Consumer readiness to reduce meat consumptions and eat more climate friendly

Marthe H. Austgulen[1] , Silje Skuland[2] , Alexander Schjøll[3] and Frode Alfnes[4]

[1] National Institute for Consumer Research (SIFO)
[2] National Institute for Consumer Research (SIFO)
[3] National Institute for Consumer Research (SIFO)
[4] National Institute for Consumer Research (SIFO), Norwegian University of Life Sciences

Paper prepared for presentation at the EAAE-AAEA Joint Seminar 'Consumer Behavior in a Changing World: Food, Culture, Society"

March 25 to 27, 2015
Naples, Italy

143rd Joint EAAE-AAEA seminar Naples, Italy 25-27 March 2015

Consumer Behavior in a Changing World: Food, Culture and Society

Consumer readiness to reduce meat consumptions and eat more climate friendly

Marthe H. Austgulen[a], Silje Skuland[a], Alexander Schjøll[a] and Frode Alfnes[ab]

[a] National Institute for Consumer Research (SIFO)

[b] Norwegian University of Life Sciences

Abstract

Food consumption is associated with various environmental impacts, and the production and consumption of meat are highlighted as significant sources of greenhouse-gas (GHG) emissions. A transition toward a low-meat and plant-based diet has thus been emphasised as an efficient way to address climate change. The aim of this paper is to combine results from a consumer survey, focus groups and an in-store experiment to shed light on how consumers perceive the environmental impacts of their food consumption, and whether they are willing and able to change their food consumption in a more climate friendly direction. The results reveal that there is some uncertainty among the respondents about what constitutes the most climate friendly food choices. The results indicate that information directed towards individual consumers are not effective in changing consumer behaviour in the direction of more climate friendly consumption when it comes to choices between meat and vegetables consumption. This paper thus conclude that environmental policies aiming to transfer part of the responsibility for reducing the greenhouse-gas emissions to food consumers is being challenged by the fact that consumers are still not ready to make food choices based on what is best for the climate.

KEYWORDS: climate, consumers, meat reduction, survey, in-store experiment, focus groups

Introduction

Food consumption is recognized as an environmentally significant behaviour, because the production, transportation and consumption of food contribute to environmental problems like climate change, land erosion and excess wastage. Consumption of animal based proteins, especially meat, has been identified as the most environmentally harmful form of food consumption. If western consumers are to change to a more environmentally sustainable diet it is thus most important to reduce the consumption of meat (Stehfest et al., 2009, Schösler et al., 2012; Aiking, 2014; Sabaté and Soret, 2014). According to the Food and Agriculture Organization of the United Nations (FAO) (2006), livestock production alone accounts for 18% of the global greenhouse-gas (GHG) emissions. Others, like Goodland and Anhang (2009), claim that livestock and their by-products actually accounts for as much as 51% of the annual worldwide GHG emission. A new study by Westhoek et al. (2014) show that by halving the consumption of meat, dairy products and eggs in the European Union, we would achieve a 40% reduction in nitrogen emissions, 25-40% reduction in GHG emissions and 23% per capita less use of cropland for food production. Stehfest et al. (2009) argue that a transition towards low-meat diets may reduce the costs of climate change mitigation by as much as 50% in 2050. Reduced meat consumption is also expected to have a positive effect on public health (Hallström et al., 2014).

The trend, however, points in the opposite direction. The consumption of meat, dairy and eggs are increasing worldwide (FAO, 2006; Kearney, 2010), and in Norway there has been an increase in the meat consumption during the last decades from approximately 46 kg per capita in 1989 to 68 kg in 2011 (Animalia, 2012). In order to meet the challenges of climate change it has been estimated that the global average of meat consumption needs to decrease to around 30 kg per capita. It is thus evident that the Norwegian consumption of meat is far above

the earth's carrying capacity, and a central question is thus how a reduction in the consumption of meat can be achieved.

In Norway, the authorities has so far shown little interest in making major agricultural policy changes in order to reduce the production of meat (Vittersø et al. forthcoming). Rather, on the contrary, the current strategy is to increase national meat production (Norwegian Ministry of Agriculture and Food, 2008-2009:89). There is also no consensus among the policymakers on what environmentally friendly consumption of meat actually is (Austgulen, 2014). A result of this lacking consensus is that much of the responsibility is being transferred to the consumers (Austgulen, 2014), and the government perceives their role as being providers and facilitators of information to the consumers (Horne, 2014).

Both at the global and local levels of governance, consumers are often given an important role as well as responsibility for environmental sustainability. The discourse of ascribing environmental responsibility to the individual consumer has become part of mainstream policy-making and distribution of (environmental) information as well as consumer empowerment is regarded as important policy tools (Halkier, 2010; Wahlen et al., 2012). The consumers are perceived to be a part of the solution, and they are expected to be aware of their responsibility (Thøgersen, 2005; Smismans, 2008; Gandenberger et al., 2011; Rumpala, 2011). This strategy requires a significant consumer engagement in order to be successful. The consumers need to be aware of the environmental impact of their food consumption, they need to feel individually responsible for contributing to the reduction of GHG emissions, and they must feel that changing their personal diet is the right solution to the problem.

In this article, we seek to investigate whether these necessary requirements are in place and whether the strategy of providing information to the consumers are perceived as efficient. Our aim with this article is threefold: Firstly, we aim to examine how consumers perceive the environmental impact of their food consumption. Secondly, we aim to examine whether they

are interested and willing to change their food consumption in a climate friendly direction, and which factors that are influencing such willingness. Finally, we aim to examine whether information about climate friendly food influences the purchasing decisions of consumers.

The article is organised as follows: In the following section, we review the existing literature on the role of consumers and their willingness to change to a more plant-based diet. The literature review is focused on the use and effectiveness of information tools to encourage environmental and climate friendly consumption and which factors that has been found to influence consumers' willingness to reduce their meat consumption. This is followed by a presentation of the various methods we have used to gather data for our study. Thereafter our empirical findings are presented and discussed. We conclude with a discussion of the implication of the findings for Norwegian sustainability and consumer policies.

Literature

Engaging the consumer through the use of informational tools, such as eco-labels, are often presented as a part of the solution to climate change and other sustainability issues (e.g. Boström and Klintman, 2008; Vanclay et al., 2011; Dendler, 2014). Vanclay et al. (2011) show, through experiments in a convenience store in Australia, that when consumers receive appropriate guidance about the products' embodied carbon emissions, they may adjust their preferences towards favouring green-labelled products. However, the effect is significantly stronger when the information and guidance are combined with price signals.

