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To what degree are Norwegian parents aware of the relationship between meat consumption and greenhouse gases?

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Summary

Background: Sustainability and health are high in both the national and global political agenda. Norway has committed to a 40 % reduction of greenhouse gases by 2030, compared to emissions in 1990. The United Nations Sustainable Development Goals accentuates the importance of sustainable food production and consumption, to battel climate change. Climate scientists have established the important effectiveness of eating less meat. As meat consumption is high in Norway, consumers may not be aware of this impact or their awareness may not translate into lower meat consumption. The objective of this study is to assess to what extent Norwegian parents are aware of the impact of meat consumption and greenhouse gas emissions.

Method: Data from the *Fruits and Vegetable Makes the Mark* project from 2018 was used in the analysis (n=540). A cross-sectional survey was conducted, and parents of 6th and 7th graders in Hedmark and Telemark were asked to evaluate the effectiveness of different mitigation options that were either food-related or energy-related. They were also asked if they tried to eat less animal products for environmental reasons, and requested to report their weekly meat frequency intake in a food frequency questionnaire. Based on these data, analyses were conducted to asses how parents evaluate different mitigation options and if perceived effectiveness of eating less meat affects meat consumption frequency.

Results: The results show that the study population perceives throwing away less food and recycling food waste are the most effective mitigation options for preventing global warming. The mean perceived effectiveness score of eating less meat as a mitigation option, was rated low compared to most of the other mitigation options and was in the bottom three. Perceived effect of eating less meat as a mitigation option was related to efforts to try to eat less animal food. A trend was seen in the linear regression analysis, with decreasing meat intake frequencies as effectiveness rating increased.

Conclusion: Parents in this study are a bit hesitant to reduce meat consumption as a mitigation option. This is partly due to lack of knowledge, but consumer with knowledge about the relationship between meat consumption and GHG emissions, does not necessary try to eat less meat. Parents are thus not ready to make diet related choices based on climate mitigation.

Sammendrag

Bakgrunn: Bærekraft og helse står høyt på den politiske agendaen både nasjonalt og globalt. Norge har forpliktet seg til å redusere sine utslipp av klimagasser med 40 % innen 2030, sammenlignet med utslipp fra 1990. FNs Bærekraftsmål vektlegger viktigheten av bærekraftige matproduksjon og bærekraftig inntak, for å motvirke klimaendringer. Klimaforskere har fastsatt at å spise mindre kjøtt er et viktig og effektivt klimatiltak. Siden kjøttkonsumet er høyt i Norge, er muligens ikke forbrukere bevisste på sammenhengen eller så fører ikke bevisstheten til lavere kjøttinntak. Formålet med studien er å undersøke i hvilken grad norske foreldre er klar over sammenhengen mellom kjøttinntak og klimagassutslipp.

Metode: Data fra prosjektet *Fruits and Vegetable Makes the Mark* fra 2018 ble brukt i analysene (n=540). Det ble gjennomført en tverrsnittstudie, og foreldre til 6. og 7.klassinger fra Hedmark og Telemark ble bedd om å evaluere effektiviteten til ulike matrelaterte eller energirelaterte klimatiltak. De ble også spurt om de forsøkte å spise mindre animalske produkter av miljømessige grunner, og bedd om å oppgi sin ukentlige frekvens på kjøttinntak i ett matvarefrekvensskjema. Basert på disse svarene ble det utført analyser for å se hvordan foreldrene evaluerer effektiviteten til ulike klimatiltak og om evaluert effekt på å spis mindre kjøtt påvirket frekvensen av kjøttinntak.

Resultater: Resultatene viser at studiepopulasjonen anser klimatiltakene å kaste mindre mat og å resirkulere matavfall som de mest effektive for å motvirke global oppvarming. Gjennomsnittsskåren til klimatiltaket å spise mindre kjøtt, var rangert lavt sammenlignet med andre klimatiltak, og var blant de tre laveste rangerte. Oppfattet effekt av å spise mindre kjøtt som et klimatiltak, hadde sammenheng med innsats for å spise mindre animalske matvarer. Den lineære regresjonsanalysen viste en trend med synkende frekvens på kjøttinntak ved økende oppfattet effektivitet på klimatiltaket å spise mindre kjøtt.

Konklusjon: Foreldre i studien er litt nølende med å redusere kjøttforbruket som et klimatiltak. Dette skyldes delvis mangel på kunnskap, men også forbrukere som har kjennskap til forholdet mellom kjøttinntak og klimagassutslipp, forsøker ikke nødvendigvis å redusere inntaket sitt. Deltakerne er ikke klare til å ta kostholdsrelaterte valg basert på forebyggende klimatiltak.

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List of abbreviations

Term/abbreviation	**Meaning**	**Explanation**
Anthropogenic		Caused or produced by humans
Global warming		An increase in combined surface air and sea surface temperatures averaged over the globe and over a 30-year period.
Sustainable development		Development that meets the needs of the present without compromising the ability of future generations to meet their own needs
Climate adaptation		Refers to the actions taken to manage impacts of climate change by reducing vulnerability and exposure to its harmful effects and exploiting any potential benefits.
CO_2 footprint	Carbon dioxide footprint	Frequently used measurement of the impact of human activities on the Earth's environment.
Global CO_2 footprint	Global carbon dioxide footprint	Earths productive area is calculated to 12 billion global hectares (gha), about 1.63 gha per person. In 2019, CO_2 footprint was estimated at 2.75 gha per person.
GWP	Global warming potential	The global warming potential is the accumulated impact the gas has on the greenhouse effect from 1 ton of the gas, compared to 1 ton of CO_2 emission during a specified timeframe (usually 100 years). Through GWP CO^2 equivalents are calculated.
Organic agriculture		Plant- and livestock production that meets the requirements in the regulation on organic production and labelling of agriculture products, aquaculture products, food and feed

CO2-Eq	Carbon dioxide equivalent	Measurement unit for GHG emissions. The unit equals the global warming effect of what 1 ton carbon dioxide would have in the course of 100 years.
Carbon capability		The ability to make informed judgments and to take effective decisions regarding the use and management of carbon, through both individual behavioral change and collective action
Ruminants		Cattle, sheep, goats.
Monogastrics		Pigs, poultry
LCA	Life cycle analysis	Includes all emissions from the cradle to the grave of a product. Functional units are used to define the quantified performance of a product system, and these units are the basis for comparing the GHG emissions of different products.
Dietary pattern		The quantities, proportions, variety, or combination of different foods, drinks, and nutrients (when available) in diets, and the frequency with which they are habitually consumed.
Baseline emissions		Baseline emissions refer to the production of greenhouse gases that have occurred in the past and which are being produced prior to the introduction of any strategies to reduce emissions. The baseline measurement is determined over a set period of time, typically one year.

Conversion table

1000 kg	1 ton
1000 tons	1 Kton
1 000 000 tons	1 Mton
1000 Mton	1 Gton
1000 Gton	1 Tton

1.0 Introduction

Agriculture accounts for about 10-12 % of global greenhouse gas (GHG) emissions, and if deforesting and other changes in land is included, this number is between 16-29 % (FAO/WHO, 2019; Helsedirektoratet, 2011). At the global level, food production accounts 48 % of land resources and 70 % of freshwater resources, making the agricultural sector the biggest consumer of the earth's natural resources (FAO/WHO, 2019; Smedshaug, 2012). The food group with the greatest environmental impacts is animal foods, which contributes to degrading of biodiversity, pollution through use of chemicals and pesticides, the use of fossil energy, as well as the big impact on climate change and global warming (Maillot, Darmon, Darmon, Lafay, & Drewnowski, 2007). However, emissions of GHGs is considered to have the most harmful effect. Gerber et al. (2013) estimated that livestock-related emission is as high as 5.2 Gton CO_2-equivalents yearly. Stehfest et al. (2009) points out that a global transition towards low-meat diets may reduce the costs of climate change mitigation by as much as 50 % in 2050.

The world's population has doubled since the 1960s and will reach 9 billion inhabitants in 2050 (Vinnari & Vinnari, 2014). To ensure a sustainable future for the generations to come, we need to utilize our natural resources wisely through sustainable development. With the growth in world population, we are facing several challenges in how to feed the growing population in a sustainable way. Changing lifestyles and eating patterns due to economic, demographic and social factors, are putting more pressure on resources for food production (FAO/WHO, 2019). The impacts on health and environment from the global food system will most likely increase in the future, if historic trends in dietary choices and populations growth continues. Increased purchasing power globally causes an increased consumption of more calories per person, and increased intake of dairy foods and milk (Smedshaug, 2012). Urbanization and increasing prosperity make populations demand more food, and especially more animal source foods, fish, sugar, fats and oils (Vinnari & Vinnari, 2014). This transition increases the risk of diet-related diseases, and the increase in animal source foods results in a higher environmental impact, due to their higher impact per calorie or grams food produced compared to plant-based foods. Low- and middle-income countries is therefore predicted to have the highest increase in per capita diet-related impacts but are at the same time predicted to remain lower than those in higher-income countries. To reduce the environmental pressure, it is the high-income countries that needs the greatest dietary changes (Vinnari & Vinnari, 2014). To feed the growing population of the world with enough

food, production of grains needs to double before 2060. In 2015, 36 % of the world's total cereal production was used to feed animals, while 43 % was used directly as human food (Helsedirektoratet, 2017). In Norway, only 10-30 % is used directly as human feed, while the rest is used as animal feed. Grains like barley and oats that are used for livestock feed, could contribute to increase self-coverage of food if used directly as human food instead (Helsedirektoratet, 2017).

By using the IPCC Tier 2 methodology, Hedenus, Wirsenius, and Johansson (2014) found that baseline emissions from agriculture will in 2070 be about 13 Gton CO_2-equivalents yearly, compared to 7.1 Gton in 2000. A fast growth in productivity and technical mitigation measures could help keep emission to 7.7 in 2070. Another 2.7-4.7 Gton CO_2-equivalents can be reduced yearly, by structural changes in human diets. To have a 50 % or greater chance to reach the 2 degrees Celsius target, total annual emissions must be 13 Gton or less in 2070. Reducing dairy and ruminant meat is therefore crucial to reach the 2 degrees goal (Hedenus et al., 2014).

Governmental resources all over the world mostly recommend low-impact mitigation actions (Wynes & Nicholas, 2017). Improving information, education and communication to promote more effective emission reducing actions, could help close the mitigation gap and decrease anthropogenic greenhouse gas emissions. The national nutrition recommendations are a possible channel for this information, regarding mitigation actions related to food. Until 2017, these recommendations only addressed the health outcomes of dietary choices (Helsedirektoratet, 2017). In 2017, a national report confirmed that what is considered a healthy diet also is similar to what is considered to be a sustainable diet (Helsedirektoratet, 2017).

The detrimental environmental impact of today's food systems is causing a great need of change to healthy diets that have a low environmental impact (FAO/WHO, 2019). FAO and WHO held an international expert consultation on Sustainable and Healthy Diets, to give guidance to countries on what constitutes "Sustainable Healthy Diets". The Intergovernmental Panel on Climate Change (2019) states that the consumption of sustainable and healthy diets is a key opportunity to improve health outcomes and reduce GHG emissions from food systems. However, shaping consumers food choices require policies that addresses economics, behavior and food environment issues (IPCC, 2019).

The alternatives to making a smaller impact are there, but research has shown that consumers rate the different mitigations in a way that does not comply with what experts know (de Boer, Witt, & Aiking, 2016). The food we eat and our food choices, affects a lot more than our health and our wallet. From an environmental perspective, meat is the food with the biggest negative impact. Research has shown that the Western diet is not sustainable, and that there are great benefits to be achieved if this trend is changed (Hallström, Carlsson-Kanyama, & Börjesson, 2015). The high meat consumption is affecting our health and our environment, causing extreme expenses in both health care and climate mitigation. Experts are aware of this, and that we need to change out habits. The development in consumer choices does not reflect this, as global meat consumption is rising (FAO, 2015).

The next generations must by 2050 be accustomed to lifestyle choices that does not exceed 2.1 tons CO_2-eq per person in annual emissions, to reach the 2 degrees Celsius target (Girod, van Vuuren, & Hertwich, 2014). Parents can be a crucial part of preparing their kids as the next generation for this, making their behavior, knowledge and attitudes a factor for success. What might be most important step in understanding the cumulative impact of our lifestyle choices, is to have knowledge of how effective actions made by a single person are (Wynes & Nicholas, 2017). As agriculture and meat consumption play such a crucial role in the pushing safe ecological boundaries of environmental systems, it is important to examine if consumers are aware of the relationship between their meat consumption and climate gas emissions.

1.1 Study objectives

The study objectives of this study were to analyze how parents of 6th and 7th graders rate the effectiveness of different food-related and energy-related mitigation actions for global warming, if perceived effectiveness of eating less meat as a mitigation action is related to efforts to try to eat less meat, and if perceived effectiveness of eating less meat is related to reported intake frequencies of red and white meat for dinner or as sandwich meats.

The present study will hopefully help to gain knowledge about how we can change consumer behavior/diets to be more sustainable and healthier. By mapping knowledge and attitudes, it is possible to empower individuals to focus on the most effective mitigation options for reducing their personal emissions (Wynes & Nicholas, 2017).

2.0 Theoretical background

2.1 Global Temperature Rise and Climate Change

The earths environmental systems are pushed beyond safe boundaries by human activity, such as fossil energy use and food production (Willett et al., 2019). Human activity has led to accumulation of greenhouse gases in the atmosphere, provoking global warming and anthropogenic climate change (IPCC, 2014; Oosterveer & Sonnenfeld, 2012; Wynes & Nicholas, 2017). With increasing levels of greenhouse gases, the occurrence of climate change is at much higher rates than previously anticipated (United Nations, 2017). Natural and human systems are already altered due to the observed warming the last six to seven decades and anthropogenic influence is the main cause (WCED, 1987).

Global food systems occupies 40 percent of the ice-free land area on earth (FAO/WHO, 2019), and agriculture accounts for 70 % of global fresh-water use (IPCC, 2019). Steinfeld et al. (2006) has identified the livestock sector as significant contributor to global warming, because of their anthropogenic greenhouse gas emissions. Agriculture contribute with a great amount of global non-fossil GHG emissions, such as methane (50 %) and nitrous oxide (60 %) through animal foodstuffs (Girod et al., 2014; Jo, Kim, & Seo, 2016). Emissions from the Norwegian agriculture contributes with 8.5 % of the total emission in Norway (NOU 2015:15, 2015).

Climate change is visible through sea level rise, loss of biodiversity, and a higher incidence of extreme weather such as floods and droughts (Allen et al., 2018). Climate change is now one of the most urgent global environmental problems, threatening future generations opportunity to cover their needs (Oosterveer & Sonnenfeld, 2012). In 1987, The World Commission on Environment and Development (WCED) wanted to counteract this, by putting sustainable development on the political agenda (WCED, 1987). Sustainable development is meeting the needs of people living today, without destroying future generations opportunities to cover their needs (Helse- og omsorgsdepartementet, 2017). The aim of sustainable development is to engage in efforts to modernize society, while balancing social, economic and ecological interest (Oosterveer & Sonnenfeld, 2012).

One of the two major global agendas that focus on sustainability and human health, is the Paris Agreement (Willett et al., 2019). The aim of the Paris Agreement is to achieve the Climate Conventions objectives, by strengthening global response to the threat of climate change and increase the ability of countries to handle the impacts of climate change. It frames

both scientific and political consensus to limit global temperature rise below 2 degrees Celsius above pre-industrial levels, but also to strive to keep the temperature rise below 1.5 degrees Celsius. The other major global agenda with focus on environment and human health, is the United Nations Sustainable Development Goals (SDGs). The international policy framework includes environmental sustainability or human health in almost every one of its 17 goals. The goals seek to protect the planet, end poverty, ensure prosperity for all, and eradicate malnourishment and hunger. Climate change has its own sustainable development goal, goal number 13, "Climate Action" (United Nations, n.d.). Sustainable development goal 13 includes three targets as well as two sub targets. Sub target 13.3 accentuate the importance of improving education, raising awareness and human as well as institutional capacity on climate change adaption, early warning, impact reduction and mitigation. The overall goal is to take action to tackle climate change and the following impacts of it (United Nations, 2017).

People around the globe are being affected by rising sea levels and extreme weather, and the worst affected is the poor and vulnerable (United Nations, 2017). If left unattended, the global temperature is predicted to rise over 3 degrees Celsius. Besides extreme weather and natural disasters, climate change also cause a higher threat of food and water scarcity. With rising average sea levels and air temperatures, the risk of increased levels of parasites, bacteria and viruses in food and water increases (FAO/WHO, 2019). This makes climate change and global warming pressing issues with high political importance, especially since it's affecting both environmental sustainability and human health (United Nations, 2017). Our efforts need to increase greatly to solve the problem. Investment in renewable energy and a transformation of the world's systems regarding industry, transport, energy, forestry, food and agriculture is needed (United Nations, 2017). In addition to these investments in our existing systems, behavioral changes in the world population are needed. There are a lot of different mitigation actions consumers can make to prevent global warming and climate change, but studies have shown that a big part of the global population, including Norwegians, does not know how effective these mitigations options are (Austgulen, Skuland, Schjøll, & Alfnes, 2018; de Boer et al., 2016; Macdiarmid, Douglas, & Campbell, 2016; Pohjolainen, Tapio, Vinnari, Jokinen, & Räsänen, 2016; Truelove & Parks, 2012; Whitmarsh, Seyfang, & O'neill, 2011).

2.1.1 Greenhouse Gases (GHGs)

Climate is affected by greenhouse gases in the atmosphere, because they reflects some of the earths heat radiation from solar heating, which prevents the energy to pass back out of the atmosphere (Helsedirektoratet, 2017). This process is called the greenhouse effects, and results in a warmer surface on the planet. Anthropogenic greenhouse gas emissions have increased the atmospheric concentration of carbon dioxide (CO_2), nitrous oxide (N_2O) and methane (CH_4) (IPCC, 2014). Carbon dioxide is released through natural processes and through human activities such as changes in land use, the burning of fossil fuels and deforestation, which has increased the atmospheric concentration of CO_2 by more than a third since the mid-1900s. Carbon dioxide accounted for 76 % of total anthropogenic emissions in 2010, making it the major greenhouse gas (IPCC, 2014). It is also very long-lived and can last for hundreds of thousands of years (IPCC, 2018). Methane is also produced through both human activities and through natural sources (IPCC, 2014). Rice cultivation, decomposition of landfill waste, agriculture and domestic livestock are forces of methane production. While carbon dioxide is long-lived and accumulates in the atmosphere, methane only lasts for about a decade, but it has a 56 times greater global warming potential over a 20 year period (IPCC, 2018; Willett et al., 2019). In 2010, 16 % of total anthropogenic GHG emissions came from methane (IPCC, 2014). Only 6.2 % came from the powerful greenhouse gas nitrous oxide, which is mainly produced through soil cultivation practices such as fossil fuel combustion and the use of fertilizers. It is not as long-lived as carbon dioxide, but can still last over a century in the atmosphere and has 280 times greater global warming potential compared to carbon dioxide over a time period of 20 years (IPCC, 2018; Willett et al., 2019). If no additional efforts to reduce GHG emissions are being made, the growth in global population and economic activities will increase emissions even more. With no further action, the baseline scenario will be an increase of global mean surface temperature between 3.7 degrees Celsius to 4.8 degrees Celsius in 2100 compared to pre-industrial levels (IPCC, 2014).

2.1.2 Greenhouse gases in agriculture and livestock

Agriculture contributes to a great amount of greenhouse gas emissions that causes global warming, but is also one of the industries that climate change will hit the hardest (SSB, 2019). The burning of fossil fuels is the main cause of why the concentration of atmospheric carbon dioxide (CO_2) has increased, however clearing of land for human activities has also contributed (United Nations, 2017). Much of these changes are due to a higher population which demands more resources, such as food through increased agriculture. The consumption and production of food accounts for a considerable amount of the greenhouse gas emissions

from Norway, and the most effective measures to lower emissions are related to food production and consumption (Helsedirektoratet, 2016; NOU 2015:15, 2015).

