Sustainable Development Commission

Setting the table

Advice to Government on priority elements of sustainable diets

The Sustainable Development Commission is the Government's independent watchdog on sustainable development, reporting to the Prime Minister, the First Ministers of Scotland and Wales and the First Minister and Deputy First Minister of Northern Ireland.

Through advocacy, advice and appraisal, we help put sustainable development at the heart of Government policy.

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Responsibility for the content, conclusions and recommendations of the report rests solely with the SDC.

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1. Executive Summary and Recommendations

Basic messages about healthy eating have been understood and promoted for many years. However, understanding about how such advice fits with evidence of the environmental and other sustainability impacts of our diets, for example on climate change, is less clear. Developing a better understanding of a sustainable diet is essential for government to achieve its objective of 'a sustainable, secure and healthy food supply'.[1] Not only would this provide more coherent messages to consumers, but it would also help clarify what is required of the supply chain.

The need to address this issue has been identified as a priority for government.[2] The reasons why food systems need to be transformed into sustainable ones are well documented.[3] The diets of UK consumers are a significant factor in a number of critical sustainability issues such as climate change, public health, social inequality, biodiversity, and energy, land and water use, to name only a few. Defining a sustainable diet thus becomes a test case for whether the government can achieve a better match between evidence and policy, and whether the supply chain and consumers can achieve a better match between choice and living within environmental limits.

Government is currently developing a vision for sustainable and secure food in the UK,[4] developing integrated dietary advice to consumers[5] and developing sustainability standards for public sector caterers.[6] As the UK Government's independent advisor on sustainable development, the Sustainable Development Commission (SDC) was invited by the Department for Environment, Food and Rural Affairs (Defra) to contribute to these processes by providing advice on sustainable diets.

Defra commissioned the SDC to:

- Map the existing evidence on sustainable diets and assess synergies and tensions between public health; environmental sustainability; social inequalities and economic stability
- Identify potential priority elements around which government can build consensus, including messages to consumers
- Identify gaps in existing evidence and make recommendations for further research
- Engage stakeholders in assessing the evidence
- Undertake a preliminary assessment of a range of 'sustainable food' initiatives.

The SDC commissioned a team from the British Heart Foundation Health Promotion Research Group at the University of Oxford, working with an independent food and environment consultant, to undertake the core elements of this work. Research for the project took place between June and August 2009. This report summarises the consultants' results, discusses implications for policy and makes recommendations to Government. Responsibility for the content, conclusions and recommendations of the report rests with the SDC.

The focus of the study was to examine how changes in UK food *consumption* patterns i.e. the food that we eat, could deliver positive sustainability outcomes (e.g. reduced climate change impacts, improved health and nutrition, reduced environmental impacts, improved economic and social benefits). The SDC recognises that changes in consumption will inevitably have implications for production and the food chain in the UK and globally. These are worthy of further consideration, but were outside the scope of the research for this report.

The recommendations in this report primarily focus on UK and English Government policy. However, we offer this report as support for continued engagement with the Devolved Administrations in Scotland, Wales and Northern Ireland.

Key findings

There is, as yet, no universally agreed definition of a 'sustainable diet' but stakeholders from business, academia and non-governmental organisations (NGOs) with whom we engaged during this project, agree that clearer understanding of sustainable diets is urgently needed.

Using evidence from 44 published academic research studies and expert reports, a sustainability assessment was made of how a range of food and dietary consumption behaviour changes would impact on health, environment, the economy and reducing social inequalities. Overall this showed more evidence of positive synergies (i.e. win-wins) between these sustainability impacts than of tensions (i.e. win-lose). For example, reducing consumption of food and drinks with low nutritional value (i.e. fatty/sugary foods and drinks) was found to have mainly positive impacts on health, the environment and reducing social inequalities. However, the research also found gaps in the evidence, most notably with respect to economic impacts of dietary changes.

Whilst we recommend further research, it is clear that good indicative evidence already exists to describe many elements of a sustainable diet. On the basis of evidence from the literature and from stakeholders, we have prioritised the changes to our diets that would contribute the most progress towards a sustainable diet. These priorities are grouped into three categories:

1. Changes likely to have the most significant and immediate impact on making our diets more sustainable, in which health, environmental, economic and social impacts are more likely to complement each other:

- Reducing consumption of meat and dairy products
- Reducing consumption of food and drink of low nutritional value (i.e. fatty and sugary foods)
- Reducing food waste.

2. Changes likely to have a significant positive sustainability impact, but where gains in one area might have a more negative impact in other areas:

- Increasing consumption of fruit and vegetables, particularly seasonal and field grown
- Consuming only fish from sustainable stocks
- Increasing consumption of foods produced with respect for wildlife and the environment e.g. organic food.

3. Changes which will make a smaller contribution to making our diets sustainable, with largely complementary effects across key areas:

- Reducing energy input by shopping on foot or over the internet, and cooking and storing food in energy conserving ways
- Drinking tap water instead of bottled water.

We conclude that government's approach to addressing these priorities has been mixed. For example, food waste has received the attention of high profile awareness raising campaigns, whereas government has not focused to the same extent on the two other priority areas we identify: reducing meat and dairy consumption and the consumption of food of low nutritional value. While we recognise the complexities of the 'meat and dairy' issue we also advise government that the evidence is sufficiently strong to justify Government addressing this element of a sustainable diet in a more coherent way.

The research for this project also identified 40 practical initiatives designed to promote a more sustainable food supply, from government initiatives to local food growing projects and business tools. Of the 12 which were assessed for the breadth of sustainability covered by their aims, few included a wide range of sustainability elements within their scope. Only three initiatives had a reasonably good sustainability scope; Food for Life, Growing Communities and Sustainable Food: A Guide for Hospitals.

We conclude that such initiatives have the potential to enable more sustainable food practices though few had adequately evaluated possible impacts. Encouragingly, we found some are engaging with the need for clearer consistency about sustainability criteria - for example, the government's *Healthier Food Mark* for public sector caterers. The SDC has little doubt that even the pioneers in this field would benefit from clearer government guidance on a sustainable diet.

Recommendations

We make a number of policy and research recommendations to Government.

Policy recommendations:

- Government (via Domestic Affairs (Food) Cabinet Sub-committee), together with the Devolved Administrations to develop guidance on sustainable diets, including the priority areas identified by this research. Specifically:
  - Defra to develop, through the Food 2030 project, a shared vision amongst business, Government and civil society on advice to consumers and the food chain for a sustainable diet
  - FSA to provide guidance through its Integrated Advice to Consumers project
  - DH to incorporate guidance into Healthier Food Mark for public sector caterers.

- FSA, Defra and DH to take a two-step approach (as recommended by the Council of Food Policy Advisors) to providing advice on sustainable diets:

  1. Firstly, current government advice to consumers, including the FSA's *Eatwell Plate*, should be amended to better align nutrition advice with key existing environmental evidence. This first step should be taken immediately, with advice issued from relevant expert bodies such as the Scientific Advisory Committee on Nutrition and other relevant environmental expert advisory bodies.

  2. The second stage should be the development of more detailed guidance using fuller sustainability criteria. The FSA, Defra and DH should give particular attention, through their expert advisory bodies, to a number of 'hotspots', namely meat and dairy, fish and the use of soy and palm oil in processed foods. Attention should also be given to methods of production, processed foods of relatively low nutritional value, and to the impact of ingredient and product substitution.

- Defra, jointly with the FSA and Devolved Administrations, to explore the development of advice on sustainable diets at European Union and international level, along with the European Commission (in particular DG SANCO, but also DG AGRI and DG ENV), the European Food Safety Authority, the European Environment Agency and other national Governments.

- Defra, jointly with the FSA, to develop criteria for evaluating initiatives attempting to promote more sustainable diets, with a view to facilitating exchange of best practice and transferability of models and encouraging scaling up of approaches which demonstrate multiple sustainability benefits.

Research Recommendations:

- Defra (in collaboration with FSA and DH) to undertake a systematic literature review to clarify the extent and quality of evidence regarding the impact of different dietary changes that could lead to a more sustainable diet, and to commission and encourage further research where there are important gaps in the evidence base to support the development of more detailed guidance.

- Sustainable diets to be a priority area for the Chief Scientific Advisor's Food Research Group to include:
  - 'Hotspots' including meat and dairy, fish, soy and palm oil
  - Better understanding of how and whether methods of production affect sustainability
  - The sustainability implications of processed foods of relatively low nutritional value
  - The impact of ingredient and product substitution.

- Defra to undertake research on the social implications of dietary change, including:
    - Consumer difficulties in, and opportunities for, trying to be both healthy and environmentally benign in their food choices
    - The acceptability of different diets, especially in relation to reducing meat and dairy consumption
    - The impact on jobs and livelihoods in the UK and elsewhere
    - The compatibility of consumer preferences and feasibility for growers.

2. Context

The SDC's 2008 report, *Green, Healthy and Fair*,[7] advised government that clearer direction is necessary for consumers and the food supply chain about how to meet both nutrition and environmental demands for sustainable living. In particular, we called on the Government to build up the evidence base on synergies and tensions between a diet that is good for health and also good for the planet.

According to one large European study, food and drink accounts for an estimated 20-30% of the environmental impact of all consumption.[8] Overall agriculture is the largest single source of greenhouse gas emissions in the food chain,[9] with meat and meat products the largest contributor of all consumer products.[10] For individual foods, the greatest impacts may be at different stages in the food chain. Food production globally also has major implications for biodiversity, including habitat loss, water use and pollution.

However, sustainability of the food system and of food consumption is about more than environmental impact. There is strong evidence of the impact of diet on health, including increased risk of obesity, cardiovascular diseases and cancers, and also of its role as an indicator of social inequality. For three decades, UK consumers have been made increasingly aware of the messages around healthy eating. However messages about the impact of diet on health and on the environment are less clear. There is no clear understanding of what diets consumers should be encouraged to eat that leads to improved dietary health and also improved environmental outcomes.

In 2008, the Prime Minister's Strategy Unit report, *Food Matters*,[11] laid out its response to this challenge and set out a new Government vision and approach to putting the food system on a sustainable path: low carbon and healthy. This recognised the need for more integrated information and advice to help consumers choose a safe and healthier diet with a low environmental impact.

The Food Standards Agency (FSA) is tasked with developing, by 2011, a new website which will provide a one-stop shop to consumers looking for information and advice on nutrition, food sustainability and food safety,[12] through its Integrated Advice to Consumers (IAC) project.

Defra's Council of Food Policy Advisors has stated that one of its priorities is to define a low impact (sustainable) healthy diet, which should ultimately take into account cost, seasonality, culture and ethics.[13] The Chatham House report,[14] which addresses global food security, also stressed the need for 'a system that can supply safe, healthy food with positive social benefits and low environmental impacts'. As part of the new 'Healthier Food Mark' (proposed in *Food Matters* and being led by the Department of Health (DH)), nutrition and sustainability criteria are being developed for public sector caterers. This report by the SDC is intended to support these various government initiatives.

