



Government
Office for

Science

 **Foresight**

Foresight Project on Global Food and Farming Futures

Synthesis Report C8: Changing consumption patterns

This Report has been commissioned as part of the UK Government's Foresight Project on Global Food and Farming Futures. The views expressed are not those of the UK Government and do not represent its policies.

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About this report

This Report has been commissioned as part of the UK Government's Foresight Project on Global Food and Farming Futures and forms one of a set of 13 'Synthesis Reports' synthesising the evidence base of over 80 independent reviews commissioned by the Project. For the Final Project Report and a map of all the Foresight Project publications please see the project CD or website at www.bis.gsi.gov.uk/foresight.

C8. Changing consumption patterns

C8.1 Introduction

Project Report C1 concluded that global food demand to 2030 and beyond is set to rise at a rate that is neither sustainable nor feasible. Over-consumption in high-income countries, leading to high rates of obesity, waste in the food system and significant greenhouse gas (GHG) emissions are leading to growing health burdens and negative environmental impacts. Emerging economies are moving towards similar patterns of consumption and the demand for meat, grain and dairy products is expected to grow rapidly (Project Report C1). In low-income countries, rising food prices are likely to lead to even greater barriers to overcoming hunger. Increased competition for resources, particularly land, water and energy, will add to further pressure on the global food system. Project Reports C5, C6 and C7 demonstrated how closing the yield gap, implementing new technologies and reducing waste are all strategies that can help meet food demand in the decades ahead. But modifying demand itself offers an additional route to tackling the challenge of feeding nine billion people by 2050.

There are several reasons why policy-makers might seek to influence patterns of food consumption. They concern, in particular, environmental sustainability, public health, economic sustainability and global development goals. Some food types and food production systems have greater environmental externalities and are less sustainable. For example, the expansion of palm oil production in South East Asia has had highly adverse impacts on biodiversity¹. Rising demand² has led to large areas of forest in South East Asia being directly or indirectly converted into plantations for palm oil^{3,4}. These threaten biodiversity as they support much fewer species than forests or other tree crops and also contribute to agricultural GHG emissions and habitat fragmentation. The livestock sector contributes a relatively high proportion to the global total for agricultural GHG emissions, particularly methane, which is estimated to be 25 times more powerful than carbon dioxide over a 100-year period⁵. A switch in demand to food that is produced more sustainably would limit these kinds of environmental impacts. Consumption of some sorts of food may also increase competition for resources and hence lead to higher average food prices. For example, a global increase in the proportion of calories obtained from grain-fed meat as opposed to grain will stimulate the overall demand for grain and lead to an upward pressure on grain prices.

From a public health perspective, a nutritionally balanced diet will promote the health of individuals, and reduce the societal costs of dealing with diet-associated illness. Individual governments may also seek to encourage the purchase of food produced locally for domestic political reasons. By contrast, greater consumer demand for certain foods may benefit the poor in low-income countries, and thus contribute to goals for global development. For example, a growing market for organic food represents a significant export opportunity for low-income countries. The notion of encouraging changes in patterns of consumption that have potential for multiple benefits has attracted support. There has been much recent discussion about the provision of incentives for consumers to purchase food that is both healthy and 'sustainable', and which supports local and national enterprises. However, in practice, these features do not always coincide.

Evidence shows, however, that patterns of food consumption are influenced by a vast range of interacting factors, and changing them requires multiple interventions over relatively long periods of time^{6,7}. At a population level, these include taxes and subsidies, regulation of claims and labels,

1 FAO (2006); Fitzherbert et al. (2008)

2 Oil palm is the world's most traded oil seed crop.

3 Land-cover data compiled by the Food and Agriculture Organization of the United Nations (2008) estimated that between 1990 and 2005, 55–59% of oil palm expansion in Malaysia, and at least 56% of that in Indonesia, occurred at the expense of forests.

4 Koh and Ghazoul (2008)

5 See Project Report C12 (Annex E refers)

6 WP2; Foresight (2007)

7 WP2 (Annex E refers)

measures that affect the availability of foods to consumers, and communications such as advertising and public campaigns. Within communities, a range of factors influence patterns of food consumption including cultural and religious practices, proximity of retail outlets or places to grow food, transport networks to gain access to these outlets, food provided in institutions such as schools, prisons, hospitals and workplaces, and health messages from professionals (education, food supply, health). Within the family, important determinants of the kind of food that is purchased and eaten include the different preferences and needs of family members, the availability of different foods and storage facilities within the home, the size of the family budget, access to transport, and the time and skills available for shopping and cooking. For individuals, beliefs (encompassing ethical concerns about the environment, animal welfare, international trade issues), preferences (sensory, food quality), self-identity and habits affect food choices.

The majority of studies that have investigated consumer behaviour have concentrated on high-income countries and hence on consumers who buy most of the food they consume at home from supermarkets and who eat significant amounts of food from outlets outside the home. However, many of the same influences apply, and will increasingly apply, to mid- and low-income countries as rising urbanisation provides opportunities for people to consume food that they themselves have not cooked, and as global growth of the supermarket sector continues.

This Report first discusses the concept of diets that are both healthy and 'sustainable'. It then considers the main methods available to change patterns of consumption, as well as factors that may act to frustrate such adjustments. It concludes by suggesting the most important interventions needed to achieve a sustainable and equitable food system by 2050. It draws substantially on the report commissioned for this Project by Stockley⁸.

C8.2 Defining healthy and 'sustainable' diets

There is well-developed evidence, and a scientific consensus on what constitutes a healthy diet⁹. Many countries, the World Health Organization (WHO) and many other organisations provide dietary advice on grounds of public health. There has also been progress in agreeing what constitutes a 'sustainable' diet, although there are tensions between the economic, social and environmental aspects of sustainability, and the issues that they raise. The impact of diet on environmental sustainability is primarily focused on resource depletion, particularly of fossil fuels, land and water (see Project Report C2), on GHG emissions¹⁰ (see Project Report C12), and on species diversity and land-use change (see Project Report C13). Strategies for reducing GHG impacts are heavily influenced by choices about consumption, particularly in the case of red meats, although efficiency changes and production choices can have a significant impact.

Assessing the complex and relatively new evidence to define a 'sustainable diet' and bringing together, where possible, aims for health and sustainability have already been recognised as important priorities for the research community and for policy-makers. Awareness of these issues has grown within the nutrition science community^{11,12} and some countries such as Germany and Sweden have already issued or prepared official guidance¹³. The UK Sustainable Development Commission has identified guidelines for

⁸ Project Report WP2 (Annex E refers)

⁹ WP2 (Annex E refers)

¹⁰ Results vary widely depending on the approaches adopted, particularly with regard to the boundaries of accounting inputs and the attribution of GHGs to different products. However, it is clear that certain types of meat and dairy products, foods derived from fisheries and aquaculture with particularly high fuel or feed inputs, and foods that are air freighted, tend to carry the highest GHG burden. For a full discussion see Project Report C12 (Annex E refers).

