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Role of public catering and use of organic food in educational contexts:

Creating centres for sustainable food systems

Finnish national report of innovative Public Organic food Procurement for Youth (iPOPY) 2007-2010 research project

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Front page pictures from Finnish school meals by Øyvør Helstad and Minna Mikkola.



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 Creating centres for sustainable food systems

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Sammendrag:

I Finland er det en lang tradisjon for offentlig matservering, både i arbeidsliv og i skole. Etter langvarige og omfattende forhandlinger siden starten av 1900-tallet om hvilken rolle offentlig matforsyning skulle ha i skolene, er nå gratis og offentlig regulerte skolemåltider vel etablert. Visjonen om en demokratisk ernærings situasjon for folket utfordres i dag av nye visjoner om økologiske måltider. Begrepet "catering for sustainability" (matforsyning for bærekraft) er et uttrykk for denne endringen.

I dag er finske skoler orientert mot bærekraftig utvikling, og det gir seg også uttrykk i at maten som serveres blir stadig "grønnere". Bærekraftig utvikling er et tverrfaglig tema som vier oppmerksomhet til økologisk og lokal mat både i undervisningen og i skolemåltidene. Ulike miljøsertifiseringsordninger av skolene kan være et utgangspunkt for å introdusere økologisk mat, og de ansvarlige for skolematen er ofte også interessert i dette temaet. Matansvarlige på skolene foretrekker ofte lokal og økologisk, gjerne både lokal og økologisk mat, og er interessert i sertifisering for å kommunisere dette. Per i dag er imidlertid bruken av økologisk mat i finske skolemåltider lite synliggjort.

Forskningen i den finske delen av iPOPY tok sikte på å forstå og forklare den aktuelle situasjonen i finsk skolematservering og undervisning for bærekraftig utvikling, på en måte som kunne avdekke forslag til utvikling og økt bruk av økologisk mat i skolemåltidene. Takket være samarbeidsvillige aktører fra skoler på ulike nivå, både elever, lærere, rektorer og matansvarlige, har det vært mulig å gjennomføre en kvalitativ undersøkelse av sosiale sammenhenger og prosesser i offentlig matforsyning, så vel som undervisning i (for) bærekraftig utvikling. Dybdeintervju og fokusgrupper ble brukt til å innhente kunnskap om økologisk mat i skolene, sett i lys av bærekraftig utvikling.

Resultatene viser at de matansvarlige var personlig engasjert i bærekraft, og uttrykte at dette

begrepet var en del av deres profesjonelle identitet. En slik identitet kunne ha både positive og negative kjennetegn, avhengig av om de matansvarlige fikk støtte i sine bestrebelses eller ikke. Støtten kunne komme fra overordnede, fra strategier i organisasjonen, eller fra leverandører. Samarbeid med leverandører, og å ta i bruk leverandører av økologiske produkt, innebar muligheter til å oppgradere matserveringen. Å ta i bruk økologisk melk viste seg å ha et potensial i en "catering for sustainability" prosess. En formidlet dialog, der forskeren deltok som "mekler" mellom leverandør og matansvarlig, ble gjennomført med økologisk melk som eksempel. Er kvaliteten av økologisk melk like god (i Finland er økologisk melk i motsetning til konvensjonell ikke tilsatt D-vitaminer, og ikke homogenisert), og er den egnet til bruk i skolemåltider? Det var flere forhold enn merpris som gjorde matansvarlige skeptiske til økologisk melk. De matansvarlige er ikke nødvendigvis helt inneforstått med det økologiske budskapet, de har også kritiske motforestillinger. Forskningen lette etter nye måter å kommunisere om økologisk mat på. Å vektlegge bærekraft viste seg å være viktig for å velge å gå over til økologisk.

Undervisningen for bærekraftig utvikling (UBU) i Finland i grunnskole og videregående skole ble gjennomgått. Det er ambisiøse mål om bærekraftig utvikling både i enkeltfag og tverrfaglige tilnærminger. Innen UBU kan det avgrenses en enhet som omfatter matsystemer, inkludert økologisk mat og landbruk. Det er i ferd med å utvikle seg et fag som kan kalles *mat*undervisning for bærekraftig utvikling (MUBU). Engasjerte lærere la ned mye arbeid i dette, og satte i gang prosesser som endret hele skolens tilnærming i retning av mer økologi og bærekraft (whole school approach). Ungdom ga uttrykk for at de oppfattet økologisk mat som en legemliggjøring av et mer bærekraftig matsystem, men det kom også fram tvil og usikkerhet som trenger mer detaljert kunnskap for å komme til en avklaring. Mange ungdommer argumenterte for økologisk mat på bakgrunn av etikk, dyrevelferd og helse, men tvilrådigheten var til stede om økologisk kvalitet var god nok, og støtten til økologisk kan sees som betinget. Noen ungdommer var også tydelige på at de foretrakk konvensjonell mat.

Det anbefales at aktører i skolene bør fokusere på matundervisning for bærekraftig utvikling, og økologisk mat bør innføres gjennom felles satsninger som del av en "catering for sustainability".

Summary:

Public catering has long traditions in Finland both on the sectors of working life and education. The historical background through lengthy and extensive negotiations since the beginning of 20th century about the role of public catering in education has cemented the position of free and regulated school meals. However, this vision of democratic nutrition of the 20th century is contested by a renewed vision of ecological meals of the 21st century. As a notion, catering for sustainability catches the orientation for change.

Today, the orientation for sustainable development within schools and the consecutive 'greening of public catering' seems to proceed in Finnish schools. The cross-curricular theme of sustainable development breeds focus on local and organic food in education and catering. Environmental or sustainability certification of a school may introduce organic food into school catering. The caterers have interest in organic food too. They often prefer local and organic, even local organic food and may use a certification scheme to increase the visibility of their orientation. However, more often than not, organic food is not used as a visible staple in Finnish school catering.

This research aimed at understanding the current situation in Finnish school catering and education for sustainable development (ESD) in ways enabling suggestions for development and increased use of organic food in school catering. This qualitative inquiry into the social dynamics of public catering and ESD was enabled by the co-operative educational institutes across educational levels and their rectors, teachers, caterers and young people, whose in-depth interviews and focus groups produced data about organic food in schools within the framing of sustainable development.

According to this research, the caterers did exert social force for sustainability by expressing their professional identity for sustainability. This identity could convey both positive and negative features for caterers, depending on whether they received support from their management, organizational strategies or suppliers. The co-operation with their supply chains as well as switching

into organic supply chains offered options for upgrading their catering activities. In this research, the use of organic milk as a staple was identified to have potential for catering for sustainability. A mediated dialogue was conducted with caterers about the quality of organic milk and its suitability to school catering. The barriers of the use of organic milk were not only economic, and an intermediate mediating strategy for sustainability was suggested for caterers in terms of the use of organic food. Furthermore, caterers were understood not to be only pleased about the organic message but it was seen to evoke critical response. This response was analysed and new ways of communication about organic food were suggested.

Finnish ESD (education for sustainable development) in basic and general upper secondary education was reviewed and it was found to present ambitious aims through both disciplinary and cross-curricular themes. An entity within ESD, regarding food system and including organic food in particular, could be identified as an evolving topic of food education for sustainability (FES). There were committed teachers who made big efforts to promote it and who actually implemented the whole school approach for this aim. The young people also considered organic food as an embodiment of more sustainable food system, which, however, also raised extensive ambiguity in need of more detailed addressing. Furthermore, there were young people who expressed commitment mainly on ethical, animal welfare and health grounds for organic food. Young people also viewed organic quality as an ambiguous one and they demonstrated conditional commitment. A negative commitment by young people meant that they rather chose conventional food. Finally, suggestions for stakeholders in educational contexts included focus on FES and introduction of organic food through concerted efforts into the school catering for sustainability.

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Introduction

The current western food system is an amazing achievement from the perspective of food security, food safety and extensive selection of food commodities, including a huge product range from downmarket to upmarket and from conventional to organic. However, environmental impacts of the food system such as climate change, eutrophication and ecotoxicity for biota by intensive agriculture (Tukker et al., 2006, 2009; Weidema et al., 2008) as well as public health concerns such as obesity related and dental diseases (WHO/FAO, 2003) reflect sustainability deficit of the current food system. It goes without saying that changes toward sustainable food system are currently needed across western societies, and that this orientation presents both extensive and profound challenges to food production and consumption. These changes pertain to farming systems, processing industry, wholesale, retail and catering industry, transports, consumers' eating habits and life styles more generally.

Political quest for more sustainable food systems is expressed by documents such as European and national programs and recommendations for sustainable consumption and production (CEC, 2005; COM, 2001; European Commission GPP Training Toolkit, 2009; Getting more from less, 2005; Ministry of the Environment, 2008, 2009; Suomen kestävä kehityksen toimikunnan asettama strategiaryhmä, 2006), regulations pertaining to organic farming (Council Regulation (EC) No 834/2007) and labelling schemes promoting environmentally friendly catering (Nordic Ecolabelling, 2009; Swan labelling of restaurants, 2006) and the use of organic food in catering (www.ekocentria.fi, Portaat luomuun). These documents emphasise efforts to move to consumption of seasonal, vegetable-based, local and organic food. As public documents they explicitly refer to public catering for sustainability as a forerunner exemplifying more sustainable consumption patterns in a "Green State" (Morgan and Sonnino, 2008).

Educational institutes represent societal capacity for change towards more sustainable food systems by their double impact. First, they offer meals to young people and personnel, participating in demand of sustainable food through public procurement, and second, they educate future consumers both through concepts and practices. As organic farming is currently one of the most widely known low-input production modes, representing inherently a less obtrusive agricultural system, its use in public catering is of considerable interest for development of sustainable food systems.

Innovative Public Organic food Procurement for Youth (iPOPY) research proposal was approved by CORE Organic Funding Body Network (www.coreorganic.net) as a project dedicated to inquiry about ways to increase the consumption of organic food in educational institutes and other relevant sites where young people consume food. The research effort was divided into five thematic Work Packages (WP). Research was to be conducted about policies and strategies for increasing organic consumption (WP 2), organic supply chain management and certification procedures for organic food in catering (WP 3), consumers' perceptions, preferences and learning about sustainability and organic food (WP 4) and links between health and organic food (WP 5). The project coordination, dissemination of results and overall conclusions (WP 1) were meant to offer a 'big picture' about European 'state of the art' consumption of organic food at schools and ways to increase this consumption in participating countries. This CORE Organic project was funded by four countries: Denmark, Finland, Italy and Norway, which furthermore offered resources for German participants to study the organizational features and certification of public catering in terms of use of organic food. The Finnish part of iPOPY project was funded by the Ministry of Agriculture and Forestry (www.mmm.fi). The iPOPY team consisted of following organizations and researchers:

WP1 The project coordination, conclusions and dissemination of results: coordinator, researcher Anne-Kristin Løes, Bioforsk Organic Food and Farming Division, NO, researcher Matthias Kösling, Bioforsk Organic Food and Farming Division, NO, researcher Benjamin Nölting, Technical University of Berlin, Center for Technology and Society and later professor in Fachhochschule Eberswald, DE

WP2 Policy analysis: professor Niels-Heine Kristensen, Technical University Denmark, IPL/Innovation & Sustainability, later professor, Aalborg University, DK, researcher Thorkild Nielsen, Technical

University Denmark, IPL/Innovation & Sustainability, later researcher Aalborg University, DK, PhD student Mette Weinreich Hansen, Technical University Denmark, IPL/Innovation & Sustainability, later Aalborg University, DK

WP3 Supply chain management and certification: professor Stefano Bocchi, State University of Milan, Faculty of Agriculture, Department of Crop Science, IT and professor Roberto Spigarolo, State University of Milan, Faculty of Agriculture, Department of Crop Science, IT, researcher Marco Valerio Sarti, State University of Milan, Faculty of Agriculture, Department of Crop Science, IT, Carola Strassner, managing director The Organic Food Service Consultancy, later professor Münster University of Applied Sciences, DE

WP4 Perceptions, preferences and learning about sustainable development and organic food: senior researcher Gun Roos, National Institute for Consumer Research (SIFO), NO, project researcher Minna Mikkola, University of Helsinki, Ruralia Institute, FI. Lecturer Sirkka Antinluoma, Laurea University of Applied Sciences, degree program for service management, FI, participated in data collection for WP3 and WP5 through students' course work.

WP5 Health and organic food: senior scientist Bent Egberg Mikkelsen, Technical University Denmark, IPL/Innovation & Sustainability, later professor, Aalborg University, DK, Chen He, PhD student, Technical University Denmark, IPL/Innovation & Sustainability, later Aalborg University, DK

Additionally, the project attracted the interest of several students who contributed to various WPs by conducting research related to their Bachelor or Master thesis.