The internationalisation of supply chains, as well as consumer concerns, suggests the need for Government to take note of the debates taking place in many countries. For example, note should also be taken of the recent joint submission to the European Commission by Sweden's National Food Administration and Environmental Protection Agency on 'environmentally effective food choices'.[15]

Interest in sustainable diets also comes from business and wider civil society. An Institute of Grocery Distribution (IGD) study has looked specifically at the potential for nutritional goals to impact environmental sustainability.[16] Civil society has been driving attempts to articulate a coherent and integrated approach to a sustainable diet. Third sector organisations are developing a breadth of sustainable food initiatives, including local food growing projects. In contrast, commercial operators such as food retailers are only more recently beginning to adopt approaches to sustainable consumption which embrace multiple aims, for example, Marks & Spencer's Plan A.[17]

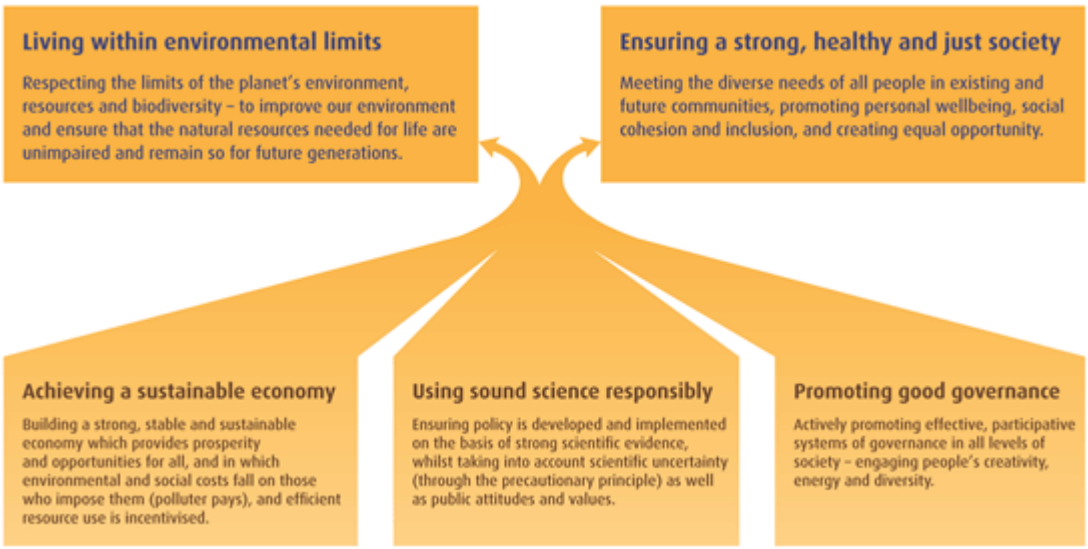
Through its *One Planet Diet* work, WWF is looking at recommendations for UK dietary change which are intended to have a positive impact on both the health of the UK population and the global environment. Supporting this project, forthcoming work by Imperial College and WWF considers how consumption of red meat and dairy can be made more sustainable,

taking account of the cultural, religious and nutritional implications of such changes.[18]

The task for Government now is to build on this work by developing a future food strategy and vision for a sustainable and secure food system. Following consultation around a vision of what our food system might look like in 2030, Defra will develop an action plan setting out how we might achieve this goal. An announcement is expected early 2010. This study is a contribution to that process.

We use the Government's own principles of sustainable development – ensuring a strong, healthy and just society and living within environmental limits – and its goal of integration (rather than trade-offs) of environmental, social and economic outcomes as the lens through which we have made our assessment (see Figure 1).

Figure 1 The UK government's principles of sustainable development



Source: *One Future – different paths: The UK's shared framework for sustainable development*, HMG, 2005

3. The study

3.1 Purpose of the study

The purpose of this study was to map existing research and initiatives on a sustainable diet, and to identify priorities for potential messages around which the Government should seek to build consensus. Specifically Defra commissioned SDC to:

- Map the existing evidence on sustainable diets and assess synergies and tensions between public health; environmental sustainability; social inequalities and economic stability
- Identify potential priority elements around which government can build consensus, including messages to consumers
- Identify gaps in existing evidence and make recommendations for further research
- Engage stakeholders in assessing the evidence
- Undertake a preliminary assessment of a range of 'sustainable food' initiatives.

The report advises the Government on approaches to exemplifying what constitutes a sustainable diet and on priority areas for further research and action.

3.2 Scope

The focus of the study was to examine how changes in UK food *consumption* patterns i.e. the food that we eat, could deliver positive sustainability outcomes (e.g. reduced climate change impacts, improved health and nutrition, reduced environmental impacts, improved economic and social benefits). The SDC recognises that changes in consumption will inevitably have implications for production and the food chain in the UK and globally. These are worthy of further consideration, but were outside the scope of the research for this report.

This report enters a complex policy field: defining a sustainable diet. This can be addressed either narrowly or broadly. There is logic to focusing on a limited number of priority areas, such as climate change (greenhouse gas emissions) and nutrition. Taking a handful of issues and encouraging the food supply chain to start addressing those few does at least begin the process of change. On the other hand, this approach neglects issues which remain very important and still need to be addressed. These issues are typically those lacking such high profile policy backing, and include environmental concerns such as biodiversity impact, water use, and soil conservation; and ethical issues such as animal welfare or fair trade; and socio-cultural issues such as seasonality, taste and local identity. There is growing academic recognition of the complexity of defining sustainability,[19 20] as well as a growing body of evidence of the unsustainable nature of current diets.[21]

Evidence gathering for this study included a range of criteria applicable to sustainable diets. Given time constraints, the study did not adopt a full perspective of sustainability. For example, it did not include aspects such as animal welfare. Others such as fair trade and water use were addressed in a limited way. The SDC strongly supports the view that 21st century food policy will need to include such features.[22] However, for the purposes of this study, it was considered appropriate to begin this complex methodological task by focusing largely on healthy eating and a range of environmental concerns.

The limited three-month timeframe for the research element of this project (to comply with Defra's timescale), has necessarily limited the scale of the literature review and consultation. We make recommendations that further research be conducted to include a wider and more in-depth literature review which will contribute to debates occurring both within Government and within wider civil society. This would also be within the interests of the supply chain. However, the findings from the research undertaken can be considered indicative and provide an evidence base of priority areas for further research, policy and advice.

The recommendations resulting from this study are directed primarily at Defra, for whom this study was conducted, the Department of Health (DH) and the Food Standards Agency (FSA). However, the SDC is a UK-wide body and engagement on the issues mapped here is already underway with the Devolved Administrations in Scotland, Wales and Northern

Ireland. In particular, the Scottish Government has identified in its 2009 National Food and Drink Policy, *Recipe for Success*[23] the need to use the latest research and evidence to link environmental goals to food and nutritional goals. The Welsh Assembly Government too, with its strong meat and dairy industry is acutely aware of the complexity of bringing economic and rural concerns into line with public health and environmental issues. The SDC sees sustainable diets as a key issue for the UK-wide Food Strategy Task Force to consider. Within England also, sustainable diets could be a test case for cross-departmental food policy under the auspices of the Domestic Affairs (Food) Cabinet Sub-Committee and their parallel civil service structures.

3.3 Methods

The SDC commissioned a team from the British Heart Foundation Health Promotion Research Group at the University of Oxford, working with an independent food and environment consultant, to undertake the core elements of this work. The study was carried out between June and August 2009, and comprises the following four elements:

- Literature review: evidence gathering and mapping of synergies and tensions between elements of sustainable diets
- One-to-one interviews with food and health experts from industry, academia and civil society
- A stakeholder workshop: On 10th July 2009, the SDC convened government officials, food industry representatives, academics and consumer and environmental interest groups to test the evidence gathered, identify and cover gaps, and to identify barriers, challenges and opportunities, including areas for further research
- Mapping and critique of existing initiatives aimed at promoting a more sustainable diet.

The project benefited from a Government Reference Group, comprised of officials from key Government Departments and Agencies including Defra, Department of Health (DH), Food Standards Agency (FSA), Department for Children, Schools and Families (DCSF), School Food Trust (SFT), with invitations extended to Office of Government Commerce (OGC) and Department for International Development (DFID). The group provided valuable information, opinion and feedback. Responsibility for the content, conclusions and recommendations of the report rests with the SDC.

3.3.1 Literature review

In *Green, Healthy and Fair*, the SDC called for Government to build a robust evidence base to support development of a sustainable food system. Defra's current research portfolio on the food chain includes the links between healthy eating and sustainability, which also covers analysis of benefits and barriers to sustainable food purchasing behaviour. The SDC welcomes this and requests that this take a broad perspective on sustainability, as suggested in Section 3.2 above, covering the full range of environmental, social, ethical and health features of sustainability. Pending such a clarification of the terrain, for this study it was necessary to conduct a more limited literature review. Given the restricted timescale of this project, this review could not be fully comprehensive, nor fully systematic (as with, for instance, a Cochrane review[24]) in assessing the quality of the literature included. Whilst every effort was made to include a range of expert reports and academic articles, it is possible that the selection of literature featured in this review does not fully represent the wealth of current knowledge and evidence on the sustainability of diets. The results of this literature review should therefore be considered indicative, and should be updated by a more formal, systematic literature review.

The literature selected consists of recent expert reports and academic articles (see Annex 1). In the course of interviews with experts, the stakeholder workshop and Government Reference Group meetings, further literature was suggested and subsequently included. Publications were included in the review if they considered the sustainability of the UK food system or contained conclusions that could be extrapolated to the UK situation. The data extraction and presentation of the results of the review were conducted systematically. A total of 44 publications were included.

Developing framework guidelines

The approach taken for this study presumed that the definition of a 'sustainable diet' can be expressed through a series of recommendations as to how the current UK diet should be modified.

A framework for data extraction was constructed by:

1. Identifying existing advice and recommendations for an environmentally sustainable diet in order to develop 'framework guidelines'.

2. Using evidence from the literature review to assess the impact (synergies and tensions) of these framework guidelines on the following aspects of sustainability:

- Public health
- Environmental sustainability
- Economic stability
- Social inequalities

The list of framework guidelines used for data extraction is provided in Table 1. These framework guidelines were based on recommendations drawn from two sources: the 'Greener Living' areas of the Government's information portal *Directgov*[25] and the Food Climate Research Network's (FCRN) report: *Cooking up a storm*.[26] Whilst these sources each form a different subset of these recommendations and have different phrasing, their recommendations can be condensed into these thirteen framework guidelines.

Guidelines have been grouped into three categories.

