

Let's talk about meat:

changing dietary behaviour for the 21st century



by Sue Dibb & Dr. Ian Fitzpatrick

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Eating Better: for a fair, green, healthy future (www.eating-better.org) is a growing UK-based broad alliance that is calling for action by governments, the food industry and all those who can make a difference, to help people eat a greater variety of plant-based foods and less and better meat (red, white & processed); and to support farming that produces meat in ways that benefit the environment, health, global food security and animal welfare.

Launched in July 2013, with the endorsement of celebrity chef and campaigner, Hugh Fearnley-Whittingstall, Eating Better brings together a growing number of national supporting organisations and partner networks from a diverse range of fields, collaborating towards a shared vision and goals. These include interests and expertise from public health, environment, animal welfare, faith groups, campaigning, research, international development and responsible food.

Eating Better's vision is a world in which everyone values and has access to healthy, humane and sustainable diets. High meat consuming countries and individuals have reduced their consumption in line with health recommendations and GHG reduction targets. Meat is produced humanely and sustainably, its production provides sustainable livelihoods, environmental benefits and it is consumed in quantities consistent with good health and global resource use capacity.

Our mission is:

- To raise awareness of why we need a shift to more plant-based eating and less and better meat consumption.
- To build support and lobby policy makers, businesses and others who can make a difference that the time is right to incorporate Eating Better's approach into their policies and practices.
- To stimulate long-term cultural shifts by devising new ways of framing the 'eat less meat' message that are compelling, inclusive and attract public support.

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Copies can be downloaded at: <http://www.eating-better.org/uploads/documents/Let'sTalkAboutMeat.pdf>

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1. Executive Summary

Strong evidence now exists of the need to shift diets towards reduced levels of meat-eating among high consuming countries like the UK to help address climate change, promote public health and help feed the world more fairly and humanely.

But understanding how to achieve this dietary behaviour change has not yet received the attention it deserves.

This report intends to stimulate engagement and action towards addressing this important question.

Eating Better has undertaken a review of relevant consumption patterns, trends, and people's attitudes and behaviours. We identify ten drivers that could provide opportunities for encouraging dietary shifts. We also highlight research and policy gaps and make recommendations.

Key findings:

- In 2014, a YouGov survey for Eating Better shows that more than a third of people in the UK (35%) report they are willing to eat less meat, with one-in-five (20%) saying they have cut back in the last year. Despite this significant interest in eating less meat, our evidence review found only very limited research to directly understand the public's knowledge, attitudes and behaviours towards eating less meat, or that sought to understand how best to achieve this dietary transition.
- This review has identified ten potential drivers for motivating behaviour change towards Eating Better's goal to encourage more plant-based and 'less and better' meat eating. Promising drivers include concern for health, concern for farm animal welfare and cost savings of eating less meat.
- Concern for climate change, the environment and feeding the world more fairly currently rate less highly as potential motivators of behaviour change. There are low levels of awareness of meat-eating having these impacts – only 28% of people agree that livestock production has significant impacts on the environment.
- Concerns about meat authenticity, provenance and safety - brought to the public's attention by the horsemeat scandal in 2013 and concerns about *Campylobacter* contamination in chicken in 2014 - have impacted on consumer attitudes, but less clearly on long-term purchasing behaviour.

- Habitual behaviours towards food choices and the strong cultural and personal significance of meat eating for many are potential barriers to change. Men in particular tend to be higher meat consumers and less willing to consider eating less. By comparison, women eat less red meat. Young people appear more open to 'flexitarian' eating with the highest proportion of non-meat eaters, potentially indicative of a generational shift in attitudes and behaviours towards meat eating.

It is increasingly well understood that successful behaviour change requires a systemic approach that goes beyond persuading or 'nudging' individuals to change their behaviour, to include government policies and practices, new and different business practices, and civil society initiatives working in synergy to facilitate the desired behaviour change.

A broad range of civil society organisations is working to raise awareness and encourage behaviour change towards less and/or better meat consumption. However we found that the evidence for advocating reduced meat consumption as part of healthy sustainable diets has not yet translated into policies and practices from government to support consumer behaviour change. In particular the UK, unlike some other countries, has not yet published official healthy and sustainable dietary guidance - including advice about reducing consumption of meat - that can be used by health professionals, educators, businesses and the public.

We conclude that there is an important role for governments, public health bodies, food businesses, researchers and civil society organisations to work collaboratively towards understanding and testing the practical ways in which dietary behaviours can be shifted onto more sustainable pathways.

Recommendations:

We recommend governments and public health bodies:

- Recognise the importance of integrating sustainability with healthy eating policies and practices, and put in place strategies to apply this within local, national and international contexts.
- Provide, and actively promote, information and advice on healthy sustainable diets by updating the Eatwell Plate to include advice on eating less and better meat.
- Ensure the National Curriculum includes education on healthy and sustainable eating.
- Fund research to support successful behaviour change strategies.
- Monitor consumer diets and report on progress towards less and better meat consumption.
- Ensure that public health, agriculture, trade, fiscal and other relevant policies support and catalyse the transition towards healthy sustainable food production and consumption.
- Convene experts and stakeholders with the purpose of sharing knowledge and creating collaboration towards practical approaches to achieving healthy sustainable diets.

We recommend that food businesses:

- should assess the ways in which they can support dietary change to more plant-based and less and better meat eating through menu planning, reformulation, choice editing, support for farmers producing 'better' meat, and making low meat/meat-free options more available, affordable and attractive.

We recommend that researchers and funding bodies:

- should prioritise and fund a suite of practical research projects working with food businesses, civil society organisations and the public to:
- develop new pilots and projects to test behavioural approaches and evaluate initiatives towards reducing meat consumption.
- understand how best to engage different audiences for example by gender, age, income, cultural or religious backgrounds, geographical communities and at 'moments of change' such as becoming a parent.

We recommend that civil society organisations:

- should work collaboratively to develop shared messaging and campaigns, evaluate the impacts of initiatives towards less and better meat eating and consider how to integrate messages on the benefits of less and better meat eating into their communication and lobbying activities.