In 2017, Norwegian greenhouse gas emissions were 52.4 million tons CO_2-equivalents (SSB, 2019). If emissions from energy expenditure in the agriculture sector is included, 9.4 % of the total greenhouse gas emission comes from the agriculture sector. Carbon dioxide (CO_2) emissions from burning oil and diesel for heating and machinery is not included, but is included in the energy sector instead (Teknisk arbeidsgruppe, 2018). Only emission within Norwegian territory is taken into account, resulting in a potentially much higher realistic number if for example import of animal feed was taken into account (Helsedirektoratet, 2017). The emissions reported in the agriculture sector are mainly from livestock and meat production, release of CO_2 through cultivation of marsh, and nitrous oxide from fertilizers containing nitrogen (NOU 2015:15, 2015). The sector accounted for 75 % of nitrous oxide (N_2O) and 94% ammonia (NH_3), of total emissions. Most of the emission of ammonia in the sector originates from manures and commercial fertilizers, while the 52% of methane emission from the sector is due to livestock. Herbivores and most ruminants produce methane mainly through enteric fermentation, and through decomposition of manure (Girod et al., 2014). Ruminants produce the most, while other domestic animals produce less (SSB, 2019). Digestion as well as quantity and composition of the feed determines how much methane is produced. Cattle accounted for 75 % and sheep 18%. Together with landfills, these are the most significant sources of methane emission in Norway (SSB, 2019).

Increased productivity in the agricultural sector has a great GHG mitigation potential in countries where crop yields and livestock feed conversion efficiency are below biophysical limits (Hedenus et al., 2014). However, wheat yields and other major crops has leveled off in some regions and not increased the last 10-20 years. This suggests that further increases in productivity may not be possible, at least not without higher nitrogen turnover or intensified livestock production, which will increase GHG emissions (Hedenus et al., 2014).

Livestock numbers in the future are dependent on developments in the population, consumption per person, and how much of the production that is covered by Norwegian production (Teknisk arbeidsgruppe, 2018). A decrease in milking cows is projected in Norway. However, an increase greater than the decrease in milking cows is projected for cow sucklers, which will lead to an increase in the emissions from cattle.

Livestock is corrosive on the earth's resources, especially because of the high GHG emissions from the sector. Meat is therefore not considered to be sustainable food group (FAO/WHO, 2019). A more plant-based diet with less red meat and less food waste will result in a more sustainable diet and reduce GHG emissions (Helsedirektoratet, 2016).

2.2 Sustainable Healthy Diets

Our lifestyle choices affect the environment and sustainability, and what we eat has a major impact on food production (Helse- og omsorgsdepartementet, 2017). The Food and Agriculture Organization (FAO) of the United Nations (UN) defines sustainable diets as diets with a low environmental impact, that ensures food and nutrition security for both present and future generations (FAO, 2012). They should also protect and respect ecosystems and biodiversity, be culturally acceptable, affordable, healthy and safe, as well as enhance natural and human resources. The FAOs definition recognizes that the health of human beings and the health of ecosystem are connected and cannot be isolated from each other (FAO, 2012).

One of the strongest determinants of health is our dietary patterns, and every country in the world is affected by either single burden, double burden or triple burden of malnutrition (Donati et al., 2016). Malnutrition in all its forms is affecting every one of the world's countries, and one in three individuals is affected by at least one form of malnutrition (FAO/WHO, 2019). Poor diets are the major contributor to the prevalence of malnutrition, and the production and consumption of food degrading the environment and natural resources, the FAO and WHO addressed the problems by holding an expert consultation and creating guidelines to "Sustainable Healthy Diets". The approach considers international nutrition recommendations, the environmental cost of the production and consumption of food, and how adaptable the diet is to cultural, economic and social contexts. Several of the UNs Sustainable Development Goals are dependent on diets and food consumption to be achieved, especially goal 1 (No Poverty), 2 (Zero Hunger), 3 (Good Health and Well-being), 4 (Quality Education), 5 (Gender Equality), 12 (Responsible Consumption and Production) and 13 (Climate Action) (FAO/WHO, 2019). The guidelines describe sustainable healthy diets as dietary patterns that promote health and wellbeing, are safe and equitable, culturally acceptable and have a low environmental pressure and impact. FAO/WHO (2019) describes the aim if a sustainable healthy diet like this:

> The aims of Sustainable Healthy Diets are to achieve optimal growth and development of all individuals and support functioning and physical, mental, and social wellbeing at all life stages for present and future generations; contribute to

> preventing all forms of malnutrition (i.e. undernutrition, micronutrient deficiency, overweight and obesity); reduce the risk of diet-related NCDs; and support the preservation of biodiversity and planetary health. Sustainable healthy diets must combine all the dimensions of sustainability to avoid unintended consequences. (FAO/WHO, 2019, p. 9)

In regards of the health aspect, the guidelines from FAO/WHO (2019) describes a sustainable healthy diet as a diet which includes plenty and various fruits and vegetables, wholegrains, nuts and legumes. It can also contain moderate amounts of dairy, eggs, fish and poultry, but only small amounts of red meat. When considering the environmental impact, the diet should maintain GHG emission within set targets, as well as for land and water use, phosphorus and nitrogen application and chemical pollution. It should also preserve biodiversity, including that of crops, livestock, aquatic genetic resources, forest-derived food, as well as avoid overhunting and overfishing. It also includes several other important guidelines, such as minimizing the use of plastic, antibiotics and reduce food waste and food loss, among others. To be considered healthy, the diets must also be consistent with the WHO guidelines, to ensure health and wellbeing for the general population and reduce the risk of diet-related NCDs (World Health Organization, 2018).

The Global Burden of Disease (GBD) Study have characterized risk factors for NCD as a diet with low intake of n-6 polyunsaturated fatty acids (PUFA), seafood n-3 fatty acids, calcium and fiber, milk, nuts and seeds, whole grains, legumes, fruits and vegetables (FAO/WHO, 2019). The risk factors also include a high intake of sodium, trans fatty acids, sugar-sweetened beverages, and red and processed meat. The GBD Study quantifies what percent of each disease could have been prevented if the recommendations were met for each dietary factor. In all regions, besides the Western Pacific Region, a low consumption of whole grains was the leading dietary risk factor. In the Western Pacific region, high intake of sodium was the leading risk factor. The association between high intake of animal products, ultra-processed foods, and a low intake of plant-based foods are highlighted consistently in studies the GBD studies has assessed. Today's evidence on health and dietary pattern implies a need to focus on degree of food processing and plant foods. Some territorial diets, such as the New Nordic Diet and the Mediterranean Diet, are shown to have health benefits. Even though a small percentage of the world population follow these dietary patterns, their principles of preferably eating seasonal and local foods, daily consumption of healthy fats, whole grains, fruits and vegetables, can apply to dietary patterns adapted in other cultures and

territories. By following these principles, other territorial diets can become more nutritious and sustainable. A transition towards a healthier diet with less red meat, is therefore very likely to reduce the food systems environmental impact. Changes in food production systems and the evidence base implies a shift away from animal food towards plant foods, all have direct relevance to the sustainability agenda. The need for a dietary shift is a great challenge for economic, political and cultural reasons. Action is needed for businesses, governments and individuals. The social norm on meat-based diets needs to change, and interventions are needed to change supply and demand (FAO/WHO, 2019).

2.2.1 Dietary Recommendations regarding meat

The national nutritional recommendation for meat in Norwegian, is to choose lean meat and meat products, as well as to limit consumption of processed and red meat to less than 500 grams weekly (Folkehelsedirektoratet, 2011; Helsedirektoratet, 2017). White meat, pure meat, and lean meat with little added salt is also a part of the recommendation, with no recommended upper or lower limit.

Meat and meat products usually contain a high amount of salt and saturated fat (Helsedirektoratet, 2017). The recommendation of saturated fat is 10 E% (Folkehelsedirektoratet, 2011). To reach the recommended level it is beneficial to eat less high fat dairy products and high fat meat. (Helsedirektoratet, 2019). Consumption of red meat probably increase risk of colorectal cancer and type 2 diabetes, and processed meat increases risk of heart attack, colorectal cancer and type 2 diabetes (Helsedirektoratet, 2016; World Cancer Research Fund, 2007).

So far, only Sweden, Finland, Germany, Brazil and Qatar has integrated sustainability to the national nutrition guidelines (Helsedirektoratet, 2017). The Norwegian recommendations are mainly based on the relationship between diet and health, but the latest recommendations also include sustainability considerations. It is acknowledged that negative environmental impacts related to dietary choices, are due to consumption of animal foods. Ruminant meat production is considered beneficial for preserving biodiversity and utilization of Norwegian land resources, by Helsedirektoratet (2017). However, they do recommend a decrease in both white and red meat for the Norwegian meat consumption to be considered sustainable, and to specifically avoid meat from suckler cows.

2.2.2 Meat consumption

Consumption of meat and dairy is increasing worldwide (Austgulen et al., 2018). In the 1960s, meat consumption was 24.2 kg per capita, which has almost doubled to 2015, where the consumption was 41.3 kg per capita (FAO, n.d.). The consumption is predicted to increase further in 2030, to 45.3 kg per capita.

In Norway, meat consumption has increased considerable over time, however, there has been a decrease from 77 kg per person in 2016 to 76 kg per person in 2017 (Helsedirektoratet, 2019). The Norwegian population consumed 19.5 kg of poultry and 50 kg of red meat per person in 2017. The national Norkost survey (2012) found that mean consumption of red meat among men was 1022 gram per week, and 623 grams per week for women (Totland et al., 2012). One third of women and 55 % of men in the study consumed more meat than recommended. In addition, 25 % of men ate twice the recommended amount of meat. Only 45 % of men and 67 % of women had a meat consumption within the recommendations of red meat (Helse- og omsorgsdepartementet, 2017; Totland et al., 2012). The Norwegian diet contains 14 E% of saturated fat, 4 E% more than recommended (Helsedirektoratet, 2019). The main sources of saturated fat in the Norwegian diet are milk and dairy products and meat. Most of the trans-fat we eat today comes from dairy and meat products, but the consumption is within the recommendation.

As table 1 shows, the production of meat increased from 2016 to 2017, while the consumption of meat decreased at the same time. The total meat production is still predicted to increase further for 2018 (Helsedirektoratet, 2019).

Table 1: Meat production from livestock in Norway, in mill. kg (Helsedirektoratet, 2019)

	1959	**2016**	**2017**
Cattle	41.1	80.1	83.7
Veal	7.5	1.5	1.5
Sheep and lamb	14.9	26.1	27.6
Goat	0.3	0.3	0.3
Horse	2.2	0.1	0.1
Poultry	2.9	98.3	101.0
Pork	48.2	137.7	137.3
Reindeer, deer, rabbit	1.8	2.3	1.6
Total meat	118.9	346.4	352.9

2.3 Mitigation options

Our main consumption categories that results in greenhouse gas emissions are travel, shelter, food, goods and services (Girod et al., 2014). A significant portion of GHG emissions is related to domestic energy use, mainly through combustion of fossil fuels (Abrahamse & Shwom, 2018). As much as 25 % of total energy demand globally originates from the residential sector. The energy is used directly though heating and lightning, and indirectly through energy related to disposal, transportation and production of consumer goods and services. Efficiency and behavioral change in household could significantly reduce contributions to climate change, both directly and indirect (Abrahamse & Shwom, 2018). Direct energy consumption from households could be reduced by as much as 20 % by adapting efficiency and behavioral change.

Vita et al. (2019) calculated the effect of different mitigation scenarios, with environmental pressure of European consumption in 2007 as a baseline. The results of their findings are shown together with the results from Wynes and Nicholas (2017) for relevant mitigations options of this study in table 2. High-impact actions for reducing personal emissions are living car-free, limit airplane travels and shifting to a plant-based diet (Vita et al., 2019; Wynes & Nicholas, 2017). Mitigations with moderate effectiveness are food recycling, throwing away less food, reduce energy expenditure at home, reduce general consumption. The least effective mitigation options in the present study were buying food in season, choosing products with eco labels and buy more organic food. (Vita et al., 2019; Wynes & Nicholas, 2017). Data regarding effectiveness of voting on a political party with global warming on their political agenda was not found.

Table 2: Effect of different mitigation options, measured in level or potential reduction of MtCO2-eq.

Mitigation option	Level of/potential reduction of $MtCO_2$-eq	Reference
Recycle food waste	Moderate	(Wynes & Nicholas, 2017)
Throw away less food	2.1 %, Moderate	(Vita et al., 2019; Wynes & Nicholas, 2017)
Limit car use	8.8 %, High	(Vita et al., 2019; Wynes & Nicholas, 2017)
Fly less	2.3 %, High	(Vita et al., 2019; Wynes & Nicholas, 2017)
Reduce energy expenditure at home	Moderate	(Wynes & Nicholas, 2017)
Buy food that is in season	0.1 %	
Reduce my general consumption	Moderate	(Wynes & Nicholas, 2017)
Local food	0.6 %, Moderate	(Vita et al., 2019; Wynes & Nicholas, 2017)
Choose products with eco labels	Low	(Wynes & Nicholas, 2017)
Eat less meat		
Mediterranean Diet	2.7 %, Moderate	(Vita et al., 2019; Wynes & Nicholas, 2017)
Vegetarian	6.4 %	(Vita et al., 2019)
Vegan	13.9 %, High	(Vita et al., 2019; Wynes & Nicholas, 2017)
Healthy Vegan	15.7 %, High	(Vita et al., 2019; Wynes & Nicholas, 2017)
Buy more organic food	1.8 %	(Vita et al., 2019)

The mitigation option with the highest impact on annual personal emission, is having one fewer child, which reduces annual personal emission by 58.6 CO_2-eq in an average developed country (Wynes & Nicholas, 2017). This mitigation option is not addressed in the present study, and will not be given further attention

2.3.1 Transport related mitigation options

Emissions from cars are mainly carbon dioxide, and emission from road traffic accounts for 19 % of Norway's total emissions (Helsedirektoratet, 2017). Personal vehicles accounts for 56 % of these emissions. Most car trips are less than 3 km, a suitable walking or biking distance. By choosing to bike or walk instead of driving the short trips, emissions can be lowered, and physical activity in the population increased. It is a high impact mitigation action, and living car free can cut emissions by 2.4 CO_2-eq/yearly (Wynes & Nicholas, 2017).

Flying one less can cut personal emissions by 1.6 CO_2-eq transatlantic roundtrip, and is a highly effective mitigation option (Vita et al., 2019; Wynes & Nicholas, 2017)

2.3.2 Food related mitigation options

Carbon footprint from households can be reduced by choosing food that is produced by using less energy intensive means or with a smaller greenhouse gas impact (Abrahamse & Shwom, 2018). The carbon footprint of food was shown to be 10-30 % of a household's footprint, which can be reduced by less overeating, food waste and by eating less meat, dairy products and nonessential food items.

Recycle Food waste

Food waste should be reduced, and could according to Hoolohan, Berners-Lee, McKinstry-West, and Hewitt (2013) reduce GHG emissions in the UK by 12 %. In comparison, eliminating meat would result in a 35 % reduction (Hoolohan et al., 2013). Comprehensive recycling was shown to be four time less effective than eating plant based (Wynes & Nicholas, 2017).

Throw away less food

A Norwegian report calculated that reducing food waste would have a yearly reduction of 0.2 Mton CO_2-Eq in emissions in 2030 (Teknisk arbeidsgruppe, 2018) The average Norwegian domestic households threw away 42.1 kg food in 2015, which means that food waste accounted for 13 % of food consumption (Helsedirektoratet, 2017). Food waste is calculated to have emissions to 0.98 Mt CO_2-eq per year. This equals an economic loss of 20 billion NOK yearly (SSB, 2019). Less food waste will reduce the pressure on the climate, reduce greenhouse gas emissions, increase the resource utilization and increase food safety. Meat has a greater food wastage than other food products.

A third of the produced food globally is never eaten, 25 to 30 % is lost or wasted, resulting in increased GHG emissions, due to both food waste and food loss (Helse- og omsorgsdepartementet, 2017; IPCC, 2019). By reducing this number, the food availability will increase without increasing production. This again will decrease the pressure on resources, climate and environment (Helse- og omsorgsdepartementet, 2017).

Buy more local food

Local food is not necessarily more climate friendly than food that has been transported a long distance (Helsedirektoratet, 2017). The exception is food transported by plane or food that require a big amount of energy for cooling. Air-freighted food accounts for very large amounts of GHG emissions and should be avoided. Even though cargo boats and long-haul

transportation can have large emissions, the emission per unit is low, due to the big amount that is transported at the same time.

Buy more organic food

Organic farming has a lower land productivity, compared to traditional farming (Helsedirektoratet, 2017). The consequence can be a need of expansion of cultivation area, which will affect biodiversity negatively. Organic agriculture has severe restrictions when it comes to use of pesticides and mineral fertilizers (SSB, 2019). Fertilizers can lead to greenhouse gas emissions and pollution of waterways and oceans.

Meat consumption

A dietary change from animal foods to vegetable foods can hold a great mitigation potential, depending on what products are substituted (Hedenus et al., 2014). If every person reduced their total meat consumption by 11 % in 2030, 152 000 CO_2-equivalents less would be emitted. In comparison, if food waste was reduced with 35% in 2030, the reduction would be 56 000 CO_2-equivalents (NOU 2015:15, 2015). Non-vegetal food have higher emission per calorie in general, compared to vegetal food, and a voluntary diet change could reduce indirect energy use by as much as 30 % in domestic households (Abrahamse & Shwom, 2018; Girod et al., 2014). Vegetable food production emits considerable lower amounts of GHG, uses less land and water per produced calorie and per produced gram of protein, compared to animal food (Helsedirektoratet, 2017). This is one of the main arguments for reducing meat consumption and increase consumption of vegetable food.

All diets with low meat consumption can reduce environmental impact significantly (Vita et al., 2019). The less animal food in the diet, the higher the reductions. Transitioning to a plant-based diet, can reduce personal emissions by 0.8 CO_2-eq yearly (Wynes & Nicholas, 2017). The Mediterranean Diet, which is rich in fish, oils, legumes, vegetables and cereals, and only consist of a small amount of red meat, have a potential to reduce carbon emissions by 2.7 %. Transition to a vegetarian diet reduces 6.4 % $MtCO_2$-eq, and the most effective was the healthy vegan (15.7 %). Red meat has greater emissions than white meat per calorie unit (NOU 2015:15, 2015). The CO_2-equivalent per calorie unit (kcal) for sheep and suckler cows are 18-21 kg, while pork, poultry and dairy production is below 2 kg per kcal. Grains used for food and potato emits less than 1 kg CO_2-equivalents per kcal.

Cattle meat from suckler cows has the greatest global warming potential of all types of meat, at 20-40 kg CO_2-eq per kilo (Helsedirektoratet, 2017). Followed by meat from dairy cows (12-23 kg CO_2-eq per kilo), and lamb meat (14-24 kg CO_2-eq per kilo). Goat meat is

assumed to be at the same level, but there is no available data on the matter. Pork is quite lower than the ruminants, respectively 4-14 kg CO_2-eq per kilo. Poultry, chicken and turkey, has the lowest emissions (4 kg CO_2-eq per kilo).

Protein-rich, plant-based food like soy and peas have emissions in line with the 2.0 degrees Celsius target, and the emissions of vegetal food mostly comes from energy use in farming, transportation and preparation (Girod et al., 2014). Meat from ruminants contributes with 10 times more GHG emissions, compared to dairy products and non-ruminants. By changing the average diet in households in high income countries towards national dietary guidelines, GHG emissions could be reduced by 13-25 % (Abrahamse & Shwom, 2018). These guidelines vary, but the WHO recommends an average of 80 grams of meat daily, but the reduction would also be because of calorie consumption closer to recommended amount.

The CO_2-equivalent per calorie unit (kcal) for sheep and cow sucklers are 18-21 kg, while pork, poultry and dairy production is below 2 kg per kcal (NOU 2015:15, 2015). Red meat has greater emissions than white meat per calorie unit. Grains used for food and potato emits less than 1 kg CO_2-equivalents per kcal. The revenue effect of reducing production subsidies to red meat equivalent to a production tax of 840 kr per metric ton CO_2-equivalent, is calculated to 1600 million kroners. Replacing 10 000 tons of cattle beef with pork and poultry, would lead to a decrease in emission of 235 000 CO_2-equivalents (NOU 2015:15, 2015). According to a UK study, emissions could be reduced by 18 % by eating less carbon-intensive meats such as chicken and pork, instead of ruminant meat (Hoolohan et al., 2013).

A Norwegian report calculated that a transition from meat to plant-based food while following the national nutrition recommendations, would reduce yearly emissions by 0.6 Mton CO_2-Eq (Teknisk arbeidsgruppe, 2018).