¹¹ For example, in 2005 the International Union of Nutritional Sciences and the World Health Policy Forum drew up the Giessen Declaration. This stated that nutritional science should be enlarged beyond its traditional biological and health remit, to include social and environmental dimensions. See Leitzmann and Cannon (2006).

¹² The Barilla Centre for Food and Nutrition (BCFN), based in Italy, has integrated nutritional and environmental advice by incorporating the generation of GHGs, water use and ecological footprints into the well-known food pyramid. Foods such as bread, pasta and whole grains at the base of the food pyramid have a lower impact on the environment than meat, poultry, fish, dairy and eggs, which are located towards the top. <http://www.barillacfn.com>.

¹³ The German Council for Sustainable Development (2009) advises consumers to eat healthy food products (those that are promoted in dietary guidance), organic products, seasonal fruit and grown locally vegetables, Fairtrade products and beverages in recyclable packaging units, and to avoid foods that are high in sugar and fat. The Swedish Government will publish guidelines to provide consumers with a sound and consistent basis for purchasing food that promotes health and sustainability. Swedish National Food Administration (2009).

effecting changes to diets that will contribute the most towards sustainability while encompassing existing guidance on public health nutrition¹⁴. Some of these guidelines have the potential for positive impacts on both public health and sustainability, while others have the potential for a positive effect on one but not on the other (see Table 8.1). The changes identified within the guidelines, which will serve as a potential sources of evidence in policy development, are as follows¹⁵:

Highest priority changes, with a significant and immediate impact on 'sustainable diets', and where health and different facets of sustainability complement each other, are:

- reducing food waste
- reducing consumption of food and drink of low nutritional value¹⁶, i.e. fatty and sugary foods, tea, coffee and alcohol¹⁷
- reducing consumption of meat and dairy products.

Medium priority changes, which would have a significant positive effect on sustainability but where gains in one area might have negative impacts in other areas, are:

- increasing consumption of fruit and vegetables, particularly seasonal and field grown
- consuming fish from sustainable stocks only
- increasing consumption of foods produced with respect for wildlife and the environment.

Lower priority changes, which would make a smaller impact on sustainability, but with largely complementary effects across health and the different facets of the sustainability, are:

- 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
- making a list/menu plan to reduce waste.

¹⁴ UK Sustainable Development Commission (2009)

¹⁵ The following section is excerpted from 'Setting the Table' UK Sustainable Development Commission (2009).

¹⁶ These are foods and drinks that provide calories but no other nutrients and which use resources such as fossil fuels, and water that could be dedicated to crops providing calories and other nutrients.

¹⁷ Highly processed energy-dense foods produce more GHG emissions than fruit, vegetables and cereal crops; the production of tea and coffee have high land requirements.

Table C8.1: Summary of impacts of framework guidelines for 'sustainable' and healthy diets from the UK Sustainable Development Commission

	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 food 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.

Source: UK Sustainable Development Commission (2009).

Priorities such as these for the UK do not include interventions that may increase food security in low-income countries by limiting price rises. Non-governmental organisations such as Oxfam have produced guidelines that are relevant to this goal (see Box 8.1) and which could be incorporated into broader guidance for a healthy and 'sustainable' diet.

Box C8.1: Oxfam's consumption guidelines to effect change^{18,19}

Oxfam's '4-a-week' report identifies guidelines to adapt consumer behaviour and change diets in developed countries. Oxfam's guidance argues for a change in consumer behaviour, supported by governments and industry, to deliver environmental and social justice. Highlighting the impact of consumption in UK on international climate change and global hunger, the report recommends the following four changes to consumption. Some of these would also have positive impacts on public health. For example, meat and dairy are significant sources of saturated fat in the diet, and reduction in consumption would be expected to decrease cholesterol levels and the risk of cardiovascular disease.

1. Wasting less food: a reduction in overbuying and an increase in resourcefulness coupled with responsible sourcing and purchasing from business will have a drastic impact on the excessive waste in the food system.

2. Reducing consumption of meat and dairy products: increasing global demand for meat and dairy products has the potential to escalate price rises. Consumers are recommended to limit the quantity of meat and dairy they consume, while governments need to support small-scale farmers and develop targets for livestock emission reductions and emissions labelling schemes.

3. Buying fairtrade produce: fairtrade has supported 'millions of poor producers' while starting a movement to expand socially responsible consumption. However, fairtrade is dependent on public support and the purchasing power of the consumer for fairtrade cannot control volatility of commodity prices or manage competition within international markets, so business support is critical to making Fairtrade a reality.

4. Buying other foods from low-income countries: food from low-income countries should not be boycotted on environmental grounds. Emissions are generated throughout the food system meaning a reduction in 'food miles' does not necessarily equate to a reduction in emissions. Rather than focusing on 'food miles' consumers should utilise their purchasing power to compel retailers to set fair prices, create stable contracts and protect the workers in their supply chain.

C8.3 Levers to change consumption

There has been extensive study of how food-related consumer behaviour may be influenced by different interventions, although the vast majority have concerned high-income countries. Most comparative studies have also concentrated on interventions aimed at a particular outcome, such as improving health or, to a lesser extent, increasing sustainability. Complex behaviours such as food consumption are more challenging and need integrated, multidisciplinary and comprehensive approaches, encompassing a complementary range of actions and working at environmental and policy, community and individual levels. Particular attention has been given to interventions to modify food consumption to help reduce the prevalence of overweight and obesity in high-income countries and, increasingly, emerging economies (see Box 8.2)²⁰. However, achieving sustained outcomes can be difficult and takes effort over many years or decades. In this section, several options for different kinds of interventions are discussed.

18 Oxfam (2009) http://www.oxfam.org.uk/resources/policy/climate_change/downloads/ogb_bp_4aweek.pdf

19 The Food Ethics Council's (FEC) Food and Fairness Enquiry in the UK also reported recently on the role of consumers in ensuring a sustainable food supply chain. It concluded that consumers as individuals often feel disempowered, but that in aggregate they can have considerable power over the supply chain and should consider themselves as "'consumer citizen[s]" –who pursue[] ethical and political values through their consumption' (FEC 2010). However, acknowledging the limitations of 'ethical consumption', the report stresses the wider roles and responsibilities of consumers in civil society in 'holding government and businesses to account for tackling structural problems, tackling the root causes of unfairness as well as its symptoms' (FEC 2010).