Ten Drivers for Change

Driver	Opportunities
1. Habits	Non-meat or lower-meat choices to be good value, accessible and desirable tasty choices.
2. Cultural significance of meat eating	Opportunity to draw on traditional diets based on low meat/plant-based eating e.g. Mediterranean diet, Asian and Middle Eastern cuisines.
3. Price/cost	Lower meat diets can save money and enable 'better' meat choices within the same budget.
4. Convenience	Food companies and the food service sector to offer more non-meat and lower meat meal alternatives. Education to increase cooking skills for plant-based eating.
5. Interest in health	Promotion of strong public health messages on health benefits of lower meat and plant-based diets. Myth busting information provision on nutritional adequacy of lower/non meat eating e.g. protein and iron. Reducing meat, rather than eliminating it completely to offer nutritional reassurance.
6. Awareness of the environmental impacts	Awareness raising campaigns, information, education and better labelling (where appropriate).
7. Concern for animal welfare	Opportunities to link animal welfare concerns to wider environmental and health concerns to encourage less and better meat eating. Greater provision and promotion of meat produced to higher animal welfare standards.
8. Interest in provenance and traceability	Opportunity to connect people with where their food comes from and the people that produce it, and offer higher quality/taste, environmental, welfare standards and better returns to producers/local economy. Food retailers and caterers, to include 'local' distinctiveness as part of 'better' meat offer.
9. Knowledge about alternatives to meat	Growth in meat replacement and meat alternative market provides opportunities to help consumers transition to a lower meat diet.
10. Food scares	Opportunity to raise awareness of 'better' meat choices or meat alternatives.

2. Introduction

The way we feed ourselves is unhealthy and unsustainable¹. Feeding a growing, more affluent, aspirational and increasingly urban global population of 9 billion by 2050 healthily, fairly and sustainably simply isn't possible unless we make some changes.

We know there are no magic bullets. Reducing food waste and producing food with less impact on the environment are both essential but not sufficient. Modifying our eating patterns towards diets that are both healthy and sustainable must be a priority too. There is growing agreement on the principles that underpin healthy sustainable diets².

Strong evidence now exists of the need to shift diets towards reduced levels of meat-eating among high consuming countries like the UK to help address climate change, promote public health and help feed the world more fairly and humanely.³ It is also clear that an environmentally sustainable level of meat production will be substantially lower than is normal for high income consumers today⁴.

But trends in meat production and consumption are not in keeping with this goal. Average global meat consumption has almost doubled in the past 50 years, and production is predicted to double by 2050 to feed a growing and more affluent global population⁵. And while UK meat consumption overall remains fairly static, average UK consumption is twice the global average and significant numbers of consumers eat more than the current health-related recommendations for red and processed meat.

The purpose of this report is not to review the evidence for dietary change – though it has been reviewed here⁶ and we summarise some of the main sustainability benefits below. Rather it is to take as a starting point that dietary change *is* necessary and to ask: how might a shift towards more plant-based eating with less and better meat as part of healthier, more sustainable consumption habits be best achieved?

To that end we have conducted a literature search and review of relevant research and data sources including academic papers supplemented by research from civil society, government and business. This report is underpinned by evidence from the literature review. We also publish separately a full bibliography of relevant sources that the literature search identified.⁵

In analysing this literature we have sought to determine relevant consumption patterns, trends, and people's attitudes and behaviours towards eating less and better meat and more plant-based foods; identify drivers that could provide opportunities for encouraging dietary shifts; highlight research and policy gaps and make recommendations for policy makers, public health authorities, businesses, the research community, research funders and civil society.

⁵ <http://www.eating-better.org/uploads/documents/BehaviourChangeBibliography.pdf>

We intend that our findings and recommendations inform future work that Eating Better undertakes. Its purpose is also to stimulate further engagement and collaboration towards the goal of encouraging dietary shifts towards less and better meat consumption.

The literature search was conducted by the UK Health Forum. This involved searching for published literature in databases, including both qualitative and quantitative studies, grey literature such as qualitative research and reports that are not published in journals and data sources. This search was supplemented with sources proposed by members of the project's Advisory Panel. The scope included reports from 2003 to 2014 which were primarily published in the UK. Evidence from other countries (English language only) was also included where it was relevant or potentially comparable to UK information. Within our time and budget resources we do not claim this is a fully comprehensive data search.

Sustainability benefits of a less and better approach to meat eating.

- **Environmental sustainability:** Meat production is a major hotspot generating some 14.5% of total global greenhouse gas (GHG) emissions⁷, using 70% of agricultural land, including a third of arable land needed also for crop production, and is a key driver of deforestation, loss of wildlife and land degradation, and water use. The 2014 IPCC report on climate change emissions identified changing diets as a significant though undeveloped area for action⁸.
- **Public health:** High levels of meat consumption particularly red and processed meats are associated with adverse health including heart disease, cancers and diabetes. Modelling by researchers at Oxford University has shown that eating meat no more than three times a week and replacing meat with plant-based foods would prevent 45,000 early deaths a year in the UK and save the NHS £1.2bn a year*.
- **Fairer food systems:** eating less meat means fewer animals reared and less pressure to intensify production. Choosing meat produced to high animal welfare standards means a better quality of life for farm animals. Global food security could be improved by using more crops to feed people rather than livestock. It has been calculated that halving world consumption of grain-fed meat, for example, could feed two billion more people.†

* Scarborough et al, [Modelling the impacts of the Fair Less Meat diet](#).

British Heart Foundation Health Promotion Research Group, for Friends of the Earth and CIWF 2010

† Emily S Cassidy et al 2013 *Environ. Res. Lett.* **8** 034015 [doi:10.1088/1748-9326/8/3/034015](https://doi.org/10.1088/1748-9326/8/3/034015)

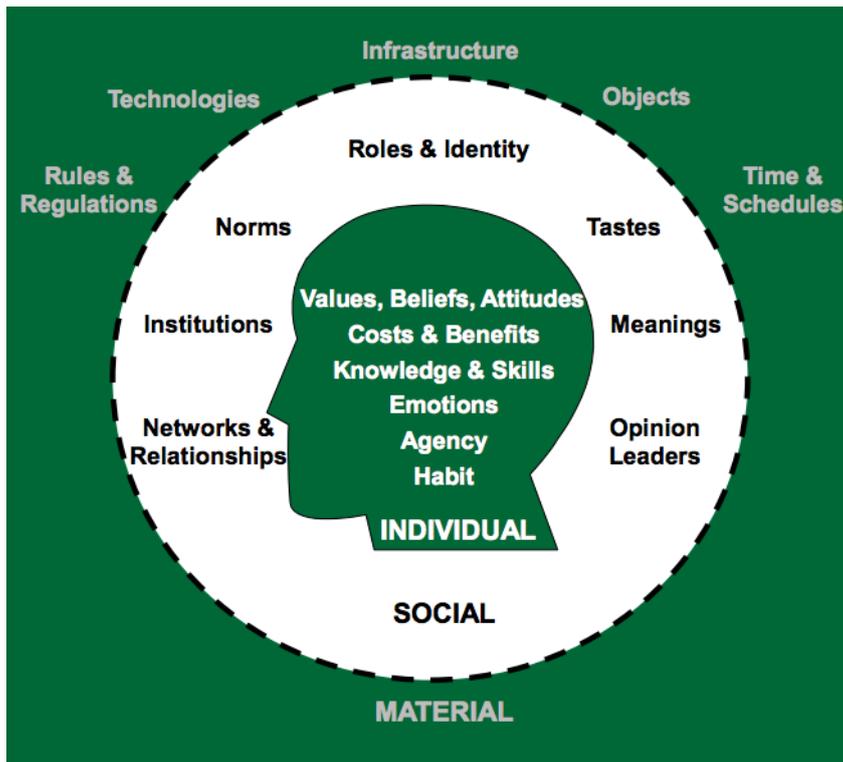
3. Background to behaviour change

Our eating patterns are influenced by a wide range of cultural, economic, ecological, technological and institutional factors including: affluence, food prices, food availability, eating habits and lifestyle, household make-up and ethnicity⁹. There are also factors at play that can influence our attitudes and behaviours towards meat consumption. These include food safety or quality scares such as the BSE crisis or the more recent horsemeat scandal, concerns with animal welfare, and perceptions of the health and environmental impacts of meat consumption¹⁰.