Quite a few eco-labels for food exist, but it has proven hard to introduce eco-labels that are specifically targeting GHG emissions. In 2007, the British retailer Tesco promised a revolution in green consumption as the company pledged to put carbon footprints on all its 70 000 products. Five years later, they concluded that this would not be possible due to the extensive amount of work and resources needed to calculate the carbon footprint of each

product (Guardian, 2012). Studies in the UK by Upham et al. (2011) also found that the public find it hard to make sense of labelled emission values and that there is little evidence of a willingness among the consumers to use carbon labels to guide their product selection.

The belief in informational tools, such as eco-labels, as effective environmental measures has been criticized from several angles, and the actual progress made in changing people's consumptions patterns in a more environmentally sustainable direction has been modest (Biel et al., 2005; Thøgersen, 2005; Thøgersen and Crompton, 2009). A wide range of social and behavioural research indicates that information or understanding is insufficient on its own to drive changes in behaviours or practices (Horne, 2009). In the context of sustainable food consumption this can be exemplified by a study by Grunert et al. (2014). They found that the use of sustainability labels on food products in Europe is related to the consumers' motivation – the more the consumers are concerned about sustainability issues related to food production, the higher is also the level of use of sustainability labels. They also found, similar to previous studies (e.g. Hoogland et al., 2007), that universalism is a dominant value domain influencing the motivation, understanding and use of sustainability labels. Consumers that are putting higher emphasis on collectivistic as compared to individualistic values also pay more attention to sustainability issues in the context of food. Results such as this indicate that the consumers' values are important determinators of their actions. Nevertheless, motivation and understanding are not sufficient to result in behaviour and a high level of concern and understanding does thus not necessarily translate into corresponding levels of use of sustainability labels. A number of studies on sustainable consumption point to this gap between attitudes and behaviour (e.g. Gardner and Stern, 1996; Owens, 2000; de Barcellos et al., 2011; Bray et al., 2011; Grunert, 2011; Pape et al., 2011).

A number of studies have investigated sustainable food consumption in general (see e.g., Grunert et al., 2014), and a few studies have also discussed consumer readiness and

willingness to change to a more plant-based diet. These studies have identified different individual constraints. Several studies highlight the consumers' values as important indicators. In line with Grunert et al. (2014) a study by de Boer (2007) with Dutch respondents found that consumers that give priority to universalistic values are more likely to favour less meat or free-range meat. Another study with Dutch respondents found that the idea about a meat-free meal a week was received more negatively by consumers who were sceptical about the seriousness of climate change (de Boer et al., 2013). The relationship between conceptually broad values and specific behaviours is, however, found to be mediated by prevention-oriented food choice motives together with a high level of involvement in food (de Boer et al. 2007). Other studies highlight the importance of consumer knowledge about the environmental impact of different foods. A study by Lea and Worsley (2008) found that consumers in Australia seem to be unaware of the environmental impact associated with meat consumption. Tobler et al. (2011) found that out of five different actions, Swiss consumers clearly rated purchasing organic food and foregoing meat least environmentally beneficial. They believed avoiding excessive packaging had the strongest impact on the environment (Tobler et al., 2011). Moreover, Schösler et al. (2012) found that the consumers' familiarity and skills are important determinants of their likelihood of preparing vegetarian meals and of their attitudes towards various meat substitution options. Consumer practices are also emphasised by de Boer and Aiking (2011), who claim that the consumers' frames and habits are strongly adapted to the current meat system. Thus, a value dimension, a knowledge dimension and a practice dimension seem to be prominent in the consumers' orientations related to meat, climate and sustainability.

Furthermore, socio-demographic variations in consumer willingness to reduce meat consumption have been identified: women, highly educated, and younger people are more likely to be willing to, and more likely to have already reduced their meat consumption (de Boer et al. 2007; Lea et al., 2006; Latvala et al., 2012; Tobler et al., 2011).

Methods

The results presented in this paper are based on data retrieved from several sources and through the use of different methods. Through a representative survey we have investigated consumers' perceptions of environmental measures related to food and meat consumption. These data makes it possible to investigate the effects of value variables, knowledge variables and socio-demographic variables. Furthermore, four focus groups were held on the topic to further explore consumer attitudes, knowledge, motivations and practices. Finally, we have tested the effect of informational measures through an in-store experiment.

Survey

The survey data were collected though a web survey in November 2011. The data were collected through TNS Gallup's Norwegian web panel. The panel consist of a pre-recruited selection of about 50 000 Norwegian respondents who are willing to participate in surveys, and who have access to computers with Internet. The panel sample is pre-stratified by age, gender and residence, and the respondents are randomly selected within these groups.[1] The size of the panel suggests that it is possible to draw samples that are representative for the Norwegian population (TNS Gallup 2011). The sample in this study consist of 1532 respondents that are 18 years and older. Overall, the sample is in line with the population distribution, with some exceptions regarding age and education. The sample is therefore weighted, corresponding to the population distribution. The main focus of the survey was attitudes to climate change and climate policy, and included several questions on the role of consumers and own consumption

[1] The survey was sent to 3500 respondents, and it was viewed by a total of 1 739 respondents. Among these, 92 did not return complete answers, and 115 opened the survey but did not fill it out. The 1 532 respondents that completed the survey thus constitute 44% of all it was sent to, and 88% of all that opened the survey.

practices. A special focus was placed on the environmental effect of production and consumption of meat and on possible ways of regulating such consumption.

Focus group interviews

Based on the findings from the consumer survey we conducted four focus group interviews in April 2013 in order to examine how consumers reflect upon the environmental impacts of their food consumption and their willingness to change their food consumption in a more climate friendly direction. We also discussed possible effects of in-store promotion of vegetables dinners, such as price reduction, food labelling, information campaigns and vegetable recipe booklets. In all 24 participants were selected from the Norstat panel consists of about 80.000 Norwegians aged from 15 to 79. Respondents were recruited by e-mail asking them to participate and screened by filling out a small web-based questionnaire. Four focus groups separated based on age, gender and marital status (women 25-35 single, men 25-25 single, women 36-45 married, men 36-45 married). All participants reported to eat meats and vegetables in accordance with the average consumption pattern in Norway. The participants received a check of NOK 500 for taking part in the focus group interviews.