2.3.3 Production and Food systems

What we choose to eat are shaped by food systems, and they are not enabling consumers to eat healthy and nutritious diets that are sustainable (International Food Policy Research Institute, 2016). Today's food systems are being more and more challenged to provide healthy diets consisting of adequate, diverse, safe and nutrient rich food (FAO/WHO, 2019). These challenges are addressed in the UN Decade of Action 2016 – 2025 to transform food systems to promote sustainable produced and healthy diets. Today's food systems have a detrimental environmental impact, causing a great need of change to healthy diets that have a

low environmental impact. Food systems is the leading cause of depletion of natural resources and environmental degradation and responsible for 20-35 % of GHG emissions.

Today's food systems are also described as imbalance and unequal power distribution and is by this way leaving the vulnerable behind. Food systems around the globe are very diverse, and economic and social characteristics of food and food systems must be considered when addressing the problems of malnutrition (FAO/WHO, 2019). The global food system needs to change in order to reach the SDGs and the Paris Agreement, emphasizing the need for healthier and more sustainable diets.

2.4 Consumer willingness and awareness

Transport habits, domestic energy use, and the food we eat determine how much we, as consumers, affect greenhouse gas emission. Most of this consumption is not conscious decision-making, but rather habitual and routine (Chappells, Shove, & Vliet, 2005), but still highlights the role of consumers in the shift towards a low-carbon society (Whitmarsh et al., 2011). Climate change is complex and mostly not directly observable, and therefore difficult to convey to the public. Before this could not be directly experienced by most of the world, but the impact is becoming more and more visible for all global citizens, with more extreme weather and a rising global temperature (Whitmarsh et al., 2011). Awareness is therefore rising, but the consequences are still not translated into personal relevance for most people (Lorenzoni, Nicholson-Cole, & Whitmarsh, 2007), and people usually do not think of their own actions as causes of global warming (Whitmarsh, 2009). Bamberg and Möser (2007) found in their meta-analysis that one of the strongest correlates of pro-environmental intention is general environmental knowledge, while others found that the strongest predictor was the belief that the effort would make a difference (Heath & Gifford, 2006). A survey conducted in 2008, found that few people saw the link between personal actions and lifestyle choices and carbon emission, even though the self-reported awareness of climate change among the respondents was high (Whitmarsh et al., 2011).

The consumers might not need to engage at the deepest level of understanding, but for the public needs to understand their individual contribution to make more conscious choices (Whitmarsh et al., 2011).

2.4.1 Willingness and awareness regarding meat consumption

Norwegian authorities have so far not made any changes in agricultural policy to try to reduce meat production, and actually wants to increase production (Austgulen et al., 2018). This puts a lot of responsibility on consumers to make sustainable choices, which they might not be empowered to make. Previous studies suggest that few consumers are aware of the impact of their meat consumption, and if the know about the relationship between greenhouse gas emissions and meat consumption, they tend to underestimate it (Austgulen et al., 2018). The public debate regarding sustainable production and consumption of meat in Norway is often confused with preserving cultural landscape through grazing, as well as with food security (Austgulen et al., 2018; Lafferty, Knudsen, & Larsen, 2007).

A systematic review on consumers attitudes towards environmental concerns of meat production (2019) found that reducing meat consumption was the least preferred mitigation option when compared to non-food mitigation options (Sanchez-Sabate & Sabaté, 2019). Studies have shown that consumers are more positive to change meat consumption to more sustainable meat options, than to reduce or eliminate meat consumption completely (Verain, Dagevos, & Antonides, 2015). Willingness to decrease consumption is affected by social and cultural values, but also by routines and habits (Austgulen et al., 2018). Lower willingness to reduce consumption is also associated with high meat consumption frequencies and positive attitudes towards meat, such as a strong health belief regarding meat. If the consumer perceives meat as unhealthy, willingness to reduce consumption is higher. Unwillingness is associated with the belief that a diet without meat will lead to nutrition deficiency and not contain enough protein (Wyker & Davison, 2010).

Other predictors for willingness are values and attitudes towards climate change, but also gender (Austgulen et al., 2018; Milford & Kildal, 2019). There is a higher willingness among women to reduce their meat consumption, and they also have a stronger belief regarding meat environmental impact. Studies have also shown that urban populations consume less meat and are more likely to choose a plant-based diet, compared to rural populations (Gossard & York, 2003; Hoek, Luning, Stafleu, & de Graaf, 2004).

Awareness of the impact is shown in several studies to increase willingness to reduce meat consumption (de Boer et al., 2016; Tobler, Visschers, & Siegrist, 2011; Verain et al., 2015). Underestimation of the impact meat has on the environment is also a common finding when addressing consumer mitigation willingness (de Boer et al., 2016; Hartmann & Siegrist, 2017; Vanhonacker, Van Loo, Gellynck, & Verbeke, 2013).

A systematic review looking into people's awareness of meat production and consumption environmental impact, found that aware consumers are a minority and that consumers underestimate or ignore the potential of eating less or no meat (Sanchez-Sabate & Sabaté, 2019). Most consumers in the studies did not know that a plant-based diet is more sustainable than a diet including meat. Studies from the US, Belgium, Portugal, Finland, the Netherlands and Germany were included in the review, and awareness was found among 23-35 % across the quantitative studies. Participants agreeing with meat reduction as an environmentally friendly choice varies between 18-29 % across the studies. Eating less meat as a mitigation option was usually rated the least or second least effective option. In those studies that reported covariates, gender was mentioned more than any other variable. Women perceive eating less meat as more effective than men and are more conscious about the impact meat production and consumption has.

A lot of misconceptions regarding climate change emerged in Whitmarsh et al. (2011) study, and greenhouse gas emission from meat consumption and production was not recognized (Whitmarsh et al., 2011). When asked about avoiding meat as a pro-environmental action, only 8.7 % answered always, 9.8% answered often, 24.3% said occasionally, and the majority (57.2%) replied never. When asked about recycling, 70.7% answered always. The findings showed that the sample was not properly equipped to change their lifestyles and reduce their emissions. In another study, the most frequently mentioned pro-environmental behavior was recycling, while reducing meat consumption was listed by only a few and rated below the midpoint of the mitigation scale (1-11) (Truelove & Parks, 2012). The same study also found that those that believed reducing meat consumption to be an effective mitigation option, were also much more likely to stop eating meat.

A qualitative study conducted by Macdiarmid et al. (2016), found that the majority of the 83 contestants believed that climate change is real. But some of them were unaware of food having an environmental impact, and there was a lack of awareness of the association between meat consumption and climate change. The Scottish respondents had the perception that their personal meat consumption played a minimal role in a global context, which led to a resistance to the idea of reducing personal meat consumption. This resistance was found in all socio-economic statuses, both genders, both rural and urban.

In a big cross-sectional survey in Finland, researchers found that local meat (53.3%) and organic meat (35.1%) was perceived a solution to emissions from meat consumption, compared to reducing meat consumption (25.5%) (Pohjolainen et al., 2016).

People willing to reduce or stop consumption of meat for environmental purposes were a minority in all the studies included in a review of 15 research papers (Sanchez-Sabate & Sabaté, 2019). Eating less meat was one of the least preferred mitigation options to counter climate change among the participants in the studies. Willingness to reduce consumption had a positive association with the belief that meat have a negative impact on the environment (de Boer et al., 2016; Tobler et al., 2011; Truelove & Parks, 2012). Hunter and Röös (2016) found that participants thought that it was difficult to reduce their meat consumption.

Half of Europeans reported that they would be willing to substitute most of the meat in their diet with vegetables (European Commission, 2013). Romania, Italy, Spain and Portugal were more positive to replace meat with vegetables than the countries Belgium, the UK, the Netherlands, Finland and Denmark.

A change in behavior is more likely to occur with a positive attitude based on motivation and reason (Glanz, Rimer, & Viswanath, 2015). Previous research show that there is a lack of knowledge, and a lot of misperceptions among the public when it comes to mitigators and contributors of global warming. There is a need to address the knowledge of this in Norway as well.

3.0 Method

3.1 Fruit and Vegetables Make the Marks

This master thesis is a part of the research project "Fruit and Vegetables Make the Marks", a school-based intervention study which started in 2001. The aim of study was to increase school children's consumption of fruit and vegetables. The schools 6th and 7th graders answered a survey about nutrition and physical activity at school and brought home a parent survey for one of their parents to answer. The questionnaire survey was repeated in 2008, and this time it also contained questions regarding sustainable lifestyles and transportation habits. In 2018, the survey was conducted again and additional questions regarding sustainable lifestyle choices and evaluation of mitigation options were added. This thesis is built on the data collected in the survey conducted in September 2018. The methodological approach of this thesis is quantitative, and the study has a descriptive cross-sectional design.

3.2 Study population

The population in this survey consists of male and female parents of 6th and 7th graders in the two counties Hedmark and Telemark. Only one parent could answer the questionnaire, so it was not possible to control the gender distribution.

3.2.1 Study sample

From the 38 schools in Hedmark and Telemark county that participated in the original survey, 26 accepted the invitation in 2018. One school withdrew from the study before the survey was conducted. The 25 participating schools had a total of 1735 6th and 7th graders. Members of the project group guided 760 6th and 7th graders through the survey. The pupils brought home another survey for one of their parents to answer at home, and 609 parents answered and returned this questionnaire. As shown in figure 1, the parents responding to the most relevant questions in the questionnaire, make up the sample in this paper. In the 25 schools, 43.8 % of all pupils in the 6th and 7th grade participated in the survey. These 43.8 % brought home a questionnaire a for their parents, where 80.1 % answered and returned the questionnaire. Out of all possible parents that could have answered, this amounted for 35.1 %, or 609 parent respondents. To answer the research questions, the background variables age, level of education and gender had to be answered by the respondents. Questions regarding mitigation options and their self-reported meat-eating frequency also had to be answered. To be included in the first correlation analysis,

participants had to had answered a question regarding if the try to eat less animal foods to save the environment. The two questions addressing personal importance of global warming and what they believed caused global warming, also had to be answered to be included in the one-way ANOVA. Participants who had answered that they ate red meat for dinner more than once, were then excluded before the last multivariate analysis.

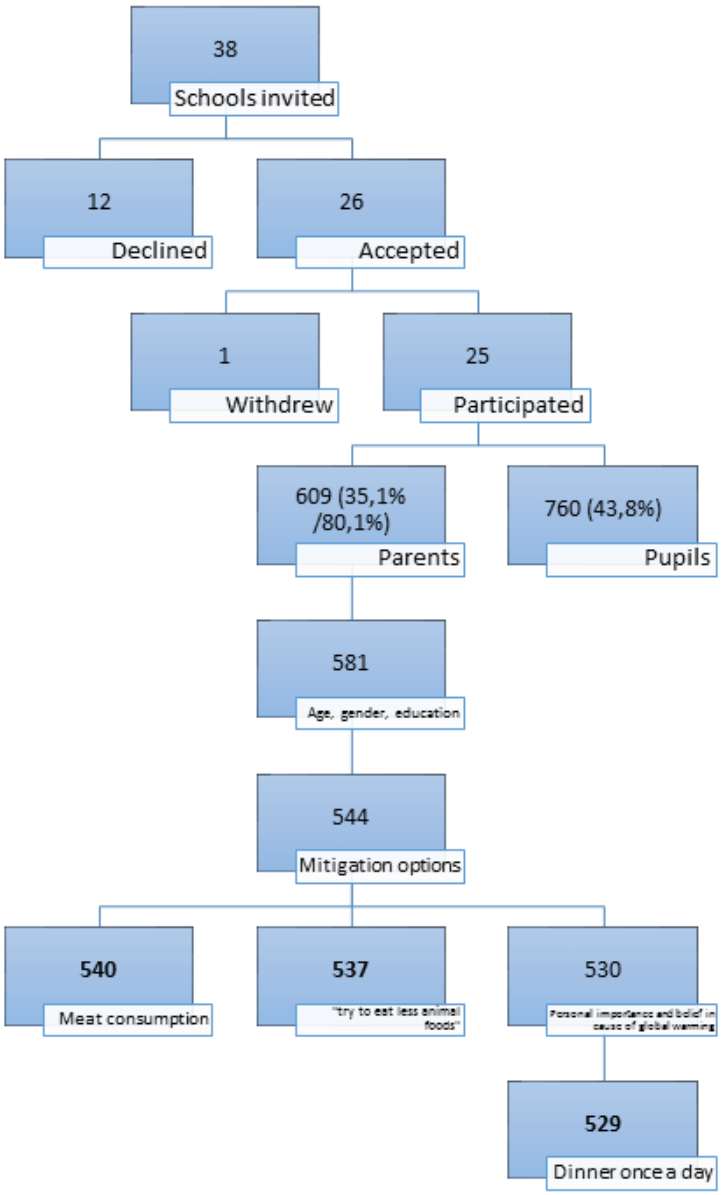

Figure 1: Flow chart of recruitment and inclusion process.

3.3 Data collection

The 38 schools that had participated in the previous surveys received an invitation and information about the project by e-mail during the spring of 2018 (appendix 5). The 26 schools that accepted, were later contacted by a member of the project team for further planning. Each school were asked to provide information about how many students attended

their 6th and 7th grade, and the school address. After receiving this information from the schools, information about the project and consent forms were sent to the schools and handed to the students. They were asked to bring the consent form home for one of their parents to sign (appendix 4). Only students with a signature from their parents could participate in the survey. The school surveys went over a time period of two weeks, all in paper form. Student questionnaires were gathered by the research projects members by the end of the school visit, while students brought home the parent questionnaire the same day. The parent questionnaires were forwarded to the University of Agder after they were obtained by the schools. The questionnaires were continuously punched into SPSS as they arrived by mail.

3.3.1 Contribution to the research project

As part of the project working group, along with several other master students, I participated in the data collection and the prior and post processes. Each student was responsible for five to six schools in either Telemark or Hedmark. This responsibility included contacting the school principal and obtaining a contact person at the different schools. The first contact was to confirm the correct mail address for the schools, and the correct number of pupils in the 6th and 7th grade. This information was used to send out the correct number of consent forms, as well as to prepare a suitable number of questionnaires. Some of the schools were located far away from each other, and a well-prepared schedule for the school visits was crucial. Therefore, agreeing on a date and time for the survey to take place was of high priority. This was rather challenging at some schools, due to camp school and other activities occurring during the fall. I was responsible for six schools in Hedmark county, and planned accommodation and transport with two other students with responsibility for schools in the same county.

The data collection was done in two weeks. The day before a school survey, the group members sat together and planned out the day in detail, regarding driving time and distribution of assignments for the next day. To best prepare for the survey, the school contact person was asked to provide the numbers of signed consent forms received from the pupil's parents. Every pupil and parent questionnaire were paired with the same number manually by the project members, and the number of received consent form gave a good indication on how many questionnaires that needed to be prepared. The pupil and parent questionnaire with identical numbers, was put in an envelope marked with the same number. Each class in each school had their own set of numbers, making this a time-consuming task that required a high level of precision. The members of the project did this together the

evening before the school visit. After identification numbers were written on the pupil questionnaire, the parent questionnaire and the envelope, this was doublechecked by another member of the project.

During the surveys, a project member was always present. Depending on time and size of the class, sometimes two or even three members were present. One member presented the project to the pupils and read part A of the questionnaire out loud, while the remaining members answered questions from the pupils. Reading a large part of the questionnaire out loud was probably helpful for the pupils with reading disabilities. Some questions were answered in plenary, while others were answered more privately. It was a great advantage to be more than one member during the survey, as the pupils tended to have a lot of questions. Being able to ask a personal question without the rest of the class listening, might also have led to a lower threshold for asking about questions they did not understand. One school hour, or 45 minutes, was originally the estimated time set for the survey. However, the survey always exceeded this time frame, due to many questions from the class. After every pupil had finished their questionnaire, these were collected by the project members and the pupils was once more reminded to bring the envelope with the parent questionnaire home to one of their parents.

Notes were shared daily among the project members, after each school visit. The notes contained information about how many with a consent form were present, the correct number of pupils in the class, how many project members were present, and so on. The response rate was calculated continuously during the data collection. After the data from both pupil and parent questionnaires were entered to SPSS, and my contribution was to control for punching errors in 20 questionnaires.

3.3.2 Ethical considerations

The study and the student project of this thesis are both reported to and approved by Norwegian Centre for Research Data (NSD) (appendix 2 and 3).

The school principals received an invitation to participate along with information about the project. Information was forwarded to the parents by the schools that accepted the invitation, as well as a consent form for the parents to sign. Parents and students were informed that they could withdraw from the project at any time, and that all information would be de-identified. The data from the study was transferred with de-identified data without access to the

enrollment log. The questionnaires from both parents and students will be terminated by December 31st, 2019.

3.4 Parent questionnaire

All data was collected through a questionnaire. The questionnaire used in this cross-sectional study, consisted of five parts; part A, part B, part C, part E and part F. There was no part D in the questionnaire. The questionnaire is in appendix 1, in Norwegian. On the first page the participants were asked about their birth year, gender and what day of the week they answered the questionnaire. Part A was configured as a 24-hour recall interview, where participants were asked about their consumption of fruit, vegetables, and meat during different meals on the day before. Part B consisted of questions about what participants usually eat during the week, measured in frequencies per week. In part C, the participants were asked about their family, anthropometric measurements, and other personal questions about their life and lifestyle. Part E asked the participants about their work situation and their transportation habits to and from work. In the last part of the questionnaire, part F, the respondents were asked to rate how much they agree to different statements related to climate and global warming. The last module also asked the respondents to rate how effective they perceived different mitigation options/actions were to counteract global warming. The questions from part F were based on the same questions de Boer et al. (2016) used in their study with similar study objectives as in this thesis. Summary of the questionnaire content is shown in table 3.

Table 3: Content of the different sections in the parent questionnaire.

Part	Content
Part A	24-hour recall interview.
Part B	Habitual consumption frequency.
Part C	Life and lifestyle.
Part E	Work situation and transportation habits.
Part F	Statements regarding climate change and global warming.

3.4.1 Demographic characteristics

The education levels were divided into “primary school”, “high school (included vocational school)”, “university or college (3 year or less)”, and “university or college (more than 3 years)”.

3.4.2 Measurements of meat consumption

The participants meat consumption was measured by four questions in the food frequency module in the questionnaire, part B. They were asked how often they ate red meat for dinner, chicken or turkey for dinner, used red meat as sandwich meat, and chicken or turkey as sandwich meat. The different response options were “never”, “less than once a week”, “once a week”, “twice a week”, “three times a week”, “four times a week”, “five times a week”, “six times a week”, “every day”, and “more than once a day”.

3.4.3 Measurements of attitude/knowledge of climate change and different mitigation actions

In part F of the questionnaire, participants were asked how much they agree or disagree to different statements related to climate. The most relevant question in this section, for this paper, is “I try to eat less animal foods (meat, fish, dairy products and eggs) to save the environment”. Here the respondents could choose to answer: “completely disagree”, “somewhat disagree”, “neither agree nor disagree”, “somewhat agree”, and “completely agree”. Another relevant question was “If we assume that the climate is changing (towards global warming), do you think…” with these answer options: “It is mainly due to human activity”, “It is mainly due to natural changes”, “it is equally due to human activity and natural changes”, “neither of the above, the climate is not changing” and “don’t know”. The participants were also asked “how important is global warming as a subject for you personally”. To this question, the answers were; “not at all important”, “not very important” “somewhat important”, and “very important”.

The last module of part F in the questionnaire, asked the respondents to evaluate effects of different mitigation options/actions to counteract global warming: “for each of the following lifestyle changes, set a mark how effective you think they are for counteracting global warming”. The different mitigation options/actions were: “vote for a party that prioritize global warming”, “reduce my overall/general consumption”, “choose products with eco labels”, “reduce energy consumption at home”, “recycle food waste”, “limit car use”, “fly less”, “buy more organic food”, “buy more locally produced food”, “eat less meat”, “throw away less food”, and “buy food that is in season”. The answer options in the five-point scale were; “not effective at all”, “not very effective”, “somewhat effective”, “very effective”, and “don’t know”.

3.5 Statistical analysis

All analysis was conducted in IBM SPSS Statistics version 25. All the answers from the questionnaires were punched manually into the program by students of the project group. Punching accuracy was double-checked by a second person that looked at the questionnaires and compared the answers to the data punched into SPSS. SPSS was used to examine the distribution of all the relevant variables. The significance level was set to 5 %.

3.5.1 Background variables

The variables chosen to describe the sample in this thesis is: age, gender, level of education, belief in global warming, and personal importance of global warming. Prior to the analysis, the first two groups were merged into "primary and/or high school", due to the size of the groups.