This can add up to a complicated picture. As Professor Tim Jackson, leading expert on sustainable consumption, has written: *'The challenge of enabling sustainable lives is not straightforward. Nor can it be left to the vagaries of the market. Individual behaviours are deeply embedded in a social context. We are guided as much by what others around us say and do and by the 'rules of the game', as we are by person choice. We often find ourselves 'locked in' to unsustainable ways of living by the physical and institutional constraints around us.'*¹¹

One way to consider the range of influences on our behaviour is illustrated below (fig 1). The ISM model¹² developed by Andrew Darnton brings together insights from behavioural economics, social psychology and sociology in categorising the influences on behaviour across the individual (I), social (S) and material (M) contexts. The model articulates how our individual 'choices' (based on perceptions, motivations, and calculations) are shaped by social factors (the networks, interpersonal relationships and opinion leaders that influence consumption norms) and proscribed by the material options available to us (including: the rules and regulations that govern the supply, price and availability of foods and the functioning of markets; planning policies that determine the location of food outlets; the technologies that make certain production and consumption practices possible).

Fig 1. ISM Model



It is increasingly understood that changing behaviours does not always mean targeting individuals. Rather changing behaviours requires a systemic approach to effective interventions that address social circles, and hard and soft infrastructures, as well as winning hearts and minds. Individual interventions tend to focus on the provision of information and incentives, based on the traditional economic assumption that individuals make conscious and rational decisions. Such approaches have limited success because they fail to recognise that much of our behaviour - particularly about day-to-day food choices - is at a low level of consciousness and flows from habits, routines and external influences. Meanwhile, attributes such as taste, convenience or price may well be prioritised over health and sustainability considerations.

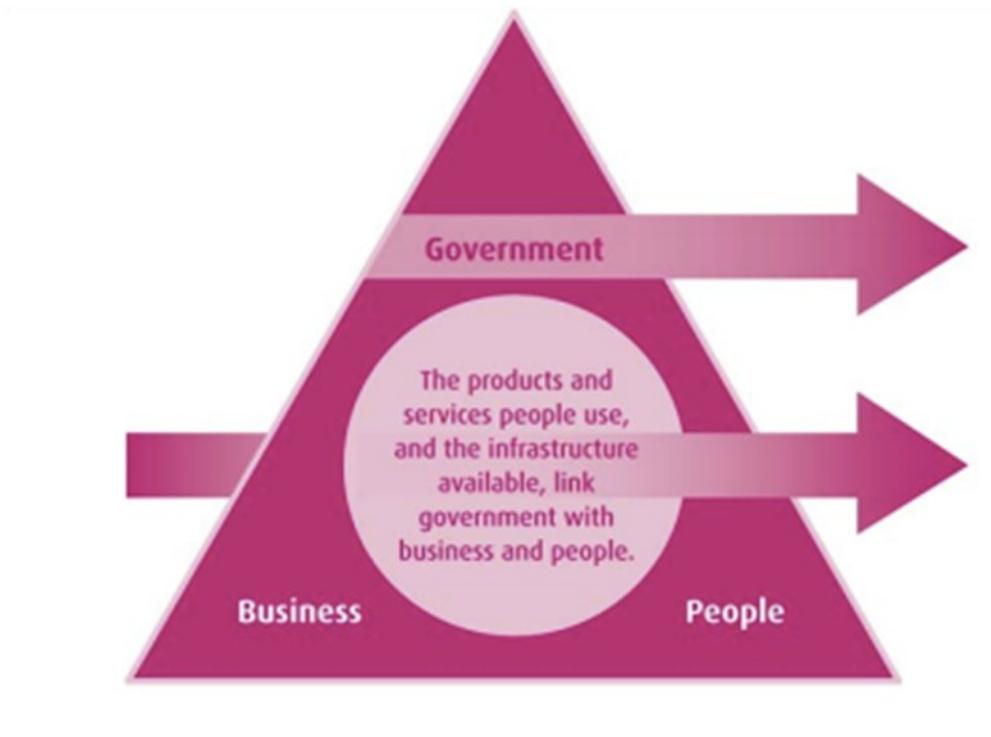
Successful approaches to behaviour change therefore need to consider how to make healthy and sustainable choices the easier, desirable and more accessible choices for people, by having the right incentives, social support and positive environments in place to encourage the desired change.

For these reasons Eating Better's approach is framed by the Triangle of Change model of sustainable consumption behaviour change (fig 2)⁹. This recognises the necessity for policy makers, businesses and civil society to work together to help people shift towards behaviour change goals. The Triangle of Change model makes it clear that all have a role to play - dependent on what each is best able and best placed to deliver. Governments, for example, are best placed to deliver regulatory frameworks, fiscal measures and incentives, while removing barriers. They should provide authoritative

information and advice, education for the public. They also have an important role in funding research, convening stakeholders and using their procurement framework to further the desired change.

Businesses can develop and market more sustainable products and services, and engage their customers and their employees. Approaches to encouraging individuals to change behaviour are often best delivered at a community or organisational level, making use of networks of trust and influence.

