# Towards Organic Food

## Attitudes about the introduction of organic milk and fruit in primary and secondary schools in Norway

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**Abstract**

Norwegian consumers are becoming increasingly interested in organic food and the government is setting goals with regard to production and consumption. The "*Økoløft* project" is one of the strategies developed by the government to help realise an increase in organic production and public sector consumption. Schools are one public sector setting where organic food consumption has started to grow to counter the predominance of unhealthy food patterns among children. Yet schools as public sector institutes are poorly considered in the government goals related to organic food.

This study explores the attitudes about the introduction of organic milk and fruit in primary and secondary schools in Norway. Attitudes and opinions of the school food actors at different levels were investigated. The study was conducted on two levels; food actors at the decision making level through interviews and food actors at the implementation level through a web based survey.

The majority of the school administrators agree that *skolefrukt* and *skolemelk* programs represent a good opportunity to introduce organic produce into Norwegian schools. This is reflected in the 80% schools which did not have organic produce in their schools agree on free *skolefrukt* as the best scheme to introduce organic produce where subscription based *skolefrukt* program was considered as the next best. Third was the *skolemelk program.*

Organic agriculture as an environmentally friendly practice; as a way of diminishing social inequalities and provides equal access for fruit; as a convenient way to get fruit and milk; as a tool of gaining knowledge; ban of harmful chemicals and pesticides is perceived by the school administration to be the most important supporting factors to the inclusion of organic fruit and milk into the schools. The hindrances identified were *skolemelk* and *subscription based skolefrukt* as creation of discrimination between the children, inadequate budget due to the high cost of organic food, an assumption that conventional Norwegian fruit should be given priority over imported organic fruit, a preference to allocate funding towards learning facilities rather than food.

At the decision making level hindrances include a lack of coordination between government actors, the freedom to use the free *skolefrukt* budget for other purposes, the high cost of organic produce and the fact that the organic market in Norway is at its early stages of development. Supporting factors were motivated actors, the national goal for a clean environment, and practical implementing projects such as *Økoløft*.

The *Økoløft* project as well as schools that have environmental certification programs such as, Eco- School certification *(Miljøfyrtårnsertifisert*nd Children's Green City *(Grønt*

*Flagg-sertifisert)* has influenced schools to use organic products. A higher consumption of organic produce in the schools involved with *Økoløft* project may be due to the access they had to more knowledge about organic produce and how to put this knowledge into practice.

It can conclude that factors to support and hinder the inclusion of organic fruit and milk into schools seem to be interrelated. The initiatives aimed at developing school food programs should therefore take this complexity into consideration and adopt multi-faceted strategies that draw knowledge from the actors within the wider system in which schools are embedded as a means to promote organic consumption.

**Key words : School food program, organic policy, stakeholders, agroecology, system thinking, web based survey, school fruit program (*skolefrukt)* school milk program (*skolemelk*) Organic lift in the municipalities (*Økoløft i kommune*)**

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# 1 INTRODUCTION

The predominance of unhealthy foods such as refined sugars and energy-dense convenience foods makes it difficult to encourage children to maintain a healthy eating style and as a consequence, the younger generation is less keen on fruit, vegetables and dairy (Øverby et al. 2004),. There are serious health concerns for obese and overweight children and an increase in child obesity has been described as an epidemic (Commission of the European Communities 2003). Research has found that approximately 8-14% of Norwegians aged 15-16 years are overweight or obese and that over half of adult men in Norway are overweight and 15-18% are obese (Norwegian Institute of Public Health 2011). Eating more fruit and vegetables and drinking milk can play an important role in combating obesity (Knai 2006). Fruit and vegetables play an important role in combating heart disease, cancer and diabetes (WHO 2008).

Organic foods have become increasingly popular in many countries. The production method of organic food is more in harmony with the natural ecosystem and the specifics of local conditions where the production is based on ecological processes, and respecting the natural cycles of energy and nutrients. Organic farming systems are thus often associated with better nourishment and well being for both producers and consumers. This is achieved by working with nature rather than against it, and replenishing the soil with organic material, rather than denuding it and relying upon artificial fertilisers. Soil quality and hence food quality is then improved and biodiversity will be enhanced (Seyfang 2007; Sylvander 1995). The most obvious advantage of organic farming is how it excludes the use of chemical inputs completely, and thus is believed to be a healthier alternative to the products of conventional farming. According to the International Federation of Organic Agriculture Movements (IFOAM) , the role of organic agriculture, whether in farming, processing, distribution, or consumption, is to sustain and enhance the health of ecosystems and organisms from the smallest in the soil to human beings (IFOAM 2011). This emphasizes that the health of individual and entire communities cannot be separated from the ecosystem health. Having a healthy ecosystem with healthy soil provides us with healthy crops, which in turn sustains the healthy living of animals and humans. In particular, organic agriculture is intended to produce high quality, nutritious food that contributes to preventive health care and well-being (Reed 2001).

## 1.1 School environment

Schools offer the perfect environment for the development of academic and social skills and also provide a perfect setting for children to learn about and adopt a healthier lifestyle. The school is both an arena for food praxis and for learning and therefore eating patterns can be influenced (Øverby et al. 2004) both through the food environment and through educational and curricular classroom activities (He & Mikkelsen 2009). Education is recognized as the vehicle that can encourage familiarity in relation to food, nutrition and cooking skills, providing adolescents with a knowledge of healthy eating that should make them more responsible in their food choices (Stitt 1998). On the other hand, if children are not being taught in school about food, healthy eating and practical skills, they are putting their nutrition in the hands of the manufacturers of ready meals (Smithers 2000).

As individuals we recognize that food is a basic requirement of life, and that the food we eat has a major impact on our health. Therefore, it is important that school children understand the importance of food and nutrition in relation to their health not just in the short term, but more importantly, in the long term. One opportunity to increase the quality of school food, and hence the health and well being of the children, is to provide organic school food programs to increase organic consumption, and to inform children about pesticide and chemical free food.

When compared to other European and Scandinavian countries, public procurement of food for youth in Norway is not well developed (Løes et al. 2008). The common school meal is sandwiches (*"matpakke"*) brought from home, which usually accompanies fruit and milk subscription programs. In a few regions, organic fruit or milk are available (Marley 2008b). A subscription program for School milk *"skolemelk"* (hereafter *skolemelk* will be used) was introduced in the early 1970s and a similar subscription program was introduced for fruit around 1995 (Bårdsen & Løes 2010). This program has been partially subsidised by the government, with parents paying the remainder by signing up for a subscription program for fruit (known as *"skolefrukt")* for their children (Bere 2007). The government has, since 2007, made it possible for children at lower secondary levels (grades 8-10 or 1-10) to have one free fruit every day.

However there is potential for public procurement to contribute to broader policy goals, for example to improve health and education, increase opportunities for food, as well as support environmental objectives and local producers. Including organic food in public procurement also helps ensure that people on lower incomes have access to organic food (Department for Environment 2008).

## 1.2 The organic sector in Norway

Organic agriculture has been a growing trend in Norway in recent years. In 1986, Norway had only 19 certified organic production farms. The 1990s witnessed an increase in the number of certified organic farms, as there were more initiatives that encouraged farmers to convert to organic production. In the period between 1991 and 2005, the number of organic farms increased from 423 to 2486. During the same period there was an increase in the area of certified farm land and land under conversion to organic production from 2443 hectares to 43,034 hectares (Løes 2006). According to Oikos (2011a), organic agricultural land amounted to 57,392 hectares in 2010 with an increase of 1.2 percent from 2009 to 2010. A total of 5.7% of agricultural land in Norway is now organically certified (Oikos 2011a).

The European Action Plan for Organic Food and Farming encouraged the increase of organic food production and consumption in European countries by activities such as information camps, strengthening research on organic agricultural and production methods and technical advice (Commission of the European Communities 2004). In 2005, the Norwegian government set a goal for 15% of Norway's food production and consumption to be organic by the year 2015. Following re-election in September 2009 the government reset the goal again to achieve 15% of Norway's food production and consumption to be organic by 2020 (Norwegian Agricultural Authority 2009). While the basis for this production goal is a balanced development in various sectors, covering organic livestock and a diverse selection of organic foods, both Norwegian and imported foods are included in this consumption aim (Løes & Schjøth 2010)

In order to increase organic consumption through public sector institutes in the coming decade. the *Økoløft* project implemented in 52 municipalities is one of the initiatives taken

by the Norwegian government. (more information about the project is found in "Context" chapter).

Schools are one public sector setting where organic food consumption has started to grow in recent years. Across Norway, some schools are starting to introduce organic food to their children (Marley 2008b). Some are doing this within the framework of the government's school fruit initiative, while other schools are establishing their own organic school meal programs. And in primary and lower secondary schools children have access to school fruit and milk programs which were implemented to encourage good nutrition habits at younger ages (Kunnskapsdepartementet 2007). Therefore schools that provide an environment that promotes and supports healthy choices can have a significant impact on the food choices of children and adolescents.

Burke views schools as ideal settings to familiarize children and youth with the benefits of making positive choices about food (Burke 2002). Burke also mentioned that "we tend to carry our childhood health and nutritional habits into our adult lives, and once these habits are established they are difficult to break away from. It is therefore important to establish healthy habits at relatively early age" (Burke 2002). This concept of forming habits can also involve educating informed future consumers. Morgan and Sonnino write about empowering consumers by educating them about healthy food choices and allowing them to make informed decisions; the consumers still have the opportunity to choose unhealthy options, but would be aware of the consequences of their decisions (Morgan 2008).

Morgan and Sonnino's idea of a "sustainable school meal service" (2008) carries similar themes, although it is not as focused on teaching about agriculture. This concept aims at providing "fresh and nutritious food", it "conceives healthy eating as a part of a socially negotiated 'whole school' approach". Which forms a symbiotic relationship between the classroom and the school canteen, and it also focused on local and seasonal foods (Morgan 2008).

Even though schools are not directly connected with the *Økoløft* project they are establishments that could have a positive impact on the success of this project. Yet schools, as public sector institutes, are not sufficiently considered in the organic food movement, in which school food programs can also used as an educational tool (Morgan 2008). In most

of the primary and lower secondary schools in Norway at present there are two programs in operation named *skolefrukt* and *skolemelk*. These two systems have been systematically developed in Norway. Thus, school headmasters and the school administrators in these *Økoløft* municipalities are a good resource to find out about attitudes regarding introducing organic products into schools. I will attempt to find the key players and decision makers in *skolefrukt* and *skolemelk* and to explore their insights on these programs that they have gained by concrete experiences. I will also attempt to identify the organizational structure in *skolefrukt* and *skolemelk* in relation to the flow of food, decisions and finance as well as explore the attitudes of school administrators on the fruit and milk initiatives as one way in which schools can introduce organic food to their children.

The aim of this study was to answer the following overall question: "What are the barriers against and potential for increasing organic milk and fruit consumption in Norwegian schools?" This was to be answered in the light of the following operationalized questions.

1. What is the opinion of the key players and decision makers among the food system actors of the '*skolefrukt*' and '*skolemelk*' programs of providing organic milk and fruit for school children?
2. What is the relationship between ''*skolefrukt*'; '*skolemelk*' and food system actors as a whole?
3. What are the attitudes and thoughts of the primary and secondary school administrators regarding the inclusion of organic milk and fruit in their schools?
4. What factors promote or prevent the use of organic milk and fruit in schools?

# 2 RESEARCH METHODOLOGY

In my research work I used both qualitative and quantitative methods to explore the attitudes and opinions of the school food actors in different hierarchical levels. In order to reach my goal and to make it simple I divided my inquiry into two sections. In the first phase I decided to explore the attitudes towards and understanding of the idea of inclusion of organic fruit and milk into schools of the school food system actors at the decision making level through interviews which is a qualitative data collecting method . In the second phase, perceptions of the actors at the implementation level (in this case school administrators) were collected through a survey using a web-based questionnaire which is a quantitative data collecting method.

The reason I carried out the interviews first was that the interview technique provides a good opportunity be exploratory and to express one's own openings and thoughts which allows for a good view of the overall understanding of the situation. Due to this feature of interview technique the results from the interviews can later be used to prepare the web-based questionnaire. This questionnaire is more rigid and specific and was considered to be most effective when performed at the second phase in my research. Meanwhile study visits and observations were also conducted. Then I used a rich picture as a tool to present complexity, interrelationships, and segregations of the *skolefrukt* and *skolemelk* systems.

## 2.1 Study visits to schools

Two school visits were made in order to obtain an understanding of the functioning of the *skolefrukt* and *skolemelk* programs. The first, made on 2nd of March 2010, was to a combined school in Porsgrunn named Vestsiden School and the other was to a lower secondary school in Ås (*Ås Ungdomsskole*) on 17th March 2010. There are several reasons for selecting these two schools. First is that they were recommended by the Information office for fruit and vegetables as two examples around the country where the fruit program works very well. Secondly, the lower secondary school in Ås is more convenient for its proximity to the Norwegian University of Life Sciences, and Vestsiden School in Porsgrunn was visited to observe the function of 10-litre milk container. With this background I first telephoned the headmasters of each school to request an appointment to

observe the functioning of the *skolefrukt* and *skolemelk* programs and to interview the person responsible for handling these programs.

While visiting the schools, I had the chance to observe some of the daily activities. However, since I only spent a day at each school, my observations were limited. I was shown around each school by the interviewees during the children's lunch break. Spending some time at these schools allowed me to see how the *skolefrukt* and *skolemelk* programs function.

## 2.2 Interviews

Twelve officials were interviewed, including representatives from the hierarchical levels of the food chain from production to processing and distribution and at the implementation level. (Names and dates which conversations took place were given in Appendix 3). "Semi-structured interviews" (Berg 2001) were used in order to collect their ideas. The interviews were conducted as a dialogue between the interviewer and the informant in a meeting room. Even though I had a set of questions to be asked of the informant, as Berg says, some other questions were also discussed as they arose. I asked most open ended questions like 'why' and 'how' giving an opportunity for them to explore their ideas at the last section of the survey questions (Wilson, K. K. & Morren, G. E. B. 1990).

### 2.2.1 Interviews with *skolefrukt* and *skolemelk* responsible people in schools

Two interviews were conducted with school inspectors at Porsgrunn Vestsiden school and a lower secondary school in Ås (*Ås Ungdomsskole*). (Names and dates of the conversations that took place are given in Appendix 3). The interviews were conducted with two intentions. One was to making a sense out of the present situation of the implementation stage of *skolefrukt* and *skolemelk* programs from the people who have concrete experience in the programs. The second was to formulate the interview guidelines for the food sector actors and the web based survey. The questions were focused on main 4 areas; attitudes based on concrete experiences of *skolefrukt* and *skolemelk* programs and organic food in school; informative questions on *Økoløft* project; factual and personal information.

### 2.2.2 Interviews with the food system actors at the decision making level

In the preparatory period 7 interviews were planned but while performing the interviews 4 more informants were identified as important interviewees. (Names of the persons and dates which conversations took place are given in Appendix 3). Out of 11 planned interviews 10 interviews were conducted. One institute did not want to participate and that was the Norwegian Ministry of Local Government and Regional Affairs Department. The interviews were usually conducted in the interviewee´s office, or in a nearby conference room except for the interview carried out via "skype" with the project leader Anne-Kristin Løes, iPOPY project. The sequence of the interview was carried out in the following 4-part sequence

- Exploratory questions

  These questions were dependent on the persons' field of work. But generally followed respective institutions' work related to organic sector/ *skolefrukt/skolemelk* programs
- Attitudes based on concrete experiences

  *Økoløft* project

  Barriers and possibilities on introducing organic products to Norwegian schools
- Factual data
- Personal information

In formulating my interviews, I was inspired and guided by books on qualitative research by (Denscombe 2007E) and by (Berg 2001). Interviews were useful in the first stage, being an exploratory stage, as compared with written questionnaires, because they allowed me to expand on topics that came up and to explore themes that I had not originally thought of discussing. As Berg writes, "Usually, interviewing is defined simply as a conversation with a purpose" (Berg 2001). The purpose in my interviews was to get a general overview of s*kolefrukt* and *skolemelk* of the idea of providing organic milk and fruit to school children, as well as an account of the role of organic food in that setting. The personal opinions of the interviewees also came through in the interviews. The interviews were recorded to be able to check details and statements when writing the interview reports. Appointments for interviews were made by telephone and e-mail.

## 2.3 Web based survey

(Couper 2000) mentioned that the web-based survey is a fast and effective survey method to collect data and it was used as another research method in my thesis work. The initial questionnaire was designed in a Microsoft Word format and the language was in English (see Appendix 4) and later translated into Norwegian (see Appendix 5). A preliminary test survey questionnaire was carried out with four consultants who have experience in conducting surveys with an intention of refining the questionnaire. The Word format questionnaire was sent by e-mail to them and improvements were discussed at a meeting held later. The survey questionnaire was modified a second time according to the comments of the consultants. Then the questionnaire was translated into Norwegian in order to make it easier for the participants to respond. The completed questionnaire was then converted into a web based format by using the software Quest Back (http://www.questback.no/). An invitation letter was sent along with the questionnaire (see Appendix 6 and 7) to all the participants explaining the aim and expectations of the project. Through a special link the final web based survey was published. The completed questionnaires were processed with regard to the validity of the answers, with respect to the number of questions answered. It was agreed that questionnaires in which at least 50% of questions were answered, would be considered eligible for processing.

### 2.3.1 School selection for the web based survey

My study has involved primary (grades 1-7), lower secondary (grades 8-10) and combined schools (grades 1-10) in the municipalities which conducted the *Økoløft* project in Norway. First these three types of schools are the ones that receive *skolefrukt and skolemelk* programs. Also the municipalities that conduct the *Økoløft* project work towards increasing organic consumption through public sector institutes. A total number of 340 schools from 52 municipalities in 15 counties in the *Økoløft* project were selected and expected to conduct my research (Appendix 8).

Both schools which include organic food items in their food serving practices and schools which do not were invited to answer the web-based survey. The first group of participants identified for inclusion in the web-based survey were school headmasters. Later several other groups were also included as potential participants. These were inspectors, teachers,

and administrative officers engaged in school food programs. This adjustment was made in part due to the busy schedule of school headmasters. The lack of time available for them to engage in a survey meant the survey was forwarded to the person responsible for school food programs. The mailing list for participants was developed in part with the help of project leaders in the *Økoløft* project as well as searching through the homepage of the Norwegian Education Ministry (http://skoleporten.utdanningsdirektoratet.no) and also by visiting the municipality web sites.

The web-based survey was open for 6 weeks, and 3 approaches were used to increase the response. One of them was to find and forward the survey that had originally been sent to the school email address to the direct email address of the headmasters. Secondly, reminders were sent once a week to the schools who had not yet answered the survey. Thirdly, telephone contact was made with those who had not responded to explain the aim and expectations of the survey.

### 2.3.2 Structure of the web based survey

The content sequence of the web-based survey comes in 3 parts. These are information gathering about the present situation, attitude of respondents and background information (see Appendix 4 and 5).

- Information gathering
  - About school food practice at present
  - About Environmental brand certification programs in schools
- Attitude of respondents
  - Attitudes of *Økoløft* project
  - Attitudes about organic agriculture in general
  - Attitudes on different factors of organic produce in *skolefrukt* and *skolemelk*
    - Environmental sustainability and animal welfare
    - Educational
    - Health and nutritional aspects
    - Food safety
    - Economical
    - Social aspects
    - Availability and quality

- Attitudes concerning logistics

    Background information

    Personal

    School

### 2.3.3 Factors considered in the web-based survey

The questions for the web-based survey were designed around 9 distinct categories and were then formulated as statements. These concerned *skolefrukt and skolemelk* in general as well as attitudes towards the inclusion of organic fruit and milk into school food programs. The respondents were asked to indicate their level of agreement or disagreement to the statements. The categories cover a range of factors including environmental sustainability and animal welfare, education, health and nutrition, food safety, quality, social, economical, availability and logistical. The factors and the statements are shown in table 1. The statements were designed to be responded to by selecting one of five levels of agreement: Fully agree, partly agree, fully disagree, partly disagree or do not know.

Table 1: Factors considered in the web-based survey and the related

| Factor | • Statement |
|---|---|
| **Environmental sustainability and animal welfare** | • Organic agriculture has less negative impacts on the environment<br>• Organic agriculture contributes to sustainability<br>• Organic agriculture respects animal welfare |
| **Knowledge** | • Organic fruit and milk in schools will enhance students' knowledge on organic agriculture.<br>• Organic fruit and milk in schools help school to increase the nutritional knowledge of the pupils'<br>• Serving organic fruit and milk provide students an opportunity to learn about ecology<br>• The food products given to children in schools can be part of the school's general work on sustainability education |
| **Food safety** | • Organic fruit or milk give less harmful chemicals and pesticides to our body than conventional<br>• Organic fruit or milk lacks the preservatives, artificial sweeteners, colourings and flavourings that conventional agriculture has |

| Factor | Statement |
|---|---|
| **Health, nutrition** | • Consuming organic fruit and milk has a positive health consequence<br>• Organic fruit and milk improve healthy eating patterns of the students at schools<br>• Organic fruit and milk is more nutritious than conventional fruit and milk<br>• Organic fruit and milk in school fruit program and school milk program positively promotes the nutritional side of school meals |
| **Quality** | • Organic milk and fruit taste better than conventional fruit and milk<br>• Serving organic fruit makes available fruit with bad appearance as compared to conventional fruit<br>• Serving organic fruit makes available fruit with poor storage quality<br>• Organic fruit served in school fruit programs is not labeled and difficult to differentiate from conventional fruit |
| **Economical** | • Organic milk is fairly priced but too expensive<br>• Organic fruit are fairly priced but too expensive<br>• The present budget given for the free fruit program is not sufficient to purchase organic fruit to all students |
| **Availability** | • There is little variety of organic fruit to be distributed in school fruit programs<br>• There is little variety of organic milk products to be distributed in school milk programs<br>• Serving organic fruit will face problems with consistent availability |
| **Logistic** | • The school fruit program is a convenient way to get organic fruit to school children<br>• Using organic fruit increases the administrative work load in the school<br>• TINE's new internet based ordering system from August 2010 has reduced the administration work of the school milk program |
| **Social** | • Norwegian conventional fruit is should be given priority over imported organic fruit<br>• Offering organic produce in schools will create a discrimination as lower income families can't afford to buy it<br>• Priority should be given to improve learning facilities to meet high education expectations over providing organic fruit to the children<br>• The free fruit program can provide equal access to Organic fruit |

## 2.4 Methods of data analysis

Hundred and thirty nine out of 340 school administrators responded in the web based survey. This comprises 41% of school administrators in the primary, upper secondary and combined schools in the *Økoløft* project municipalities. Responses from seven schools had to be disregarded since they were not eligible for processing due to lack of answers and therefore 132 responses were used for the analysis. The data was grouped under the nine factors “environmental sustainability and animal welfare”, “educational”, “health and nutritional”, “food safety”, “quality”, “social”, “economical”, ”availabilit” and “logistical” and analyzed using excel and SPSS package. The percentage of school administrators of the primary, upper secondary and combined schools that answered to the five categories of fully agree, partly agree, fully disagree, partly disagree and do not know were calculated for each statement. Since a relationship could be identified among some factors they were regrouped under 4 groups and presented using tables.

