

## Dietary guidelines

Nutritional health communication versus sustainable food policy

Jelsøe, Erling

*Published in:*  
Journal of Transdisciplinary Environmental Studies

*Publication date:*  
2015

*Document Version*  
Publisher's PDF, also known as Version of record

*Citation for published version (APA):*  
Jelsøe, E. (2015). Dietary guidelines: Nutritional health communication versus sustainable food policy. *Journal of Transdisciplinary Environmental Studies*, 14(2), 36-51.

### General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain.
- You may freely distribute the URL identifying the publication in the public portal.

### Take down policy

If you believe that this document breaches copyright please contact [rucforsk@ruc.dk](mailto:rucforsk@ruc.dk) providing details, and we will remove access to the work immediately and investigate your claim.

# Dietary Guidelines: Nutritional Health Communication versus Sustainable Food Policy

**Erling Jelsøe**, *Department of Environmental, Social and Spatial Change, Roskilde University, Denmark,*  
[ej@ruc.dk](mailto:ej@ruc.dk)

**Abstract:** *Dietary guidelines are issued regularly in most developed countries. In almost all cases they are concerned solely with the nutritional aspects of food and eating and are based on an understanding of food exclusively as a source of nutrients. In recent years, however, a growing number of proposals in a number of countries have addressed the issue of making dietary guidelines that integrate health and sustainability, but in all cases they have been met with different kinds of resistance. This article reviews the development towards an integrated understanding of health and sustainability in relation to food and eating and the emergence of proposals for integrated guidelines. It explores the conflicts and controversies that have arisen in the wake of the various proposals and identifies a number of different types of conflicts. These relate to conflicts of interests between the various actors involved and political resistance against initiatives that are perceived as being in conflict with the values of a market economy and free trade. Furthermore, there are controversies that can be broadly characterised as relating to the politics of knowledge and have to do with the differentiation of expertise and the role of expert cultures for the elaboration and communication of messages about health and sustainability. Finally, the article briefly points to some answers to the complexity of issues surrounding the creation of dietary guidelines.*

**Key words:** *dietary guidelines, food and sustainability, knowledge policy, nutrition, health communication*

## Introduction

Dietary guidelines are one of the most prominent ways in which public authorities communicate to the population in many countries about food choice and healthy eating. Although the authorities in some countries have issued various types of advice about healthy eating for more than hundred years, the modern type of guidelines that are regularly revised and issued by governmental agencies is a relatively new phenomenon that began to be common in developed countries in the 1970s and 1980s. Dietary guidelines give advice to the population about food

choice and healthy eating, primarily with reference to various groups of food such as fruit and vegetables, fish, dairy products etc., or to more general eating habits such as, 'eat varied and not too much'. They draw upon knowledge about the nutritional status of the population, but also about food habits and food supply in the respective countries. The essential element of the guidelines, however, is nutritional science and they are normally the result of comparing state of the art knowledge about human nutrition with the nutritional status of the population

in a country. On this basis, so-called food-based guidelines, that is, guidelines about how and what to eat in order to improve nutrition related health conditions, are derived (EFSA, 2010; FAO/WHO, 1996). All in all, the preparation of such guidelines is a rather complex procedure and the translation of nutritionally based recommendations into guidelines about how to eat is one of the intricate points. Eating and eating habits are concerned with many issues other than the intake of nutrients, and eating is connected with cultural traditions, availability of foods depending on geographical location and production structures, quality of food and individual preferences, etc. People do not associate food with nutrients when they choose what to eat. Furthermore, even the food-based dietary guidelines can be difficult for people to follow in their everyday practices.

Despite such difficulties, when public authorities have initiated these efforts to guide people about their eating they are connected with the perceived importance for public health and the societal implications thereof. Unhealthy eating is seen as a potential burden for the health care sector in respect of its implications for public health — it can make citizens less fit for work, increase expenditures on health care, and so on. As a consequence, nutritional advice appears as a task for public authorities. At the same time, the public authorities want citizens to exhibit adequate health behaviour as a personal responsibility for the individual, guided by health information from the state, an endeavor that dates back to the Enlightenment period in 18<sup>th</sup> century Europe (Mellemaard, 1999; Otto, 1994;). This concern for the eating habits of the population has developed over time, but the focus on health and, more particularly, on nutrition has been a defining feature of dietary guidance.

However, eating has societal implications in respects other than merely health and nutrition, and so responsibility might be ascribed to citizens in other areas as well. A notable example is the environmental and resource aspects of food consumption.

Food production, as it has developed especially since the Second World War has been characterised by what has been termed the productivist paradigm (Lang & Heasman, 2004), which is associated with mechanisation, the use of fossil energy, growing chemical inputs in terms of synthetic fertilisers and

pesticides, large-scale production and specialisation, industrialisation and concentration of animal farming, globalisation of trade, and an international division of labour leading to transportation of food over long distances. This has enabled an enormous increase in food production with a high level of productivity but, at the same time, there has been a number of consequences that include the considerable use of resources such as energy, water and minerals, as well as the pollution of groundwater and surface waters as a consequence of the use of chemicals and handling of large amounts of manure, and changes in the countryside resulting in the reduction of biodiversity and social depletion. The increasing production of meat globally, means that very large areas of land are used for the production of feed for animals, thus reducing the area available for food for human consumption and adding to the environmental problems caused by agriculture. Furthermore, agriculture is connected with considerable emissions of greenhouse gases, not only originating from the use of fossil fuels but also from the methane emission from ruminants and laughing gas from the use of nitrogen fertilisers (Jelsøe & Kjærgård, 2010). Fisheries have developed globally to proportions that imply that most of the world's major fish stocks are threatened or at the point of collapse and, at the same time, aquaculture is expanding and demanding increasing resources of small fish for feed, thereby jeopardising the marine food chains. Finally, food loss and waste is estimated to take up 30–40% of food production globally.

However, our eating patterns have considerable influence on the environmental consequences and resource use in food production because the demand for food impacts on production, and the actual size and pattern of production are decisive for the environmental implications of food production. This has been documented in a number of studies (see, for example, Marlow et al, 2009). More sustainable patterns of production can be obtained, first, by reducing the amount of meat production and consumption. Changes in concepts of production towards, for example, organic farming, would bring an end to the use of pesticides and synthetic fertiliser. Fish is a critical point since most dietary guidelines recommend increased consumption of fish, despite the fact that the current level of fisheries is unsustainable. A larger consumption of local foods could reduce the amount of transport of foods

around the globe, and a reduction in food loss and waste could reduce the demand for food considerably and, thereby, the environmental impact of food production.

As they are framed in most countries, dietary guidelines are, to some extent, in accordance with environmental considerations — but only to some extent. I shall return to this point later. At any rate, as I have tried to demonstrate here, there are good reasons for informing citizens about how they can eat in a more sustainable way. In particular, the need to integrate nutritional and environmental considerations in the same set of guidelines, rather than having separate sets of guidelines that leave it to the citizens to find ways to take both into account, is well founded. This is because health-related and environmental aspects of food and eating are interwoven and separate sets of guidelines may turn out to be contradictory. Furthermore, this idea is not new. Joan Dye Gussow and Katherine Clancy, in the United States, suggested one of the earliest proposals on ‘dietary guidelines for sustainability’ in 1986 (Gussow & Clancy, 1986). Their proposal was met with criticism and dissociation from different sides and had no immediate impact on dietary guidelines in the US. In recent years a growing number of proposals in a number of countries have addressed the issue but in all cases they have been met with different kinds of resistance or have simply been ignored. As yet, to my knowledge, only one country, Sweden, has passed such guidelines and then only after considerable debate and political conflict.