In-store experiments

In order to test the behavioural effect of providing information about climate friendly food, we conducted an in-store experiment where we set up stands with recipe booklets promoting vegetable main dishes. The choice of recipe booklets as the main treatment was based on the discussions in the previously mentioned focus groups, as the majority of the respondents in the focus groups were positive to recipe booklets as a measure that could reduce the consumers meat consumption. The experiment was conducted in four grocery stores in the Oslo area during two weeks in March 2014. The typical sales pitch for vegetables in Norway is the associated

health benefits, so we created one versions of our recipe booklet with a health promotion – "Vegetable dinner – good for the health!" An alternative version of the recipe booklet was created to see if we could create more interest in vegetable dinners by introducing a new a new sales pitch – "Vegetable dinner – good for the climate!" Assuming that most consumers know that vegetables are healthy, the new sales pitch added a second benefit, making it both good for the consumers themselves and good for the environment. We measured the interest in vegetable dinners by the number of recipient booklets taken from the stores. (We have also received sales data, but the analysis of these data are not completed).

Two of the stores were members of the "Rimi" chain and can be caracterised as soft discount stores that mainly compete on price. The two other stores were part of the supermarket chain "ICA" that competes on quality. The two chains have a market share of 7% and 3% of the Norwegian grocery market, and are the fifth and 12th largest grocery chains in Norway, respectively (Dagligvarehandelen, 2014). One of the soft discount stores and one of the supermarkets started with the health booklets, while the other two started with the climate booklets. After one week, we changed booklet types in all stores so that both treatments were tested in all four stores.

The booklets were identical, except for the front page, page two and the back page. The front page reads "Vegetable dinner – good for the health!" in the health treatment and "Vegetable dinner – good for the climate!" in the climate treatment. In the health version of the booklet, the Information office for fruit and vegetables was portrayed as the sender of the information, while the sender of the information in the climate treatment was the environmental organisation Future in our hands. On page two of the booklet, there was a text explaining why vegetables are healthy in the health version of the booklet, and there was a similar text describing vegetables as climate friendly in the climate version of the booklet. The information

office and the environmental organisation respectively wrote the texts. The last page of the booklet had one of the two logos printed.

The front pages of the booklets are shown in Fig. 1 below. The booklet to the left shows the version promoting vegetables as healthy while the booklet to the right shows the version promoting vegetables as climate friendly.

Fig. 1. Front pages of recipe booklet with vegetable main dishes.

The booklets were placed in stands with a large poster identical to the front page of the booklets. The stands stood in the fruit and vegetables section in the stores. Fig. 2 shows how the booklets appeared in the stores.

Fig. 2. Placement of booklets in stores.

In the terminology of Harrison and List (2004) our field experiment is a natural field experiment. Consumers did not know they were part of an experiment which is an important design feature when studying ethical consumer issues like climate change. Since most Norwegians agree that actions should be taken in order to mitigate climate change (TNS Gallup, 2014), they may be more prone to overstate their interest and willingness to take such actions in surveys and in interview in order to appear in accordance with what they perceive to be socially desirable (Fisher, 1993).

Results

Survey

When asked to rate four activities according to environmentally friendliness on a scale from 1 to 4 where 1 is the most environmentally friendly[2] we get similar findings to Lea and Worsley (2008) and Tobler et al. (2011). The results from our consumer survey show that Norwegian consumers rate purchasing organic food (mean = 3.10) and foregoing meat (mean = 2.90) as the least environmentally beneficial alternatives. Reducing food waste (mean = 1.97) and increasing the production of locally produced food (mean = 2.03) are ranked as the most environmentally beneficial measures. A bit less than a third of the respondents do, however, answer that they do not know or that neither of the alternatives are environmentally beneficial. Fig. 3 illustrates the respondents' ratings of the four alternatives. Respondents who claim that they do not know, that neither of the alternatives are environmentally beneficial and the ones who have not completed the ranking are excluded.

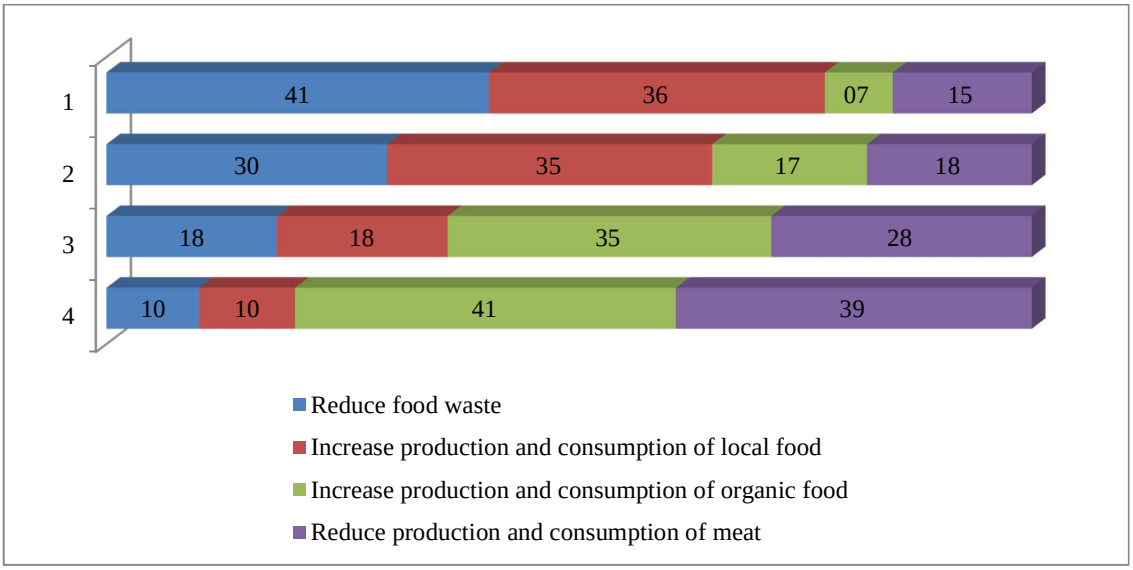

Fig. 3: Respondents' rating of the perceived environmental benefit of different measures. Per cent shown for the rankings of each measure (N = 1 049).

[2] The following question was asked: "Production, distribution and consumption of food is connected with significant environmental impact. Which of the following measures do you think will have the greatest impact on the environment?"