# 3 CONTEXT

## 3.1 National project "*Økoløft i Kommuner*"

The government has launched a project named "*Økoløft i kommuner*" ("Organic up-lift in municipalities") in order to achieve the above-mentioned national goal. The government ministries that established this project were Local Government and Regional Development, the Ministry of Agriculture and Food and the Norwegian Agricultural Authority. Fifty two municipalities (see Appendix 8) were involved in this project and the overall goal was to increase the availability of organic products in public institutions; educate consumers (e.g. at school through different activities or in shops through product promotion); provide advice for producers (both organic and conventional) and to provide advice and contacts (e.g. with organic producers) for distributors. The 52 municipalities participated in 31 projects. (Norwegian Agricultural Authority 2009).

Twenty million NOK has been distributed to the 52 municipalities concerned that will make an extra effort to promote organic production and consumption (Fylkesmannen i Oslo og Akershus 2010; Norwegian Agriculture Authority 2008).

## 3.2 Norwegian school structure

The Norwegian school system can be divided into two main parts named "*grunnskole*" and "*videregående skole*". All schools which have grades from 1-10 are named *grunnskoler. Grunnskoler* can again be divided in to three categories. Primary school (*barneskole*, age 6-13, grade 1-7), lower secondary school (*ungdomsskole*, age 13-16, grade 8-10) and combined school (*kombinerte barne- og ungdomsskoler*, age- 6-16, grade 1-10). "*grunnskoler*" are generally owned and administrated by municipalities. Of all these, especially in municipalities with low amounts of people, combined schools are the most common. On completion of lower secondary school students enter upper secondary school (*videregående skole*, age 16-19).

According to (Utdanningsforbundet 2011), 614 020 children attended a total number of 2957 *grunnskoler* in Norway in 2010-2011. Out of these, 1765 schools are primary schools, 716 are combined schools and 476 are lower secondary schools. The total number

of children in upper secondary education was 193 000, and there were 561 such schools of which 74 were independent. The other 487 upper secondary schools were owned and administrated by the counties.

Attendance at primary and lower secondary schools is mandatory for all children aged 6–16. The "Knowledge Promotion", with its special emphasis on learning, is meant to help ensure that all children receive a differentiated education. The municipalities fund primary and lower secondary education and have a great deal of freedom when it comes to organizing the education. The above information is based on the Norwegian Directorate for Education and Training (Ministry of Education 2011).

### 3.3 Brief history of the school food system in Norway

From the beginning of 1880, school meals in Norway were given mainly to the children from poor families. The sponsor was a benevolent organization called "*Suppekjøkken*" (supper kitchen). After 15 years, the municipality started to offer free warm school meals to poor children. Richer children also had the opportunity to obtain meals at a lower price. But some people in society weren't satisfied with the school meals, believing it to be poor health food instead of healthy cold meals. Due to that, from 1935, the schools in Norway gradually changed to offer cold meals such as fruit, vegetables, milk, cheese and bread. Unfortunately, due to the poor budget the municipalities were no longer able to offer free meals, so children had to bring food with them from home. After many years of development, this has been transformed to the lunch box which is popular today in Norwegian schools (Løes et al. 2008).

According to (Bere 2007), an increasing trend of using fast food and added sugar products has been identified among children in last decades. In an effort to begin to counteract this trend *skolefrukt* has been initiated in Norway. In 2004, school fruit was mentioned in public regulations, with regard to the size or quality of the fruit and vegetables. But there were only 41% of schools that took part in the fruit program, and just 12% of children subscribed in 2006. In order to inspire more schools to join it, public funds were allocated to pay partially for fruit, and to offer a free refrigerator to schools that have over 50 children. A wholesaler of fruit and vegetables delivered this fruit. In some Norwegian schools they demand organic fruit (Løes et al. 2008). Today there are two main programs

in providing fruit and vegetables to the Norwegian schools named “Subscription-based school fruit system” and “free fruit program”.

Since 1970 a Norwegian dairy company, TINE, has given milk out to almost all schools in the country and it is a common food item in Norwegian schools. The children can get it during the school day. In some schools canteens and tuck-shops (*kiosk*) provide another alternative for students to buy food.

### 3.4 Public guidelines to school meals

In their guidelines for school meals (common for primary, lower secondary and upper secondary school), the Directorate for Health and Social affairs (*Sosial- og helsedirektorate*t) emphasises that the school meal is a central element in creating a good environment for learning and well-being and that the meals influence the pupils’ health (short and long-term) (Helse- og omsorgsdepartementet 1995). Their basic position is that the pupils are expected to bring their own packed lunch to school, but that all should be offered milk and fruit/vegetables and cold drinking water at all times. Sufficient time must be allowed for the meals, at least 20 minutes, and an adult should be present during the eating at least in grades 1-4. Food served or sold at school should be healthy and contain little sugar and fat; recommendations include whole-grain bread, water, fat reduced milk, fruit and vegetables (“five per day”). Soft drinks, chips, snacks and sweets should be avoided, and cakes etc. should not be served daily. Lower secondary schools should organise a canteen or booth where the pupils can purchase food. The guidelines should be regarded as a standard for school owners and school administration (Sosial- og helsedirektoratet 1998).

### 3.5 The school fruit program

There are two main programs that provide fruit and vegetables to the Norwegian schools named “subscription-based school fruit program” (from here onwards referred to as subscription-based *Skolefrukt)* and “free school fruit program” (from here onwards referred to as *free Skolefrukt)*. The choice of these programs is mainly dependent on the type of school, which means whether they are pure primary school (1-7 classes); combined school (1-10 classes), or lower secondary school (8-10 classes). Children in the pure primary

school (1-7) get their fruit through subscription-based *Skolefrukt*. Children in the combined school (1-10 classes), and lower secondary school (8-10 classes) have access to the free *Skolefrukt*. Out of 2957 primary and secondary schools 2003 schools registered in their administration system. (Opplysningskontoret for frukt og grønt 2011)

### 3.5.1 Subscription-based *Skolefrukt*

Under this program fruit is offered to the children in pure primary schools as a subscription service where the parents pay a part of the costs. Tore Angelsen, Project manager in the Information office for fruit and vegetables mentioned that, about 60% of the grade 1-7 schools in Norway have subscribed for the parent paid school fruit package. Students get a fresh fruit or vegetable every day. This may be an apple, pear, orange, banana, carrot, kiwi or nectarine, depending on the season. Parents pay NOK 2.50 per fruit and are subsidized by the public sector with NOK 1, per fruit / vegetable. Parents only pay for the days the school has decided that it should hand out fruit or vegetables and from the start date of the subscription to the student. Parents can register their children to receive a piece of fruit or a carrot each school day, usually at lunchtime. Registration is possible during the whole year at this registration website: httprimary school://skolefruktsys.no/Login.aspx. Administration of the subscription-based *Skolefrukt* is carried out by the Information office for fruit and vegetables (Opplysningskontoret for frukt og grønt/ OFG) in Oslo in collaboration with the Ministry of Health in Norway.

As Angelsen explained, 55% of students study in pure primary schools where there was an approximate demand of 52,000 pieces of fruit per day in Autumn 2009. This has been a declining trend for 2 to 3 years where it was, at its peak, around 90,000 pieces of fruit per day. The declining trend is due to two reasons. Municipalities dropping free *skolefrukt* for pure primary school and a government funded project ending spring 2009 which provide free *skolefrukt*f or pure primary school in some parts of Oslo, Drammen and Finnmark.

Delivery of fruit to each school is covered by the subscription program and the school makes the final choice of supplier. This allows the school to choose from the vendors that the Information office for fruit and vegetables have a signed framework agreement with in that area.

### 3.5.2 Free fruit program (Gratisfruktordningen)/ free *Skolefrukt*

Free *Skolefrukt* for all children in lower secondary schools and combined schools was introduced in 2007 as part of a government goal to ensure good nutrition habits of children and young people to provide the basis for good learning outcomes in schools (Kunnskapsdepartementet 2007). In this system the municipality purchases the fruit on behalf of schools and offers one free fruit per child daily. According to the Kunnskaps departementet 2007 the justification to select lower secondary schools is that the children in this group have a worse diet than those from other schools. For this reason, schools with secondary school (both combined and pure secondary schools) children were selected to receive free *Skolefrukt*.

Nine hundred and ninety schools (990) are registered under free *Skolefrukt* (Opplysningskontoret for frukt og grønt 2011). When we look at the number of children in schools, 30% of children purchase fruit under subscription-based *Skolefrukt (participating schools)*. Of course, there is a higher demand per day for fruit under free *Skolefrukt,* which is around 285,000 pupils. Most of them are getting free fruit.

The Norwegian Ministry of Education and Research established the subscription-based *Skolefrukt* and the Norwegian Ministry of Local Government and Regional Affairs Department finance it. The government has given nearly 230 million NOK in order to subsidize the subscription-based *Skolefrukt* in 2011.
http://www.skolefrukt.no/vedlegg/Belop_til_kommunene_2011.pdf

According to Angelsen, the information office for fruit and vegetables provides their administration facility (*skolefruktsys.no*) free of charge to the municipalities who work with free *Skolefrukt* for combined schools and lower secondary schools. Under this facility the Information office for fruit and vegetables negotiate and enter into agreements with suppliers. However the municipalities can elect whether or not to join the administration system (*skolefruktsys.no*). Each municipality or school makes their own decisions regarding how to put it into practice (Kunnskapsdepartementet 2007). According to Angelsen one of the examples of a municipality opting out of the administration system is Trondheim. The independent decision making power in this municipality has led to them

choosing organic fruit and vegetables rather than conventional fruit and vegetables (Løes et al. 2007).

At present 75% - 80% of all municipalities are using the administration system of the Information office for fruit and vegetables. The Information office for fruit and vegetables does not have a precise view about the total number of municipalities who offer free school fruit. According to Angelsen this is due to some municipalities skipping free *skolefrukt* despite receiving government finance for it. Concerning deliveries/transport of fruit to schools under the free program, the final supplier can be chosen by the municipality or school from the suppliers registered with the Information office for fruit and vegetables. A total of 14 wholesalers are registered to supply fruit and vegetables to schools and the biggest supplier is Bama.

### 3.6 The school milk program

The school milk program ensures that students have access to cold milk at school each day. The program is based on advice from the Ministry of health that milk should make up part of school meals. The milk is subsidized so that all students are offered milk at a reduced price (Opplysningskontoret for meieriprodukter 2011b). The Norwegian dairy company TINE is the supplier of both organic and conventional school milk, and other dairy products to schools. TINE offers different school milk products through *skolemelk*.

- Reduced fat conventional milk (1.5% fat)
- Conventional milk with extra low fat content (0.5-0.7% fat)
- Cocoa flavoured, lactose free, conventional milk, without added sugar, extra low fat content (0.5-0.7%)
- Cocoa flavoured, lactose free, conventional milk, with 0.9% added sugar, and extra low fat content (0.5 – 0.7% fat)
- Lactose free reduced fat conventional milk (1.5% fat)
- Organic reduced fat milk (1.5% fat)
- Organic reduced fat, raspberry flavoured, lactose free milk, without added sugar (1.5% fat)
- Banana flavoured, conventional milk, extra low fat content (0.5-0.7%) (Opplysningskontoret for meieriprodukter 2011a)

TINE is following national health guidelines by encouraging the schools to order the fat-reduced types of milk (Sosial- og helsedirektoratet 1998). At the same time it is the fat-educed type that is most popular, and it is for this reason that organic school milk comes in this type.

Until mid 2009 school children had only one type of organic reduced fat milk (1.5% fat) available to them through *skolemelk,* which was also only available in mid Norway. The reason that organic reduced fat school milk (1.5% fat) was not available across the country was because the total volume of this organic milk was so limited that any transfer of organic milk to 1/4 litre cartons must be carried out in one plant. The limited durability makes it difficult if not impossible to distribute this version to schools throughout the country. From Autumn 2011 production of organic reduced fat milk (1.5% fat) in 1/4-litre cartons was discontinued. At the same time, due to low demand, banana flavoured conventional milk with extra low fat content (0.5 - 0.7%) is also no longer produced.

Since Autumn 2010 raspberry flavoured organic milk with 1.5% fat content was introduced and is now available all over the country. The reason for this nationwide availablility is that the new school milk is given an additional heat treatment to increase shelf life. In addition, the product is lactose-reduced, so that children with lactose intolerance can drink it. The product is completely without added sugar.

From Autumn 2011 two new types of products are available as options in the school assortments. These are cocoa flavoured, lactose free, without added sugar conventional milk type (0.5 - 0.7% fat) and lactose free reduced fat conventional milk (1.5% fat).

It is up to the school to decide on the types of milk they wish to provide to the children through *skolemelk.* In the new online program of purchasing the schools must choose at least two milk varieties but TINE has no influence on what products the school chooses. Parents and students at the schools who use the online system will always have at least 2 types of milk available in schools. (https://www.skolemelk.no/ofte-stilte-sporsmal).

Since Autumn 2010 a new ordering and billing system has taken care of all *skolemelk* administration around the order and payment from parents. According to the *Skolemelk* and nutrition adviser, Birgit Irgens, this had been requested by schools for years, as many

schools said it took too much time and resources to manage the registration and reminders from parents. Due to this reason many schools have only offered one milk variant  Thus, this new system was introduced to save schools time and resources that they can use for other tasks and therefore also enable them to offer more than one variant of milk.

*Skolemelk* is available in 99% of primary schools (Opplysningskontoret for meieriprodukter 2011a). All six types of school milk in Norway are subsidised by a purchase tax administrated by TINE. This tax imposes a slight reduction in income for the milk producers, so the subsidies come from Norwegian farmers, not from the public. Between 2003 and 2007 the subsidising was differential so that all types of milk, including organic, had the same price. In the Autumn of 2007 this arrangement was discontinued, and cocoa flavoured and organic milk increased by NOK 0.49 per unit. By the 2010/2011 school year this premium had increased to NOK 1.34 per unit; prices are NOK 3.97 per container of conventional reduced fat milk, NOK 4.00 for extra low fat milk, NOK 5.22 for cocoa milk and NOK 6.50 for raspberry flavoured organic milk, these prices will increase in the 2011/2012 school year to NOK 4.08 per container of conventional reduced fat, 4.12 NOK extra low fat milk, NOK 5.36 for cocoa milk and NOK 6.68 for raspberry flavoured organic milk. It was explained by Birgit Irgens that the large price premium on organic milk is because it is more expensive to produce organic milk than the conventional variety. The producers receive a premium per litre of currently NOK 0.75. This compares to a basic payment of ca. NOK 4 per litre.  Further, Irgens mentioned that the supply and production of organic milk is lower than the conventional method and hence the market price becomes higher.

### 3.7 Actors related to *skolefrukt* and *skolemelk*

This part will present the actors involved in *skolefrukt and skolemelk*. Their roles and motives concerning school food programs. The actors were categorized into 3 societal categories: government, market and supporting services, civil society. Actors from the government represent politicians at the national and regional level along with civil workers such as school staff or school headmasters. Actors from the market represent channels that provide food such as supply chains, distributors. Actors from civil societies are often from organizations such as registered charities, non-governmental organizations (NGOs) for example.

### 3.7.1 The government actors

**Norwegian Agriculture Authority**

The Norwegian Agricultural Authority is an agency of the Norwegian Ministry of Agriculture and Food, and is a national authority; having the competence to ensure that all schemes and regulations are administered uniformly across the country, and throughout the value chain. Their mission is to provide professional advice, implement agricultural policies, and facilitate co-operation within the agricultural and food industry. Implementation of the *Økoløft* project was a responsibility of this agency in which the Government set a goal that 15 percent of food production and food consumption be organic by 2020. In order to reach the goal the Norwegian Agricultural Authority has a central role in development of areas such as managing various grant schemes, development of organic agriculture; work as a meeting arena for organic production and consumption; allocation of grant funds for research on organic farming, market surveillance of organic products, preparing summaries of acreage, production, processing and sales as well as having an advisory function to the Ministry of Agriculture and Food in matters related to organic agriculture.

The selection of the municipalities for the *Økoløft* project was based on a recommendation made by the Norwegian Agricultural Authority. NOK 230 million was distributed to the 52 municipalities concerned in order to make an extra effort to promote organic production and consumption (Fylkesmannen i Oslo og Akershus 2010). According to the senior adviser, Emil Mohr at the Norwegian Agriculture Authority the public organic goal has a bigger challenge when it comes to organic consumption than with organic production.

**Ministry of Agriculture and Food**

The Ministry of Agriculture and Development is responsible for agriculture, forestry and food in Norway. This is the one of the ministries which established the *Økoløft* project. The Ministry believes organic agriculture has an important role as being at the forefront of transforming Norwegian agriculture into an environmentally friendly and sustainable industry. An action plan for organic food production and consumption for 2008-2015 was

proposed by the Ministry of Agriculture and Food which was later revised to 2020 (Ministry of Agriculture and Food 2008).

Some of the strategies and measures that have been taken by the Ministry of Agriculture and Development in developing organic agriculture in Norway include:

- Arranging professional discussions to give advice and make proposals to decision-makers and competent stakeholders
- Funding projects that contribute to developing the market for organic products
- Development of more user-friendly regulations for organic production and marketing
- Supporting research and knowledge development within organic production and consumption
- Cooperation with other parties to raise consumer awareness of organic production and organic labels, including the commitment of public institutions to use organic products
- Implementing and evaluating the project to promote organic agriculture in municipalities (Ministry of Agriculture and Food 2008).

**Norwegian Ministry of Local Government and Regional Development**

The Norwegian Ministry of Local Government and Regional Development (Norwegian: *Kommunal- og regionaldepartementet*) was established in 1948. It is responsible for housing and building, regional and rural policy, municipal and county administration and finances, and the conduct of elections. This department financed the *Økoløft* project.

**Ministry of Education and Research**

The work of this ministry is aimed at ensuring that Norway has a sound and well-functioning educational system, and productive and creative research environments. The ministry seeks to ensure that everyone has the opportunity to participate and influence development in the knowledge society. Out of the seven departments in the ministry, the department of education and training provides the education and training system and has

the overall responsibility for the primary and secondary schools. This department is also responsible for formulating policy on primary and secondary education and training.

### 3.7.2 Market actors

**Information office for fruit and vegetables**

The information office for fruit and vegetables is a foundation aiming to increase consumption of fresh fruit, berries, vegetables and potatoes in Norway. The subscription based *Skolefrukt* project is administrated mainly by this office collaborating with the Department of Health in Norway. However, free *skolefrukt* may also use the administration facility (*skolefruktsys.no*), free of charge. In addition to the per-fruit-served support, all schools of at least 50 pupils, or where more than 40% of the pupils subscribe to the program, receive a refrigerator for storage free of charge from the office. The information office for fruit and vegetables is run as a brand-neutral business.

**Information office for milk products**

The information office for dairy products (*Opplysningskontor for meieriprodukter*) is a center of Norwegian milk and dairy products. They have expertise in nutrition, food preparation and teaching, and like the information office for fruit and vegetables, they also run a brand-neutral information business. Therefore they give equal treatment to both conventional and organic milk. The office aims to increase knowledge about milk and dairy products to the people. They have a wide range of activities. They offer free recipe booklets, brochures and fact sheets, conduct lectures and teaching, organize seminars and deliver content on different types of media.

The information office for dairy products is funded through a sales tax paid by farmers in Norway, in line with other information offices in agriculture. This sales tax is administered by the Revenue Council and administered by the Norwegian Agricultural Authority. Until August 2010 information dissemination regarding *skolemelk* was the responsibility of the information office for dairy products, while TINE distributed milk to schools. From August 2010, with the introduction of the new administration system, TINE has taken over this activity from the information office for dairy products.

**TINE**

TINE is a big cooperative owned by over 15,000 dairy farmers scattered across the country (TINE 2011) and delivers milk for the *skolemelk* program all over the country. The cooperative has five divisions in different regions in Norway, which are TINE west division, TINE south division, TINE north division, TINE east division and TINE mid Norway division. The central administration of TINE is located in Oslo, and the main strategies are designed there.

**School fruit distributors**

A total of 14 wholesalers are registered in *skolefrukt,* supplying fruit and vegetables to schools, the largest of which is Bama where Odd Langdalen is next largest. Out of the 14 distributors, only 4 distribute organic fruit. These are Bama, who provide a fixed combination of conventional and organic by agreement with the school; Odd Langdalen, who can provide 100% organic if desired; Avigo Grønnmat, who provide 100% organic fruit in Aust- and Vest-Agder and Per Knudsmoen A/S who provide organic carrots from September – January at the normal price (Skolefrukt 2010).

### 3.7.3 Actors from civil society

**Oikos**

In Norway, the main political actor to promote the consumption of organic food is the organization Oikos (Løes et al. 2008; Oikos 2011b). Oikos was founded in September 2000, when three organic organizations merged into one. The aim was to establish one organic movement and strengthen the organic voice into the landscape of Norwegian politics, economics and social life. Oikos is a non-profit, idealistic organization and a member of the IFOAM (International Federation of Organic Agriculture Movements). Oikos runs projects in addition to political lobbying and meetings with stakeholders in the food-sector and the agricultural sector. The main project activities are to increase the visibility of organic food in food stores, and to facilitate the use of organic food at festivals (Oikos 2011b). Oikos has not worked much to introduce organic food in schools, but has been active in influencing TINE, to offer organic milk at schools.

**iPOPY project**

The iPOPY (innovative Public Organic food Procurement for Youth) project has studied public organic food procurement and has suggested efficient policies and instruments for increased consumption of organic products in public food serving outlets for young people. Even though they do not directly fall under the label of stakeholders, their findings and experiences are very important and interesting and also supportive to the actors in the *skolefrukt* and *skolemelk* programs. The iPOPY project was concluded on September 2, 2010. Their basic goal was to contribute to an increased consumption of organic food in Europe. About 14 researchers from Denmark, Finland, Italy, Norway and Germany participated in the project group. The iPOPY project collected, systemized and analyzed information about how school meals and other relevant food systems are organized, and how organic food is integrated into these systems.