In this article, I will discuss this resistance and the conflicts around an idea that seems to be obvious. First, I discuss dietary guidelines from an historical and theoretical perspective. I present a brief account of the historical changes, showing how dietary advice has developed into a formalised and institutionalised activity that takes place in a large number of developed countries and with a focus on general advice rather than the more specific concerns about, for example, the deficiency diseases that characterised dietary advice before World War 2. I also point to some of the characteristics of dietary guidelines from a more sociological point of view through a discussion particularly about consumer practices and conceptions of food and eating as opposed to those prevailing within food science. Following that, I discuss the interrelations between health and sustainability in relation to the diet, with the aim of providing an

overview of the most important arguments and some main points about the historical development of the discussion of this issue internationally. This section does not aim to provide an extensive overview of the comprehensive volume of literature about the issue, but I have included references to review and summary articles that provide good overviews. I then present an overview of the proposals for guidelines for sustainable diets that have been made in various countries since Gussow and Clancy wrote their paper in 1986 and I consider how they have been dealt with politically. The identification of relevant proposals was based on a literature search in combination with a snowball-like method of tracing relevant contributions to the various national debates. I have only included proposals that were made by official bodies responsible for working with dietary guidelines. Based on the analysis of the proposals and the controversies they were associated with, including the arguments put forward by the most important actors, I have constructed a typology of the conflicts. This is presented in the subsequent section that deals with the rationales behind the controversies. Finally, the article points to some answers to the complexity of issues around the creation of dietary guidelines and tries to indicate some ways forward towards integrated guidelines for health and sustainability.

## 1. Dietary Guidelines

As mentioned above, the emergence of dietary guidelines can be seen in the context of a broader public concern for the health of citizens that began in the later part of the 18th century in Europe. It was seen as a task of the state to educate its citizens through enlightenment, that is, information about healthy living. Even though the diet already played a role in health information, it did not give rise to dietary guidelines in the sense that we understand them today, as an official set of recommendations about how to eat in order to stay healthy.

On the other hand, information and advice about healthy eating has existed in various forms over time. By the end of the 19th century, when knowledge about the role of microorganisms in disease, as well as the first scientific knowledge about the chemical composition of foods, had been established, hygiene and a focus on protein began to play an important role. Later, in the first half of the 20th century, advice about vitamins and minerals became key elements in the information about diet and health. This reflected

the newly established knowledge about the role of micronutrients in foods as well as the prevalence of deficiency diseases, especially among less wealthy people. But dietary recommendations were still not formulated, except in a few countries. Thus, in the United States the US Department of Agriculture (USDA) has been producing dietary recommendations since the end of the 19th century. However, these were issued unregularly and often under specific historical circumstances such as the economic crisis in the 1930s and the 2nd World War. It was not until 1980 that USDA, in cooperation with the US Department of Health, Education and Welfare (HEW, later renamed the Department of Health and Human Services, DHHS), started publishing dietary guidelines that were subsequently revised and re-issued every five years (Callaway, 1997; Davis & Saltos, 1999).

These regular revisions should reflect ongoing changes and progress in nutritional science (as well as changes in the nutritional status and food habits of the population). In many other developed countries the elaboration and publishing of dietary guidelines were similarly initiated in the 1970s or 1980s. Thus, in Denmark the first set of official guidelines appeared in 1976 after a submission of an unofficial graphical representation, 'the diet circle', of dietary recommendations issued in 1967.

Less formalised and often unofficial recommendations about how to eat are known from many countries, in many cases, as in Denmark, dating back to the 18th century but increasingly since the late 19th century and the beginning of the 20th. Thus, the Danish National Council for Domestic Science, which was also responsible for the first set of official dietary guidelines in 1976, began to regularly issue advice about health and food from 1936. However, dietary recommendations after the Second World War differed from those of earlier periods in several respects. The focus changed and acquired an emphasis on lifestyle diseases such as cardiovascular diseases, cancers etc. Furthermore, whilst dietary advice in first half of the century was often oriented towards vulnerable groups suffering from, for example, deficiencies of vitamins or minerals, the dietary recommendations since the 1970s were general and placed greater emphasis on personal responsibility for a healthy lifestyle. Since the 1990s the elaboration of dietary guidelines has been for-

malised internationally by bodies such as the FAO and the WHO (EUFIC, 2009; FAO/WHO, 1996). The outcome of this is the food-based dietary guidelines that consist of a set of recommendations for the intake of nutrients, which are turned into guidelines about food and eating. The guidelines primarily deal with general advice, such as the first message in the most recent Danish guidelines, 'eat varied, not too much and be physically active', and messages concerned with food groups, such as 'eat fruit and many vegetables' (which is the second message). Only one of ten messages in the Danish guidelines has a focus on a nutrient, this is the seventh message that says 'eat less saturated fat' (Fødevarestyrelsen, 2013). These examples illustrate the general nature of the advice given in the dietary guidelines. Perhaps more importantly, this approach to dietary advice, despite the attempts to contextualise the recommendations in relation to country specific eating habits, still mirrors a conception of food almost exclusively as a source of nutrients, whereas the everyday life approaches to food, in which it is a means of satiety but at same time reflects other considerations such as social, cultural, food as a source of experience, etc., are basically ignored.

This is probably why some countries, notably Brazil, have issued dietary guidelines that deal with food and meals in a way that is much closer to everyday practices and the social circumstances of eating. The Brazilian guidelines, which were issued by the Brazilian Ministry of Health in March 2014, include messages such as 'eat in company whenever possible' and '...enjoy your skills in food preparation and cooking', as well as some that are explicitly critical towards the mainstream food system, such as '...avoid fast food restaurants' and 'be critical of the commercial advertisement of food products' (McDonald & Bankman, 2014). Advice about eating beyond the narrow nutritionally defined approach also exists in Japan and France. In the summer 2014 the Danish Minister of Food, Dan Jørgensen, announced the appointment of a meal think tank that should formulate a set of 'meal advices'. This was meant to be a supplement to the dietary guidelines, not an alternative. When he announced the appointment of the think tank, the minister mentioned the need for a focus on the social circumstances of eating and for improvement in Danish food culture. Part of the work of the think tank should be based on public hearings, that is, an approach to working with counselling about food

and eating, an approach that differs substantially from the procedures of the official dietary guidelines. The think tank formulated three advices that were published in its report in April 2015. The second advice, ‘use raw materials — and shop with responsibility for humans, animals and the planet’, involved a focus on sustainability, which is even clearer in the report from the think tank (Måltidstænketanken, 2015: p. 22–23). What the future role of these advices will be is as yet unclear, not least after the change of government in Denmark a few months after they were published.

In the following, I will outline some characteristics of dietary guidelines from a more sociological point of view. One important characteristic of dietary guidelines and the processes behind their creation is scientisation. The tendency towards ‘rationalization, surveillance and regulation of the diet of the masses, supported by scientific claims’ (Lupton, 1996: p. 72) has been inherent in modernity since the late 18th century but increasingly during the last four or five decades. Citizens’ relationship with nutritional science can be characterised as ‘second-hand non-experience’, using the expression coined by Ulrich Beck in his book about the risk society (Beck, 1992: p. 71–72). Food is not experienced as nutrients in everyday life, and our knowledge about nutrition stems from science since it is not possible to detect nutrients through the normal experience of food consumption. On the other hand, as also pointed out by Beck, many people have an ambivalent relationship with science. Much of the debate about food and health is influenced by nutritional science and news about nutrition are conveyed through the media almost constantly, often by experts with conflicting views. This ambivalence is probably enhanced because most people today have no direct knowledge about food production or personal experience about how the food they buy is produced, contrary to the situation in earlier times when the majority of the population were farmers or prepared their meals from raw materials of local origin.