As an introduction to the Finnish iPOPY research results, this report offers the reader an outline of public catering in Finland (Chapter 1) through its rise, development on the educational sector and its regulated practises, which are 'crystallized' in the so called plate model. The report explains connections between educational system, school catering and orientations for sustainability such as environmental management schemes and use of organic and local food as a background for Finnish iPOPY research (Chapter 2).

The report describes the aims of this research into public catering for sustainability in educational contexts, its materials and methods as well as research co-operation with participating organizations and stakeholders (Chapter 3). The research results disclose the role of public caterers as a social and professional force for sustainability through catering, the formal education about sustainability and organic food as well as teachers' commitment for these topics, and finally, young people's perspectives to organic food and their views about change in Finnish food culture in terms of organic food (Chapter 4). The strategies to promote sustainable food system through public catering in educational contexts are discussed as the whole school approach and finally general recommendations are developed towards increasing use of organic food in school catering (Chapter 5).

This research into Finnish public catering, advocating catering for sustainability within the educational environment, has been qualitative by its approach. Its basic aim has been to disclose underlying organizational structures, stakeholders' views and activities and the educational potential for change towards more sustainable food systems among these stakeholders. The research results presented and discussed here are to some extent heterogeneous in the way that some results refer to journal papers while others are still more tentative, as they are based on conference papers and presentations.

This report offers the 'Finnish picture' of modern, efficient, equal, free, heavily structured and rather rigid catering system, in need of more advanced visions for sustainability and negotiations about their implementation. Here sustainability strategies based on increased communication and co-operation between the stakeholders - caterers, their suppliers, teachers, young people, administrators and researchers - could lead into contextually agreed usage of local, organic, seasonal and vegetarian food in line with official recommendations, while making use of the environmental research and commitment as well as innovativeness of the stakeholders. The author wants to thank the Finnish Ministry of Agriculture and Forestry for funding and support during the project, the Finnish participants and their organizations for their crucial efforts and interest in research as well as all the members of iPOPY team for this joint adventure, called research, into the world of every-day life and eating at schools.

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1. Public catering in Finland

1.1 Rise of public catering from the late 19th to 20th century

The public catering in Finland has its roots in the 19th century traditions of the autonomous grand duchy of Finland, at the time a part of the Russian empire. The decree from 1868 ordered the entrepreneur in a paternal way to see to it that "the servants, particularly the under-aged, depending on his house and food, are kept to honouring God, decency and good manners, and that they have a healthy dwelling, and enough and suitable nutrition...". By the advancing industrialisation during the 19th century the labour and the workers moved into factory halls and the close connection between the masters and servants broke down. Because the workers were far away from their homes, the factory patrons became responsible for organising food service for their workers, some of whom were children. At the end of 19th century the time for rest and eating during working day was strictly regulated, and proper feeding was seen as prerequisite for hard-working labourers. Their simple meals were made of staples such as hulled grain cooked in milk to porridge and catered on commercial basis. Initially under supervision of factory patrons, the profession of catering manager was gradually established. The catering of the time met also problems; the labourers were not willing to pay for proper meals but wanted to eat "only delicacies such as pancakes and raisin soup". At those times, many factory catering businesses were closed down due to missing customers. Catering at the site became a regular practice later by the time Finland declared independence from Russia in 1917 and intensive industrial and infrastructure developments continued on distant sites. (Tarasti, 1988).

In the late 19th century several schools for home economics were established in Finland. These schools educated women in vocational skills such as cooking (catering), and resulted from societal visions and efforts for improving women's and families' conditions by women's organizations and their leaders. These schools were often disparaged but the response was poignant, as illustrated by speech given by Elisabeth Stenius, a founder of one such school: "They comment our plan by calling it just a cooking school. Children, they say, have been once nursed in great numbers without any education. Indeed, they have been nursed, but they have also been killed in great numbers without education" (Kuopion talouskoulu, 2010, translation by the author).

By the 1930' there were vocationally educated catering managers, paid by the catering businesses, who served warm meals for labourers. After the Second World War, during the "rebuilding era" the workers needed proper food when constructing bridges, roads, rails and other public infrastructure. A new catering organisation was established through negotiations with particular ministries, called "Construction site services", which additionally extended to cater warm meals for public office workers for payment. In the beginning the activities were profitable, but by the increase of small construction projects the activities became increasingly unprofitable and the company went bankrupt. A new company was established through painful funding negotiations with the ministries; National Nutrition Centre was created in Finland in 1947. (Tarasti, 1988).

The National Nutrition Centre's activities had from the beginning a strong social label as workers' welfare services. The catering activities were initially run without profit, and the main idea was to increase the quality of meals. By the end of 1960's the office-based administrative work in business and governmental organizations expanded in modern society and the nutrition needs of staff in large office quarters were addressed by increasingly modern catering. The service management identified customers' needs and stated that the business was "to look first after the users' benefits". In the 1960', the activities were to be more profitable, create contacts with customers and clarify the basics of public catering. In the beginning of the 1970's the nutrition science offered basis for the new developments. Furthermore, regulations were developed to secure the accessibility to catering sites by eaters. Regulations determined the timing of the meals as well as the minimum number of eaters (at least 50) for establishing a new satellite unit. The state covered costs of the kitchen infrastructure and equipment. The local catering unit was responsible for the dishes, ingredients and labour. The state also subsidized the meal prices by circa 30%. The basic principles of cost recovery, efficiency, healthy nutrition and securing the customers the possibility to interact with service providers were based in laws and decrees since 1976. (Tarasti 1988).

Some examples of the regulated activities within the sphere of public catering give an idea of its top-down developments. In 1947, while the Ministry of Construction acquired "Construction site services", the Finnish parliament gave a decree for "National Nutrition Centre"; the business expanded and in 1953, catering sites were 223 and personnel 280. Furthermore, in 1953 International Labour Organization (ILO) recommended work place meals and in 1968 common Nordic nutrition recommendations were issued. After the first office for nutrition therapist was established in 1971, the meal services were extended to universities in 1974. Ministry of Finance published in 1977 guidelines for work place meals in state institutions and for customers' catering boards. In 1983 the law for vocational education and its social benefits included free meal service. In 1986 the catering sites were 328 and personnel 1694, and catered meals were offered to about 90% of state workers. Educational institutes were not specifically mentioned in the responsibilities of National Nutrition Centre, which catered, however, meals in Finland for more than 30 schools in 1975. The Finnish Board of Medication issued recommendations for work place meals, emphasising the importance of catering proper and affordable meals in support for public health. (Tarasti, 1988).

In 1986 the National Nutrition Centre was reorganised in three main functions: administration, planning and development as well as business development. Each individual catering unit was designed by planners to conform with good equipment, occupational safety, efficiency, hygiene and interior decoration in lunch and dinner halls. The catering sites also developed co-operation with users, as catering boards were created. In addition to basic Finnish food culture, the thematic meals were started in the 1980's; the applications included Mediterranean, traditional Finnish, Indian, American, Russian or other cuisines, and also particular ingredients and harvest menus were standard. (Tarasti, 1988).

The narrative of National Nutrition Centre in Finland (today Fazer-Amica, a catering division of a food corporation) is a story of negotiated, centrally organised economical meal services relying heavily on nutrition recommendations, modern catering methods and centralized management. The organization and its professional staff benefitted the daily well-being of (small-salary) people working and studying throughout Finland in state office buildings, construction sites and educational institutes. (Tarasti, 1988).

1.2 Development of public catering on the educational sector

Parallel with public catering industry, school catering developed under the societal conditions and socio-political currents of the period. Educational system was slowly developing through heated societal debates in the middle of 19th century from short-term literacy education organised by the church into state organised basic education. The educational aims reflected to some extent competing pedagogical emphases such as schooling as a human right of all children, construction of the nation and state by educated citizens through their higher or lower societal positions and philanthropic concern for education as support for poor people. Basically, the dispute concerned education as a human right or a civil obligation, and oscillated between concepts such as freedom, equality and the 'common good'. In 1866 the state took an active role in promoting education as the senate passed a decree of basic education enabling secular schools to be established. (Aho, 2003).

However, as this education was not compulsory the schools were scattered and established on eventual individual educational interests and particularly local economic possibilities (Aho, 2003). Moreover, in the countryside children were needed as labour force and still in 1890, probably 80% of children from 9 to 12 years of age were not educated at school but only learned from their parents and literacy courses organised by the church (Aho, 2003). In these learning occasions, held at farms for groups of children, the respective farmhouse was to offer food for them; competition of quality and volume of food was occasionally heavy enough to deserve a reprimand (Lintukangas et al., 2007). In some schools, meals were served for poor children by philanthropists active in school kitchens, while well-off pupils were to bring their own food. (Lintukangas et al., 2007). In 1896 school meals were discussed for the first time in a meeting concerning basic education schools, and in 1905 a school catering association was established by a private person, Mrs. Augusta af Heurlin. In the academic year 1905-1906 there were already 11 school catering units (Lintukangas et al., 2007). In 1908, the state was approached for the first time for funding school

catering, and in 1913 it provided the first batch of funding for this purpose. In 1915 about 17 000 children were eating a meal at school daily (Lintukangas et al., 2007).

After more than 50 years of lengthy and extensive, at times even heated political disputes, the generic compulsory education was established in 1921 by the parliament of Finland, to benefit the country with the newly won independence. The compulsory education decree also included food and clothing support for poor children. While right-wing politics was against free school meal for children of limited means, the 'centre' politics promoted it and after lengthy political disputes the law of 1921 concerning basic education costs ordered that state pay two thirds of nutrition costs for poor children (Ahonen, 2003; Lintukangas et al., 2007). In 1929 general Mannerheim's children's protection association published "The proposal for meal order in basic schools" suggesting that pupils' health demands that in each primary school there must be a catering unit. In 1930's the plans for new school buildings included catering facilities and in 1932 nearly 30% of schools had a catering unit. A research report by Finnish National Board of Education in 1930 stated that only 40% of pupils were in full health. Such facts supported the development of catering facilities in schools (Lintukangas et al., 2007).

In 1943 the basic education law stated for the first time that municipalities shall serve pupils a free meal during full working days, and that the time period for implementation is five years. The year 1948 is recognized as the official date for establishment of free public school meals in Finland. Furthermore, by the law of 1943 pupils were made responsible for contributing to growing and collecting a reasonable amount of food, outside their school work, to be used by school catering (Lintukangas et al. 2007). The basic education laws passed from the 1950' to 1990' prescribed in more or less detailed ways about sufficient meals on every school day, and teacher's supervisory and participatory duties regarding school meals. In general, the sufficiency of the meal was defined as as one third of daily nutritional needs. Furthermore, the duration of the meal was to be at the minimum 30 minutes and its timing needed to align with meal times at home. In the 1970', National Board of Education was nominated as the authority responsible for issuing guidelines for school meals. In 1977 all municipalities had established a restructured basic education, and several municipalities served also general upper secondary education students a free, warm meal. Finally, the decree of upper secondary education (499/1983) included students' rights for free school meals, aligning with the principles applied in basic education. The decrees also emphasised rector's and teachers' supervisory role over school catering unit and school meals. (Lintukangas et al., 2007). The long history of school meals in Finland testifies about incremental development under economically restrictive conditions towards free, balanced and sufficient school meal for all young people from the age of 7 to 19 across basic and upper secondary - both general and vocational - education (Appendix 2). The development discloses the often tensioned rise of welfare state services reflecting the political power relations and educational philosophies balancing the mutual rights and responsibilities between the individual and the state.

1.3 Regulated practice of school catering of today

The aim of current educational laws of 1998 for basic, general upper secondary and vocational education is to ensure equal access to education; to this aim, pre-primary and basic education are provided free of charge for all young people in the age from 6 to 15 (16). This education includes teaching, teaching materials, school transport and finally school meals as part of pupil welfare services (Manninen, 2009). In general upper secondary and vocational education, school meals are served for students in the age from 15 (16) to 18 (19). Educational laws for basic and upper secondary education state the right for free meal:

"The pupil who participates in instruction must be served every working day an appropriately organised and supervised, well-balanced free meal" (Law of Basic Education 628/1998, §31), (Lintukangas et al., 2007)

"Full-time students have the right to have a free meal on those work days, during which the curriculum supposes students' presence in the place of instruction offered by the organizer of the education. A decree regulates full-time studies" (Law of general upper secondary education 629/1998, §28). (Lintukangas et al., 2007)

“Full-time students have the right to have a free meal on those work days, during which the curriculum supposes students’ presence in the place of instruction offered by the organizer of the education. A decree regulates full-time studies” (Law of vocational education, 630/1998, §37). (Lintukangas et al., 2007).