# 4 RESULTS AND DISCUSSIONS

## 4.1 Perception of the food system actors of the '*skolefrukt*' and '*skolemelk* to the idea of organic milk and fruit

### 4.1.1 Hindrances at school level

**The high cost of organic food vs. tight budgets**

The foremost problem in introducing organic fruit and organic milk in to *skolefrukt* or *skolemelk* is the cost. Almost all the stakeholders interviewed mentioned that certified organic products are generally more expensive than their conventional counterparts. Tight budgets create limitations to the use of organic food and therefore both municipalities and schools are very careful in how and where the money is spent. In both the schools interviewed it was mentioned that they would like to include organic fruit into the school food programs but they always have to consider the price when purchasing. Due to the high price of organic produce they tend to choose conventional produce at a lower price. They think that if the prices were equal in organic and conventional produce they would purchase the organic products for their children. As Angelsen explained in Information office for fruit and vegetables, some municipalities do not implement the free *skolefrukt* at all due to budgetary constrains in the municipality. However the social worker (*miljøarbeider*) in Vestsiden School thinks that introducing organic milk and fruit can be done through *skolemelk*, subscription based *skolefrukt* and free *skolefrukt* programs. Interviewees in both Vestsiden skole and *Ås ungdomskole* explained that it has never been requested, either by parents or by children, that they provide organic products in the school food programs. It is their belief that the lack of interest and motivation for parents to buy organic fruit and milk may be due to the high cost.

Both the informants in the Norwegian Agricultural Authority and Oikos explained that price of organic food includes not only the cost of the food production itself, but also the public benefits such as environmental protection, animal welfare, minimizing health risks etc. which add to the value of the product. So as consumers it is up to them to understand the importance of the added value of the organic product that is not directly visible. They

also mentioned that educating parents has the potential to alter purchasing habits towards organic fruit and milk.

According to the senior adviser at the Norwegian Ministry of Agriculture and Food, projects have been conducted on introducing organic food in schools. These projects had good results and schools have been very positive about these programs. However the high costs of introducing organic products to school meals has hindered further development of these projects (Interview on 22.03.2010).

**The role of education**

The senior adviser at the Norwegian Ministry of Agriculture and Food further mentioned that schools have more challenges than they had several years ago. Both teachers and children have a lot more targets to achieve. When such focus is centered on education, introducing and instructing other topics such as organic food becomes more difficult.

Anne-Kristin Løes, project leader in the Bioforsk, mentioned that one of the probable reasons not to offer schools organic food may well be that many teachers and headmasters/school administrators think that serving food is not the most important school task, and do not prioritize it. This was also confirmed by many of the other stakeholders interviewed. The web based survey results showed that 63% of headmasters/school administrators also think this. Anne-Kristin Løes also mentioned that in Norway it is commonly believed that public money for the school sector can be better utilized for purposes other than school meals, and that feeding school children is the responsibility of the parents, not the public sector.

**Public procurement and food service decision-making**

Emil Mohr at the Norwegian Agricultural Authority mentioned that, although organic food procurement is part of government policy, such food is not being bought routinely by most of the public sector, and that it is for each single organization to decide whether they want organic products or not when purchasing food. He further explained that an institute's food decisions are based on recommendations rather than demands and that this also applies to schools. Even with a national goal in place, authorities cannot oblige schools to buy

organic food but can only encourage and promote organic food consumption. On the other hand each of these public institutions has the freedom to choose how to source their food. Therefore strong, clear leadership on this agenda at a national level, along with financial and other support is necessary.

**Aesthetic aspects**

An informant at *Ås Ungdomsskole* with experience of using organic fruit in school previously in the free *skolefrukt* program mentioned that the organic fruit often looked less appetizing, and it was more difficult to get the children to eat the fruit. Anne-Kristin Løes, mentioned that schools in Trondheim have faced similar experiences with having organic fruit that does not have a fresh appearance. Such experiences limit the marketability of organic products, as consumers are more attracted to fruit without blemishes (Bårdsen & Løes 2010)

### 4.1.2 Hindrances on government level

**Coordination between government administrations**

To work towards the inclusion of organic fruit in *skolefrukt* within the framework of the *Økoløft* project requires the cooperation of 5 governmental bodies. They are the Norwegian Ministry of Agriculture and Food, the Norwegian Ministry of Local Government and Regional Affairs, the Norwegian Agricultural Authority (*Statens Landbruksforvaltning)*, the Ministry of Education and Research, and the Ministry of Health. Emil Mohr mentioned that with too many responsible bodies focusing one goal of the inclusion of organic fruit in *skolefrukt* cooperation is made difficult as each of the institutions also have their own goals.

Angelsen, explained the reason why the government goal and the school fruit program are not linked: The Local Government and Regional Affairs Department finance free *skolefrukt,* but the responsible department for the free *skolefrukt* program is the Ministry of Education and Research. The Ministry of Education and Research has not specified in the regulations that the fruit and vegetables in the program has to be organic. Moreover the informant mentioned that the Ministry of Education and Research's first priority with this

specific program has been to provide fruit and vegetables for the pupils. The fruit and vegetable-program costs more than 230 million NOK each year. Organic fruit and vegetables for all pupils would have meant additional costs, and there would have been additional organisational challenges. It is therefore left to the municipalities to decide if they wish to provide organic fruit and vegetables to the pupils. Therefore encouraging the consumption of organic fruit would require more money than could be afforded. From the same standpoint, it is believed that the ministry would prefer to invest money in encouraging children to eat more fruit as a first step, and whether or not these fruit are organic is not a priority issue. Thus, there is no need to link the government organic goal to the free *skolefrukt* programs that targets combined or upper secondary schools.

Angelsen further explained that the Ministry of Health, which finances the subscription-based *skolefrukt* program, thinks that there are no differences between organic and conventional fruit as it is not scientifically proven whether organic fruit is healthier than its' conventional counterpart, or that it has a higher nutritional value, thus there seems to be no reason to further subsidize the *skolefrukt* program. Therefore neither free *skolefrukt* nor subsidized *skolefrukt* is directly linked with the government goal of 15% consumption of organic produce. Due to the multiple interests inherent to organic fruit consumption resulting in more complexity in the relevant decision making process, Oikos and other organizations that encourage organic production and consumption have suggested a strategy to make public institutes increase the proportion of the organic food they purchase. The above-mentioned organizations propose a policy tool for public institutions to include a quota of organic food within their purchases. According to Reidar Andestad, Leader, Oikos, this will be a very big step towards increasing production, sales, activities and logistics that will in turn reduce the price due to a high amount of production.

**Free *skolefrukt* budget**

According to Angelsen, in 2009 a budget of 217 million NOK was allocated to the municipalities as '*rammetilskudd*' (financial aid) for free fruit programs which increased to 230 million NOK in 2011 (Opplysning kontoret for frukt og grønsake 2011). However, it is up to each municipality to decide how to spend this money. When the municipality budgets become tighter and the schools must save money, it is the *skolefrukt* budget that is compromised most of the time. The argument is that learning facilities and maintenance

costs are difficult to cut. It is however possible to purchase cheaper fruit and save money that can be utilized for other purposes and organic fruit is therefore sacrificed. Informant from the Ministry of Education and Research has received some information that a very few municipalities has not followed up the fruit and vegetable-programme in accordance with the regulations. She further mentioned that in general most municipalities provide fruit and vegetables for all pupils in 1-10th grade schools and 8-10th grade schools. This pattern, as explained by the informant from Oikos, was not intended to take place, yet municipalities have priorities other than to develop organic food consumption in schools. The informant from the Education department however believed that if the municipality can buy the same amount of fruit of the required standard (as recommended by the ministry) at a lower price, this cost saving would be good for the municipality. Angelsen commented that it is wrong to put this money into the financial support named in Norwegian "*rammetilskudd*" and the money could be put to better use if it was given through the financial support named in Norwegian "*Øremerket tilskudd"* which is a grant form that can be used by the government as a political objective to be achieved by municipalities or counties. Thus this will help to utilize the money provided to be allocated to buy good quality fruit. Angelsen further explained that alternatively the *skolefrukt* budget could have been included within the department of health budget.

### 4.1.3 Hindrances at the market level

**The new market**

Organic products are mostly available via conventional producers and wholesalers because the organic market in Norway is still in its early stages compared to other European countries (Michelsen J. 1999).

Informants from Oikos, the Norwegian Ministry of Agriculture and Food and the Norwegian Agricultural Authority explained that Bama is the biggest supplier of fruit to schools and that sometimes around 20% of the fruit delivered to schools per week is organic. The experience of the Information office for fruit and vegetables is that the delivery of organic fruit to schools by Bama has been a declining trend down from 2 days per week to once a fortnight. Bama's main income is from conventional and not organic produce. Therefore they have less focus on organic products and give priority to

conventional produce that increases their profit. Product Manager at Bama said that, depending on the availability and the quantity of the organic fruit, they try their best to provide organic fruit to schools twice a week. She further explained that the variety of fruit might not be as high as conventional fruit.

**Labelling**

When I asked product manager at Bama about labelling fruit in *skolefrukt* as organic, she mentioned that the big cartons are labelled but not individual fruit. This is because it is very expensive to label them separately as the quantity of fruit is limited. Therefore, even though the children get an organic product they do not know it, and this means that the student will be unable to find the opportunity to distinguish between the quality of organic product and that of the conventional product. According to Reidar Andestad, Oikos, the lack of sufficient labelling reduces the possibility to make a pedagogical and informational input to school fruit program strategy.

### 4.1.4 Hindrances on community level

**Common perception of the food safety status in Norway**

Most of the stakeholders interviewed mentioned that Norwegians claim that conventional Norwegian fruit contains less contaminants than imported conventional fruits. Therefore Norwegian fruits can be considered as 'clean' therefore it should be given priority over organic fruit.

Emil Mohr, mentioned that this attitude not only applies to the *skolefrukt* program but also in the overall market of organic products in Norway. Three informants mentioned that they personally think that paying extra for organic is pointless and that people who buy organic products do so because of they are idealistic. Anne-Kristin Løes mentioned that the presence of people among the *skolefrukt* and *skolemelk* programs who believe the conventional products are just as 'clean' as organic products would discourage the organic movement in Norway.

**Imported, long travelled fruit**

The main limiting factor for organic market expansion in Norway is expected to be a shortage of many organic products (Organic-world.net 2011). The informant from the Ministry of Education and Research mentioned that Norway, as a country that has some climate restrictions in crop production, has to import organic products from other countries and the increased transportation (food miles) leads to environmental pollution. Food miles are defined as the distance that food travels from the field to the grocery store (Institute of Science in Society 2005).

According to Reidar Andestad, Leader, Oikos the import of organic foods will, however, significantly complement the Norwegian production and ensure access to foods that are not produced in Norway. He further explained that, due to low organic fruit production in Norway, even with an increase in production in the most favourable seasons, it is difficult to find the organic products on the market. This is due to most Norwegian organic fruit being used for juice production; otherwise it wouldn't be easy to find any in the shops. For that reason, organic fruit is mostly sourced from the global market. Kristina Alnes, Marketing Manager, Oikos referred to the study conducted by '*Fremtiden i Våre Hender'* (the future in your hands) on the climate-effect of transportation and mentioned that they have found that transportation represents a small portion of the total environmental cost because of the efforts implemented by Norway to mitigate climate change.

Kristina Alnes further explained that transporting fresh organic produce by sea, such as tomatoes is more energy efficient than growing tomatoes in Norway in heated greenhouses. Reidar Andestad, mentioned that at present the organic market in Norway is 1.2 % of the total sales in the shops. In this phase of Norwegian organic production, they think that no more restrictions to transportation should be introduced because there can be a greater demand than supply of nationally grown organic produce.

Both representatives interviewed in the supply chain (Bama and Odd Langdalen) mentioned from their experiences that local producers have difficulties when selling products to the municipality. The municipalities call for open trade agreements that require a large amount of products to reduce costs, which makes the local producers unable to access the trade agreements. Local producers are not always able to deliver in sufficient

quantities, or at regular intervals, and cannot compete with the lower price that larger scale suppliers offer. For the above reasons, sourcing imported products rather than a local product is widely accepted. Further both Norwegian and imported foods are included in the national goal for organic consumption (Organic-world.net 2011).

### 4.1.5 Hindrances for having organic *skolemelk*

**High cost**

All the stakeholders interviewed commented that the high price of organic milk is the main reason for eliminating it from the selection list from the schools where organic had been made available. Birgit Irgens, nutrition adviser /*skolemelk* from TINE mentioned that the reason for reducing the organic school milk demand from 25009 litres in 2009 to 20000 litres in 2010 (20% reduction) is due to the price increase. According to her the large premium on organic milk compared to conventional milk is due to the high cost of production.

The lower production and supply of organic milk compared to conventional contributes to an increase in the internal handling costs to the company, and hence the market price is increased. Birgit Irgens further explained the difficulty of reducing milk prices where TINE does not earn a profit from the *skolemelk* program and where a loss has been made for many years. Prices on both conventional and organic milk in general have risen significantly since 2007. She predicts that if the demand for organic milk increases through the school milk program, the possibility of reducing the price is visible. Also she assumes that the school milk ordering system via the Internet, which was launched in August 2010, will help to increase the demand for organic milk in school.

On the contrary a news article published in nærnett.no (http://nernett.no/?do=article&id=1804) states that over half of the organically produced milk is sold as regular milk due to demand being lower than what is actually produced. The document mentions that, according to an officer named Øystein Syrstad, only 47% of the organically produced milk is actually sold as organic milk. The rest is mixed with conventional milk and sold as conventional. He mentioned that it is only TINE who loses money, not the farmers. The annual report from 2009 revealed that TINE acquired less

than 40 million gallons of organic milk nationwide. When looking at this fact on the one hand and at the national goal on the other it is TINE's duty to follow this up in a proper manner.

**Funds from Agriculture Marketing Board (*Omsetningsrådet*)**

After the general meeting in 2010 of the project leaders in the *Økoløft* municipalities on promoting organic products, there have been some discussions to find out the possibility of using funds from the Agriculture Marketing Board '*Omsetningsrådet*'. '*Omsateningsrådet*' is a certain percentage collected from the sale of all the agricultural produce sent to market which goes in to a fund where it is used for marketing and to provide information (Norwegian Agriculture Authority 2011). However Emil Mohr later mentioned that the discussion was not successful and this money cannot be used to level out the prices on the products.

### 4.1.6 Possibilities for the introduction of organic milk and fruit

**Environmental, animal welfare and sustainability benifits**

According to Emil Mohr, the environment is an important aspect in both the national environmental program (2008) and in organic agriculture. He further mentioned that identifying organic agriculture in the national agricultural goal is due to its positive environmental impacts, which result in "a clean ocean and toxic free environment". Therefore the main concern in the organic agricultural plan in 2005-2015 has focused on environmental aspects where the new action plan extended until 2020 includes additional aspects such as animal welfare and sustainability aspects. Therefore these positive aspects like, environmental friendliness, animal welfare and sustainability will help as a motivating factor for introducing organic fruit and milk into schools.

**Engage actors through motivation**

According to Emil Mohr "*it is difficult to incite people to purchase organic food, but to motivate and stimulate people who have a burning interest in organic food, support and advice can be given which will then be a benefit because they can carry the rhythm in their*

*work towards an organic goal*". He also mentioned that to make a durable change, time and energy should be spent without trying to do everything at once. Therefore small but solids steps, such as motivating people, are important. From the survey results more than 50% of school administrators personally think organic agriculture and food is an important theme to them. Such people can be motivated and engage in the organic movement.

Reidar Andestad, Oikos mentioned that in his experience people working in public kitchens are very happy to be asked about their opinions and being offered relevant training. Inviting the kitchen staff to a join a seminar has proven to be a very efficient tool. This gives the opportunity to share important information, have discussions, build competence, share some good (food) experiences and be inspired. Therefore motivating enthusiastic people in the *skolefrukt* and *skolemelk* could make a change towards inclusion of organic food in schools. Anne-Kristin Løes, said from her experience that "*most of the organic programs have depended on a few individuals' enthusiasm for an interest in organic food".*

**New *skolemelk* ordering system**

Many of the informants have recognized that the administration of school milk places an extra burden on the schools. Therefore schools choose to offer only conventional or only organic school milk. Teachers have other obligations to fulfill in the school. Therefore they consider the school milk program as additional work. Thus the schools decide to use one or two types of milk to make the administration system as easy as possible (Interview with Birgit Irgens). The high cost is one of the arguments used for avoiding organic milk in a busy school environment in order to make the administration easier. From autumn 2010 TINE provided an internet based ordering system / similar to the *skolefrukt*. In this system TINE does the administration work such as handling the orders, finance and delivery activities. Birgit Irgens in TINE believes that the schools then have to do less administrative work on the *skolemelk* than they did before. Thus the schools can provide several types of milk to the students. The schools will be left with collecting the milk from the refrigerator to the classroom based on the information list provided by TINE on what type of milk should go to which student. TINE hopes that this new system will help increase the demand for organic milk too.

**Overcoming logistic barriers**

Until late 2010 organic milk was produced only in one private production dairy located at Røros. Thus, students in mid-Norway had the opportunity to buy organic milk at school. According to Birgit Irgens, the reason for having it only in that area was the presence of a considerably higher demand from schools in mid Norway than other areas. Østfold and Kristiansand have had organic school milk previously. TINE has experienced a gap between 'students who wanted organic school milk' and 'students who purchased organic school milk'. Due to this TINE has had to discard milk, which resulted in the cessation of organic milk production in Østfold and Kristiansand. Irgens further explained that as skimmed milk is produced by pasteurization technology it has a short shelf life. This short life of pasteurized milk worked as a time barrier to make organic milk available in other areas. Learning from this experience TINE will produce a new organic milk product for the *skolemelk* from August 2011 that has a longer shelf life. This milk is raspberry flavoured with no added sugar and produced using the ESL (Extended Shelf Life) method. ESL Technologies allow a shelf life extension in the range of 2 to 30 days in a refrigerator. This milk will be produced in Brumunddal and be made available allover Norway under *skolemelk*. Also this milk comes in the small bottle type containers, which makes it easier for the student to drink (see figure 4.2). TINE hopes that this will have a positive affect and increase the demand of organic school milk among children.

## 4.2 The relationship between ‘‘*skolefrukt*’ ‘*skolemelk*’ and food system actors as a whole

In this section I shall explain the relationship between the *skolefrukt* and the food system actors and the relationship between the *skolemelk* program and the food system actors as a whole.

### 4.2.1 ‘‘S*kolefrukt*’ and food system actors

In this part I have attempted to explain the organizational structure in *skolefrukt* in figure 4.1. *Skolefrukt* has two main programs which provide fruit and vegetables to the Norwegian schools: s*ubscription-based skolefrukt* and *free* s*kolefrukt*. The two programs differ in terms of financing, supervision, the entities managing the implementation, sourcing and supply. The type of schools that are targeted by each of these systems also differ. I shall explain the structure of both the free *skolefrukt* program and the s*ubscription-based skolefrukt* program. Later I will show how the *Økoløft* project is placed in the picture.

**Free *skolefrukt* program**

In figure 4.1 the blue boxes on the right hand side shows the entities directly involved in the free *skolefrukt* program. They are the Ministry of Education and Research, Ministry of Local Government and Regional Department and the Municipalities. The Ministry of Education and Research is responsible for the establishment and supervision of this program. Free *skolefrukt* targets combined schools (grades 1-10), and lower secondary schools (grades 8-10). Local municipalities are responsible for the management of this program, and the Ministry of Local Government and Regional Development provide financing to each municipality known as ‘*rammetilskudd*’ (financial aid). The municipality has the authority to decide whether to include organic fruit, use only conventional fruit or to use the money to fulfil other requirements of the school (Angelsen, interview dated 08.03.10).

The municipalities are responsible for purchasing fruit for in to the schools in their area. Here they have two options; either to use the web based system “*skolefruktsys*” which is

provided free of charge by the Information office for fruit and vegetables, or to use their own system. If the municipalities opt to use "*skolefruktsys*", they make the order through the website "*skolefruktsys.no*" and the suppliers receive the orders and make deliveries of fruit to schools. Therefore the Information office for fruit and vegetables act indirectly through "*skolefruktsys*" in the free *skolefrukt* program. If the municipalities decide to use their own systems they deal directly with either local or large scale suppliers such as *Bama* who then supply the fruit to schools. Either way the municipalities pay the suppliers directly. Suppliers can be conventional fruit suppliers, organic fruit suppliers or both. These suppliers deal in both imported and Norwegian fruit.

In this way the municipality can make their own decisions regarding how to put free *skolefrukt* money into practice (Kunnskapsdepartementet 2007). The municipality of Trondheim is one of the municipalities who use their own system. At present 75%-80% of the total municipalities use the administration system of the Information office for fruit and vegetables. The total number of municipalities who offer free school fruit is uncertain. According to Angelsen this is because the municipalities are not offering free school fruit despite the fact they receive government finance for it.

### *Subscription-based skolefrukt* program

On the other hand the s*ubscription-based skolefrukt* program targets primary schools (grades 1-7). The establishment, supervision and financing of s*ubscription-based skolefrukt* is performed by the Ministry of Health and Care, and is managed by the Information office for fruit and vegetables in Oslo. The Information office for fruit and vegetables has acted as an intermediary between parents and suppliers through a web based system known as "*skolefruktsys*" since 2005, where parents can place their orders throughout the year. This order information goes to the 14 suppliers registered with the Information office for fruit and vegetables and they then deliver the fruit to schools. These suppliers provide conventionally grown fruit or organic fruit that are either produced in Norway or imported. S*ubscription-based skolefrukt* is paid in part by parents so financing is partially private, and partially subsidized by the government. The decision to include either organic fruit or conventional fruit within the subscription based system is made at the school level (Opplysningskontoret for meieriprodukter 2011a). According to most of

the actors one of the reasons not to have organic fruit in schools is due to higher price compared to that of conventional fruit.

The *Økoløft* project is managed by three main government bodies (shown in the bottom right hand corner of fig. 4.1) which are the Ministry of Local Government and Regional Development, Ministry of Agriculture and Food and The Norwegian Agricultural Authority (Norwegian Agriculture Authority 2008). This system, as it stands does not have the authority to directly influence the decision to source organic fruit for schools. The *Økoløft* project implements the national goals in the public sector and, even though schools belong to the public sector, priority is given to educational strategies rather than preference for organic fruit. The *Økoløft* project implements through municipality, therefore schools have to cooperate with the municipality to get the projects activities and services. This Relationship between municipalities, *skolemelkt* and the *Økoløft* project is shown in green dashes. If the project chooses the schools as a potential public institution it should be via contact with the municipalities.

### 4.2.2 ''S*kolemelk*' and food system actors

In figure 4.2 I have considered only the *skolemelk* products distribution, management, supervision and financing where TINE production dairies produce other products too. Later I have shown how the *Økoløft* project is placed in the structure.