A prominent example of the disagreements among expert about nutrition was provided when, in 2013, a few months after the release of the most recent dietary guidelines in Denmark, researchers from the University of Copenhagen published a paper in which they criticised advice about reducing the consumption of saturated fat in the diet (Ringgaard,

2013). Their criticism was reported in the media. A further example, which has attracted much attention internationally, is the so-called low-carbohydrate diets (including the Atkins diet, the paleo diet and the low-carbon high fat, LCHF diet) that advocate a high consumption of meat and are based on the assumption that the diet should have a high content of protein and fat and a low content of carbohydrates (see, for example, the page on ‘low-carbohydrate diet’ in Wikipedia, last updated 19 October 2015). These dietary principles are very different from official dietary guidelines, probably in all countries that have such guidelines. Moreover, the recommendation to eat a large amount of meat is also in conflict with current proposals for a sustainable diet, as I will discuss further below.

Nutritional experts are often worried about consumers’ apparent lack of knowledge about dietary guidelines. Most consumers have limited knowledge about the specific content of the guidelines’ messages (see, for example, Hansen et al, 2013). However, several studies show that ordinary consumers are generally more knowledgeable and resourceful with respect to healthy eating even if they do not follow the guidelines or follow them only to a limited extent (Halkier & Jensen, 2011; Sørensen et al, 2013). This is contrary to the understanding behind the major element of health information, including dietary guidelines, that builds on a so-called deficit model based on the assumption that ordinary people lack knowledge and resources in relation to health behaviour. When consumers do not follow the nutritional recommendations, which is often the case, it is not necessarily because of lack of knowledge but because eating, as mentioned above, is associated with many considerations other than just health (Groth et al, 2009; Sørensen et al, 2013).

In this respect, the production and publication of dietary guidelines is a contradictory exercise because they are faced with citizens’ ambivalence regarding nutrition and the problematic positioning of the health messages between experts and citizens. In the worst case, they risk disempowering citizens because they are based on the deficit model that assumes the citizens’ lack of resources. Furthermore, the whole idea behind dietary guidelines — that this kind of information can change peoples’ eating habits — has been questioned because our living conditions are shaped by an ‘obesogenic environment’, that is, an environment that

promotes an unhealthy lifestyle regarding food and physical exercise (Woolf & Nestle, 2008).

Nevertheless, dietary guidelines are agenda setting in terms of what is seen, socially and politically, as the correct eating habits and, at the same time, they are setting the framework for health professionals concerned with nutrition, who teach and give advice about food and nutrition, and, in many countries, they establish the basis for initiatives such as school meals, etc. This means that they contribute to the reproduction and strengthening of a discourse about food and health that sees food related health concerns as isolated from other considerations about food and eating.

## 2. Health and Sustainability of Food Production and Consumption

The fact that considerations regarding a healthy diet and sustainable food production are, in a number of ways, in agreement has been pointed out frequently in the debate about these matters both by researchers and other actors in the food system. It is not the intention here to present an extensive review of this debate or the various studies that support the view. Rather, I will mention a few historical contributions and provide a short overview of the most important arguments with respect to the interrelations between health and sustainability in relation to the diet. An overview of a number of the initiatives in the field can also be found in Lang and Barling (2013) and the final report of the LiveWell for Life project (2014).

In order to discuss sustainability of food production and consumption I will use the following definition of a sustainable food system, proposed by the American Public Health Association (here cited in Kickbusch, 2010):

*A “sustainable food system” is “one that provides healthy food to meet current food needs while maintaining healthy ecosystems that can also provide food for generations to come with minimal negative impact to the environment. A sustainable food system also encourages local production and distribution infrastructures and makes nutritious food available, accessible, and affordable to all. Further, it is humane and just, protecting farmers and other workers, consumers, and communities”* (APHA, 2007) (Kickbusch, 2010: p. 14).

This definition emphasises the links between health and sustainability and the need for a holistic approach to the understanding of the concept. Sustainability is normally understood as containing three dimensions: environmental, economic and social. I shall touch upon all three dimensions in the following, but the environmental will be the one that is discussed most thoroughly.

A classic contribution, and perhaps one of the earliest contributions, to a debate about food, health and sustainability was found in Frances Moore Lappé's famous book, 'Diet for a small planet', published in 1971 (Lappé, 1971). Her understanding was shaped by the early 1970s' focus on resources and she observed that the main problem for global food security was the consumption of meat. Her solution was vegetarianism and much of her discussion about that was devoted to a somewhat exaggerated focus on protein complementing as an expression of a concern for getting enough protein from a vegetarian diet. This focus made her draw attention to traditional diets, such as the Mexican diet of beans and maize tortillas, in which protein complementing had been developed, not based on science but on experience and the use of local or regional resources.

During the 1970s many other books about food, health and environmental issues appeared including vegetarian cookery books, some of which introduced an integrated perspective on health and environment that contained most of the arguments that appeared in later debates. Thus, in the introduction to a popular Danish cookery book on 'green gastronomy' in 1977, the author stated that, 'a more vegetarian diet may thus be one of the important elements in a new food policy, which at the same time must fulfil a number of goals, namely to create the possibility of feeding more people with healthier foods, at lower costs in terms of energy and pollution, and securing farm land for future generations' (Holt, 1977 [my translation]). The focus on vegetable diets, vegetarian or not, was a common trait for these contributions, even though the author in this case did not reject the production and consumption of meat totally but stressed that it should take place on a much more limited scale.

The initiatives and proposals in the field during the 1970s did not give rise to any major policy initiatives, however. During the 1990s this changed following

the WHO/UNEP conference on health promotion in Sundsvall, Sweden, in 1991 and the UN summit in Rio in 1992 that introduced the so-called socio-ecological model of health and led to the inclusion of health in the Agenda 21 document from the Rio summit (Kickbusch, 2010: p. 11). One expression of this change that relates explicitly to dietary guidelines is the joint FAO/WHO document on food-based dietary guidelines from 1996 in which the significance of agricultural and environmental sciences for the elaboration of dietary guidelines was emphasised. It stated that: 'The need for sustainable food production using existing natural resources is becoming more and more apparent' (FAO/WHO, 1996: p. 7). This statement had no direct influence on the report's considerations regarding the design of the guidelines.

The ultimate result of the change towards a focus on the integration of nutrition and sustainability within the WHO was its action plan for food and nutrition policy for the European Region 2000–2005 in which it described a comprehensive policy containing nutrition, food safety and sustainable food supply (WHO Europe, 2001). The action plan also contained an explicit social component with a focus on social inequality in the access to good quality and nutritious food.

Goodland and Pimentel (2000) made an important contribution to the discussion about food, health and sustainability with their graphical illustration of the connection between environmental and dietary factors. Their main point is that foods from biological species high in the food chain, such as meat and dairy products, have a high environmental impact, an inefficient use of energy and are the least healthy, whereas those foods from lower down the food chain, such as plant foods, have least environmental impact and are the most energy efficient and the healthiest (see also Goodland, 1997; Robertson et al, 2004). They added a food policy perspective by suggesting that foods from high in the food chain should be taxed to compensate for their environmental costs. Almost simultaneously, in 1999, the Swedish Environmental Protection Agency published a study in which they compared the current Swedish diet with one that was more ecologically sustainable in terms of reduction of land requirements, energy demands and fertiliser input. They showed that a diet such as this, that was more ecologically sustainable, was

also closer to WHO recommendations regarding a healthy diet (Robertson et al, 2004; Swedish Environmental Protection Agency, 1999).