Fig 2: The Triangle of Change



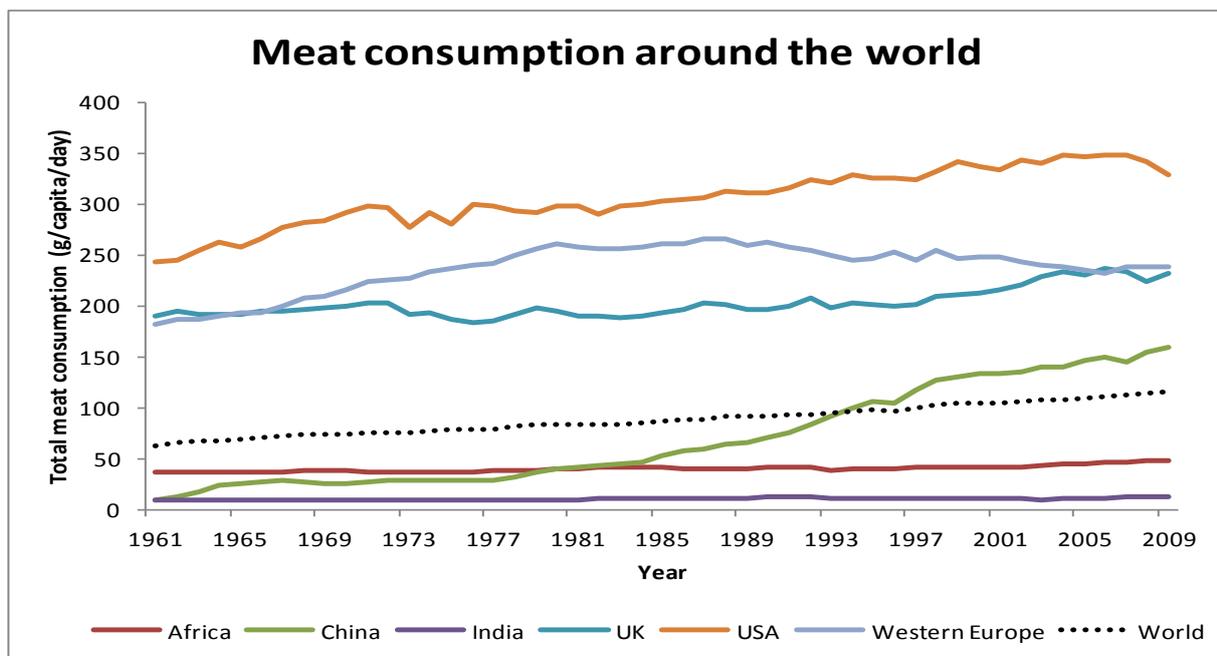
[¶] Sustainable Development Commission/National Consumer Council (2006) *I Will If You Will: Towards sustainable consumption*, Report of the UK Sustainable Consumption Roundtable.

4. Meat consumption: Where are we now?

In understanding how we want consumption patterns to change, it's important to understand where we are now. This section summarises the data on current meat consumption patterns, trends and attitudes in the UK.

The UN Food & Agriculture Organisation (FAO) provides data on meat consumption around the world.¹³ As fig 3 illustrates, UK per capita meat consumption (213g/person/day, equivalent to 84kg/year) is average for Western European countries and high globally, approximately twice the world average, though lower than the US (329g/person/day). These statistics report on food supply data (carcass weights) which is not the same as amounts actually consumed as it does not take into account inedible parts of the carcass and food waste. It does however enable country-by-country comparisons to be made. 2012 figures from DEFRA put UK average meat consumption (based on food purchases) at just under 80kg/year per person¹⁴.

Fig 3: Meat Consumption around the world: FAOSTATS, 2013



Levels of meat consumption in the UK have remained fairly constant over recent decades, though this masks significant changes in the types of meat we eat.

Of most significance has been the five-fold increase in poultry consumption since the 1960s, which has mirrored long term declines in beef and lamb, apart from minced beef. Today we also eat more processed meat products such as sausage rolls, pasties, burgers, bacon, ham and particularly ready meals, while purchasing less uncooked carcass meat and offal. One reason for this trend is that in the longer term the relative cost of chicken has declined, encouraging increased consumption. Similarly ready meals have become

comparatively cheaper during this period¹⁵ and the increasing appeal of 'convenience' to people with busy lives cannot be downplayed.

In recent years the recession and the horsemeat scandal have both had impacts on meat eating behaviours and attitudes. The recession has seen the majority of consumers cutting back and trading down on food purchasing. Lower income consumers have been most affected: in 2010 the poorest 10% of consumers brought 26% less fresh meat than in 2007 and more frozen and processed foods (as well as fewer fruit and vegetables)¹⁶.

The effects of the horsemeat scandal in 2013, in which ready meals and burgers were found to be adulterated with horsemeat, appear to have led some consumers to change their shopping habits. Alongside many consumers buying less, trading down and looking for cheaper deals as a result of the recession, Which? also identified a trend towards 'trading up', with some shoppers buying less processed meat, avoiding cheaper meat ranges and being more likely to shop at butchers rather than supermarkets¹⁷. This and other evidence suggests a dichotomy in the market between those trading down, and those trading up to 'better' meat eating. Less clear is the extent to which those trading up to 'better' are also cutting back on the amount of meat they eat, i.e. consuming 'less and better'.

A YouGov survey for Eating Better in 2013 found around 50% of all respondents saying they were willing to pay more for 'better' meat (e.g. tastier, healthier, higher animal welfare, better returns for farmers) and this was across all social grade groups¹⁸. Although such attitudes are not always put into practice, it indicates some of the aspirational values that many people hold towards meat consumption.

Attitudes and practices among different groups

Gender:

There are significant gender differences around meat eating, with men eating more meat - particularly red meat - than women. Latest National Diet & Nutrition Survey figures give total mean intake of red (86g) and white meat (43g) for men = 129g/day compared to 56g and 33g (89g/day) for women¹⁹.

Current average intakes of red meat for men exceed government health recommendations, with young men (16-24) being the highest consumers of red meat. Four in 10 men and one in 10 women eat more than 90g of red and processed meat a day²⁰. In 2012 it was calculated that six out of ten men consume more red and processed meat than government health guidelines recommend²¹.

Social groups:

There is little difference in overall consumption levels between social groups, though households in higher income occupations eat more carcass meat and fewer processed meat products such as burgers and sausages compared to those in lower income employment or who are unemployed²².

Age:

Older people (65 and over) eat less meat than younger people though it is not clear whether this represents a decline in meat eating in later life, cost factors or if it is a generational difference. Young men (aged 16-24 are the highest consumers of red meat (average 92g/day)²³.

However, young people (18-24) have also been found to be nearly three times more likely to say they don't eat any meat at all – with one in six (17%) of young people saying they don't eat any meat²⁴. Young people aged 18-24 (40%) are also likely to be more aware of the significant environmental impacts of producing and consuming meat than older people (31%)²⁵. It is unclear whether these data represent different market segments among young people.

Ethnic & religious groups

We found a gap in research and data relating to the attitudes and practices of ethnic and religious groups in the UK. Dutch research into healthy and sustainable food choices among native and migrant citizens in the Netherlands has found great food cultural differences among various ethnic groups including around meat consumption²⁶.

Meat reducers

The number of people describing themselves as vegetarian (2%) and vegan (1%) remains consistently low²⁷. A trend towards meat-reducing or 'flexitarian' eating^o has been reported, though we found little research quantifying this in the UK.