Two distinct pathways for *skolemelk* have been identified: organic milk and conventionally produced milk. Organic milk flow is shown in thick green arrows where conventional milk flow is shown with thick orange arrows. For organic milk there have been two main supplies: one is organic milk produced by farmers in the mid Norway region, then picked up by TINE in a tank-truck and driven to a production dairy that demands organic milk. A private dairy production at Røros produced ¼ litre units of organic milk which covered only mid Norway. The Mid Norway TINE dairy production then bought and distributed this milk to the school storages in Mid Norway with permission from *skolemelk* administration in the schools. The school administration then made it available to the children in their school who had ordered it (Bårdsen & Løes 2010). This sub-pathway for school milk was discontinued in 2010 which is indicated by cross marks in red in figure 4.2. The other pathway for organic milk is the TINE production dairy unit in Brumendal

which since 2010, has supplied low fat raspberry flavored organic milk to schools all-over Norway through the *skolemelk* administration system (TINE. 2011b).

The next pathway is that conventionally produced milk is collected into TINE production dairies which then make the other *skolemelk* products such as chocolate milk, lactose free milk, skimmed milk and banana flavored milk (discontinued since 2011 August) (TINE. 2011a). TINE then will distribute the milk to schools. The parents can make orders for their children through TINE's *skolemelk* administration system throughout the year. Thick orange arrow in the figure explains that high percentage of milk is processed in conventional manner. Both organic and conventional milk is subsidized by the marketing levies "*Omsetningsavgift"* (financial aid) (this is explained in section 4.1.5) (Norwegian Agriculture Authority 2011). The rest of the payment is made by parents (Opplysning kontoret for melk 2011). Therefore financing for *skolemelk* is partially private, and partially subsidized by the government.

TINE *skolemelk* web based administration as with "*skolefruktsys*", allows parents to place their orders for the dairy products they require for their children, thus it acts as an interface between parents and the administrative person in each school who manages the sourcing of milk. It is up to each school to decide whether to use this web based administration system or not. In the schools which do not use the web based administration system parents have to make the order to the school itself. Here the *skolemelk* administration in schools is responsible for collecting information and money. The money collected at the school is then transferred to TINE. The schools that do not use the web based administration system have extra administrative work in conducting *skolemelk* compared to the schools which use the web based system.

The Ministry of Health and Care Services provides supervision and finance for the *skolemelk* system, working closely with the information office for milk and milk products. The information office for milk products provides brand-neutral information to the schools. Therefore they give equal treatment to both conventional and organic milk.

With the *skolefrukt* system, the Information Office works directly with the *skolefruktsys* administration which was established by the Ministry of Health. By comparison, the

*skolemelk* administration has been put in place by TINE in 2010, and the duties for the Information Office have been reduced.

In figure 4.2 I have also explained the link with the *Økoløft* project and *skolemelk.* The three main government institutions' cooperation is depicted; which are the Ministry of Local Government and Regional Development, Ministry of Agriculture and Food and The Norwegian Agricultural Authority (Norwegian Agriculture Authority 2008). This system, as it stands, does not have the authority to directly influence the decision to source organic milk in schools. As the *Økoløft* project is implemented through municipalities, the municipality also comes to be an actor in the *skolemelk* program. The *Økoløft* project implements through municipality, therefore schools have to cooperate with the municipality to get the projects activities and services. This Relationship between municipalities, *skolemelk* and the *Økoløft* project is shown in green dashes. If the project chooses the schools as a potential public institution it should be via contact with the municipalities.

**Figure 4.1: ''*Skolefrukt*' and food system actors**

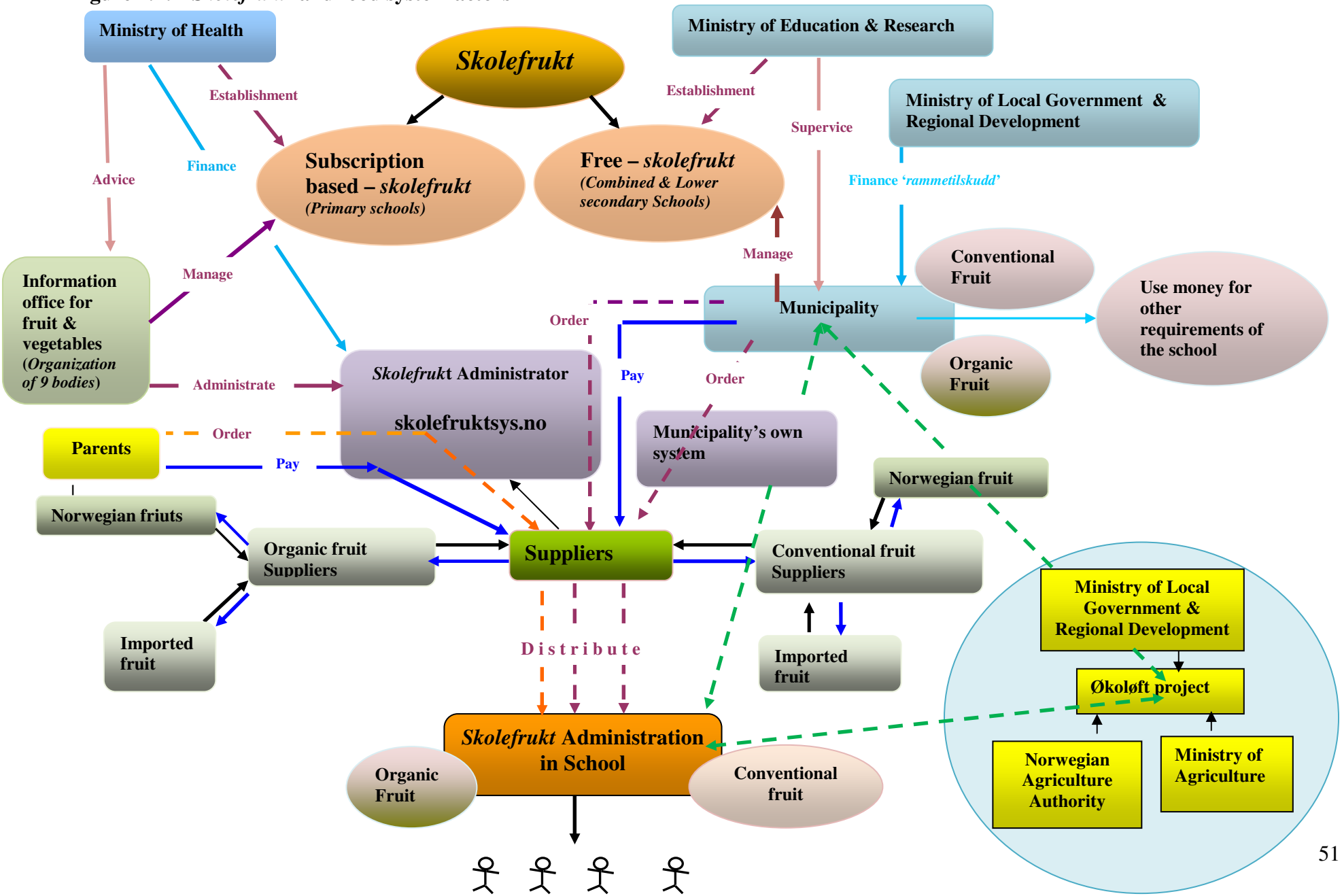
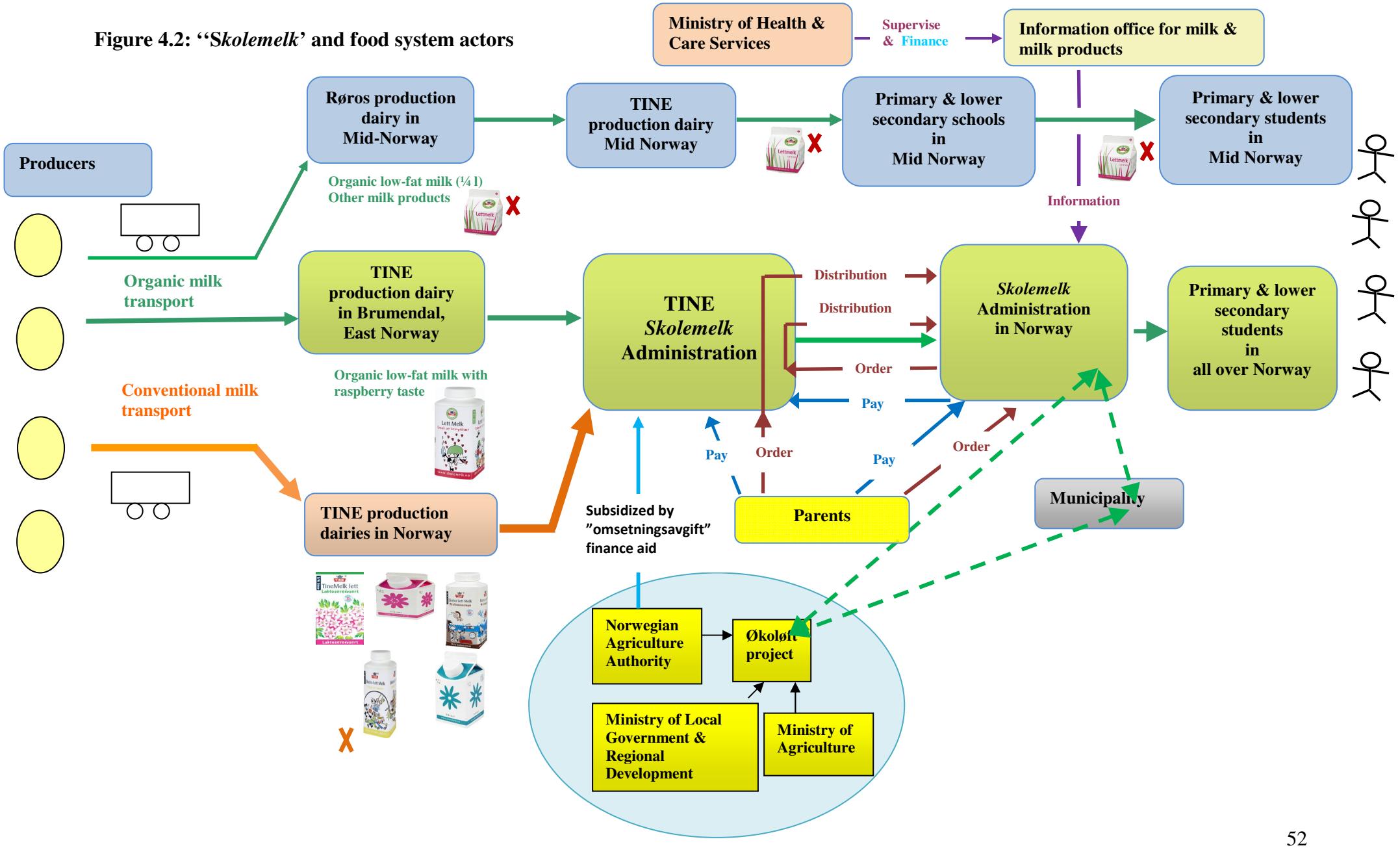


**Figure 4.2: ‘‘*Skolemelk*’ and food system actors**



## 4.3 Attitudes and thoughts of the primary and secondary school administrators on organic milk and fruit in schools

In this section the nine factors considered in the web based survey on inclusion of organic milk and fruit into schools have been analyzed in accordance with the responses given by the school head masters and school administrators.

### 4.3.1 Environmental sustainability, animal welfare and educational factors

Factors that relate to environment sustainability and animal welfare and knowledge were put together because of the interrelationships that exist between them. Research shows that experience learning through environment, animal and activities taken towards organic farming increase ones knowledge (Torjusen et al. 2008). Table 4.1 shows that more than 80% respondents of school administrators in all 3 types of schools agree that organic agriculture results in less negative impacts on the environment which make it an 'environmentally friendly' practice compared to the conventional agriculture. Interestingly none of the interviewees fully disagreed with this statement.

Respondents who think of organic agriculture as environmentally sustainable are 60%. The difference between the percentages in "environmentally friendly" and "sustainable" may be that, "environmentally friendly" is more observable because it is a practice. However sustainability is a result which is obtained through practice (Torjusen et al. 2008) such as prohibiting the use of chemical inputs and prioritizing animal welfare. Sustainability is a long term process and is mostly perceived through the existence of unsustainable practices by pursuing alternative scenarios to the usual practice. It is thus not easy to determine whether a given practice that is alternative to an unsustainable model could be truly sustainable and this explains the percentage of responses to the use of the term "sustainable" to describe organic farming. Moreover, organic agriculture in Norway has only been implemented recently and the respondents wouldn't be able to confirm whether organic agriculture is more sustainable than the conventional model.

Expectations of better animal welfare in organic production were chosen as a motivating factor by more than 60% of the respondents in all 3 types of schools.

The same table 4.1 shows that inclusion of organic food in school food programs can influence the knowledge and awareness of the students. Knowledge is according Long, a cognitive and social construction which is constantly made by the experiences and discontinuities that emerge in the intersection between different actors' experiences, background and values (Long 2001). Generally more than 65% of school administrators agreed that organic school food programs facilitates an opportunity for the children to enhance their knowledge of organic agriculture; nearly 70% agreed that it could work as a tool to learn about ecology and over 70% agreed it could provide awareness on sustainability. This demonstrates that including organic food in schools can support an awareness that may go beyond the consumerism and towards a paradigm/idea where consumers are aware of how and where their food is produced with a good understanding of the ecosystem and sustainability. Nearly 60% of school administrators agree that there is a possibility to increase specific knowledge such as nutritional knowledge among the students. Hence organic *skolefrukt* and *skolemelk* can work as a powerful learning tool to increase general knowledge and specific knowledge of the students. This indicates that such experiential learning about food, organic farming, ecology and sustainability improved the general environmental awareness of the children, and that they can use this generic awareness to adopt healthy eating patterns.

In the thesis research by Marley 2008, who also found some similar results ,which clearly emphasize the need for knowledge about organic food as a basis for change in school children's nutrition. In the schools where organic food was relatively highly integrated in the school day, students tended to be more informed and have more positive opinions about organic food than at the schools where this theme was less integrated. The iPOPY project description expresses the ideal that if children learn about organic food at school, they will be more likely to purchase this food in the future (Løes et al. 2007).

In the open comments, one of the participants stated that "*Skolefrukt and skolemelk programs should be organic, and also should be included as a part of learning. One reason for this is a proper and healthy diet that promotes students' learning"*

Other analysis has argued that knowledge is lost along the way from field to mouth (Lockie 2002). The results obtained from the web based survey show that many school administrators express the desire to increase the knowledge about food systems,

agricultural practices, ecology and food among the children. *Skolefrukt and skolemelk* programs can be used, in addition to providing the school children with either conventional or organic produce, to establish a platform for experiential learning (Kolb 1984), particularly for students participating in school food programs.

As Burke (Burke 2002) argues, "Today's students are tomorrow's consumers and citizens. There is, therefore, a need to develop aware, informed users and consumers of food" (Torjusen et al. 2008). Therefore, these results indicate an opportunity for the stakeholders and researchers to contribute to creating positive scenarios using the *skolefrukt* and *skolemelk* as a way of teaching topics like organic agriculture, ecology, sustainability and nutrition.

Table 4.1: Attitudes of the school administrators on environmental sustainability, animal welfare and knowledge factors on inclusion of organic milk and fruit into schools

| | Statements | Fully Agree | Partly Agree | Partly Disagree | Fully Disagree | Do not know | N |
|---|---|---|---|---|---|---|---|
| 1 | "Organic agriculture has less negative impacts on the environment (environmentally friendly)" | | | | | | |
| | Primary Schools | 45 | 40 | 8 | 0 | 7 | 85 |
| | Combined Schools | 34 | 48 | 3 | 0 | 14 | 29 |
| | Upper secondary schools | 47 | 41 | 6 | 0 | 6 | 17 |
| 2 | "Organic agriculture contributes to sustainability" | | | | | | |
| | Primary Schools | 26 | 36 | 16 | 8 | 13 | 84 |
| | Combined Schools | 31 | 41 | 7 | 0 | 21 | 29 |
| | Upper secondary schools | 33 | 18 | 20 | 6 | 23 | 17 |
| 3 | "Organic agriculture respects animal welfare" | | | | | | |
| | Primary Schools | 35 | 35 | 14 | 2 | 14 | 85 |
| | Combined Schools | 31 | 31 | 7 | 3 | 28 | 29 |
| | Upper secondary schools | 41 | 24 | 17 | 0 | 18 | 17 |
| 4 | "Organic fruit and milk in schools will enhance students' knowledge on organic agriculture." | | | | | | |
| | Primary Schools | 19 | 48 | 22 | 5 | 6 | 86 |
| | Combined Schools | 17 | 59 | 3 | 14 | 7 | 29 |
| | Upper secondary schools | 12 | 49 | 22 | 0 | 19 | 17 |
| 5 | "Organic fruit and milk in schools helps to increase the nutritional knowledge of the pupils'" | | | | | | |
| | Primary Schools | 13 | 49 | 23 | 6 | 9 | 86 |
| | Combined Schools | 14 | 45 | 14 | 17 | 10 | 29 |
| | Upper secondary schools | 6 | 53 | 24 | 0 | 18 | 17 |
| 6 | "Serving organic fruit and milk provides students an opportunity to learn about ecology" | | | | | | |
| | Primary Schools | 23 | 51 | 14 | 6 | 6 | 86 |
| | Combined Schools | 24 | 45 | 14 | 10 | 7 | 29 |
| | Upper secondary schools | 18 | 53 | 12 | 0 | 17 | 17 |
| 7 | "The food products given to pupils in schools can help to improve their knowledge of sustainability" | | | | | | |
| | Primary Schools | 19 | 49 | 11 | 2 | 19 | 84 |
| | Combined Schools | 24 | 56 | 10 | 0 | 10 | 29 |
| | Upper secondary schools | 22 | 44 | 11 | 6 | 17 | 18 |

### 4.3.2 Health, nutrition, food safety and quality factors

Table 4.2 shows that health and food safety considered as factors in organic *skolemelk and skolefrukt* programs that were valued by school administrators and constituted a source of motivation. The majority (more than 70%) of school administrators believe that organic products bring positive health impacts. But 45% disagreed that children will develop healthy eating habits through the program. Intention of the government goal of having fruit and milk programs in schools is that students and young people adopt healthy eating habits that provide the basis for good learning outcomes in schools (Kunnskapsdepartementet 2007). A considerable percentage (45%) of disagreement does not necessarily indicate that school children have improved eating patterns. This shows that implementing a food program without provision of necessary knowledge has less impact on improving healthy eating habits of the children. Therefore a parallel food education strategy should be implemented along with the program.

The answers to the question of the nutritional factor of organic fruit and milk were mostly the do-not-know answers, which were given by over 35% of respondents. Around 40% agreed and 20% disagreed with the statement that organic fruit and milk products are more nutritious than conventional. This lack of consensus is due, not only because of disagreement, but also because of a high percentage of do-not-know answers. During the interviews conducted with the stakeholders, even though a few mentioned the health aspect of organic food, the nutritional aspect was not mentioned. This may be due to a lack of information available and research conducted in this area.

Integrating nutrition and health themes into the school environment allows children to experience what they have learned in the classroom (Morgan and Sonnino 2007). The teachers in the "Farm to School Connection program" at the California schools have found that incorporation of agriculture into the school curriculum provides an excellent avenue in which to discuss food – its health benefits, how to choose healthy foods and factors contributing to human health, as well as concepts important to planetary health for example.

Magnusson et al. (2003) find food safety concern is a better predictor of the purchase of organic food. Similarly concern about food safety has also been identified by the

respondents as a motivating reason for including organic fruit and milk into school food programs; 70% of respondents think that regulation on production such as a ban of harmful chemicals and pesticides results in higher product safety in organic foods. Around 80% of respondents agreed that processing regulations such as minimizing the use of preservatives, artificial sweeteners, colorings and flavorings was of particular importance to make organic food safer than the conventional products.

One of the other attitudes noted at the stakeholders' discussion was that students are interested in food qualities such as taste and appearance rather than whether or not the fruit is organic. Roddy et al, 2010 mentioned that organic produce tastes better than conventional produce. However in the survey respondents' attitudes towards the 'taste' in upper secondary schools compared to primary and combined schools are significantly different. In primary and combined schools over 45% replied "do not know" to this question. However in upper secondary schools over 55% of respondents agreed that organic produce tastes better than conventional produce. In all three types of schools 52% agreed that organic fruit has a shorter shelf life and worse appearance than conventional fruit whereas 20% disagreed concerning appearance, 44-65% agreed and more than 6% disagreed concerning shelf life. The respondents in all three types of schools who answered "do-not-know" to appearance and shelf life is around 30%.

In general the respondents do not seem to be aware of the fact that organic food tastes better and therefore decline to purchase organic food on the basis of less aesthetic appeal and lack of shelf life. Research shows that taste and appearance are very important factors for teenagers when buying food (Bissonnette & Contento 2001). Results collected from upper secondary schools indicate that organic fruit taste better (58% agreed), have a bad appearance (65% agreed) and have a poor shelf life (65% agreed). This shows that upper secondary school respondents agree that organic fruit taste better. However bad appearance and poor shelf life make them uninterested in buying organic fruit.

Some of the school administrators' comments give an insight into how this was experienced:

*"We have organic fruit in schools, \organic fruit was tasty, but the students hesitate a little to consume the fruit due to some spots on the skin, etc."*

*"Organic fruit in the store can sometimes be too bad and the sample is small."*

*"The students eat the fruit of the nicest appearance"*

Madlavoll School in Stavanger mentioned "*We used organic school fruit until the autumn of 2009. After this we changed to Bama providing regular fruit. One reason for this was that we got a lot of fruit of poor quality and a short shelf life*"
*"Organic fruit are labelled in the big cartons. Not on each fruit. There is a possibility to mix organic and conventional fruit during handling"*

All the statements centering on food quality resulted in a high level of do not know answers ranging from 27% to 51%. Answering 'do not know' for so many questions regarding the quality aspect may be due to lack of experiential knowledge on organic food and farming. One of the school administrators commented; *"I have answered "do not know" to many questions, because I have no basis to answer them. It may be due to lack of experience with these issues, and lack of knowledge. The questions I have chosen to respond graded on is where I have reason to respond"*.