The municipalities are obliged to draw up a plan for pupil welfare, as part of their particular application of National Core Curriculum (Opetushallitus, 2004). The pupil welfare plan includes the key principles for organising school meals and sets out the objectives for health and nutritional education as well as teaching good manners (Manninen, 2009). The national guidelines of school meals extend to daily social engagement in peaceful and aesthetically pleasing environment (Lintukangas et al., 2007; Manninen, 2009) while the school meal is considered as part of education and pedagogical tool for teaching good nutrition, eating habits, increased consumption of vegetables, fruits and berries, wholemeal bread and low or non fat milk (Manninen, 2009). Snacks should be offered if lessons continue for more than three hours after school lunch, and the school should have a plan to organize this support in alignment with lunch menu (Valtion ravitsemusneuvottelukunta, 2008). However, the snacks are not served free but need to be paid by the pupils. Furthermore, it is recommended that all schools would host a school meal board, with rector, teachers of home economics and health education, and representatives of other teachers, caterers, pupils and students as well as their parents (Valtion ravitsemusneuvottelukunta, 2008). Catering staff should have the possibility for further education to secure the quality of the service (Valtion ravitsemusneuvottelukunta, 2008).

On the municipal level, public catering extends beyond educational institutes such as day-care centres, basic and upper secondary schools (both general and vocational) and universities of applied sciences to sites such as hospitals, elderly homes, children’s homes and office or construction sites. As a result, public catering is often organized by intertwining school catering with catering for other sites through central and satellite kitchens (Risku-Norja et al., 2010), preparing meals from some hundreds to thousands and tens of thousands (Mikkola, 2009a).

In 2008, in Finland there were altogether nearly 22 000 catering units, of which more than 9 000 public ones, including both central and satellite kitchens (ACNielsen, 2008). In basic, general upper secondary and vocational education there were more than 3 800 public catering units (ACNielsen, 2008), dispersed within 342 municipalities (Appendix 1). The number of central and satellite kitchens has continuously decreased at the pace of 1-4 % per year as municipalities centralise their service offer and rationalise catering operations into bigger units than previously (ACNielsen, 2008).

The municipalities responsible for the school meals may organise the service through various administrative sectors as their own service production, whereby caterers are civil servants. Municipalities may also outsource this municipal service to a commercial caterer; the latter mode of organizing school meals is increasing but still remains rather limited in Finland. In large urban municipalities new municipal commercial catering enterprises are established on the basis of the old municipal catering organizations; the aim is to increase competitiveness of municipal catering by increasing efficiency and clarity of organization, and to emphasise the service identity of caterers as well as to save costs of public catering. The number of municipal commercial catering enterprises increases continuously and the operation by customer-producer model apparently makes it more transparent to allocate and control expenses. However, independently of the mode of organizing the catering, municipalities are in any case responsible for it (Lintukangas et al., 2007).

In alignment with public procurement directive, the municipalities procure the food commodities for public catering by tender calls based on explicated quality and volume criteria. The contracts may be awarded on the basis of most advantageous tender instead of the cheapest one, which allows a wide variety of quality features to be made use of, such as freshness, low-fat content or organic, applied on a number of food items. However, in practice low costs are important as public services carry heavy cost discipline in general. Recently, there have been extensive discussions in newspapers about the modest quality of school meals, and the caterers themselves feel that they work wonders with the funding at their use. The medium price of Finnish school meal was 2,08 € in 2003 (Urho & Hasunen, 2004) and 2,45 € in 2007 according to Opetushallitus. This price includes both food cost and other costs such as salaries, cleaning, electricity and premises. These costs vary between small and large organizations as well as rural and urban areas, which makes price

comparisons rather difficult. However, the quality and price of school meals as well as economic difficulties of municipalities have been an issue for quite some time (Urho & Hasunen, 2004), and the economic recession of 2009-2010 seems to make no difference. Furthermore, even though school meals are free, the breakfast and afternoon snacks are increasingly served at schools on commercial basis either by caterers or through vending machines. Municipal commercial catering enterprises may also aim at improving their economy by such additional activities.

However, the position of public catering on the market is rather strong and particularly its major role in maintaining nutritional standards, applied through Finnish food culture, is considerable. As the school lunch aims to maintain and improve pupils' health and well-being while supporting their efforts during school days, the composition of the lunch is regulated by national nutrition recommendations for schools, issued by Valtion ravitsemusneuvottelukunta (National Nutrition Council) (Lintukangas et al., 2007; Manninen, 2009; Valtion ravitsemusneuvottelukunta, 2008).

1.4 The plate model for nutrition and food culture

The national nutrition recommendations have addressed public catering in general, and the latest foundation of Finnish nutrition recommendations - nutrition and exercise into balance (Valtion ravitsemusneuvottelukunta, 2005) has recently been specified for school meals (Valtion ravitsemusneuvottelukunta, 2008). The current school meal recommendation offers particular guidelines for implementation of the educational laws of 1998 emphasizing 'balanced, purposeful and supervised' meals for pupils, and aims at health, nutrition and manner education. However, actual implementation rests on municipalities and schools, whereby nutrition recommendations offer guidelines for menu planning. Most municipalities practice a cycling menu for five to six weeks over the whole academic year, with exceptions for festive occasions such as Christmas, Easter time, Independence Day, May Day and the last school days and daytrips. Many catering organizations practice also thematic catering with Mediterranean, American, Mexican, Oriental and organic or vegetarian menus.

The school meal recommendation states that a school meal should cover about one third of the daily nutrition demand of a pupil. Energy nutrients such as fat including saturated fat should contain at the maximum 30 and 10%, respectively, of the meals' energy content, and proteins should provide 15 % and carbohydrates 55 % of the meals' energy content. Furthermore, the reference energy content is prescribed for four different age groups of pupils, starting from pre-primary and ending with upper secondary level of education (Valtion ravitsemusneuvottelukunta, 2008).

The balanced meal is prescribed to consist of warm main dish, vegetables, milk or sour milk, bread and spread. If the main course should be porridge or soup, it is amended with cold cuts and fruits as well as berries or vegetables. School meals should be balanced, align with nutrition recommendations, tasty and attractive. While pupils are served optional meal choices, all of these need to be based on principles of healthy nutrition. When organizing the self-service for pupils, vegetables need to be put onto the front end of the counter. (Valtion ravitsemusneuvottelukunta, 2008).

Further, the recommendation states that school meals need to include

- a variety of vegetables, fruits and berries
- low-salt bread with plentiful of fibres
- soft vegetable fat spread and vegetable oil based salad dressing
- potato, rice or pasta
- low-fat meat or cold cuts
- fish once or twice a week
- non-fat or low-fat milk products
- water as thirst-quencher

Main dishes are recommended to be served as two options, one of which may represent the vegetarian meal replacing meat, fish or eggs for legumes or the like. The health or religion based diets need to be accounted for.

As the school meal aims to embody guidelines for healthy nutrition, the "model meal" should be displayed for pupils in the dining hall before pupils compile their own meal at the self-service

counter (Valtion ravitsemusneuvottelukunta, 2008). In practise, model meals are displayed from once to three times a week in the dining hall (Lintukangas et al., 2007). The model meal is presented according to the so called "Plate model", including all the parts of the meal. Here half of the plate is covered by vegetables, one fourth by potato, pasta or rice and one fourth by meat, fish, eggs or beans (or corresponding ingredient). The meal also includes one or two slices of bread with spread, a glass of milk or sour milk and possibly a dessert. The relative shares of different parts of the meal stay the same for pupils of different age eating portions of different sizes (Valtion ravitsemusneuvottelukunta, 2008).

The recommendation states that the award criteria for food for public catering must include nutrition and taste, and these must have no less weight than economic criteria. Furthermore, the recommendations suggest it is advisable to use nutrition density of particular vitamins, minerals and fibre as technical award criteria. Additionally, when developing the service quality, feedback from pupils and teachers needs to be organized and made use of by the school meal board (Valtion ravitsemusneuvottelukunta, 2008).

2. Finnish educational system, school catering and orientation for sustainability

2.1 Educational system

In 2007, there were 560 000 young people in compulsory education, and 90% of the population aged 17 were in education. The official languages are Finnish and Swedish, and the public authorities are obligated to take care of the educational needs of the Finnish- and Swedish-speaking population according to the same criteria. The majority of the students attend public funded schools and approximately 8% attend private grant-aided institutions. Most primary and upper secondary level institutions are maintained by municipalities or federations of municipalities. The responsibility for educational funding is divided between the State and the local authorities. Of the funding of primary and secondary education, the state subsidy averages 57% of the calculatory costs, while the municipal contributions amount to an average of 43% (Erydice, 2010).

From birth to the age of 6, children can attend day care centres (kindergartens) or smaller family day care groups in private homes, all of which charge reasonable fees depending on parental income. At the age of 6, children can attend pre-school classes in school, which are free of charge. All 6-year-olds will have the right to free pre-primary education. About 90% of 6-year-olds participate in pre-primary teaching either in day care centres (80%) or in schools (about 20%). Apart from the publicly provided services, the church and some voluntary organisations provide various teaching services (Erydice, 2010).

The new Basic Education Act that came into force on 1 January 1999 does not separate the *peruskoulu* (comprehensive school) into a lower and upper stage. It only states that basic education lasts nine years and that, during the first six, instruction is usually given by the class teacher and, in the last three, by the subject teacher (see class size/student grouping). Children must begin compulsory education in the year they reach 7. The school year comprises of 190 days between mid-August and the beginning of June. Schools open five days a week, and the number of lessons per week varies from 19 to 30 (Erydice, 2010).

The national core curriculum for basic education is drawn up by the National Board of Education (Opetushallitus, 2004) and includes goals and assessment criteria. Within this framework, schools and municipalities then form their own curricular regulations that are sensitive to the local context. Teachers choose their own teaching methods and have freedom to select their own teaching materials. Compulsory core subjects in basic education are the mother tongue (i.e. Finnish or Swedish) and literature, the other national language, foreign languages, environmental studies, civics, religion or ethics, history, social studies, mathematics, physics, chemistry, biology, geography, physical education, music, visual arts, craft, home economics and pupil counselling (Erydice, 2010).

Students who have successfully completed compulsory education are eligible for general and vocational upper secondary education. The application procedure takes place mainly through the national joint application system. Students are entitled to apply nationally to any institution offering upper secondary education. The student selection to general upper secondary schools is mainly based on previous study record, whereas in vocational schools the selection criteria also include work experience and other comparable factors and possibly entrance and aptitude tests. Although tuition is free, contribution towards teaching material may be required (Erydice, 2010).

The National Board of Education decides on the general objectives and core contents for both general (Opetushallitus, 2003) and vocational upper secondary education. Based on the national core curriculum, each provider of education prepares the local curriculum. The compulsory subjects in general upper secondary school include mother tongue and literature, the other national

language, foreign languages, studies in mathematics and natural sciences, studies in the humanities and social sciences, religion or ethics, physical and health education, as well as arts and practical subjects. In addition, the syllabus includes specialisation and applied courses, the provisions of which are decided by schools. (Eyrydice, 2010). In addition school subjects in basic and upper secondary education, there are cross-curricular themes which integrate the education according to current and future societal needs; one of these themes is sustainable development in both educational levels (Opetushallitus, 2003, 2004; Roos & Mikkola, 2010a; Uitto, 2009). The educational system in Finland is presented in Appendix 2 including educational levels after upper secondary education.

2.2 Environmental and sustainability management schemes in schools

The environmental studies and natural sciences as well as humanities offer education from disciplinary perspective. Furthermore, these disciplines carry out educational integration according to cross-curricular themes, one of which is education for sustainable development (ESD), including today the previously common environmental education (EE). Often these educational orientations are used interchangeably by teachers and young people. Some schools choose a strong ESD orientation by implementing practical measures in alignment with their sustainability quest, and these measures may regard any one or all of the dimensions of sustainable development. Typically, there is interest in schools to environmental issues, whereby topics such as use and saving of energy and water as well as prevention of waste creation, recycling and source separation become developmental foci. In the case of socio-cultural dimension, topics such as food culture, architecture, land use planning or education in developing countries may be paid particular efforts by teachers and young people.

Particular environmental or sustainability management schemes have been established by external educational or other societal bodies, signalling increased awareness of sustainability and respective environmental choices and activities. These schemes offer certification for schools on commercial or cost price basis according to a range of criteria set up by the certifier. Additionally, there are also certification schemes for restaurants and catering, which may be used by public catering and school catering as well. The multi-criteria schemes often include the use of organic, local, seasonal and vegetable food by catering while there is also a scheme dedicated to the use of organic food only by the restaurant or catering unit.