YouGov²⁸ (2013) for Eating Better found 25% of respondents said they had reduced their meat consumption over the previous year. A year later in 2014 slightly fewer people (20%) reported a reduction²⁹. It is likely that the higher 2013 figure reflected the impacts of the horsemeat scandal; and the continuing indication of reduction among a significant section of the public could indicate a longer term trend, though it is unclear whether this is reflected in consumption data. Dutch research in 2013 found 28% of people eating meat less than 3 – 4 times a week, with half the sample considered to be 'meat-reducers'³⁰.

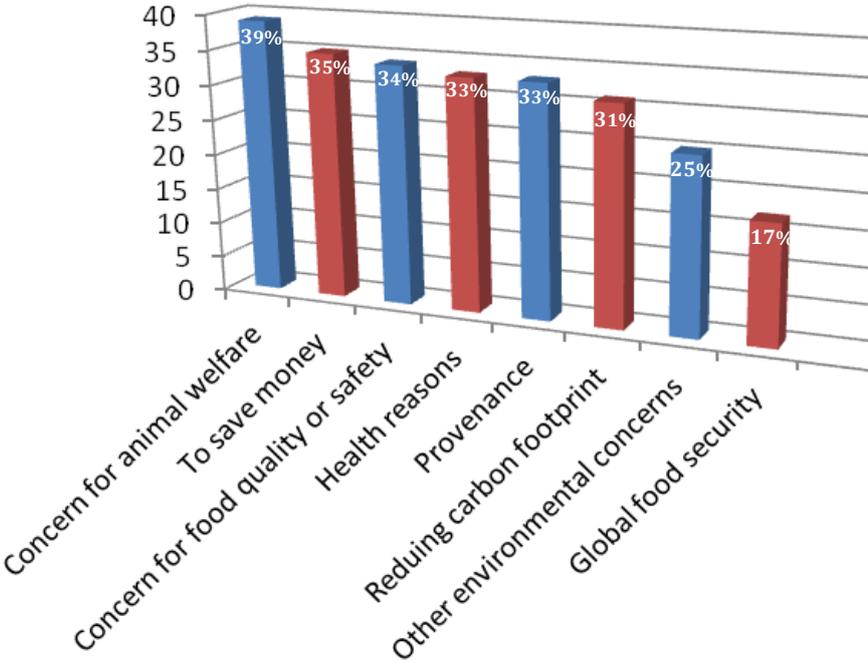
YouGov³¹ (2013) found a higher percentage of people (34%) saying they were willing to consider eating less meat in the future, compared to those who were not willing (30%). This figure was maintained in 2014 (35%) indicating considerable interest among a large section of the population³².

Respondents' main reasons (in 2013) for eating or considering eating less meat and fewer meat products were: concerns for animal welfare (39%), to save money (35%), food quality/safety (34%), health (33%) and provenance (33%). Environmental concerns tended to rate lower: high carbon footprint (31%), other environmental concerns (25%) and global food security (17%)³³. (fig. 4)

^o A term which refers to people who prefer to reduce their meat consumption rather than become vegetarians or vegans. Other terms include semi-vegetarian, part-time vegetarian/carnivore and flexivore.

This is broadly consistent with DEFRA’s survey of food attitudes³⁴, which found that in general consumers were most concerned with the health benefits and animal welfare of food, rather than other sustainability issues, or whether the food had been produced in a way that respected the environment.

Fig 4: Reasons for reducing meat consumption, YouGov 2013



5. Drivers, opportunities and barriers

In this section we review a range of factors that our literature review identified as potential drivers influential towards less and better meat consumption and more plant-based eating. We have assessed the opportunities and barriers towards dietary shifts these drivers present. Table 5 summarises the opportunities to encourage or overcome these factors.

5.1 Habits

Much of our day-to-day food habits are routine in that we eat often and without much deliberation. Hence our habits and routines are one of the main barriers to sustainable food purchasing³⁵. A survey on food provenance by YouGov in 2012 found most consumers buy meat and poultry on a habitual basis with two-thirds (66%) regularly opting for the same products³⁶. Research by Merchant Gourmet shows that 90% of UK families cook a limited range of nine meals on a regular basis³⁷.

However habits are open to influence. Although eating patterns can follow a routine, they are not set in stone³⁸. Whether people are willing to try out new products and change their diet has a lot to do with their identity and how experimental they are³⁹. Surveys indicate considerable willingness to eat less meat that could be acted upon more widely if non-meat or lower-meat choices are made good value, accessible and desirable, tasty choices.

5.2 Cultural significance

Meat holds cultural importance for many people for whom it is seen as an essential part of a meal⁴⁰. In many cultures there is an association between masculinity and meat eating⁴¹. Eating Better's YouGov survey found that it was the favourite part of their meal for 50% of respondents.⁴²

Attachment to a traditional meal format has been identified as a barrier to the adoption of plant-based diets. People who prefer the traditional 'meat and two veg' meal tend to have a stronger preference for meat than people who are more adventurous in their eating approach; eating pasta dishes for example.⁴³

Many traditional food cultures are based on low meat more/plant-based eating, for example the Mediterranean diet, Asian and Middle Eastern cuisines. There is opportunity to draw on such traditional diets to showcase reduced meat eating and develop new recipes and menus.

5.3 Price/Cost

Regardless of socio-economic grouping, price is a primary consideration for food shoppers⁴⁴ and has been identified as one of a number of main barriers against purchasing more sustainable food⁴⁵.

Meat is typically among the most expensive food items in people's shopping baskets, and the impacts of rising prices and squeezed household budgets during the current recession have encouraged cutting back and trading down in

Fig 5: Ten Drivers for Change

Driver	Opportunities
1. Habits	Non-meat or lower-meat choices to be good value, accessible and desirable tasty choices.
2. Cultural significance of meat eating	Opportunity to draw on traditional diets based on low meat/plant-based eating e.g. Mediterranean diet, Asian and Middle Eastern cuisines.
3. Price/cost	Lower meat diets can save money and enable 'better' meat choices within the same budget.
4. Convenience	Food companies and the food service sector to offer more non-meat and lower meat meal alternatives. Education to increase cooking skills for plant-based eating.
5. Interest in health	Promotion of strong public health messages on health benefits of lower meat and plant-based diets. Myth busting information provision on nutritional adequacy of lower/non meat eating e.g. protein and iron. Reducing meat, rather than eliminating it completely to offer nutritional reassurance.
6. Awareness of the environmental impacts	Awareness raising campaigns, information, education and better labelling (where appropriate).
7. Concern for animal welfare	Opportunities to link animal welfare concerns to wider environmental and health concerns to encourage less and better meat eating. Greater provision and promotion of meat produced to higher animal welfare standards.
8. Interest in provenance and traceability	Opportunity to connect people with where their food comes from and the people that produce it, and offer higher quality/taste, environmental, welfare standards and better returns to producers/local economy. Food retailers and caterers, to include 'local' distinctiveness as part of 'better' meat offer.
9. Knowledge about alternatives to meat	Growth in meat replacement and meat alternative market provides opportunities to help consumers transition to a lower meat diet.
10. Food scares	Opportunity to raise awareness of 'better' meat choices or meat alternatives.

food purchasing, including meat. In Eating Better's 2013 YouGov survey, 35% of people gave 'saving money' as one of the main reasons for eating less meat⁴⁶.