20 This is the subject of a separate Foresight study and the topic is not discussed in detail in this Report.

Box C8.2: Key findings and messages for policy-makers from the 'Taking Obesity: Future Choices' Foresight Project Report²¹

The Foresight report **Tackling Obesity: Future Choices** (October 2007) set out to address how the growing social, economic and health threats of obesity could be managed. The study introduced a range of analytical methods and approaches to tackling this major health challenge and brought a multidisciplinary approach to understanding the many diverse environmental and biological determinants of obesity and their complex interrelationships.

Many adults in the UK are already overweight and by 2050 60% of men and 50% of women could be clinically obese. The report shows how modern living's sedentary lifestyles and motorised transport, coupled with ready access to abundant, energy-dense food, have helped create an obesogenic environment. It highlighted the concept of 'passive obesity', which has led to the inexorable rise in the prevalence of unhealthy weight over the last 30 years.

Without action, by 2050 the cost of overweight and obesity to the NHS could rise to almost £10 billion, and the wider cost to society to around £50 billion (at today's prices). Preventing obesity is a societal challenge that requires partnership between government, the research community, business and civil society and will require far greater change than anything tried so far. Specifically, a comprehensive portfolio of sustained interventions is needed that prioritises the prevention of health problems. This would need to be delivered at multiple levels: personal, family, community and national; and evaluated and reviewed regularly.

The report's quantitative analysis described the scale of the future challenge and the qualitative work identified potentially promising areas for action. The UK Government used these findings, in conjunction with strategic framework developed by the study, as the foundation of 'Healthy Weight, Healthy Lives: a Cross-Government Strategy for England'.²² This integrated policy response represented a new cross-government approach that reflected the diverse determinants of obesity and which committed to providing additional investment to help the achievement and maintenance of healthy weight. Strategies to tackle obesity in the context of wider public health are now being explored in the current UK Government's 'Healthy lives, Healthy people: our strategy for public health in England'.²³

C8.3.1 Taxes and subsidies

Governments can impose taxes to discourage consumption of certain types of food. Alternatively, they can subsidise food that they wish to favour. It is well known that consumption of staple foods is relatively price insensitive but that other foods are influenced by price. For example, decreasing the price of low-fat snacks, fruit and vegetables, or providing coupons and vouchers for fruit and vegetables to people on a low income increases consumption of these foods²⁴. The subsidy of corn syrup in the USA led to a reduction in the price, and increased consumption of high-sugar soft drinks²⁵. General reviews of the efficacy of broad taxes and subsidies designed to influence patterns of consumption, chiefly to achieve health goals, have acknowledged their potential but have pointed out the poor evidence for their efficacy and consistency²⁶. There is better evidence for using targeted price incentives within, for example, community projects and discrete settings such as schools and workplaces²⁷.

A particular criticism of tax measures to influence consumption is that they are regressive and preferentially influence low-income groups. This has been a main line of attack by industry groups criticising the proposed imposition of taxes on high-sugar soft drinks in some cities in the USA²⁸. Supporters of these measures have pointed out that for complex socio-economic reasons, low-income

²¹ Foresight (2007)

²² HMG (2008)

²³ HMG (2010)

²⁴ WP2 (Annex E refers)

²⁵ Brownson et al. (2006); World Cancer Research Fund (2009)

²⁶ WHO 2006; Yngve et al. (2009)

²⁷ Hawkes (2009)

²⁸ Fletcher et al. (2010)

and younger age groups are the highest consumers of these products in wealthier countries, and hence stand to gain the most in terms of health from a reduction in consumption²⁹.

C8.3.2 Labelling

Reviews of food labelling have largely concentrated on those providing information about the healthiness of different foods. There is evidence that consumers are aware and welcome food labelling, but their effect in influencing decisions on food purchase appears to be relatively limited, especially if it requires the processing of numerical information on the label. The most effective labels are clear, simple and concise^{30,31}. Labelling is also most effective when combined with other measures such as educational campaigns³². An interesting consequence of the introduction of labelling is that it can encourage manufacturers to reformulate the food they produce to match nutritional guidelines more closely³³. Labelling tends to be least effective in influencing the behaviour of low-income groups.

Studies that have analysed the use of labelling to describe sustainability and other environmental goals have tended to find that consumers are confused by the variety of different logos and schemes (see Project Report C7)³⁴. An exception is the organic label, which is well understood and used particularly by consumers seeking this type of product. The use of labelling for Fairtrade and marine stewardship is becoming more widespread and is associated with rising sales, suggesting its effectiveness, although quantitative assessment is not yet available. In general, there has been concern at the proliferation of labelling schemes and the damage this poses to consumer trust³⁵.

C8.3.3 Campaigns

The term campaign often denotes advertising, marketing and the provision of information with the intent of changing consumer preferences. The majority of food campaigns are carried out by the private sector with the intention of boosting sales of a particular food item. The high expenditure on food advertising attests to its effectiveness. A report prepared by Ofcom, the UK broadcast communications regulator, states that: 'In 2003 advertisers for food, soft drinks and chain restaurants spent £522m in the UK promoting their products on television. This represented 72% of their budget, making television a key medium for food advertisers.... 'Big Five' products (i.e. confectionery, savoury snacks, soft drinks, fast food and pre-sugared breakfast cereals) represent 77% of all food, soft drink and fast food advertising spend within children's airtime'³⁶. A review of the influence of television advertising on children's preferences and patterns of purchasing and consumption found it to be effective at the level of both the brand and the food category^{37,38}. However, experience of bringing in new regulations for advertising foods to children³⁹ and provision of foods in schools in recent years⁴⁰ has demonstrated that despite initial protests some progress has been made with product re-formulation⁴¹.

There is limited evidence for the effectiveness of pro-health and pro-sustainability campaigns, though it is unclear whether this is owing to a lack of interest or to the relatively limited resources invested in such campaigns⁴². In these areas, advertising alone tends to raise awareness rather than change behaviour, although it can be more effective when it is combined with a broader range of initiatives. An example of a more sophisticated approach is social marketing, which seeks to apply marketing techniques for the public good⁴³. It stresses the importance of identifying different target groups and taking explicit account

29 Nielsen et al. (2002); Vereecken et al. (2005); Block et al. (2010)

30 Cowburn and Stockley (2005); Drichoutis et al. (2006); Wills and Grunert (2007); World Cancer Research Fund (2009)

31 Borgmeier and Westenhoefer (2009); Malam et al. (2009)

32 Sassi et al. (2009)

33 Drichoutis et al. (2006); Sassi et al. (2009)

34 Collins et al. (2003); Conner and Christy (2004); Bottonaki et al. (2006); Hoogland et al. (2007)

35 FEC (2008)

36 Ofcom (2004)

37 Hastings et al. (2003)

38 Ofcom (2004)

39 Ofcom (2007)

40 HMG (2008)

41 See, for example, www.just-food.com/news/kellogg-md-says-sales-potential-will-drive-reformulation_id111999.aspx

42 Brownson et al. (2006)

43 McDermott et al. (2006)

of behavioural theory in designing interventions as well as taking account of competing interests and other stakeholders. The success of the North Karelia Project in Finland demonstrates that when campaigns are part of a community-based set of initiatives maintained over several years, they can be highly effective (see Box 8.3⁴⁴). The most successful campaigns adopt specific measures for certain groups in society, such as low-income groups, ethnic minorities, young children, older people and women⁴⁵. One of the largest government-led social marketing campaigns is the 'Change4Life' programme in England, which aims to reduce overweight and obesity by improving behaviours relating to eating and activity ('Eat well, Move More, Live Longer'). It uses social marketing to target resources to the most at-risk groups⁴⁶. There is a danger, however, that public good campaigns can be used inappropriately by commercial interests. For example, the '5-a-day' message on public health from the UK Government promoting consumption of fruit and vegetables has been affected by some misleading commercial claims on the types of foods and portion size, while industry efforts to promote '3-a-day' dairy and wholegrain cereal products that do not have a credible, independent basis may confuse consumers⁴⁷.