Table 4.2: Attitudes of the school administrators on health, nutritional, food safety and quality factors on inclusion of organic milk and fruit into schools

| | Statements | Fully Agree | Partly Agree | Partly Disagree | Fully Disagree | Do not know | N |
|---|---|---|---|---|---|---|---|
| 8 | "Consuming organic fruit and milk has a positive health consequence " | | | | | | |
| | Primary schools | 36 | 40 | 7 | 2 | 15 | 85 |
| | Combined schools | 38 | 38 | 3 | 0 | 21 | 29 |
| | Upper secondary schools | 29 | 53 | 6 | 0 | 12 | 17 |
| 9 | "Organic fruit and milk improve healthy eating habits of the students at schools " | | | | | | |
| | Primary schools | 12 | 29 | 26 | 16 | 17 | 86 |
| | Combined schools | 17 | 14 | 24 | 28 | 17 | 29 |
| | Upper secondary schools | 6 | 29 | 35 | 6 | 24 | 17 |
| 10 | "Organic fruit and milk are more nutritious than conventional fruit and milk" | | | | | | |
| | Primary schools | 19 | 27 | 9 | 11 | 34 | 85 |
| | Combined schools | 14 | 24 | 7 | 7 | 48 | 29 |
| | Upper secondary schools | 18 | 24 | 29 | 0 | 29 | 17 |
| 11 | "Organic fruit and milk in school fruit program and school milk program promote positively the nutritional side of school meals" | | | | | | |
| | Primary schools | 18 | 33 | 9 | 5 | 35 | 85 |
| | Combined schools | 14 | 24 | 10 | 10 | 42 | 29 |
| | Upper secondary schools | 11 | 39 | 17 | 0 | 33 | 18 |
| 12 | "Organic fruit or milk as compared to conventional give less harmful chemicals & pesticides to our body | | | | | | |
| | Primary schools | 43 | 33 | 5 | 6 | 13 | 86 |
| | Combined schools | 31 | 35 | 3 | 3 | 28 | 29 |
| | Upper secondary schools | 47 | 29 | 6 | 0 | 18 | 17 |
| 13 | "Organic fruit or milk lacks preservatives, artificial sweeteners, colorings and flavorings compared to conventional agriculture" | | | | | | |
| | Primary schools | 55 | 24 | 4 | 1 | 18 | 85 |
| | Combined schools | 41 | 21 | 7 | 0 | 31 | 29 |
| | Upper secondary schools | 66 | 24 | 0 | 0 | 12 | 17 |

| | Statements | Fully Agree | Partly Agree | Partly Disagree | Fully Disagree | Do not know | N |
|---|---|---|---|---|---|---|---|
| 14 | "Organic milk and fruit taste better than conventional fruit and milk" | | | | | | |
| | Primary schools | 9 | 13 | 18 | 13 | 47 | 85 |
| | Combined schools | 10 | 14 | 14 | 14 | 48 | 29 |
| | Upper secondary schools | 30 | 29 | 12 | 0 | 29 | 17 |
| 15 | "Serving organic fruit makes available fruit with bad appearance as compared to conventional fruit" | | | | | | |
| | Primary schools | 10 | 29 | 13 | 9 | 38 | 86 |
| | Combined schools | 10 | 38 | 7 | 14 | 31 | 29 |
| | Upper secondary schools | 12 | 53 | 0 | 12 | 23 | 17 |
| 16 | "Serving organic fruit make available fruit with poor storage quality" | | | | | | |
| | Primary schools | 15 | 29 | 12 | 6 | 38 | 85 |
| | Combined schools | 17 | 28 | 10 | 10 | 34 | 29 |
| | Upper secondary schools | 24 | 41 | 6 | 0 | 29 | 17 |
| 17 | "Organic fruit served in school fruit programs are not labeled and difficult to differentiate from conventional fruit" | | | | | | |
| | Primary schools | 12 | 12 | 7 | 5 | 64 | 82 |
| | Combined schools | 21 | 17 | 10 | 0 | 52 | 29 |
| | Upper secondary schools | 11 | 28 | 6 | 17 | 39 | 18 |

### 4.3.3 Economical, availability and logistical factors

School administrators' have identified the high cost of organic fruit and milk as a challenge in including them in school food programs. Over half of the school administrators think that organic fruit and milk is expensive, yet they believe that these organic products are fairly priced.

Around 65% of school administrators surveyed agreed that the budget given to municipalities to buy fruit is not adequate to include organic fruit. This is another obstacle to buy organic fruit for school food programs. This indicates that inclusion of organic fruit is not economically feasible even though it is considered to be fairly priced. This shows

that school administrators believe that the price of organic food includes not only the cost of the food production itself, but also other public benifits such as environmental protection, animal welfare, minimizing health risks for example which add to the value of the product. The group of school administrators in the *Økoløft* municipality who have this understanding of organic food can be used as a good resource in introducing organic food into schools.

Much research shows that high cost was one of the factors mentioned as a barrier to consumption of organic food (Løes et al. 2008; Roddy et al. 1996). This was confirmed by the survey too. This factor may also be strengthened by among other things, the attitude that there is an inconvenience associated with purchasing organic food.

The lack of availability of organic food has been identified as another obstacle to its purchase (Hughner et al. 2007; Magnusson et al. 2001; Magnusson et al. 2003; Zanoli & Naspetti 2002). In this research findings on the availability of organic fruit and milk reveal 45% of respondents chose "do not know" even though the number of those who agreed was higher than those who disagreed. Around 40% in primary and secondary schools and 76% upper secondary schools chose "do not know" to the question asked regarding the attitudes towards the variety of organic fruit and milk. Even though there is a problem on organic fruit availability*, free skolefrukt* was considered as a convenient way to get fruit by over 70% school administrators in primary and secondary schools and 100% in upper secondary school. Higher percentage answered free *skolefrukt* as convenient in upper secondary school may be due to they have the learning experience through implementing free *skolefrukt.*

At the interviews BAMA mentioned that they do not label the organic *skolefrukt* due to the high cost for labelling individual fruit which will increase the product cost which is already high. Therefore it is less possible to identify an organic fruit, unless it is known to come from a bulk package that is labelled as such, without a visible label, the end user will not identify the benefits of the product, and in case of the *skolefrutkt* program, school children will not get to learn as much about organic production. Therefore a lack of sufficient labelling reduces the possibility to make a pedagogical and informational input to school fruit program strategy.

Some of the comments made by the respondents on availability and variety are follows.
*"Organic fruit in the shops are small in sample size"*

In one of the schools which provides organic fruit to the children under the *skolefrukt* subscription program the school inspector mentioned that they were "*missing bananas and carrots in the autumn of 2010, even though students have requested bananas"*

Regarding *skolemelk*, one of the respondents commented that *"Tine is the only distributor of milk that we can use. Therefore we have to tolerate what they provide to us even though it is small in size and lacks variety"*.

However TINE has increased the availability of organic *skolemelk* by distributing organic fat reduced, raspberry flavoured, lactose free milk, without added sugar all over Norway since 2010. TINE introduced a new administration system from August 2010 that takes care of the processes of ordering and payment from parents in *skolemelk.* Previously the Information office for milk and milk products was responsible for providing the information and school milk reward program and schools carry out the administrative work.. The school inspector's interviewed at both Vestsiden School and *Ås Ungdommenskole* mentioned that it took too much time and resources to collect money from parents. Thus TINE assumes that this new system will save time and resources for school administrators, which they can then use for other tasks.
Interestingly 83% of respondents agreed that *skolefrukt* is a convenient way to provide school children with organic fruit. One of the comments was "*Skolefrukt, skolemelk and other school meal programs are a good opportunity to provide organic products. It might take some extra work but it is worth it for the school children"*.

*"Having organic food at the schools would be one step in creating more of a demand for local organic farming and food production"*.

Table 4.3: Attitudes of the school administrators on economical, availability and logistical factors on inclusion of organic milk and fruit into schools

| | Statements | Fully Agree | Partly Agree | Partly Disagree | Fully Disagree | Do not know | N |
|---|---|---|---|---|---|---|---|
| 18 | "Organic milk is fairly priced but too expensive " | | | | | | |
| | Primary schools | 20 | 34 | 14 | 10 | 22 | 86 |
| | Combined schools | 11 | 49 | 18 | 4 | 18 | 28 |
| | Upper secondary schools | 24 | 28 | 18 | 12 | 18 | 17 |
| 19 | "Organic fruit are fairly priced but too expensive" | | | | | | |
| | Primary schools | 22 | 30 | 18 | 11 | 19 | 84 |
| | Combined schools | 22 | 41 | 17 | 3 | 17 | 29 |
| | Upper secondary schools | 29 | 29 | 12 | 18 | 12 | 17 |
| 20 | "Present budget given for the free fruit program is not sufficient to purchase organic fruit for all students" | | | | | | |
| | Combined schools | 59 | 17 | 0 | 7 | 17 | 29 |
| | Upper secondary schools | 28 | 27 | 17 | 0 | 28 | 18 |
| 21 | "Serving organic fruit will face problems with consistency of availability" | | | | | | |
| | Primary schools | 15 | 15 | 5 | 7 | 57 | 84 |
| | Combined schools | 24 | 21 | 10 | 7 | 38 | 29 |
| | Upper secondary schools | 6 | 39 | 6 | 6 | 43 | 18 |
| 22 | "There is little variety of organic fruit to be distributed in school fruit program" | | | | | | |
| | Primary schools | 17 | 21 | 8 | 2 | 51 | 84 |
| | Combined schools | 8 | 34 | 3 | 7 | 48 | 29 |
| | Upper secondary schools | 6 | 32 | 17 | 6 | 39 | 18 |
| 23 | "There is little variety of organic milk products to be distributed in school milk program" | | | | | | |
| | Primary schools | 13 | 28 | 12 | 5 | 42 | 83 |
| | Combined schools | 14 | 32 | 4 | 7 | 43 | 28 |
| | Upper secondary schools | 6 | 18 | 0 | 0 | 76 | 17 |
| 24 | *"Skolefrukt* is a convenient way to get fruit" | | | | | | |
| | Primary schools | 39 | 34 | 7 | 8 | 12 | 84 |
| | Combined schools | 31 | 46 | 10 | 3 | 10 | 29 |
| | Upper secondary schools | 41 | 59 | 0 | 0 | 0 | 17 |

| | Statements | Fully Agree | Partly Agree | Partly Disagree | Fully Disagree | Do not know | N |
|---|---|---|---|---|---|---|---|
| 25 | "S*kolefrukt* increases the administration work in school" | | | | | | |
| | Primary schools | 20 | 17 | 13 | 23 | 27 | 83 |
| | Combined schools | 7 | 21 | 14 | 34 | 24 | 29 |
| | Upper secondary schools | 11 | 5 | 11 | 52 | 21 | 19 |
| 26 | "TINE's new program reduces administration work in schools" | | | | | | |
| | Primary schools | 46 | 22 | 5 | 4 | 23 | 82 |
| | Combined schools | 43 | 11 | 11 | 7 | 28 | 28 |
| | Upper secondary schools | 24 | 24 | 0 | 0 | 52 | 17 |

### 4.3.4 Social factors

According to most of the stakeholders interviewed, Norwegians claim that Norwegian conventional products is 'clean' and therefore give priority to it over organic products. The results (65% agreed) show that this statement acts as another hindering factor to the inclusion of organic fruit into school food programs. Based on this perception, one may question the motivation for buying expensive organic food when there is an option of 'clean conventional food' to lower price. Since concern for health is one of the reasons why people consume organic food (Hughner *et al* 2007), 'clean' conventional food grown in Norway, which cost less than organic produce, become a good solution. This results in less consumption of imported organic food in public and private domain.

Another attitude noted was that the inclusion of organic fruit and milk into subscription based *skolefrukt and skolemelk* may create discrimination among the children as lower income families cannot afford organic products. This was noted by 75% of school administrators in primary and upper secondary schools and 58% in combined schools who agreed on this statement whereas less than 17% disagreed. Upper secondary schools did not disagree at all. As the parents pay subscription based *skolefrukt and skolemelk* programs, lower income families tend to buy the cheapest products for their children whereas families with higher income may buy organic products with higher prices for their children. As the Norwegian education system works towards reducing discrimination, this representation of income level through school subscription programs may act as a barrier

to including organic fruit and milk in schools. This may be the reason that schools choose programs without organic produce at the stage of deciding what types or varieties the school will have.

Over 60% of school administrators think that schools should give priority to improve learning facilities to meet high education expectations over providing organic fruit to the children in school. This attitude works as a barrier to the inclusion of organic fruit and milk in schools. Choosing the type of products in *skolemelk* and *skolefrukt* is a decision of a school which gives priority to the majority decision. As it requires both time for administration and is costly schools are reluctant to include organic products in to *skolemelk* and *skolefrukt*. A family consuming organic food in their homes that may want their children to consume organic fruit and milk at schools have no opportunity meet this need. It is also important to consider the parents need towards organic food while providing a good education in schools.

It is interesting to see that more than 60% of respondents support to the idea that "schools should give priority to improving learning facilities to meet high education expectations over providing organic fruit to the children in school" yet 70% respondents think that *skolefrukt* and 60% *skolemelk* have a possibility to introduce organic fruit and milk into schools; more than 85% of respondents have positive attitudes on the environmental effects, 70% of health effects and over 60% on knowledge improvement through the organic concept for example. In such situations, where the school administrators know their first goal is to provide good education but also the importance of organic agriculture knowledge and consumption, this correlation can be better utilized towards to provide a good learning outcome to the children through identifying new learning methodologies such as an organic school garden in school yard, farm visits or cooking organic food for example.

It is encouraging to see that more than 75% of school administrators agreed that inclusion of organic fruit through the free *skolefrukt* program was regarded as especially significant in diminishing social inequalities and providing equal access whereas it does not do this through subscription based *skolefrukt and skolemelk.* This shows the importance of implementing free school fruit including to primary schools which reduces discrimination and increases the equal accessibility to all children.

Table 4.4 Attitudes of the school administrators on social factors on inclusion of organic milk and fruit into schools

| | Statements | Fully Agree | Partly Agree | Partly Disagree | Fully Disagree | Do not know | N |
|---|---|---|---|---|---|---|---|
| 27 | "Norwegian conventional fruit should be given priority over imported organic fruit" | | | | | | |
| | Primary schools | 41 | 30 | 16 | 2 | 11 | 81 |
| | Combined schools | 36 | 21 | 18 | 11 | 14 | 28 |
| | Upper secondary schools | 22 | 44 | 17 | 0 | 17 | 18 |
| 28 | "Lower income families can not afford organic fruit and organic milk. This results in discrimination among children" | | | | | | |
| | Primary schools | 42 | 33 | 7 | 3 | 15 | 86 |
| | Combined schools | 17 | 41 | 7 | 10 | 24 | 29 |
| | Upper secondary schools | 47 | 29 | 0 | 0 | 24 | 17 |
| 29 | "Priority should be given to improving learning facilities to meet high education expectations over providing organic fruit to the children" | | | | | | |
| | Primary schools | 33 | 34 | 16 | 5 | 12 | 85 |
| | Combined schools | 32 | 29 | 11 | 14 | 14 | 28 |
| | Upper secondary schools | 11 | 53 | 11 | 11 | 16 | 19 |
| 30 | "A free fruit program is a good mechanism to providing equal access to organic fruit" | | | | | | |
| | Primary schools | 67 | 19 | 4 | 4 | 7 | 85 |
| | Combined schools | 41 | 34 | 14 | 0 | 10 | 29 |
| | Upper secondary schools | 59 | 29 | 6 | 0 | 6 | 17 |

## 4.4 Factors that promote or prevent the use of organic milk and fruit in schools

I have summarized the first five factors that promote and prevent the use of organic fruit and milk in schools in accordance with the web-based survey results:

### 4.4.1 Supporting factors

- Organic agriculture is seen as an environmentally friendly practice as it has less negative impacts on the environment.
- Inclusion of organic fruit through the free *skolefrukt* program is regarded as significant in both diminishing social inequalities and provides equal access for fruit and as a convenient way to provide fruit.
- Availability of organic fruit and milk in school creates an opportunity for the children to enhance their knowledge of organic agriculture, ecology and sustainability.
- A perception that organic produce brings positive health consequences.
- Organic fruit and milk products do not contain harmful chemicals and pesticides and are minimally exposed to preservatives, artificial sweeteners, colorings and flavorings is of particular importance in making organic food safer than conventional products.

### 4.4.2 Hindering factors

- School head masters and administrators perceive that inclusion of organic milk can create discrimination between the children.
- The budget allocated to municipalities for purchasing fruit is inadequate for including organic fruit in the school food program.
- Norwegian conventional farming and food is perceived to be “clean” and therefore Norwegian fruit should be prioritized over providing organic fruit.
- The school administrators believe that schools should give priority to improve learning facilities to meet high education expectations over providing organic fruit to the children in school.
- The high cost of organic fruit and milk creates a challenge in including them in school food programs.

## 4.5 Demographic information

In this section, the demographic information of the survey is taken into account. This includes the gender, age, educational level, position in school.

### 4.5.1 Gender and Age

Sixty seven percent of the total numbers of respondents were female school administrators. 33% were male. Seventy two percent of respondents were over 45 and below 56 years. 28% were between 25 and 44 years.

### 4.5.2 Education

Forty-one percent of respondents had more than 5 years education in university or high school education. 36% of respondents had 3-5 years of education, School administrator who had only 3 years education was 12% and 10% had 1-2 years. 11% did not answer this question.

### 4.5.3 Position

The position shows a slight imbalance in distribution between school head masters and people in other positions taking part in the survey. 54% of all participants were school headmasters while 46% held other administrative positions. The reason not more headmasters than this responded may be either due to a high workload or that the *skolemelk* and *skolefrukt* administration is performed by another person.

### 4.5.4 Possibilities for introducing organic food into school food programs

The survey results show that 79% of schools do not provide organic food at present. Table 4.5 shows the attitudes of school administrators who do not provide organic food at present towards the possibility of including it in the future.

Table 4.5: Possibility of introducing organic food into schools that do not currently provide it

| School food program | Fully Agree | Partly Agree | Shouldn't use these programs to promote organic | Don't know | N |
|---|---|---|---|---|---|
| Free fruit program | 32 % | 38 % | 12 % | 17 % | 81 |
| Subscription based school fruit | 22 % | 39 % | 14 % | 25 % | 72 |
| School milk program | 18 % | 42 % | 17 % | 23 % | 88 |
| School canteen | 9 % | 43 % | 26 % | 22 % | 65 |
| School tuck shop (kiosk) | 7 % | 13 % | 32 % | 48 % | 56 |

The programs considered by school administrators as the most likely to allow introduction of organic products into schools are: Free *skolefrukt (*70%), Subscription based *skolefrukt (*61%), *Skolemelk (*60%). The school tuck shop was considered the least likely place to introduce organic food into schools.

## 4.6 The relationship between school food programs; environmental certification programs and the the *Økoløft* program

This section is an extension of this document that presents information about the relationship between school food programs; environmental certification programs and the *Økoløft* program. This is beyond the scope of research questions, however the relationships identified among them made me to present in this section.

### 4.6.1 Awareness of the *Økoløft* project by the school administrators

Nineteen percent of schools have participated in the *Økoløft* project where 81% have not. Even though many of the schools are not directly involved with the *Økoløft* project, more than 60% of school administrators were aware of the project. Only 36% of school administrators were unaware of the project. This shows that even with a pilot project that is aimed at public institutions there are still many places that do not know about the project or its' goals.

A relationship was identified between the schools that have environmental certification programs such as Eco-lighthouse certification (*miljøfyrtårnsertifiser)* and green flag, certification *(grønt flagg-sertifisert)*, the schools that knew about the *Økoløft* project and the schools that have been directly involved with the *Økoløft* project in relation to use of organic food in school food programs (see table: 4.6). Even though the difference is not yet that big we can see that the two programs named above to some degree influence the practice of including organic food in school food programs.

Schools that are environmentally certified have more availability of organic food (32%) than the schools that do not have environmental certification program (17%).

Schools that knew about the *Økoløft* project and schools actually participating in the *Økoløft* project had more organic food in schools than those which do not. Schools involved with the project have more opportunities for real life experience such as visiting for organic farms, sharing knowledge on organic agriculture or tasting organic food for example. These successful examples can make both school administrators and students motivated to include organic products more than the schools not involved in the project.

Table 4.6: Relationship between schools; certification programs; *Økoløft* program and availability of organic products through school food programs (in percentage)

| **Availability of organic food through school food programs** | | |
|---|---|---|
| | **Yes always/Yes sometimes** | **No** |
| Schools certified by environmental certifications | 32 | 68 |
| Schools not certified by environmental certifications | 17 | 70 |
| Schools know about the *Økoløft* project | 27 | 65 |
| Schools do not know about the *Økoløft* project | 10 | 88 |
| Schools participate in *Økoløft* project | 38 | 50 |
| Schools do not participate in *Økoløft* project | 19 | 78 |

The school administrators were also asked to write briefly on how the school participated in *Økoløft* project activities with particular focus on providing organic food for children. A summary of the activities conducted is shown in the table 4.7. These activities were focused both towards gaining knowledge and information on organic agriculture and food and on practical activities in which the students can participate. Courses and activities in practical cooking utilizing organic products were very common and popular in several schools. Organic gardens were also popular in some schools and have received guidance from the schools actually participating in the *Økoløft* project. The practical aspects of organic agriculture were emphasized in several places by arranging visits to organic farms, and some farmers have also visited schools to share their knowledge and experience. Several schools have conducted cooking sessions where organic food was used and students have enjoyed participating in such activities. Cooperation with professional cooks and making food together is also a good idea. Some schools have gone over the school boundary and provided information on organic food and agriculture to the parents. Some schools have used *skolefrukt* and /or *skolemelk* programs to distribute organic milk and fruit in the schools.