More recently, Dutch researchers have compared six different diets with respect to their ecological and nutritional impacts with the aim of exploring 'the possibilities for future integrated guidelines' (van Dooren et al, 2013). They used greenhouse gas emissions and land use as aggregated indicators for a number of environmental impacts of the most consumed products in the six diets, and by means of life cycle analysis they made calculations for these indicators. Calculations of a nutritional index were made based on indicators from a number of international health organisations (including the WHO and the World Cancer Research Fund). The results in this case showed that a diet that was in accordance with Dutch dietary guidelines had higher scores on both the health and the sustainability indicators (i.e., they were both healthier and more sustainable) than the average Dutch diet. In that respect this was similar to the Swedish finding. However, it also showed that other diets explored, notably a vegetarian and a traditional Mediterranean diet, were even more beneficial, both in terms of nutrition and sustainability, than the one based on the dietary guidelines. The highest scores on sustainability were obtained by a vegan diet (but the authors expressed a number of reservations regarding the adequacy of such a diet). Of course such findings depend on the indicators used but at least the results seem to indicate that more sustainable diets than one based on the present dietary guidelines can be obtained, whilst the nutritional quality of the diet can be maintained or even improved.

These studies and findings about the agreement between health and sustainability have, and historically have had, an emphasis on the need for lowering meat production and increasing the consumption of vegetable products (though the most recent study made by Dutch researchers had a broader focus on different agricultural products). Two recent reviews of the literature on the issue support this view (Bajzelj et al, 2015; Reynolds et al, 2014). But there are also a number of other issues of relevance for the discussion of health and sustainability that have been highlighted by researchers and also in some reports from national and international organisations. So, for example,



we mentioned pesticides above as an issue that is important in relation to food and health since many foods, not least vegetable products, despite rigorous control with pesticides, contain small amounts of these substances that, at the same time, have negative environmental impacts. Even though pesticides are problematic for both health and the environment, and could be avoided by giving priority to organic farming, there are no recommendations about organic farming included in the dietary guidelines. In several European countries there is public support for organic farming in various ways, but as a policy area this is an activity that takes place separate from the elaboration and publication of dietary guidelines. There may be a number of reasons for this including the fact that problems related to pesticides concern food safety and not nutrition and, therefore, is a different field of expertise with very different concepts about food and nutrition. Thus, problems related to food toxicology have traditionally been marginal issues in relations to dietary guidelines. In addition, the dominant view among food authorities is that the contents of pesticides in fruit and vegetables are generally much lower than the threshold values. Therefore, they do not represent a health concern, as stated, for example, in a report about the control of pesticide residues in foods in Denmark: 'pesticide residues that can be found in foods on the Danish market should not give rise to health concerns. The Food Agency still encourages eating at least 600 grams of fruit and vegetables a day' (DTU Fødevareinstituttet og Fødevarestyrelsen, 2014: p. 26 [my translation]). The potential conflict between the pesticide issue and the health related recommendations about eating fruit and vegetables is clearly expressed here.

Fish is another important issue. As mentioned, an increased intake of fish is recommended in most national dietary guidelines even though today there is already an overexploitation of available fish stocks globally. As an alternative, the production of farmed fish has been growing steadily during the last decades, but providing feed for the farmed fish may undermine marine food chains unless other sources of foodstuff are used, that is, those primarily of vegetable origin. When farmed fish have a diet of vegetable origin the content of n-3 fatty acids, which is one of the most important health arguments for eating fish, falls significantly (Robertson et al, 2004).

For these reasons dietary guidelines face consumers with a dilemma and, to my knowledge, none of the authorities responsible for publishing the guidelines have tried to address this. In addition, fish farms are a source of extensive pollution problems in marine coastal areas, problems that include the use of large amounts of medicine and other chemicals. Another serious problem is the contents of mercury and other heavy metals, as well as a number of organic pollutants such as PCB and dioxin, which occur especially in large carnivorous fish high in the food chain. As a consequence of the mercury content, the Danish Veterinary and Food Administration recently recommended that pregnant and breast-feeding women, as well as children less than three years old, should not eat certain large carnivorous fish (Kokkegård, 2014a). A month earlier a nutritionist from the University of Copenhagen had warned that such a recommendation would scare consumers into not eating fish at all, to the detriment, not least, of pregnant and breastfeeding women (Kokkegård, 2014b). Similar recommendations exist in a number of European countries influenced by an assessment made by the European Food Safety Authority in 2004 about mercury in fish (EFSA, 2004). In the United States, recommendations about not eating certain carnivorous fish had already been established in 2004 (Jenkins et al, 2009). It has been suggested that the food authorities in the US are under pressure from some producers, especially those of canned tuna, since they have been reluctant to include tuna species (that are high in mercury) under these recommendations (Nestle, 2014). The problems associated with fish production and consumption thus comprise contradictions and conflicts. The conflicts have to do with the different views of scientists and advisors with different types of expertise, such as the case with the pesticides, and with the different economic and political interests of the actors involved.

Food in present day societies is transported over long distances, both because of globalisation of food production and, more locally, because of the concentration of shops in large shopping centers, which promotes shopping by car. Taken together, transportation of food has grown considerably over the last decades, giving rise to energy expenditures and the increased emission of greenhouse gases (Pretty et al, 2005). It also increases the risk of food deteriorating because many foods are vulnerable to the effects of long distance transport. Finally, it adds to the prob-

lem that the large majority of consumers have little knowledge about how foods are produced and the environmental and other problems associated with it. This issue was touched upon in a survey about dietary guidelines in European countries, undertaken by the WHO Regional Office for Europe, in which it was noted that, 'Most European Member States do not focus on food security and sustainability e.g., locally grown fruits and vegetables are rarely recommended. The closer food is grown to where it is consumed, the shorter is its storage, transport and finally the loss of nutrients. This is especially true for vegetables and fruit. The average intake of fruit and vegetables in Europe is too low. This can only be improved if the availability, affordability and access to vegetables and fruit are improved' (WHO, 2003: p. 34). This is a good example of an integrated perspective on food and dietary recommendations.

Finally, food loss and waste is a serious problem in most of the world, even though the problem arises for different reasons in different parts of the world. It is estimated that about one third of the edible parts of food produced for human consumption are lost or wasted globally, corresponding to 1.3 billion tons of food each year (FAO, 2011). This is an obvious environmental problem because it enhances the pressure on natural resources and increases pollution from food production. The loss of so much food is also an obvious threat to food security in a global context. To consumers in developed countries, however, the waste issue represents no immediate problem for nutrition and appears to many as a moral problem. But this may change and, at any rate, new practices of consumption that can lead to reduced food waste will have implications for practices regarding food choices and the planning of meals and, in this sense, it is relevant in relation to dietary advice (see also the article by Pedersen, Kjærgård & Land in this TES issue).

A particular waste issue is the increasing use of bottled water. Most dietary guidelines include advice to drink water instead of sugary or alcoholic drinks. But drinking water typically from plastic bottles generates unnecessary waste since tap water is drinkable in many countries.

### **3. Dietary Guidelines for Sustainability?**

Despite the above mentioned efforts and arguments that began more than 40 years ago, as yet only one

country (as noted above) has issued official dietary guidelines with an integrated view on nutrition and sustainability. This is not because proposals have not been put forward. On the contrary, as mentioned in the introduction to this paper, a number of countries have made draft proposals for dietary guidelines that include considerations of sustainable food choices, but due to conflicts and political resistance none of them have been turned into official guidelines.