Eating less meat therefore offers opportunities for saving money and potentially for trading up to better quality meat. Evidence from WWF's LiveWell project demonstrates that shifting to lower meat/more plant-based eating can save money⁴⁷.

As the effects of the recession recede and many of the public start to feel less squeezed, it is not clear whether people will increase their meat consumption and/or 'trade up'. This may be mitigated by long-term trends predicting increasing meat prices due to growth in global demand.

5.4 Convenience

The trend towards 'convenience' has been a major influence on food purchasing habits, encouraged by lack of time, skills or interest to cook. The convenience food market is estimated to continue its growth, increasing by 30% between 2013 and 2018 from £35.6 billion to £46.2 billion⁴⁸. It is likely that ready meals and convenience meat consumption will also continue to rise in the UK.

As people continue to move away from carcass meat in general, consumption of convenience products like takeaway meats and ready meals are predicted to increase. An Australian study found that vegetarian diets were perceived as inconvenient, and lack of knowledge and cooking skills were the major barriers to preparing plant-based meals quickly and easily⁴⁹. The researchers concluded that knowledge of simple ways of preparing meals could lead to increased meat-replacement dishes.

Convenience and the eating-out markets both offer potential opportunities for food companies and the food service sector to provide non-meat, or lower meat convenience meal alternatives.

5.5 Interest in Health

Health concerns tend to rate higher than environmental concerns in motivating dietary behaviour change, and interest in health offers a potential opportunity for modifying behaviour towards less and better (healthier) meat and more plant-based eating. Research for Meatless Monday campaign in the US (2012), for example, found that Americans were cutting back on meat, primarily because of concerns for their health⁵⁰.

High levels of meat consumption (particularly red and processed meat) are associated with increased risks of bowel cancer and heart disease⁵¹. In respect of bowel cancer, the Department of Health advises that people who eat more than 90g/day of cooked and processed red meat should reduce their intake to 70g/day⁵².

Public health advice at NHS Choices also provides practical tips for cutting down on saturated fats which includes choosing leaner cuts of meat, cutting the fat off meat and the skin off chicken, and not eating too many sausages and meat pies. It also mentions that beans, peas and lentils are useful alternatives to meat since they are low in fat and contain fibre, protein, vitamins and minerals⁵³.

It is unclear how many people are aware of this advice or whether it is influential in altering behaviour. One 2012 public opinion survey found that, when told a recent report had claimed that eating red meat increases the risk of cancer and heart disease, only 19% said they would cut down on the amount of meat they eat (14% by a little and 5% by a lot). 64% said they would probably keep eating the same amount of red meat⁵⁴.

Research on dietary change in other health areas may provide some lessons for efforts to reduce meat consumption. One study on the adoption of lower-fat diets concluded that the most effective strategies involved improving the taste of lower-fat foods (echoing the issue of lack of flavour in meat-replacements), increasing awareness about the effects of fat intake, and building family support to increase adherence to dietary changes⁵⁵. There is also evidence that people often think they eat more healthily than they do⁵⁶; a problem which could apply in efforts to reduce meat consumption.

The significance of strong public health messaging may be a valuable driver of reduced meat consumption. But as the 5-a-Day message for fruit and vegetable consumption shows, knowledge of the message doesn't necessarily translate into meeting the target. Despite high levels of awareness of the 5-a-Day message, average consumption of fruit and vegetables remains below 5 portions a day, indicating that motivating factors other than awareness-raising are necessary to change consumption behaviour.

Potential barriers against meat reduction are concerns that meat is essential for maintaining health, and that vegetarian diets are nutritionally inadequate⁵⁷. A study on meat consumption in Australia found that lack of knowledge about the nutritional value of plant-based diets was a significant barrier to people reducing their meat consumption, particularly among middle aged people.

Health concerns about cutting out or cutting back on meat include lack of sufficient protein and iron. While meat is an important source of protein, in the UK protein deficiency is not a nutritional problem. Average protein consumption is around 76g of protein per day; between 40% and 70% more than the guideline daily amount of 45-55g⁵⁸. On average, meat provides 40% of total protein intake. Vegetable sources of protein already constitute a high proportion of our protein intake, mainly from cereals and other plant sources including pulses, nuts and seeds⁵⁹

Provision of information and education on the nutritional content and value of meat-free foods would be helpful in overcoming nutritional concerns. For example, although red meat, including organ meat, is the richest and most easily absorbed source of iron, many plant foods are also good sources including dried fruit, beans and lentils, green leafy vegetables, sesame seeds, nuts, wholemeal bread and fortified cereals. Including a good source of vitamin C (e.g vegetables, citrus fruits) with meals helps the body absorb iron from plant sources. Government advice states that reducing meat consumption to an average of 70g/day would have little effect on iron intake amongst adults⁶⁰. Reducing meat, rather than eliminating it completely, also potentially offers nutritional reassurance.

5.6 Awareness of the environmental impacts

Awareness of the environmental impacts of producing and consuming meat is increasing: YouGov for Eating Better (2013) found awareness had increased from one in seven (14%) to nearly one in three (31%) in 2013⁶¹. The greatest increase has been among young people (aged 18-24) where there has been a fivefold increase in awareness from 8% in 2007 to 40% in 2013.

Yet, when compared to other 'food and sustainability' issues, awareness is low and can be a barrier to change. For example, research on consumer willingness to adopt environmental food consumption behaviours showed that many consumers thought that choosing foods with less packaging would have a more positive impact on the environment than moving away from meat consumption⁶². A similar study showed that two key mitigating behaviours for reducing GHG emissions – adjusting the thermostat and reducing meat consumption – were considered to have considerably less impact than they actually do⁶³. This points to the importance of information campaigns that can explain the relative impacts that different consumer or dietary decisions have on the environment⁶⁴.

Participants in research by the Sustainable Consumption Institute (SCI) said they lacked the information to make 'sustainable' choices⁶⁵. SCI identifies the importance of education, particularly for younger generations. But the research also points out the limits of information provision alone, given the deeply socially embedded and cultural nature of food and eating.