1. **General recommendations**: relating to all food and drink

Two types of **specific recommendations**: relating to foods, in particular categories by type e.g. 'dairy products'; nutritional properties e.g. 'foods of low nutritional value' or how they are produced e.g. 'organic food' etc. It is generally recognised that specific dietary recommendations are more useful than general recommendations.[27] Within this category:

2. **Specific displacement recommendations**: relating to increased/decreased consumption of all foods within a category e.g. eat less fish

3. **Specific substitution recommendations**: relating to changing type of food within that category e.g. 'eat fish from certified or sustainable fish stocks'.[28]

Table 1: The framework guidelines for this research

	Framework guideline	Explanation	Sources
General			
1	Consume less food and drink	Consumption of no more calories than needed to maintain a healthy body weight. Reduce overall consumption of foods and drinks without specifically focusing on any particular food categories	1
2	Accept different notions of quality	Acceptance of different standards of food quality, e.g. taste and appearance rather than other aspects of quality or food safety	1
3	Accept variability of supply	Acceptance that some food products may not always be available in the UK (due to seasonality of growing patterns, crop failure etc) and not relying on overseas imports of such foods	1
4	Shop on foot or over the internet	Reduction of impact of travel, particularly from cars	1, 2
5	Cook and store foods in energy conserving ways	Reduction of energy used for cooking and reduce the need to refrigerate foods at home (without compromising food safety)	1
6	Prepare food for more than one person and for several days	Reduction of energy impact of cooking	1
7	Reduce food waste	Reduction of greenhouse gas (GHG) emissions and environmental impacts including packaging waste.	1, 2
Specific displacement			
8	Reduce consumption of meat and dairy products	Reduction of GHG and environmental impact of production	1, 2
9	Reduce consumption of food and drinks with low nutritional value	Reduction of consumption of foods and drinks in the 'fatty and sugary foods' category of the *Eatwell Plate* – and tea, coffee and alcohol, leading to reduction in GHG emissions from production of these energy dense, highly processed foods	1

10	Reduce consumption of bottled water	Reduction of environmental impacts from packaging, transport and waste.	2
Specific substitution			
11	Increase consumption of food produced with respect for wildlife and the environment e.g. organic food	Reduction of impacts from food production systems (including on soil, water quality and biodiversity)	2
12	Eat seasonal, field grown fruit and vegetables	Increased consumption of fruit and vegetables grown without additional heating or protection, and which are not fragile or easily spoiled and are in season (both in the UK and overseas) and reduced consumption of fruit and vegetables grown in heated greenhouses (to reduce GHG impacts from energy use and waste)	1, 2
13	Eat fish from sustainable stocks	Reduction of biodiversity impacts on depleted or threatened fish stocks	2

Sources:
1 Food Climate Research Network report, *Cooking up a storm*
2 Greener living areas of the Government's information portal, *Directgov*

Alternative suggestions for developing an approach to determining a sustainable diet have proposed the use of the '*Eatwell Plate*' as a starting point. This provides healthy eating recommendations originally developed by DH[29] and 'the eight tips for eating well' issued by the FSA.[30] The reason this approach was not used for this study is that public health dietary guidelines are concerned only with the amount and the kind of foods that are consumed. In contrast, environmental dietary guidelines are concerned not just with the amount and kind of foods that are consumed, but also how these foods are produced, transported, sold and cooked, etc. Therefore, selecting environmental dietary guidelines as the framework for the data extraction allowed for a wider consideration of sustainability criteria.

It should be noted that one possible limitation of this evidence review is that some elements of sustainability and diet may have been omitted by the selection of the framework guidelines e.g. improving animal welfare. The purpose of the framework guidelines was to provide a structure for reporting the results of the evidence review. So, while some areas of evidence may not be covered by the framework guidelines, it is presumed that the reporting of the evidence on the areas covered by the guidelines has not been biased by the choice of guidelines. In other words, if a different set of framework guidelines were selected, e.g. from a public health perspective, then similar conclusions would have been drawn.

Data extraction

The aim of the systematic data extraction was to identify evidence of the impact of each of the framework guidelines on different measures of sustainability, defined here as public health, environmental sustainability, economic stability and social inequalities. Table 2 shows the range of different issues covered under each of these four areas.

Table 2: Possible impacts of recommendations for a sustainable diet

Main impact	This includes:
Public health	Chronic disease (cancer, cardiovascular disease, etc.); food borne diseases (food safety); nutrient deficiencies
Environmental sustainability	Climate change; resource depletion (fossil fuels, water, land); species diversity; landscape change (e.g. in aesthetic appeal)
Economic stability	Employment; incomes
Social inequalities	Within the UK (e.g. in health, income, etc); between countries (e.g. between developed and developing)
Other possible aspects of sustainability not covered by this research because of time constraints	Psychological and physical wellbeing, cultural and social diversity, animal welfare

For the purpose of this study, health was considered to be 'a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity'.[31]

Using the systematic data extraction defined earlier, the literature review identified:

- Framework guidelines where the impacts on different aspects of sustainability are all or mainly positive i.e. synergies
- Framework guidelines where the impacts on different aspects of sustainability are both positive and negative i.e. tensions.

The results of this mapping exercise were used to identify priority areas, based on their potential positive or negative impact on the sustainability of the diet.

3.3.2 Interviews

Semi-structured interviews were held between 6th June and 23rd July 2009 with 13 food and health experts from industry, academia and civil society. A list of the experts' organisations is provided in Annex 2.

The interviews were designed to draw out stakeholder views on priority issues for a sustainable diet, discuss the range of tensions and synergies, and to establish any additional sources of research and information to support the project. The interviews were recorded and analysed and emerging priorities and issues identified.

3.3.3 Stakeholder workshop

A participative workshop with 41 attendees including government officials, food industry representatives, academics and consumer and environmental interest groups was held on 10th July 2009 to:

- Seek overall stakeholder views on the accuracy/relevance of the evidence gathered to date
- Identify gaps in the evidence/areas for further research
- Identify further recommendations to frame the literature review
- Develop an understanding of the main barriers/challenges and tensions
- Identify potential win-wins and how these should be prioritised.

A list of attendees is provided in Annex 3.

3.3.4 Mapping of initiatives

An increasing number of initiatives and practical projects aim to promote a more sustainable diet, or elements of sustainability. These range from government-led national initiatives to local food growing projects and business tools. The aim of this aspect of the study was to map this range of initiatives and to assess a selection against agreed criteria to determine the extent to which they address sustainability. It should be noted that we were not seeking to assess the value of these projects, or the extent to which they meet their stated aims – rather, to assess the breadth of sustainability of their aims.

An initial list of 41 initiatives was compiled and is provided in Annex 4. Initiatives were included if they:

a) Address one or more of the four aspects of sustainability used for analysing the literature (i.e. public health, environmental sustainability, economic stability and social inequalities)
b) Show resilience i.e. it is feasible for them to be scaled up or duplicated, and they are capable of providing evidence of impact
c) Are delivery-focused rather than policy, fiscal or regulatory measures.

Twelve were selected which represented the range of initiatives in terms of geographical scope (national/local), the type of lead operator (government/NGO/commercial), and the aspects of sustainability they focused on (health/environment, etc.).

Initiatives were assessed in order to gauge the extent to which each addressed the issues covered by the framework guidelines for the literature review, the extent of their sustainability focus, their target audience (e.g. consumers, local producers, etc), and for any independent evaluation or, if unavailable, anecdotal evidence of impact.

4. Findings

4.1 Interviews with stakeholders

The interviews supported the aims of the project. Most respondents considered that it would be both useful and timely to seek to define a 'sustainable diet'. They endorsed the view that the project should take a wide view of what a sustainable diet might look like.

> "The working definition needs to 1) deliver emission reduction and adaptation targets 2) address resource depletion and 3) address food security"
> - *NGO representative*

It was felt that there is already considerable evidence on which to base a definition of a sustainable diet; however, it was recognised that there is a need to examine the evidence base further.

The majority of interviewees identified the following as priority issues to tackle:

- Livestock consumption for both health and the environment including:
  - hidden cereal and protein use as feeds as well as land use issues for GHG emissions, water and energy use
  - better qualification of the health benefits of red versus white meat and the relative benefits of reducing the associated GHG emissions
- Climate change and energy use impacts of our current diet, i.e. with a view to mitigating these impacts
- Tackling the obesity epidemic via dietary intervention
- Increasing fruit and vegetable consumption for health (and possible environmental benefits such as for carbon sequestration by perennials and increasing biodiversity).

> "It all hinges on livestock consumption and intake"
> - *Academic*

Other priorities listed by interviewees included:

- Addressing fish consumption for health and the environment
- Tackling dairy consumption, as separate from meat
- Developing water footprints for food – the environmental impact is related to place of production and is hugely significant for biodiversity-rich areas and ecosystem services, and therefore food security.

4.2 Evidence from the literature review

The aim of the literature review was to identify evidence for the impacts of framework guidelines aimed at promoting a sustainable diet on

- Public health
- Environmental sustainability
- Economic stability and
- Social inequalities

Evidence was drawn from 44 publications (see Annex 1) and used to identify synergies and tensions between the sustainability elements. The results are shown in table 3 below.

Table 3: Evidence tables for literature review

Guideline 1.	**Consume less food and drink**			
Explanation:	Consumption of no more calories than needed to maintain a healthy body weight Reduce overall consumption of foods and drinks without specifically focusing on any particular food categories			
	Public health	**Environmental sustainability**	**Economic stability**	**Social inequalities**
Potential positive impacts of guideline	Could result in reduction in overweight and obesity rates, since total energy intake in excess of total energy output results in weight gain. [8, 19]	Reduction in all of the environmental impacts of the food system due to reduced food production, stimulated by a reduction in demand. [8, 19] *Climate change:* Reduced GHG emissions from transport attributed to a more obese society. [10]		Reduction in total expenditure on food and drink. This will be particularly helpful to poorer people in the UK. Recent estimates suggest that the poorest 10% of the UK spend 15% of their expenditure on food, compared with the richest 10% who spend just 7% on food. [21]
Potential negative impact of guideline			Reduction in size of the food and drink production and supply industry. This is a major part of the UK economy, accounting for 7% of GDP and employing 3.7m people. Food production is the single biggest manufacturing sector in the UK. [21, 26]	

Guideline 2.	**Accept different notions of quality**			
Explanation:	Acceptance of different standards of food quality, e.g. taste and appearance rather than other aspects of quality or food safety			
	Public health	**Environmental sustainability**	**Economic stability**	**Social inequalities**
Potential positive impacts of guideline		Reduction in food waste at the agricultural stage, and hence a general reduction in the environmental impact of the food system. [19, 34] *Climate change:* Reduction in requirement of imported food. For example, apples grown in the UK in season and then kept refrigerated for consumption year round could replace the need for apples imported from, e.g. New Zealand. It is suggested that GHG emissions from refrigeration would be less than those required to transport the produce from overseas. [19]		
Potential negative impact of guideline			As with the guideline relating to eating less, may result in reduction in size of the food and drink production and supply industry. [21, 26]	