This result indicates that Norwegian respondents do not perceive reducing the production and consumption of meat as a very important environmental measure, compared to alternatives such as reducing food waste and increasing production and consumption of local food. When asked which of the measures that would be easiest for them to implement[3], the respondents' ranking slightly changes. The measures are ranked on a scale from 1 to 4 where 1 is perceived as the easiest to implement. The results are illustrated in Fig. 4. The respondents who claim that they do not know or that neither of the alternatives is easy to implement and the ones who have not completed the ranking are excluded. A large share of the respondents rate reducing food waste (mean = 2.00) as the easiest measure to implement, followed by increasing the (production and) consumption of locally produced food (mean = 2.27), reducing the (production and) consumption of meat (mean = 2.78) and increasing the (production and) consumption of organic food (mean = 2.95).

<

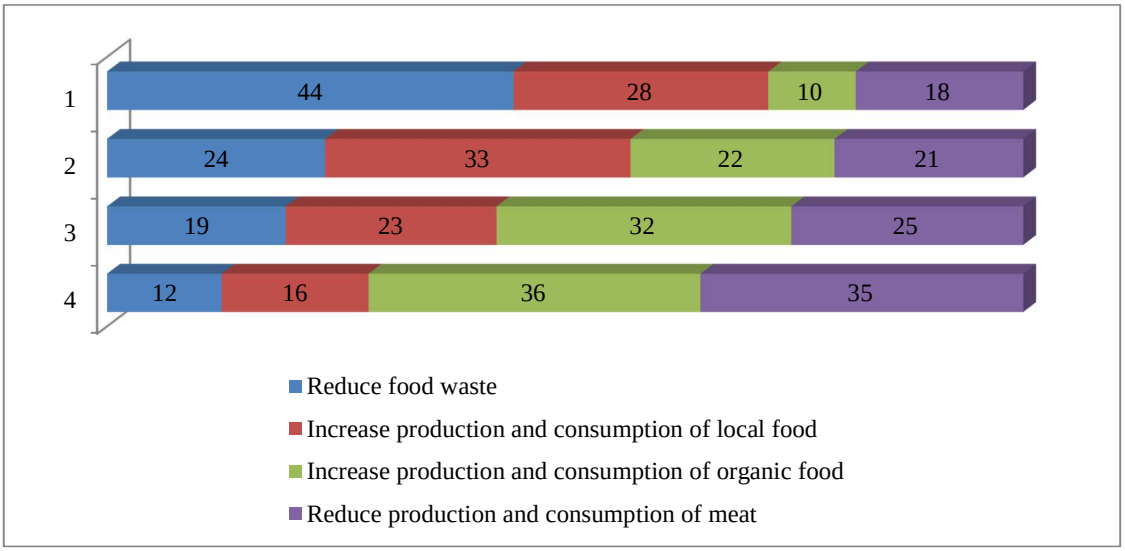

Fig. 4: Respondent's rating of measures that would be easiest for them to implement. Per cent shown for rankings of each measure (N = 1 024).

[3] The following question was asked: "If you were to reduce the environmental impact of your food consumption, which measures would then be easiest to implement?"

The results for perceived environmental benefit and for perceived easiness to implement are thus quite similar, and both show that the reduction of meat consumption is perceived as the second least or least attractive alternative. Awareness of the environmental impact of meat production thus appears to be low among the Norwegian respondents. This can, most likely, be explained by the way meat production are discussed and framed in the Norwegian public discourse. Meat production constitutes an important part of Norwegian agricultural production, and it is heavily subsidized. In the public debate on the environmental impact of meat consumption, Norwegian agricultural organizations are promoting the environmental sustainability of meat production and the need for increased production of meat in Norway (Austgulen, 2014). Meat production is thus being connected to local production, which is also emphasised as environmentally sustainable.

We also asked the respondents to state their opinion about three statements on potential environmental measures and a statement on the perceived difficulty of reducing their meat consumption. The results, presented in Table 1, show that 34% of the respondents agree with the statement "it is hard for me to reduce my consumption of meat". Forty percent of the respondents disagree with this statement. This result is in line with the ratings of measures presented in Fig. 4.

Table 1: Support for environmental measures. Shown in per cent.

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Do not know
It is hard for me to reduce my consumption of meat	17.0	23.5	23.0	23.2	11.7	1.4
It is a good idea for the environment to have a meat free day per week	14.9	8.6	18.1	23.1	25.7	9.5

The prices on meat products should be increased for environmental reasons	38.1	22.7	19.5	10.9	5.3	3.5

Table 1 also presents the results for two statements on potential environmental measures related to meat consumption. The first statement concerns the idea of having one meat free day per week. Almost 50% of the respondents agree, and 23% disagree, that it is a good idea for the environment to have a meat free day per week. In comparison, 14% of the respondents claim to actually have reduced their consumption of meat due to environmental reasons (not shown). Few respondents, however, are positive towards manipulating meat prices for environmental reasons. A majority, more than 60% of the respondents, disagree with the statement claiming that the prices on meat products should be increased for environmental reasons, while only 16% agree. So what can explain the respondents' attitudes towards the two different measures?

Table 2 displays the results of two independent regression analyses with the support for a meat free meal per week and the support for increased prices on meat products as dependent variables. The reference categories in the analyses are given in parentheses and the operationalisations are presented in footnotes. Previous studies suggest that both socio-demographic variables and value variables are important determinants of consumers' willingness to reduce their meat consumption. Regression analyses show that these factors are influential also in our sample. When the demographic variables are introduced separately, gender, age and education are found to be significant predictors of support for meat free meal, and gender, education and income are found to be significant predictors of increased prices on meat for environmental reasons (not shown here). However, the socio-demographic variables loose significance when values are introduced in the model, and none of the socio-demographic variables are still significant when the practice variables are introduced. The models with only the socio-demographic variables have a relatively low explained variance (adjusted R^2 of 0.032 and 0.043 respectively). This indicates that variations in the socio-demographic variables have

limited effect on the respondents support for both measures, and that values and reported practices acts as partly mediating variables for gender, age, education and income.

Table 2: Regression analyses on determinants of support for meat reduction measures.