Conflicts over dietary guidelines are not a new phenomenon and, in some countries, have also occurred in relation to the official and purely nutrition related guidelines. Especially in the United States, the first proposals for official dietary guidelines in the second half of the 1970s and the beginning of the 1980s were met with fierce criticism and resistance, not least from parts of the food industry who, through lobbying, exerted considerable pressure to change advice in favour of eating less meat and dietary products with a high fat content as well as products with a high content of sugar, as Marion Nestle thoroughly revealed in her book, 'Food Politics' (Nestle, 2002). Similar, albeit perhaps less intense, controversies have been seen in the United Kingdom (Cannon, 1987; Lang & Heasman, 2004).

With the emergence of proposals for dietary guidelines for both nutrition and sustainability, a range of different conflicts and criticism has appeared. In addition to conflicts of interests between different actors we have already mentioned that conflicts may arise because of antagonism between experts of the different fields of food science, for example, the fields of food safety and nutrition. When Gussow and Clancy published their proposal on 'dietary guidelines for sustainability' in 1986 they were met with another type of counter argument. They were criticised for wanting to dictate to Americans what to eat (Gussow, 1999). This may seem paradoxical since advice about sustainable diets does not in any sense differ from nutritional advice in that respect. In both cases people are given advice about the best way to cope with certain issues related to eating and, in principle, it makes no difference whether this has to do with health or sustainability. Yet this criticism points to the fact, for many people, eating is regarded as a private matter and even advice that does not impose any kind of obligation or coercion on the consumer, may appear as a threat to individual choice and an intervention in the free

market. Nutritional advice has become accepted, perhaps because health arguments have obtained an almost imperative status in present day societies, but to extend the advice to new areas of food and eating may seem threatening.

In 2003 Australia published a set of dietary guidelines. The guidelines themselves did not contain any advice about sustainable eating. However, both the voluminous background report and a much shorter booklet, which addressed the general public, contained short sections about 'special considerations', of which one was about diet and sustainable eating (Australian Government, 2003a, 2003b). This section in the background report contained the following final remarks: 'While these Dietary Guidelines for Australian Adults are consistent with sustainable food production and consumption, dietary guidelines of the future will probably become more and more focused on sustainability as the problems caused by non-sustainable systems become more starkly obvious' (Australian Government, 2003a: pp. 272–273). This, of course, raised expectations regarding future revisions. However, ten years later, when the guidelines were about to be revised, despite initial proposals from some of the actors involved in the process, environmental considerations did not find their way into the guidelines and the final result was not very different from that of 2003. Indeed, this time an appendix on food, nutrition and environmental sustainability was only included in the comprehensive scientific background report that probably very few ordinary consumers would read (Australian Government, 2013). So even though the appendix of this later version contained four quite sensible advices about environmental considerations related to food and eating, the outcome of the revision was, all in all, a step backwards compared to the situation in 2003. There is little doubt that the reason for this outcome was primarily due to intense lobbying from sectors of the agriculture and food industry, not least the meat producers (see, for example, Crowe et al, 2013). Part of the strategy against the inclusion of environmental sustainability in the guidelines was to question the evidence base for so doing, as, for instance, witnessed by the National Farmers Federation (2011). The success of this strategy was mirrored in the background report as it envisages further monitoring and better understanding of the issues because 'the concept of sustainable dietary patterns is not straightforward' (Australian Government, 2013: p. 9). Yet, clearly,

disputes over the evidence take place regarding nutritional recommendations, too (as mentioned above).

Another example, where the process, though disappointing in the end, did not result in a similar situation, occurred in England, where the Sustainable Development Commission (SDC) was asked by the Department for Environment, Food and Rural Affairs (Defra) to provide advice on sustainable diets. The SDC initiated a review of 44 academic studies and expert reports and made an assessment of 'how a range of food and dietary behaviour changes would impact on health, environment, the economy and reducing social inequalities' (Sustainable Development Commission, 2009: p. 4). Thus a broad conception of sustainability comprising all of its three dimensions was applied and an integrated approach to health and sustainability was also taken. The review revealed a number of positive synergies between the various dimensions of health and sustainability and fewer tensions. Gaps in the evidence were also found, but primarily regarding the economic impacts of dietary changes. The SDC proposed a broad range of policy initiatives on how to develop advice to consumers about healthy and sustainable diets, including, for example, considerations on how to cope with the issue of giving advice about fish consumption (Sustainable Development Commission, 2009). Based on the recommendations the UK Government asked the UK Food Standards Agency to create an Integrated Advice to Consumers project aimed at establishing a web-based portal to advise and influence consumer behaviour. However, the project was terminated by the new coalition Government in 2010 (Lang & Barling, 2013).

In Sweden, Livsmedelverket (National Food Administration) in collaboration with the Swedish Environmental Protection Agency made a proposal for a complete set of 'environmentally effective food choices' in 2009, which covered virtually all of the issues relevant for a discussion about sustainable eating practices mentioned above (Livsmedelverket, 2009). The proposal was based on scientific assessment from the Swedish Institute for Food and Biotechnology (Fogelberg, 2008). It was sent to the EU for notification because doubt had been expressed about whether it would violate EU regulations. Since the proposal contained advice on eating local food it was found by the Commission and Romania to be against EU rules about free trade. Livsmedel-

erker, together with the Environmental Protection Agency and the Swedish Board of Agriculture, revised the proposal, removing the reference to local produce and, instead, explaining the underlying environmental factors. The arguments were connected both to transportation — even though it was stressed in the proposal that the transportation of food over longer distances does not necessarily imply greater greenhouse gas emissions than more local foods (the complexity of the so-called food mileage issue is described, for example, in Wynen & Vancetti, 2008) — and to the fact that the content of pesticides in Swedish food is lower than in most imported foods. Nevertheless, in 2010 the Swedish Government decided to withdraw the proposal in order not to be on a collision course with the principles of free trade (Livsmedelverket, 2010). This decision, taken by the Swedish Government, gave rise to considerable criticism and debate in Sweden. However, in April 2015 a new set of dietary guidelines were issued in Sweden and these include considerations for the environmental aspects of eating, and present an integrated view of health and environment (Livsmedelverket, 2015). This time, there are no recommendations about local foods, and this appears to be the compromise that has enabled the emergence of what must be the world's first official set of guidelines that take an integrated view on food and eating. In a more comprehensive background report about the guidelines (Konde et al, 2015), there are a few carefully balanced remarks about the transportation of foods, but apart from that both this report and the publication aimed at the general public contain a comprehensive set of guidelines about the environmental aspects of eating (Konde et al, 2015; Livsmedelverket, 2015).

In 2011, at the request of the Minister of Agriculture, Nature and Food Quality, the Health Council of the Netherlands published a report entitled 'Guidelines for a healthy diet: the ecological perspective'. The Health Council undertook a literature review, held an international working conference on healthy and sustainable diets, and, finally, produced a draft report that was reviewed by various experts (Health Council of the Netherlands, 2011). The point of departure was the existing Dutch dietary guidelines and the findings identified those guidelines that had a low ecological impact, defined on the basis of a number of criteria and their detrimental ecological effects. The conclusion was that a more plant-based

diet and one with less content of sugary foods and snacks would yield both ecological and health benefits, whereas the recommendation about fish in the Dutch dietary guidelines would be problematic from an ecological point of view. All in all, the report did not make any attempt to explore or create proposals for dietary guidelines that would yield more ecological benefits than those that were simply meeting the existing guidelines about a healthy diet. The report made a number of recommendations among which the most important was a call for further research regarding eco-friendly foods. Thus the report and the mandate given to the Health Council by the Minister reflected a low level of ambition regarding guidelines for more sustainable diets.

In Germany the Council for Sustainable Development (Rat für Nachhaltige Entwicklung), which is a body appointed by the German federal government has, since 2003, regularly issued a publication entitled 'The sustainable shopping basket', which contains advice about how to shop sustainably and includes a section on foods (German Council for Sustainable Development, 2013: pp. 12–20). However, to date, the advice has not been integrated into the official dietary guidelines.

