UK lamb in certain scenarios, depending on the amount of fertiliser used on grazing pasture. We know from our market research that consumers may struggle with this proposition based on their notion that the embedded 'food miles' in meat which has travelled 13,000 miles to reach them would make non-domestic meat less environmentally friendly.

The exact definition of 'better' meat is therefore fraught with difficulties, and the disparate voices within the livestock industry will not easily coalesce around a single agreed definition.

Intervention 4. Encourage people to substitute lower-impact livestock products.

As stated above, there are real difficulties in accurately measuring the carbon tariff for each species on a mean average basis and then comparing and contrasting. Your list of obstacles is comprehensive and we endorse it. This is a problem frequently faced by the media who ask us for simple calculations such as 'how much water is used to produce a kg of beef?' The answer is always a huge range, dependent upon the production system used, the origin of the animal feed etc. In our experience journalists struggle with this ambiguity and usually misrepresent the facts. No such licence would or should be allowed to those who apply labelling information to food, where accuracy of information is a legal requirement.

Intervention 5. Promote consumption of less popular meat cuts.

The reality of the global nature of international trade in meat and meat products is that there are markets around the world for the less popular cuts such as offal. Whilst the role of the celebrity chef in promoting lesser-used cuts is a very media-friendly topic, in reality it is the impact of macro market issues which create value for meat processors. For instance the main reason that the price for cull ewes has recovered since the days of Foot and Mouth Disease in 2001 is that the euro has strengthened against the pound and the halal meat sector continues to grow across Europe; it is not a function of the media-friendly Mutton Renaissance campaign, whatever certain food journalists might care to believe. Much more important therefore than PR campaigns to get UK consumers to eat cuts that they do not want to eat (fattier forequarter cuts, tripe, offals, trotters etc) is export trade development work to open markets in areas like Asia, Africa and the Middle East. Many of these markets are still closed to us following BSE in the 1990s and FMD in 2001 & 2007.

Intervention 6. Promote more seasonal consumption and lower-impact forms of storage.

As a general observation the patterns of meat consumption in UK, across all meat species, show stronger demand in the winter months and weaker demand in the summer months (notwithstanding the BBQ season which drives high demand for certain cuts such as ribs and certain meat products such as sausages and burgers). Roasting joints and hot cooked meals generally are obviously more suited to colder months. AHDB can provide data on meat volume consumption by month as required.

In the pig sector production is largely insensitive to seasonality, with a reasonably flat pattern of production and consumption. The demand for ham and sausages is just as strong in summer as in winter (and processed pigmeat products account for much more consumed volume in the UK than fresh pork itself).

In the beef sector there is more seasonality, as you identify, around extensive suckler beef than there is around dairy beef; but as explained above there is not necessarily a confirmed and commonly agreed link between extensive systems and lower carbon footprint. And in reality suckler beef animals are 'finished' (grown to meet the slaughter weight and carcass profile required by the market) at a range of different ages to provide a reasonably flat supply profile.

The sheep sector is the most obviously seasonal red meat sector with the majority of UK lambs being born in the early months of the year and slaughtered in the autumn/early winter. Retailers normally therefore stock more NZ lamb in the Jan-July period than the Aug to Dec period (indeed at least one

retailer adopts a 100% NZ policy for their pre-packed lamb for six months of the year). But the overall supply of UK sheepmeat should not be pigeon-holed as a six-month proposition, given the different topography of the UK which allows for staggered production across uplands and lowlands, and the commercially driven response to market pricing signals which means that producers can target production to be market-ready when UK volumes are lower and prices available to them therefore higher.

Note that the UK abattoir sector generally is set up to deal with year-round livestock supply and certainly those who pack meat for the major retailers are responsible for providing year-round supplies of meat according to relatively stable consumer demand. The large meat packers who pack the majority of home-produced meat are *also* the packers/importers of imported meat; their job is to provide a 52-week supply response to retailers' demand.

Intervention 7. Facilitate community action by providing info/funds.

No comments offered re this intervention.

Intervention 8. Education on lower carbon living in schools delivered through the national curriculum.

AHDB's sector bodies collaborate well together with the British Nutrition Foundation to provide curriculum materials/teaching resources in relation to Food - A Fact of Life. Primarily based at Key Stages 1 and 2 (up to 11 yrs) these resources are being extended to KS3. AHDB certainly has a role to play in funding the development of teaching resources related to primary food production and is keen to work with others on any collaborative agenda in this area.