Another cited barrier to reduced or better meat consumption is the lack of suitable labelling on food. YouGov for Eating Better (2013) found support for more information, education and better labelling including country of origin and how animals are reared. Two out of three people (67%) agreed it is hard to tell which meat is more environmentally friendly⁶⁶.

5.7 Concern for animal welfare

Animal welfare issues are increasingly important to consumers, have received high profile media attention, and provide an opportunity for engaging the public on less and better meat consumption. For example, the TV campaign in 2008 by Hugh Fearnley-Whittingstall and Jamie Oliver to expose the welfare conditions of factory-farmed chicken, led to a marked

increase in purchases of free-range chicken at the time⁶⁷. We note the role of both celebrities and the media here in providing a sufficiently high profile to the issue, to influence the public's attitudes and behaviour.

It's not clear to what extent this trend continued, though research for DEFRA on food purchasing behaviour published in 2011 found that almost half of shoppers reported buying free range eggs and 27% free range or freedom food chicken⁶⁸. An IGD survey before the campaign found that over half of the UK population say they make at least one or two purchase decisions because of animal welfare standards⁶⁹. In the same survey, more than a quarter say they would be willing to pay an extra 10% for higher welfare food. A YouGov survey for Eating Better (2013) found 55% of people saying they would be willing to pay an additional cost for meat/meat products if they were produced to higher animal welfare standards⁷⁰. Both surveys indicate an interest and willingness to pay for 'better' meat from an animal welfare perspective.

Sales of Freedom Food – the RSPCA higher animal welfare standard – products have been increasing by 12% a year since 2009, and Freedom Food reported that more farmers were wanting to sign up since the horsemeat scandal⁷¹. Sales of organic food (which provide higher animal welfare and environmental standards) have also increased during 2013 for the first time since the financial crisis, in part due to the horsemeat scandal⁷². However a YouGov 2013 survey of UK adults found the majority (60%) of respondents associate organic foods with the word 'expensive'⁷³.

Freedom Food products have become available in discount supermarkets such as Aldi and Lidl, as well as McDonald's, which currently uses 100% Freedom Food-sourced pork in all of its restaurants⁷⁴. Freedom Food currently covers about one third of all pigs reared in the UK⁷⁵. There are also indications that more food companies are reporting on farm animal welfare, with the number of companies publishing formal animal welfare policies rising from 46% to 56% between 2012 and 2013⁷⁶.

5.8 Interest in provenance and traceability

YouGov 2012 research into food provenance concludes: 'our research clearly shows that there is demand for locally, regionally and UK-produced foods'⁷⁷. The horsemeat scandal raised awareness of meat traceability and provenance, and helped build consumer interest in 'local' food. 'Local' food provides a number of perceived consumer benefits including provenance and supporting local producers; helping to connect people with where their food comes from. YouGov found that almost eight in ten (79%) consumers believe locally-sourced foods support the local economy and half (50%) believe it is better quality as it has not 'travelled' as far⁷⁸. Local food is often also seen to be a proxy for environmentally friendly foods, and foods with higher animal welfare standards, although this is not necessarily the case.

'Local' food appears to have greater resonance than other environmental and ethical food issues/options. A 2012 survey for IGD found that 36% of

shoppers expected to buy more locally produced food, compared to 30% of shoppers buying more free range products; 24% more Fairtrade and 15% more organic food⁷⁹.

Meat has particular resonance for UK sourcing. YouGov in 2012 found that 59% of consumers prefer to buy UK-sourced meat and poultry compared to imported meat⁸⁰. Research by Mintel found that the number of people who considered traceability along the food chain to be important had doubled between December 2012 (before the horsemeat scandal), and March 2013 at its height⁸¹. About a fifth of customers thought it was important to buy locally (within a 30 mile-radius), and over a third thought it was important to buy British products. For some people though, horsemeat did not inspire trust in British meat products, with 38% saying it made them trust British meat products less⁸².

Interest in local food potentially provides opportunities to connect people with greater understanding of where their food comes from, and the people that produce it.

5.9 Knowledge about alternatives to meat

Participants in research by the Sustainable Consumption Institute (SCI) identified lack of knowledge of 'meat-free' recipes (and the predicted reluctance of other family members) as the main barriers in making a bigger change beyond shifts from red to white meat, or using Quorn[®] or lentils⁸³.

As one participant's comment illustrates: *"For a lot of people, meat is a big staple of their meal, especially for men. So I think if a campaign was like, don't eat meat twice a week, I think a lot of people would go, 'So I starve for two days a week?' You have to give people an alternative."*

A survey by ICM in 2010 conducted on behalf of a protein ingredient supplier, showed that although there was increasing interest in non-meat sources of protein, there was a considerable lack of knowledge of plant-based proteins among the general public, and therefore an important opportunity for education about alternative sources⁸⁴.

Mintel research found that 42% of people did not like the taste of meat substitutes, 36% considered vegetarian and meat-free food tasted bland, and 34% claimed not to know how to use meat substitutes in their cooking. Almost half of UK consumers opted for meat-free dishes rather than meat replacement dishes when they wanted to avoid meat⁸⁵.

A number of meat replacement or meat alternative products have become increasingly popular in the last few years and provide opportunities to help consumers transition to a lower meat diet. The German Vegetarian Society suggest that the retail and catering sectors would benefit from introducing a 'part-time vegetarian' range into their products⁸⁶.

5.10 Food scares

Food scares make regular headlines: in 2014 Campylobacter in chicken, last year it was concern for horsemeat contamination in ready meals and burgers. Previously BSE, and Foot and Mouth Disease have had major impacts on the meat industry.

While food scares raise awareness of the less palatable aspects of meat production and processing, and create short-term changes in consumption, there is less evidence that they produce significant long term behaviour change for the majority of the public. It appears that they are more likely to create shifts between meat categories, rather than leading to less meat consumption overall. The evidence from the horsemeat contamination scandal for example suggests that it may not have impacted on overall meat consumption, but it did impact on specific meat categories and sales from supermarkets. Ready meals, processed and 'economy' meats (the products most affected by horsemeat adulteration) were most likely to be temporarily off the menu⁸⁷.

6. Strategies for change

It is increasingly well understood that successful behaviour change requires a systemic approach that goes beyond persuading or ‘nudging’ individuals to change their behaviour, to include government policies and practices, new and different business practices, and civil society initiatives working in synergy to facilitate the desired behaviour change.

6.1 Policy response

From a policy perspective, we found that the evidence for advocating reduced meat consumption as part of healthy sustainable diets, has not yet translated into policies and practices from government to support consumer behaviour change. In particular the UK - unlike some other countries - has not yet published official healthy and sustainable dietary guidance, including advice about reducing consumption of meat, that can be used by health professionals, businesses and the public.