Guideline 3	**Accept variability of supply**			
Explanation:	Acceptance that some food products may not always be available in the UK (due to seasonality of growing patterns, crop failure etc) and not relying on overseas imports of such foods			
	Public health	**Environmental sustainability**	**Economic stability**	**Social inequalities**
Potential positive impacts of guideline	Reduction in heavy goods vehicles on the roads in the UK, which are associated with air pollution and road traffic accidents. Currently 25% of UK heavy goods vehicle movements relate to food and drink. [21] Reduction in some forms of food poisoning that have developed due to long supply chains. [19]	*Climate change:* Reduction of GHG emissions from transport due to decreased supply of overseas food to the UK market. [6, 7, 18, 19, 43] It has been estimated that energy use in the UK food system would fall by 50PJ per year (the equivalent of a large power station) if the UK became self-sufficient in terms of food. [6] Reduction of GHG emissions from imported beef. Brazilian production of beef is responsible for approximately 30-40% more GHG emissions, due to a higher slaughter age and long calving intervals. [42]		Improved working conditions for agricultural workers may become the norm, as it would be harder to adopt the 'out of sight, out of mind' principle. [6, 30]
Potential negative impacts of guideline	Could lead to an increase in consumption in dried, canned or bottled fruit and vegetables, which may have lower nutritional quality due to processes in their preservation (e.g. addition of salt or sugar). [39]	*Land use:* Local food production in the UK would require an increase in land use by between 1% and 16%, if the UK were to become self-sufficient in terms of food. [6]		Reduction in trade with developing countries. Of the top five air freighters of food to the UK, four are developing countries. [19, 21, 26, 29]

Guideline 4.	**Shop on foot or over the internet**			
Explanation:	Reduction of impact of travel, particularly from cars			
	Public health	**Environmental sustainability**	**Economic stability**	**Social inequalities**
Potential positive impact of guideline		*Climate change:* Reduction in GHG emissions from reduced food miles. [5, 19] The GHG emissions associated with travelling to and from supermarkets (which are often placed in out of town locations) may in many cases outweigh emissions from transporting food around the world, even by air freight. [21, 23]		
Potential negative impact of guideline				

Guideline 5.	**Cook and store foods in energy conserving ways**			
Explanation:	Reduction of energy used for cooking and reduce the need to refrigerate foods at home (without compromising food safety)			
	Public health	**Environmental sustainability**	**Economic stability**	**Social inequalities**
Potential positive impact of guideline		*Climate change:* Reduce GHG emissions from the home by improved efficiency in cooking and storing of foods. [19, 23]		
Potential negative impact of guideline				

Guideline 6.	**Prepare food for more than one person and for several days**			
Explanation:	Reduction of energy impact of cooking			
	Public health	**Environmental sustainability**	**Economic stability**	**Social inequalities**
Potential positive impact of guideline		*Climate change:* Reduction in GHG emissions from energy use in cooking could be achieved because of 'economies of scale'. [19]		
Potential negative impact of guideline				

Guideline 7	**Reduce food waste**			
Explanation:	Reduction of GHG emissions and environmental impacts including packaging waste			
	Public health	**Environmental sustainability**	**Economic stability**	**Social inequalities**
Potential positive impacts of guideline	Increase in consumption of fruit and vegetables, which in relative terms is the most wasted food category. [21]	Reduction in overall environmental impact of food sector, if reduced food waste resulted in fewer purchases of food and drinks, and hence lower production. [14, 19, 21, 26, 32] *Climate change:* Reduction in GHG emissions from organic matter in landfills. Also, food waste could be used to generate electricity via anaerobic digestion, thereby reducing further GHG emissions from other electricity generation sources. [19, 21]		
Potential negative impact of guideline			As with the guideline for eating less, may result in reduction in size of the food and drink production and supply industry. [21, 26]	

Guideline 8	**Reduce consumption of meat and dairy products**			
Explanation:	Reduction of GHG and environmental impact of production			
	Public health	**Environmental sustainability**	**Economic stability**	**Social inequalities**
Potential positive impacts of guideline	Reduced levels of saturated fat and cholesterol in diet, over-consumption of which can lead to cardiovascular disease. [1, 13, 21] Reduced incidence of some forms of cancer with high consumption of red and processed meat as causal factors. [2, 9, 13, 20, 21] Could potentially reduce incidence of zoonoses through less intensive farming systems. [13] Reduction of antibiotic resistance which the livestock sector contributes to via water pollution. [33]	*Climate change:* Large reductions in GHG emissions, where meat and dairy are the main contributing factors from the food system, mainly through CH4 and N2O emissions. [3, 7, 8, 11, 12, 13, 14, 17, 19, 21, 22, 24, 33, 36, 41, 42] Slowing of the rate of deforestation, and hence loss of carbon sequestration resources. [3, 20, 30, 33, 42] *Land use:* Freeing of large areas of land for other forms of agricultural use. Livestock currently uses 70% of available global agricultural land. It is estimated that the additional land required for cereal production to offset a reduction in consumption of meat could be achieved by conversion of land currently used to produce animal feed. [3, 15, 17, 20, 33] *Water use:* Freeing up of large quantities of water for human consumption or for other agricultural purposes. The livestock sector currently uses 8% of global human water supply. The eutrophication impact of meat and dairy is greater than arable crops by a magnitude of ten, and the acidification		The average cost of the diet would decrease, since vegetarian diets are currently cheaper than meat diets in the UK. [14] The health benefits of eating less red and processed meat would be gained to a greater extent by low income groups, who currently eat more of these foods than the general population. [40] Globally, reduced meat consumption would reduce food prices, since cereal crops currently grown as animal feed could be used to feed humans. This is particularly true in South America, where dependence upon soy has resulted on increases in the price of other cereal staples. [8, 19, 20] Employment would rise in South America, where current methods of livestock and animal feed production are not labour intensive. [20]

		impact is greater by a magnitude of one hundred. [17, 20, 23, 31, 32, 33, 36] *Other:* Slowing of the rate of loss of biodiversity. Livestock is a major cause of loss of biodiversity through deforestation, land degradation,		
Potential negative impacts of guideline	Increased incidence of Fe, Ca and Zn deficiencies in subgroups of population (e.g. Fe in pregnant women). [21] Increased incidence of osteoporosis, for which Ca is a protective factor. [1]	*Other:* Through environmental stewardship grants, many livestock and dairy farmers are responsible for the picturesque appearance of the British countryside. [35]	The significant and valuable UK livestock industry would decline. [28, 35] Rural areas in the UK dependent upon livestock would decline, local unemployment and migration to urban areas would increase. [37] The global livestock industry, employing 1.3bn people, would decline. [13, 16]	

Guideline 9.	**Reduce consumption of food and drinks with low nutritional value**			
Explanation:	Reduction of consumption of foods and drinks in the 'fatty and sugary foods' category of the *Eatwell Plate* – and tea, coffee and alcohol			
	Public health	**Environmental sustainability**	**Economic stability**	**Social inequalities**
Potential positive impacts of guideline	Reduction in consumption of energy dense, nutrient-poor foods, which is a causal factor of obesity. [1, 19] Reduction in consumption of sugar-sweetened soft drinks, which is a causal factor of dental caries and obesity. [1]	*Climate change:* Reduction in GHG emissions from the production of energy dense foods, which tend to be highly processed and produce more GHG emissions than fruit, vegetables and cereal crops. [7, 11, 12, 19] *Land use:* Reduction in land use due to reduced consumption of tea, coffee and alcoholic beverages. Tea has even higher land requirements per unit than beef. [15]		Reduction in consumption of sugar-sweetened soft drinks and processed meat is likely to affect the health of the low-income population in the UK more positively than the general population since consumption of these foods is higher in the low-income population than the general population. [21, 40]
Potential negative impact of guideline			Reduction in the size of the food manufacturing industry, the largest manufacturing industry in the UK. [21]	

Guideline: 10.	**Reduce consumption of bottled water**			
Explanation:	Reduction of environmental impacts from packaging, transport and waste			
	Public health	**Environmental sustainability**	**Economic stability**	**Social inequalities**
Potential positive impact of guideline		*Climate change:* Reduction in GHG emissions from bottled water, which produces 300 times as many emissions as tap water, primarily due to packaging and transportation. [44]		
Potential negative impact of guideline				

Guideline 11.	**Increase consumption of foods produced with respect for wildlife and the environment e.g. organic food**			
Explanation:	Reduction of impacts from food production systems (including on soil, water quality and biodiversity)			
	Public health	**Environmental sustainability**	**Economic stability**	**Social inequalities**
Potential positive impacts of guideline		*Climate change:* Reduction in GHG emissions would result in many aspects of food production, mainly due to reduced use of industrial fertiliser (a source of N_2O) in organic farming. This is the case for production of beef and sheep – two sectors which are large emitters of GHG. [23, 27, 36] It has been estimated that a diet consisting purely of organic food would produce 23% less GHG emissions than the current average UK diet. [14] Increased carbon sequestration rates of soil. It is estimated that 65% of agricultural GHG emissions could be sequestered if organic farming were universally adopted. [24, 27] *Land use:* Reduction in the number of 'dead zones' in coastal areas that have been a result of inappropriate use of industrial fertiliser. [28] Reduction in soil erosion and soil degradation. Organic farming methods comply with the IPCC Fourth Assessment Report recommendations on maintaining fertile soils and restoring degraded soils. [27]	Increase in labour requirements and hence employment in the agricultural industry. It is estimated that if England and Wales universally adopted organic farming then farm employment would increase by 70%. [38]	

		Reduction in soil erosion and soil degradation. Organic farming methods comply with the IPCC Fourth Assessment Report recommendations on maintaining fertile soils and restoring degraded soils. [27] *Water use:* Reduction of groundwater pollution from inappropriate use of pesticide. [28] *Other:* Reduction in loss of biodiversity through inappropriate use of pesticide. [28]		
Potential negative impacts of guideline		*Climate change:* Increase in GHG emissions from poultry production, in comparison with intensive production. [21, 23, 36] *Land use:* Increase in land requirements for organic food production, due to lower yields. [36] *Water use:* Increase in eutrophication from wheat production in comparison with conventional farming. [23]		Increase in the cost of food, which could impact most on the poorest in society. It is estimated that a diet consisting wherever possible of organic food is around 30% more expensive than the current average diet. [14] Decrease in global food production due to lower yields, which could result in food insecurity in developing countries. [25, 28]

Guideline 12.	**Eat seasonal, field grown fruit and vegetables**			
Explanation:	Increased consumption of fruit and vegetables grown without additional heating or protection, and which are not fragile or easily spoiled and are in season (both in the UK and overseas) and reduced consumption of fruit and vegetables grown in heated greenhouses (to reduce GHG impacts from energy use and waste)			
	Public health	**Environmental sustainability**	**Economic stability**	**Social inequalities**
Potential positive impacts of guideline		*Climate change:* Reduction in GHG emissions from artificial heating of greenhouses, and from refrigeration of fruit and vegetables grown out of season and then stored. [19, 36, 43] *Land use:* Reduction in abiotic resource depletion from greenhouse-raised vegetables, which is far higher than for field-grown vegetables. [36] *Water use:* Reduction in acidification from greenhouse-raised vegetables, which is far higher than for field-grown vegetables. [23, 28, 36]		
Potential negative impacts of guideline	Lack of availability of seasonal fruit and vegetables may lead to decreased consumption, which in turn could result in increased incidence of cardiovascular disease and some cancers. [1, 2]		Increase the seasonality of horticulture labour requirements, which could have a negative impact on employment. [36]	