In the United States the dietary guidelines are currently under revision following the scheme of regular revisions every fifth year. In connection with this a new controversy has emerged. The Dietary Guidelines Advisory Committee appointed a subcommittee on food sustainability and safety that reviewed the scientific literature on the issue and found that a more plant-based diet with less meat and dairy foods will be more sustainable and, at the same time, more health promoting. The views of the subcommittee were presented to the Advisory Committee at a meeting in July 2014 and were positively received by the Committee. This has given rise to strong criticism from conservative politicians in the US Congress as well as from the meat industry and has sparked heated public debate and lobbying from the meat producers. Congress passed a directive that instructs the Obama Administration not to make guidelines that include environmental considerations saying that it expects the Secretary to ensure that 'the advisory committee focuses on nutrient and dietary recommendations based upon sound nutrition science' (Congressional Directives, 2014: p. 29). The American Meat Institute has put for-

ward similar arguments and has also questioned the evidence that a diet with more vegetables should be healthier than a more meat-based diet. Nevertheless, at its final meeting on December 15, 2014, the Dietary Guidelines Advisory Committee maintained the inclusion of environmental considerations in its recommendations to the Department of Health and Human Services and the Department of Agriculture (Charles, 2014; Musiker, 2014). The final report from the committee was issued in February 2015 and includes the chapter on food sustainability and safety (Dietary Guidelines Advisory Committee, 2015). Since then, there has been a period of intense controversy and lobbying (see, for instance, Lee-Gammage, 2015 and Merrigan et al, 2015). The latest move in this controversy (November 2015) was the announcement by the US Secretaries of Agriculture and of Health that the 2015 dietary guidelines will not include considerations about sustainability (Vilsack & Burwell, 2015). Whereas this outcome of the controversy seems to be a victory for interests connected with sections of the food industry and with conservative politicians, the debate has also mobilised actors in civil society in favour of sustainable eating and has created a wider awareness about sustainable foods in the US that may have implications for the future development in this field (Merrigan et al, 2015).

Finally, Denmark published its most recent dietary guidelines in 2013. The ten main messages do not explicitly deal with environmental issues. However, in the booklet written for ordinary consumers, there are additional 'tips' that contain some messages related to climate and environment. Thus, even though the main message about meat is 'choose lean meat and processed meat', there is a tip saying that 'when you eat less meat, you will contribute to reducing the climate burden'. There is also a tip recommending fresh and local vegetables and fruit in order to save the environment from unnecessary transport, but, at the same time, there is another one saying that frozen or canned vegetables are nutritionally good choices; so those tips are contradictory. Another environmentally related tip is about planning the purchases, and here the reduction of food waste is mentioned as one of the advantages of so doing. Finally, there is a tip about drinking water from the tap; 'water from the tap is clean in Denmark' (Fødevarestyrelsen, 2013). Interestingly, a report about 'climate oriented dietary guidelines' was pro-

duced as part of the preparatory work for the new guidelines and contains a set of 'additional climate dietary guidelines' (Thorsen et al, 2012). However, this report is not available on the official website of the Danish dietary guidelines (<http://altomkost.dk/raad-og-anbefalinger/de-officielle-kostraad/>) but only from the website of the National Food Institute at the Danish Technical University. This means that probably very few consumers will come across the report. It is also clear from the report that the National Food Institute has been reluctant to use the climate dietary guidelines because of fear that they are too complicated and might influence people to give up the dietary guidelines (Thorsen et al, 2012: p. 9).

#### **4. The Rationales behind the Controversies**

The conflicts and controversies that we have mentioned above have their origins in a number of different circumstances. The battlefield of interests and lobbying around dietary guidelines and their potential consequences for food consumption and demand for foods, meat and sugary foods in particular, are well-known from the wider debates about food and eating. They have been more prominent in some countries than in others. The United States and Australia are, perhaps, the countries where they have been most pronounced.

The tendency of conservative-liberal governments to shelve proposals about environmentally related dietary guidelines, as we have seen in the Netherlands and in England, most probably also reflect a resistance against proposals that are seen as being in conflict with commercial interests and a free market. The fate of the Swedish proposal about 'environmentally effective food choices' may also be an expression of such a view. Even though officially it was related to a conflict with EU regulations, the decision to abandon the guidelines was taken by the Swedish conservative Minister of Agriculture.

As mentioned above, another argument that has been put forward is that environmentally related dietary guidelines dictate to consumers what they should eat. As already noted, the inconsistency of this argument should be obvious but it does demonstrate the sensitivity of policy initiatives oriented towards individual eating practices. On the other hand, in the recent years we have seen interventions against smoking in most of the Western world that go far

beyond anything that has been proposed regarding food. So this raises a question about whether intervention in personal behaviour is seen as acceptable or not, and this is connected with wider discussions about health interventions and governmentality (see, for example, Rose, 2006).

In some cases the food industry has questioned the underlying evidence for the proposals and made requests for 'sound science', a demand that was also formulated by the US Congress in a way that resembles the approach of the chemical industry to political controversies about the regulation of chemicals. The paradox in relation to food is that nutrition is apparently pictured as more in accordance with the principles of 'sound science' than assessment of environmental effects, which is indeed questionable.

In a wider sense such arguments reflect a conflict about the politics of knowledge along the lines that were discussed by Beck (1992) and which are also expressed in other ways such as through the differentiation of scientific expertise and the splitting of food science into the different disciplines of nutrition, food toxicology, ecology etc., each with their own paradigm and world view. We have seen this in relation to the different perceptions regarding fish consumption, where nutritionists and food toxicologists have expressed very different views on the issue of how to cope with the pollution of fish with heavy metals and other pollutants.

With regard to the politics of knowledge, there is also a contrast between expert views and those of ordinary lay people, and this is inherent in the practices of official health communication, as discussed above. This is seen when authorities and scientific experts, like those in Denmark, are reluctant to include environmental messages in the dietary guidelines because they fear that the guidelines will be too complex and consumers will become confused and give up the dietary guidelines altogether. This is an expression of a traditional culture of expertise that considers lay people to be rather ignorant (Wynne, 2001). Of course dietary guidelines have to be expressed in a clear and accessible way, but many consumers are interested in the environmental aspects of food and may even become more confused when they receive messages about nutrition and environment from separate public agencies and organisations.

## 5. Concluding Remarks

Lang and Barling (2013) denote sustainable diets as an 'eco-nutritional hotspot', the aptness of which should be clear from the above analysis. What is remarkable is also the complexity of the controversies that surround dietary guidelines. Furthermore, even if dietary guidelines as a policy means may not appear to be very forceful, they have a considerable discursive power and many of the current prominent issues in debates about food, health and sustainability are reflected in the debates about the design of dietary guidelines.

The battles over conflicting interests, albeit more pronounced in some countries than in others, probably reflecting different political cultures in the different countries, point to the necessity of broad policy processes of dialogue and stakeholder involvement. Such dialogues are taking place in some countries. There is also a need for transparency rather than closed expert fora in the shaping of the guidelines, and this might contribute to achieving greater awareness about the interrelatedness between health and sustainability.

The controversies regarding knowledge politics point to the relevance of more reflexive processes around the dietary guidelines. Many nutritional experts are worried about the debate between different nutritionists over the guidelines because they fear it will undermine the trust in the guidelines among ordinary people. However, controversies of this kind are inevitable in a late modern society, and so the question is how such processes can be turned into a resource for the understanding of health and sustainability, rather than the opposite?