	Meat free meal (N= 1 115)		**Increase prices** (N= 1 165)	
	B	SE	B	SE
Constant	4.688*	0.143	3.569*	0.122
Sex (male)	0.040	0.077	0.070	0.066
Age[4] (low)	0.045	0.025	-0.027	0.022
Education[5] (low)	-0.023	0.088	0.065	0.074
Income[6] (low)	-0.004	0.030	-0.025	0.026
Values (collectivistic to individualistic)[7]	-0.034**	0.012	-0.062*	0.011
Climate scepticism (trust to scepticism)[8]	-0.050*	0.005	-0.039*	0.004
Hard to reduce meat consumption[9]	-0.227*	0.031	-0.153*	0.026
Have already reduced meat consumption	0.525*	0.105	0.527*	0.092
Adjusted R^2	0.291		0.306	

**, * indicate significance at 1% and 5% respectively
Reference categories in parentheses

[4] Measured at ordinal level with five categories: 0 = 18-29, 1 = 30-39, 2 = 40-49, 3 = 50-59, 4 = 60+
[5] Education is measured dichotomously: 0 = primary school, secondary school and upper secondary school, 1 = (university college or university)
[6] Measured at ordinal level with six categories: 0 = less than NOK 200 000, 1 = NOK 200 000 - NOK 299 999, 2 = NOK 300 000- NOK 399 999, 3 = NOK 400 000 – NOK 599 999, 4 = NOK 600 000 – NOK 799 999, 5 = more than NOK 800 000.
[7] We measure ideology as an index from collectivistic (0) to individualistic (16) values composed of four statements: 1) A high level of taxes keeps public services secure, 2) The problems facing developing countries matter to us all, 3) More of the tasks performed by the public sector today should be performed by the private sector, 4) Government intrudes too much into people's lives. Reliability analysis ($\alpha = 0.696$) indicates that the index is an acceptable measure of the respondents values. We consider the index as an acceptable measure of the respondents' (political) values as is can be interpreted as a measure of the respondents' placement on the right-left scale in Norwegian politics (Austgulen and Stø, 2013).
[8] We measure climate scepticism as an index that goes from trust in climate science (0) to climate scepticism (44) The scale is based on 11 statements about climate change: 1) I am certain that climate change is happening, 2) Floods and heat waves are not increasing in volume, they are just being reported more by the media, 3) Climate change is largely human-made, 4) Reports that human activities cause climate change are exaggerated, 5) We know enough today to say that climate change is a problem, 6) Climate change is receiving too much attention, 7) In general, I would say that climate change is being exaggerated in the news, 8) I am worried about the consequences climate change can have for us humans, 9) It is too early to say whether climate change represents a problem, 9) Climate change is just natural variations in the earth's temperature, 10) Climate change is given too much attention, 11) The evidence for climate change is reliable. Reliability analysis ($\alpha = 0.905$) confirm that the index represents a good measure of climate scepticism (Austgulen and Stø, 2013).
[9] Measured at ordinal level with five categories from strongly disagree (0) to strongly agree (4).

When the value variables measuring perceptions of climate change and ideological placement are introduced the models explained variance (adjusted R^2) increases to 0.224 and 0.256 respectively. Both the idea of a meat free meal per week and increased prices of meat products are received more negatively by respondents that score higher on the climate scepticism scale, and are thus more sceptic towards climate change, and who are holders of individualistic values, all else equal. This result indicates that values are determining factors and gives support to previous studies that emphasise the effect of perceptions of climate change and universalistic values (de Boer et al., 2013, 2007).

When the variables measuring perceived difficulty of reducing individual meat consumption and whether or not the respondents have already reduced their consumption of meat are introduced to the model, the explained variance increase even further to 0.291 and 0.306 respectively. Together, the variables thus explain about 30% of the variance in both regression models. The final model reveals that neither of the socio-demographic variables are significant when controlled for values and meat consumption practices. Not surprisingly, respondents that say that it is hard to reduce their consumption of meat are more critical both towards the idea about a meat free meal per weak and increased prices of meat for environmental reasons. Correspondingly, respondents that claim to have already reduced their level of meat consumption for environmental reasons are more positive towards both strategies.

Focus groups

The focus group interviews provided similar results as the survey. Most participants had limited knowledge about the environmental impact of their food consumption pattern and were rather reluctant to change their dietary pattern in a more sustainable direction. Moreover, participants were unsure if changing their eating habits would help at all. In fact, many argued that they

were tired of campaigns or mediatized messages encouraging them to change their diets for one reason or the other. However, participants varied in their responses and discussions of reducing meat consumption, environmental impact of food consumption and which measures that needs to be taken by whom. These variations can be understood as part and parcel of participants' everyday food habits as well their moral concerns about their consumption practices. While both focus groups with male participant were less approving of consumers' responsibility for climate change, the women were divided. The focus group with younger women was most positive to changing their consumption.

Similar to previous research on food consumption, the participants in this study emphasised the importance of meat in everyday dinner habits. David (33) provided a typical answer to the question of what kind of food ingredients would make up a dinner, if meat is excluded: "*A proper dinner really needs meat, vegetables and sauce. However, we might cook many good meals from veggies or without meat, too. I just think that it is somewhat sub-conscious, really.*" The central role of meat in the representation of the proper or ordinary dinner has been well established in food studies (Murcott, 1982; Bugge, 2006; Bugge and Almås, 2006; Halkier, 2009). Moreover, the participant's responses also reflected the gendered connection between men and meat in opposition to women and vegetables that has been identified in previous studies (Roos et al., 2001; Sobal, 2005).