3.5.2 Recoding of variables

To find out how the respondents evaluated the different mitigation options, the answers were recoded the same way as in and then the mean for each mitigation option calculated (figure 2). The answer options in the five-point scale were coded the same way as de Boer et al. (2016) did in their study; (1) "not effective at all", (2) "not very effective", (4) "somewhat effective", (5) "very effective", and (3) "don't know". By recoding and calculating a mean score, it was possible to measure the perceived effectiveness for the different mitigation options and more easily compare the result to de Boer et al. (2016).

The participants were also asked about their meat consumption, where the responses were coded to 0 (never), 0.5 (less than once a week), 1 (once a week), 2 (twice a week) and so on. The answer "more than once a day" was coded to 10. Only one person answered that he or she ate dinner more than once a day, and this person was excluded from the correlation analysis (to avoid a jump in the range of answers). Answers were recoded to obtain a higher level of measurement, allowing the variable to be used in the linear regression analysis and multivariate analysis.

3.5.3 Correlation analysis

A cross table was used to look at the association between eating less meat as a mitigation option for global warming and if the respondents try to eat less animal foods. The participants that had not answered the question about regarding eating less animal foods, were excluded and 537 remained for the analysis. Pearson's chi-square test was used to test the likelihood that the observed distribution is due to chance.

A one-way ANOVA was conducted on all the meat-eating frequency variables up against the perceived effectiveness ratings of eating less meat as a mitigation option. Since the answers to the dependent variable, meat consumption frequency, was recoded to a higher level of measurement, it was possible to run a linear regression analysis to investigate the relationship between meat frequency consumption and evaluated effectiveness of eating less meat as a mitigation option. The variable was assumed to be normally distributed, by running descriptive test in SPSS.

Multivariate analysis on red meat for dinner and the evaluated effectiveness of eating less meat as a mitigation option were also conducted, with age, gender, education level, personal importance of global warming, and belief in human causation were the independent variables in the analysis.

4.0 Results

This chapter will present the result of the statistical analysis with the intention to answer the thesis research objectives. The main demographic characteristics of the sample will be presented first, followed by the perceived effectiveness of the different mitigation options from the questionnaire. Further, the meat intake of the study sample is presented, and then a crosstab of the association between eating less meat as a mitigation action and efforts to eat less animal foods. Mean reported intake frequencies of meat according to perceived effectiveness of eating less meat as a mitigation action is presented in the next table. The last table in this chapter shows the linear regression analysis between the dependent variable intake frequency of red meat for dinner and the independent variable eating less meat as a mitigation action.

4.1 Characteristics of the study sample

Table 4 shows us that most of the respondents are female (79.3 %) and in the age group 40-49 years (63.3 %). The majority also have more than three years of college or university (47.8 %). Almost one half of the sample (48.7 %) believes that global warming is due to human activity, global warming is a little important (58.0 %) or very important (20.7 %) for them personally.

Table 4: Main demographic characteristics and attitudes to global warming among parents of school children in the 6th and 7th grade (age 10-12 years), participating in the FVMM study (n=540).

	No	**(%)**
Gender		
Male	112	(20.7 %)
Female	428	(79.3 %)
Age		
20-29 year	4	(0.7 %)
30-39 year	158	(29.3 %)
40-49 year	342	(63.3 %)
50-59 year	32	(5.9 %)
60+ year	4	(0.7 %)
Education		
High school and lower	159	(29.4 %)
College/University. 3 years or less	123	(22.8 %)

College/University. more than 3 years	258	(47.8 %)
Belief in cause of global warming (n=534)		
Mainly due to human activity	260	(48.7 %)
Mainly due to natural changes	37	(6.9 %)
Equally due to human activity and natural changes	172	(32.2 %)
Neither. the climate is not changing	1	(0.2 %)
Don't know	64	(11.9 %)
Personal importance of global warming (n=536)		
Not at all important	20	(3.7 %)
Not very important	94	(17.5 %)
Somewhat important	311	(58.0 %)
Very important	111	(20.7 %)

Figure 2 shows us that the mitigation options "recycle food waste" and "throw away less food" received the highest ratings of effectiveness, rated marginally above "limit car use" and "fly less". The sample expressed that voting for a political party that assess global warming is the least effective mitigation option. The "eat less meat" option, which is the most interesting for this thesis, is among the bottom three.

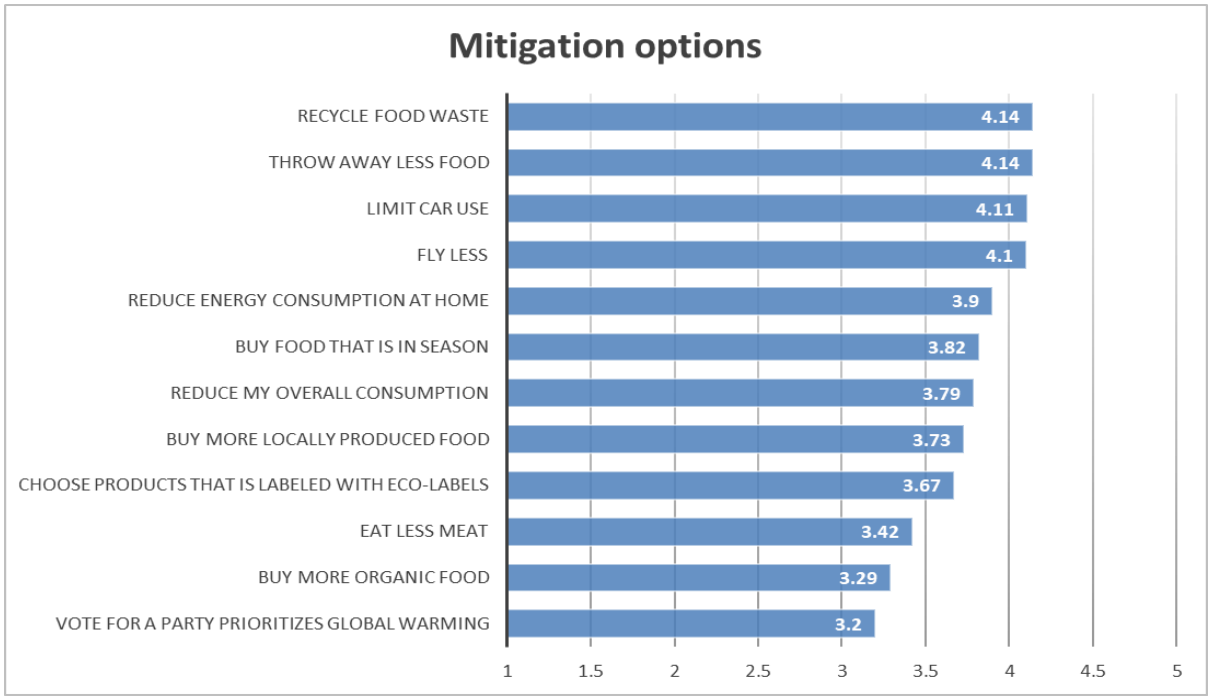

Figure 2: Mean perceived effectiveness of different mitigation options for global warming, on a scale from 1 to 5. (n=540).

While figure 2 showed the mean ratings, table 5 shows the perceived effectiveness in percentages. “Eat less meat” was the mitigation option that most of the sample gave the “not at all effective” effectiveness rating (9.8 %) and was also among the top three mitigations options that received the “not very effective” effectiveness rating (17.4 %). The mitigation option the most respondents were unsure about effectiveness, was “vote for a party that prioritized global warming” (16.1 %). Respondents were also more unsure about the effectiveness of buying more organic food (11.3 %), buying food in season (11.1 %), eating less meat (10.4 %) and choosing products with eco labels (10.0 %), than the effectiveness of the other mitigation options.

Table 5: Perceived effectiveness of the different mitigation actions, in percent.

	Not at all effective (%)	Not very effective (%)	Somewhat effective (%)	Very effective (%)	Don’t know (%)
Recycle food waste	2.0	4.4	52.0	35.4	6.1
Throw away less food	2.2	6.3	48.0	38.3	5.2
Limit car use	3.9	5.2	49.1	37.4	4.4
Fly less	3.0	7.4	38.5	42.6	8.5
Reduce energy expenditure at home	2.8	7.2	64.1	19.4	6.5
Buy food that is in season	2.8	10.9	52.0	23.1	11.1
Reduce my general consumption	2.8	11.5	60.2	18.1	7.4
Buy more locally produced food	4.1	13.3	53.0	21.1	8.5
Choose products with eco labels	3.7	13.3	58.1	14.8	10.0
Eat less meat	9.8	17.4	45.9	16.5	10.4
Buy more organic food	8.7	21.5	48.9	9.6	11.3
Vote for a party that prioritizes global warming	8.3	24.3	42.0	9.3	16.1
Total	100.0	100.0	100.0	100.0	100.0

The table below shows the respondents self-reported habitual weekly meat frequency consumption. The respondents eat more frequently red meat for dinner than chicken or turkey, and a similar tendency can be seen for the sandwich toppings.

Table 6: Reported habitual intake frequencies of red and white meat, times/week (n=540).

	Red meat as sandwich topping		White meat as sandwich topping		Red meat for dinner		White meat for dinner	
	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent
Never	37	6.9%	90	16.7%	11	2.0%	8	1.5%
Less than once a week	86	15.9%	218	40.4%	18	3.3%	72	13.3%
Once a week	57	10.6%	64	11.9%	33	6.1%	173	32.0%
Twice a week	97	18.0%	67	12.4%	114	21.1%	168	31.1%
Three times a week	83	15.4%	43	8.0%	183	33.9%	88	16.3%
Four times a week	67	12.4%	23	4.3%	122	22.6%	25	4.6%
Five times a week	55	10.2%	15	2.8%	44	8.1%	4	0.7%
Six times a week	16	3.0%	8	1.5%	11	2.0%	0	0.0%
Every day	42	7.8%	12	2.2%	3	0.6%	2	0.4%
More than once a day	0	0.0%	0	0.0%	1	0.2%	0	0.0%
Total	540	100.0%	540	100.0%	540	100.0%	540	100.0%

The crosstab in table 7, shows how the perceived effectiveness of eating less meat relates to the samples effort to try to eat less animal foods for environmental reasons. The respondents that rate eating less meat as "not at all effective" or don't know if it is effective or not, are the ones that state that they do not try to eat less animal foods. Most respondents answered that eating less meat is "somewhat effective" (n=247), but more than 50 % with that answer either completely or somewhat disagree that they try to eat less animal foods to save the environment. With a chi-square of <0.001, there is 0.001 % chance that the null hypothesis is correct, and we can reject it. Thus, the likelihood that the variables are dependent becomes stronger.

Table 7: Association between eating less meat as a mitigation action for global warming and efforts to eat less animal foods (n= 537).

	I try to eat less animal foods to save the environment					
Eating less meat as a mitigation option	Completely disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Completely agree	Total
Not at all effective (n=52)	84.6%	9.6%	5.8%	0.0%	0.0%	100.0%
Not very effective (n=94)	54.3%	25.5%	13.8%	5.3%	1.1%	100.0%
Somewhat effective (n=247)	25.5%	27.5%	28.7%	16.6%	1.6%	100.0%
Very effective (n=88)	14.8%	17.0%	20.5%	29.5%	18.2%	100.0%
Don't know (n=56)	57.1%	14.3%	25.0%	1.8%	1.8%	100.0%
Total	37.8%	22.3%	22.2%	13.6%	4.1%	100.0%
Pearson's chi-square: <0.001						

In table 8, the mean reported meat intake for the participant are shown according to their perceived effectiveness of the "eat less meat" mitigation option. There was not a significant correlation between white meat for dinner or as a sandwich topping, while both were significant for red meat. The trend was strongest for red meat for dinner.

Table 8: Mean reported intake frequencies of red and white meat according to perceived effectiveness of eating less meat as a mitigation action for global warming (n=539).

	White meat on sandwich	White meat for dinner	Red meat on sandwich	Red meat for dinner
	Mean (95% CI)	Mean (95% CI)	Mean (95% CI)	Mean (95% CI)
Not at all effective (n=52)	1.22 (0.73, 1.71)	1.46 (1.14, 1.78)	3.56 (3.02, 4.1)	3.79 (3.43, 4.15)
Not very effective (n=94)	1.15 (0.85, 1.45)	1.72 (1.51, 1.94)	2.79 (2.37, 3.2)	3.33 (3.06, 3.6)
Somewhat effective (n=248)	1.38 (1.19, 1.58)	1.8 (1.68, 1.92)	2.65 (2.40, 2.91)	2.93 (2.79, 3.07)
Very effective (n=89)	1.26 (0.94, 1.58)	1.7 (1.45, 1.96)	2.3 (1.86, 2.75)	2.37 (2.07, 2.66)
Don't know (n=56)	1.88 (1.39, 2.38)	1.88 (1.58, 2.19)	2.96 (2.43, 3.5)	2.99 (2.67, 3.31)
Total (n=539)	1.36 (1.22, 1.49)	1.75 (1.66, 1.84)	2.74 (2.57, 2.91)	2.99 (2.88, 3.1)
p-value ANOVA	0.078	0.233	0.009	<0.001

Table 9 shows the results of the linear regression analysis. Besides the "not very effective"-group, mean weekly intake frequency is significantly lower for every model, compared to the reference. The "not very effective"-group had a lower weekly intake frequency (-0.49), but this was not significant in any of the models. The groups "somewhat effective" and "don't know" had similar effect to weekly meat intake frequency and both were significant in all models. When comparing the reference group with the «very effective»-group, meat intake frequency decrease by 1.44 times per week in Model 1. The table shows a trend in decreased meat intake frequencies as effectiveness rating increase. Adjusting for the variables age, gender, education, personal importance of global warming and belief in human causation strengthens the trend somewhat.

Table 9: Linear regression analysis of eating less meat as a mitigation action for global warming in relation to weekly intake frequency of red meat for dinner, before and after multivariate adjustment (n=529).

	Model 1	p-value	Model 2*	p-value	Model 3**	p-value	Model 4***	p-value
Not at all effective	Reference							
Not very effective	-0.49 (-0.92, -0.07)	0.023	-0.54 (-0.97, -0.11)	0.014	-0.54 (-0.97, -0.10)	0.015	-0.60 (-1.04, -0.16)	0.008
Somewhat effective	-0.89 (-1.27, -0.52)	<0.001	-0.96 (-1.34, -0.58)	<0.001	-0.95 (-1.35, -0.55)	<0.001	-1.02 (-1.42, -0.61)	<0.001
Very effective	-1.44 (-1.87, -1.01)	<0.001	-1.52 (-1.95, -1.08)	<0.001	-1.47 (-1.93, -1.01)	<0.001	-1.55 (-2.02, -1.08)	<0.001
Don’t know	-0.85 (-1.32, -0.38)	<0.001	-0.92(-1.41, -0.44)	<0.001	-0.93 (-1.41, -0.44)	<0.001	-0.93 (-1.42, -0.44)	<0.001

*age, gender, education. **personal importance of global warming. ***Belief in human causation of global warming.

5.0 Discussion

The intention of present study was to provide insight into Norwegian parents' awareness of different mitigation options, especially concerning meat consumption. How perceived effectiveness relates efforts to compliance to the mitigation option and to meat consumption, was also assessed.

5.1 Main findings

The results of the study show that most of the respondents in the study sample knows that global warming is mainly due to human activity (47.8 %), while one third thinks it is equally due to human activity and natural changes (32.2 %). Personal importance of global warming was somewhat important (58.0 %) or very important (20.7 %) to the participants, indicating that the attention to the subject is relatively high.

Perceived effectiveness of different mitigation options for global warming

The results show that the study population perceives throwing away less food and recycling food waste are the most effective mitigation options for preventing global warming. These two food-related mitigation options were followed by two transport- and one energy-related mitigation options, respectively "limit car use", "fly less" and "reduce energy consumption at home". The mean perceived effectiveness of eating less meat as a mitigation option, is rated low compared to most of the other mitigation options and is in the bottom three. This was also the mitigation option that the study population rated as "not at all effective" (9.8 %), and 17.4 % respondents rated it as "not very effective", which is among the highest three percentages in this effectiveness category. Despite this, most of the respondents rated it as "somewhat effective" (45.9 %). The only two mitigation options that were rated lower, were "buy more organic food" and "vote for a party that prioritizes global warming".

All mitigation options were rated "somewhat effective" by 39 % or more by the respondents, indicating that the respondents might perceive that consumer mitigations make a difference in GHG emissions and global warming. Regarding the transport related mitigation options "fly less" and "limit" car use, the respondents show an accurate evaluation compared to studies of mitigation options effectiveness (Vita et al., 2019; Wynes & Nicholas, 2017). They did not show the same knowledge about food related mitigation options, as a mitigation option with low mitigation potential (recycling of food waste) was rated highest among the respondents. Reduce food waste has a greater mitigation potential compared to recycling, but low compared to eating less meat.

Perceived effectiveness of eating less meat and efforts to reduce animal foods

As expected, the respondents that rated "eating less meat" as not at all effective as a mitigation option (n=52), somewhat or completely disagreed that they try to eat less animal foods to save the environment (94.2%). In the "not very effective"-group, 6.4% said that they somewhat or completely agreed that they were trying to eat less animal foods, while 79.8% disagreed. This was also expected. What was not expected, were the respondents who thinks eating less meat is very effective and still completely or somewhat disagree that they are trying to eat less animal foods (31.8%). Less than half of the respondents with this rating say that they somewhat or completely agree that they try to eat less animal foods (47.7%). This is a strong indicator than information alone is not enough to make people change their eating habits. At the same time, the results suggest that if the whole study population had been enlightened about the relationship between meat production and global warming, the number of people who somewhat or completely agree that they try to eat less animal foods, would increase 30% (17.7% to 47.7%). With a chi-square of <0.001 there is a strong probability that the variables are dependent.

Perceived effectiveness of eating less meat and meat consumption frequency

Meat intake in the sample was measured as self-reported habitual weekly meat frequency consumption. The respondents ate red meat for dinner more frequently than chicken or turkey, and a similar tendency was seen for the sandwich toppings. The respondents more frequently eat red meat compared to poultry, both as a sandwich topping and for dinner. As the average Norwegian eat 19.5 kg poultry and 50 kg red meat each year, these results are not surprising. Frequency is not directly transferable to amount. However, Helsedirektoratet (2017) gives 500 grams as an example of 2-3 dinner portions in addition to some sandwich toppings. If only considering dinner portions and assuming 2-3 dinner portions are equivalent to 500 grams, 55 % in the study population eat approximately according to the national recommendations. Over 30 % percent of the study population eats more than this, and hence more than the recommended amount. This is the same results as the women in the Norkost 3-survey (Totland et al., 2012).

When mean reported meat intake for the participant were shown according to their perceived effectiveness of the "eat less meat" mitigation option, there was not a significant correlation between white meat for dinner or as a sandwich topping. Both were significant for red meat, and the trend was strongest for red meat for dinner. This may indicate knowledge about the different impact different types of meat have, and more awareness regarding larger

portions, like dinner portions. Mean weekly intake frequency was significantly lower for every model in the linear regression analysis of eating less meat as a mitigation option in relation to weekly intake frequency of red meat for dinner. Only the results in the "not very effective"-group were not significant in any of the models, and also had a lower weekly intake frequency (-0.49).The groups "somewhat effective" and "don't know" had similar effect to weekly meat intake frequency and both were significant in all models. When comparing the reference group with the «very effective»-group, meat intake frequency decrease by 1.44 times per week in Model 1. The results show a trend in decreased meat intake frequencies as effectiveness rating increase. Adjusting for the variables age, gender, education, personal importance of global warming and belief in human causation strengthens the trend somewhat.

5.2 Results compared to previous studies

The finding are compatible with previous research done in Norway, which has shown that the population have limited knowledge about how meat production affects the environment (Austgulen et al., 2018; Vittersø & Kjærnes, 2015). The results are similar to findings in other countries (Latvala et al., 2012; Macdiarmid et al., 2016; Tobler et al., 2011).