Guideline: 13.	**Eat fish from sustainable stocks**			
Explanation:	Reduction of biodiversity impacts on depleted or threatened fish stocks			
	Public health	**Environmental sustainability**	**Economic stability**	**Social inequalities**
Potential positive impacts of guideline		*Climate change:* Reduction in GHG emissions from fishing, the dominant source of GHG emissions in the fish supply chain. Fishing from depleted stocks is less efficient. [7, 23] *Other:* Slow the global depletion of fish stocks. The FAO estimates that 75% of the world's fisheries are fully exploited, over exploited or severely depleted. [21, 34]		Repletion of fish stocks would reduce the price of fish, which is an important source of protein in the developing world. [4]
Potential negative impacts of guideline	May result in reduction of consumption of oily fish, which is a protective factor for cardiovascular disease. [1]	*Water use:* Increased nutrient releases from fish farms, which are a source of eutrophication. [23]		

Overall, the literature review shows there is more evidence of the impacts on health, the environment, economic stability and social inequalities for some framework guidelines than for others. For example, there is more evidence of the impacts of reducing consumption of food and drink of low nutritional value (Guideline 9) than, for example, the impacts of shopping on foot or over the internet (Guideline 4). The impacts of reduced meat and dairy consumption (Guideline 8) were most widely discussed, being mentioned in a total of 30 out of the 44 publications, with the majority (20) discussing environmental impacts. This is followed by Guideline 3: 'Accept variability of supply' (12 publications) and Guideline 11: 'Increase consumption of foods produced with respect for wildlife and the environment e.g. organic food'(nine publications). For many of the other guidelines, less evidence of impacts were identified from the literature e.g. the environmental impacts of Guideline 1: 'Eat less food and drink' was discussed in only three publications.

Positive v negative impacts

The majority of the evidence cited in the literature pointed towards positive impacts, although where there was more discussion, there also tended to be more examples of negative impacts.

For example for Guideline 8: 'Reduce consumption of meat and dairy products', most of the evidence related to positive impacts – particularly on environmental sustainability including significant reductions in GHG emissions, slowing the rate of biodiversity loss and deforestation and freeing up large quantities of water for human consumption and land for other forms of agricultural use. Most public health evidence reviewed also indicated benefits including reduced incidence of cancer and cardiovascular disease, though negative evidence pointed to a potential for reduced iron and calcium intakes. On reducing social inequalities evidence was largely positive, e.g. by reducing dietary costs through eating less meat and dairy. Evidence pointed to potential negative impacts for livestock industries.

Similarly, the data extracted on reducing consumption of food and drinks with low nutritional value (Guideline 9) indicated benefits to environmental sustainability through reduction in GHG emissions from highly processed, energy-dense foods and a reduction in land use. Public health benefits would include reduced incidence of obesity and other diet-related ill-health. Evidence also suggests that the health of low-income groups would be expected to improve more significantly as the proportion of these foods in their diet is higher compared to the general population. Potential negative consequences to food manufacturing industry were also identified.

The guideline on reducing food waste (Guideline 7) also indicated synergies between public health and environmental sustainability. Reducing food waste is expected to increase fruit and vegetable consumption resulting in better health outcomes; result in overall reduction in the environmental impact of food production (due to reduced purchase of food and drink) as well as reduce GHG emissions from landfills.

There is less apparent synergy for the guideline on eating seasonal, field grown fruit and vegetables (Guideline 12). Positive environmental benefits include a reduction in GHG emissions from artificial heating of greenhouses, and a reduced need for refrigeration of fruit and vegetables during storage. Less positively, evidence suggests potential adverse impact on, or tension with, public health through reduced availability and therefore reduced consumption of fruit and vegetables.

Similar tensions in impact can also be seen to result from consuming fish from sustainable stocks only (Guideline 13). Positive environmental impacts include improvements in depleted fish stocks and reductions in GHG emissions from fishing. However reductions in consumption of oily fish could have a negative public health impact.

Equally evident are the tensions resulting from an increase in the consumption of foods produced with respect for wildlife and the environment e.g. organic food (Guideline 11). The literature review found evidence related only to organic rather than other production systems. This evidence shows both potential significant positive environmental impacts (including reduced GHG emissions, soil health, biodiversity) as well as some negative impacts. However, one positive impact is the expectation that farm employment would increase, although social inequalities could be worsened through higher food prices.

The review found much less evidence of the potential impacts of reducing the consumption of bottled water (Guideline 10), the reduced environmental impacts from packaging and transportation being the only potential positive impacts identified in the literature. This is also the case for Guidelines 4 (Shop on foot or over the internet), 5 (Cook and store foods in energy conserving ways) and 6 (Prepare food for more than one person and for several days).

In most cases, the economic impacts that could result have not been adequately assessed in the literature. Where evidence of economic impact was available, a negative impact was suggested, largely associated with a reduction in consumption of certain foods impacting on the industry supporting its production. The only exception was the evidence on increased consumption of organic food, which would grow the industry and employment, particularly as organic production is typically more labour intensive than conventional farming methods. The negative impacts on economic stability displayed for the other framework guidelines should be viewed in context – inevitably changing the food system in the UK will result in a shift of the status quo, which will produce both economic challenges and opportunities.

However, lack of *existing evidence* for impact does not mean lack of impact. It follows that a high level of discussion in the literature about impacts does not necessarily mean a high level of agreement about the nature or extent of the impact. This was particularly the case for Guideline 11: 'Increase consumption of foods produced with respect for wildlife and the environment e.g. organic food'. For this guideline there were nearly as many citations of a negative impact on sustainability as there were for a positive impact.

A summary of where the literature identified more positive or negative sustainability impacts of the framework guidelines is shown in Table 4 below.

Table 4: Summary of impacts of framework guidelines

	Framework guideline	Public health	Environmental sustainability	Economic sustainability	Social inequalities
1	Consume less food and drink	+	+	-	+
2	Accept different notions of quality	o	+	-	o
3	Accept variability of supply	±	±	o	±
4	Shop on foot or over the internet	o	+	o	o
5	Cook and store foods in energy conserving ways	o	+	o	o
6	Prepare food for more than one person and for several days	o	+	o	o
7	Reduce food waste	+	+	-	o
8	Reduce consumption of meat and dairy products	±	±	-	+
9	Reduce consumption of food and drinks with low nutritional value	+	+	-	+
10	Reduce consumption of bottled water	o	+	o	o
11	Increase consumption of organic food	o	±	+	-
12	Eat seasonal, field grown fruit and vegetables	-	+	-	o
13	Eat fish from sustainable stocks	-	±	o	+

+ some evidence of positive impacts
- some evidence of negative impacts
± some evidence of both positive and negative impacts
o no evidence of impacts
Note: 'no evidence of impacts' does not equate to no potential impacts.

Gaps and challenges

The literature review identified three problems in analysing tensions and synergies. Firstly the evidence is often missing for economic impacts. Secondly, where evidence does exist, it varies considerably in quality.

Thirdly, impacts are measured in a variety of different ways, making it difficult to compare the impact of the framework guidelines on different aspects of sustainability. In the light of these gaps and challenges, we therefore recommend that Defra (in collaboration with FSA and DH) undertake a systematic literature review to clarify the extent and quality of evidence regarding the impact of different dietary changes that could lead to a more sustainable diet, and to commission and encourage further research where there are important gaps in the evidence base to support the development of more detailed guidance.

Recommendation

Defra (in collaboration with FSA and DH) to undertake a systematic literature review to clarify the extent and quality of evidence regarding the impact of different dietary changes that could lead to a more sustainable diet, and to commission and encourage further research where there are important gaps in the evidence base to support the development of more detailed guidance.

4.3 Evaluating the evidence

Participants in the workshop provided feedback on the preliminary findings of the literature review. In particular, participants indicated where the framework guidelines could be modified and prioritised. Four types of modification were suggested: *clarification* of wording; *change* of wording; *splitting* a guideline to give two or more recommendations; and *merging* a guideline with another to generate a single recommendation.

In most cases, participants thought that the framework guidelines should be retained as recommendations (at least in modified form) but in one or two instances there was a suggestion that a guideline could usefully be dropped. Participants made various additional recommendations for defining a sustainable diet – these are shown in Table 5.

Table 5: Additional recommendations for a sustainable diet suggested by workshop participants

New recommendation	Type	Related framework guidelines and recommendation(s)
Eat more locally produced food	General	3. Accept variability of supply; 12. Eat seasonal fruit and vegetables;
Grow your own	General	5. Cook/store using less energy; 3. Accept variability of supply
Buy food which uses less packaging	General	7. Reduce food waste; 10. Less bottled water
Eat more vegetarian meals	Specific substitution	8. Less meat and dairy
Eat more fruit and vegetables	Specific displacement	8. Less meat and dairy; 9. Less low nutritional value food and drink.
Eat more bread, potatoes and other cereals	Specific displacement	8. Less meat and dairy; 9. Less low nutritional value food and drink (this recommendation is a recommendation of the *Eatwell Plate,* not covered by the framework guidelines)
Eat food that has been fairly traded	General	Although not used as a framework guideline, we did examine the impact of all the other framework guidelines on key elements of fair trade (see, for example, the evidence table for Guideline 3)
Eat products made from sustainable soy and palm oil	Specific substitution	8. Less meat and dairy 9. Less low nutritional value food and drink

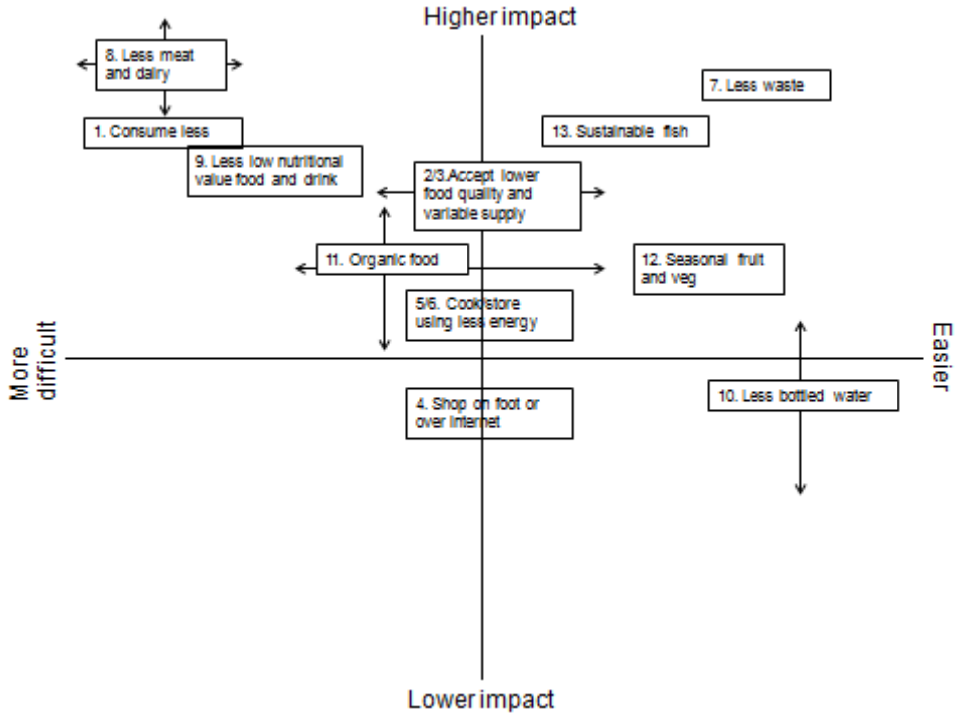
There was much more discussion about some framework guidelines than others. Guideline 8: 'Reduce consumption of meat and dairy products' in particular received the most attention and was discussed/commented on in depth whilst general guidelines relating to shopping, cooking and storing foods at home (Guidelines 4, 5 and 6) received much less attention, reflecting relative impacts.