Fred (37) described his preferred dinner plate as this: "*Large portion of meat, then potatoes, and then a small portion of vegetables.*" In comparison, female participants highlighted eating vegetables:

Carol (31): *Proper dinner makes me think about something traditional. However, a proper dinner for me is also a chicken salad.*

Cheryl (25): *Have moved somewhat from the idea that it must be potatoes at any cause. Or pasta or rice...*

Carol (31): *For me it might just be salad. I do not need the chicken in it.*

Catherine (25): *Yes, any protein source à la...*

Cheryl (25): *Chickpeas in the salad, then it is a proper dinner.*

Despite these gendered food preferences, none of the participants said they would like to become a vegetarian. Still, many claimed they had reduced their meat consumption. Reducing meat consumption was often negotiated as a choice related to eating healthy. Charlotte (29) said, "*I don't eat a lot of red meat any more. I kind of get these heart* [decease] *associations.*" Many of the participants said that they had replaced the red meat with chicken, and many argued that they regarded chicken as something else than meat. "*In my mind, chicken is a different category"*, Charlotte (29) said. Of all 24 participants, only two told that they tried to avoid eating meat for ethical reasons. Christine (25) said that she avoided chicken because she had "*heard rumors that the chicken is not treated that well*". In the focus group with the single women, animal welfare concerns was raised. Catherine (25) referred to a documentary about pig farming that had made her suspicious about eating pork:

Catherine (25): *In South Africa, I had no idea where the meat came from and how it was produced, so I did not eat pig when I lived down there after I saw the movie. In Norway, I have a little more faith in animal welfare.*

Charlotte (29): *I also saw a Jamie Oliver documentary about chickens. And I sat and cried. He wept himself too, right. And you almost wanted to throw up when you saw it. And for a week I did not eat chicken, but then I forgot all about it. However, I do not believe that it is very much better in Norway, from the experience, direct experience. I have no trust.*

Cheryl (25): *I buy at least only free-range chickens and eggs and all that. But I know that free range, it is also [problematic].*

The discussion among the women illustrates how eating habits become normatively challenged by mediatized messengers which prompt ordinary consumers to resolve societal problems by means of changing their food consumption. Moreover, the discussion reveals how consumers indeed become emotionally influenced to change their consumption, but as Charlotte (29) said, after a week she had forgotten all about it. In fact, most of participants said that they were tired of all kinds of instructions "*telling us what is incredibly unhealthy all the time or dangerous for us*" (Elaine, 42), and that such information becomes "*piled up and stored away, really"* (Dylan, 33).

The participants were asked to consider several in-store measures such as recipe booklet of vegetable dinners, price reduction campaigns of vegetables, red light labelling of meat products and meat free day campaigns. The participants favoured measures such as price reduction, recipe booklet and vegetable dinner app for smart phones. However, when the campaigns they were asked to consider mentioned the word climate friendly or reducing climate impact, most participant were rather critical. In fact, participants told that they would rather prefer that the measures taken should be done in silence. "*If it is beneficial for the climate, then wrap it in. Do not write it down. Rather let it be a side effect*" (Dustin, 32).

While most of the young women said that they would be positive to in-store campaigns and information suggesting consumers to replace meat with vegetables in their diet, the rest of the women as well as the men expressed scepticism and reluctance to changing their eating habits in a more climate friendly direction. The male participants in particular were worried that a meal without meat would be less filling. Others argued that reducing meat consumption would reduce their life quality. In fact, some men argued that in order for them to eat less meat extreme societal changes needed to occur. War, revolution and food rationing were mentioned. However, most of them argued that they would consider reducing their consumption of meat if

serious proof of the environmental impact of consumption was provided. Meanwhile, most participants were unaware that their food consumption had any major impact at all. Still, most believed that manmade climate change to be true, but many argued that they did not think consumer could solve such major issues.

Despite the reluctance expressed by the participants, some said that they became inspired during the focus groups.

Interviewer: *There is a little resentment here. Do you get somewhat provoked by these issues?*

Daniel (27): *No, I just think that this is a trend… And I do not believe it ... well, it is sort of idealism. What specifically does that mean?*

David (33): *You do become a little bit blind too when there is so much influence all the time, trying to instruct you, whether it is advertising or ... You just push it away.*

Dylan (33): *Well, I am not provoked. It is a completely wrong word, really. I can be a bit provoked by some that kind of dietary advice if there comes from a guru in a way ... On the other hand, when they tells us what is healthy and we also see that they sells hundreds of thousands of books and become rich and too fat. So ... It is that way it provokes me a bit. But here, if it ... it seems like it is actually an honest initiative, that is ... I have nothing against idealism, although it may be naive, but then, that's ... Less ... So, for the more it becomes more the opposite is provocative. I like admiring someone actually takes the trouble to try to do something. I think that is fine. And, as I said, it may be that I will join it at some point, if I have more money and if I am in a way ... Yes, it comes just underneath the skin. I actually believe that this is good here. I must admit that ... Thus, my vision of it here ... I notice that it actually has changed slightly only during the hours here. Simply because I did not have that much knowledge about how food*

production affects the climate. Could also mean that I am easily influenced, but I feel like I am actually more positive now than an hour ago.

Dylan's statement indeed illustrates that although the participants were rather reluctant and little aware of the environmental impact of food consumption, awareness can arise. The participants reflected over the importance of eating meat for dinner in Norwegian food culture. The focus group interviews illustrate that there is a consumer fatigue towards information campaigns directed towards consumers, instruction them to change their diets – no matter what the cause are. Still, many considered increasing the consumption of vegetables and reducing meat consumption as important for a healthy diet. Moreover, participants expressed the need for serious proof in order to be persuaded to change their food habits, or otherwise to rather be regulated in silence.

In-store experiment

In the in-store natural field experiment, we investigate if the interest in vegetable dinners is affected by information provision about another benefit of vegetable dinners – that it is good for the climate. We measure the interest by the number of recipe booklets taken from the stores. The control treatment promotes the health benefits of vegetable consumption. This has been marketed to the consumers for decades and should, therefore, be known to most consumers. The alternative treatment promotes vegetable consumption as climate friendly. This represents a new form of vegetable promotion for most consumers, and is adding a public goods dimension to the consumers' food choice.

Table 3 shows the number of booklets taken from the stores. Especially two features is worth noticing. Firstly, after being on display for two weeks in the fruit and vegetable sections in four relatively big stores, the number of booklets taken is very small. Hence, most consumers did not show any interest in new vegetable dinner recipes. Second, there are slightly more

booklets taken when using the traditional health promotion than the new climate promotions. Hence, informing the consumers about the environmental benefit of eating vegetable dinners had no positive effect on the interest for the vegetable dinners.

Table 3: Number of recipe booklets taken.

	Treatment	
Type of store	Health	Climate
Soft discount	210	242
Supermarket	236	214
N	446	456

Conclusions

Efforts appear to be required to boost the consumers' consciousness on the issue of the environmental impact of meat consumption. Both at the global and local levels of governance, consumers are often given an important role as well as responsibility for environmental sustainability, and the discourse of ascribing environmental responsibility to the individual consumer has become part of mainstream policy-making. The consumers are perceived to be a part of the solution, and they are expected to be aware of their responsibility.