A Norwegian study from 2018, found that purchasing organic food and avoiding meat were ranked the lowest amongst similar mitigation options as the present study (Austgulen et al., 2018). When asked about the positive environmental effects of a meat-free day weekly, almost 50 % agreed, but only 14 % of the same respondents claimed to have reduced meat consumption due to environmental impact (Austgulen et al., 2018). One third of the respondents also found it difficult to reduce meat consumption. In the same study, reduce food waste and increase production of locally produced food were ranked highest. The underestimation of meat consumption's impact on climate change is found in several other studies as well (Austgulen et al., 2018; de Boer et al., 2016). Inadequate knowledge is one of the barriers, which is confirmed in the present study. Consumers with more knowledge about the relationship between meat consumption and GHG emissions, are both in this study and others, associated with a higher willingness to eat less meat (Austgulen et al., 2018; de Boer, Schösler, & Aiking, 2014). In the study by de Boer et al. (2016), willingness to eat less meat increased with perceived effectiveness. This indicates that raised awareness on the most sustainable dietary options may lead to more people choosing the more effecting ones, like eating less meat. This study has shown that increasing consumer knowledge will increase willingness to reduce consumption frequencies, but also that knowledge is not always enough

for that behavioral change. de Boer et al. (2016) found that the most important covariate with perceived effectiveness of eating less meat, was frequency of meat eating. Increased frequency of meat eating correlated with lower perceived effectiveness. Several other studies have found the same result, regarding meat eating frequencies and willingness to reduce meat consumption (de Boer & Aiking, 2011; de Boer et al., 2014; De Groeve & Bleys, 2017; Graça, Calheiros, & Oliveira, 2015; Graça, Oliveira, & Calheiros, 2015; Milford & Kildal, 2019; Whitley, Gunderson, & Charters, 2018).

The results show that information about the relationship between meat consumption and GHG emissions is necessary, but unfortunately not enough alone to behavioral change regarding reduction in meat consumption. This could be due to strong routines consumers have regarding diets. Perceived effectiveness of own actions is shown to increase likelihood of adapting sustainable habits (Hunter & Röös, 2016; Pohjolainen et al., 2016; Vermeir & Verbeke, 2006). This perception can be influenced by targeted information, education and communication towards consumers (Vermeir & Verbeke, 2006).

Education and government documents from European Union, Canada, the US and Australia did not focus on high-impact mitigation actions for reducing emissions (Wynes & Nicholas, 2017). This can potentially create a mitigation gap between individuals that are willing to change behaviors regarding to climate targets, and the official recommendations. Norwegian agricultural organizations promote meat production in Norway as environmentally friendly and want to increase production, which might confuse a lot of consumers. It is also highly subsidized, and considered an important part of Norwegian agriculture (Austgulen et al., 2018). Some studies have shown that pairing information of environmental damage, with health benefits of decreasing meat consumption could lead to higher willingness due to more visible personal benefits (de Boer, Schösler, & Boersema, 2013).

Avoidance of meat has been found to be determined by attitudes, habits, norms and perceived behavioral control (Verain et al., 2015). Animal welfare, moral and ethical beliefs, health related motives and environmental impact also motivates people to decrease meat consumption. Barriers for decreasing consumption are lack of knowledge and familiarity of substitutes for meat, habits, appreciation of the taste of meat, lack of cooking skills, low awareness or skepticism of meats environmental impact. Gender and socio-economic status are also predictors of willingness to decrease meat consumption. A Norwegian study of

mostly male, young soldiers, showed that they did not believe that a high consumption of red meat was harmful for their health (Milford & Kildal, 2019). Several studies have found gender to be a predictor for willingness to eat less meat (Campbell-Arvai, 2015; de Boer et al., 2014; De Groeve & Bleys, 2017). Since women in previous studies has been shown to be more likely to reduce their meat intake due to environmental reasons, and the study sample consists of 79 % women, these results may be more environmental positive than if more men had answered the survey.

There has been a shift globally from plant-based dietary patterns, towards diets rich in added sugar, fats and animal source foods, as well as food with minimal nutritional value and high energy density (FAO/WHO, 2019). To success with consumer transition towards more sustainable dietary choices, policies regarding economics, behavior and food environment needs to be in place. All consumers go through several decision-making progresses regarding dietary choices each day. This process is affected by many factors, such as learned experiences with food, cultural environment, value judgements and routines. The behavior linked to dietary choices is also affected by food environment, sociocultural factors, as well as food affordability and cost. People seldom eat something they can not afford, and is therefore affected by household income and the particular foods market price in relation to other household expenses. Unfortunately, energy-dense foods are less expensive that nutritious food, both in high, middle- and low-income countries, making poverty an obstacle to access nutritious foods. Socio-economic transitions, traditions and food availability is connected to variability of consumption practices and habits at the regional level (FAO/WHO, 2019).

To alleviate the impact we humans have on the environment, we need individuals to choose diets high in vegetables and low in meat (Steinfeld et al., 2006; Willett et al., 2019). Only a minority of consumers in developed countries are aware of meat production and consumptions impact on the environment, and the same goes for consumers willing to reduce or stop their meat intake for environmental reasons (Hartmann & Siegrist, 2017; Sanchez-Sabate & Sabaté, 2019). The Western population does not seem to be motivated to reduce meat consumption to alleviate climate change, and reducing meat consumption was among the least preferred mitigation options (Sanchez-Sabate & Sabaté, 2019). Increasing consumer knowledge of the relationship between meat production and consumption is a beneficial approach to increase awareness and willingness among consumers. Studies have shown that providing information before answering questions regarding willingness, increased

percentages significantly (Sanchez-Sabate & Sabaté, 2019). More research on strategies to increase both willingness and awareness to change meat consumption in Western countries is needed.

More people need to follow the national nutrition recommendations to promote sustainability. A plant-based diet, with increased consumption of fish and decreased consumption of meat, will contribute to reach both health policy targets as well as climate policy targets (Helse- og omsorgsdepartementet, 2018). For people to adopt to high impact actions, structural barriers and social norms must allow it (Wynes & Nicholas, 2017). To reach the UNs SDGs, efforts are needed from public authorities and private sector (Helse- og omsorgsdepartementet, 2018). Businesses can contribute with innovative and sustainable solutions, but also by changing their production and how they organize their work. The public health will be greatly influenced by the achievement of the SDGs. The different stages in the food chain are important for reaching most of the targets; primary production, processing, transport, trade and marketing. A sustainable food availability with a lot of plant-based food is a good basis for a healthy diet. Another good reason for more people to follow the recommendations is the huge community benefit, which potentially can be as big as 154 billion each year in Norway (Helsedirektoratet, 2016). When combining health loss, health service costs and production loss, the total social cost related to consumption of red and processed meat is as much as 30 billion kroners (Helsedirektoratet, 2016). This does not include costs related to global environmental issues. The health-related society cost itself reinforces the justification of regulating production and consumption of red meat with taxes. The income from these taxes could for example be used to subsidize fruit and vegetables, since the consumption is below the recommendations in the population. The social cost related to health loss due to a too low consumption of fruit and vegetables is estimated to be 60 billion kroner.

Consumers in Norway have in a previous study been critical to the idea that most of the responsibility lies on the consumer, and not resolved at a higher level (Austgulen et al., 2018). Interventions are needed on several levels to increase consumption of plant-based food and reduce animal foods. Providing information and knowledge through campaigns, more focus in the national dietary guidelines and providing plant-based food in public institutions, such as schools. Another option at a different level, would be pricing food according to environmental impact, but this was not perceived as a good solution in a previous Norwegian study (Austgulen et al., 2018).

Actions for the implementation of sustainable healthy diets can be done through government mechanisms, incentives and disincentives, legal frameworks; and regulatory instruments to promote the production, processing, distribution, labelling and marketing (FAO/WHO, 2019).

Analyses looking at diets as a mitigation option mostly rely on possible preference changes with the consumer, instead of changes in policy that impact demands (Hedenus et al., 2014). The food industry analyzes sociocultural aspects of food choices in detail. This is not common in policymaking, which is unfortunate since classification tools and ethnographic surveys could be used to identify food choice values and shared practices and define food cultures. Food choice values help groups and individual to simplify choice, and connecting them with narratives and symbol can help create new norms for growing, procuring an enjoying food. Sale restriction, labeling and marketing restrictions are policies that might guide or restrict consumer choices. An understanding of the drivers of consumer food choices and how they are shaped is critical during policymaking.

Red meat has greater emissions than white meat per calorie unit, and this suggests that red meat should have a higher tax. However, the production subsidies are higher for red meat than white meat today, both considering per kilo and per calorie unit (NOU 2015:15, 2015). The revenue effect of reducing production subsidies to red meat equivalent to a production tax of 840 kr per metric ton CO_2-equivalent, is calculated to 1600 million kroner (NOU 2015:15, 2015).

Behavioral changes must occur in the food industry, the grocery trade and with the consumers, in order to influence emissions (Teknisk arbeidsgruppe, 2018). The effect on the climate will be reported in the agricultural sector, as a result of changes in demand – which for agriculture may mean a lower demand for beef and higher demand for plant-based food.

5.3 Methodological considerations

5.3.1 Study design

The study this thesis is based upon, was a repeated cross-sectional survey conducted in 2001, 2008 and 2018. The present study is based only on the last survey, making it at cross-sectional survey which capture the state at the specific moment. A limitation with this design, is that it is not possible see individual changes over time.

The schools that were invited to participate in the study, were the same schools that participated in 2011. All schools were located in Hedmark or Telemark, two rural counties in the eastern and south-eastern part of Norway. The counties mostly consist of villages and

small towns, making generalization of the results to the more urban parts of Norway a bit difficult. In a global perspective, Norwegian big cities are relatively small, so generalization in some degree should be possible.

5.3.2 Study sample

In the 25 participating schools, there were a total of 1735 6th and 7th graders. Out of these, 670 (44 %) brought back a signed consent form in time. Many of the 7th graders had just been or were going to camp school, and therefore some had a short period of time to get a parent signature, which might have led to a lower response rate. After the school survey with the 6th and 7th graders, 670 children brought a questionnaire home to their parent. Out of these, 609 (80 %) parents answered and returned the questionnaire. The response rate sinks to 35 % when total possible respondents are accounted for, and there is a risk of selection bias

Out of the 609 parents who answered the survey, 529 answered all the relevant questions for the final analysis. For some of the analysis and the descriptive statistics, the number of respondents with sufficient answers were a bit higher, respectively 537 and 540. Based on the demographics of the study population, it is likely that respondents differ from non-respondents. The high percentage of women (79 %) and respondents with more than 3 years of higher education (48 %) substantiates this assumption. In Norway, 33 % have higher education, while as many as 71 % have higher education in this sample (SSB, 2018). Since most of the respondents were in the age group 40-49 years old (63 %), educational level for this group was interesting to compare to when assessing generalization. The two counties have very similar education level in the age group 40-49 years old, with less than one percent difference in population, women and men (SSB, 2018). Table 10 shows mean percentage of years with higher education and in the age 40-49 in the two counties, and for the same age group in Norway. There are no big differences from the counties compared to Norway when it comes to four or less years of higher education. There is however a higher percentage of people with more than 4 years of higher education in Norway, compared with the two counties, where the counties are lower. Since the Norwegian Statistics (SSB) has categorized long higher education as more than four years, it is difficult to compare with the characteristics of this study sample, where “more than three years” was the highest possible answer for education level. It is however indicative and strengthens the assumption that there is a difference in educational level in respondents compared to non-respondents.

Table 10: Mean years of higher education for the population aged 40-49 years old in the two counties Hedmark and Telemark, and years of higher education for the population aged 40-49 years old in Norway, in 2018 (%) (SSB, 2018).

	Higher education, ≤4 years	Higher education, >4 years
Hedmark and Telemark		
Population	28.7 %	8.3 %
Women	37.0 %	8.7 %
Men	20.4 %	7.9 %
Norway		
Population	30.3 %	14.0 %
Women	37.4 %	14.3 %
Men	23.7 %	13.7 %

As most respondents also were women and more women in the two counties had a higher level of education compared to the men, the results could have been different with more male respondents. This skewness might make the results less likely to be generalized to the rest of the Norwegian population, as socioeconomic status is a predictor of survey participation (Fismen et al., 2016). It is also a possibility that the respondents have a greater interest in nutrition, physical activity and sustainability compared to the non-respondents, which can lead to response bias. A higher educational level is also associated with higher physical activity levels and dietary choices, which were some of the main topics of the questionnaire (Dahl, Bergsli, & van der Wel, 2014).

5.3.3 Data collection

Being present and collecting the questionnaires from the 6th and 7th graders right away had both advantages and disadvantages. An advantage is that the data collection was done in one day per school, which saved time. This was not the case for the parent questionnaires, that had to be forwarded by the projects contact person at the schools. Another advantage is that each project member had the same protocol to follow when presenting the questionnaire and answering questions from the pupils, making interpretation of the questions more similar than if for example a teacher were to interpret and answer the questions. The parent survey did nor have this advantage, as it was self-administrated, and respondents did not have the possibility to ask questions concerning the survey. A disadvantage of the data collection, was that pupils

with a consent form that were not present the day of the survey, would not be able to participate on the survey and not bring a questionnaire home to their parent.

The questionnaires were punched manually, which increases the possibility of typing errors. Since punching accuracy was double-checked by a second person, the risk of errors decreased.

5.3.4 Measurements of meat consumption

The questionnaire included two self-reported diet assessment methods; a modified 24-hour recall and a food frequency questionnaire (FFQ). Self-reported data are prone to biases, and the answers might be biased towards what respondents think researchers want them to answer or towards how they wished their diet was (Pedersen, Hjartåker, Müller, & Anderssen, 2017). Recall bias may also occur in retrospective assessment methods, such as the ones used in the questionnaire.

The 24-hour recall is an open method and can potentially provide very detailed information about a person's diet the last 24 hours. It can be time consuming for the respondent to answer and time consuming to process the answers for researchers. However, the method can give a detailed insight to the diet. The 24-hour recall also only assess one day of the respondents diet, and might not provide an accurate description of the respondents normal diet (Pedersen et al., 2017). Without knowing what weekday the parents filled out the 24-hour recall, it was not possible to know if the answers represented a regular weekday or a day of the weekend.

The food frequency questions in the survey, asked the participants of how often they usually eat different food groups, and that they could use the last three months as a basis. The length of the reference period is important to the validity of the FFQ, to minimize recall bias (Pedersen et al., 2017). This assessment method is closed and will therefore not be able to map the whole diet of a respondent by itself, and not provide as many details. For this thesis, it was not the necessary to map the whole diet of the contestant and using the answers from the food frequency questionnaire to assess meat consumption frequency was considered to be the most suitable to answer the study objectives. Since the study objectives in this study is inspired by the study de Boer et al. (2016) did in the Netherlands and The US, it was also a natural choice to use the same approach when assessing meat consumption. This is also a frequently used assessment method in previous research on the subject.

It might have been useful to include portion size in the FFQ, to easier compare with the mean consumption of meat in Norway. The study populations meat consumption in gram per week could have made it easier to see if the study population has a greater consumption of meat than the general Norwegian population. Another approach that could have provided valuable and relevant information, is the respondents self-reported change in their diet the last couple of years, as well as their intentions to change their consumption the next couple of years.

5.3.5 Other measurements

The respondent's reported their highest educational level in the self-administrated questionnaire. Education was measured as a categorical variable, with milestones such as high school, three years or less of higher education and more than three years of higher education. To measure perceived relevance of mitigation, respondents were asked about the attribution to climate change, if they believed it to be cause by human or natural factors. They were also asked about the personal importance of climate change. Respondents were also asked to answer how much they agreed or disagreed to different statements related to climate, which was measured as a categorical variable. The statement that was relevant for this thesis, was regarding their efforts to eat less animal foods.

Other covariates that should be considered in future research: gastronomic dimension, cooking skills and social networks, since eating is a socially regulated behavior (Poulain & Dörr, 2017).

5.3.4 Ethical considerations

Research clearance and ethical approval for the Food and Vegetable Make the Mark-study was obtained from The Norwegian Social Science Data Services (NSD), and by the Faculty's Ethics Committee of the University of Agder (FEC) in 2018. The student project got a separate approval by NSD as well.

Since the recruitment of parents was through recruitment of schools and children under the age of 16, an informative consent form with a parent's signature was mandatory for the pupils to be allowed to participate. The consent for contained information about the protocol, the purpose of the study, and information on how to withdraw consent and participation from the study at any time.

Participants were deidentified by using a random subject ID. There were no connections to personal data, since the subject ID had no connection to children or parent name or personal information. The random ID number the children received only connected them to which school they attended. These numbers were changed by the project manager, making the analysis blind for project members when conducting the analysis.

6.0 Conclusion

The present study has shown that increasing consumer knowledge will increase willingness to reduce meat consumption frequencies, but also that knowledge is not always enough for that behavioral change. Norwegian consumers in this study are a bit hesitant to reduce meat consumption as a mitigation option. This is partly due to lack of knowledge, but consumer claiming to know about the relationship between meat consumption and GHG emissions, does not necessary try to eat less meat. Consumer are thus not empowered to make diet related choices based on climate mitigation.

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Appendixes

Appendix 1: Parent questionnaire

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F

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Spørreskjema om kosthold, fysisk aktivitet og miljø - FG6/ATN/(M)EAT 2018

Takk for at du vil delta i den felles datainnsamlingen for prosjektene Frukt og grønt i 6. (FG6), Aktiv transport til skole og jobb i Norge (ATN) og (M)EAT (om bærekraftig kosthold).

I dag har elevene i din datter/sønns klasse svart på et liknende spørreskjema.

Det er kun en av elevens foreldre/foresatte som skal fylle ut dette spørreskjemaet.

Alle svarene behandles konfidensielt. Er det spørsmål du ikke kan eller vil svare på kan du la det være.

Det ferdig utfylte skjemaet legges i den konvolutten den kom i, forsegles og sendes med din sønn/datter tilbake til kontaktlærer.

Dersom du har spørsmål eller andre henvendelser omkring prosjektet, vennligst ta kontakt med Helene Kristin Olsen på telefon 93215307, eller e-post heleno17@student.uia.no.

TAKK FOR HJELPEN!

Elling Bere
Professor
Prosjektleder

Helene Kristin Olsen
Masterstudent

1. Er du?

(1) ☐ Mann

(2) ☐ Kvinne

2. I hvilket år er du født?

1	9		

3. Hvilken dato er det i dag?

Del A - Hva spiste du i går?

Dagen i går er delt opp i 4 perioder: Frokost, mellom frokost og middag, middag og kvelds.

- Kryss av for om du spiste de forskjellige matvarene til de forskjellige tider eller ikke.
- For **frukt, grønnsaker, poteter**, o**g kjøtt** skal du også skrive HVA du spiste og HVOR MYE. Under følger en beskrivelse av hvordan du skal gjøre dette.
- Du skal også skrive ned om du kastet mat i går, samt hva og hvor mye.

For å skrive ned hvor mye du spiste og drakk skal du tenke på følgende:

Frukt og **bær** måles i antall (f.eks. ett eple, en banan) eller i porsjon (f.eks. en porsjon fruktsalat)

Grønnsaker måles i antall (f.eks. en gulrot) eller i porsjon (f.eks. en porsjon salat, en porsjon brokkoli)

Poteter måles i antall (f.eks. 2 poteter) eller i porsjon (f.eks. en porsjon potetstappe eller en porsjon stekte poteter)

Kjøtt måles i antall (f.eks. pølser/skinkeskiver på brødskiven) eller porsjon (til middag)

Hvis du spiste noe som ikke kan måles i stykker, porsjoner eller antall, må du beskrive best mulig hvor mye du spiste (f.eks. 2 never bringebær, 1½ skive kålrot, 3 ringer paprika).

Kjøtt deles i rødt kjøtt (f.eks. svin, lam og storfe) og hvitt kjøtt (kylling og kalkun).