Green Flag

The Green Flag management scheme for environment and sustainable development is governed by the Finnish Association for Environmental Education (<www.ymparistokasvatus.fi/pages/349.php>) as part of an international eco-school program, which is active in 47 countries around the world, and involves more than 32 000 schools according to Wikipedia. The program pays particular attention to implementation of betterments for the environment and sustainable development within school premises as well as participation of pupils in “green pupil boards”. The Green Flag is awarded to a school which is able to report about environmental activities implemented together with pupils according to a set of multiple criteria and a particular focal area of interest during one school year. The schools are able to select their focal areas, one of which is organic food. After three successive and successful years of developing environmental education, the school is awarded the Green Flag for the years to come. There are about 200 certified Green Flag schools in Finland, only some of which include organic food in their environmental activities.

OKKA-foundation

The Finnish Foundation for Educational and Pedagogic Development - OKKA-Foundation (Opetus-, kasvatus- ja koulutusalojen säätiö - OKKA-säätiö, <www.koulujaymparisto.fi/>) has developed criteria for certification of educational institutes for sustainable development. This multicriteria scheme offers rather extensive options for schools to align with, as it includes ecological-economic and socio-cultural themes for both general and vocational education. There are altogether more than 10 themes, three of which deal with responsible choices, nutrition and health and well-being of personnel and students. Recently the certification criteria were renewed; the criteria also include use of organic food in school catering. The OKKA Foundation has certified dozens of schools.

The environmental diploma of the church

Developed by the evangelical Lutheran church of Finland according to generic environmental management schemes, the environmental diploma of the evangelical-lutheran church (Kirkkohallitus, 2005) is awarded to congregations which are able to match the multiple sustainability criteria, of which each congregation may choose the most appropriate ones for its own use (<<http://sakasti.evl.fi/sakasti.nsf/sp?open&cid=Content2C9E37>>). These extensive criteria include themes such as environmental education, waste management, cleaning, maintenance of premises, catering, office work, churchyards, forests and traffic, which yield 'environmental points' to the congregation aiming at certification. Again, one of the criteria is to use local and organic food in meal service organized by the congregation. Furthermore, there is a group of more than 30 retreat and camp sites of various congregations, several of which are committed to the use of local and organic food in meal service (<<http://www.kirkonpaikat.net/index.php?kieli=3>>).

The Nordic Eco-label

This labelling scheme operates within the Nordic countries and pays attention to environmental betterment on a number of topics (Nordic Eco-labelling of Restaurants, 2009). The criteria include the use of regional, organic and fairly traded food as well as energy efficiency, eco-labelled chemicals and environmentally friendly transports. Furthermore, the labelling includes the vegetarian meal in the menu, prohibition of particular unsustainable foodstuffs and information about the use of GMO based ingredients. At the moment the labelling scheme seems to be gaining increased attraction (<http://www.ymparistomerkki.fi/kriteeri_91>) also among educational institutes.

Portaat luomuun (The Step-by-Step-towards-Organic)

The labelling scheme "Portaat luomuun", translated here as "Step-by-Step-towards-Organic" (<<http://www.ekocentria.fi/index.asp>>), is a free scheme for professional kitchens and signals the use of organic food in terms of number of organic ingredients and the frequency of their use. The first step informs about the use of at least two organic ingredients daily, and the second step refers to the use of at least four organic ingredients daily together with four other organic ingredients in regular use. The third step means ample daily use of organic food in cooking or as part of meals. Furthermore, the professional kitchen on the third step aims to serve organic meals, prepared of organic ingredients. The customers are informed about the particular organic ingredients used daily by the kitchen according to the logic of in-house control. There are currently about 300 catering units enrolled in this promotional scheme, and a large part of these units is connected with education.

The National Board of Education illustrates on its homepages the educational activities for environment and sustainable development by links to case schools (EDU.fi - opettajan verkkopalvelu, 2010). Among the 31 case schools, both basic and general upper secondary, one third of schools reported about active engagement with food related developments. These included efforts to decrease food waste, call for higher appreciation for particular dishes and separate waste management for food waste on the premises. Only a few schools reported of their focus on sustainable food system by the use of organic food and growing food in school garden for school catering.

2.3 Use of organic and local food in school catering

Public caterers working on the educational sector often see that the use of local and organic food is connected with sustainable development or the improvement of the state of the environment. However, as the concept of local food is fuzzy there is no particular record about its use in public catering other than caterers' own evaluations. Furthermore, caterers tend to think that domestic and local food represent rather similar values and qualities. Domestic food in Finland is very much appreciated and trusted (Isoniemi et al., 2006; Mikkola, 2009a; Kjærnes et al., 2007; Piironen et al., 2004; Risku-Norja et al., 2010).

Organic food, although a labelled food commodity, has not generally been recorded either in terms of volume, weight or price across the public catering organizations in Finland, other than those enrolled in a scheme for environmental or sustainable development. However, organic food is also used by catering organizations to some extent without signalling its use by particular schemes. Furthermore, some of local food is also organic, and may thus be included in this category. In itself, this situation implies that organic food has not such a particular position in the catering industry in all occasions; obviously it is perceived as an issue by those caterers who proceed to enrol in a particular labelling scheme or who develop environmental, sustainable or otherwise convictional educational institutes in strategic co-operation with their stakeholders. Not even all the environmental or sustainability certifications entail the information about the extent of use of organic food, because these organizations may be certified on other grounds than the use of organic food.

Basically, the use of organic food takes place in several different ways in public catering, according to the meaning given to organic food within the organization and by the caterer.

1. Organic food is used occasionally as a trial or by coincidence by caterers, without particular organizational framing
2. Organic food is used rather regularly without particular emphasis on its organic quality, often stress is laid on local food
3. Organic food is studied as an environmentally sustainable food commodity and in case of increased positive understanding about organic quality its use would expand from the current level
4. Organic food is used as one part of annual food theme cycle, for instance during an 'organic day' or an 'organic week'
5. Organic food is used systematically according to a municipal strategy
6. Organic food is used in a dedicated environment such as environmental day-care centre, in devoted environments such as congregations or Steiner schools or the like, and possibly signalled by a scheme for environment, sustainable development or organic food
7. Organic food is used as part of environmental or sustainability scheme
8. Organic food is planned to be used increasingly according to a scheme for environment, sustainable development or organic food

Risku-Norja et al. (2010) surveyed the use of domestic, local and organic food in Finland in public catering in the autumn 2008. They approached municipal catering managers in all Finnish municipalities, both unilingual and bilingual ones. The response percentage was 29 and the municipalities represented the range from remote rural areas to urban areas; the results may be seen as representative.

The proportion of domestic food used by municipalities was high - more than 75 % of total consumption of the particular food item - particularly in terms of bread, milk products and eggs in circa 90% of municipalities. In terms of domestic meat, the consumption was high in about 65 % of the municipalities (Fig. 1 A).

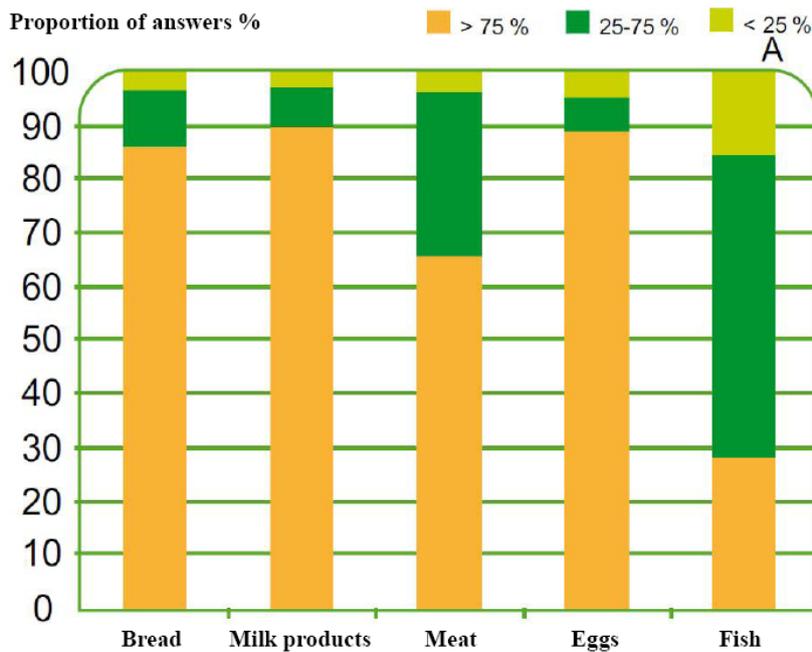


Figure 1 A. The proportion of domestic food used by municipalities [Risku-Norja et al., 2010]

The proportion of local food, specified here as provincial, used by municipalities was clearly lower than the use of domestic food. Only bread was used more than 75 % of its total consumption by 50 % of municipalities, while milk, meat, eggs and fish was used to similar extent only by 8-15 % of municipalities (Fig. 1 B).

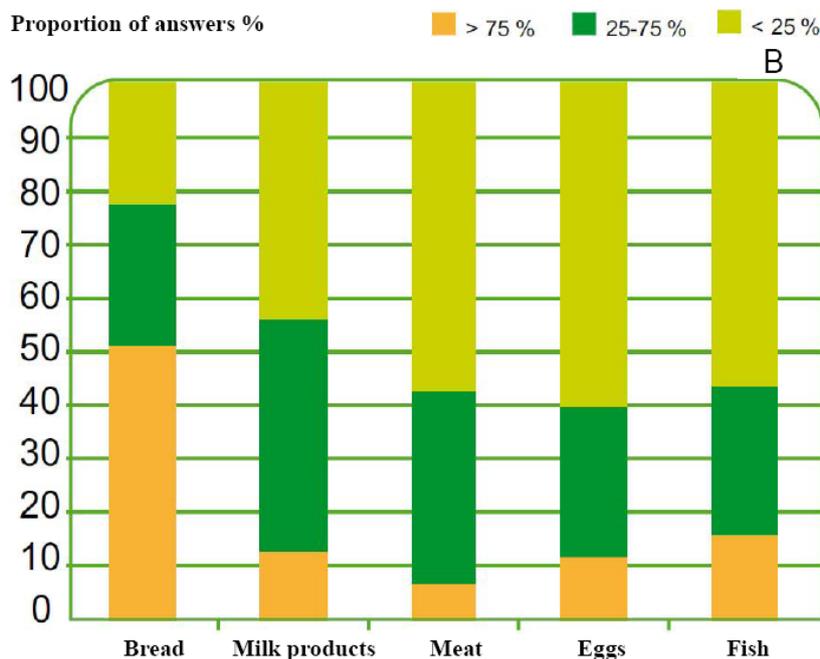


Figure 1 B. The proportion of provincial food used by municipalities [Risku-Norja et al., 2010]

In general, the number of municipalities using organic food to large extent was rather low. Circa 2-4 % of municipalities were 'heavy' users of organic ingredients such as bread, milk products and meat, whereas the share was somewhat higher for eggs (Fig. 1C). Organic potatoes and berries were used to similar extent by 5-7 % of municipalities (Risku-Norja et al., 2010). While domestic and local products have a strong position in public catering, organic products have not yet taken well root in this sector (Risku-Norja et al., 2010).

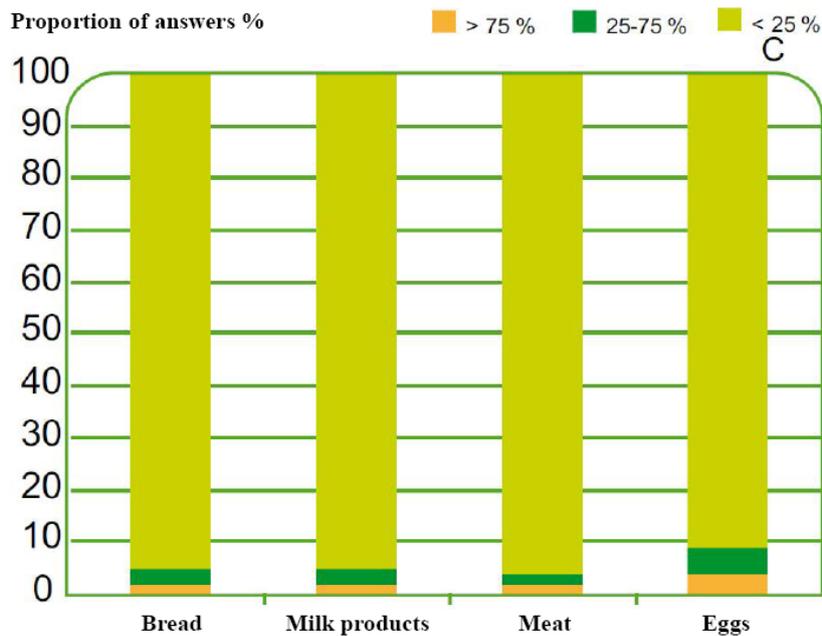


Figure 1 C. The proportion of organic food used by municipalities [Risku-Norja et al., 2010]

Another survey (Isoniemi et al., 2006) reports rather similar shares of the use of local food (Fig 2 A). Heavy users of potatoes and root vegetables were many - nearly 60 % of respondents. Local bread was used to nearly similar extent by more than 40 % of municipalities. Heavy use of local vegetables, berries, milk and meat products was reported by clearly lesser extent, 9-17 % of the municipalities.