Citizens in present day societies are constantly bombarded with messages about health and sustainability and, at the same time, they receive information about many different aspects of food and eating from public authorities. A more integrated set of dietary guidelines would, in all probability, make the situation more manageable for consumers rather than the opposite. But this requires an open reflexive approach and an understanding of the discursive nature of dietary guidelines, as distinct from the focus on 'sound science' (which does not mean ignoring the role of science in the creation of the guidelines). This will be the great challenge for future development in the field.

## Acknowledgements

I am indebted to my colleague Dorthe Elle Ilsøe with whom I had good and fruitful discussions about the initial ideas behind this article.

## References

- APHA. (2007) *American Public Health Association Policy Statement 200712. Toward a Healthy, Sustainable Food System*. Washington, DC., American Public Health Association (APHA).
- Australian Government. (2003a) *Dietary guidelines for Australian adults*. Endorsed 10 April 2003. National Health & Medical Research Council.
- Australian Government. (2003b) *Food for health. Dietary guidelines for Australians, a guide to healthy eating*. National Health & Medical Research Council.
- Australian Government. (2013) *Eat for health. Australian dietary guidelines. Providing the scientific evidence for healthier Australian diets*. National Health & Medical Research Council.
- Bajzelj, B., Benton, T. G., Clark, M., Garnett, T., Marteau, T. M., Richards, K. S. Smith, P. & Vasiljevic, M. (2015) *Synergies between healthy and sustainable diets. Brief for GSDR (Global Sustainable Development Report of the UN)*. [Online] Available from: <https://sustainabledevelopment.un.org/content/documents/635987-Bajzelj-Synergies%20between%20healthy%20and%20sustainable%20diets.pdf> [Accessed 1st November 2015].
- Beck, U. (1992) *Risk Society. Towards a New Modernity*. London/Thousand Oaks/New Delhi, Sage Publications.
- Callaway, C. W. (1997) Dietary guidelines for Americans: An historical perspective. *Journal of the American College of Nutrition*, 16 (6), 510–516.
- Cannon, G. (1987) *The Politics of Food*. London, Century.
- Charles, D. (2014) *Congress to nutritionists: Don't talk about the environment*. NPR (National Public Radio), December 23, 2015. [Online] Available from: <http://www.npr.org/sections/thesalt/2014/12/15/370427441/congress-to-nutritionists-dont-talk-about-the-environment> [Accessed 10th January 2015].
- Congressional Directives. (2014) *Division A — Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Act, 2015*. Washington, D.C.
- Crowe, T., Forbes-Ewan, C., Collins, C., Sacks, G. & Clifton, P. (2013) New Australian dietary guidelines: experts respond. *The Conversation*, 18 February 2013. [Online] Available from: <http://theconversation.com/new-australian-dietary-guidelines-experts-respond-12259> [Accessed 11th December 2014].
- Davis, C. & Saltos, E. (1999) Dietary recommendations and how they have changed over time. In: Frazão, E. (ed.) *America's eating habits*. Agriculture Information Bulletin, No. (AIB-750), 33–50.
- Dietary Guidelines Advisory Committee. (2015) *Scientific report of the 2015 Dietary Guidelines Advisory Committee*. Advisory report to the Secretary of Health and Human Services and the Secretary of Agriculture. First print, February 2015. Department of Health and Human Services and Department of Agriculture.
- DTU Fødevareinstituttet og Fødevarestyrelsen. (2014) *Pesticidrester i fødevarer 2013. Resultater fra den danske pesticidkontrol*. Glostrup, Ministeriet for Fødevarer, Landbrug og Fiskeri, Fødevarestyrelsen.
- EFSA. (2004) *EFSA provides risk assessment on mercury in fish: Precautionary advice given to vulnerable groups*. Press Release, European Food Safety Authority, March 18, 2004.
- EFSA. (2010) Scientific opinion on establishing food-based dietary guidelines. EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA). *EFSA Journal*, 8 (3), 1460.
- EUFIC. (2009) *Food-based dietary guidelines in Europe*. EUFIC Review 10/2009.
- FAO. (2011) *Global food losses and food waste. Extent, causes and prevention*. Rome, FAO.
- FAO/WHO. (1996) *Preparation and use of food-based dietary guidelines*. Report of a joint FAO/WHO consultation. Nicosia, Cyprus, WHO.
- Fogelberg, C. L. (2008) *Towards Environmentally Sound Dietary Guidelines — Scientific Basis for Environmental Assessment of the Swedish National Food Agency's Dietary Guidelines*. Uppsala, Livsmedelverket.
- Fødevarestyrelsen. (2013) *De officielle kostråd*. Glostrup, Ministeriet for Fødevarer, Landbrug og Fiskeri, Fødevarestyrelsen.
- German Council for Sustainable Development. (2013) *The Sustainable Shopping Basket. A Guide to Better Shopping*. 4<sup>th</sup> edition. Berlin, German Council for Sustainable Development.
- Goodland, R. (1997) Agricultural sustainability: Diet matters. *Ecological Economics*, 23 (3), 189–200.

- Goodland, R. & Pimentel, D. (2000) Environmental sustainability and integrity in the agricultural sector. In: Pimentel, D., Westra, L. & Noss, R. F. (eds.) *Ecological integrity. Integrating environment, conservation, and health*. Washington, D.C./Covelo, CA, Island Press, pp. 121–137.
- Groth, M. V., Sørensen, M. R., Biloft-Jensen, A., Mathiesen, J., Kørup, K. & Fagt, S. (2009) *Danskernes Måltidsvaner, Holdninger, Motivation og Barrierer for at Spise Sundt 1995-2008*. Søborg, DTU Fødevarainstitutet.
- Gussow, J. D. (1999) Dietary guidelines for sustainability: Twelve years later. *Journal of Nutrition Education*, 31, 194–200.
- Gussow, J. D. & Clancy, K. L. (1986) Dietary guidelines for sustainability. *Journal of Nutrition Education*, 18 (1), 1–5.
- Halkier, B. & Jensen, I. (2011) Doing ‘healthier’ food in everyday life? A qualitative study of how Pakistani Danes handle nutritional communication. *Critical Public Health*, 21 (4), 471–483.
- Hansen, I. H., Achmann, K., Lätheenmäki, L. & Grunert, K. G. (2013) *Danskernes Forståelse af “De Otte Kostråd”*. DCA-rapport nr. 022, Aarhus Universitet, DCA – Nationalt Center for Fødevarer og Jordbrug.
- Health Council of the Netherlands. (2011) *Guidelines for a Healthy Diet: The Ecological Perspective*. The Hague,
- Holt, P. (1977) *Grøn Gastronomi*. København, Christian Ejlers Forlag.
- Jelsøe, E. & Kjærgård, B. (2010) Sustainability in agriculture and food production. In: Nielsen, K. A., Elling, B., Figueroa, M. & Jelsøe, E. (eds.) *A new agenda for sustainability*. Farnham, Ashgate, pp. 135–157.
- Jenkins, J. A., Sievenpiper, J. L., Pauly, D., Sumalia, U. R., Kendall, C. W. C. & Mowatt, F. M. (2009) Are dietary recommendations for the use of fish oils sustainable? *Canadian Medical Association Journal*, 180 (6), 633–637.
- Kickbusch, I. (lead author) (2010). Triggering debate — White Paper: The Food System — a prism of present and future challenges for health promotion and sustainable development. Health Promotion Switzerland.
- Kokkegård, H. (2014a) Nye kostråd: gravide og børn under 14 år bør droppe frisk tun. [Online] Available from: <http://dr.dk>, December 11, 2014 [Accessed 11th December 2014].
- Kokkegård, H. (2014b) Ernæringsforsker afviser advarsel: spis de fisk du vil. [Online] Available from: <http://dr.dk>, November 3 [Accessed 11th December 2014].
- Konde, Å. B., Bjerselius, R., Haglund, L., Jansson, A., Pearson, M., Färnstrand, J. S. & Johansson, A. -K. (2015) Swedish dietary guidelines — risk and benefit management report. Livsmedelverkets rapportserie nr. 5/2015. Livsmedelverket/National Food Agency.
- Lang, T. & Barling, D. (2013) Nutrition and sustainability: An emerging food policy discourse. *Proceedings of the Nutrition Society*, 72, 1–12.
- Lang, T. & Heasman, M. (2004) *Food Wars. The Global Battle for Mouths, Minds and Markets*. London/Sterling, Earthscan.
- Lappé, F. M. (1971) *Diet for a Small Planet*. New York, Bantam Books.
- Lee-Gammage, S. (2015) *Who Will Win in the Battle Over Sustainability in the Dietary Guidelines for Americans, Science or Special Interests?* FCRN Blog, 3 April 2015. [Online] Available from: <http://www.fcrn.org.uk/fcrn-blogs/samuel-lee-gammage/who-will-win-battle-over-sustainability-dietary-guidelines-americans> [Accessed 10th September 2015].
- LiveWell for Life. (2014) *On Our Plate Today: Healthy, Sustainable Food Choices. LiveWell for Life, Final Recommendations*. [Online] Available from: <http://livewellforlife.eu/> [Accessed 8th January 2015].
- Livsmedelverket. (2009) *The National Food Administration’s environmentally effective food choices*. Proposal notified to the EU. Livsmedelverket and Naturvårdsverket.
- Livsmedelverket. (2010) *Sverige Drar Tillbaka Förslag om Miljösmarta Matval*. Press release, November 12, 2010. [Online] Available from: <http://www.slv.se/sv/Pressmeddelanden/Pressmeddelanden/12-november-2010---Sverige-drar-tillbaka-forslag-om-miljosmarta-matval/> [Accessed 10th November 2014].
- Livsmedelverket. (2015) *Find Your Way to Eat Greener, Not Too Much and Be Active*. Livsmedelverket/National Food Agency.
- Lupton, D. (1996) *Food, the Body and the Self*. London/Thousand Oaks/New Delhi, Sage Publications.
- Marlow, H. J., Hayes, J. W., Soret, S., Carter, R. L., Schwab, E. R. & Sabate, J. (2009) Diet and the environment: Does what you eat matter? *American Journal of Clinical Nutrition*, 89, 1699S–1703S.