We are not experts on the detailed development of the school curriculum, but would comment that organisations like FACE (Farming and Countryside Education) have a long history of providing links to the ever-changing curriculum on agricultural topics, and we are partners with them on some projects. AHDB does have a dedicated education sector manager. We agree with your assertion that school pupils take home messages to their families.

Intervention 9. Extend nutrient profiling on advertising to children to restrict advertising for high GHG-intensive foods.

See above re the difficulties of defining generic GHG tariffs for each meat. The public debate already experienced over what many perceive to be the intuitive nonsense of restricting the advertising of cheese based on nutrient profiling (with no credit given for the calcium benefit) would be repeated for red meat (with the emphasis on the iron/protein benefit).

Note that the vast majority of fresh red meat purchased in the UK is branded as retailer own-label and not manufacturer's brand (apart from some processed products such as some sausage and burger ranges), and in fact very little advertising is undertaken judged as a % spend of overall sales value. Fresh meat does feature quite heavily in retailer's press advertising about their promotional offers, and meat can quite often be the advertising 'hook' in press advertising placed by supermarkets (which reaches its peak intensity towards the end of each week in the daily newspapers). This advertising would be deemed by the advertisers to be the promotion of individual supermarket chains, and not the advertising of meat per se.

Intervention 10. Work with retailers and caterers to increase the number of meat-free SKUs, recipe suggestions etc.

There is no doubt that the stocking policies and procurement policies of retailers and caterers are the source of biggest potential leverage in terms of having an overall effect on the consumption of total GHG-intensive foods. The large supermarket retailers in particular have the ability to establish restrictive product specifications as part of their procurement policies and to insist on these being met by their suppliers, who provide largely own-label meat products/ranges. Some major retailers have shown over the last few years how they can insist on particular welfare criteria from their suppliers, from wherever the meat is sourced, and put in place an audit system to check compliance. The market

has witnessed recently some headline-grabbing initiatives to restrict sourcing specifications on other food products, for instance in relation to free-range eggs.

We question however whether any individual retailer would deliberately put themselves at a competitive disadvantage by offering a heavily edited or truncated meat range in comparison to their competitors. They might consider that there is first-mover commercial *disadvantage*, rather than first-mover PR *advantage*. The reality of the food market is that supermarket chains monitor each other's offer in terms of meat range and pricing policy on a weekly basis, and any perceived weakness in a competitor's position would be mercilessly exploited.

The larger retailers with national coverage are inclined to target a number of discrete consumer segments, with product ranges aimed at different groups of shoppers. Thus Tesco currently promotes a vegetarian lifestyle to its customers on its 'Greener Living' website, whilst simultaneously continuing to develop the optimum meat range and price positioning to maximise its meat sales. They would not consider these concurrent policies to be contradictory, merely the targeting of different consumer segments with different messages and product offers, within a broad church total offer.

Intervention 11. Government explicitly reduces its own consumption of high impact products.

This would certainly have an impact in terms of the media coverage, resulting in some leverage to the decision. One wonders however how effectively the Government could implement a cross-Departmental strategy on food sourcing, given the difficulties experienced through many years of the Public Sector Food Procurement Initiative (PSFPI), which is perceived by many to have been slow to achieve its original ministerial objectives.

Additionally, there are sub-sectors within the overall public sector where the nutritional imperatives of a balanced diet outweigh the principles of reducing high GHG impact products. For instance, the role of protein in recovery/recuperation in hospitals, and the need to provide high calorie/high protein diets for the armed services.

Re: Table 1c. Change Knowledge

Intervention 12. Inform industry about consumer preferences as business underestimates support for the green agenda compared to evidence from consumer research.

AHDB's own research indicates that most consumers are indeed willing to 'do their bit' for the environment, although the majority are much more prepared to change behaviour in relation to issues which do not involve a personal sacrifice, whether it be to lifestyle or wallet/purse. We would question whether businesses do in fact underestimate consumer attitudes, as our experience is that the main retailers and also the main catering chains conduct extensive consumer research of their own. Indeed one could support the view that Tesco lead rather than follow their shopper's attitudinal changes on many issues. Their CEO has gone on record as saying that Tesco's environmental agenda is slightly ahead of their shoppers' demand.

Intervention 13. Introduce a GHG labelling system on food products in retail outlets.