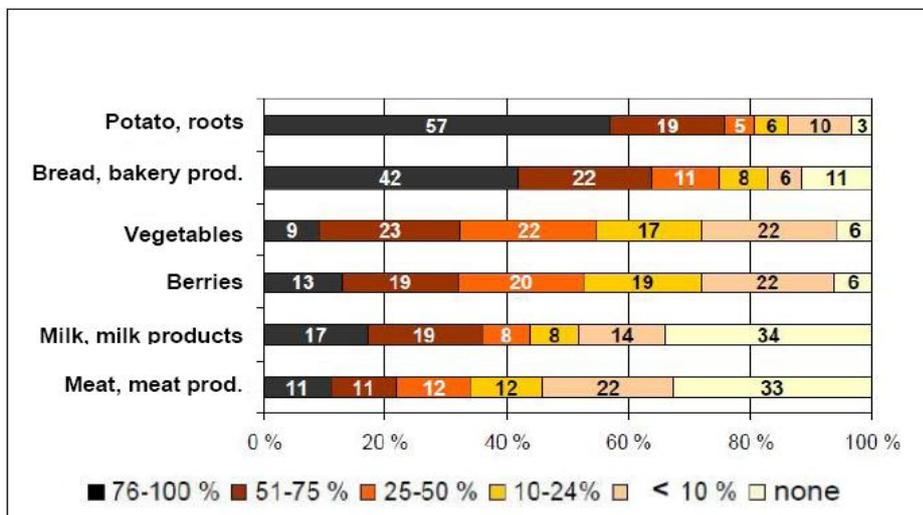


Figure 2 A. The proportion of local food used by municipalities. [Isoniemi et al., 2006]

Again, the municipal use of organic food was rather scarce according to this survey (Isoniemi et al., 2006) and comes very close to the results of Risku-Norja et al. (2010). Heavy users (more than 75 % of the total consumption of a particular food is organic) comprised 4 % of the municipalities for berries, 8 % for potatoes and root vegetables, 0 % for vegetables, 3 % for bread and bakery products, 1 % for meat and meat products and 3 % for milk and milk products (Fig. 2 B). The medium heavy users - between 50 and 75 % organic of the total use - are reported to represent 3-12 % of municipalities (Fig. 2 B).

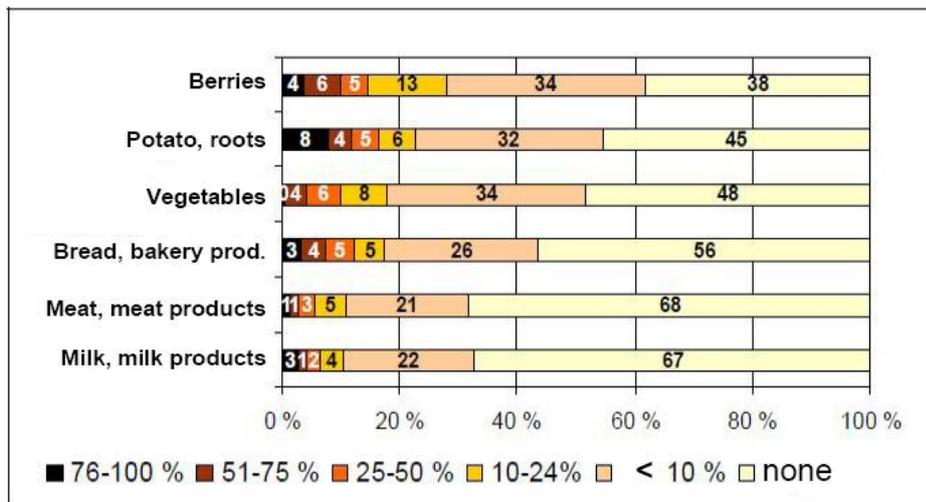


Figure 2 B. The proportion of organic food used by municipalities. [Isoniemi et al., 2006]

There were 3814 basic and upper secondary education school catering units and 3018 day-care centre catering units in Finland (ACNielsen, 2008). Thus, if 4 % of municipalities would use organic eggs in catering to large extent (more than 75 % of their egg consumption) in basic and upper secondary education schools, this would amount to 153 schools using mainly organic eggs in catering. However, since there are more schools than municipalities and schools are not evenly distributed across municipalities this estimation is not valid. Other sources such as schools' environmental schemes and organic food certification schemes, all of which are voluntary, suggest that a few hundred school catering units use organic food. Furthermore it is estimated, that about 1 500 professional kitchens out of total of 22 000 ones in Finland use organic food to some extent (Rahtola, 2010). These 1500 catering units serve customers not only in the educational sector but also in hospitals, elderly people's nursing homes, various associations and public offices. The main conclusion to be drawn from these results is that even rather low percentages of municipalities reporting of the use of organic food amounts to moderate number of schools serving particular organic foods to young people.

According to Isoniemi et al. (2006), 15 to nearly 30 % of the stakeholders of municipal catering such as municipal management, catering, food businesses and interested citizens were perceived to support strongly or rather strongly initiatives to increase the proportion of local food in public catering. In similar vein, circa 10 to nearly 20 % of the stakeholders were perceived to go for organic food in public catering (Fig 3). Local food was more supported than organic food by respondents, and there were slight difference in perceived mutual interest by caterers and municipal managers. However, there seems to be sincere opinions about the importance of the categories of local and organic food in public catering.

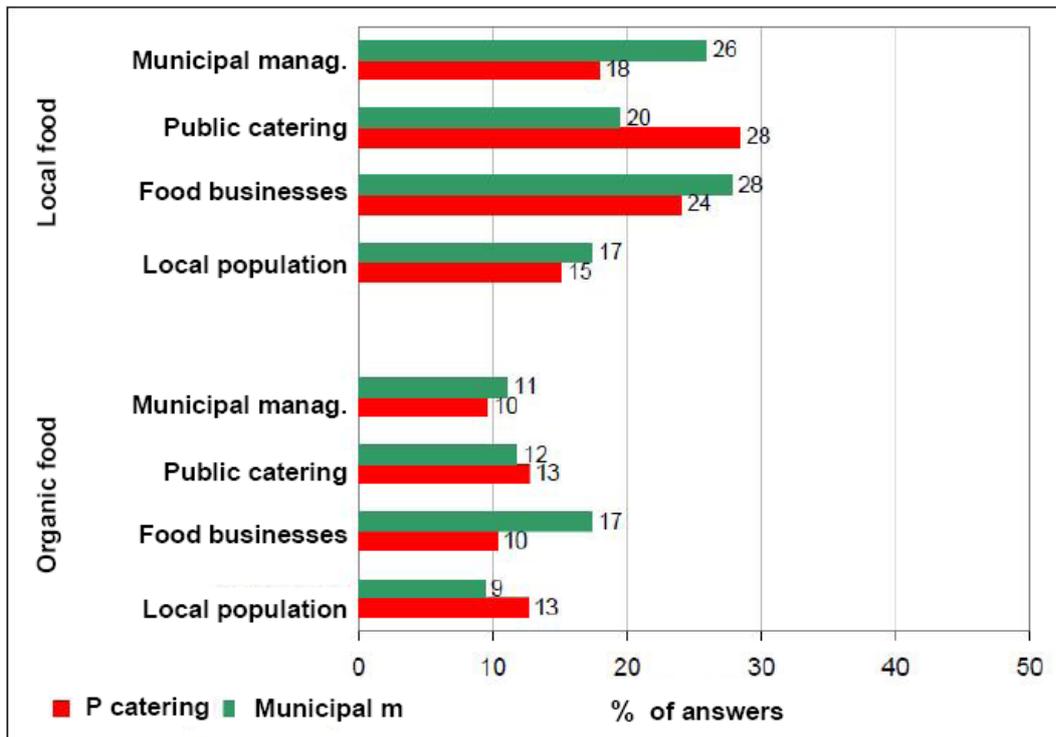


Figure 3. The perceived interest by municipal managers and public catering representatives about stakeholder groups' support for the use of local and organic food in public catering. [Isoniemi et al., 2006]

3. Research into public catering for sustainability in educational contexts in Finland

3.1 Aims of the research

The generic main aims of the research have been to study

- how to increase the use of organic food through strategies applied by public catering organizations serving young people
- how to increase the use of organic food through supply chain management and certification of catering for organic food
- how stakeholders such as caterers, teachers and young people perceive organic food, what are their preferences as well as how and what they learn about sustainable development and organic food
- how health and organic food are connected by young people

The research deals with school catering of four countries - Denmark, Finland, Italy and Norway - which all convey a particular socio-cultural environment for development of increased use of organic food in school environment. In Finland, research about the use of organic food by public catering at schools and other sites where young people eat - such as congregation - has been framed by the concept of sustainable development and furthermore, sustainable food system. The Finnish research has targeted stakeholders of the educational system, such as caterers, teachers and pupils and students, from basic education level to upper secondary, vocational, university of applied science and university levels. The research inquires into the stakeholders' views and activities within their reach, in their organizational contexts, and seeks for comprehending the current situation in ways enabling the future increase in the use of organic food as part of school meals. The research looks for actors' experiences of the internal dynamics towards more sustainable food system, of which the use of organic food is a part (Mikkola, 2010).

3.2 Materials and methods

The most important research materials were interviews of individual caterers and teachers as well as focus groups of pupils (age 8-15), students (age 16-25) and food system experts. Furthermore, non-participatory observation at school meals, teachers' meeting rooms, catering sites and school yards as well as self-ethnography of informal discussions, e-mails and SMS messages with caterers and teachers (Alvesson, 2003) were used to support interpretation of the interview and focus group data.

Furthermore, a test use of organic milk in public catering was organized in co-operation with caterers, rectors, teachers and dairy company marketers in seven co-operation organizations. The test use also included organic bread in some organizations. Three posters about the quality of these products were produced for young people. The two posters in Finnish addressed pupils in basic education and were put on walls in respective dining halls. The poster in English was produced together with dairy company experts of organic milk production and marketing to answer questions about quality of organic milk presented by caterers (Appendix 3). This poster in English also addressed students of upper secondary school, vocational institute, university of applied sciences and university students and was set up in respective dining halls. This poster was the central embodiment of the dialogue between the researcher(s) and the caterers, crystallising the strategy of 'intermediate mediating strategies' for the use of organic milk in catering. This poster was also visible during the iPOPY seminar 'Like what you get? Is it good for you?' in Helsinki 21-22 January 2009 in the main building of University of Helsinki (Mikkola et al., 2009).

The project researcher organised and conducted individual interviews with caterers (22), rectors (5) and teachers (14) and focus groups of pupils and students (16). The interview guide dealt with conceptualisation and practice of sustainable development and organic food. Additionally, expert focus groups (3) were organised and facilitated with another researcher to explore how sustainable food choices would take shape when greenhouse gas emission information pertaining to dairy and vegetable milks, including organic milk, would be available and considered. The interviews and focus group discussions were tape recorded and transcribed verbatim by a professional.

The main research method was qualitative text analysis in order to construct more profound understanding (Kvale, 1996) about the way the stakeholders understood organic food and its role in public catering, given the frame of sustainable development which was used in common parlance, municipal strategies and the educational themes, and finally by the researcher. In the research, theoretical notions were developed in order to focus the analysis and to disclose the patterns of thinking and acting by the stakeholders. This analysis aimed to catch the internal social dynamics of actors based on their mutual differences, made visible by the conceptual lenses used.

The research dealt with caterers' perceptions, preferences and learning, specified as follows:

- caterers as a social force for sustainable food system, including the use of organic food
- the discursive relation to organic milk in the conditions of climate change and high greenhouse gas emissions by dairy production
- the response of caterers to marketing of organic food as moral communication
- dialogue about organic milk in public catering as an intermediate mediating strategy for sustainability

The research inquired into teaching about sustainability and organic food as follows:

- the content of formal education for sustainable development and organic food
- the teachers' efforts for food education for sustainability
- the transformative features of food education for sustainability

The research examined young people's perceptions and preferences about organic food as follows:

- cultural sustainability of Finnish food system in terms of change into use of organic food
- the young people's perspectives into organic food

In general, this qualitative research has been based on constructivism as a broad understanding of social reality as simultaneously 'private' and socially shared, and built upon meanings and consequent activities by the stakeholders in catering and education. This theoretical understanding is in place when the primary interest of the research is to understand the thinking and acting by the various stakeholders and to participate in the discourse of catering for sustainability with the stakeholders by suggesting developmental orientations rising from researcher's interpretations.