Box C8.3: The North Karelia Project: a regional community-based multilevel intervention

The North Karelia Project began in 1972, initially as a project to prevent cardiovascular disease among residents of this province of Eastern Finland. The Finnish Heart Association coordinated the initial discussions, which included community representatives, national experts and several representatives of the World Health Organization (WHO). Later, the project expanded to include other non-communicable diseases.

The project began following a petition from provincial representatives who had learned of extremely high rates of cardiovascular disease in their province. The project worked by bringing together health organisations and professionals with community organisations to run public health interventions embedded within the local community and, importantly, targeting interventions at the whole population rather than chronic sufferers or high-risk groups. The project therefore drew on a wide range of voluntary organisations, sports organisations, media outlets, retailers, berry and vegetable farmers, public health nurses and physicians, opinion leaders in villages, workplaces and many others⁴⁸.

Surveys were conducted every five years (from 1972 to 1992). Results show that cardiovascular mortality rates for men aged 35–64 decreased by 57% from 1970 to 1992. The project also contributed to policy changes in health, agriculture and commerce within Finland as a whole. For example, the food industry collaborated with the project to promote low-fat dairy products and sausages as well as salt reduction in several foods. In 1972, some 90% of the population used butter on their bread; in 1992 only 15% did so. Consumption of fruit and vegetables rose from about 20 kg per person annually in 1972 to 50 kg in 1992⁴⁹. This project shows that it is possible to make major changes to complex behaviours, in this case through community-based action within a supportive environment.

C8.3.4 Targeting schools and the workplace

There is considerable evidence that targeted programmes aimed at school children can change behaviours, though most information relates to health outcomes and to younger children⁵⁰. Interventions that involve a combination of education (both classroom teaching and hands-on experience), changes in the food provided at school and in the school environment (including pricing), involvement of parents and the local community, and which take an integrated 'whole-school' approach appear to be most successful. Recent regulation to ensure that school meals achieve a minimum dietary standard has been

44 Puska et al. (2005)

45 WP2 (Annex E refers)

46 Funded with £75 million over three years, there has been a large-scale, positive response to Change4Life from the public and stakeholders in England. Early evaluation shows positive changes in knowledge and attitudes towards a healthy lifestyle. However, it is difficult to make objective measures of changes in behaviour and it is too early to assess its long-term effectiveness or sustainability. Moreover, its impacts will be difficult to disaggregate from those of other interventions.

47 Collins et al. (2003)

48 Cardiovascular Health Practitioners Institute – www.cvhpinstitute.org/links/northk.htm

49 Puska et al. (2005)

50 Brownson et al. (2006); Jepson et al. (2006)

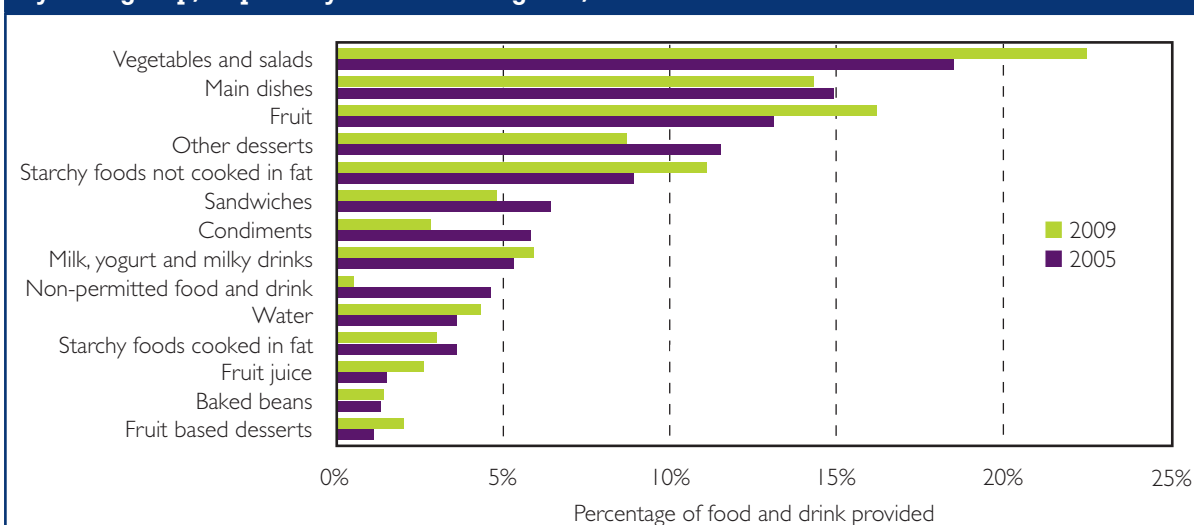
introduced in England⁵¹ (see Box 8.4 and Figure 8.1). As children become older, the influence of the availability and accessibility of different food types, as well as peer pressure, becomes increasingly important⁵².

There is some evidence that programmes targeted at the workplace can change patterns of food consumption, although again most evidence relates to health and nutrition⁵³. There is also a gender difference with these interventions generally having greater participation from women than men and with success tending to be associated with multipronged approaches that include increased access to desirable foods, differential pricing and the involvement of community leaders and community beyond the workplace.

Box C8.4: The introduction of school food regulations in English primary schools: a regulatory intervention

By September 2008, all primary schools in England were required by law to meet new food-based and nutrient-based standards for provision of school food. Compared with 2005, caterers in 2008 provided a more healthy lunch, including more vegetables and salad; more starchy foods not cooked in fat (pasta and rice); more fruit, fruit juice and fruit-based desserts; fewer desserts without fruit; fewer chips and other starchy foods cooked in fat; and no crisps or confectionery. The average meal taken now contains over two portions of fruit and vegetables and is lower in fat, sugar and salt. Consequently, pupils eat healthier meals at lunchtime. For example, fat now provides about 29% of lunchtime energy (well below the 35% maximum allowed), and saturated fats provide around 11% (meeting the target). The average sodium content of a meal has dropped by almost one-third since 2005 (see Figure 8.1).