Assessing impact

The workshop participants were also asked (in the context of the literature review, but also using their own knowledge) to assess the impact of the framework guidelines on a sustainable diet and how easy they would be to achieve. A summary of their views is shown in Figure 2.

Figure 2 shows where there was general agreement as to both impact and difficulty. For example, virtually all workshop attendees agreed that eating less meat and dairy products would have a high impact on achieving a more sustainable diet, but could be more difficult to implement. For other framework guidelines there was less consensus. For example, there was much less agreement about both impact and difficulty in implementing the guideline relating to organic food. This range of views is indicated by the arrows attached to boxes in Figure 2.

Figure 2 Impact and difficulty of framework guidelines



Opportunities for and barriers to implementation

Workshop participants were asked to identify opportunities for, and barriers to, the implementation of a selected number of the framework guidelines. Barriers identified ranged from cultural barriers, to pressure from commercial interests. Opportunities to overcome barriers ranged from education in schools to tackling systemic problems in the food supply chain. Public procurement was frequently suggested as an 'opportunity'.

Table 6 illustrates some of the barriers and opportunities that participants considered would have the most impact. Whilst not necessarily fully comprehensive, the table illustrates the range and types of barriers and opportunities also explored. Where possible, barriers and opportunities are paired to demonstrate that there are potentially opportunities for overcoming barriers.

Table 6: Barriers to and opportunities for implementing some of the framework guidelines

	Framework guideline	Barriers	Opportunities
1	Consume less food and drink	Physiological drive to eat more than body needs	
		Increased eating out	Further development of calorie labelling on menus
		Food marketing	Further restrictions on marketing to children
7	Reduce food waste	Lack of composting facilities	Greater provision of door-step composting facilities Development of anaerobic digestion schemes
		Use by/best before regulations	Change in labelling law
		Lack of financial incentives for consumers	Bins with microchips and fines
8	Reduce consumption of meat and dairy products	Understanding of the advantages and disadvantages of meat/dairy for health (particularly of subgroups)	Further research into the advantages and disadvantages of meat/dairy
		Cultural associations between meat and wealth	
		Externalisation of costs of animal production (e.g. of rainforest destruction)	Internalisation of costs of animal production (e.g. through carbon taxes)
10	Reduce consumption of bottled water	Lack of attractive alternatives	Provision of fountains in public spaces
		Advertising for bottled water	Rules for public procurement
13	Eat fish from sustainable stocks	Current healthy eating advice	Change current dietary advice
		Traditional food consumption patterns	Celebrity chef promotion of sustainable fish
		Lack of incentives for the fishing industry	Expansion of Marine Stewardship Council accreditation scheme
		EU Common Fisheries Policy	
		Lack of alternatives to unsustainable fish	Development of aquaculture (especially herbivore fish)

Prioritisation

The results of this mapping exercise were used to identify a hierarchy of priority areas, based on the extent of their impact on the sustainability of the diet, taking into account synergies and tensions. Whilst a subjective judgment, this process of prioritisation was based on the evidence gathered (both from the literature review and stakeholder workshop), taking into account the known impacts of different food groups and life-cycle analyses identifying relative impacts of the production process.[32 33]

On this basis, a hierarchy of priority areas is proposed:

1. Changes likely to have the most significant and immediate impact on making our diets more sustainable, in which health, environmental, economic and social impacts are more likely to complement each other:

- Reducing consumption of meat and dairy products
- Reducing consumption of food and drink of low nutritional value (i.e. fatty and sugary foods)
- Reducing food waste.

2. Changes likely to have a significant positive sustainability impact, but where gains in one area might have a more negative impact in other areas:

- Increasing consumption of fruit and vegetables, particularly seasonal and field grown
- Consuming only fish from sustainable stocks
- Increasing consumption of foods produced with respect for wildlife and the environment e.g. organic food.

3. Changes which will make a smaller contribution to making our diets sustainable, with largely complementary effects across key areas:

- Reducing energy input by shopping on foot or over the internet, and cooking and storing food in energy conserving ways
- Drinking tap water instead of bottled water.

There were a number of guidelines that we were unable to categorise as more evidence is required to assess their impact on the sustainability of the diet:

- Accept different notions of quality
- Accept variability of supply
- Consume less food and drink.
- Reduce consumption of tea, coffee and alcohol (as part of the 'food and drink of low-nutritional value' category.

It should be noted that the guidelines grouped in this way take no account of the difficulty or ease of implementation (as, for example, illustrated by the horizontal dimension of Figure 2).

On the basis of impact, the highest priority for attaining a sustainable diet would be to reduce consumption of meat and dairy products and fatty and sugary foods (specific displacement recommendations rather than general recommendations). A lower level of consumption of these products would have a major effect on reducing the environmental impact of the food system from a UK and global perspective, and would probably have major benefits for health as well. In the case of foods and drinks of low nutritional value, the health impact is entirely clear. Also a priority is reduction in food waste.

We discuss further the implications of these findings and make specific recommendations in Section 6 below.

4.4 Towards a sustainable diet – practical examples

A broad range of 41 initiatives was included in the mapping (see Annex 4). There were considerable differences in aims, approach and in scope, including schemes providing guidelines, practical projects providing advice and assistance in promoting a sustainable diet, and business tools for the assessment and marketing of products.

The breadth of the sustainability scope of the twelve selected initiatives was assessed using data available online (and submitted to the initiatives for verification) and a subjective assessment of the initiatives (due to the lack of published evaluations and lack of time to perform further in-depth research on the initiatives). It should be noted that we were not seeking to assess the value of these projects, or the extent to which they meet their stated aims rather, to assess the breadth of sustainability of their aims.

Table 7: Assessment of potential positive impact of initiatives on the four key aspects of sustainability

Good impact
Food for Life Growing Communities Sustainable food: A guide for hospitals
Some impact
Carbonostics Cornwall Food Programme Fairtrade Fareshare Fife Diet Good Food on the Public Plate Public Sector Food Procurement Initiative (PSFPI) Walmart Sustainable Product Index
Limited impact
PAS 2050 Assessing the life cycle greenhouse gas emissions of goods and services

Table 7 groups the 12 according to the extent to which they aim to address and/or demonstrate some success in addressing each of the four aspects of sustainability (public health, environmental sustainability, economic stability and social inequalities). It shows that only 3 of 12 initiatives (Food for Life, Growing Communities, and Sustainable Food: A Guide for Hospitals) had a reasonably good coverage of sustainability aspects. The majority were more limited in scope. No projects covered the range of criteria fully.

Growing Communities (a social enterprise in East London running fruit and vegetable box schemes, organic farmers' markets and urban market gardens)[34] and *Food for Life* (a multi-NGO-led lottery funded partnership providing a national award scheme for schools and communities committed to transforming their food culture)[35] demonstrated broad aims and evidence of impact. *Sustainable food: A guide for hospitals* (produced by DH and NHS PASA) also covered all four aspects of sustainability but as it has not been operational for long, it is difficult to assess its on-the-ground impact. All three initiatives aimed to make a positive local economic impact (e.g. supporting jobs and sales locally) whilst also specifically tackling environmental and health objectives.

Good Food on the Public Plate (a project run by Sustain to increase the amount of sustainable food being served in selected schools, hospitals and care homes in London and the South East),[36] the *Fife Diet* (a project to get people eating a diet consisting of 95 per cent fresh local food)[37] and the Government's *Public Sector Food Procurement Initiative* (PSFPI)[38] (an initiative to support and promote more sustainable food procurement across the public sector) appear to have some potential impact on the four areas of sustainability, indicating that both major national initiatives and local voluntary projects could present opportunities for an integrated approach.

There is an important flowering of business tools being designed to address the challenge of sustainable food from a supply chain perspective. These include: *PAS2050* (a standard and method for assessing the life cycle greenhouse gas emissions of goods and services),[39] *Carbonostics* (an industry-focused life cycle analysis tool)[40] and Walmart's *Sustainable Product Index* (a project to build a

single source of data for the company to evaluate the sustainability of products).[41] These provide interesting approaches to the promotion of a sustainable diet. In particular *Carbonostics*, a life-cycle management tool developed by Blue Horse Associates (a network of sustainability experts focused on the food and consumer goods industries) is designed to balance the carbon emissions, nutrition, and cost of food products, although there is no independent evaluation assessing its usefulness in practice. We consider that Government should observe and engage with such schemes and approaches and encourage consistency and coherence.

Overall, few initiatives have adequate evaluation of impact (either internal or independent) though for some initiatives (*Food for Life* and *Fife Diet*), an evaluation was underway. This makes it difficult to draw conclusions on actual impact compared to intended impact.

A common framework for evaluating the impacts of these initiatives on sustainability could help identify successful approaches, to facilitate sharing of expertise and, ultimately, the scaling up of those initiatives which demonstrate multiple sustainability benefits. We therefore recommend that Defra, jointly with the FSA, develop criteria for evaluating initiatives attempting to promote more sustainable diets, with a view to facilitating the exchange of best practice and transferability of models and encouraging the scaling up of approaches with demonstrate multiple sustainability benefits.

Recommendation

Defra, jointly with the FSA, to develop criteria for evaluating initiatives attempting to promote more sustainable diets, with a view to facilitating the exchange of best practice and transferability of models and encouraging the scaling up of approaches which demonstrate multiple sustainability benefits.

5. Discussion of Policy Implications

There is, as yet, no universally agreed definition of a 'sustainable diet', but most agree that such a definition is both urgently needed for policy and would be helpful for the whole of the food chain including consumers. We believe that the notion of sustainable diets has the potential to help set a level playing field for supply chains. The food industry is beginning to engage with the need to lower carbon footprints, but companies have mixed understandings of the range of issues which need to be addressed to put the UK's food system on a more sustainable footing. Clarity of definition of sustainable diets could help fill the gap between wider policy aspirations and delivery by the food system.