3.3 Research co-operation with participating organizations and stakeholders

The co-operation organizations of this qualitative research, all active in the Helsinki region, consisted of three basic education schools, one general upper secondary education school, a vocational institute, a university of applied sciences, two university campuses, a congregation, a hospital and a dairy company. They represented educationally, societally and economically important sites for institutional catering. The nine catering organizations working on these sites were all public, but one of them changed in the middle of the research period due to competitive bidding; this site was consequently catered by a commercial contract caterer. Two of the participating basic education schools had the Green Flag status and in the third school, hosting both basic education and general upper secondary education, some teachers and the caterer considered the food as a focal area to be developed. Moreover, the vocational institute and the university of applied sciences developed their environmental activities in order to be certified in the near future; the participating congregation already had managed to get certified. The university and hospital catering organizations were interested in orientating towards more ecological-economic catering.

The co-operation relations with part of these stakeholder organizations were already established in previous projects, which enhanced the feasibility of communication; the researcher was perceived

as an accepted and trusted actor within the organizations and by their employees. Part of the participating organizations and their personnel were enrolled to co-operate in the project and this required more both formal and informal communication efforts.

The organizing of interviews, focus groups and test use of organic milk represented really an effort by the participants due to the 'intervention' character of the research, to be implemented in the middle of rigid daily schedules in catering and school work. Research contacts always require time and focus by the participants, and when the number of their social relations is already very high, adding new persons and interests into this 'socially crowded' world was a real achievement by the rectors, teachers, caterers and young people. The interviews held at schools required that teachers arranged a substitute for themselves, young people replaced their absence in the lessons by some other school work as agreed with their teachers and all the underaged (less than 18 y) young people needed the permission to participate by their guardians. The central condition for this research-ethical approval was the unidentifiability of the young people. Teachers were very helpful in collecting these signed approvals for the researcher.

Furthermore, some educational, congregation and hospital organizations required a formal and conditioned approval by their governing bodies; the required approvals were applied for and granted while the researcher agreed to inform the respective organizations about the results of the research. Additionally, some scientific journals presented a demand for approval by an ethics committee, in this case Viikki campus board of research ethics of the University of Helsinki. As a basic condition for this research, the same research ethical procedures and accountability has been applied across all participating organizations and the persons participating in this research (Mikkola, 2010).

In Finland, as well as elsewhere in industrialised 'late modern' western countries, sustainable development and organic food have become on the one hand widely accepted as representations of societal efforts for 'goodness', while on the other, they seem to address citizens and businesses partly with fuzzy and ambiguous concepts. These ambiguities were in general perceived as topical difficulties and tensions when conducting interviews, and in understandable ways, the interviewees were not addressed by an easy task. This situation underlines the shared production of interview by the interviewees and the interviewer, as well as the enabling role played by the interviewees in this research.

4. Stakeholders' views of and activities for catering for sustainability

4.1 Caterers

4.1.1 Professional identity for sustainability within Finnish public catering

Caterers were considered to include all those professionals, who directly implemented within the catering organizations the meal production for customers. Here the caterers were the first order consumers, choice editing the meals for their customers, who as second order consumers could choose to eat or leave the food. Catering professionals such as public procurers, catering and kitchen managers as well as educational administrators were thus understood as an important social force for sustainability within their organizations. However, their activities represented the result of their organizations' (sustainability or otherwise) strategies, their implementation, prevailing catering practices and the views and activities of the caterers themselves about what constitutes catering for sustainability. In order to analyse the caterers' efforts within their organizations in terms of sustainable development - including the use of organic food - a theoretical notion of 'professional identity for sustainability' was developed to include this axis between the organization and the employee to support the analysis.

The analysis divided the caterers into procurers who are responsible for the tender calls and contracts on the one hand and managers, who are responsible for cooking of meals in mass scale and supporting the procurement by their product knowledge, on the other hand. The results depict the situation in the beginning of 21st century in catering organizations ranging from small to large and located in rural, suburban and urban areas. The research confirms that there is a professional identity for sustainability among Finnish public caterers, implemented in progressive and positive ways particularly within organizations leaning on and implementing consciously their strategy for sustainable development. However, depending on organizational conditions and personal views and activities, very different professional identities for sustainability could be discovered, some rewarding and some stressing.

Among procurers, a *balanced identity* promoted in practice the procurement of local, organic and domestic food through active negotiations with supply chains' actors, and adapted to the use of imported food. The economic gloom was not a prohibition to these developments. Furthermore, this professional identity reorganised catering and its different constituent material flows in co-operation with large public staff. The activities gained global visibility and were awarded for their thrust promoting sustainability. A *rule-abiding identity* acted for procurement of organic food, in alignment with organizational strategies, without negotiations with supply chain actors. Here the economic downturn was not a cause for giving up organic milk either; however, heavy market competition and reorganizing of deliveries of organic milk led to contracts not being realized in all instances. A *co-operation identity* aimed at innovative cost decrease through long-term contracts, whereby co-developments with supply chains' actors resulted in extensive solutions to reduce energy and packaging costs. These activities created net income flows which were shared with stakeholders.

Less positive situation prevailed by *juggling identities*, who made efforts to use local food without much support by their organizations' neither local supply chains' actors; moreover, concern for violating public procurement directives was felt stressing. *Critical identities* were highly ambiguous about 'true' environmental and socio-cultural features along the supply chains, and claimed to receive hardly any support by their organizations' ever new waves of environmental strategies or by environmental departments. Simultaneously, calling tenders and drawing contracts was 'tough

game'. Finally *delimited identities* saw organic and local food as an insignificant niche without wider impacts, while funding was needed instead in kitchen reconstruction projects.

In similar vein, catering managers expressed identities for sustainability. There were *action identities*, whereby efforts were made to buy and serve organic food even by 'taking a short-cut' by the organizational procurement. *Supportive identities* purchased organic local food as an expression of independent orientation for rural development and quality food. *Concerned identities* expressed negative evaluations about pesticide residues, transport and health effects as well as pollution, and aimed at purchasing local and organic food. *Contented identity* enjoyed organic food procured by the organization. *Contingent identity* carried a positive image about one's organic procurement while neglecting the aim when a retailer gave up this product line. *Selective identity* focused on other aspects such as waste management and energy saving, while vegetarian food was considered as a solution available for the issue of sustainable food. Tight cost control led the interpretation of development of catering towards more 'graphic' understanding and a Wal-Mart-type direction of activities.

Basically, there were considerable discrepancies and heterogeneity between professional identities for sustainability of caterers even within same organisations, as well as differences in the choice of supply chains - whether conventional or organic - and co-operative activities in terms of their supply chain management. The results point to the need of negotiating more consistent and coherent strategies for sustainability, including the use of life cycle assessment or other methods to learn from supply chains and the use of organic food in selected and feasible food items, some local, some national or imported. Public catering is not just about feeding citizens most economically but also about visions for sustainable food system, and realization of the potential of public catering as centres of sustainability of every-day life. (Mikkola, 2009a).

4.1.2 Organic milk, greenhouse gas emissions and sustainable food choices

Recently, meat and dairy products have been heavily criticized for their greenhouse gas (GHG) emissions, which are generally considerably higher than those of vegetable based food particularly in terms of agricultural production. However, meat and dairy products also incorporate important European food cultural legacy and are particularly important parts of agriculture in the north of Europe. Organic milk has been seen as a sustainable product in terms of its supply on the market, feasible price for consumers in comparison to functional food items, farmer's income and animal wellbeing. The positive aspects of organic milk and its expanding consumption may be at risk due to the negative perceptions of consumers about its GHG emissions.

The research was conducted about sustainable choices explored by three expert focus groups consisting of professionals in food sector R&D, education and information. The focus groups were presented with a sustainable choice of conventional, organic milk (dairy milks), soy and oat milk (vegetable milks) with their agricultural GHG emissions given in a diagram. The three expert focus groups discussed the question of sustainable choice in terms of these food items, and the discussions were tape-recorded and transcribed verbatim. The discourse analysis explored the relations to GHG information, primary production, food purchases and consumption as well as food culture in transition. The three discourses emerging in the analysis were present in all three focus groups.

The market discourse emphasised the consumer satisfaction by particular milk products, which could be both dairy and vegetable milks. There were market potential in both upmarket and downmarket products, and organic milk had its own niche among dedicated consumers. However, more potential in terms of profits and market share could possibly be released through genetically modified organisms and other technologies using vegetable based raw material for different kinds of functional foods. The organic milk niche could be there as one among many depending on consumers' choices.

The sustainability discourse aimed at changes in food production and consumption across the commercial and public spheres. The technology was seen as a lever for increasing the usability of

vegetable milks, and new food culture was suggested to be started both among individual consumers as well as public institutions. They were also seen as sites of education about sustainable choices, disseminating new food culture as recipes for vegetable milks to home cooking. Moreover, retail chains were expected to participate in the developments, as well as state through tax creation of some kind to support new food culture. Here organic milk was given a role as a sustainable product, to be still used to benefit animals, nutrition and regional development.

The bioregion discourse emphasised self-sufficiency in milk production and the importance of dairy industry as a nationally important field of technology development, long history and unique natural conditions, rendering dairy milk production 'The' food industry of the North. In similar ways, milk production takes place globally under different conditions and by particular animals in various countries of the world. Organic milk embodies the Nordic milk, but the main interest is to see to regional production and food culture even when producing vegetable milk from oat.

In this way current food culture may encounter concerted changes in the future, and even though dairy milk production and consumption may be challenged, organic milk seemed to elicit sustainability arguments such as animal wellbeing, regional development and traditional food culture (Mikkola & Risku-Norja, 2008, 2010).

4.1.3 Dialogue about organic milk in public catering as a strategy for sustainability

Organic milk was identified at large as a suitable food product (Risku-Norja & Mikkola, 2009) to be served by public catering. Furthermore, organic milk was an industrial product the supply of which exceeded demand, of even quality and delivered country-wide at reasonable price, comparable to that of low-lactose products. All these features support its use by public catering. Moreover, the product was able to increase farm income and animal wellbeing. In order to promote catering for sustainability, a participatory research method was applied to develop the use of organic milk in public catering. As one method of the large participatory research family, dialog between researchers and caterers was organised in order to enable the creation of common ground for decisions about the use organic milk. Such dialogue also enables increased understanding about restrictions of product use and the possible benefits of its use. Furthermore, the dialog method avoided the marketing approach, disliked by some catering managers. The dialogue in this research was a mediated one, as the researcher presented the caterers' points of view to dairy industry representatives, who commented caterers' views through the researcher to the caterers. There were five catering organizations and their caterers who participated in the dialogue and the test use of organic milk. The interviews, emails and discussions with caterers were the qualitative material for this piece of research.

As first part of the dialogue, the researcher developed a perspective to the quality of organic milk and applied it by engaging in the dialogue about it. The second stage of the dialogue was built by caterers' comments. They saw the organic quality nutritionally flawed as selenium was missing in the product and vitamin D was not added to the product. Furthermore, its packaging sizes did not include volumes of 10 or 20 litres, the price was higher than that of conventional milk and its availability through contracts was sometimes questionable. Finally, the fat tended to layer on the top of milk column of low-fat milk due to the lack of homogenization of organic milk in Finland. The dairy experts commented through the researcher in the second sequence of the dialogue that selenium content may be increased by special feeding process, but that the vitamin D fortification is difficult to implement as it would need new legal approaches, changes in industrial processes and packaging efforts depending on market demand. The researcher suggested the caterers to make a test use of organic milk, offered at the same price as conventional milk by the dairy company, and the successful trial led some caterers to use organic milk and to enrol to step-by-step organic promotion scheme, while others wanted to consider their choice. The barriers to the increased use of organic milk seem to be concrete, industrial and legal questions not always well known by parties of demand and supply. This dialogue also included the poster produced in co-operation with dairy experts. The poster depicted the sustainable quality of organic milk, and was presented to the eaters in the schools' dining halls suggesting organic milk as a sustainability strategy for Finnish milk system (Appendix 3). The role of learning about one's own supply chains is still in its initial stages in

work places, and needs increased attention in the development of sustainable food system. (Mikkola, 2009b)

4.1.4 Tackling the discursive challenge of moral communication about organic food

Several stakeholders of this research, such as caterers, teachers and rectors, understood organic food as 'virtuous' choice for sustainable production and consumption to be exemplified in public catering. These stakeholders were joining the 'organic front', as more or less serious advocates of 'good life' or 'do-gooders' showing their virtuous choices off. However, caterers not using organic food, for instance organic milk, may experience the organic message as more or less demanding because of the expectations it sets for their purchasing behaviour, indicating their 'goodness'. In this piece of research, the organic message evoking the caterers' critical response was understood as moral communication. The caterers' views were studied by discourse analysis using interpretative repertoires as the methodological concept.