Table 4.7 Examples of activities carried out by schools in relation to the *Økoløft* project in various Norwegian municipalities

| **Knowledge & Information** |
|---|
| • Knowledge & Information on organic food & agriculture through communication with the project leader and distribution of information to parents through leaflets and letters |
| • Day classes and Meetings |
| • Lectures conducted by an organic farmer on "organic farming" during food and health classes to the students |
| • Organic farming and food lessons conducted by teachers |
| • Close cooperation with the consultant in the municipality for tips & advice. |
| • School headmaster and teachers, received information on *Økoløft* project from the municipality, *Økoløft* project responsibilities have participated at a parents meeting and provided information on *Økoløft* project and organic food goals in Norway. |
| • Cooperation with the chef in Kavines hotel where students made 100% organic pizza. Lecture on "organic food" by an organic farmer. |
| **Education through practical activities** |
| • Organic school garden in school |
| • Organic school garden engaged with researchers and *Økoløft* project officers |
| • Conducting Projects |
| • Organic farms visits. Cooking with organic foods |
| • Once a month school lunch with organic foods |
| • School has arranged a party with short travelled food (*kortreist gjestebud*) with local, organically produced food. |
| • Collaborated with Bioforsk about school organic garden |
| • Produced and harvested organic vegetables in cooperation with a local manufacturer |
| • Organic week in school (visit organic farm, organic farming lecture in school, parents cooked organic food for children in primary school during the week) |
| • Project officers from *Økoløft* project visited grade 7 and cooked organic food together with the children |
| • School represented in competition arranged by *Økoløft* project |
| • Organic milk & fruit in schools |
| • After schools with only Organic food and organic milk in dispenses |
| • Free organic carrots 2 days per week |

# 5 CONCLUSION AND RECOMMENDATIONS

The study indicates that the majority of the school administrators agree that *skolefrukt* and *skolemelk* programs represent a good opportunity to introduce organic produce into Norwegian schools. This is reflected in the 80% schools which did not have organic produce in their schools agree on free *skolefrukt* as the best scheme to introduce organic produce where subscription based *skolefrukt* program was considered as the next best. Third was the *skolemelk program.*

Organic agriculture as an environmentally friendly practice is perceived by the school administration to be the most important support to the inclusion of organic fruit and milk into the schools. The free fruit program is seen as a way of diminishing social inequalities, providing equal access for fruit and as a convenient way to get fruit it is considered to be the second most important support. Gaining knowledge was a core factor that helps to develop aware, informed users and consumers and provides a significant impact on the food choices of children and adolescents. Creation of discrimination between the children is rated by the school administrators to be the biggest hindrance to the inclusion of fruit and milk into schools. The second biggest hindrance is the lack of budget due to the high cost of organic food. Other hindrances identified was an assumption that conventional an assumption that conventional Norwegian fruit should be given priority over imported organic fruit, a preference to allocate funding towards learning facilities rather than food.

At the decision making level hindrances include a lack of coordination between government actors, the freedom to use the free *skolefrukt* budget for other purposes, the high cost of organic produce and the fact that the organic market in Norway is at its early stages of development. Supporting factors were motivated actors, the national goal for a clean environment, and practical implementing projects such as *Økoløft*.

The *Økoløft* project as well as schools that have environmental certification programs such as, Eco- School certification *(Miljøfyrtårnsertifisert*) and Children's Green City *(Grønt Flagg-sertifisert)* has influenced schools to use organic products. A higher consumption of organic produce in the schools involved with *Økoløft* project may be due to the access they had to more knowledge about organic produce and how to put this knowledge into

practice. Therefore this experiential learning made them informed consumers and probably made them use the products in schools.

The complexity, interrelationships, and segregations of the *skolefrukt* and *skolemelk* systems were visible in the rich picture and thus can possibly create a challenge in including organic fruit and milk into schools.

Factors that affect progress to the inclusion of organic fruit and milk into schools seem to be related in an intricate manner. Different aspects within society seem to interact and affect the consumption in schools. Any effort to develop organic fruit and milk in schools should therefore take into consideration the dynamism and complexity of the whole society and the food system. Efforts to understand the linkages and interactions between different elements should be made in order to devise feasible strategies for inclusion of organic fruit and milk into schools.

Efforts to develop organic fruit and milk in schools should focus on strengthening the supporting factors and weakening the hindering factors mentioned in this paper. Some of the ways through which this can be achieved are:

- To correct the lack of information on organic agriculture and food. A person's food decision is influenced by the knowledge and information he has. Therefore in order to develop aware, informed users and consumers of food, provision of information on organic agriculture, organic certification process and organic food to the school administration and students is important. This can be done through media such as brochures and leaflets, seminars, lectures and conferences and also using small methods such as to invite a local organic farmer for a discussion; study visits to a local organic farm etc. Further, when providing information on agriculture and food it is very important to give balanced information and knowledge. As the Norwegian school goal is "knowledge promotion" (Ministry of Education and Reserch 2011) it is important to provide both the negative and the positive aspects of organic and conventional agriculture. This helps to create a clear understanding.

- A school environment that promotes and supports healthy choices through experiential learning can have a significant impact on the food choices of children and adolescents

(Stitt 1998). This can be done through kitchen gardens, organic farm visits, organic school weeks, and organic food cooking sessions for example. This helps students to link theory and practice in such a way where they can experience how the food is grown without using chemicals and pesticides. This can help the child develop a life-long learning about food, and adopt healthy eating habits.

- Integration and consistency is also important in the effectiveness of environmental education at the schools (Marley 2008). Sending consistent messages throughout the school day leads pupils to retain more of what they have learned about environmental topics; what pupils experience outside of class should therefore be consistent with classroom learning. Organic food and environmental topics can be incorporated into the school culture, making them regular elements in the school day. The organic food at a school can, for example, be used in lessons and discussions about informed or sustainable consumption. The origins of the different organic foods that the school provides can also be discussed. Information given in the *skolefrukt* and *skolemelk* web sides can potentially be used in a variety of discussions, such as food transportation, local food sources, farming practices in different countries, and so on. The organic food which a school supplies for its pupils can be integrated into a variety of lessons and discussions.

- Parents should be invited to seminars conducted on organic agriculture and food during school time. Separate meetings can also be organized to allow parents to enhance their knowledge of organic agriculture and food. Brochures and Internet based information is another way to provide an education about organic agriculture and food.

- Including organic food in school food programs can be accompanied by awareness campaigns, seminars and similar educational activities led by relevant organizations such as Oikos. Public institutions with a neutral position that are not necessarily advocating organic agriculture can have a more proactive role in promoting this kind of knowledge through school education.

- Innovation and creativity should be increased in organic products in order to improve the variety of produce available. In this case consumers have a choice between the organic products too.

- Better promotion of the intrinsic value of organic produce. Organic products have a value because they do not contain contaminants, consider animal welfare and employ environmentally sound practices in their production that are not used in conventional production systems. These values however are not made sufficiently visible to the consumer thus can only be judged from the external appearance. On the other hand added value such as lactose reduced milk and flavoring can encourage purchases. The value added organic dairy product can be more competitive, especially with the predominance of conventional products.

- In order to strengthen consumers' trust in the products, better labeling of individual fruit and vegetable is needed. This will lead to an increase in the consumption of organic fruit and milk and also act as an initiative to learn more about the product such as what the product is, how and where it is produced and by whom.

- On the government level better coordination of the activities of the different ministries involved in school food programs could help to overcome the disciplinary boundaries between them, and result in more effective implementation of national strategies. Therefore different actors, especially policy makers and analysts need to recognize the multiple benefits of including organic product in consumption initiatives.

- Research is also needed to provide policy makers with evidence of health aspects and the nutritional value of organic food. The lack of knowledge in these two areas is considered as one of the reasons the consumption of organic fruit and milk is not prioritized in schools. Therefore it is important to allocate necessary funding for further research into organic agriculture.

- Initiatives that encourage production and consumption such as *Økoløft* could benefit from recruiting individuals who are enthusiastic towards organic production; further these initiatives can contribute more positively towards achieving the organic goals.

Through motivation and stimulation the people who have a burning interest in organic agriculture in schools can carry the rhythm in their work towards an organic goal. Therefore it is important to identify these people and give them an opportunity to provide their services.

- Introduce a regulation for public institutions to include a quota of organic food within their purchases. At present the food decisions of a given institute are based on recommendations rather than demands. This step would contribute to increasing production, sales, activities and logistics which will in the long term reduce the price of the products by better balancing supply and demand.

- Many stakeholders drew strong links between local food and organic food, they found that having organic food at their schools would be one step in creating more of a demand for local organic farming and food production. Due to Norway's strong political support for local agriculture, linking organic agriculture with the local can be effective in gaining support for organic.

- A free fruit budget should be made available under *Øremerket tilskudd* which is a form of grant that can be used by the government to reach a political objective of municipalities or counties, where the municipalities can't use this grant for other purposes. The grant is then given as a regular budgetary allocation, which is a parliamentary decision.

- Make the schools more informed on how to use the internet based administration system when ordering fruit and milk as it can save the time and as it is convenient.

# 6 REFLECTION AND LIMITATIONS

## 6.1 Learning process related to the research

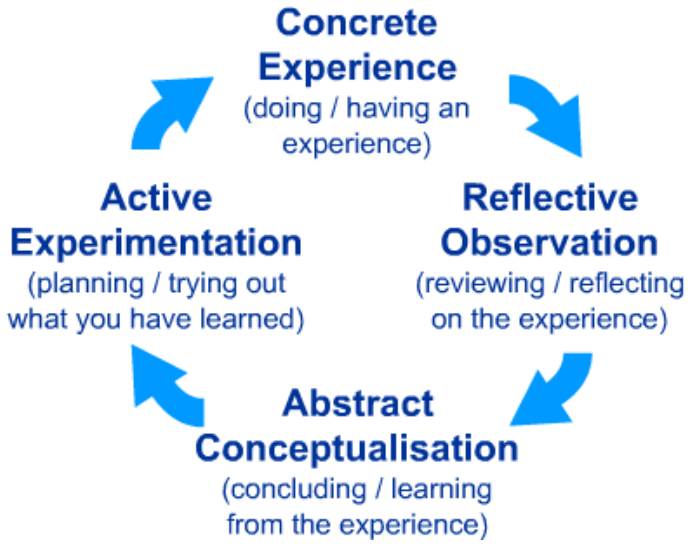



Figure 6.1 Kolb's learning cycle

During the research work I learnt to build a bridge between theory and practice. The approach to building the bridge was project work on a real life situation. *Skolefrukt* and *skolemelk* programs gave me a good opportunity to study about the theory and link it with practice. The theoretical information and facts given in books, web sites and reports on *skolefrukt* and *skolemelk* programs could study in practice through observation during study visits to school and discussions with the decision makers in school food programs. This helped me to observe and understand the challenges in the food system. Due to the complex and changing characters of the agro ecology and food systems it gave me an opportunity to use hard and soft system methodologies and experiential learning theories to recognize, understand and analyze them.

The research analysis of the food system can be linked to the soft system methodology (Kolb's cycle application). The core idea of Kolb's experiential learning process is that knowledge is created through transformation of experience, and that the transformation consists of four interrelated activities to solve a problem: divergence (observation), assimilation (thinking), convergence (planning), and accommodation (action) (Wilson, K. & Morren, G. E. B. 1990). I have reviewed Kolb's learning cycle, illustrating the personal

learning process and problem solving ability in relation to the research process (Figure 6.1).

I started my research by conducting interviews with the stakeholders of the *skolefrukt* and *skolemelk* food actors in Norway. This was the first concrete experience and the real life situation. During the phase of divergence I tried to "make sense out of the situation" (Wilson & Morren, 1990). Having an open mind, and thinking creatively, I asked questions of the food system actors to see the big picture of the *skolefrukt* and *skolemelk* food systems. This phase was quite unstructured. I tried to find the answers to "what is there?" Brainstorming was used as soft system tool.

During the "assimilation" phase, using information and observations gathered from the stakeholders during interviews I tried to understand the complexity and structure of the *skolefrukt* and *skolemelk* food system using a rich picture. Here, from the real world experiences, I dived into the abstract world in order to prepare the web-based survey which was sent to the school head masters afterwards in order to find an answer to the question "what *could* be in the *skolefrukt* and *skolemelk*"? Therefore relevant literature was referred to and a deeper understanding obtained with regard to consumer behavior, school food meal programs and organic production and consumption in Norway for example.

From the conceptualization created during the assimilative phase through the web-based survey, I studied the *skolefrukt* and *skolemelk system* a second time. I stepped out from the abstract world again to the real world during the convergence phase. I stepped into the school head master's shoes. I identified issues based on the responses to the web-based survey and grasped the very important issues in order to generate some recommendations. Different options were given to improve the situation.
The duration of the project is not limited to going just once through the cycle. I had to spiral back in to the *skolefrukt* and *skolemelk* food system as it is in a flux of different actors' ideas, and diverging and completely novel ideas came in after conducting interviews. Therefore having come to the convergence phase in the first tour of Kolb's learning cycle we stepped back again to the divergence phase to collect new data and to find hard facts to get a better understanding about the changed situation.
Having arrived at the last stages of the convergence phase I made some recommendations and wrote the thesis report.

In the accommodative phase actual implementation of the recommendations should take place (Wilson & Morren, 1990). As a part of that I will send the thesis results to the stakeholders who participated in the interviews after this thesis has been recommended by the Norwegian University of Life Sciences. If they find the report of interest they will apply some of the report's outcomes to their practice and they shall also have an opportunity to get a better understanding of the *skolefrukt* and *skolemelk* food system because the research was exploratory.

Further, it is vital that the learning process is more than cognition, since the process moves from the real world into the conceptual world and emerges back in the real world in the action phase. It is rather difficult to put different actions into different quadrants. But knowledge is created in all quadrants.

## 6.2 Choice of models used in the research

I used several models and tools which I have learnt during the Agroecology farming and food system course at the Norwegian University of Life Sciences. Figure 6.2 shows the models used within the framework of soft system thinking (soft system theory is explained in appendix 1).

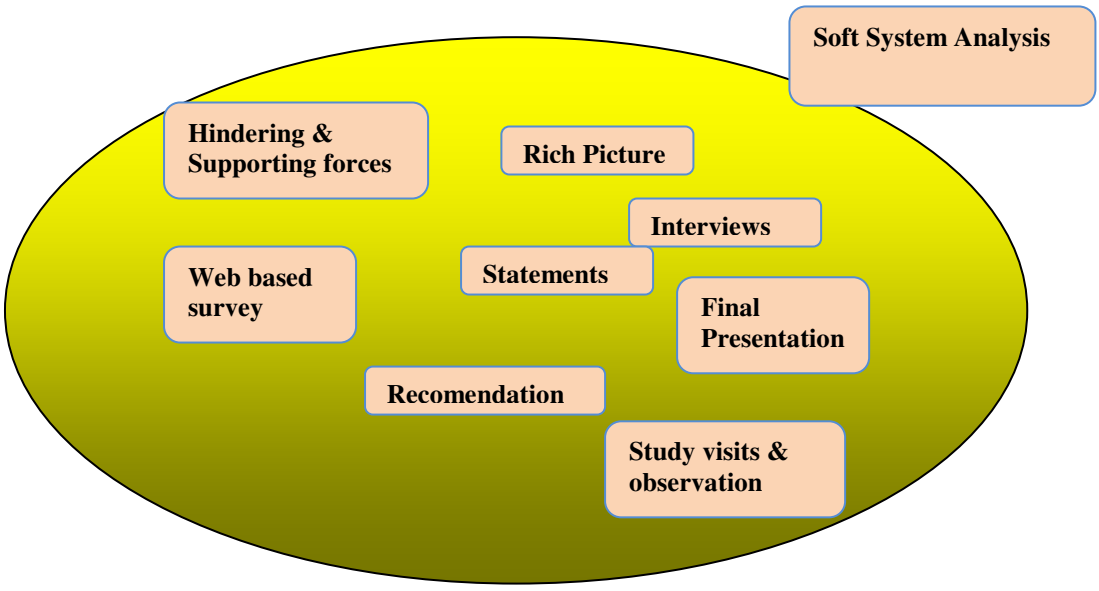



Figure 6.2 : Choice of models used in the research

Study visits gave me an opportunity to learn and study about the two systems in practice and to understand how it functions at the implementation level. A rich picture was used to explain a complex situation in *skolefrukt* and *skolemelk* with its actors and interactions in food flow showing how one part affects the other.

Interviews were used to identify the key issues and ideas behind introducing organic fruits and organic milk into Norwegian schools and based on this they were repeated in the web-based survey to explore the attitudes of the school headmasters regarding inclusion of organic produce in schools.

During the research process I referenced my work where possible. With the agreement of the survey respondents or interviewees some of their suggestions and statements have been written including the source. Below I have quoted some of those wordings:

"*Skolefrukt and skolemelk programs should be organic, and also should be included as a part of learning. One reason for this is a proper and healthy diet that promotes students' learning"*

Madlavoll School in Stavanger mentioned "*We used organic school fruit until the autumn of 2009. After this we changed to Bama providing regular fruit. One reason for this was that we got a lot of fruit of poor quality and a short shelf life*"

According to Angelsen at the Information office for fruit and vegetables in 2009 a budget of 217 million NOK was allocated to the municipalities as '*rammetilskudd'* (financial aid) for free fruit programs which increased to 230 million NOK in 2011.

Referencing the source assists others who are interested in finding more information.

Hindering and supporting forces have been explained because this helps to understand and determine strengths and weaknesses of the actual situation and to see how strengths could be improved and weaknesses could be minimize. Interviews gave us freedom to conduct a good conversation but difficult to compare them because they are not designed in a way to defend the quality of data. The collected information was from different people having different values and needs. I did not try to label one person's idea as right or wrong, but tried to reflect different sides and make suggestions to decide what should be done. Therefore I tried to meet the different interests at different levels for conversion.

Each methodology during the research work has been explained in detail in the Methodology chapter.

## 6.3 System theory applied to the study

In order to relate the organic fruit and organic milk in to *skolefrukt* and *skolemelk* programs, it is helpful to conceive food system in Norwegian school as complex system. According to (Altieri 1987) food system is a good example of a complex system. Figure 6.3 show the relationship between different actors in a food system in general. Figure 6.4 illustrates how our area of study becomes a complex system. They may react with many of actors such as parents, dedicated and motivated teachers, different age group of children, outside community, local municipality, educational institutions like universities and research institutes, wholesalers, processors, government institutions, recyclers etc...

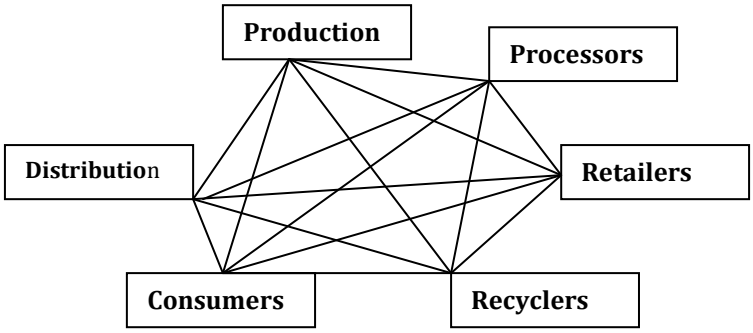



Fig 6.3: A food system as an example of a complex system

In order for this system to function well good communication and relations are very important. Within this system top-level decisions taken at schools regarding school food programs are based on numerous factors (figure 6.4) e.g.:

- Market factors such as price, supply and demand
- Quality factors such as appearance, taste and a lack of harmful residuals
- Health factors such as less sugar and salt intake
- Nutritional factors such as calorie levels
- Political factors such as government goals
- Economical factors such as school budgets
- Infrastructure factors such as storage facilities
- Joint projects with the schools and projects conducted outside
- Environmental and animal welfare factors such as less pollution

When taken together all of these factors can be interlinked by the common purpose of providing food to children for health and education. Thus all of the factors that determine the school's top-level decisions in the human activity system become linked by this common goal, which in turn defines the human activity system.

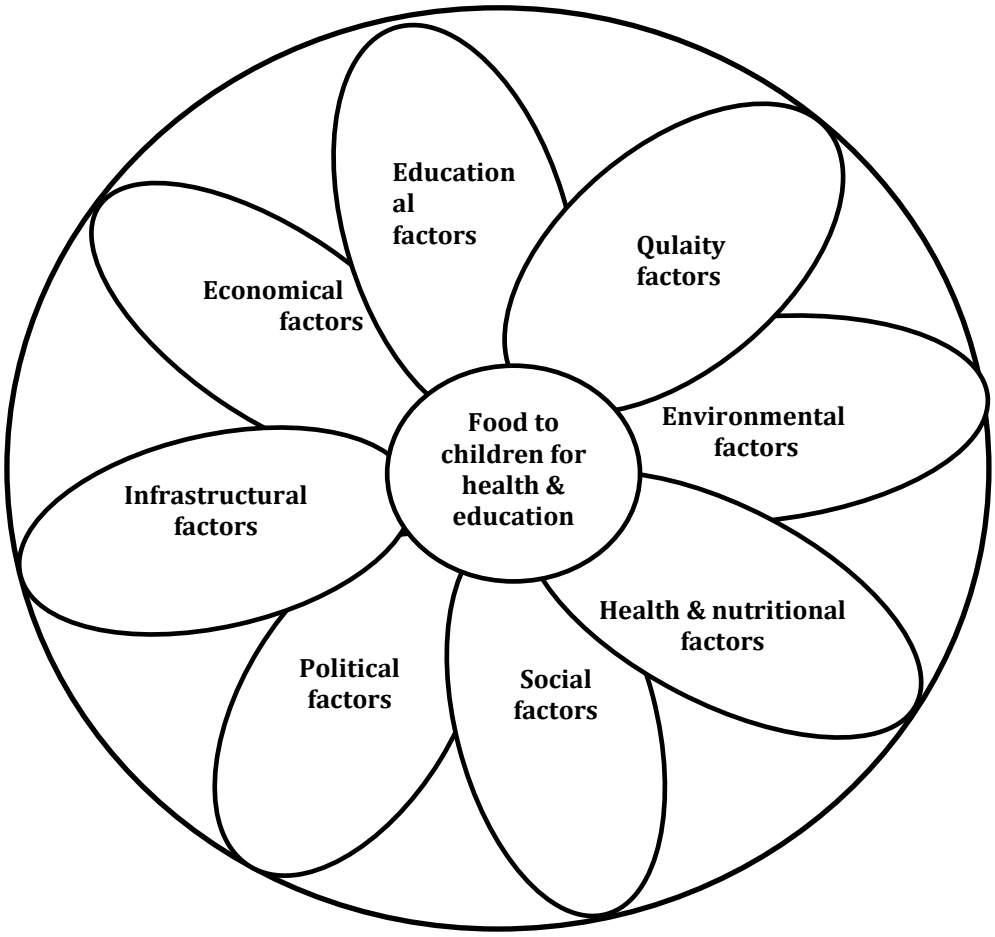



Figure 6.4: Factors influencing the common goal

## 6.4 Limitations

In the soft system approach, Bawden, (2005) talks about 'improvements through accommodation of different world views of different stakeholders', which means that, one must take into consideration the worldviews of all the stakeholders involved in order to see how the problem is depicted in different ways by different people. In the inquiry I was unable to contact one of the ministries that I had planned in my schedule. Also I did not include recyclers and parents in the interviews. But I tried to develop some worldviews for

them aided by previous research information. So while the research was not entirely holistic I have tried to make it as inclusive as possible.

I did not have any difficulty in making appointments with the stakeholders in the *skolefrukt* and *skolemelk* programme except for one. Also all of them spoke good English. However in some places during the interview there were some difficulties in explaining some expressions and words that they most used in Norwegian. Due to this they seemed to feel slightly uncomfortable and their idea was not fully expressed. If it could have been done in Norwegian or by using a translator the interviewees could feel comfortable in such situations and express their whole idea about it. I also used much time for translation and getting help with the language as many of the documents were in Norwegian.