Tenk tilbake til i går tidlig

Frokost

4. Spiste du frokost i går tidlig?

☐ Ja ☐ Nei

5. Spiste du frukt eller bær i går tidlig?

☐ Ja ☐ Nei

Hvis ja, skriv ned hva slags og hvor mye **frukt** og **bær** du spiste her:

6. Spiste du grønnsaker i går tidlig?

☐ Ja ☐ Nei

Hvis ja, skriv ned hva slags og hvor mye **grønnsaker** du spiste her:

7. Spiste du kjøtt i går tidlig?

☐ Ja ☐ Nei

Hvis ja, skriv ned hva slags og hvor mye **kjøtt** du spiste her:

8. Kastet du mat i går tidlig?

☐ Ja ☐ Nei

Hvis ja, skriv ned hva slags og hvor mye **mat du kastet**:

Tenk på tiden mellom frokost og middag i går

9. Spiste du lunsj/ formiddagsmat i går?

☐ Ja ☐ Nei

10. Spiste du frukt eller bær i tiden mellom frokost og middag i går? **Formiddag**

☐ Ja ☐ Nei

Hvis ja, skriv ned hva slags og hvor mye **frukt** og **bær** du spiste her:

11. Spiste du grønnsaker i tiden mellom frokost og middag i går?

☐ Ja ☐ Nei

Hvis ja, skriv ned hva slags og hvor mye **grønnsaker** du spiste her:

12. Spiste du kjøtt i tiden mellom frokost og middag i går?

☐ Ja ☐ Nei

Hvis ja, skriv ned hva slags og hvor mye **kjøtt** du spiste her:

13. Kastet du mat i tiden mellom frokost og middag i går?

☐ Ja ☐ Nei

Hvis ja, skriv ned hva slags og hvor mye **mat du kastet** her:

Tenk tilbake til middagstid i går

Middag

14. Spiste du middag i går?

☐ Ja ☐ Nei

15. Spiste du potet til middag i går?

☐ Ja ☐ Nei

Hvis ja, skriv ned i hvilken form og hvor mye **potet** du spiste her:

16. Spiste du grønnsaker til middag i går?

☐ Ja ☐ Nei

Hvis ja, skriv ned hva slags og hvor mye **grønnsaker** du spiste her:

17. Spiste du frukt eller bær til middag eller som dessert i går?

☐ Ja ☐ Nei

Hvis ja, skriv ned hva slags og hvor mye **frukt** og **bær** du spiste her:

18. Spiste du kjøtt til middag i går?

☐ Ja ☐ Nei

Hvis ja, skriv ned hva slags og hvor mye **kjøtt** du spiste her:

19. Kastet du mat i forbindelse med middagen i går?

☐ Ja ☐ Nei

Hvis ja, skriv ned hva slags og hvor mye **mat** du kastet her:

Tenk tilbake til tiden etter middag i går

20. Spiste du kveldsmat i går kveld?

☐ Ja ☐ Nei

21. Spiste du frukt eller bær etter middag eller til kvelds i går? **Kvelds**

☐ Ja ☐ Nei

Hvis ja, skriv ned hva slags og hvor mye **frukt** og **bær** du spiste her:

22. Spiste du grønnsaker etter middag eller til kvelds i går?

☐ Ja ☐ Nei

Hvis ja, skriv ned hva slags og hvor mye **grønnsaker** du spiste her:

23. Spiste du kjøtt etter middag eller til kvelds i går?

☐ Ja ☐ Nei

Hvis ja, skriv ned hva slags og hvor mye **kjøtt** du spiste her:

24. Kastet du mat etter middag eller til kvelds i går?

☐ Ja ☐ Nei

Hvis ja, skriv ned hva slags og hvor mye **mat** du kastet her:

Del B - Hva spiser du vanligvis?

Når du fyller ut disse spørsmålene skal du tenke på hva du vanligvis spiser/drikker. Tenk gjerne på hva du har spist/drukket de siste 3 månedene. Tenk på både hva du spiser hjemme, på arbeid og i fritiden. Kryss av i den ruten du føler passer best for deg.

1. Hvor ofte spiser du potet?

(1) ☐ Aldri
(2) ☐ Sjeldnere enn 1 gang i uken
(3) ☐ 1 gang i uken
(4) ☐ 2 ganger i uken
(5) ☐ 3 ganger i uken
(6) ☐ 4 ganger i uken
(7) ☐ 5 ganger i uken
(8) ☐ 6 ganger i uken
(9) ☐ Hver dag
(10) ☐ Flere ganger hver dag

2. Hvor ofte spiser du grønnsaker til middag?

(1) ☐ Aldri
(2) ☐ Sjeldnere enn 1 gang i uken
(3) ☐ 1 gang i uken
(4) ☐ 2 ganger i uken
(5) ☐ 3 ganger i uken
(6) ☐ 4 ganger i uken
(7) ☐ 5 ganger i uken
(8) ☐ 6 ganger i uken
(9) ☐ Hver dag
(10) ☐ Flere ganger hver dag

3. Hvor ofte spiser du grønnsaker på brødskivene?

(11) ☐ Aldri
(12) ☐ Sjeldnere enn 1 gang i uken
(13) ☐ 1 gang i uken
(14) ☐ 2 ganger i uken
(15) ☐ 3 ganger i uken
(16) ☐ 4 ganger i uken
(17) ☐ 5 ganger i uken
(18) ☐ 6 ganger i uken
(19) ☐ Hver eneste dag
(20) ☐ Flere ganger hver dag

4. Hvor ofte spiser du andre grønnsaker (f.eks. gulrot til lunchen)?

(1) ☐ Aldri
(2) ☐ Sjeldnere enn 1 gang i uken
(3) ☐ 1 gang i uken
(4) ☐ 2 ganger i uken
(5) ☐ 3 ganger i uken
(6) ☐ 4 ganger i uken
(7) ☐ 5 ganger i uken
(8) ☐ 6 ganger i uken
(9) ☐ Hver dag
(10) ☐ Flere ganger hver dag

5. Hvor ofte spiser du eple, appelsin, pære og banan?

(1) ☐ Aldri
(2) ☐ Sjeldnere enn 1 gang i uken
(3) ☐ 1 gang i uken
(4) ☐ 2 ganger i uken
(5) ☐ 3 ganger i uken
(6) ☐ 4 ganger i uken
(7) ☐ 5 ganger i uken
(8) ☐ 6 ganger i uken
(9) ☐ Hver dag
(10) ☐ Flere ganger hver dag

6. Hvor ofte spiser du annen frukt og bær (andre frukter og bær enn eple, appelsin, pære og banan)?

(1) ☐ Aldri
(2) ☐ Sjeldnere enn 1 gang i uken
(3) ☐ 1 gang i uken
(4) ☐ 2 ganger i uken
(5) ☐ 3 ganger i uken
(6) ☐ 4 ganger i uken
(7) ☐ 5 ganger i uken
(8) ☐ 6 ganger i uken
(9) ☐ Hver dag
(10) ☐ Flere ganger hver dag

7. Hvor ofte spiser du nudler (f.eks. Mr.Lee)?

(1) ☐ Aldri
(2) ☐ Sjeldnere enn 1 gang i uken
(3) ☐ 1 gang i uken
(4) ☐ 2 ganger i uken
(5) ☐ 3 ganger i uken
(6) ☐ 4 ganger i uken
(7) ☐ 5 ganger i uken
(8) ☐ 6 ganger i uken
(9) ☐ Hver dag
(10) ☐ Flere ganger hver dag

8. Hvor ofte spiser du potetgull?

(1) ☐ Aldri
(2) ☐ Sjeldnere enn 1 gang i uken
(3) ☐ 1 gang i uken
(4) ☐ 2 ganger i uken
(5) ☐ 3 ganger i uken
(6) ☐ 4 ganger i uken
(7) ☐ 5 ganger i uken
(8) ☐ 6 ganger i uken
(9) ☐ Hver dag
(10) ☐ Flere ganger hver dag

9. Hvor ofte spiser du godterier (sjokolade, blandet godt osv.)?

(1) ☐ Aldri
(2) ☐ Sjeldnere enn 1 gang i uken
(3) ☐ 1 gang i uken
(4) ☐ 2 ganger i uken
(5) ☐ 3 ganger i uken
(6) ☐ 4 ganger i uken
(7) ☐ 5 ganger i uken
(8) ☐ 6 ganger i uken
(9) ☐ Hver dag
(10) ☐ Flere ganger hver dag

10. Hvor ofte spiser du boller, muffins, kake eller annen søt gjærbakst?

(1) ☐ Aldri
(2) ☐ Sjeldnere enn 1 gang i uken
(3) ☐ 1 gang i uken
(4) ☐ 2 ganger i uken
(5) ☐ 3 ganger i uken
(6) ☐ 4 ganger i uken
(7) ☐ 5 ganger i uken
(8) ☐ 6 ganger i uken
(9) ☐ Hver dag
(10) ☐ Flere ganger hver dag

11. Hvor ofte drikker du juice?

(1) ☐ Aldri
(2) ☐ Sjeldnere enn 1 gang i uken
(3) ☐ 1 gang i uken
(4) ☐ 2 ganger i uken
(5) ☐ 3 ganger i uken
(6) ☐ 4 ganger i uken
(7) ☐ 5 ganger i uken
(8) ☐ 6 ganger i uken
(9) ☐ Hver dag
(10) ☐ Flere ganger hver dag

12. Hvor ofte drikker du saft?

(1) ☐ Aldri
(2) ☐ Sjeldnere enn 1 gang i uken
(3) ☐ 1 gang i uken
(4) ☐ 2 ganger i uken
(5) ☐ 3 ganger i uken
(6) ☐ 4 ganger i uken
(7) ☐ 5 ganger i uken
(8) ☐ 6 ganger i uken
(9) ☐ Hver dag
(10) ☐ Flere ganger hver dag

13. Hvor ofte drikker du brus MED sukker?

(1) ☐ Aldri
(2) ☐ Sjeldnere enn 1 gang i uken
(3) ☐ 1 gang i uken
(4) ☐ 2 ganger i uken
(5) ☐ 3 ganger i uken
(6) ☐ 4 ganger i uken
(7) ☐ 5 ganger i uken
(8) ☐ 6 ganger i uken
(9) ☐ Hver dag
(10) ☐ Flere ganger hver dag

14. Hvor ofte drikker du brus UTEN sukker?

(1) ☐ Aldri
(2) ☐ Sjeldnere enn 1 gang i uken
(3) ☐ 1 gang i uken
(4) ☐ 2 ganger i uken
(5) ☐ 3 ganger i uken
(6) ☐ 4 ganger i uken
(7) ☐ 5 ganger i uken
(8) ☐ 6 ganger i uken
(9) ☐ Hver dag
(10) ☐ Flere ganger hver dag

15. Hvor ofte drikker du vann fra springen?

(1) ☐ Aldri
(2) ☐ Sjeldnere enn 1 gang i uken
(3) ☐ 1 gang i uken
(4) ☐ 2 ganger i uken
(5) ☐ 3 ganger i uken
(6) ☐ 4 ganger i uken
(7) ☐ 5 ganger i uken
(8) ☐ 6 ganger i uken
(9) ☐ Hver dag
(10) ☐ Flere ganger hver dag

16. Hvor ofte drikker du reint kjøpevann? (uten kullsyre og smak)

(1) ☐ Aldri
(2) ☐ Sjeldnere enn 1 gang i uken
(3) ☐ 1 gang i uken
(4) ☐ 2 ganger i uken
(5) ☐ 3 ganger i uken
(6) ☐ 4 ganger i uken
(7) ☐ 5 ganger i uken
(8) ☐ 6 ganger i uken
(9) ☐ Hver dag
(10) ☐ Flere ganger hver dag

17. Hvor ofte drikker du vann med kullsyre og/ eller smak?

(1) ☐ Aldri
(2) ☐ Sjeldnere enn 1 gang i uken
(3) ☐ 1 gang i uken
(4) ☐ 2 ganger i uken
(5) ☐ 3 ganger i uken
(6) ☐ 4 ganger i uken
(7) ☐ 5 ganger i uken
(8) ☐ 6 ganger i uken
(9) ☐ Hver dag
(10) ☐ Flere ganger hver dag

18. Hvor ofte spiser du RØDT kjøtt som pålegg (skinke, pølse)?

(1) ☐ Aldri
(2) ☐ Sjeldnere enn 1 gang i uken
(3) ☐ 1 gang i uken
(4) ☐ 2 ganger i uken
(5) ☐ 3 ganger i uken
(6) ☐ 4 ganger i uken
(7) ☐ 5 ganger i uken
(8) ☐ 6 ganger i uken
(9) ☐ Hver dag
(10) ☐ Flere ganger hver dag

19. Hvor ofte spiser du pålegg av kylling/kalkun?

(1) ☐ Aldri
(2) ☐ Sjeldnere enn 1 gang i uken
(3) ☐ 1 gang i uken
(4) ☐ 2 ganger i uken
(5) ☐ 3 ganger i uken
(6) ☐ 4 ganger i uken
(7) ☐ 5 ganger i uken
(8) ☐ 6 ganger i uken
(9) ☐ Hver dag
(10) ☐ Flere ganger hver dag

20. Hvor ofte spiser du RØDT kjøtt til middag (som kotelett, karbonader, pølse, kjøttdeig)?

(1) ☐ Aldri
(2) ☐ Sjeldnere enn 1 gang i uken
(3) ☐ 1 gang i uken
(4) ☐ 2 ganger i uken
(5) ☐ 3 ganger i uken
(6) ☐ 4 ganger i uken
(7) ☐ 5 ganger i uken
(8) ☐ 6 ganger i uken
(9) ☐ Hver dag
(10) ☐ Flere ganger hver dag

21. Hvor ofte spiser du kylling/kalkun til middag?

(1) ☐ Aldri
(2) ☐ Sjeldnere enn 1 gang i uken
(3) ☐ 1 gang i uken
(4) ☐ 2 ganger i uken
(5) ☐ 3 ganger i uken
(6) ☐ 4 ganger i uken
(7) ☐ 5 ganger i uken
(8) ☐ 6 ganger i uken
(9) ☐ Hver dag
(10) ☐ Flere ganger hver dag

Del C - Spørsmål om deg og ditt

1. Hvor mye bor du sammen med din sønn/datter?

(1) ☐ Hele tiden
(2) ☐ 50% eller mer av tiden
(3) ☐ Mindre enn 50%

2. Hvor mange personer er dere i familien (bor sammen til daglig)?

☐ Voksne

☐ Barn

3. Hva veide du sist du veide deg?

_____ kg

4. Hvor høy var du sist du målte deg?

_____ cm

5. Trener/mosjonerer du regelmessig?

(1) ☐ Ja

(2) ☐ Nei

(3) Hvis ja, skriv hva :

6. Utenom arbeidstid: Hvor mange GANGER i uken driver du idrett eller mosjonerer du så mye at du blir andpusten og/eller svett?

(1) ☐ Hver dag

(2) ☐ 4 - 6 ganger i uken

(3) ☐ 2 - 3 ganger i uken

(4) ☐ En gang i uken

(5) ☐ En gang i måneden

(6) ☐ Mindre enn en gang i måneden

(7) ☐ Aldri

7. Utenom arbeidstid: Hvor mange timer per dag pleier du å se på TV og/eller sitte foran PC'en?

(1) ☐ Ingen

(2) ☐ Mindre enn en ½ time om dagen

(3) ☐ ½ - 1 time

(4) ☐ 2 - 3 timer

(5) ☐ 4 timer

(6) ☐ Mer enn 4 timer

8. Har du egen sykkel (uten el-motor)?

(1) ☐ Ja

(2) ☐ Nei

9. Har du egen el-sykkel?

(1) ☐ Ja

(2) ☐ Nei

10. Hvor stor andel av syklingen din gjøres med el-sykkel (0-100%)?

_____ %

11. Hvor mange biler har familien din?

☐ Bil(er)

12. Neste gang familien skal kjøpe bil: Kommer dere til å kjøpe en "miljøvennlig" bil?

(1) ☐ Ja, helt klart

(2) ☐ Det vil bli vurdert

(3) ☐ Nei

13. Hvor mange bøker har dere hjemme hos dere?

(50 bøker er ca. 1 meter i bokhyllen)

(1) ☐ Ingen bøker

(2) ☐ Mindre enn 20

(3) ☐ 20 - 50

(4) ☐ 50 - 100

(5) ☐ 100 - 500

(6) ☐ 500 – 1000

(7) ☐ Mer enn 1000

14. Hvor ofte er familien din på tur i skogen/ på fjellet

(1) ☐ Aldri

(2) ☐ Sjeldnere enn 1 gang per måned

(3) ☐ Sjeldnere enn 1 gang per uke

(4) ☐ 1 gang i uken

(5) ☐ Mer enn 1 gang i uken

15. Røyker du?

(1) ☐ Nei, jeg har aldri røykt fast

(2) ☐ Nei, jeg har sluttet

(3) ☐ Ja, men ikke daglig

(4) ☐ Ja, daglig

16. Snuser du?

(1) ☐ Nei, jeg har aldri snust fast

(2) ☐ Nei, jeg har sluttet

(3) ☐ Ja, men ikke daglig

(4) ☐ Ja, daglig

17. Hvor ofte drikker du alkohol?

(1) ☐ Aldri
(2) ☐ Sjeldnere enn 1 gang i uka
(3) ☐ Ukentlig, men ikke daglig
(4) ☐ Daglig

18. Prøver du å slanke deg?

(1) ☐ Nei, vekten min er passe
(2) ☐ Nei, men jeg trenger å slanke meg
(3) ☐ Ja

19. Hvor mange timer sover du vanligvis om natten?

☐ Timer

20. Hvor lang utdanning har du?

(1) ☐ Grunnskole
(2) ☐ Videregående skole (inkl. gymnas/yrkesskole)
(3) ☐ Universitet eller høyskole (3 år eller mindre)
(4) ☐ Universitet eller høyskole (mer enn 3 år)

21. Hvor lang utdanning har din ektefelle/samboer?

(1) ☐ Grunnskole
(2) ☐ Videregående skole (inkl. gymnas/yrkesskole)
(3) ☐ Universitet eller høyskole (3 år eller mindre)
(4) ☐ Universitet eller høyskole (mer enn 3 år)
(5) ☐ Har ikke ektefelle/samboer

22. Hva var din husstands samlede årsinntekt for forrige år (brutto)?

_____ kr

23. Ranger trafikksikkerheten på skoleveien til barnet ditt fra 1 (meget farlig vei) til 10 (helt trygg vei)?

☐ km

24. Hva er ditt og din partners nåværende arbeid og stillingsprosent?

Deg selv_____ i _____%

Din partner_____ i _____%

25. Hvis det hadde vært stortingsvalg kommende mandag, hvilket parti ville du stemme på?

(1) ☐ Rødt
(2) ☐ Sosialistisk Venstreparti
(3) ☐ Arbeiderpartiet
(4) ☐ Senterpartiet
(5) ☐ Miljøpartiet: De grønne
(6) ☐ Kristelig folkeparti
(7) ☐ Venstre
(8) ☐ Høyre
(9) ☐ Fremskrittspartiet
(10) ☐ Annet parti……...
(11) ☐ Ville ikke stemt

26. Hvor ofte ser du på tv mens du spiser?

(1) ☐ Aldri
(2) ☐ Sjeldnere enn 1 gang i uken
(3) ☐ 1 gang i uken
(4) ☐ 2 ganger i uken
(5) ☐ 3 ganger i uken
(6) ☐ 4 ganger i uken
(7) ☐ 5 ganger i uken
(8) ☐ 6 ganger i uken
(9) ☐ Hver eneste dag
(10) ☐ Flere ganger hver da

Del E - Spørsmål om hvordan du kommer deg til arbeid (arbeider du både utenfor hjemmet og hjemme, tenk kun på arbeidsplassen utenfor hjemmet)**.**

1. Hvordan er din arbeidssituasjon?

(1) ☐ Arbeider kun utenfor hjemmet

(2) ☐ Arbeider både utenfor hjemmet og hjemme

(3) ☐ Arbeider kun hjemme/hjemmekontor (gå til spørsmål 21)

(4) ☐ Arbeider ikke/er hjemmeværende (gå til spørsmål 21)

2. Hvor mange dager i uka arbeider du utenfor hjemmet?

☐ dager

3. Hvordan kom du deg til arbeid i går?

(1) ☐ Gikk

(2) ☐ Syklet

(3) ☐ Kjørte bil

(4) ☐ Tok kollektiv transport (buss, tog e.l.)

(5) ☐ Var ikke på jobb utenfor hjemmet i går

4. Hvordan kom du deg fra arbeid i går?

(1) ☐ Gikk

(2) ☐ Syklet

(3) ☐ Kjørte bil

(4) ☐ Tok kollektiv transport (buss, tog e.l.)

(5) ☐ Var ikke på jobb utenfor hjemmet i går

5. Hvordan kommer du deg vanligvis til og fra arbeid utenfor hjemmet. Skriv inn antall dager i en normal uke ved de forskjellige årstidene. Summer for hver linje (jobber du 5 dager/uke utenfor hjemmet skal summen for hver linje bli 5, jobber du 3 dager utenfor hjemmet/uke skal summen bli 3).