We must therefore conclude that environmental policies aiming to transfer part of the responsibility for reducing the greenhouse-gas emissions to food consumers is being challenged by the fact that consumers are still not ready to make food choices based on what is best for the climate. Information or understanding is insufficient on its own to drive changes in behaviours or practices. This suggests that much of the existing measures to influence consumers are less successful and that future campaigns need to either arise awareness by communicate scientific

evidence of both the impact and how reduced meat consumption can help solving climate change, or by influencing consumers in silence.

Acknowledgement

Several actors and organization have contributed to this study. We would first like to thank ICA/RIMI, the supermarket and grocery chain were we conducted our field experiments, and GreeNudge, a private organisation that funded our project. We would also like to thank the Information office for fruit and vegetables and the environmental NGO, Future in our hands, for the permission to use their logos on the booklets, and especially the Information office for sharing their vegetables recipes with us. Lastly, we are very grateful for the in-store pictures photographed by Thea Grav Rosenberg.

References

Aiking, H., 2014. Protein production: planet, profit, plus people? American Journal of Clinical Nutrition 100, 4765-4825.

Animalia, 2012. Kjøttets tilstand. Status i norsk kjøtt- og eggproduksjon. Animalia, Oslo.

Austgulen, M., 2014. Environmentally Sustainable Meat Consumption: An analysis of the Norwegian Public Debate. Journal of Consumer Policy 37 (1), 45-66.

Austgulen, M., Stø, E., 2013. Norsk skepsis og usikkerhet om klimaendringer. ["Norwegian skepticism and uncertainty about climate change," in Norwegian.] Tidsskrift for Samfunnsforskning 54 (2), 123-152.

Biel, A., Dahlstrand, U., Grankvist, G., 2005. Habitual and value-guided purchase behaviour. AMBIO – A Journal of the Human Environment 34 (4), 360-365.

Boström, M., Klintman, M., 2008. Eco-Standards, Product Labelling and Green Consumerism. Palgrave Macmillan, Hampshire.

Bray, J., Johns, N., Kilburn, D., 2011. An Exploratory Study into the Factors Impeding Ethical Consumption. Journal of Business Ethics 98 (4), 597-608.

de Barcellos, M.D., Krystallis, A., de Melo Saab, M.S., Kügler, J.O., Grunert, K.G., 2011. Investigating the gap between citizens' sustainability attitudes and food purchasing behaviour: empirical evidence from Brazilian pork consumers. International Journal of Consumer Studies 35 (4), 391-402.

de Boer, J., Hoogland, C.T., Boersema, J.J., 2007. Towards more sustainable food choices. Value Priorities and motivational orientations. Food Quality and Preference 18 (7), 985-996.

de Boer, J., Aiking, H., 2011. On the merits of plant-based proteins for global food security: Marrying macro and micro perspectives. Ecological Economics 70 (7), 1259-1265.

de Boer, J., Schösler, H., Boersema, J.J., 2013. Climate change and meat eating: An inconvenient couple? Journal of Environmental Psychology 33, 1-8.

Bugge, A.B., 2006. *Å Spise Middag - en Matsosiologisk Analyse*. Tapir Akademisk, Trondheim.

Bugge, A.B., Almås, R., 2006. Domestic Dinner. Representations and practices of a proper meal among young suburban mothers. Journal of Consumer Culture 6 (2), 203-228.

Dagligvarehandelen, 2014. Hvem er hvem i nordisk dagligvarehandel. Iss. 1-2014, Dagligvarehandelen, Oslo.

Dendler, L., 2014. Sustainability Meta Labelling: an effective measure to facilitate more sustainable consumption and production? Journal of Cleaner Production 63 (15), 74-83.

FAO, 2006. Livestock's long shadow, environmental issues and options. Food and Agriculture Organization, Rome.

Fisher, R.J., 1993. Social Desirability Bias and the Validity of Indirect Questioning. Journal of Consumer Research 20 (2), 303–315.

Gandenberger, C., Garrelts, H., Wehlau, D., 2011. Assessing the Effects of Certification Networks on Sustainable Production and Consumption: The cases of FLO and FSC. Journal of Consumer Policy 34 (1), 107-126.

Gardner, G.T., Stern, P.C., 1996. Environmental problems and human behavior. Allyn and Bacon, Needham Heights.

Goodland, R., Anhang, J., 2009. Livestock and climate change: what if the key actors in climate change are... cows, pigs, and chickens? World Watch, November/December.

Grunert, K.G., 2011. Sustainability in the Food Sector: A Consumer Behaviour Perspective. International Journal on Food System Dynamics 2 (3), 207-218.

Grunert, K.G., Hieke, S., Wills, J. 2014. Sustainability labels on food products: Consumer motivation, understanding and use. Food Policy 44, 177-189.

Guardian, 2012. Tesco drops carbon pledge. <http://www.theguardian.com/environment/2012/jan/30/tesco-drops-carbon-labelling> (accessed May 2014).

Halkier, B., 2009. Suitable Cooking? Performance and Positioning in Cooking Practices among Danish Women. Food, Culture & Society, 12 (3), 357-377.

Halkier, B., 2010. Consumption challenged, food in medialised everyday lives. Ashgate, Surrey.

Hallström, E., Röös, E., Börjesson, P., 2014. Sustainable meat consumption: A quantitative analysis of nutritional intake, greenhouse gas emissions and land use from a Swedish perspective. Food Policy 47, 81-90.

Harrison, G.W., List, J.A., 2004. Field Experiments. Journal of Economic Literature 42 (4), 1009-1055.

Hoogland, C.T., de Boer, J., Boersema, J.J., 2007. Food and sustainability: Do consumers recognize, understand and value on-package information on production standards? Appetite 49 (1), 47-57.

Horne, R.E., 2009. Limits to labels: The role of eco-labels in the assessment of product sustainability and routes to sustainable consumption. International Journal of Consumer Studies 33 (2), 175-182.

Horne, S., 2014. Forbrukernes ansvar i miljø- og klimapolitikken. Innlegg på SIFOs frokostseminar. <http://www.regjeringen.no/nb/dep/bld/aktuelt/taler_artikler/taler-og-artikler-av-barne--likestilli-2/forbrukernes-ansvar-i-miljo--og-klimapol.html?id=749342> (accessed October 2014)

Kearney, J., 2010. Food consumption trends and drivers. Philosophical Transactions of the Royal Society B: Biological Sciences 365 (1554), 2793-2807

Latvala, T., Niva, M., Mäkelä, J., Pouta, E., Heikkailä, J., Kotro, J., Forsman-Hugg, S., 2012. Diversifying meat consumption patterns: Consumers' self-reported past behavior and intentions for change. Meat Science 92 (1), 71-77.