We recommend governments and public health bodies:

- Recognise the importance of integrating sustainability with healthy eating policies and practices, and put in place strategies to apply this within local, national and international contexts.
- Provide, and actively promote, information and advice on healthy sustainable diets by updating the Eatwell Plate to include advice on eating less and better meat.
- Ensure the National Curriculum includes education on healthy and sustainable eating.
- Fund research to support successful behaviour change strategies.
- Monitor consumer diets and report on progress towards less and better meat consumption.
- Ensure that public health, agriculture, trade, fiscal and other relevant policies support and catalyse the transition towards healthy sustainable food production and consumption.
- Convene experts and stakeholders with the purpose of sharing knowledge and creating collaboration towards practical approaches to achieving healthy sustainable diets.

6.2: Civil society response

In the UK a range of civil society organisations are working to raise awareness and encourage behaviour change towards less and/or better meat consumption.

In addition to our own Eating Better alliance initiative, these include Meat-free/Meat-less Monday initiatives⁸⁸, WWF LiveWell for Life⁸⁹, Part-Time Carnivore⁹⁰, Friends of the Earth’s Meat-Free May⁹¹, Business in the Community’s START campaign and campaigns such as Compassion in World Farming’s Campaign to end factory farming⁹², and the Pig Pledge⁹³.

Behaviour Change's *Dabble with your Dinner* project works with food retailers and caterers to increase the consumption of vegetables within everyday family meals⁹⁴.

We recommend that civil society organisations: should work collaboratively to develop shared messaging and campaigns, evaluate the impacts of initiatives towards less and better meat eating and consider how to integrate messages on the benefits of less and better meat eating into their communication and lobbying activities.

6.3 Business response

Eating Better is encouraging food businesses to see the opportunities for less and better meat eating within their offer. In the catering sector, the Soil Association's Food for Life Catering Mark⁹⁵ works with meal providers in schools, universities, workplaces and hospitals, to encourage healthier sustainable eating. All meat must satisfy UK welfare standards and be sustainably sourced. At Silver and Gold levels of the scheme, caterers are rewarded for serving an increasing percentage of organic produce, and for having one or more meat-free days on the menu each week, while taking steps to reduce meat consumption by making vegetable-based dishes the principal dish of the day.

Companies already engaging with the less and better meat message include Pizza Express with a Meat-Free Monday friendly menu and IKEA's intention to 'green' its iconic meatballs to cut carbon emissions (by offering vegetarian and chicken options) and top chefs are leading a trend towards putting vegetables, rather than meat, centre plate⁹⁶.

Yet while initiatives remain limited within the mainstream food market, the vegetarian/meat-free market is noted to be growing. Key Note estimates the value of the vegetarian food market increasing from almost £800m in 2012 to £882m in 2016, noting that retailers like Tesco, ASDA, Sainsbury's and Morrisons now sell own-brand vegetarian ranges. There is an estimated 50% increase in the number of vegetarian restaurants in the UK since 2007⁹⁷.

Sales of Quorn[®] are growing 10-15% every year with predicted sales worth around £140 million in 2013. According to the company, 80% of the UK population has tried Quorn[®] and more than half of their customers are meat-eaters⁹⁸. In the US, Sales of Gardein (Garden Protein) have almost doubled every two years⁹⁹ and Beyond Meat claims to be the first engineered soya-based chicken product that tastes and feels like real chicken¹⁰⁰. A vegetarian butcher began business in The Hague, Netherlands in 2010, and its products are now also available in Belgium, Portugal, Finland and Germany¹⁰¹.

We recommend that food businesses should assess the ways in which they can support dietary change to more plant-based and less and better meat eating through menu planning, reformulation, choice editing, support for farmers producing 'better' meat, and making low meat/meat-free options more available, affordable and attractive.

6.4 Research response

Our review found a lack of published research that has evaluated meat reduction initiatives or compared the impact of different approaches.

One study we did find from Dutch researchers Joop de Boer and colleagues from the Institute of Environmental Studies, VU University of Amsterdam, sought to explore change strategies to shifting diets to reducing meat consumption. Strategies they identified included promoting smaller portions of meat ("less"); smaller portions using meat raised in a more sustainable manner ("less but better"); smaller portions and eating more vegetable protein ("less and more varied"); and meatless meals with or without meat substitutes ("veggie-days")¹⁰².

When these approaches were tested with a nationwide sample of 1,083 Dutch consumers, the researchers concluded that different strategies will appeal to different segments of consumers and their preferences. For example, those who prefer to have a meatless meal may be more likely to buy a meat replacement, while those who prefer to reduce the portion of meat may be inclined to buy organic or free range meat. In addition, the "less but better" or "less but more varied" messages may better communicate to consumers who are able to regulate their weight. The authors conclude that such strategies should be complementary rather than competitive. Also, they should be accompanied by explanations, recommendations and guidelines, and be supported by social, governmental and public health authorities.

Our review has found clear evidence of differences in attitudes and behaviours towards meat eating among different sectors of the population that it would be useful to understand in greater depth – either as groups who appear more open to reducing their consumption such as young people and women – or as groups that appear harder to reach, such as men who are high meat consumers, or people on lower incomes whose vegetable consumption is already lower than recommended.

Eating Better would like to see strategies introduced and evaluated in the UK. Specifically, we recommend that researchers and funding bodies should prioritise and fund a suite of practical research projects working with food businesses, civil society organisations and the public:

- to develop new pilots and projects to test behavioural approaches and evaluate initiatives towards reducing meat consumption and
- to understand how best to engage different audiences for example by gender, age, income, cultural or religious backgrounds, geographical communities and at 'moments of change' such as becoming a parent.

7. Conclusion

While there is now strong evidence and growing interest and awareness of health, environmental sustainability and ethical reasons to reduce meat consumption, there is a lack of research to understand how best to achieve this.

Our literature review points to a number of drivers that need to be considered to support behaviour change towards less and better meat consumption as part of healthy sustainable diets.

A key gap that we identified is the lack of policy responses including integrated healthy sustainable dietary guidelines to provide a framework and advice for health professionals and businesses as well as the public.

Also lacking in the literature we reviewed, is evidence of work to assess specific messages or initiatives that encourage shifts towards more plant-based eating, with less and better meat consumption.

We conclude that there is an important role for policy makers, health bodies, businesses researchers, and civil society to work collaboratively towards understanding and testing the practical ways in which dietary behaviours can be encouraged onto more sustainable pathways.

Eating Better intends to use the findings of this report to stimulate engagement with policy makers, practitioners, researchers, businesses and civil society to encourage further discussion, and stimulate further research and practical initiatives.

We will continue to engage with policy makers to encourage supportive policies at a UK, EU and global level, and raise awareness with businesses of the market opportunities for more plant-based diets, and less and better meat eating.

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