Even though I sent the web-based survey to 340 head masters, by the 3$^{rd}$ week after publishing the survey respondent rate was only 46 out of 340 schools. Due to this poor response rate those who had not yet responded were contacted via telephone and a quick explanation was given about the survey's aims and expectations. This increased the response rate up to 129 by the 5$^{th}$ week. According to my experience direct contact with the respondents helped to develop a close relationship between them and me. Some of the headmasters explained that as they get many survey questionnaires via email they simply ignore the ones that are voluntary. So I think it is important to contact the respondents even after publishing a web-based survey to offer a short description of it. This helps to improve the responses.

At the beginning the web-based survey was designed to target the school headmasters in *Økoløft* municipalities. As a result of the telephone conversations made with school headmasters who did not respond to the survey, it was explained to me that, due to them not being directly they could not answer the questions however many of them forwarded the survey to another teacher who was responsible for *skolefrukt* or *skolemelk*. Due to the lack of response from the headmasters I decided to also include the other school administrator's into my survey sample. As this survey includes both *skolefrukt* and *skolemelk* the teachers who are responsible for *skolefrukt* were unable to answer questions about *skolemelk* and vice versa. This may be a possible reason for many of the answers given in the web-based survey.

The study visit was conducted in only two schools. The observations made in these schools are different from other schools. Therefore a generalization cannot be made about all schools in Norway. Also one of the reasons for visiting Vestsiden School in Porsgrunn was to observe the 10 litre milk container which was provided by TINE. Due to practical problems such as the need for an adult to help when receiving milk it has meant that it is little used.

However, a variety of further research can be done on the topic of organic food in schools. Despite the potential challenges of recruiting schools that do not offer organic food, it would be interesting to compare schools with organic food programmes and schools without such programmes or the municipalities that have the *Økoløft* project and the municipalities which do not. It would be especially interesting to perform such a comparative study between schools within the same region or municipality, which are influenced by roughly the same outside factors. In order to explore the opinions that Norwegian schools in general have about organic food, a large-scale consumer study could be performed; this could be done either only at schools which have organic food, or as a comparative study including schools with and schools without organic food.

# 7 APPENDICES

## Appendix 1: System theory; Theoritical background of the study

System theory is a methodology that uses the concept of a system as the ontological basis for understanding and improving a situation. According to (Wilson, K. & Morren, G. E. B. 1990) systems are defined as "a set of parts that behave in a way that an observer has chosen to view as coordinated to accomplish one or more goals". Hard systems designed to address problems in the functioning of natural or man made systems. Having an idea to improve the situation discrete problems could be identified and solved by focusing on achieving a named objective (Bawden R. J. 1992; Checkland P 2002). Applying system analysing to problems that did not have clear objectives, new soft system model imaged to solve problem. It showed that when dealing with the systems where human play a major role, different people would define the system, define the problems to be solved finally the actions which could take to improve the situation.

In order to deal with the fact that situations and problem solving objects are not easily defined SSM is a useful methodology. According to Peter Checkland, the founter of Soft System Methodology (SSM), "any situation in which human beings trying to act together will be complex simply because individual are autonomous. Shared purpose - essential for cooperate actions will have to be established, negotiated, argued, tested in a complex social process (2002). This methodology includes selected concepts of purposeful activity that are human, subjective representation of reality (Checkland P 2002)

The first stage of SSM refers to the process of entering and exploring the problematic situation with the intention of making improvements. In the soft system approach, Bawden, (2005) talks about 'improvements through accommodation of different world views of different stakeholders' which means that, one must take in to consideration the worldviews of the stakeholders involved in order to see how the problem is depicted in different ways of different people. Afterward a "rich picture" can be developed. In the next step, root definitions, or arrangements of purposeful Human Activity Systems that are relevant to the exploration of the problem are created. This means that including the activities that would be done to attain a particular purpose by the actors within the defined system. The next step is the formulation of conceptual models which shows the cause effect relationship

primary school between the actions necessary to describe the root definition. In the fifth stage, the model is compared to the problematic situation, encouraging a debate about the differences that arise. Worldviews inherent in the formation of the model can also be discussed. The final stage serves to address possible conflicts between contrasting opinions, interest and values during soft system methodology process by compromising and accommodating for these differences. The resulting idea represents the proposed action that is then recommended to improve the situation.

Soft systems include the idea that every human action, including the researcher, has a function relevant to the situation (Checkland 2006). They were developed for situations where there is no clearly defined and commonly agreed set of outputs due to differing worldviews of stakeholders. This methodology doesn't only take all the economical, political and environmental aspects into account but considers also cultural aspects and personal wishes.

## Appendix 2 : Previous studies on consumer behaviour

Interest in organic food has grown remarkably as consumers due to various facts like health and enviornmeantal effect of pesticides, taste, food safety etc... Consumer purchase dicisions are based on subjective experiences and perceptions of organic food. Numerous studies demonstrate these different themes. Aarset et al, 2004 performed their group panel discussions about exploring consumer perceptions of 'organic', 'organic salmon', and the role of regulatory authorities. Found considerable confusion as to what constitutes organic salmon and differences in opinion with respect to the role regulatory agencies should play. Magnusson *et al* (2001, 2003) conducted a mail questionnaire on attitudes regarding organic foods among Swedish adults, asking specifically about the purchase of organic milk, bread, potatoes and milk. A review of over 30 previous studies mostly from Europe and the United States, have been studied by Hughner *et al* (2007). His study focus on why people buy organic food and who are the organic consumers. Fotopoulos et al 2002 have conducted a study in Greece to examine attitudes and behaviours of buyers and non buyers of organic food. Helene Hill, Fidelma Lynchehaun in British Food Journal (2002) considers consumer attitudes and motivation towards organic food, and milk specifically. Vermeir and Verbeke (2006) conducted research in Belgium, studying the gap between attitudes and behavioural intentions in terms of sustainable food consumption.

### Consumers' motives for the purchase and non purchase of organic food perceptions and experiences of organic food

Here I aimed at describe the opinions and attitudes of consumers based on the research conducted in the past. In this section, I have categorized consumers attitudes and opinions on organic food base on earlier consumer studies into different themes. Taste of the food, personal health considerations, convenience and availability, price, environmental concern, local food production and gender and age are some of them.

### Enviornmentalal consideration animal welfare

Consumer studies have found environmental concern to be a factor in consumers' attitudes towards organic foods (Roddy et al. 1996; Soler et al. 2002; Torjusen et al. 2008). Organic consumers view the chemicals and pesticides used in conventional Food products as being

environmentally harmful, while organic foods are perceived as being environmentally friendly (Jolly & nORRIS 1991). In some studies though environmental concern has been demonstrated to have a favorable influence on consumer attitudes, several other studies have found that it is not a driving factor of organic food purchase (Zanoli & Naspetti 2002) (Magnusson et al. 2001). (Hughner et al. 2007) *and* (Magnusson et al. 2003) had similar results which is health and environment were the two most frequently expressed reasons for buying organic foods, personal health was seen as the more important factor . Most consumers are not willing to give up short-term egoistic health-related motives in exchange for long-term altruistic environmental factors (Magnusson et al. 2003). Despite the relatively strong perceived association between the environment and organic agriculture, it appears that environmental concern on its own will not influence most consumers to buy organic foods.

Expectations of better animal welfare in organic production systems also motivate organic buyers, though to a lesser extent than do health and environmental concerns (Hermansen 2003). Animal welfare is a multi-level construct which contains both nutritional and social components; it is used by respondents as an indicator of food quality, food safety, and humane treatment of livestock (Torjusen et al. 2001). Concern for the welfare of domestic animals may be another factor that leads to consumer preference for organic products. (Menghi 1997)

**Personal health**

The overwhelming majority of studies find 'health' to be the primary reason consumers buy organic foods (Bissonnette & Contento 2001; Hughner et al. 2007; Magnusson et al. 2001; Reed 2001; Zanoli & Naspetti 2002). Consumers buy organic because of their desire to avoid the chemicals used in conventional food production. Hughner *et al* note the consumer concerns about long-term health effects of pesticides and other agro-chemicals. Recent scares about food-borne illnesses - such as BSE (mad-cow disease), foot and mouth disease, *e-coli*, and salmonella - have been other reasons for skepticism about the conventional food system which have led consumers to consider other food source options (Hughner *et al* 2007; Vermeir & Verbeke 2006). Consumers often consider organic foods to be less likely to present such health risks. Magnusson et al. (2003) find that health concern is a better predictor of the purchase of organic food than concern for the

environment. iPOPY discussion paper mention that paying more attention to organic food and farming and health in class room teaching may contribute toward developing a good foundation for the children as future consumers, allowing them to make sound decisions and have an impact on the market (Andersen et al. 2010)

**Nutritional concerns**

Several studies also find that respondents believe organic produce is more nutritious than conventional produce. (Sparling et al. 1992) found most consumers view nutritional benefits of the two types of produce as the same, although 9 percent of retail produce buyers cite organic produce being "more nutritious" as the main reason they believe consumers purchase organic produce. Other studies such as (Morgan et al. 1990) found that both purchasers of organic produce and non-purchasers of organic produce as well as retail produce buyers believed that organic produce was more nutritious than conventional produce. The perception that organic produce is at least as nutritious, if not more so, than Conventionally-grown produce seems to be widely held. (Harris et al. 2000)(Hansen et al. 2002) found that if produce is grown in healthy soil, the produce should contain sufficient vitamins and minerals. There is no scientific reason to believe that organic fruit and vegetables absorb more vitamins and minerals than those exposed to chemicals.

**Food safety**

Concern about food safety has also been identified as a reason for the purchase of organically-produced food (Connell et al. 2008; Jolly & nORRIS 1991). Organic foods are exceptional in that consumer risk perceptions play an important role in determining demand (Land 1998). Of note, many studies did not clearly define the 'food safety' construct (e.g., (Kouba 2003), leaving it to the respondent to develop their own interpretations. In general, pesticide residues are of greatest concern (Kramer 1990). Of particular importance, the regulation of processing results in higher product safety in organic foods, due to the limitation on no more than 5% non-organic constituents, and the ban on irradiation, colouring agents, sweeteners, synthetic additives, flavourings, GMOs, and trans fatty acids (Hansen et al. 2002)

**Taste**

Several studies have found 'taste' to be among the most important criteria in organic food purchases (Magnusson et al. 2003; Roddy et al. 1996). (Hill & Lynchehaun 2002) suggest that because of the high prices associated with organic food, consumers perceive organic food to be higher quality than conventionally grown food, which informs their perceptions of taste. Interestingly, Fillion and Arazi (2002) conducted a series of blind taste-tests between organic and non-organic orange juice and milk. They found that organic orange juice was perceived as tasting better than conventional orange juice; however, no differences were found between organic and conventional milk. The authors concluded that the global claim 'organic food tastes better' is thus not valid for all organic food categories. Nonetheless, consumers of organic food do perceive taste advantages over conventional alternatives (Fillion & Arazi 2002). Bissonnette and Contento 2001 found that taste as a very important factor for teenagers when buying food. They also found that the teens that they surveyed thought that organic foods tasted better than conventional foods. Hughner *et al* found taste to be among the top reasons for purchasing organic food.

**High cost**

Many of the research findings say that the high price of organic food has been found to be the main obstacle in its purchase (Byrne et al. 1992; Magnusson et al. 2001; Roddy et al. 1996; Zanoli & Naspetti 2002). As a result, willingness to pay (WTP) has been the focus of several studies. Research has found that consumers are willing, at least hypothetically, to pay a premium for organically grown food; however, many are not willing to pay as much as the current market price premiums (Millock 2002). Magnusson in his study in 2001 have found that respondents with higher education and/or with a higher income were more willing to pay the higher prices associated with organic products. Kramer in his study found that pesticide residues are of greatest concern, and a household which associates conventional foods with a high level of health risk should be willing to pay more for organic food that contains no pesticides (Kramer 1990). Andersen, S., A. Burkal, et al. (2010) have found that the children will prefer prefer healthier foods provided that healthy and unhealthy food had an equal price. Children feel that healthier and organic foods are in a higher price range than less healthy food, such as pizza or shawarma.

**Appearance**

Some studies show that consumers have a strong resistance to blemishes. (Ott 1990) found that consumers would be unwilling to accept any decrease in appearance quality when purchasing organic produce, and unwilling to accept insect-damage on pesticide residue-free produce. There is a clear relationship between willingness to accept blemishes and organic purchasing behaviour (Goldman & Katherine 1991). Jolly & Norris (1991) found that Supermarket chains surveyed rated organic produce appearance as worse than non-organic produce and believed that their customers held the same view. Andersen, S., A. Burkal, et al. (2010) in his research says that the children complained that the organic foods were displayed in a boring manner and did not live up to their expectations. Elin Marley examines the attitudes of children on *skolefrukt* four Norwegian secondary schools, one in each of the counties of Rogaland, Østfold, Oppland and Møre og Romsdal. One of the thought was that organic *skolefrukt* had for poor quality, but still is a good idea (Marley 2008a; Marley 2008b)

**Freshness and shelf life**

Freshness is another factor that influences consumers' produce decisions. Consumers rate in-store freshness as the same between conventional and organic produce (Sparling et al. 1992). Retail produce buyers say organic produce tend to have a shorter shelf life than conventional produce and that this characteristic decreases consumers' demand for organic produce. However, the frequency of this response was very weak. Torjusen et al 2008 and Parker 1996 found that one of the reason for purchasing organic produce is freshness. A characteristic related to freshness is shelf life, i.e., how long organic fruit and vegetables will keep. Jolly & Norris (1991) and Morgan *et al.* (1990) find the majority of produce managers rate organic produce's keeping qualities as worse than that of conventionally-grown produce. Sparling *et al.* (1992) finds that consumers see no difference in the keeping quality of organic produce versus conventional produce. Other consumers cited organic produce's longer shelf life as a reason for purchasing organic produce (Morgan *et al.* 1990). There seems to be no consensus regarding organic produce's keeping qualities as compared to the keeping qualities of conventionally-grown produce.

**The lack of availability**

The lack of availability and/or inconvenience associated with purchasing organic food resents Have identified as an obstacle to its purchase (Hughner et al. 2007; Magnusson et al. 2001; Magnusson et al. 2003; Zanoli & Naspetti 2002). Vermeir and Verbeke in 2006 found that "The general public believes that sustainable products are difficult to obtain". Joris Aertsens in his Phd thesis 2011 has found an increase in demand which is not met by increases in the supplied quantities may lead to a lack of availability. It is clear that good prognoses for future demand, good planning and enhanced communication from buyers to suppliers, all may help reduce this problem (Aertsens 2011).

**Labelling**

Labelling is a means for providing information about various product attributes, and thus, if consumers value these attributes, for increasing sales of the products that bear the label. Since it is impossible for consumers to check the authenticity of such products, it is necessary to build up a control system with clearly defined rules for production methods and the labelling of certified products. Consumer studies suggest that trustworthy labels guaranteeing organic production are very important (Hack 1995; Sylvander 1995) The results indicate that clear and unambiguous labelling is an important factor in the buying of organic foods.

**Gender**

Several studies have found that a higher proportion of women than men hold positive attitudes towards organic food (Koivisto Hursti & Magnusson 2003; Lea & Worsley 2005; Magnusson et al. 2001). Stobbelaar et al.(2007) refer to studies that indicate that "soft" values (e.g. eco-friendliness) seem to better fit female perspectives and that women are generally more concerned about health and healthy food. Stobbelaar et al.(2007) and Gotschi et al. (2007) find that adolescent girls are more positive towards organic products than boys (Stobbelaar et al. 2007).

**Education**

Also education seems not to play an important role in relation to organic food consumption. Some authors find a positive relation between education and organic food consumption (Jolly & nORRIS 1991; Yue et al. 2008) while others find a negative relation (Byrne et al. 1992; Thompson & Kidwell 2006).

**Age**

Some authors have found a significant relation between age and the consumption of organic food. For example, a research has found that in the UK, committed organic consumers tend to be older than the average population (Geen & Firth 2006) while another finding on the contrary that older respondents were less likely to buy organic foods than younger respondents (Arbindra et al. 2005). Similarly, (Stobbelaar et al. 2007) found that younger consumers were willing to pay more for reductions in pesticide exposure than older consumers. (Lea & Worsley 2005) find that the impact of age on organic food beliefs is minimal.

**Educational concept related to school food programs**

In addition to the reserch conducted on general consumer attitudes on organic products in there are specific reserch which have been conducted in school settings on how it linked with education. The folowing section I have summarized some reserch conducted in past on organic food education through school food programs. How school food programs help students to learn or how it work as an educational tool.

**Environmental education**

Study conducted by Morgan and Sonnino 2007 have found that school food programs facilities an opportunity for dialogue about environmental to schools, and providing opportunities for hands-on experiences (Morgan & Sonnino 2007). The Organic School Project *Chicago, Illinois* works directly with schools to create school feeding programs that emphasize environmental sustainability (FEED 2010). According to UNESCO's

education for sustainability development concept also promote an education system on development that is environmentally sound and animal welfare (UNESCO 2011).

**Educational aspect**

In the thesis research by Elin Marley clearly emphasize the need of knowledge about organic food as a basis for change in school children. In the schools where organic food was relatively highly integrated in the school day, children tended to be more informed and have more positive opinions about organic food than at the schools where this theme was less integrated (Marley 2008a). The iPOPY project description expresses the ideal that if children learn about organic food at school, they will be more likely to purchase this food in the future (Løes et al. 2007). According to Burke views schools as ideal settings to familiarize children and youth with the benefits of making positive choices about food (Burke 2002). This concept of forming habits can also involve educating informed future consumers. Morgan and Sonnino write about empowering consumers by educating them about healthy food choices, allowing them to make informed decisions; the consumers still have the opportunity to choose unhealthy options, but would be aware of the consequences of their decisions (Morgan & Sonnino 2007). As Burke argues, "Today's students are tomorrow's consumers and citizens. There is, therefore, a need to develop aware, informed users and consumers of food"(Burke 2002). Nielsen, T., B. Nolting, et al. (2009) in their research on school meals in European countries have found that in *Italy* it is an objective of the school meal systems to teach the children/ students (and their parents) the properties of the organic method and its benefits for the environment in order to improve the children"s conscious-ness and to create young aware consumers. In *Denmark*, where some private catering companies as well as some municipalities offer teaching materials and try to organise the school meals in a way that involves the children in preparation. In *Finland*, school meals "are used as vehicle for nutrition but also for health, cultural and economic education."

**Health aspect nutritional aspect**

Integrating nutrition and health themes into the whole school environment allows children to experience what they have learned in the classroom. The teachers in the "Farm to School Connection program" at the California schools found it rewarding to reinforce what they had taught in the classroom with "real-life examples and experiences" on school triprimary school to local farms (Graham et al. 2004). They emphasize the importance of integrating farming and food system into everyday learning, writing that: The incorporation of agriculture into the school curriculum provides an excellent avenue in which to discuss food – its health benefits, how to choose healthy foods and factors contributing to human health, as well as concepts important to planetary health etc (Graham et al. 2004). Healthy food habits are crucial because of their association with a reduced risk of many cancers, coronary heart disease, stroke, diabetes and obesity later in life (Jiménez-Cruz et al. 2002; Wechsler et al. 2001). School meal programs can provide nutrition education programs that focus on increasing the intake of fruit and vegetables, and decreasing the consumption of soft drinks, high-fat-containing snacks, and sweets (Jiménez-Cruz et al. 2002). The idea of a "*sustainable school meal service*" (2007:19) by Morgan and Sonnino's carries a concept aims at providing "fresh and nutritious food", it "conceives healthy eating as part of a socially negotiated, whole school approach" which forms a symbiotic relationship between the classroom and the school canteen, and it also focuses on local and seasonal foods (Morgan & Sonnino 2007).

Improving the quality of students' dietary intake during the school day is important because, for many youth, meals and snacks consumed during school hours make a major contribution to the day's total intake of energy and nutrients (Dwyer 1995).

**Appendix 3: Names, dates and place the interviews conducted**

| **Interviews conducted in schools** | **Date** |
|---|---|
| • Linda Rai, Social worker (miljøarbeider),Vestsiden skole, Porsgrunn school | 02 March 2010 |
| • Anne Marie Glende, School Inspector, Ås Ungdomsskole, Ås | 17 March 2010 |
| **Interviews with Ministries** | **Date** |
| • Per Christian Rålm, Senior Adviser, Norwegian Ministry of Agriculture and Food | 22 March 2010 |
| • Emil Mohr, Senior Adviser, Norwegian Agricultural Authority | 10 March 2010 |
| • Maren Hegna, Senior Adviser, Department of Education and Training, Norwegian Ministry of Education and Research | 12 April 2010 |
| **Interviews with Information Officers** | **Date** |
| • Tore Angelsen, Project Manager- *skolefrukt*, Information Office for Fruit and Vegetables (*Opplysningskontoret for frukt og grønske*) | 8 March 2010 |
| • Kjersti Selseth, Culinary Consultant, Information Office for Milk products (*Opplysningskontoret for Meieriprodukter*) | 23 March 2010 |
| **Interviews with Non Governmental Organizations** | **Date** |
| • Kristina Alnes, Marketing Manager, Oikos and Reidar Andestad, Leader, Oikos | 25 April 2010 |
| **Interviews with suppliers** | **Date** |
| • Berit Bakken, Product Manager, Odd Langdalen | 06 May 2010 |
| • Ragnhild Sand Toledo, Product Manager, BAMA | 26 May 2010 |
| • Birgit Irgens, Senior Consultant/ School and nutrition adviser, TINE | 20 April 2010 |
| **Interviews with Research Institutes** | **Date** |
| • Project Leader, Bioforsk, Anne-Kristin Løes | 16 March 2010 |

## Appendix 4 : Web based survey : English version

### 1. Information about your school food practice

1.1 What is your school food serving practice/practices during school time?

| | |
|---|---|
| Free fruit program | ☐ |
| Paid fruit program by parents | ☐ |
| School milk program | ☐ |
| School canteen (with the facilities that can sit down) | ☐ |
| School tuck shop (kiosk) | ☐ |

1.2 Do the children get organic foods as a choice from any of the food serving practices at present?

| | |
|---|---|
| Yes always | ☐ |
| Yes sometimes | ☐ |
| No | ☐ |
| Do not know | ☐ |

1.3 From which food serving practice/ practices can students choose organic food?

| | |
|---|---|
| Free fruit program | ☐ |
| Paid fruit program by parents | ☐ |
| School milk program | ☐ |
| School canteen (with the facilities that can sit down) | ☐ |
| School tuck shop (kiosk) | ☐ |

1.4 To what extent can the below food serving practices can be used as an opportunity to provide organic food to your school children?

| | Very much | To some degree | Should not use these programs to promote organic | Do not know |
|---|---|---|---|---|
| Free fruit program | ☐ | ☐ | ☐ | ☐ |
| Parent paid fruit program | ☐ | ☐ | ☐ | ☐ |
| School milk program | ☐ | ☐ | ☐ | ☐ |
| School canteen | ☐ | ☐ | ☐ | ☐ |
| School tuck shop | ☐ | ☐ | ☐ | ☐ |

1.5 If you have selected 'should not use these programs to promote organic' category to answer the above question , Please specify why you think so.