Lea, E., Crawford, D., Worsley, A., 2006. Consumers' readiness to eat a plant-based diet. European Journal of Clinical Nutrition, 60: 342-351.

Lea, E., Worsley, A., 2008. Australian consumers' food-related environmental beliefs and behaviours. Appetite, 5 (2-3), 207-214.

Murcott, A. 1982. On the social significance of the "cooked dinner" in South Wales. *Social Science Information*, 21: 677-696.

Norwegian Ministry of Agriculture and Food, (2008-2009). *Climate Challenges – Agriculture part of the Solution*. Report No. 39 (2008-2009) to the Storting. Norwegian Ministry of Agriculture and Food, Oslo.

Owens, S., 2000. Engaging the public: Information and deliberation in environmental policy. Environment and Planning A 32 (7), 1141-1148.

Pape, J., Rau, H., Fahy, F., Davies, A., 2011. Developing Policies and Instruments for Sustainable Household Consumption: Irish Experiences and Futures. Journal of Consumer Policy 34 (1), 25-42.

Roos, G., Prättälä, R., Koski, K., 2001. Men, masculinity and food: interviews with Finish carpenters and engineers. Appetite 37 (1), 47-56.

Rumpala, Y., 2011. "Sustainable consumption" as a new phase in a governmentalization of consumption. Theory and Society 40 (6), 669-699.

Sabaté, J., Soret, S., 2014. Sustainability of plant-based diets: back to the future. American Journal of Clinical Nutrition 100 (supplement 1), 4765-4825.

Schösler, H., de Boer, J. Boersema, J.J., 2012. Can we cut out the meat of the dish? Constructing consumer-oriented pathways towards meat substitution. Appetite 58 (1), 39-47.

Smismans, S., 2008. New Modes of Governance and the Participatory Myth. West European Politics 31 (5), 874-895.

Sobal, J., 2005. Men, meat, and marriage: Models of Maculinity. Food and Foodways: Explorations in the History and Culture of Human Nourishment 13 (1-2), 135-158.

Stehfest, E., Bouwman, L., van Vuuren, D.P., den Elzen, M.G.J., Eickhout, B., Kabat, P., 2009. Climate benefits of changing diet. Climatic Change 98 (1-2), 83-102.

Tobler, C., Visschers, V.H.M., Siegrist, M., 2011. Eating green. Consumers' willingness to adopt ecological food consumption behaviors. Appetite 57 (3), 674-682.

Thøgersen, J., 2005. How May Consumer Policy Empower Consumers for Sustainable Lifestyles? Journal of Consumer Policy 28 (2), 143-178.

Thøgersen, J., Crompton, T., 2009. Simple and Painless? The Limitations of Spillover in Environmental Campaigning. Journal of Consumer Policy 32 (2), 141-163.

TNS Gallup. 2011. Teknisk rapport. Holdning til klimaendringer, Climate Crossroads. Oslo: TNS Gallup.

Upham, P., Dendler, L., Bleda, M., 2011. Carbon labelling of grocery products: public perceptions and potential emissions reductions. Journal of Cleaner Production 19 (4), 348-355.

Vanclay, J.K., Shortiss, J., Aulsebrook, S., Gillespie, A.M., Howell, B.C., Johanni, R., Maher, M.J., Mitchell, K.M., Steward, M.D., Yates, J., 2011. Customer Response to Carbon Labelling of Groceries. Journal of Consumer Policy 34 (1), 153-160.

Vittersø, G., Kjærnes, U., Austgulen, M., (forthcoming). Sustainable consumption in the Norwegian political economy of beef.

Wahlen, S., Heiskanen, E., Aalto, K., 2012. Endorsing Sustainable Food Consumption: Prospects from Public Catering. Journal of Consumer Policy 35 (1), 7-21.

Westhoek, H., Lesschen, J.P., Rood, T., Wagner, S., De Marco, A., Murphy-Bokern, D., Leip, A., van Grinsven, H., Sutton, M.A., Oenema, O., 2014. Food choices, health and environment: Effects of cutting Europe's meat and dairy intake. Global Environmental Change 26, 196-205.

Appendix – overview of focus group participants

Focus group	Name	Age	Marriage status	Children	Profession
C Women, 25-35	Carol	31	Single mother	One child	Nurse
	Charlotte	29	Single	-	Economy consultant
	Catherine	25	Single (boyfriend)	-	Internship, fish industry
	Cheryl	25	Single mother	Two children	Housewife
	Courtney	31	Single	-	Librarian
	Christine	25	Single (boyfriend)	-	Master student
D Men, 25-35	Daniel	27	Cohabitant	Expecting first child	Teacher
	David	33	Cohabitant	-	Computer software
	Dennis	29	Cohabitant	-	Sales
	Douglas	28	Married	Expecting first child	Sales
	Dylan	32	Married	Expecting third child	Student, shopkeeper
	Dustin	32	Married	Expecting first child	IT
E Women, 36-45	Elaine	43	Married	One child	Manager
	Elizabeth	42	Married	Two children	Nurse

	Erin	42	Married	One child	Manager
	Ellen	36	Married	-	Nurse
	Emily	38	Married	Two children	Teacher
	Eve	36	Married	Two children	Nurse
F Men 36-45	Felix	40	Married	-	Shopkeeper
	Frank	39	Married	One child	Hospital worker
	Finley	39	Married	Two children	Project manager
	Floyd	42	Married	Two children	Senior advisor
	Fred	37	Married	One child	Caretaker
	Flynn	45	Married	Two children	Musician

A few studies have discussed the consumer readiness and willingness to change to a more plant-based diet (e.g. Lea et al., 2006; Lea and Worsley, 2008; de Boer and Aiking, 2011; Tobler et al., 2011; Latvala et al., 2012; Schösler et al., 2012; de Boer et al., 2013), but most of the existing studies rely solely on survey data. It is important to obtain more insight into consumers' perspectives on climate friendly food consumption and complement

the survey results with results from other methods. In this study we are therefore employing data from a consumer survey, focus groups and an in-store experiment.