Årstid		Går	Sykler/ el-sykler	Kjører bil (motorsykkel e.l.)	Kollektiv transport	Totalt
Høst (sept- nov)	Til arbeid					=
	Fra arbeid					=
Vinter (des- feb)	Til arbeid					=
	Fra arbeid					=
Vår (mars- mai)	Til arbeid					=
	Fra arbeid					=
Sommer (jun- aug)	Til arbeid					=
	Fra arbeid					=

6. Har du tilgang på parkeringsplass på arbeidsplassen?

(1) ☐ Ja

(2) ☐ Nei

7. Når du kjører/tar bil til jobb, hvor mange voksne er det vanligvis i bilen?

☐ voksne

8. Hvor langt er det fra hjemmet til arbeidet?

☐ km

9. Hvor lang tid bruker du på å gå *til og fra* arbeid (NB: et svar til arbeid og et svar fra):

	Til	Fra	
(1)	☐	☐	Mindre enn 10 min
(2)	☐	☐	10-20 min
(3)	☐	☐	20-30 min
(4)	☐	☐	30 min eller mer
(5)	☐	☐	Går aldri

10. Hvor lang tid bruker du på å sykle *til og fra* arbeid:

	Til	Fra	
(1)	☐	☐	Mindre enn 10 min
(2)	☐	☐	10-20 min
(3)	☐	☐	20-30 min
(4)	☐	☐	30 min eller mer
(5)	☐	☐	Sykler aldri

11. Dersom du går eller sykler *til og fra* arbeid, blir du andpusten og/eller svett?

	Til	Fra	
(1)	☐	☐	Ja
(2)	☐	☐	Nei

12. Har du sykkelhjelm?

(3) ☐ Ja

(4) ☐ Nei

13. Bruker du sykkelhjelm når du sykler til jobb?

(1) ☐ Ja

(2) ☐ Av og til

(3) ☐ Nei

(4) ☐ Sykler aldri

14. Ranger trafikksikkerheten på arbeidsveien din fra 1 (meget farlig vei) til 10 (helt trygg).

☐

15. Er det noe konkret som hindrer deg i å gå /sykle til arbeid så ofte som du vil?

(1) ☐ Ja

(2) ☐ Nei

(3) Hvis ja, skriv hva:

16. Dersom du tar kollektiv transport til arbeid, hvor langt er det fra der du bor til holdeplassen/stasjonen?

☐ km

17. Dersom du tar kollektiv transport, hvordan kommer du deg som regel til holdeplassen/stasjonen

(1) ☐ Går

(2) ☐ Sykler

(3) ☐ Kjører bil

Her er noen påstander rundt arbeids- og skolevei. Hvor enig/uenig er du i påstandene?

18. Jeg liker å gå/sykle til arbeid

(1) ☐ Helt uenig

(2) ☐ Litt uenig

(3) ☐ Verken enig eller uenig

(4) ☐ Litt enig

(5) ☐ Helt enig

19. Jeg bruker veien til arbeid som trening for å holde meg i god fysisk form

(6) ☐ Helt uenig

(7) ☐ Litt uenig

(8) ☐ Verken enig eller uenig

(9) ☐ Litt enig

(10) ☐ Helt enig

20. Jeg går/sykler sjelden til/fra arbeid hvis det er dårlig vær

(11) ☐ Helt uenig
(12) ☐ Litt uenig
(13) ☐ Verken enig eller uenig
(14) ☐ Litt enig
(15) ☐ Helt enig

21. Jeg er opptatt av at mitt barn skal gå/sykle til skolen

(1) ☐ Helt uenig
(2) ☐ Litt uenig
(3) ☐ Verken enig eller uenig
(4) ☐ Litt enig
(5) ☐ Helt enig

Del F - Hvor enig/uenig er du i følgende påstander relatert til klima/miljø

1. Miljøpolitikken har stor betydning for hvilket parti jeg stemmer på

(1) ☐ Helt uenig
(2) ☐ Litt uenig
(3) ☐ Verken enig eller uenig
(4) ☐ Litt enig
(5) ☐ Helt enig

2. Jeg reduserer mitt generelle forbruk for å ta vare på miljøet

(1) ☐ Helt uenig
(2) ☐ Litt uenig
(3) ☐ Verken enig eller uenig
(4) ☐ Litt enig
(5) ☐ Helt enig

3. Jeg velger bevisst varer som er merket med disse miljømerkene:

(1) ☐ Helt uenig
(2) ☐ Litt uenig
(3) ☐ Verken enig eller uenig
(4) ☐ Litt enig
(5) ☐ Helt enig

4. Jeg utfører miljøvennlige tiltak i hjemmet mitt for å få ned energibruken

(1) ☐ Helt uenig
(2) ☐ Litt uenig
(3) ☐ Verken enig eller uenig
(4) ☐ Litt enig
(5) ☐ Helt enig

5. Jeg er flink til å kildesortere husholdningsavfallet

(1) ☐ Helt uenig
(2) ☐ Litt uenig
(3) ☐ Verken enig eller uenig
(4) ☐ Litt enig
(5) ☐ Helt enig

6. Jeg kjører minst mulig bil for å begrense mitt CO2 utslipp.

(1) ☐ Helt uenig
(2) ☐ Litt uenig
(3) ☐ Verken enig eller uenig
(4) ☐ Litt enig
(5) ☐ Helt enig

7. Jeg går og sykler ofte distanser hvor andre gjerne kjører bil

(1) ☐ Helt uenig
(2) ☐ Litt uenig
(3) ☐ Verken enig eller uenig
(4) ☐ Litt enig
(5) ☐ Helt enig

8. Når jeg har et reelt reisevalg så velger jeg alltid det mest miljøvennlige alternativet (f.eks. tog vs fly, sykkel vs bil)

(1) ☐ Helt uenig
(2) ☐ Litt uenig
(3) ☐ Verken enig eller uenig
(4) ☐ Litt enig
(5) ☐ Helt enig

9. Jeg bruker alltid bil når jeg skal handle mat

(1) ☐ Helt uenig
(2) ☐ Litt uenig
(3) ☐ Verken enig eller uenig
(4) ☐ Litt enig
(5) ☐ Helt enig

10. Jeg handle ofte økologiske matvarer

(1) ☐ Helt uenig
(2) ☐ Litt uenig
(3) ☐ Verken enig eller uenig
(4) ☐ Litt enig
(5) ☐ Helt enig

11. Jeg handler ofte lokalproduserte matvarer

(1) ☐ Helt uenig
(2) ☐ Litt uenig
(3) ☐ Verken enig eller uenig
(4) ☐ Litt enig
(5) ☐ Helt enig

12. Jeg prøver å spise mindre animalske matvarer (kjøtt, fisk, meieriprodukter og egg) for å spare miljøet

(1) ☐ Helt uenig
(2) ☐ Litt uenig
(3) ☐ Verken enig eller uenig
(4) ☐ Litt enig
(5) ☐ Helt enig

13. Jeg kaster nesten aldri mat

(1) ☐ Helt uenig
(2) ☐ Litt uenig
(3) ☐ Verken enig eller uenig
(4) ☐ Litt enig
(5) ☐ Helt enig

14. Jeg prøver å kjøpe matvarer når de er i sesong

(1) ☐ Helt uenig
(2) ☐ Litt uenig
(3) ☐ Verken enig eller uenig
(4) ☐ Litt enig
(5) ☐ Helt enig

15. Jeg dyrker spiselige planter hjemme til eget bruk (f.eks. bær, grønnsaker).

(1) ☐ Ja i stor grad
(2) ☐ Ja noe
(3) ☐ Nei

16. Jeg høster spiselige ville planter (f.eks. ville bær) og/eller plukker sopp.

(1) ☐ Ja i stor grad
(2) ☐ Ja noe
(3) ☐ Nei

17. Jeg fisker

(1) ☐ Ja i stor grad
(2) ☐ Ja noe
(3) ☐ Nei

18. Jeg går på jakt

(1) ☐ Ja i stor grad
(2) ☐ Ja noe
(3) ☐ Nei

19. Hvis vi antar at klimaet endrer seg (mot global oppvarming), mener du…

(1) ☐ Det hovedsakelig skyldes menneskelig aktivitet
(2) ☐ Det hovedsakelig skyldes naturlige endringer
(3) ☐ Det skyldes likeverdig menneskelig aktivitet og naturlige endringer
(4) ☐ Ingen av delene over da klimaet ikke endrer seg
(5) ☐ Vet ikke

20. Hvor viktig er global oppvarming som tema for deg personlig

(1) ☐ Ikke viktig i det hele tatt
(2) ☐ Ikke spesielt viktig
(3) ☐ Litt viktig
(4) ☐ Veldig viktig

For hver av de følgende endringene i livsstil, kryss av for hvor effektivt du mener de forskjellige er for å motvirke global oppvarming

21. Stemme på et parti som har global oppvarming høyt på agendaen

(1) ☐ Ikke effektivt i det hele tatt
(2) ☐ Ikke særlig effektivt
(3) ☐ Noe effektivt
(4) ☐ Veldig effektivt
(5) ☐ Vet ikke

22. Redusere mitt generelle forbruk

(1) ☐ Ikke effektivt i det hele tatt
(2) ☐ Ikke særlig effektivt
(3) ☐ Noe effektivt
(4) ☐ Veldig effektivt
(5) ☐ Vet ikke

23. Velge produkt som er merket med miljømerker

(1) ☐ Ikke effektivt i det hele tatt
(2) ☐ Ikke særlig effektivt
(3) ☐ Noe effektivt
(4) ☐ Veldig effektivt
(5) ☐ Vet ikke

24. Redusere energibruken hjemme

(1) ☐ Ikke effektivt i det hele tatt
(2) ☐ Ikke særlig effektivt
(3) ☐ Noe effektivt
(4) ☐ Veldig effektivt
(5) ☐ Vet ikke

25. Kildesortere matavfallet

(1) ☐ Ikke effektivt i det hele tatt
(2) ☐ Ikke særlig effektivt
(3) ☐ Noe effektivt
(4) ☐ Veldig effektivt
(5) ☐ Vet ikke

26. Begrense bilbruken

(1) ☐ Ikke effektivt i det hele tatt
(2) ☐ Ikke særlig effektivt
(3) ☐ Noe effektivt
(4) ☐ Veldig effektivt
(5) ☐ Vet ikke

27. Fly mindre

(1) ☐ Ikke effektivt i det hele tatt
(2) ☐ Ikke særlig effektivt
(3) ☐ Noe effektivt
(4) ☐ Veldig effektivt
(5) ☐ Vet ikke

28. Handle mer økologiske matvarer

(1) ☐ Ikke effektivt i det hele tatt
(2) ☐ Ikke særlig effektivt
(3) ☐ Noe effektivt
(4) ☐ Veldig effektivt
(5) ☐ Vet ikke

29. Handle mer lokalproduserte matvarer

(1) ☐ Ikke effektivt i det hele tatt
(2) ☐ Ikke særlig effektivt
(3) ☐ Noe effektivt
(4) ☐ Veldig effektivt
(5) ☐ Vet ikke

30. Spise mindre kjøtt

(1) ☐ Ikke effektivt i det hele tatt
(2) ☐ Ikke særlig effektivt
(3) ☐ Noe effektivt
(4) ☐ Veldig effektivt
(5) ☐ Vet ikke

31. Kaste mindre mat

(1) ☐ Ikke effektivt i det hele tatt
(2) ☐ Ikke særlig effektivt
(3) ☐ Noe effektivt
(4) ☐ Veldig effektivt
(5) ☐ Vet ikke

32. Kjøpe mat som er i sesong

(1) ☐ Ikke effektivt i det hele tatt
(2) ☐ Ikke særlig effektivt
(3) ☐ Noe effektivt
(4) ☐ Veldig effektivt
(5) ☐ Vet ikke

TAKK FOR HJELPEN!

Har du noen kommentar til spørreskjemaet eller noe du vil si om kosthold/aktivitet/miljø?
Skriv det gjerne her!

Appendix 2: NSD approval for student project

NSD NORSK SENTER FOR FORSKNINGSDATA

NSD sin vurdering

Prosjekttittel

To what degree are Norwegian parents aware of the large association between meat consumption and climate gas emission

Referansenummer

142632

Registrert

14.09.2018 av Christine Louise Parr - chripa@oslomet.no

Behandlingsansvarlig institusjon

OsloMet - storbyuniversitetet / Fakultet for helsevitenskap / Institutt for sykepleie og helsefremmende arbeid

Prosjektansvarlig (vitenskapelig ansatt/veileder eller stipendiat)

Christine L Parr, chripa@oslomet.no, tlf: 92021231

Type prosjekt

Studentprosjekt, masterstudium

Kontaktinformasjon, student

Siv Hege Iversen Daugstad, s318974@oslomet.no, tlf: 48252567

Prosjektperiode

15.10.2018 - 01.07.2020

Status

21.04.2020 - Vurdert

Vurdering (2)

21.04.2020 - Vurdert

NSD har vurdert endringen registrert 23.03.2020.

Vi har nå registrert 01.07.2020 som ny sluttdato for forskningsperioden. Vi gjør oppmerksom på at ytterligere forlengelse ikke kan påregnes uten at utvalget informeres om forlengelsen.

NSD vil følge opp ved ny planlagt avslutning for å avklare om behandlingen av personopplysningene er avsluttet.

Lykke til videre med prosjektet!

Kontaktperson hos NSD: Kajsa Amundsen

Tlf. Personverntjenester: 55 58 21 17 (tast 1)

23.10.2018 - Vurdert

Det er vår vurdering at behandlingen vil være i samsvar med personvernlovgivningen, så fremt den gjennomføres i tråd med det som er dokumentert i meldeskjemaet med vedlegg, samt i meldingsdialogen mellom innmelder og NSD, den 23.10.18. Behandlingen kan starte.

MELD ENDRINGER

Dersom behandlingen av personopplysninger endrer seg, kan det være nødvendig å melde dette til NSD ved å oppdatere meldeskjemaet. På våre nettsider informerer vi om hvilke endringer som må meldes. Vent på svar før endringen gjennomføres.

TYPE OPPLYSNINGER OG VARIGHET

Prosjektet vil behandle særlige kategorier av personopplysninger frem til 31.12.19.

LOVLIG GRUNNLAG

Prosjektet anvender data fra forskningsprosjektet med saksnummer 60714. Det foreligger samtykke til at en masterstudent ved OsloMet skal anvende data til sin masteroppgave. Vi legger til grunn at dette gjelder Siv Hege Iversen Daugstad, og at taushetsplikten dermed ikke er til hinder for den behandling av opplysninger som finner sted. Vi viser til vår tidligere vurdering av at samtykke er i samsvar med kravene i art. 4 nr. 11 og art. 7, ved at det er en frivillig, spesifikk, informert og utvetydig bekreftelse, som kan dokumenteres, og som den registrerte kan trekke tilbake.

Lovlig grunnlag for behandlingen vil dermed være den registrertes uttrykkelige samtykke, jf.

personvernforordningen art. 6 nr. 1 a), jf. art. 9 nr. 2 bokstav a, jf. personopplysningsloven § 10, jf. § 9 (2).

PERSONVERNPRINSIPPER

NSD finner at den planlagte behandlingen av personopplysninger vil følge prinsippene i personvernforordningen:

- om lovlighet, rettferdighet og åpenhet (art. 5.1 a), ved at de registrerte får tilfredsstillende informasjon omog samtykker til behandlingen
- formålsbegrensning (art. 5.1 b), ved at personopplysninger samles inn for spesifikke, uttrykkelig angitte ogberettigede formål, og ikke viderebehandles til nye uforenlige formål
- dataminimering (art. 5.1 c), ved at det kun behandles opplysninger som er adekvate, relevante ognødvendige for formålet med prosjektet
- lagringsbegrensning (art. 5.1 e), ved at personopplysningene ikke lagres lengre enn nødvendig for åoppfylle formålet

DE REGISTRERTES RETTIGHETER

De registrerte vil ha følgende rettigheter i prosjektet: åpenhet (art. 12), informasjon (art. 13), innsyn (art. 15), retting (art. 16), sletting (art. 17), begrensning (art. 18), underretning (art. 19), dataportabilitet (art. 20).

Rettighetene etter art. 15–20 gjelder så lenge den registrerte er mulig å identifisere i datamaterialet.

NSD vurderer at informasjonen som de registrerte vil motta oppfyller lovens krav til form og innhold, jf. art.

12.1 og art. 13.

Vi minner om at hvis en registrert tar kontakt om sine rettigheter, har behandlingsansvarlig institusjon plikt til å svare innen en måned.

FØLG DIN INSTITUSJONS RETNINGSLINJER

NSD legger til grunn at behandlingen oppfyller kravene i personvernforordningen om riktighet (art. 5.1 d), integritet og konfidensialitet (art. 5.1. f) og sikkerhet (art. 32)

For å forsikre dere om at kravene oppfylles, må prosjektansvarlig følge interne retningslinjer/rådføre dere med behandlingsansvarlig institusjon.

OPPFØLGING AV PROSJEKTET

NSD vil følge opp ved planlagt avslutning for å avklare status for behandlingen av personopplysninger.

Lykke til med prosjektet!

Kontaktperson hos NSD: Kjersti Haugstvedt

Tlf. Personverntjenester: 55 58 21 17 (tast 1)

Appendix 3: NSD approval for *Fruit and Vegetable Make the Mark*-project

NSD

Universitetet i Agder
Att: Ening Bere
Elling.berc@uia.no

Vår dato: 21 .08.2018 Vår ref:60714 MSS/LR Deres dato: Deres ref:

VURDERING AV BEHANDLING AV SÆRSKILTE KATEGORIER PERSONOPPLYSNINGER I PROSJEKTET:EN SPØRREUNDERSØKELSE 0M KOSTHOLD, FYSISK AKT/V/TET OG MILJØ FVMWA TN 2018 SURVEY

NSD - Norsk senter for forskningsdata AS viser til meldeskjema innsendt 09.05.2018. Meldingen gjelder behandling av personopplysninger til forskningsformål.

Etter avtale med den behandlingsansvarlige, Universitetet i Agder, har NSD foretatt en vurdering av om den planlagte behandlingen er i samsvar med personvernlovgivningen.

Resultat av NSDs vurdering:

NSD vurderer at det vil bli behandlet særskilte kategorier personopplysninger om helseforhold og etnisk bakgrunn frem til 31.12.2019.

NSDs vurdering er at behandlingen vil være i samsvar med personvernlovgivingen, og at lovlig grunnlag for behandlingen er samtykke.

Vår vurdering forutsetter at prosjektansvarlig behandler personopplysninger i tråd med:
- opplysninger gitt i meldeskjema og øvrig dokumentasjon
- dialog med NSD,
- og vår vurdering (se under)
- [redacted]Universitetet i Agder sine retningslinjer for datasikkerhet, herunder regler om hvilke tekniske hjelpemidler det er tillatt å bruke
- [redacted]Universitetet i Agder sine retningslinjer for bruk av databehandler.

Nærmere begrunnelse for NSDs vurdering:

1. Beskrivelse av den planlagte behandlingen av personopplysninger

FORMÅL
Formålet med dette prosjektet er å undersøke utviklingen i kosthold og fysisk aktivitet over tid. Universitetet i Agder gjennomførte en tilsvarende undersøkelse i 2001 og 2008. Dette gif unike data

for å kunne evaluere den nasjonale ordningen med gratis skolefrukt som varte fra 2007 til 2014. I tillegg kan man i dette datamaterialet se på utviklingen over tid på sentrale kostparametere, transportvaner og holdninger til et bærekraftig kosthold. Dette sett opp mot

NSD — Norsk senter for forskningsdata AS Harald Hårfagres gate 29 Tel: +47-55 58 21 17
NSD — Norwegian Centre for Research Data NO-5007 Bergen, NORWAY Faks: +47-55 58 96 50
nsd@nsd.no Org.nr. 985 321 884
www.nsd.no

sosioøkonomisk status og kjønn. Det inkluderes nå også en undersøkelse på videregående skoler for å se på langtidseffekten av gratis skolefrukt..

UTVALG OG REKRUTTERING

Det rekrutteres tre utvalg i forbindelse med studien:

l) 6. og 7. klassinger ved 38 skoler i Hedrnark og Telemark, 2)

Elevenes foreldre

3) personer som bor i Hedmark og Telemark og er født i 2000/ 2001.

Totalt består utvalget av maksimalt 1300 barn, 8000 ungdom og 1000 foreldre/voksne. Undersøkelsen på 6. og 7. trinnet gjennomføres ved hjelp av papirskjema i skoletiden. Foreldre og barn rekrutteres via skolen.

Det har ikke lykkes prosjektleder å få gjennomført ungdomsundersøkelsen i skoletiden ved de videregående skolene og rekruttering vil derfor skje via Facebook. Det er ønskelig å innhente besvarelser på elektronisk spørreskjema fra 1000 ungdommer. Ved for lav svarprosent vil utvalget utvides til å også omfatte Agder-fylkene.