Figure C8.1: Percentage of types of food and drink items provided by caterers at lunchtime, by food group, in primary schools in England, 2005 and 2009



Source: Haroun et al. (2010) and annual data on school lunch uptake – available at: www.schoolfoodtrust.org.uk/

Note: Although there was an initial dip in the uptake of school lunch, the official statistics show that in primary schools the proportion of children eating a school lunch stabilised at 41% in 2009–10. This project shows that regulation can be both rapid and effective in bringing about change.

C8.3.5 Buying food

In high-income countries and increasingly in emerging economies, food consumption is strongly influenced by decisions made in the retail sector; particularly those affecting the retail environment. Interventions range from 'choice editing', where certain types of food are not made available to the

51 Cardiovascular Health Practitioners Institute – www.cvhpinstitute.org/links/northk.htm

52 WP2 (Annex E refers)

53 Jepson et al. (2006); World Cancer Research Fund (2009)

consumer, to more subtle changes in the layout of supermarkets and in the information provided to shoppers. National, and in some cases international, controls prohibit the sale of some food products, for example because their consumption has severe environmental consequences (such as tropical bushmeat exported to Europe) or because of food safety issues (such as foods from China containing unacceptable levels of melamine-contaminated milk⁵⁴). Food retailers themselves may also practice choice editing other than for simple commercial reasons. An example is the refusal of certain supermarkets to sell fish from threatened stocks. These types of decisions are made for a combination of reasons including issues of corporate and social responsibility as well as commercial reasons such as anticipating greater sales associated with increased respect accorded to the retail brand. The latter reason presupposes an informed and active consumer.

In addition to implementing national regulations for food labelling, individual retailers may choose to stock and label particular types of product stressing some additional benefits, for example 'healthy-eating' ranges, sustainably sourced food or Fairtrade or organic products. The effectiveness and value of these strategies to both the retailer and the consumer depends on the degree to which the labelling is understood and trusted. There are also examples of retailer-led initiatives that have a public health-led ambition to encourage healthy eating. The 'Healthy Living Programme' run by the Scottish Grocers' Federation (SGF) is one such scheme where 600 participating stores have registered an average increase in sales of fresh fruit and vegetables of between 20% and 30% over the past six years (see Box 8.5). There is evidence that point-of-sale promotional interventions such as 'buy one get one free' and sophisticated strategies such as the provision of in-store information can also promote the purchase of healthy and sustainable food⁵⁵. The UK Sustainable Development Commission has explored barriers to action for retailers to help address issues on sustainability in the food supply chain⁵⁶. A critical rate-limiting step was found to be consumer attitudes, but a willingness to act on the part of retailers was reported to be frustrated by the lack of leadership from government. Similar views were expressed by food industry leaders in a workshop organised by the Foresight project⁵⁷, and this issue is returned to below.

Box C8.5: The Scottish Grocers' Federation Healthy Living Programme: a retailer-led intervention

The SGF Healthy Living Programme⁵⁸ was established in 2004 by Robert Wiseman Dairies with the support of the Scottish Government and five leading convenience store operators in Scotland (Aberness, Botterills, C.J. Lang & Son, David Sands, and Morning, Noon and Night). Its objective was to encourage convenience stores to develop the range of fresh produce and healthier products offered in their local stores to help improve the eating habits of people living in Scotland.

Following the success of the pilot scheme, a business plan was developed to take the programme forward. The programme continues to receive the support of the Scottish Government, which has recognised the unique role convenience stores play in spreading the 'healthy eating' message, particularly in neighbourhoods with low levels of car ownership and limited public transport. Together with the substantial inward investment of the retailers themselves, the programme has developed to include 600 stores.

Participating stores have registered an average increase in sales of fresh fruit and vegetables of between 20% and 30% since the start of the programme, representing over one million transactions per week. Consumers using these convenience stores eat fresh fruit 6.4 times per week, 18.5% more than they did three years ago, and consume fresh vegetables 6.3 times per week, up 14.5% over the last three years.

The SGF Healthy Living Programme was recently included in the Scottish Government's action plan to improve diet, increase physical activity and tackle obesity. Funding continues to be provided by the Scottish Government together with substantial inward investment by retailers. This project demonstrates the potential of engaging relevant sectors to develop interventions that are tailored to their needs.

54 FSA (2008)

55 Roe et al. (1997); Seymour et al. (2004); Brownson et al. (2006); Hawkes (2009b); World Cancer Research Fund (2009)

56 UK Sustainable Development Commission (2007, 2008)

57 See W2 (Annex E refers)

58 <http://scottishshop.org.uk/sgf-healthy-living-programme/>

C8.3.6 Eating out

A rising proportion of food is consumed outside the home in both high-income countries and, increasingly, in emerging economies⁵⁹. In the USA, some homes are now built without kitchens. Decisions made in the food service sector can have major effects on the type of food consumed. Some food is provided in institutions such as schools, prisons and hospitals where there is limited or no choice. Decisions on what is provided and how it is sourced can thus have substantial effects on what is consumed. In Canada, the Heart and Stroke Foundation Health Check programme aims to guide consumers to make healthier choices when eating out at restaurants through identifying the Foundation's Health Check symbol⁶⁰. Recent initiatives in the UK include guidance on healthy and sustainable food for hospitals and the Public Sector Food Procurement Initiative to encourage more sustainable food practices⁶¹, but there is as yet no information about their effectiveness. Where food outlets do provide interventions relating to point-of-sale labelling and other information, design of menus and recipes, pricing strategy and changes in the location and number of food items can all have positive outcomes⁶².

C8.3.7 Emerging economies and low-income countries

The very poorest have few opportunities to vary their diet, and issues of providing sufficient food dwarf those of influencing consumption pattern. Although many low-income countries are focused on measures for food security, there are nevertheless opportunities to tie nutritional advice to the development of sustainable agricultural systems. In general, consumers in low-income countries and emerging economies will be more price sensitive, which is associated with being less receptive to campaigns to modify consumption. As has already been discussed, interventions need to be targeted to low-income consumers, and issues of availability and access to healthy food become critical. In many countries foods high in fat and sugar provide more calories per unit of cash than other type of food, and so an unhealthy diet can be a means to save money⁶³ and is often therefore a rational economic choice for many poor people. The lack of regulations in emerging economies and urban centres in low-income countries has led to aggressive food marketing, sometimes at the expense of a population's health status. Additionally in these regions there is a growing street food market that is often left unmonitored and unregulated despite its growing size and popularity⁶⁴. An awareness of local culture is critical when considering options to influence consumption patterns. Income constraints, cultural practices, tastes and habits are often more powerful determinants of food choice than nutritional quality.