Even though more work to clarify sustainable diets is warranted, the present study suggests there is sufficient existing literature to provide evidence of the value of dietary behaviour change. There is also broad consensus in the literature, among the experts we interviewed for this research, and the stakeholders who attended the workshop about what changes would constitute progress towards a sustainable diet.

The methods used in the present research should be taken as beginning the process of defining a UK approach to 'sustainable diets'. This process should be developed and refined by a more lengthy and detailed assessment of the impact of the framework guidelines on different aspects of sustainability. As discussed earlier in this report, there are different ways in which this question could be approached and the debate has now opened up at both national and European levels. However, the evidence gathered through this study has already led to greater understanding of what a sustainable diet might look like, and what recommendations should be made to achieve this diet in the UK.

We consider this a good basis from which to recommend features of a sustainable diet more precisely, and to that effect we have identified priority areas where changes in consumption patterns would contribute towards positive sustainability outcomes. We therefore recommend that Government, together with the Devolved Administrations develop guidance on sustainable diets, including the priority areas identified by this research. Specifically we identify three areas of current UK government policy delivery where such advice is applicable: Defra's Food 2030 project, FSA Integrated Advice to Consumers project and DH-led Healthier Food Mark for public sector caterers.

Recommendation

Government (via Domestic Affairs (Food) Cabinet Sub-committee), together with the Devolved Administrations to develop guidance on sustainable diets, including the priority areas identified by this research. Specifically:

- Defra to develop, through the Food 2030 project, a shared vision amongst business, Government and civil society on advice to consumers and the food chain for a sustainable diet
- FSA to provide guidance through its Integrated Advice to Consumers project
- DH to incorporate guidance into Healthier Food Mark for public sector caterers.

Such guidance could be given in the manner proposed by the Swedish agencies in May 2009,[42] giving advice both generally and by food group. This first step could be taken immediately, with advice issued from relevant expert bodies such as the Scientific Advisory Committee on Nutrition (SACN) and the Royal Commission on Environmental Pollution (RCEP) as appropriate.

The Council of Food Policy Advisors has recommended a two-step approach to providing advice on sustainable diets. We recommend there is merit in this approach as recommended below.

Recommendation

FSA, Defra and DH to take a two-step approach (as recommended by the Council of Food Policy Advisors) to providing advice on sustainable diets:

1. Firstly, current government advice to consumers, including the FSA's Eatwell Plate, should be amended to better align nutrition advice with key existing environmental evidence. This first step should be taken immediately, with advice issued from relevant expert bodies such as the Scientific Advisory Committee on Nutrition and other relevant environmental expert advisory bodies.

2. The second stage should be the development of more detailed guidance using fuller sustainability criteria. The FSA, Defra and DH should give particular attention, through their expert advisory bodies, to a number of 'hotspots', namely meat and dairy, fish and the use of soy and palm oil in processed foods. Attention should also be given to methods of production, processed foods of relatively low nutritional value, and to the impact of ingredient and product substitution.

Addressing priorities

We note considerable variation at present in the extent to which the top priority areas – reducing meat and dairy consumption; reducing consumption of food and drink of low nutritional value and reducing food waste - are currently being addressed by government. These are the areas that would have the most significant positive sustainability impact.

WRAP's (Waste Resource Action Programme) work and its *Love Food, Hate Waste* campaign are a step towards the goal of reducing food waste, both in the household and at other points along the food chain.[43] This campaign has had a high profile with consumers and within the supply chain. However, Government has not focused to the same extent on the two other priority areas we identify; reducing meat and dairy consumption, and the consumption of food of low nutritional value.

We recognise that there are complexities and political sensitivities to the 'meat and dairy' issue to which we cannot do justice within the scope of this report. Yet the evidence of the negative environmental sustainability impacts of livestock production is overwhelming, and includes responsibility for almost one-fifth of the world's total GHG emissions.[44] However significant variations exist between different types of animal and production methods. We also recognise that livestock production can, in some scenarios, be beneficial to the environment, for example through soil conservation and carbon capture through maintenance of grass-fed animal production in high-rainfall upland areas. Furthermore, there are nutritional benefits as well as negative health impacts that come from meat and dairy consumption. Socio-economic considerations are also part of the sustainability picture. For example, we recognise the value of research investigating the likely socio-economic impacts of changing consumption patterns. This is particularly relevant in Scotland, Wales and Northern Ireland where there is a strong production base and/or export industry in relation to meat and dairy products.

Despite these complexities, the evidence is sufficiently strong to justify Government addressing this element of a sustainable diet in a more coherent way. Defra has already started to engage the industry by sponsoring a milk roadmap[45] (designed to identify measures to reduce the environmental impact of producing, processing and consuming liquid milk) and is working with the industry to develop beef and lamb roadmaps. We welcome these steps to encourage greater efficiencies and clarity of purpose for production and supply chains. We also recommend that Government now needs to focus its efforts equally on consumption issues.

We therefore recommend that Defra, FSA and DH work in collaboration to review evidence of the sustainability implications (health, environmental, social and economic) of dietary change towards reduced meat and dairy consumption, using its scientific advisory committees where appropriate, to commission research where there are important gaps in the

evidence and to explore ways to engage positively with consumers and the supply chain on this issue. As evidence is emerging, we consider that space for such public dialogue is opening up. For example, work recently undertaken by the Food Ethics Council and WWF-UK demonstrates that there is consensus that in general, it is appropriate for the UK Government to seek to reduce GHG emissions relating to what we consume.[46]

Our third high priority area - reducing consumption of foods of low nutritional value - is key to addressing dietary health issues, such as obesity, whilst also providing other sustainability benefits. Such foods include those in the 'fatty and sugary foods' category of the *Eatwell Plate* as well as tea, coffee and alcohol. Our recommendations focus on reducing consumption of 'fatty and sugary foods' where evidence of health and environmental benefits is strongest. Government-backed restrictions on 'junk food' advertising to children, and the mandatory introduction of nutrition standards for school meals are intended to support better nutrition. We consider there is further scope for Government to consider how it can align its health and environmental messages with respect to this food category. With regard to tea, coffee and alcohol, more evidence is required to assess their sustainability impacts.

We also identify three further areas that could improve the sustainability of the diet: increasing consumption of seasonal, field grown fruit and vegetables; consuming fish only from sustainable stocks and increasing consumption of foods that have been produced organically. These are likely to have largely positive sustainability impacts but the evidence also identifies greater tensions. Dietary changes could have impacts on other areas of sustainability and need further investigation.

For example, decreasing the availability of fish (which *a priori* restricting consumption of fish to sustainable stocks would do) could lead to some public health impacts. It can be argued however that public health problems resulting from a lack of fish will be far worse in the long term if stocks are depleted to the point of no return. Reducing the availability of fish may also increase the perceived difficulty of individuals to also reduce their consumption of meat and dairy products. The FSA has recently updated its fish and shellfish consumer nutrition advice to include information on sustainable choices.[47] Such advice could be a model for integrating health and environmental advice in relation to other food choices. It also raises the question of needing to identify where suitable sources of the essential fatty acids recommended from fish are to come from if not from sustainably sourced fish. [48]

Encouraging greater consumption of fruit and vegetables is also an on-going public health goal. Modifying this advice to include seasonal, field grown (i.e. not grown in heated greenhouses) varieties where possible, would have a positive impact on environmental sustainability, but could also lead to reduced availability and hence reduced consumption with detrimental effects on health. Broadly, however, the SDC strongly supports the need for increased consumption of fruit and vegetables, and their production in the UK, where appropriate.[49]

Increasing consumption of organic food is another area where the sustainability evidence is not always clear cut. For example, the literature review identified both increased and reduced global warming potential for some organic output, in comparison with conventional farming. From the identified evidence, it appears that the positive environmental impact of organic farming outweighs the negative impact (see Table 11). However, without a systematic assessment of data quality, this judgement can only be considered indicative.

Moreover, food produced organically can be – or is perceived as being - more expensive than conventional food, which could have a negative impact on social inequalities. Much would depend on which particular foods were promoted and whether pricing reflected the full cost of production (including externalised costs). Therefore, increasing the consumption of organic foods could have both negative and positive impacts on sustainability.

Despite interest in the sustainability impacts of organic production, it is somewhat surprising that Government has not conducted such a sustainability review. The FSA has conducted well publicised reviews of impacts in respect to nutrition.[50] Given the imperative to develop low-carbon farming and food production, it will

be important to understand the contribution that organic farming can make to low-carbon sustainable food production.

The guidelines that would have least (but still positive) impact on the sustainability of our diet include all those involving dietary changes where sole responsibility has been transferred to the consumer (e.g. in relation to travel to purchase foods, storage of foods in the home and the cooking of foods). Life cycle analyses generally show that these areas make a relatively small contribution to the total environmental impact of foods. They may be important culturally, however, by winning consumer preparedness to change.

The guideline to reduce consumption of bottled water will have a less significant effect on the environmental impact of the food system overall, compared to other areas we have identified. This is because by far the greatest impact of the food system comes at the agricultural stage (through irrigation, application of fertilisers, release of nitrous oxide and methane, etc) on which the bottled water industry has no impact. That is not to say it isn't worth encouraging this behaviour however, rather that its sustainability impacts are lower than those achieved by other behavioural changes.

For similar reasons, the guideline on accepting variability of supply (i.e. to reduce consumption of imported food and drink) is unlikely to have a large impact since for most foods the contribution of transport to their environmental impact is relatively small. Furthermore, whilst this does not directly address the issue of local food, it is increasingly acknowledged that there are limits to using local food as a proxy for sustainable food.[51] In addition, reducing the import of foods could have negative economic impacts within developing countries.[52] [53]

Further research

We have identified the need for more collaborative and cross-cutting research to support further understanding and policy development on sustainable diets. We welcome the strategy for food research and innovation being developed under the leadership of Professor John Beddington, the Government's Chief Scientific Advisor. This strategy is intended to join-up food research across Government and Research Councils, to address cross cutting issues and to identify key research gaps.[54] We recommend that sustainable diets should be a priority for this multi-disciplinary approach.

We note also some thorny issues not in the scope of this report. One issue raised in the course of this project is the problem of deforestation for soy and palm oil production. These are products widely used in the processing industry, as well as in animal feed. While the industry and NGOs are working towards sustainable sourcing, there are concerns within the food industry about traceability and the verification of different modes of production, some claiming to be sustainable.

Our research has highlighted the need for particular attention to be given to hotspots, namely fish, meat and dairy, and the use of soy and palm oil in processed foods. Attention should also be given to methods of production, processed foods of relatively low nutritional value, and to the impact of ingredient and product substitution. We recommend that such issues be a priority for the Chief Scientific Advisor's Food Research Group to address.

Recommendation

Sustainable diets to be a priority research area for the Chief Scientific Advisor's Food Research Group, to include:

- 'Hotspots' including 'meat and dairy', fish, 'soy and palm oil'
- Better understanding of how and whether methods of production affect sustainability
- The sustainability implications of processed foods of relatively low nutritional value
- The impact of ingredient and product substitution.