De 38 skolene i del 1 er skolene som i 2001 var med i prosjektet Fruits and Vegetables Make the Marks (FVMM, NSD prosjektnr. 12395). En rekrutterer ungdommer i Hedmark og Telemark født i 2000/2001 for å kunne sammenligne rned FVMM fra 2001 og 2008.

DATAMATERIALE

Det innhentes blant annet opplysninger om kosthold, aktivitet, transportvancr og holdninger til et bærekraftig kosthold, samt sosioøkonomisk status og kjønn. Det vil registreres navn på skole i forbindelse med undersøkelsen på 6. og 7. trinn.

METODE

Opplysningene innhentes gjennom papirbasert spørreskjema blant elever på 6. og 7. trinn. Papirskjema kodes for å kunne kobles mot forcldrcncs besvarelse som gjennomføres elektronisk.

Spørreundersøkelse blant ungdommer gjennomføres elektronisk.

INFORMASJON OG SAMTYKKE

Barneskolene kontaktes først på e-post, så på telefon. Lærerne informerer elevene og foreldrene ved å levere ut informasjonsskriv med samtykkeerklæring.

Ungdommene rekrutteres og fåf informasjon via Facebook, samt i informasjonstekst innledningsvis i elektronisk spørreskjema.

BEHANDLINGENS VARIGHET

Ifølge e-post fra forsket, mottatt den 31.07.2018, og i tråd med informasjonen til de registrerte, vil opplysningene behandles frem til 31.12.2019. Innen 31.12.2019 skal personidentifiserbare opplysninger slettes fra datamaterialet, eller bearbeides på en slik måte at enkeltindivider ikke kan identifiseres,

2. Personvernprinsipper

NSDs vurdering er at behandlingen følger personvernprinsippene, ved at personopplysninger; - skal behandles på en lovlig, rettferdig og åpen måte med hensyn til den registrerte (se punkt 3 og 4)

- skal samles inn for spesifikke, uttrykkelig angittc og berettigede formål og der personopplysningene ikke viderebehandles på en måte som cr uforenelig med formålet (se punkt 1 og 3) - vil være adekvate, relevante og begrenset til det som er nødvendig for formålet de behandles for (se punkt 6) - skal lagres på en slik måte at det ikke ef mulig å identifisere de registrerte lengte enn det som er nødvendig for formålet (se punkt 5 og 6)

3. Lovlig grunnlag for å behandle særskilte kategorier personopplysninger

Særskilte kategorier - Samtykke ((art. 6.1. a), art. 9.2 a)
Det fremgår av meldeskjema vi har fått tilsendt at det vil bli innhentet samtykke fra de registrerte. NSD vurderer at den planlagte behandlingen av personopplysninger er lovlig fordi: e det skal innhentes uttrykkelig samtykke fra de registrerte og ● forsker har oppfylt den særskilte rådføringsplikten

Samtykke dokumenteres ved at det innhentes samtykkeerklæringer hvor foreldre til elever under 15 år har underskrevet. Samtykke fra elever ved videregående skole innhentes ved at den forespurte besvarer et elektronisk spørreskjema og at kobling mot IP loggføres.

4. De registrertes rettigheter

NSD vurderer at den registrerte har krav på å benytte seg av følgende rettigheter: informasjon, innsyn, retting og sletting av personopplysninger, begrensning, dataportabilitet, protest.

NSD finner at informasjonsskrivet stilet H-I elever og foreldre mottatt den 31.07.2018 vil gi de registrerte god informasjon om hva behandlingen innebærer og om hvilke rettigheter de har. Vi ber likevel om at det tydeliggjøres hvordan man går frem for å benytte seg av sine rettigheter, d.v.s. hvem man kontaktet f.eks. dersom man ønsker å frekke seg fra studien og få opplysningene anonymisert. Vi foreslår at dette tilføyes avslutningsvis hvor det blant annet står «Dersom du har spøtsmål eller andre henvendelser omkring prosjektet, vennligst ta kontakt med:...»

NSD finner at informasjonsskrivet sdlet til ungdommene er noe mangelfullt, og ikke gif de registrerte god nok informasjon om hva behandlingen innebærer og om hvilke rettigheter de har. Vi forutsetter derfor at følgende endres/ tilføyes før det gis til utvalget;

- Formuleringen «Det er viktig at du leser forklaringen for hvordan du fyller ut skjemaet nøye. Ved å fylle ut denne undersøkelsen kan få mulighet til å være med i trekningen av 10 gavekort. Hvert gavekort er på 1000 kronen, bør ikke stå innledningsvis i informasjonsskrivet. Fokuset på en potensiell belønning skal ikke gå på bekostning av annen viktig informasjon om hva deltakelsen innebærer. Vi foreslår at formuleringen står avslutningsvis under overskriften «Hva innebærer det for deg å delta?»
- Det må påføres hvordan den enkelte gåf frem dersom man vil benyttes seg av rettighetene sine, som f.eks. å trekke seg fra undersøkelsen. Dette må fremgå tydeligere under overskriften «Hvor kan jeg finne ut mer?»

Reviderte informasjonsskriv må sendes til personverntienester@nsd.no, husk å oppgi prosjektnummer.

Vi minner om at hvis en registrert tar kontakt om sine rettigheter, har Universitetet i Agder plikt til å svare innen en måned. Vi forutsetter at prosjektansvarlig informerer institusjonen så fort som mulig og at Universitetet i Agder har rutiner for hvordan henvendelser fra registrerte skal følges
OPP.

5. Informasjonssikkerhet

I følge meldingen skal personopplysningene behandles ved hjelp av datamaskin i nettverkssystem tilknyttet internett tilhørende virksomheten, privat datamaskin, og på server i Universitetet i Agders nettverk. Vi minner om at Universitetet i Agder er pålagt å ha kontroll på behandlingen av personopplysninger og vi anbefaler derfor ikke at personopplysninger behandles på privat utstyr uten at dette kravet kan innfris. Dette er cn vurdcfing Univcrsitetet i Agder må foreta. Da også studenter fra to andre forskningsinstitusjoner skal benytte opplysninger fra prosjektet, anbefaler vi at det sikres at disse dataene ikke inneholder indirekte identifiserende opplysninger.

Alle lagringsenheter beskyttes med brukernavn og passord.

Koblingsnøkkel oppbevares på passordbeskyttet pc. Kun prosjektansvarlig skal ha tilgang til denne i følge inforrnasjonen lil de solli forespøl'l'es deltakelse.

NSD forutsetter at personopplysningene behandles i tråd med personvernforordningens krav og institusjonens retningslinjer for informasjonssikkerhet.

6. Varighet

Ifølge meldeskjema skal personopplysninger behandles frem til 31.12.2019. Opplysninger som kan knyttes til en enkeltperson skal da slettes/anonymiseres.

Universitetet i Agder må kunne dokumentere at datamate.riale.t e.f anonymisert.

Anonymisering innebærer å bearbeide datamaterialet slik at ingen enkeltpersoner kan bli identifisert. Dct gjøres ved å:

- [redacted] Slette navn, fødselsnummer/ andre ID-nummef, adresse, telefonnummer, epostadresse, IP-adresse og andre nettidcntifikatorer
- [redacted] Slette eller grovkategoriserc alder, bosted, navn på skole, institusjon, og andre bakgrunnsopplysningef

For en utdypende beskrivelsc av anonymisering av personopplysninger, se Datatilsynets veileder: http s : / /www.datatilsynet.no/globalassets/global/regelverk-skj ema /veiledere / anonymiseringveileder-041115.pdf

Meld fra om endringer

Dersom behandlingen av personopplysninger endrer seg, kan det være nødvending å melde dette til NSD via Min side. På våre nettsider informerer vi om hvilke endringer som må meldes. Vent på svar før endringen gjennomføres.

Informasjon om behandlingen publiseres på, Min side, Meldingsarkivet og nettsider Alle relevante saksopplysninger og dokumenter er tilgjengelig: - via Min side for forskere, veiledere og studenter - via Meldingsarkivet for ansatte med internkontrolloppgaver ved Universitetet i Agder.

NSD tar kontakt om status for behandling av personopplysninger

Etter avtale med Universitetet i Agder vil NSD følge opp behandlingen av personopplysninger ved planlagt avslutning.

Vi sender da en skriftlig henvendelse til prosjektansvarlig og ber om skriftlig svar på status for behandling av personopplysninger.

Se våre nettsider eller ta kontakt ved spørsmål. Vi ønsker lykke til med behandlingen av personopplysninger.

Med vennlig hilsen

Marianne Høgetveit Myhren
seksjonsleder arie S. Schildmann seniorrådgiver

Lovhenvisninger

NSDs vurdering er at den planlagte behandlingen av personopplysninger: ● er regulert av personopplysningsloven, jf. S 2.

- oppfyller prinsippene i personvernforordningen om: o lovlighet, rettferdighet og åpenhet jf. art. 5.1 a) o formålsbcgrcnsning jf. art. 5.1 b) o dataminimering jf. art. 5.1 c) o lagringsbegrensning jf. art. 5.1 e).
- kan finne sted med hjemmel i personvernforordningen art. 6.1 a), art. 9.2 a) ● gjennomføres på en måtesom ivaretar de registrertes rettigheter jf. personvernforordningen art. 11-22

NSD legger til grunn at institusjonen også sørger for at behandlingen gjennomføres i samsvar med personvernforordningen:

- art. 5.1 d) og art. 5.1. f) og art. 32 om sikkerhet ● art. 26-29 ved felles behandlingsansvar med andre institusjoner eller bruk av databehandler
- kapittel 5 ved overføring av personopplysninger til tredjeland/internasjonale organisasjoner

Appendix 4: Parent and student information letter

UNIVERSITETET I AGDER

Til elever og foresatte i 6. og 7. klassetrinn

Dato: 22.08.2018

Besøksadresse: Gimlemoen 25 I
Direkte: 38 14 23 29

Forespørsel om å delta i forskningsprosjektet FG6/ATN/(M)EAT 2018 om ernæring og fysisk aktivitet

Vi skal ved Universitetet i Agder (UiA) gjennomføre en større spørreundersøkelse i forbindelse med prosjektene Frukt og grønt i 6. (FG6), Aktiv transport til skole og jobb i Norge (ATN) og (M)EAT (om bærekraftig kosthold). I dette skrivet gir vi deg informasjon om målene for prosjektet og hva deltakelse vil innebære for deg og ditt barn.

Formål
Vi er interessert i inntaket av frukt og grønnsaker, hvordan nordmenn kommer seg til skole og jobb, samt bærekraftig kosthold. Prosjektet FG6 startet i 2001. Resultat fra dette prosjektet har bl.a. bidratt til at regjeringen fra 2007 til 2014 satte av penger til gratis skolefrukt. Nå ønsker vi å evaluere denne ordningen samt å se på endring av kostvaner over tid. I prosjektet ATN ønsker vi å se på utvikligne fra 2008 til 2018 på transportvaner til jobb og skole, og i prosjektet (M)EAT ønsker vi å se på nordmenns forhold til et bærekraftig kosthold.

Ansvarlig for prosjektene
Dette er forskningsprosjekt i regi av Universitetet i Agdet (UiA). Seks masterstudenter (fire fra Universitetet i Agder), en fra OsloMet - storbyuniversitetet og en fra Norges miljø- og biovitenskapelige universitet (NMBU) skal skrive sine oppgaver basert på data som samles inn.

Hvorfor får du spørsmål om å delta?
Vi har tilfeldig trukket ut 38 skoler i Hedmark og Telemark hvor 6. og 7. klassinger og en av deres foreldre inviteres til å delta. Tilsvarende undersøkelsen har blitt gjennomført på de samme skolene i 2001 og 2008.

Hva innebærer det for deg og din sønn/datter å delta?
Deltagelse vil si at du og ditt besvarer et spørreskjema hver (som inkluderer alle de tre nevnte prosjektene). Barna fyller ut skjemaet i en time på skolen i uke 37 eller uke 38 (september 2018). Hvis du ønsker å se spørreskjemaet til elevene før de fyller det ut, vennligst ta kontakt med undertegnede. De får så med seg en konvolutt hjem med et spørreskjema som en av foreldrene skal fylle ut, og returnere til skolen i lukket konvolutt. Dette spørreskjemaet tar ca 30 minutter å fylle ut.

Spørsmålene i spørreskjemaene omhandler inntak av frukt, grønnsaker og kjøtt, samt andre kostholdsvaner, hvordan man kommer seg til/fra skole/jobb, annen fysisk aktivitet, samt faktorer som kan relateres til dette (for eksempel tilgjengeligheten av frukt og grønnsaker hjemme, holdninger til bruk av bil, og utdanningsnivå). Elevene vil også bli spurt om høyde og vekt, om han/hun har forsøkt å slanke seg og om han/hun har prøvd alkohol og tobakk.

Det er frivillig å delta
For at du og ditt barn skal kunne delta i spørreundersøkelsen trenger vi ditt samtykke. For å delta må du derfor fylle ut svarslippen som er vedlagt og levere den til ditt barns kontaktlærer.

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Det er frivillig å delta i prosjektet. Hvis dere velger å delta, kan dere når som helst trekke samtykke tilbake uten å oppgi noen grunn. Alle opplysninger om dere vil da bli anonymisert. Det vil ikke ha noen negative konsekvenser for dere hvis dere ikke vil delta eller senere velger å trekke dere.

Deres personvern – hvordan vi oppbevarer og bruker deres opplysninger
Vi vil bare bruke opplysningene om dere til formålene vi har fortalt om i dette skrivet, og ingen vil gjenkjennes i publikasjoner. Vi behandler opplysningene konfidensielt og i samsvar med personvernregelverket. De som har tilgang på data er de nevnte masterstudentene samt veiledere. Spørreskjemaene er merket med et nummer som kobler svar fra barn og forelder, men som ikke kan kobles til navn. Undersøkelsen er likevel ikke helt anonym, da vi samler inn data som potensielt indirekte, i få tilfeller, kan kunne identifisere enkelte ved å koble variabler. F.eks. hvilken skole barnet går på samen med bakgrunnsvariabler fra foreldrenes spørreskjema.

Hva skjer med opplysningene deres når vi avslutter forskningsprosjektet?
Opplysningene anonymiseres når prosjektet er avsluttet, senest 31. desember 2019.

Deres rettigheter
De som kan identifiseres i datamaterialet (dette vil gjelde svært få, se over under *Deres personvern*), har rett til:

- innsyn i hvilke personopplysninger som er registrert om deg,
- å få rettet personopplysninger om deg,
- få slettet personopplysninger om deg,
- få utlevert en kopi av dine personopplysninger (dataportabilitet), og
- å sende klage til personvernombudet eller Datatilsynet om behandlingen av dine personopplysninger.

Hva gir oss rett til å behandle personopplysninger om dere?
Vi behandler opplysninger om deg basert på ditt samtykke. På oppdrag fra Universitetet i Agder har NSD – Norsk senter for forskningsdata AS vurdert at behandlingen av personopplysninger i dette prosjektet er i samsvar med personvernregelverket. Studien har etisk godkjenning fra Etisk komite ved fakultet for Helse- og idrettsvitenskap, Universitetet i Agder (FEK).

Hvor kan jeg finne ut mer?
Har du spørsmål eller senere ønsker å trekke deg fra prosjektet vennligst ta kontakt med:

- Universitetet i Agder ved professor Elling Bere (telefon 38142329, e-post elling.bere@uia.no) eller masterstudent Helene Kristin Olsen (telefon 93215307, e-post heleno17@student.uia.no)
- Vårt personvernombud: Ina Danielsen (telefon 45254401, e-post personvernombud@uia.no)

Vennlig hilsen

Helene Kristin Olsen
Masterstudent

Elling Bere
Professor

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Samtykkeerklæring
FG6/ATN/(M)EAT 2018

Jeg har mottatt og forstått informasjon om prosjektet FG6/ATN/(M)EAT 2018, og har fått anledning til å stille spørsmål.

☐ Jeg samtykker til at mitt barn kan delta i spørreundersøkelsen, at han/hun kan ta med et spørreskjema hjem til meg, og at våre opplysninger behandles frem til prosjektet er avsluttet 31.12.19

Navn på barnet:_____

Skole/klasse:_____

Navn forelder
(blokkbokstaver):_____

Dato og signatur

…….....

Svarslippen sendes med ditt barn tilbake til kontaktlærer.

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Appendix 5: Letter to principals with invitation to participate in the survey

Til rektor og kontaktlærere på 6. og 7. trinn

Dato: 11.04.2018

Besøksadresse: Gimlemoen 25 I
Direkte: 38 14 23 29

Forespørsel om å delta i et forskningsprosjekt om ernæring og fysisk aktivitet

Vi skal ved Universitetet i Agder (UiA) gjennomføre en større spørreundersøkelse i forbindelse med prosjektene Frukt og grønt i 6. (FG6), Aktiv transport til skole og jobb i Norge (ATN) og (M)EAT (om bærekraftig kosthold). Vi er hovedsakelig interessert i inntaket av frukt og grønnsaker, hvordan en kommer seg til/fra skole/jobb og bærekraftig kosthold.

Prosjektet FG6 startet i 2001. Resultater fra dette prosjektet bidrog bl.a. til at regjeringen satte av penger til gratis skolefrukt i perioden fra 2007-2014 på ungdomsskoler og kombinerte barne og ungdomsskoler. Nå ønsker vi å evaluere denne ordningen samt å se på endringer i nordmenns kostvaner over tid. I tillegg vil vi se på hvordan aktivitetsvaner har utviklet seg fra 2008 til 2018, og nordmenns forhold til et bærekraftig kosthold.

Deres skole var med på spørreundersøkelsen i 2001 da vi tilfeldig trakk ut 38 skoler i Hedmark og Telemark hvor 6. og 7. klassinger og en av deres foreldre ble invitert til å delta. Nå ønsker vi å besøke de samme skolene igjen. Spørsmålene i spørreskjemaet omhandler inntak av frukt, grønnsaker og kjøtt, samt andre kostholdsvaner, hvordan man kommer seg til/fra skole/jobb, annen fysisk aktivitet, samt faktorer som kan relateres til dette (for eksempel tilgjengeligheten av frukt og grønnsaker hjemme og holdninger til bruk av bil). Elevene vil også bli spurt om høyde/vekt, om han/hun har forsøkt å slanke seg og om han/hun har prøvd alkohol/tobakk.

Vi ønsker å gjennomføre denne spørreundersøkelsen på samme tidspunkt som tidligere, dvs tirsdag til fredag i uke 37 og 38 (11-21 september 2018). Den praktiske gjennomføringen foregår ved at en prosjektmedarbeider kommer på besøk til en avtalt skoletime og gjennomfører spørreundersøkelsen med elevene (tar en skoletime). De får så med seg en konvolutt hjem med et ID nummer og en lenke til et web-basert spørreskjema som en av foreldrene skal fylle ut. Spørreskjemaet til foreldrene tar ca 30 minutter.

I tillegg vil vi be kontaktlærerne om å levere ut et infoskriv til elevene/foreldrene, og samle inn samtykke fra foreldrene. Foreldrene samtykker til elevenes deltagelse ved å signere og levere tilbake til skolen en samtykkelapp som er vedlagt infoskrivet. Kontaktlærer sender så samtykkelappene samlet tilbake til oss. Vi håper at kontaktlærerne kan purre (max 2 ganger) på foreldrene.

Det er av stor betydning for oss at dere ønsker å delta i denne undersøkelsen. Hvis dere ønsker å være med så trenger vi klasselister med navn på elevene. Disse listene vil vi bruke kun til å gi hver elev (og foreldre/foresatt) et ID nummer. Dersom noen av elevene ikke ønsker å delta er dette selvsagt fullt mulig. Vennligst bekreft ved å svare på denne e-posten så raskt som mulig om dere ønsker å delta i denne undersøkelsen eller ikke.

Studien er meldt til Personvernombudet for forskning, Norsk samfunnsvitenskapelig datatjeneste, og vil få etisk godkjenning fra Etisk komite ved fakultet for Helse- og idrettsvitenskap, Universitetet i Agder (FEK). Opplysningene anonymiseres og spørreskjemaene makuleres når prosjektet er ferdig, senest 31. desember 2019.

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Dersom dere har spørsmål om dette prosjektet kan dere ta kontakt med Helene Kristin Olsen på telefon 93215307, eller e-post heleno17@student.uia.no. Du kan også kontakte professor Elling Bere ved Fakultet for helse- og idrettsvitenskap.

Vennlig hilsen

Helene Kristin Olsen
Forskningsmedarbeider

Elling Bere
Professor

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