- McDonald, M. & Bankman, J. (2014) Brazil's new dietary guidelines: Cook and eat whole foods, be wary of adds. *Civil Eats*. March 12, 2014. [Online] Available from: <http://civileats.com/2014/03/12/brazils-new-dietary-guidelines-cook-and-eat-whole-foods-be-wary-of-ads/> [Accessed 10th January 2015].
- Mellemgaard, S. (1999). *Kroppens Natur. Sundhedsoplysning og Sundhedsidealer i 250 år*. København, Museum Tusulanums Forlag.
- Merrigan, K., Griffin, T., Wilde, P., Robien, W., Goldberg, J. & Dietz, W. (2015) Designing a sustainable diet. Sustainability as dietary guidance created political debate. *Science*, 350 (6257), 165–166.
- Musiker, M. (2014) *Top 10 food and nutrition takeaways from the Dietary Guidelines Advisory Committee's final meeting*. APCO Worldwide, 16th December 2014.
- Måltidstænketanken. (2015) *Vores Måltider. Måltidsråd og Måltidstænketankens Ambitioner*. Madkulturen og Ministeriet for Fødevarer, Landbrug og Fiskeri, April 2015.
- National Farmers Federations. (2011) *Right decision on dietary guidelines, say farmers*. Media Release, 13th December 2011. [Online] Available from: <http://www.nff.org.au/read/2345/right-decision-on-dietary-guidelines-say.html> [Accessed 10th December 2014].
- Nestle, M. (2002) *Food Politics. How the Food Industry Influences Nutrition and Health*. Berkeley/Los Angeles/London, University of California Press.
- Nestle, M. (2014) *Fish politics: The FDA's updated policy on eating fish while pregnant*. Food Politics blog, June 17, 2014. [Online] Available from: <http://www.foodpolitics.com/2014/06/fish-politics-the-fdas-updated-policy-on-eating-fish-while-pregnant/> [Accessed 11th December 2014].
- Otto, L. (1994) Et robust helbred eller et lykkeligt liv. In: Jensen, U. J. & Andersen, P. F. (eds.) *Sundhedsbegreber – filosofi og praksis*. Aarhus, Forlaget Philosophia, pp. 75–94.
- Pretty, J. N., Ball, A. S., Land, T. & Morrison, J. I. L. (2005) Farm costs and food miles: An assessment of the full costs of the UK weekly food basket. *Food Policy*, 30, 1–19.
- Reynolds, C. J., Buckley, J. D., Weinstein, P. & Boland, J. (2014) Are the dietary guidelines for meat, fat, fruit and vegetable consumption appropriate for environmental sustainability? A review of the literature. *Nutrients*, 6, 2251–2265.
- Ringgaard, A. (2013) Ny viden om fedt udfordrer de officielle kostråd. Videnskab.dk, November 14. 2013. [Online] Available from: <http://videnskab.dk/krop-sundhed/ny-viden-om-fedt-udfordrer-de-officielle-kostrad> [Accessed 11th December 2014].
- Robertson, A. et al. (2004) Food and health in Europe: A new basis for action. *WHO Regional Publications, European Series*, No: 96.
- Rose, N. (2006) *The Politics of Life Itself: Biomedicine, Power and Subjectivity in the Twenty-first Century*. Princeton, Princeton University Press.
- Sustainable Development Commission. (2009) *Setting the Table*. Advice to government on priority elements of sustainable diets. London.
- Swedish Environmental Protection Agency. (1999) *A sustainable food supply chain*. Report 4966. Stockholm.
- Sørensen, M. R., Iversen, J. D., Groth, M. V. & Fagt, S. (2013). *Danskerne Faktiske Kost og Oplevelsen af Sunde Kostvaner*. Søborg, DTU Fødevareinstituttet.
- Thorsen, A. V., Mogensen, L., Jørgensen, M. S. & Trolle, E. (2012) *Klimaorienterede Kostråd*. Søborg, DTU Fødevareinstituttet.
- van Dooren, C., Marinussen, M., Blonk, H., Aiking, H. & Vellinga, P. (2014) Exploring dietary guidelines based on ecological and nutritional values: A comparison of six dietary patterns. *Food Policy*, 44, 36–46.
- Vilsack, T. & Burwell, S. (2015) *2015 Dietary Guidelines: Giving you the tools you need to make healthy choices*. Press release. United States Department of Agriculture (USDA), October 6, 2015.
- WHO. (2001) *The first action plan for food and nutrition policy*. WHO European Region 2000–2005. WHO Regional Office for Europe, Copenhagen.
- WHO. (2003) *Food based dietary guidelines in the European region*. WHO Regional Office for Europe, Copenhagen.
- Woolf, S. N. & Nestle, M. (2008) Do dietary guidelines explain the obesity epidemic? *American Journal of Preventive Medicine*, 34 (3), 263–265.
- Wynen, E. & Vanzetti, D. (2008) No through road: The limitations of food miles. ADB Institute, Working Paper No 118.
- Wynne, B. (2001) Creating public alienation: Expert culture of risk and ethics on GMO's. *Science as Culture*, 10 (4), 445–481.