The nutritional needs of low-income consumers reflect their nutritional status and health requirements. Many poor people consume too few, low-quality calories, with too little protein or micronutrients^{65, 66}. Hence the need for specific policies and targeted interventions to improve nutritional outcomes by influencing patterns of consumption. Interventions include fortification programmes, and social marketing campaigns often run by the public sector. Industrial fortification provides an opportunity to enhance micronutrient content and improve the protein quality of traditional staples predominantly consumed by the poor, such as sorghum and cassava⁶⁷.

An alternative to fortification programmes is to encourage increased consumption of locally available foods rich in nutrients or decreased consumption of foods that reduce the biological availability of micronutrients. For example, foods to alleviate vitamin A deficiency include dark green leafy vegetables (DGLVs), orange and yellow fruits and vegetables (e.g. squash, papaya) and red palm oil⁶⁸. In Niger the Ministry of Agriculture, in collaboration with the Ministry of Health and Education, implemented a successful two-year pilot project, the goals of which were to increase production and promote

59 For example, Project Report R4 (Annex E refers) reports a growing trend within India.

60 http://www.heartandstroke.com/site/c.iKlQLcMWJtE/b.3483961/k.FBE9/Health_Check8482___Designed_to_help_you_make_healthy_food_choices.htm

61 Department of Health and NHS PASA (2009); Defra (2010)

62 Holdsworth and Haslam (1998); Seymour et al. (2004); Brownson et al. (2006); Harnack and French (2008)

63 Drewnowski and Darmon (2005)

64 DR3 (Annex E refers); WHO (2002); Winarno and Allain (2002)

65 UNSCN (2010)

66 Unnevehr et al. (2007)

67 Unnevehr et al. (2007)

68 Favin and Griffiths et al. (1991)

consumption of locally available vitamin A-rich foods. Supported by a strong educational component on nutrition, there was an increase in consumption of vitamin A, obtained from traditional green leaves and liver. The study revealed an overall improved vitamin A status that was not observed in the non-project area⁶⁹.

Increasing dietary diversification through educational and social marketing methods are being used with some success. In Africa community-based capacity building programmes are being used to capture the nutritional aspects of many agricultural programmes⁷⁰. Approaches to nutrition behavioural change have been evaluated in Mali, Burkina Faso and Niger⁷¹, where a cultural-specific methodology has been used. Varying programmes proved successful across the three countries, with the Mali project demonstrating that the nutritional status of young children can improve by incorporating low-cost communication activities into child survival programmes.

In low-income countries with very high prevalence rates of HIV and malaria, the nutritional status of those affected is critically important. These diseases both increase requirements for nutrients and inhibit their absorption. Dietary improvement through nutritional support has the potential to significantly postpone HIV/AIDS-related illness and prolong life⁷². HIV infection can accelerate the vicious cycle of insufficient dietary intake and disease that leads to malnutrition, while malnutrition increases the risk of HIV transmission from mothers to babies and the progression of HIV infection.

C8.4 Constraints on changing consumption

The review of levers for demand modification commissioned by the Foresight project stressed that the most effective interventions to modify consumption patterns have explicitly considered competing interests operating in the opposite direction⁷³. Some of the most important of these factors are discussed in the next section.

C8.4.1 Consumer resistance to certain food products

Current consumer choice and attitudes to specific methods of food production, such as those involving biotechnology, genetic modification (GM), organic cultivation and more extensive (low input) methods of production, are important in developing an understanding of how markets based on these production systems might develop in the future. The feelings of control that people have over the purchase and consumption of food has a major impact on acceptance. People tend to be more positive about possible hazards and technologies that have been present for a long time (e.g. those associated with traditional farming methods and organic farming) and more negative about those that are novel (e.g. those associated with biotechnology or GM), particularly when there are perceived to be unknown risks⁷⁴. The role of the media can be critical in informing consumers. However, on the issue of GM, for example, some have argued that the media in the UK played more of a role in forming public opinions rather than in reflecting them⁷⁵. Currently, there are major differences across the world in the consumption of foods produced using GM or organic systems. These differences are partly a reflection of differences in consumer attitudes and are also driven by complex interactions within the food supply chain, regulation and international trade.

In the UK and much of Europe, over a period of about 15 years, negative public opinion on GM crops has been influenced by concerted media campaigns, a five-year *de facto moratorium* of the European Union on authorisation of new genetically modified organisms, sustained lobbying by some non-governmental organisations and a GM-free stance by some retailers. A recent study commissioned by the UK Food Standards Agency exploring attitudes to GM food found some public trust in official sources of information, and a request for clear and accessible information from a range of different sources, including supermarkets. There was also widespread support for labelling of all GM food products,

69 Mansour et al. (1994)

70 FAO (1997)

71 Parlato and Seidel (1998)

72 Gillespie et al. (2001)

73 WP2 (Annex E refers)

74 Ronelap et al. (2007)

75 Bates (2005); Priest (2006); Augoustinos et al. (2010)

including those where GM is used as a processing aid or in animal feed. The principles⁷⁶ of transparency and consumer choice were clearly a priority for people holding a range of attitudes towards GM foods and this has shaped their views on regulation and labelling.

With the recent food price spikes in 2007–08, there is perhaps now greater awareness across the world that there are likely to be a number of global challenges that will affect future food security, including rising population growth, climate change and scarcity of water⁷⁷. Along with other approaches, GM crops are likely to have a role in increasing food production. Currently, they are cultivated in several parts of the world, but only a limited number of traits, such as insecticide or herbicide tolerance, are available⁷⁸. There remains a wealth of other significant GM traits that could be developed to offer potential benefits to farmers and consumers in a wide range of agricultural and food-related areas including resistance to pathogens and insects⁷⁹, improvements in yield potential and adaptation to climate change (such as drought and heat tolerance). Also, improved nutritional quality (including foods of unique composition for populations whose diets are lacking in essential nutrients), fresh fruits and vegetables with a longer shelf life and the development of functional foods that may provide certain health benefits⁸⁰.

Production of food by organic methods has the benefit of having a set of rules that, although open to some interpretation, at least mean that consumers can have some confidence that the products sold with such a label have met certain standards. Rises in world food prices, as seen in 2007–08, are likely to have a negative impact on organic foods in the UK and elsewhere, since most consumers see premium prices as one of the major reasons for not buying organic foods⁸¹. Food produced by other methods such as 'low-input' production might have some advantage over organic methods in that they require lower premiums, but it is also more difficult to provide a clear message to consumers⁸². The benefits would need to be made recognisable to consumers so that they are readily apparent. Unless this is the case, food produced by 'low input' production is unlikely to gain a major market share.