The identified critical interpretative repertoires evidenced contesting relation to organic message. The caterers questioned about the organic quality, which seemed compromised in terms of selenium in general and lacking vitamin D fortification of non-fat and low-fat organic milk in particular. Furthermore, some caterers identified hygienic problems in organic vegetables due to organic fertilizers. They looked forward to explicit accounts of superiority of organic quality vis-à-vis conventional Finnish food. Particularly they would like to know, in which ways organic food would represent health qualities beyond conventional food, which is considered healthy as well. Furthermore, conventional domestic food was seen to be 'better' than organic food from countries with high population and traffic density. They also regarded public services as very democratic and modest by character, and therefore the 'match' between elitist food commodities with premium prices and cost-conscious public catering was considered rather poor. Finally, they also claimed that public food service was already highly developed in terms of free warm meals, equal catering, food hygiene, satisfactory if not splendid occupational conditions and the important work for public health and education.

The research suggests that the organic message could make more use of disclosing 'production histories' and comparative research results of its health and environmental qualities. Furthermore, the message would benefit of communicative elements such as emphasis on sustainability strategies beyond the science and price issues. The organic message could suggest continuous incremental increase in the use of 'strategic' products representing high 'sustainability' value for money. Highly localized production such as that of milk and vegetables would need to be reasonably priced in comparison with conventional products, taste good and offer service quality as well as strategic lever for development of sustainable food system by and for ordinary consumers (Mikkola & Roos, 2009).

4.2 Teachers

4.2.1 Formal education for sustainable development and organic food

The United Nations Decade of Education for Sustainable Development (2005-2014), for which UNESCO is the lead agency, seeks to integrate the principles, values, and practices of sustainable development into all aspects of education and learning, in order to address the social, economic, cultural and environmental problems we face in the 21st century (<http://www.unesco.org/en/esd/>). This decade warrants a background for Education for Sustainable Development (ESD) and can be seen to set also education about organic food into perspective.

In Finland, the education about organic food and sustainability is regulated through the National Core Curricula for basic (Opetushallitus, 2004), general upper secondary (Opetushallitus, 2003) and vocational education by the National Board of Education. The new Proposal for Core Curriculum for basic education (2010) is under development for 2020 (Opetus- ja kulttuuriministeriö, 2010). These guidelines include first, cross-curricular themes, second, the learning objectives and contents of school subjects and third, as a separate part, the pupil wellbeing, which deals with school meals

and the regulations issued for these. In addition to the national curricula, there are school-specific implementations of the curricula and these may include particular emphasis on cross-curricular themes and also include particular co-operation with external bodies and outdoor educational activities (Opetushallitus, 2003; Roos & Mikkola, 2010b).

The current National Core Curriculum for basic education (Opetushallitus, 2004) works as the basis for the local school curriculum by defining learning objectives and core contents for every school subject. This curriculum for basic education regards classes 1-9 and pupils of the ages 7-15. The National Core Curriculum for general upper secondary education is planned for educational period of three years with minimum 75 courses to be passed before matriculation examination. The curriculum includes compulsory, specialisation and applied courses for students aged 16-18 (Appendix 2, Opetushallitus, 2003; Uitto, 2009).

In primary education, there are seven cross-curricular themes

1. Growth as a person
2. Cultural identity and internationalism
3. Media skills and communication
4. Participatory citizenship and entrepreneurship
5. Responsibility for environment, well-being, and sustainable future
6. Safety and traffic
7. Technology and the individual

Furthermore, as a basic value and a cross-curricular theme, ESD is to be considered in all school subjects such as mother tongue, foreign languages, mathematics, environmental and natural sciences, biology, geography, physics, chemistry, health education, religion, ethics, history, social studies, music, visual arts, crafts, physical education, home economics, and optional subjects. (Opetushallitus, 2004; Uitto, 2009). This makes the field of application of ESD rather extensive and offers teachers some room for manoeuvre in the way that these cross-curricular themes may also be conceived as layered and intertwined, thereby addressing ESD at large.

Particularly the theme Responsibility for environment, well-being, and sustainable future has objectives such as understanding the prerequisites for human well-being, the necessity of environmental protection, and the relationship between the two. Learning to observe changes in the environment and in human well-being, to clarify the causes and consequences and to act for the living environment and the enhancement of well-being is intended. Furthermore, learning to evaluate the impacts of the consumption and daily practices, and adoption of the actions required for sustainable development (SD) are expected to be developed by the pupil. Also learning to promote well-being in own communities, understanding the threats and potentials of well-being at global level is looked for through education. Understanding that through choices, individuals construct both their own futures and our common future means that the pupils will learn to act constructively for a sustainable future. (Opetushallitus, 2004; Uitto, 2009).

Within the cross-curricular theme Responsibility for environment, well-being, and sustainable future the core contents for primary schools are the ecologically, economically, culturally, and socially SD in one's own school and living environment as well as individual and community responsibility for the well-being of people and the condition of the living environment. Furthermore, core contents include environmental values and sustainable way of life and eco-efficacy in production, society, and everyday ways of acting. Product life-cycles, consumer behaviour, management of one's own household, and the consumer's means of influence build up toward the hoped-for future and choices and actions it calls for (Opetushallitus, 2004; Uitto, 2009).

In the general upper secondary school, the cross-curricular themes follow similar lines of thought, only modified for students aiming at matriculation examination. The themes are as follows:

1. Active citizenship and entrepreneurship
2. Safety and well-being
3. Sustainable development
4. Cultural identity and knowledge of cultures
5. Technology and society
6. Communication and media competence

The condensed objectives for students state that students need to be familiar with the key factors of the ecological, economic, social and cultural dimensions of SD and understand that all dimensions are important. The students know how to measure, assess and analyse changes occurring in the natural, cultural and social environments. The students need to be able to reflect the meaning of sustainable lifestyle, an environmentally friendly and eco-efficient production and community, a community and society reinforcing its social and culture heritage. Moreover, the students are able and willing to act for SD in their own everyday life and as students, consumers and active citizens and to co-operate for a better future on local, national and international level. Students also should learn to examine the challenges to SD from several points of view, such as exploring the effects of human activity on the environment and changes that have occurred in the way human beings adapt their environments during cultural evolution. Analysing global environmental hazards and their causes as well as means to correct the course of development belong to students' competences as well as exploring problems relating to population growth, poverty and hunger. Assessing the cycles of substances and energy in the environment and production systems and learning how to save energy and raw materials belongs to students' learning. Students are able to ponder on the characteristics of economic growth that would not be based on an increase in consumption of energy and raw materials and on the bearing of economic stability. Studying business enterprises and technologies that fulfil the principles of SD and learning how to exercise the means of influence available to consumers is known to students. Determining the ways in which human activities can be adjusted to their environments with respect for cultural heritage and without endangering natural diversity is within students' capabilities as well as rehearsing the practices of sustainable lifestyles and determining their structural prerequisites. Finally, examples of successful practices will be incorporated into instruction and the general upper secondary school's everyday life (Uitto, 2009). The general upper secondary schools may also run their own environmental or sustainability program as well as exhibit teaching and learning culture labelled by environmental awareness, which all support sustainable life styles (Cantell & Larna, 2006).

While ESD is an extremely rich educational field with subject specific applications, the food in general is dealt with by several schools subjects in primary education. In mother tongue and foreign languages everyday communication is needed and taught for eating meals. In Environmental and natural sciences, grades 1-4 pupils are taught about the origin of food stuffs and where food is produced. The pupils are instructed about day-to-day practices and habits that promote health, such as good nutrition and regular meals. Health education, grades 7-9 deals with healthy choices in daily living: nutritional needs and problems in different situations; the most common allergies and special diets. Home economics, grades 7-9, has objectives such as learning to perform basic tasks related e.g. to household in compatible ways with SD. In terms of Core Contents, nutrition and the food culture include nutritional recommendations and healthy food based on food quality and safety, basic methods of preparing food and meal planning. Furthermore, the curriculum mentions various eating situations in the Finnish food culture and current changes in food cultures (Uitto, 2009).

In similar vein, in general upper secondary school the mother tongue and foreign languages include communication in everyday situations while eating meals, discussing food cultures etc. Biology education consists of courses, one of which is Environmental ecology (BI3-course) dealing with sustainable future and ecologically sustainable production. Human biology (BI4-course) presents structures, functions and significance of organ systems; as well as digestion and nutrition. Biotechnology (BI5-course) introduces plant and animal breeding and their ethics and relevant legislation. Geography education includes the common world (GE2-course), working out primary production and the environment; food production and supply, sustainable agriculture and fishery, as well as different forms of agriculture. Health education consists of Foundations of health (TE1-course), presenting factors influencing working, functional abilities and food safety. Young people, health and everyday life (TE2-course) is a health-related course, discussing of cultural and social meanings of nutrition and topics such as weight control, health-related exercise and eating disorders (Opetushallitus, 2003; Uitto, 2009).

In addition to these disciplinary orientations, pupil wellbeing is a topic in the laws pertaining to education and it includes as one of the areas of implementation the balanced, sufficient and free school meal on every working day (Lintukangas et al., 2007; Manninen, 2009).

The organic food, its production methods, processing and marketing are explained in basic education rather thoroughly by environmental and natural science education. In addition, teachers use project work, school gardens and outdoor education on farms to disclose the food system and its connections with livelihoods to young people. Pupils may visit nearby supermarkets and learn about organic products, their labelling and their prices. Organic food is to lesser extent presented as a topic in general upper secondary education, whereby sustainability as an extensive scientifically conceptualised topic is presented by various disciplines. However, there are schools with explicit orientation to environmental education or education for sustainable development, and these schools make efforts to embody sustainable choices and sustainable consumption as organic food in the school catering and other activities including food (Roos & Mikkola, 2010b).

The ambitious learning objectives and content of education in basic and general upper secondary schools seem to cater well to the ESD; organic food is understandably in very minor role in the massive entity of disciplinary education. However, it seems that the two strands of education, the one represented by core curricula and the other one by wellbeing of young people through school catering do not co-operate to large extent, which points at future potential of educational development. Organic food as part of the sustainability complex could have more visibility and educational impact in Finnish schools (Roos & Mikkola, 2010a).

4.2.2 Teacher commitment and food education for sustainability

This research operated in three basic education case schools in the Helsinki region as sites of teacher (6) and rector (3) interviews, whereby these pedagogy professionals explained their activities in ESD and the role they offered to organic food. Two of the three case schools were certified by Green Flag and one was additionally certified by OKKA. The third school expressed particular interest in environmental education and food education although not certified by particular schemes. The certification status of the schools signalled interest in education for sustainability, including particular relation to organic food. The teacher interviews were explored qualitatively and the interpretation focussed on the co-existing features of commitment, content and methods of ESD and organic food within the school's particular application of the national core curriculum. Basically, the teachers could be grouped according to the weight they gave for ESD.

The *committed teachers* were active in developing their own education and creating new content and methods for it. Class-room illustrations included educational activities such as teacher's grass pot, covered by plastic bag symbolizing greenhouse gas based climate change and a cat collecting toxin 'tags' on its fur by having eaten mice contaminated by environmental toxins. Within the school, catering was included in the education for sustainability by organizing - through rather lengthy administrative procedures - organic ingredients such as milk and crisp bread to be served for pupils. This service was visible by organic labels on the food items in the dining hall and it was also informed to parents. This particular service of organic food also counted as one basis for certification by two separate certification schemes for environment and sustainable development. One teacher focused on education about oil as a finite natural resource and demonstrated this phenomenon by scanning at school three days' garbage cans from home for packaging waste. The point behind this exercise was to emphasise the need and ways to minimise plastic waste. In similar ways, savings in school energy and water consumption as well as enhanced source separation of waste were new practices introduced to both teachers and pupils, as part of certification schemes. Beyond school premises, the teachers took the young people with them to local supermarkets, where organic food items, their labelling and prices were studied. Local nature sites were examined and reported by pupils in terms of seasonal changes, flora and fauna as well as litter. Farm visits were occasionally organized and they were very much on the teachers' agenda but limited by funding.

The *teachers aligned with ESD* participated in the educational activities organized by rectors and committed teachers, as their regular educational tasks. They conformed to the educational orientation but without heavy 'personal involvement' of time and effort, and also evidenced a more neutral relation to climate change, toxins, organic food, finite resources and natural beauty of landscapes, vegetation and animals. There was also criticism by the aligning teachers about the relation of the extra efforts and pay for ESD. They also expressed interest in limiting these tasks and

starting still new ESD projects. The *teachers distanced from ESD* and organic food felt that they had more urgent foci in other educational areas such as diverse pedagogic and cultural interests. Some teachers saw the high-level basic education in literacy and numeracy as their most important responsibility.