Despite the fact that fewer shoppers would be influenced to use such a system than is claimed (our monitoring indicates that one third *claim* that they would be influenced by a labelling system), this would have an effect. The challenge is to create a labelling system which is comprehensive, with all products including imported ones having detailed LCA calculations (at a considerable expense), and which differentiates between products *within* categories, as well as *between* categories. Should the focus be on persuading shoppers to buy say tomatoes in pack A rather than in pack B... or to persuade them to buy product A rather than product B?

Early efforts at carbon footprint labelling are quite modest in their intentions, although there are some sporadic examples of quantitative labelling of products within categories; one major retailer's own-label freshly squeezed orange juice does directly compare its LCA footprint quantitatively to its alternative orange juice derived from concentrate.

Given that most food labelling law emanates from Brussels this would have to be voluntary on a UK-only basis.

Intervention 14. Introduce a GHG labelling system on menus in catering outlets.

This would have less effect than a comprehensive retail labelling system. Firstly, the incidence of eating out is much less than eating in, with around 17% or so of food volume purchased for consumption out of home (equating to around 30% of food *value*). Secondly, consumers' interest in, and attention to, food provenance and related credentials is lower in many eating out situations, where the overriding consideration is one of taste and/or enjoyment. As is the case for retail, the EU has control over 80% of food law so this would have to be a voluntary arrangement with consequent low take-up by caterers. Certain large catering chains, and McDonald's is the best example, are starting to conduct wide scale audits of their supply chains and their supplying farms with regard to GHG emissions.

Intervention 15. Tighter rules and enforcement of COO labels for livestock products.

Country of origin [COO] does not necessarily equate to a GHG tariff, as it is the individual production system which is the determinant of the GHG per kg of meat, not its country of origin. Notwithstanding that point, we know from our attitudinal tracking that consumers generally equate food miles with higher environmental cost.

In reality the labelling of fresh meat in the retail environment is fairly accurate in terms of country of origin information. There are specific EU Regulations relating to beef origin labelling, as a legacy of BSE. It is on processed meat products where origin information is either absent or misleading. Pig meat especially (over two thirds of which is bought/consumed in a processed form in the UK) suffers from some inadequate origin labelling.

Re: Table 1d. Change availability

Intervention 16. Introduce a maximum standard for GHG intensity of all foods.

This would be extremely difficult to implement on a UK-only basis as it would potentially be a breach of EU single-market regulations. If implemented on an EU basis it could be in breach of WTO rules.

Previous commentary on the difficulties of a mean average tariff for meat species apply here. We would also observe that consideration should be taken of land resource use. Tara Garnett's concept of "ecological leftovers" would dictate that the higher GHG cost ruminant grazing areas could in fact be the most favoured form of meat production, given the lack of alternative food production options.

Intervention 17. Apply very high animal welfare standards that require extensive higher cost production systems.

Ditto answer to 16 re EU and WTO issues.

Intervention 18. Encourage/require retailers to reduce average GHGs intensity of their ranges.

Care would need to be taken not to procure anti-competitive behaviour under both UK and EU competition law, if this led to distortions of the single market or to higher retail prices or restricted product ranges.

As commented above, this would necessarily require a comprehensive cross-category LCA exercise.

It should be feasible however to engage with retailers and get them to commit to quantum reductions in GHG emissions per kg of product sold in specific categories such as beef, milk, tomatoes, etc. These supply chain projects could engage the whole supply chain from primary producers forward.

For UK farmers, the benefit of such projects is that they offer a commercial rationale for the retailers to consider more vertical integration. Currently in the meat sector there are few real examples of vertical supply integration (farmers may be a member of a retailer's 'producer club', but in reality they are not

generally contracted to supply a particular supermarket. Even if they only send their stock to one abattoir, the meat may go to more than one retailer, and various cuts might go to different destinations; the flanks of a beef carcass might go to a large burger manufacturer/supplier, the steaks might go to a large catering wholesaler, etc).

But there is a beneficial prospect that retailer's commitments to reduce the GHG cost of certain product ranges could lead to more integrated linkages between livestock farmers and retailers. This should be welcomed by the industry as a key component of the development of a more sustainable future for many of them.

Intervention 19. Encourage/require retailers to remove the most GHG-intensive products from sale.

There are examples of retailers taking such action to 'choice-edit' their product ranges and turning it into a positive PR message. For instance, only Fairtrade bananas are sold in Sainsbury's and only free-range eggs are sold in M&S and some other retailers.

However, previous comments above regarding the difficulty of mean average LCA analyses apply here.

Intervention 20. Work with processors/retailers/caterers to reformulate products to reduce their GHG intensity (e.g. less meat and dairy).