C8.4.2 Wider barriers to changing consumption

There are a number of constraints to changing patterns of consumption that are common to high-income countries, emerging economies and urban populations in low-income countries that policy-makers, consumer organisations and consumers themselves need to take into account. They are not insurmountable but will condition the kinds of policy responses that are likely to be effective at the levels of populations, communities and individuals.

At the population level, there are mixed messages on diet: in many high-income countries consumers receive different, and sometimes contradictory, dietary messages relating to health and environmental sustainability. For example, there are recommendations to eat more of the omega-3 fatty acids found in oily fish alongside advice about the importance of only purchasing fish from sustainable stocks. In approximately 60 countries worldwide, many retail, fishmonger and food service sector sources of fish are increasingly labelled under the Marine Stewardship Council (MSC) as certified sustainable seafood. Although customer recognition is currently low, MSC labels are helping to educate consumers and reward fisheries that have achieved certification (currently 42 fisheries) through access to markets and often slightly higher prices⁸³. There are opportunities for closer working between those involved in nutrition and public health, and environmental sustainability to agree where possible on clear, consistent messages to consumers.

76 National Centre for Social Research (2009)

77 The Royal Society (2009)

78 C1 (Annex E refers)

79 C6 (Annex E refers)

80 DR3 (Annex E refers)

81 SRI 2 (Annex E refers)

82 While sustainable agriculture is based on long-term goals and not a specific set of farming practices, it is usually accompanied by a reduction of purchased inputs in favour of managing on-farm resources. A good example is reliance on biologically fixed nitrogen from legumes rather than manufactured nitrogen fertilisers. Low-input agriculture is one of several alternative farming systems with methods adaptable to sustainable agriculture. Low-input farming is based on a reduction, but not necessarily elimination, of chemical fertilisers, insecticides and herbicides. Low-input agriculture can be more profitable, and lower risk, than conventional high-input alternatives.

83 <http://www.msc.org>

Advertising by food producers and the food retail industry is also a powerful constraint to changing patterns of consumption. A report by the US Federal Trade Commission found that 44 major food and beverage marketers spent US\$1.6 billion to promote their products to children under 12 and adolescents aged 12 to 17 in the USA in 2006⁸⁴. These sums of money dwarf the amount available to public and third sector organisations for changing patterns of consumption to healthier and more environmentally sustainable options. In the short term, there are likely to be major private sector losers for any successful intervention that changes people's diets to more healthy and/or sustainable options, and hence there are likely to be substantial and well-funded counter-campaigns. But some companies will diversify and adapt to new markets that open up in response to changing patterns of consumption. However, as economic value is added through the food supply chain and dietary changes for health and sustainability often entail less processed food, the constituencies that benefit will typically be less organised and resourced than those that lose.

A current constraint to the uptake of environmentally sustainable options in food purchasing is that products are often not readily identifiable to consumers. They may also cost more. There is often insufficient or confusing information available to enable consumers to judge which food products have been produced sustainably. Even when information is provided, consumers may not understand the terms used, such as 'carbon footprint'. They may also be uncertain and sceptical of 'green' claims from industry, and may not trust advice from governments. These constraints are likely to pose significant barriers to uptake.

Taste and price are the dominant factors that influence food choice. The implications are that food has to meet taste requirements and price expectations first, and only then will most consumers begin to consider other factors. They may also feel overwhelmed by the huge scale of the issues in the global food system, and view their individual contributions as very small relative to those of large state or industrial organisations, such as in the case of GHG emissions. Consumers may also find it very difficult to try to accommodate all of their different values on food relating to health, environmental sustainability, the local economy and so on. Others view issues on sustainability and food as a passing fashion or view those who are engaged in environmentally friendly behaviours as being 'smug'⁸⁵. Some people are also locked into their current lifestyle patterns, partly through economic constraints, institutional barriers or inequalities in access, or because of habit or social expectations⁸⁶. Finally, when people make a change towards a sustainable behaviour, several studies show that they will sometimes use this to justify a more unsustainable behaviour, thereby neutralising the original action⁸⁷.

C8.5 Conclusions

Changes in consumption patterns can have multiple benefits

The main reasons why policy-makers may seek to change consumption patterns are to help keep food prices low, increase environmental sustainability, improve health outcomes and maintain vibrant local food industries. Changes that have multiple benefits are clearly preferred, and any trade-offs among policy goals need to be quantified and assessed. The trends for global food demand to 2030 and 2050 discussed in Project Report C1 are clearly unsustainable, and can be expected to have an impact on grain prices and hence food security, particularly in low-income countries, and also lead to substantial health burdens through over-consumption in wealthier countries. The majority of governments produce dietary advice for their citizens and many are focusing on how to promote sustainable agriculture and food systems. While many low-income countries are focused on measures to reduce the numbers who are hungry, linking nutritional advice to the development of sustainable agricultural systems may be beneficial.

84 <http://www.ftc.gov/os/2008/07/P064504foodmktingreport.pdf>

85 As opinion reported in the UK media indicates, for example Mills (2009) <http://www.timesonline.co.uk/tol/comment/columnists/article6850622.ece/> and Hickman (2010) <http://www.guardian.co.uk/environment/green-living-blog/2010/mar/08/recognise-magazine-eco-lifestyle>

86 Foresight (2007)

87 Jackson (2005); AccountAbility and Consumers International (2007); Evans and Jackson (2008); Martindale and Richardson (2008); Gallup Organisation (2009); Platt and Retallack (2009); Sustainable Consumption Institute (2009); Yates (2009)

An integrated food strategy

In most countries, current approaches to dietary change have a nutritional perspective. However, there is growing recognition that a diet that also takes the environmental sustainability of food production into account is desirable. Others factors, such as the competitiveness of local rural economies and the food retailing sector are also influential. A more integrated strategic approach to diet for health and environmental sustainability offers opportunities for greater coherence. The evidence shows that the best way to achieve this would be through multidisciplinary and comprehensive approaches, which work at individual, community, environmental and policy levels. The three highest priorities for change recognised by the UK Sustainable Development Commission, and supported by many other studies⁸⁸, are to limit excessive consumption of meat, dairy products and food and drink of low nutritional value, and reduce waste. These changes, where health and different facets of sustainability complement each other, have the potential for significant positive impacts on diets.

While reducing excessive consumption of meat and dairy foods has been identified as desirable for reducing GHG emissions and other environmental impacts (see Project Report C12 for a detailed discussion), this is not a straightforward issue. Not only are there cultural reasons for consumers to resist such advice, but it might be nutritionally undesirable in terms of micronutrient intake in some settings. Currently, public health messages on nutrition in many high-income countries advise consumers who eat more than 100 g per day of red and processed meat to limit consumption to 400 g per week⁸⁹. Around 33% of adults in the UK are thought to eat more than 100 g a day. A targeted approach focusing on people most likely to consume undesirable amounts of these foods would address objectives for both environmental sustainability and nutrition. Changes in consumption that are less clear-cut in terms of having a positive impact on sustainability and health require careful consideration and clear guidance for consumers, and here readily available and accessible information will be key.