.....

.....

**2. Attitudes about 'Økoløft i kommune' program**

2.1 Have you heard about 'Økoløft i kommune' program with the aim to increase 15% of food production and consumption to be organic in 2020 in Norway

Yes ☐

No ☐

2.2 Has your school participated in 'Økoløft i kommune' program activities?

Yes ☐

No ☐

2.3 How did the school participated in Økoløft i kommune' program activities?

.....

.....

.....

2.4 What is your personal attitude about Økoløft i kommune' program ?

.....

.....

.....

**3 Information on Environmental brand certification of school**

3.1 Have your school certified from any kind of environmental brand certificate?

Yes ☐

No ☐

3.2 If yes, what is the name of the certificate?

Miljøfyrtårnsertifisert ☐

Grønt Flagg-sertifisert ☐

3.3 Please write here if it any other certification program.

.....

.....

.....

**4 Attitudes about organic agriculture in general**

| | | Agree fully | Agree partly | Disagree partly | Disagree fully | Do not know |
|---|---|---|---|---|---|---|
| 1 | Organic agriculture has less negative impacts on the environment | ☐ | ☐ | ☐ | ☐ | ☐ |
| 2 | Organic agriculture contributes sustainability | ☐ | ☐ | ☐ | ☐ | ☐ |
| 3 | Organic agriculture respects animal welfare | ☐ | ☐ | ☐ | ☐ | ☐ |
| 4 | Organic agriculture is not very important to me | ☐ | ☐ | ☐ | ☐ | ☐ |

**5 Attitudes about having organic fruit/ organic milk in School Fruit Program and School Milk Program**

5.1 Below you will find some statements about having organic fruit and organic milk in school fruit program and school milk program. To what extent do you agree or disagree with them?

| | | Agree fully | Agree partly | Disagree partly | Disagree fully | Do not know |
|---|---|---|---|---|---|---|
| 1 | Organic fruit and milk in schools will enhance students' knowledge on organic agriculture. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 2 | Organic fruit and milk in schools helps to increase the nutritional knowledge of the pupils' | ☐ | ☐ | ☐ | ☐ | ☐ |
| 3 | Serving organic fruit and milk provide students an opportunity to learn about ecology | ☐ | ☐ | ☐ | ☐ | ☐ |
| 4 | The food products given to pupils in schools can be part of the school's general work on sustainability issues | ☐ | ☐ | ☐ | ☐ | ☐ |
| 5 | Consuming organic fruit and milk has a positive health consequence | ☐ | ☐ | ☐ | ☐ | ☐ |

| | | Agree fully | Agree partly | Disagree partly | Disagree fully | Do not know |
|---|---|---|---|---|---|---|
| 6 | Organic fruit and milk improve healthy eating patterns of the students at schools | ☐ | ☐ | ☐ | ☐ | ☐ |
| 7 | Organic fruit and milk are more nutritious than conventional fruit and milk | ☐ | ☐ | ☐ | ☐ | ☐ |
| 8 | Organic fruit and milk in school fruit program and school milk program promote positively the nutritional side of school meals | ☐ | ☐ | ☐ | ☐ | ☐ |
| 9 | Organic fruit or milk do not give harmful pesticides and chemicals to our body than conventional agriculture | ☐ | ☐ | ☐ | ☐ | ☐ |
| 10 | Organic fruit or milk lacks preservatives, artificial sweeteners, colorings and flavorings than conventional agriculture | ☐ | ☐ | ☐ | ☐ | ☐ |
| 11 | Organic milk and fruit taste better than conventional fruit and milk | ☐ | ☐ | ☐ | ☐ | ☐ |
| 12 | Serving organic fruit make available fruit with bad appearance as compared to conventional fruit | ☐ | ☐ | ☐ | ☐ | ☐ |
| 13 | Serving organic fruit make available fruit with poor storage quality | ☐ | ☐ | ☐ | ☐ | ☐ |
| 14 | Organic fruit served in school fruit program are not labeled and difficult to differentiate from conventional fruit | ☐ | ☐ | ☐ | ☐ | ☐ |
| 15 | Serving organic fruit will face problems with consistent availability of organic fruit | ☐ | ☐ | ☐ | ☐ | ☐ |
| 16 | There is little variety of organic fruit to be distributed in school fruit program | ☐ | ☐ | ☐ | ☐ | ☐ |
| 17 | There is little variety of organic milk products to be distributed in school milk program | ☐ | ☐ | ☐ | ☐ | ☐ |
| 18 | Organic milk is fairly priced but too expensive | ☐ | ☐ | ☐ | ☐ | ☐ |

| | | Agree fully | Agree partly | Disagree partly | Disagree fully | Do not know |
|---|---|---|---|---|---|---|
| 19 | Organic fruit are fairly priced but too expensive | ☐ | ☐ | ☐ | ☐ | ☐ |
| 20 | Present budget given for the free fruit program is not be sufficient to purchase organic fruit to all students | ☐ | ☐ | ☐ | ☐ | ☐ |
| 21 | School Fruit Program is a convenient way to get organic fruit to school children | ☐ | ☐ | ☐ | ☐ | ☐ |
| 22 | Using organic fruit increases administrative work load in the school | ☐ | ☐ | ☐ | ☐ | ☐ |
| 23 | TINE's new internet based ordering system from August 2010 has reduced the administration work on school milk program | ☐ | ☐ | ☐ | ☐ | ☐ |
| 24 | Norwegian conventional fruit should be given a priority than imported organic fruit | ☐ | ☐ | ☐ | ☐ | ☐ |
| 25 | Lower income families can not afford to organic fruit and organic milk. This results a discrimination among children | ☐ | ☐ | ☐ | ☐ | ☐ |
| 26 | Priority should be given to improve learning facilities to meet high education expectations than providing organic fruit to the children | ☐ | ☐ | ☐ | ☐ | ☐ |
| 27 | Free fruit program is a good mechanism to equal access to organic fruit. | ☐ | ☐ | ☐ | ☐ | ☐ |

## 6 Background Information

6.1 May we cite the comments you give in this questionnaire?

Yes ☐
No ☐

6.2 If yes, may we use your school name in connection to your citation?

Yes ☐
No ☐

6.3 What is your current position at school?

School headmaster ☐
Other ☐

6.4 Contact email : ……..

6.5 Gender

| | |
|---|---|
| Male | ☐ |
| Female | ☐ |

6.6 What is your age

| | |
|---|---|
| 20-25 | ☐ |
| 25 - 35 | ☐ |
| 36 - 45 | ☐ |
| 46 - 55 | ☐ |
| Above 56 | ☐ |

6.7 University/ High school Education

| | |
|---|---|
| 1-2 years | ☐ |
| 3 years | ☐ |
| 3 – 5 years | ☐ |
| Above 5 years | ☐ |

6.8 How long have you been working in this school?

| | |
|---|---|
| Less than one year | ☐ |
| 1-2 år | ☐ |
| 3-5 år | ☐ |
| More than 5 years | ☐ |

**7 Information about the school**

7.1 Name of the school : ……..

7.2 To which category does your school belong to

| | |
|---|---|
| Public school | ☐ |
| Private school | ☐ |
| Special school | ☐ |

7.3 In our school we have classes from

| | |
|---|---|
| 1-7 | ☐ |
| 1-10 | ☐ |
| 8-10 | ☐ |

7.4 Comments and feedback

……

7.5 Do you have any comments or questions to this questionnaire

.....

**Appendix 5 : Web Based Survey in Norwegian**

**1. Informasjon om skolematordningen på din skole**

1.1 Hvordan er skolematordningen på din skole

| | |
|---|---|
| Gratis skolefruktordning | ☐ |
| Skolefrukt betalt av foreldre | ☐ |
| Skolemelkordningen | ☐ |
| Kantine på skolen (med mulighet til å sitte ned) | ☐ |
| Kiosk | ☐ |

1.2 Har elevene mulighet til å velge økologisk mat og drikke gjennom deres skolematordning?

| | |
|---|---|
| Ja alltid | ☐ |
| Ja, noen ganger | ☐ |
| Nei | ☐ |
| Vet ikke | ☐ |

1.3 Gjennom hvilken skolematordning kan elevene velge økologisk mat?

| | |
|---|---|
| Gratis skolefruktordning | ☐ |
| Skolefrukt betalt av foreldre | ☐ |
| Skolemelkordningen | ☐ |
| Kantine på skolen | ☐ |
| Kiosk | ☐ |
| Ingen | ☐ |

1.4 Hvor egnet er de ulike skolematordningene for å gi elevene mulighet til å få økologisk mat?

| | Veldig egnet | Til en viss grad egnet | Uegnet for å tilby økologisk | Vet ikke |
|---|---|---|---|---|
| Gratis frukt ordningen | ☐ | ☐ | ☐ | ☐ |
| Betalt frukt ordningen av foreldre (abonnementsordningen) | ☐ | ☐ | ☐ | ☐ |
| Skolemelk-ordningen | ☐ | ☐ | ☐ | ☐ |
| Skole kantine (med fasiliteter som kan sette seg) | ☐ | ☐ | ☐ | ☐ |
| Skole_kiosk | ☐ | ☐ | ☐ | ☐ |

1.5 Hvis du har valgt 'uegnet for å tilby økologisk'-kategorien ved forrige spørsmål, vennligst forklar hvorfor du mener dette?

.....

.....

**2 Holdninger til 'Økoløft i kommuner'-prosjektet**

2.1 Har du hørt om 'Økoløft i kommuner'-prosjektet, som har et mål om å øke andelen økologisk av produksjon og forbruk av mat i Norge til 15 % innen 2020?

Ja ☐

Nei ☐

2.2 Har din skole deltatt i 'Økoløft i kommuner'-prosjektet?

Ja ☐

Nei ☐

2.3 På hvilken måte har din skole deltatt i 'Økoløft i kommuner'-prosjektet?

.....

.....

2.4 Hva er din personlige mening om 'Økoløft i kommuner'-prosjektet?

.....

.....

**3 Informasjon om miljøsertifisering av skoler**

3.1 Har din skole blitt miljøsertifisert på en eller annen måte?

Ja ☐

Nei ☐

3.2 Hva er navnet på miljøsertifiseringen?

Miljøfyrtårnsertifisert ☐

Grønt Flagg-sertifisert ☐

3.3 Dersom skolen er sertifisert på?

.....

.....

## 4 Holdninger generelt til økologisk landbruk

| | | Helt enig | Delvis enig | Delvis uenig | Helt uenig | Vet ikke |
|---|---|---|---|---|---|---|
| 1 | Økologisk landbruk har mindre negativ miljøpåvirkning | ☐ | ☐ | ☐ | ☐ | ☐ |
| 2 | Økologisk landbruk er mer bærekraftig | ☐ | ☐ | ☐ | ☐ | ☐ |
| 3 | Økologisk landbruk fremmer dyrevelferd | ☐ | ☐ | ☐ | ☐ | ☐ |
| 4 | Økologisk landbruk er ikke veldig viktig for meg | ☐ | ☐ | ☐ | ☐ | ☐ |

## 5 Holdninger til økologisk frukt/melk gjennom skolefrukt- og skolemelkordningene.

5.1 Nedenfor vil du finne noen utsagn om å ha økologisk frukt og melk gjennom skolefrukt- og skolemelkordningen. I hvilken grad er du enig eller uenig med dem?

| | | Helt enig | Delvis enig | Delvis uenig | Helt uenig | Vet ikke |
|---|---|---|---|---|---|---|
| 1 | Økologisk frukt og melk i skolen vil forbedre elevenes kunnskap om økologisk landbruk | ☐ | ☐ | ☐ | ☐ | ☐ |
| 2 | Økologisk frukt og melk i skolen vil forbedre elevenes kunnskap om ernæring | ☐ | ☐ | ☐ | ☐ | ☐ |
| 3 | Økologisk frukt og melk i skolen vil gi elevene en anledning til å lære økologi | ☐ | ☐ | ☐ | ☐ | ☐ |
| 4 | Skolematordninger kan utgjøre en del av skolens generelle undervisning om bærekraftig utvikling | ☐ | ☐ | ☐ | ☐ | ☐ |
| 5 | Forbruk av økologisk frukt og melk er positivt for helsen | ☐ | ☐ | ☐ | ☐ | ☐ |
| 6 | Forbruk av økologisk frukt og melk vil forbedre elevenes spisevaner på skolen | ☐ | ☐ | ☐ | ☐ | ☐ |
| 7 | Økologisk frukt og melk er mer næringsrik enn konvensjonell frukt og melk | ☐ | ☐ | ☐ | ☐ | ☐ |
| 8 | Økologisk frukt og melk i skolematordningen vil forbedre næringsverdien av skolemåltidet | ☐ | ☐ | ☐ | ☐ | ☐ |

| | | Helt enig | Delvis enig | Delvis uenig | Helt uenig | Vet ikke |
|---|---|---|---|---|---|---|
| 9 | Økologisk frukt og melk inneholder mindre pesticidrester og kjemikaler enn konvensjonell frukt og melk | ☐ | ☐ | ☐ | ☐ | ☐ |
| 10 | Økologisk frukt og melk inneholder mindre konserveringsmidler, fargestoffer og søtningsmidler enn konvensjonelle produkter | ☐ | ☐ | ☐ | ☐ | ☐ |
| 11 | Økologisk frukt og melk smaker bedre enn konvensjonell frukt og melk | ☐ | ☐ | ☐ | ☐ | ☐ |
| 12 | Bruk av økologisk frukt i skolen gir som resultat frukt med dårlig utseende, sammenlkinet med konvensjonell frukt | ☐ | ☐ | ☐ | ☐ | ☐ |
| 13 | Bruk av økologisk frukt i skolen gir som resultat frukt med dårlig lagringsevne | ☐ | ☐ | ☐ | ☐ | ☐ |
| 14 | Økologisk frukt I skolefruktordningen er ikke market og er dermed vanskelig å skille fra konvensjonell frukt. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 15 | Bruk av økologisk frukt vil medføre problemer mht. stabil levering av økologisk frukt | ☐ | ☐ | ☐ | ☐ | ☐ |
| 16 | Tilbudet av økologiske melkeprodukter er snevert | ☐ | ☐ | ☐ | ☐ | ☐ |
| 17 | Tilbudet av økologisk frukt er snevert | ☐ | ☐ | ☐ | ☐ | ☐ |
| 18 | Økologisk melk har en riktig pris, men er dyr | ☐ | ☐ | ☐ | ☐ | ☐ |
| 19 | Økologisk frukt har en riktig pris, men er dyr | ☐ | ☐ | ☐ | ☐ | ☐ |
| 20 | Det nåværende budsjett for skolefruktprdningen er ikke tilstrekkelig for å kjøpe økologisk frukt til alle elevene | ☐ | ☐ | ☐ | ☐ | ☐ |
| 21 | Skolefruktordningen er en grei måte for å skaffe økologisk frukt til elevene | ☐ | ☐ | ☐ | ☐ | ☐ |
| 22 | Bruk av økologisk frukt medfører økt administrativt arbeidet | ☐ | ☐ | ☐ | ☐ | ☐ |

| | | Helt enig | Delvis enig | Delvis uenig | Helt uenig | Vet ikke |
|---|---|---|---|---|---|---|
| 23 | TINEs nye internettbaserte bestillingsordning fra august 2010 har redusert det administrative arbeidet knyttet til skolemelkordningen. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 24 | Norsk konvensjonell frukt bør brukes framfor importert økologisk frukt | ☐ | ☐ | ☐ | ☐ | ☐ |
| 25 | Familier med lav inntekt har ikke råd til å kjøpe økologisk frukt og melk. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 26 | Det bør legges større vekt på å forbedre det fysiske læringsmiljøet enn på å tilby økologisk frukt til elevene | ☐ | ☐ | ☐ | ☐ | ☐ |
| 27 | Gratis skolefruktordning er en god ordning for å gi lik adgang til økologisk frukt | ☐ | ☐ | ☐ | ☐ | ☐ |

## 6 Bakgrunnsinformasjon

6.1 Kan vi sitere de kommentarer du gir i denne spørreundersøkelsen?

Ja ☐
Nei ☐

6.2 Kan vi bruke skolenavnet I forbindelse med siteringen?

Ja ☐
Nei ☐

6.3 Hvilken stilling har du på skolen?

Rektor ☐
Andre ☐

6.4 e-post adresse ……....

6.5 Kjønn

Mann ☐
Kvinne ☐

6.6 Hva er din alder

20-25 ☐
25 - 35 ☐
36 - 45 ☐
46 - 55 ☐
Over 56 ☐

6.7 Universitets- høyskoleutdanning

| | |
|---|---|
| 1-2 år | ☐ |
| 3 år | ☐ |
| 3 – 5 år | ☐ |
| Mer enn 5 år | ☐ |

6.9 Hovr lenge har du arbeidet på denne skolen?

| | |
|---|---|
| Mindre enn ett år | ☐ |
| 1-2 år | ☐ |
| 3-5 år | ☐ |
| Mer enn 5 år | ☐ |

**7. Informasjon om skolen**

7.2 Skolens navn : ……..

7.2 Hvilken kategori hører skolen til

| | |
|---|---|
| Offentlige skole | ☐ |
| Private school | ☐ |
| Spesialskole | ☐ |

7.3 På vår skole har vi klasser fra

| | |
|---|---|
| 1-7 | ☐ |
| 1-10 | ☐ |
| 8-10 | ☐ |

7.4 Har du noen andre kommentarer eller spørsmål vedrørende ennespørreundersøkelsen?

…….....

.....

**Appendix 6: Invitation letter in Norwegian**

Målet med undersøkelsen er å utforske holdninger til økologisk mat, og mer spesifikt organisere frukt og melk i skolefrukt og skolemelk programr.
Norske myndigheter satt som mål at innen år 2020, vil 15% av Norge's matproduksjon og forbruk være økologisk. Økoløft i kommune var en av prosjektet som fokuserte på å øke økologisk matforbruk. Selv om skolen ikke er direkte forbundet med dette prosjektet, men et sted som kunne ha påvirket på dette prosjektet. Derfor er vi svært interessert i å dele dine holdninger som en skole rektor om økologisk frukt og økologisk melk i skolemelk og skolefrukt programr.

Vi er interessert i svar fra begge skolene som har og som ikke har økologisk frukt og økologisk melk i sine tilbud. Vi vil sterkt pris på om du som rektor delta og fullføre spørreren.

Studien vil bli gjennomført på skolene i de 52 Økoløft kommunes. Du kan hjelpe oss å få denne oversikten ved å delta i å svare på vårt spørreskjema. Spørreskjemaet tar ca. 20 minutter å besvare. Det er veldig brukervennlig og grei.

Denne undersøkelsen er utført av Chamalie Jayalath (MSc student i Agroøkologi) ved norske universitet for miljø og biovitenskap Ås under veiledning fra Geir Lieblein og Aage Steen Holm.

Til slutt ønsker vi å sikre at all personlig informasjon data (felt 6), vil bli behandlet strengt konfidensielt, og dine personopplysninger vil ikke bli brukt i denne rapporten uten avtale dine. Ved spørsmål, ta kontakt chamalie.arembage@student.umb.no
Takk på forhånd for din tid.

**Appendix 7: Invitation letter in English**

The goal of the survey is to explore attitudes towards organic food and more specifically organizing fruit and milk in school fruit and school milk programs.
Norwegian government set a goal that by the year 2020, 15% of Norway's food production and consumption will be organic. Økoløft i kommune was one of the project which focused on increasing organic food consumption. Even though schools are not directly connected with this project but a place which could have influenced on this project. Therefore we are very interested to share your attitudes as a **school head master** regarding organic fruit and organic milk in school milk and school fruit programs.

We are interested in responses from both schools who have and who do not have organic fruit and organic milk in their offerings. We would highly appreciate if you as a head master participate and complete the questioner.

The study will be undertaken at the schools in the 52 Økoløft kommunes. You can help us to get this overview by participating in answering our questionnaire. The questionnaire takes approximately. 20 minutes to answer. It is very user friendly and straightforward.

This survey is conducted by Chamalie Jayalath (Msc student in Agroecology) at Norwegian University of Life Sciences Ås under supervision from Geir Lieblein and Aage Steen Holm.

Finally we would like to assure that all personal information data (fields 6), will be treated as strictly confidential and your personal data will not be used in this report without your agreement. In case any queries, please contact chamalie.arembage@student.umb.no
Thank you in advance for your time

**Appendix 8 : Number of schools expected to conduct the web based survey**

| Counties | Municipality | Number of Schools |
|---|---|---|
| Østfold | Spydeberg | 3 |
| | Trøgstad | 6 |
| | Eidsberg | 4 |
| Akershus | Aurskog-Høland | 7 |
| Hedmark | Tolga | 2 |
| | Ringsaker | 18 |
| | Grue | 2 |
| | Våler | 7 |
| | Åsnes | 7 |
| Oppland | Gran | 13 |
| | Jevnaker | 3 |
| | Lunner | 4 |
| Buskerud/Vestfold | Hurum | 7 |
| | Røyken | 12 |
| | Lier | 12 |
| | Drammen | 19 |
| | Nedre Eiker | 9 |
| | Sande | 5 |
| | Svelvik | 4 |
| Telemark | Sauherad | 4 |
| | Fyresdal | 1 |
| Aust-Agder | Arendal | 17 |
| | Grimstad | 1 |
| Rogaland | Stavanger og Sandes | 46 |
| | Utsira | 1 |
| Hordaland | Kvam | 10 |
| | Voss | 15 |
| Sogn og Fjordane | Balestrand | 3 |
| | Aurland | 2 |
| Møre og Romsdal | Tingvoll | 3 |
| | Vestnes | 5 |
| | Gjemnes | 4 |
| | Sykkylven | 9 |
| | Ørsta | 9 |

| Country | Municipality | Number of Schools |
|---|---|---|
| Sør-Trøndelag | Ørland | 4 |
| | Bjugn | 3 |
| | Selbu | 5 |
| | Holtålen | 2 |
| | Melhus | 8 |
| | Rissa | 5 |
| Nord-Trøndelag | Fosnes | 2 |
| | Namdalseid (Overhallaregionen) | 2 |
| | Snåsa | 5 |
| | Nærøy | 9 |
| Nordland | Vefsn | 7 |
| | Nesna | 2 |
| | Hemnes | 5 |
| | Vestvågøy | 10 |
| Troms | Nordreisa | 7 |
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