The European and international dimension

We acknowledge that many of the issues this report addresses raise deep questions for some sections of the food industry. Many companies and trade bodies are beginning to engage with the issue of defining sustainability, which the SDC welcomes. Note should be taken however, of the need to ensure that making diets more sustainable is a challenge not just to be addressed by larger companies and active trade bodies. Whilst clarification is needed for the UK, note should also be taken of the European food and farming context. It is not just UK food companies and supply chains which need to become more sustainable. Championing a European approach is the responsibility of Government. The SDC would welcome a UK co-ordinated approach in this task at European and international level. We therefore recommend that Defra should work with the FSA and Devolved Administrations and with relevant academics and other interests to that end. For example, Defra could consider hosting a conference jointly with interested Member States, possibly in partnership with the Swedish authorities.

Recommendation

Defra, jointly with the FSA and Devolved Administrations, to explore development of advice on sustainable diets at European Union and international level, along with the European Commission (in particular DG SANCO, but also DG AGRI and DG ENV), the European Food Safety Authority, the European Environment Agency and other national Governments.

Supporting behaviour change

Our priority areas for sustainable diets reflect relative sustainability impacts. Our research shows there is less consensus about how easy or difficult some of these changes would be to implement. The SDC recommends the inclusion of means to support behaviour change and consumer acceptability in any future work in this area. To engage the public and to win the backing of supply chains to create a more sustainable food system will probably require a range of initiatives. Specifically we recommend Defra undertake research on the social implications of dietary change as detailed below.

Recommendation

Defra to undertake research on the social implications of dietary change, including:

- Consumer difficulties in and opportunities for trying to be both healthy and environmentally benign in their food choices
- The acceptability of different diets, especially in relation to reducing meat and dairy consumption
- The impact on jobs and livelihoods in the UK and elsewhere
- The compatibility of consumer preferences and feasibility for growers.

Our research identified a number of useful existing projects and initiatives in the UK, aiming to promote either a sustainable diet or elements of a sustainable diet. Such initiatives have the potential to enable more sustainable food practices. However, we also found that the majority addressed a narrower, rather than a broader range of sustainability outcomes; more attention is needed to encourage consistency to address changes that would have the greatest impact on sustainability. Encouragingly, there appears to be some acknowledgement of the need for such initiatives to adopt a more integrated approach. Thought needs to be given to how 'single issue' perspectives (and studies) could be better integrated and co-ordinated. We recommend that Defra, jointly with the FSA, develop criteria for evaluating initiatives attempting to promote more sustainable diets, with a view to facilitating exchange of best practice and transferability of models. A common framework for evaluating the impacts of these initiatives on sustainability could help identify successful approaches, facilitate sharing of expertise, and ultimately the scaling up of those initiatives which demonstrate multiple sustainability benefits.

In addition to the initiatives assessed for this project, we note there are a number of initiatives in development which also deserve mention as they are aiming explicitly towards integration of several aspects of sustainability within their objectives. The *Healthier Food Mark* initiative is led by DH, in partnership with Defra and the FSA, and aims to increase the healthiness and environmental sustainability of public sector food by developing bronze, silver and gold standards. The criteria for awarding the standards were still subject to consultation at the time of writing. Piloting of the scheme is due to start in late 2009. The *London 2012 Olympic Games* are currently running a major consultation, at the time of writing, on integrating health and environmental sustainability considerations into their catering operations. A British Standard Institute guide, *'Principles and framework for procuring sustainably'* (currently in draft form), is intended to help organisations and individuals consider and implement sustainable practices within their procurement processes and supply chains, including the way in which they procure food. All would benefit from clearer Government guidance on sustainable diets.

6. Conclusions

This study has reviewed existing evidence on a sustainable diet, both in current literature and at the level of practical initiatives. We conclude that a definition of a sustainable diet would be useful not just to consumers, but to the whole of the supply chain.

We found that there is broad agreement on the areas to tackle as a priority, or potential messages needed in trying to achieve a sustainable diet, although the ease with which such changes could be made varies considerably. The next step therefore is to quantify what those changes are; for example, how much, and what type of meat and dairy should we be eating? Though such changes in consumption patterns will directly impact production, at present it is unclear what the resulting economic benefits might be.

We conclude that there is an appetite and an opportunity for Government to continue through the Food 2030 programme, to build the evidence base and create a policy framework and vision that identifies priorities for consumers (and the rest of the supply chain) looking to make more sustainable choices. The SDC looks forward to continuing to work closely with Government to support its vision for sustainable and secure food for all.

Annex 1: Literature Review Sources

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Annex 2: Interviewees

Organisation
British Retail Consortium
City University
Food and Drink Federation
Food Climate Research Network, Centre for Environmental Strategy, University of Surrey
IGD
Marine Stewardship Council
Soil Association
Sustain
University of Cambridge
University of Dundee
University of Reading
University of Sussex
WWF

Annex 3: Attendees at stakeholder workshop on 10th July 2009

Name	Surname	Organisation
Annie	Anderson	Centre for Public Health Nutrition Research, Department of Medicine, University of Dundee
David	Barling	Centre for Food Policy, City University London
David	Bellamy	Food and Drink Federation
Jo	Bray	Defra
Niamh	Carey	WWF
Molly	Conisbee	The Soil Association
Tony	Cooke	Sodexo UK & Ireland
Helen	Crawley	The Caroline Walker Trust
Kath	Dalmeny	Sustain
Sue	Dibb	SDC
Ian	Fenn	SDC
Andy	French	Defra
Phil	Goodliffe	Defra
Jane	Gregory	Defra
Richard	Hines	Friends of The Earth
Vicki	Hird	Independent Food and Environment Consultant
Bridget	Jackson	Imperial College / Accenture
Erica	Jobson	The National Trust
David	Leaver	Royal Agricultural College
Ellen	Lever	School Food Trust
Tom	MacMillan	Food Ethics Council
Lisa	Miles	The British Nutrition Foundation
Erik	Millstone	University of Sussex
Joe	Millward	Faculty of Health and Medical Sciences, University of Surrey
Antony	Muller	Natural England
Rebecca	Owen-Evans	Social Policy Research Assistant
Dominic	Pattinson	Defra
John	Powles	Institute of Public Health, Cambridge University
Sophie	Quinney	Medical doctor
Mike	Rayner	British Heart Foundation - Health Promotion Research Group, University of Oxford
Shivani	Reddy	SDC
Mike	Roper	Defra
Peter	Scarborough	British Heart Foundation - Health Promotion Research Group, University of Oxford
James	Smith	Cambridge University
Rachel	Solomon-Williams	Tesco plc.
Alison	Spalding	FSA
James	Steatham	Department of Health
Kevan	Wallace	Hospital Caterers Association
Duncan	Williamson	WWF
Michelle	Wu	Centre for Food Policy, City Community & Health Sciences, City University
Lucy	Yates	Consumer Focus

Annex 4: Mapping of initiatives and those selected for further assessment

	Name of project	Further assessment
National schemes		
Public procurement projects/schemes	Food for Life catering mark http://www.foodforlife.org.uk	☑
	NHS Guide for Hospitals http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_09888	☑
	Public Sector Food Procurement Initiative http://www.defra.gov.uk/farm/policy/sustain/procurement/pdf/psfpi-datareport081125.pdf	☑
Business tools for measuring, assessment and marketing	PAS2050 Assessing the life cycle greenhouse gas emissions of goods and services http://www.bsi-global.com/upload/Standards%20&%20Publications/Energy/PAS2050.pdf	☑
	Carbonostics http://www.carbonostics.com/Default.aspx	☑
	Walmart Sustainable Product Index* http://walmartstores.com/FactsNews/NewsRoom/9277.aspx	☑
Standards for sourcing	Fairtrade mark http://www.fairtrade.org.uk	☑
	Soil Association's organic certification scheme	
	Marine Stewardship Council sustainable fish certification scheme	
	Freedom Food assurance scheme	
	Linking Environment And Farming (LEAF) mark	
Health promotion schemes	Change4life programme	
	Active kids get cooking	
	Food Standards Agency Traffic light labelling scheme	
	5-a-day programme	
	School Food Trust school food improvement programme	
Schemes aimed at relieving food poverty	Fair Share http://www.fareshare.org.uk/news.php?id=393	☑
	Food Action Network	
Growing/environment schemes	Transition Towns	
	National Trust Grow your own/eat seasonably campaign	
	Landshare	
	Allotments regeneration initiative	
Promotional weeks	British food fortnight	
	Meat free Mondays	
	National Vegetarian Week	
	Organic fortnight	
Others in development	Olympics 2012 food policy	
	Sustainable food lab (a WWF initiative))	
	British Standards Institute sustainable procurement standard	
	Sustain/Co-op Labelling for sustainability	
Region/Local schemes		
Local food procurement schemes	Cornwall Food Programme	☑
	Sustains' Good Food on the Public Plate project	☑

	http://www.sustainweb.org/page.php?id=97	
Local food growing/ sourcing/ promotional projects	Fife Diet http://fifediet.co.uk/	☑
	Growing Communities http://www.growingcommunities.org/background/index.htm and foodzone.pdf	☑
	Big Lottery Making Local Food Work Programme	
	Incredible edible initiative in Todmorden	
	East Anglia Food Link	
	Community Supported Agriculture projects	
	Somerset Food Links	
	Manchester food futures	
	Local Action on Food	

* Other retailers - Marks and Spencer's, Co-op, Waitrose, etc. have such initiatives

Alphabetical list of acronyms

BIS – Department for Business, Innovation and Skills

BSI – British Standard Institute

DCSF – Department for Children, Schools and Families

DECC – Department of Energy and Climate Change

Defra – Department of the Environment, Food and Rural Affairs

DFID – Department for International Development

DG AGRI – Directorate-General for Agriculture and Rural Affairs

DG ENV – Directorate-General for the Environment

DG SANCO – Directorate-General for Health and Community Affairs

DH – Department of Health

EA – Environment Agency

EU – European Union

SDC – Sustainable Development Commission

FAO – United Nations Food and Agriculture Organisation

FCRN – Food Climate Research Network

FERA – Food and Environment Research Agency

FSA – Food Standards Agency

GDP – gross domestic product

GHG – greenhouse gas

HMG – Her Majesty's Government

HPA – Health Protection Agency

IAC – Integrated Advice to Consumers

IGD – Institute of Grocery Distribution

IPCC – Intergovernmental Panel on Climate Change

NE – Natural England

NGO – non-governmental organisation

NHS PASA – National Health Service Purchasing and Supply Agency

OGC – Office of Government Commerce

PAS 2050 – Publicly Available Specification 2050

PSFPI – Public Sector Food Procurement Initiative

SFT – School Food Trust

WHO – World Health Organisation

WRAP – Waste Resource Action Programme

WWF – World Wide Fund for Nature

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