Simple, consistent and trusted information

There is a limit to the amount of information that can be put onto a food label and usefully employed by a consumer when making informed decisions. Evidence suggests that effective labelling depends critically on consumer trust in the organisations responsible and that simple graphics or qualitative information are more effective than complex quantitative information⁹⁰. Policy-makers should consider prioritising a limited range of information that they wish to be conveyed to the consumer and communicate it using a nationally standardised, simple system. However, the limitations of food labelling (both in retail and in the food service sector) in affecting consumers needs to be acknowledged.

A new food literacy agenda

Existing reviews of the available levers to change consumption patterns as well as those commissioned by the Foresight Project agree that better decisions are made by an informed consumer⁹¹. The detachment of people in high-income countries from the production and processing of food has long been noted, and trends of growing urbanisation in emerging economies and low-income countries are increasing this disjunction. Consequences include a reliance on the service sector for food, greater waste owing to lack of knowledge of food preservation (see Project Report C10) and an inability to make informed decisions about healthy and 'sustainable' dietary choices. There is some evidence to suggest that interventions in a school setting can be effective in improving food literacy but several different elements are required⁹². In addition to craft skills associated with the preparation and storage of food, and of the composition of a balanced diet, the environmental and equitability aspects of food production and the food chain can be included in school curricula. Social marketing campaigns to help inform the broader community and help produce social norms leading to positive food system outcomes are a further option.

Government fiscal and regulatory intervention ideally requires societal consensus

Every government faces the trade-off between intervening to restrict the choice of its citizens for their own or the public good and allowing unfettered freedom of choice. The decision is also influenced by the

88 WP2 (Annex E refers)

89 Scientific Advisory Committee on Nutrition (2009)

90 Drichoutis et al. (2006)

91 WP2 (Annex E refers)

92 WP2 (Annex E refers)

actions of sectoral interest groups. What is clear is that government fiscal and regulatory intervention requires societal consensus to be effective. The history of action on tobacco provides an example of how a societal consensus for action can develop, albeit over time. As the evidence for the negative health effects of smoking became clear, it became politically acceptable to increase duties on tobacco, to introduce clear and unambiguous labelling, to run social marketing campaigns, to provide smoking cessation services and, in many countries, to restrict the right of people to smoke in public. The result has been dramatic decreases in the number of people smoking (with positive health outcomes), despite the presence of very active and well-funded counter-campaigning by the tobacco industry⁹³.

Tobacco provides a number of lessons for policy-makers, both in government and in other organisations, seeking to change patterns of consumption for other products: (i) it is important to develop a firm evidence base about the advantages of the modifying consumption; (ii) a consensus can be developed even in the face of strong lobbying from industry; and (iii) a combination of strong fiscal and other regulatory interventions can be highly effective.

Evidence from the WHO and Food and Agriculture Organization (FAO) have driven government initiatives to modify diets on health grounds⁹⁴. Based on advice from the WHO, the UK Government's 'five a day' scheme aims to increase public awareness of the health benefits of consuming 400 g of fruit and vegetables a day⁹⁵. One of the most successful examples of a successful change in dietary behaviour is the salt campaign in the UK. This has been based on a combination of re-formulation of food products (through the action of businesses) and educational messages for consumers delivered by government, health professionals and the media in a very consistent way, which has united around the 6 g a day limit. Salt intake has dropped from average of about 9.5 g per day to 8.5 g per day. Planned re-formulation by 2012 should reduce daily consumption by another 1 g per day.

The key implications for policy-makers of the latter in terms of the rising prevalence of obesity are discussed in detail in the Foresight Report on the topic⁹⁶. The evidence in the Report makes clear that policy-makers and other stakeholders, including food companies, public institutions such as schools and prisons, and communities and families need to participate in comprehensive, long-term programmes of multifaceted strategies to avoid the rising burden of overweight and obesity, which affects over one billion people worldwide.

Importance of government or international organisations setting standards for certification/ sustainability initiatives

There is great scope for the food industry to play a significant role in facilitating greater environmental sustainability in the food supply chain. Although short-term profits and competitive constraints tend to be the overriding drivers, often dictated by current consumer preferences, there is a recognition of the need to be more forward looking given growing environmental concerns and increased consumer awareness on issues of health and sustainability. There was a consensus at a workshop, held by Foresight to consider developments in the global food supply chain⁹⁷, that government should play an active role in facilitating this transition.

Project Report C3 discusses a number of initiatives where companies have worked with food producers to ensure that they meet voluntary or public standards on environmental sustainability⁹⁸, although it notes concerns that such schemes may represent barriers to some low-income food producers accessing international markets.

93 Tiessen et al. (2010)

94 <http://www.igd.com/index.asp?id=1&fid=1&sid=17&tid=0&folid=0&cid=112> <http://www.nhs.uk/livewell/5aday/Pages/5ADAYhome.aspx>

95 Though successful at increasing the profile and understanding of health issues around diets, influencing consumer behaviour is complex and takes time. In 2003, two years after the campaign launched, 28% of those surveyed by the Food Standard Agency claimed to have consumed at least five portions of fruit and vegetables the day before. However, this figure did not significantly increase over three years of the campaign, with the same survey in 2006 showing that only 30% consumed at least five portions. There is evidence that more fruit and vegetables are being purchased, although it is not clear that they are being eaten.

96 Foresight (2007)

97 See Project Report W2 (Annex E refers)

98 For example <http://www.globalgap.org>; <http://www.keystone.org/spp/environment/sustainability/field-to-market>

There are also a number of promising initiatives currently undertaken by companies to improve the sustainability of their own processes within the food supply chain. Initiatives in the UK include Sainsbury's goal⁹⁹ to reduce the GHG footprint of its dairy, lamb and poultry production¹⁰⁰, and Walmart, a leading global food retailer, has announced a radical goal of reducing its global GHG emissions by 20 million metric tonnes over the next five years. One of the main areas in which retailers have made progress is the reduction of packaging, where there are economic incentives to reduce expenditure on materials¹⁰¹.

Extending best practice has the potential to improve environmental sustainability across the global food system. To encourage this shift, food industry leaders have called for a 'level playing field' where new approaches can be shared without compromising competitiveness¹⁰². These behavioural shifts will entail government support for the development of new metrics of sustainability, strong direction setting and a consensus for action amongst diverse actors.

99 J Sainsbury plc (2009)

100 Working with producers and suppliers, Sainsbury's has launched a carbon reduction programme in partnership with the Carbon Trust to reduce the environmental impact, increase efficiency and provide greater cost savings for farmers.

101 BRC (2009)

102 W2 (Annex E refers)

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First published January 2011.

The Government Office for Science.

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