It is difficult to imagine how this could make a significant difference. Unlike the example of salt or fat reduction as initiated by FSA, whereby there is a general consumer expectation that lower salt and fat products are desirable, the meat content of processed foods or ready meals is actually a denotation of *quality* to the consumer. A meat pie with 50% meat content is deemed to be better quality than one with 30% meat content. The same applies to sausages, ready meals etc. For consumers there would therefore be a dissonant trade-off between the GHG message and the product quality message.

Intervention 21. Change procurement rules to favour lower impact diets, including more vegetarian meals.

The public sector accounts, as you indicate, for around 1 billion meals and up to £2bn value per year. Sourcing decisions in the public sector have good PR leverage (which might or might not be a good thing depending on the reaction). As alluded to above, many procurement decisions are now decentralised so implementation may not be as easy as imagined.

Re: Table 1e. Change Price

Intervention 22. Introduce VAT on GHG-intensive foods.

Changes to the VAT status of particular food products are relatively straightforward to implement for retailers, whose overall grocery range includes a mix of VATable and non VATable products.

We can confirm that there is price elasticity for meat products, and this tends to differ by species and cut. So an increase in retail price would indeed act as a suppressant on demand. It could however also lead to down-trading rather than substitution, in other words consumers buying standard ranges instead of premium, and/or value ranges instead of standard. This might lead to unintended consequences such as growth in demand for lower-welfare meat products, or indeed higher GHG emission meat products.

Intervention 23. Introduce taxes on sale/trade of GHG-intensive agricultural inputs.

Major inputs for livestock farming systems are fertiliser and feed. Increasing production costs would render more livestock producers uncompetitive and would lead to reduced production. It would not necessarily result in higher wholesale or retail prices as these are very rarely directly linked to costs of production. There are few 'cost-plus' supply contracts in place in UK agriculture. Thus consumer demand might remain stable and home production decline, resulting in the off-shoring of emissions.

Intervention 24. Tax advantages or direct support for low impact systems.

No additional comments.

Intervention 25. Eliminate subsidies or price support that promotes high impact production systems.

The post CAP-reform landscape across the EU is complicated. In the UK subsidy support through the Single Farm Payment is not linked to livestock production numbers. Clearly targeted use of modulated funds under the current RDPE [Rural Development Programme for England] regime or its successor might incentivise low GHG production practices. For the sake of this response no further analysis of opportunities is presented.

As in comments above re 23, however, there is no direct link between net cost of production and retail prices. Therefore consumer demand could be unaffected because intervention in the subsidy system would not necessarily change retail price.

Intervention 26. Cap and trade systems at EU for all GHGs.

This intervention obviously requires EU wide agreement. As you identify this requires a major and comprehensive assessment of GHG emissions.

No further comments provided.

Intervention 27. Value forest to limit deforestation, which contributes to global footprint of livestock products.

A more detailed audit of animal feed trade flows and LCA would be needed to provide an unequivocal view of the indirect impact on UK livestock production.

We should note that imports of Brazilian beef into the UK are much reduced due to recent animal health restrictions placed on Brazilian imports into the EU.

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About the Food Ethics Council

The Food Ethics Council provides independent advice on the ethics of food and farming. We:

- help guide the way through difficult issues by analysing problems, challenging accepted opinion and creating a space for dialogue; and
- build tools to put ethics at the heart of decisions about food in business, policy and civil society.

Our Council members include bioethicists and moral philosophers, farmers and food industry executives, scientists and sociologists, academics and authors. Our work has covered topics including the personalisation of public health, the control of food research, the use of veterinary drugs and the growing challenge of water scarcity.

Find out more about our work, including the members of the Council, our Business Forum, and our must-read magazine, *Food Ethics*, on our website at www.foodethicscouncil.org.

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WWF is the world's leading independent conservation organisation. And we're tackling the most serious conservation challenges facing the planet, building a future where people and nature thrive together.

That's why we're passionate about sharing the planet's resources more sustainably, taking action on climate change and protecting endangered wildlife.

Our determination, experience and scientific know-how mean we're a positive force for change. But these are tough challenges so we must also engage with communities, with business, and with government.

In January 2009, we launched our One Planet Food programme, which aims to work collaboratively with other key stakeholders to reduce the environmental and social impacts of UK food consumption, and to begin building a sustainable food system that can help people and nature thrive using their fair share of the planet's natural resources.

For further information on the work of the One Planet Food programme visit our website: www.wwf.org.uk/food

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