Schools seem to be currently engaged in a wide variety of different projects. Partly the projects serve the competition between schools and partly they reflect the teachers' efforts for merits in running the projects. Against this background, the educational and networking efforts of committed teachers with caterers on the school premises, administrators in high positions, certification bodies, and even (educational) farms seem to suggest an exceptional educational approach, which has been identified to represent evolving food education for sustainability. At its best, it seems to come close to the often idealistic and advanced educational objectives expressed by national core curricula; this very high level education aims to transformative learning approaches enabling the linking of conceptual change with personal behavioural changes and societal activity by the young people. The systemic transformative change towards sustainable food system requires considerable conceptual and practical networking in learning environments by the teachers and learners. Currently, the nodes of the food chain (food system) and educational institutes operate mainly separately, without connections: the school and the farm, food industry, retail, wholesale and school catering. School catering rarely seems to become identified as what it essentially is: a remarkable platform for food education for sustainability. To connect the 'spread out' nodes of the food chain both by concepts and practices to enable change is a very demanding task for teachers, who struggle with the everyday educational aims within their organizations to benefit school and society. In this research, education for sustainable development and education about organic food were conceptually combined and coined as food education for sustainability, which seems to be looming large behind individual and separate efforts by teachers, other stakeholders of education and the society at large (Mikkola, 2009c; Mikkola et al., 2009;)

4.3 Young people

4.3.1 Cultural sustainability of Finnish food system

Young people's views about organic food within the societal 'power field' have been studied as cultural sustainability of Finnish food system. Here, cultural sustainability in terms of food system was understood as reflective development of the relation between population, its production and consumption activities and the environment towards increased compatibility for 'good life'. This evolving relation was studied proxy by views about consumption and buying behaviour of organic food. This study observed particularly the ecological communication within Luhmannian subsystems, whereby organic food was explored from economic, scientific, political, regulative, religious and educational points of view. The basic idea of ecological communication by Luhmann is the parallel and simultaneous translatability between the different subsystems, in order to 'get the message through' for ecological changes such as use of organic food.

The focus groups of young people on the basic and upper secondary education produced the data for this piece of research. The research question was whether young people express views towards change of increased consumption of organic food in terms of Luhmannian subsystems; how do they negotiate the alignment within and between these sub systemic perspectives, active within the current society.

The findings reveal that the young people were very aware of economic aspects and prices of organic food. The situation seemed to call for economic balance by giving up of buying something else. Saving resources in a particular activity and simply consuming less while recycling efficiently were seen as solutions. At large, matching country specific and global consumption and production according to renewal potential of natural resources were outlined as 'grand' solutions. However, the young people also contested the extra profits by eco-products and questioned the efficiency of organic farming and transports of small lots. Eventually, they suggested that innovative solutions for environment and sustainability should play a bigger role than currently and open up new economic possibilities. Today's problems would find economic solutions. School meals were seen as

downgraded already; to find something more expensive to be offered was considered 'good' and 'brave', a delightful act into the right direction.

Regulations - as law-like elements in the school environment for young people - about 'food behaviour' in school were generically approved without resistance. One could only have six or seven meatballs in one meal or one should avoid creation of biowaste by eating what one takes on one's plate in self-service situation typical for Finnish school meals. The organic label was known to signal a particular product quality and consistency in its use was expected. This demand was seen to concern equally all actors of the organic food system. Hereby the deviations from the regulations were perceived negative.

Scientific environmental aspects pertaining to food reflected awareness of nature, poisons, additives, pesticides, endangered species, environmental protection and animal well-being. In these terms, organic food was perceived as a positive option to 'make things better'. However, connections with organic food and impacts such as climate change and eutrophication were unclear, and knowledge such as long term statistics seemed missing while the messages about organic food seemed mixed. Furthermore, how did organic farming relate to the challenge of feeding the population? How should one think of a conventional apple and an organic one regarding the need for peeling? Finally, it was suggested that health claims of organic food need more evidence and visibility.

Political commitment on the school level was crystallized in the certificates and the 'Green Pupil Boards' were identified as a way to introduce participation in the environmental effort among young people. In global politics, the attention was focused on international agreements on environment, whereby alignment and the lack of it and different interests of various countries were seen to be in a difficult juxtaposition. However, politics and politically organized bodies were held responsible for organizing environmentally friendly and sustainable solutions, while various 'action groups' were seen as doubtful.

Religion in its 'horizontal' sense was translated into mutual relations between humans and humans and nature. They were characterized as 'other regarding behaviour', responsibility of one's own and others' health and obligation to protect nature. The aims for working in order to learn or earn money were expressed, as well as expectations for recognition of these achievements. Consumption was understood to belong to the sphere of responsibility, while the trope 'I want it all, I want it now' was criticized. However, the relations between fair and ecological were to some extent seen as problematic. Finally, the well-off people were suggested to be the ones addressed by pricy organic stuff as a moral duty, whereas less well-off people might understandably have other orientations.

ESD was recognised as an extensive entity of teaching and learning and organic food as part of it. School meals were known to include organic ingredients, which were deemed to have a good taste in comparison with conventional alternatives of the same food items. Organic food was clarified for young people by class-room education and various projects such as visits to supermarkets to learn about organic food.

One achievement in ESD, visible in young people's reflections, seemed to be the extensive scale of sub systemic aspects they recognised as relevant for the use of organic food. However, even though critical thinking was explicated within the sub systemic views, these also seemed to include ambiguities needing more detailed addressing in order to increase clarity about the use of organic food. The development of the use of organic food would benefit of introduction of novel concepts or visions, such as food education for sustainability, and their critical examination. This approach would demand considerable efforts by rectors, teachers and caterers and students for transformative learning, equally needed by all stakeholders (Mikkola, 2009d).

4.3.2 Young people's perspectives to organic food

Young people's commitment to organic food was studied as the perspective made and taken to organic food. This perspective was based on their reported experiences, meaning-making about organic food, evaluation of impacts of organic food and finally positioning of oneself in terms of organic food. The data was the same as in the previous analysis.

This exploratory analysis identified tentatively three kinds of commitment to organic food. *The first kind of commitment* reflected the perspective of *decisions of ethical character*, which gave rise to positioning oneself as a consumer of organic food, with foremost interests in personal and societal health, ecological issues and farmer and animal welfare. This perspective did not focus in the first place on the taste or other sensory features of organic food, which eventually were often but not always perceived, particularly in comparison with conventional 'normal' food. The ethical orientation emphasised particular personally important aspect(s) in the organic quality, rather than having considered the range of aspects connected with organic food. Furthermore, young people focused on natural qualities of organic food, modest life style and self-chosen relative limitation of over-all efficiency in productive activities, which were seen as positive and the 'right choice'. Obviously this commitment to organic food was not total either, but practiced according to feasibility, which was seen as an important way to increase the use of organic food.

The *second kind of commitment* was more *conditional* in the way that organic produce was expected to align to large extent with modern food system, and to feature modern concepts of high food quality such as vitamin fortification, convenience food and value added food, regularly available on the supermarket. The ambiguous relation to organic food was emphasised as need to understand better the character and overall impacts of organic food production and consumption. The *third kind of relation* was *negative* in terms of organic food, comparing organic quality with conventional food and rejecting it due to its unsuccessful outcome in comparison to conventional food. Organic food was not particularly different as expected, it was more expensive and portions were small so that it was considered to represent low value for money. The negative relation to organic food implied to some extent satisfaction with the current modern food system and the relatively unreflected weaknesses in terms of ecology and animal welfare as well as farmer income levels. These aspects of organic food were seemingly distant or non-existing for young people representing this kind of negative commitment. Again, stronger commitment to organic food could be enabled by more active implementation of food education for sustainability (Mikkola & Roos, 2010b).

5. Strategies for public catering for sustainability in educational contexts

5.1 Whole school approach

This study inquired into integration of sustainable consumption and healthy eating in curriculum of three Finnish primary case schools, and carried out a preliminary in-depth probing into the working and outcomes of the 'whole school approach' in terms of teaching and learning. The whole school approach did portray as common effort by teachers and caterers to introduce sustainability concept and reflective practices for pupils. As such it represented new cross-curricular and transformative education approaches connecting reflection with knowledge and practices for every-day sustainability behaviours. As part of ESD and food education for sustainability in particular, organic food as an illustration for sustainability was used in one case school. Even though very fragmented and small-scale, the study suggests that sustainability education and food education for sustainability do have chances to challenge current societal developments, by today's pupils who become future citizens and consumers. The development would benefit of extensive transformation of the education and practices on the premises, including teaching and learning about ecology, economy and socio-cultural features of the food chains connected to the school (Mikkola, 2009b,e)

5.2 Recommendations for stakeholders in educational contexts

Public catering organizations in Finland have worked for more than 50 years to feed the young people, their teachers, other staff members and the caterers themselves according to nutritional guidelines and keeping up Finnish food culture on inexpensive costs. This effective and democratic catering style as an institution has been touched by the idea of sustainable development, as caterers' professional identity, teachers commitment for ESD and food education for sustainability as well as young people's perspectives to organic food evidence. However, public catering activities seem still to be more controlled by nutrition and cost aspects through tender calls than by visions for sustainability. Some support for caterers and schools in general has been offered by the Ministry of Environment (2008, 2009) which recommends the prioritisation of sustainability more highly in the purchasing of foodstuffs. According to Ministry of Environment (2008), sustainably produced foods need to be provided for the staff of public authorities at least once a month by 2010 and once a week by 2015. One year later, this recommendation is specified and strengthened by the Ministry of Environment (2009): "In order to eat sustainably, the amount of organic, vegetable-based or seasonal food will be increased in foodstuff procurement for food services. These foods will be available in Government kitchens and provided by food services at least once a week in 2010 and at least twice a week by 2015". As to generic quantitative aims, central government should have 70% of procurement sustainable in 2010 and 100% in 2015. For municipalities and local state government, the quantities are 25% sustainable in 2010 and 50% sustainable in 2015 (Ministry of Environment, 2009). The recommendations offer a range of options for caterers, and do not only promote organic food. However, the recommendations present a recognized market position for organic food suppliers to be used efficiently and timely.

These recommendations underline in material and quantitative ways some of the basic principles of sustainable food system, to be promoted in visible ways by public catering. The vision of public school catering, valid in the 20th century, was to offer democratic, free and balanced nutrition by reasonable costs equally to all learners. This vision needs renewal to correspond the needs of 21st century by extending from individual needs to the environmental and socio-cultural ones, to develop into and move towards centres of sustainable food systems in every-day life (Mikkola, 2009a). Clearly, education has considerable weight in this endeavour. In order to facilitate this development, some suggestions based on the whole school approach are put forward here for food education for sustainable development (FESD) or simply food education for sustainability (FES) as follows (Mikkola et al., 2009; Mikkola & Roos, 2010a):

Teachers

- Integrated and problem based education and ESD may offer a frame for FES as an entry point to extensive societal 'rectifying' move with pupils, students and caterers as well as supply chain actors
- Networking with other food system actors supports development of innovative FES as a whole school approach
- Combination and reflection of conceptual (scientific), practice based and experiential learning of FES increases the transformative features of education
- Use of certification schemes as tools for reflecting and developing contextual FES may help in dealing with this extensive field of education and in adding visibility for school's efforts
- Extending beyond school premises and introducing hands-on activities and experiences for young people support learning within but also outside the school environment
- Establishment of a Canteen Commission with caterers, teachers, young people and their parents facilitates negotiations and learning about implementation of FES

Caterers

- View of school meal as an educational event in addition to enjoyment of nutrition and tasty meals increases the meaning of catering
- Learning at your workplace about quality of sustainable food, including organic food, supports development of catering for sustainability
- Sharing information for teachers, young people and others about the quality of ingredients, their origin and price, including organic food increases transparency of school meals
- Participation with teachers in FES offers new participation within the school community
- Suggestions for a shared, strategic and possibly incremental sustainability approach, including organic food, for your organization offers a position of a developer
- Establishment of a Canteen Commission with caterers, teachers, young people and their parents facilitates negotiations and learning about implementation of FES

Young people

- Highly local phenomena such as sustainability aspects of your school meal may turn out to be very interesting topics for learning
- Participation of educational development of FES including organic food with teachers and caterers increases meaningfulness of learning
- Establishment of a Canteen Commission with caterers, teachers, young people and their parents facilitates negotiations and learning about implementation of FES
- Thinking about the work behind and value of the school meal for all eaters emphasises the shared efforts for good life at your school

School administration

- Consideration of possible certification of school in terms of ESD, including FES may present a new challenge
- The certification may bring about useful reflection and development of FESD
- Establishment of a Canteen Commission with caterers, teachers, young people and their parents facilitates negotiations and learning about implementation of FES
- The educational achievements and school profile may improve as actors have access to high level nutrition and education about it
- Making young people aware of the sustainability status of their education may take place by collecting and sharing evidence for this at your school

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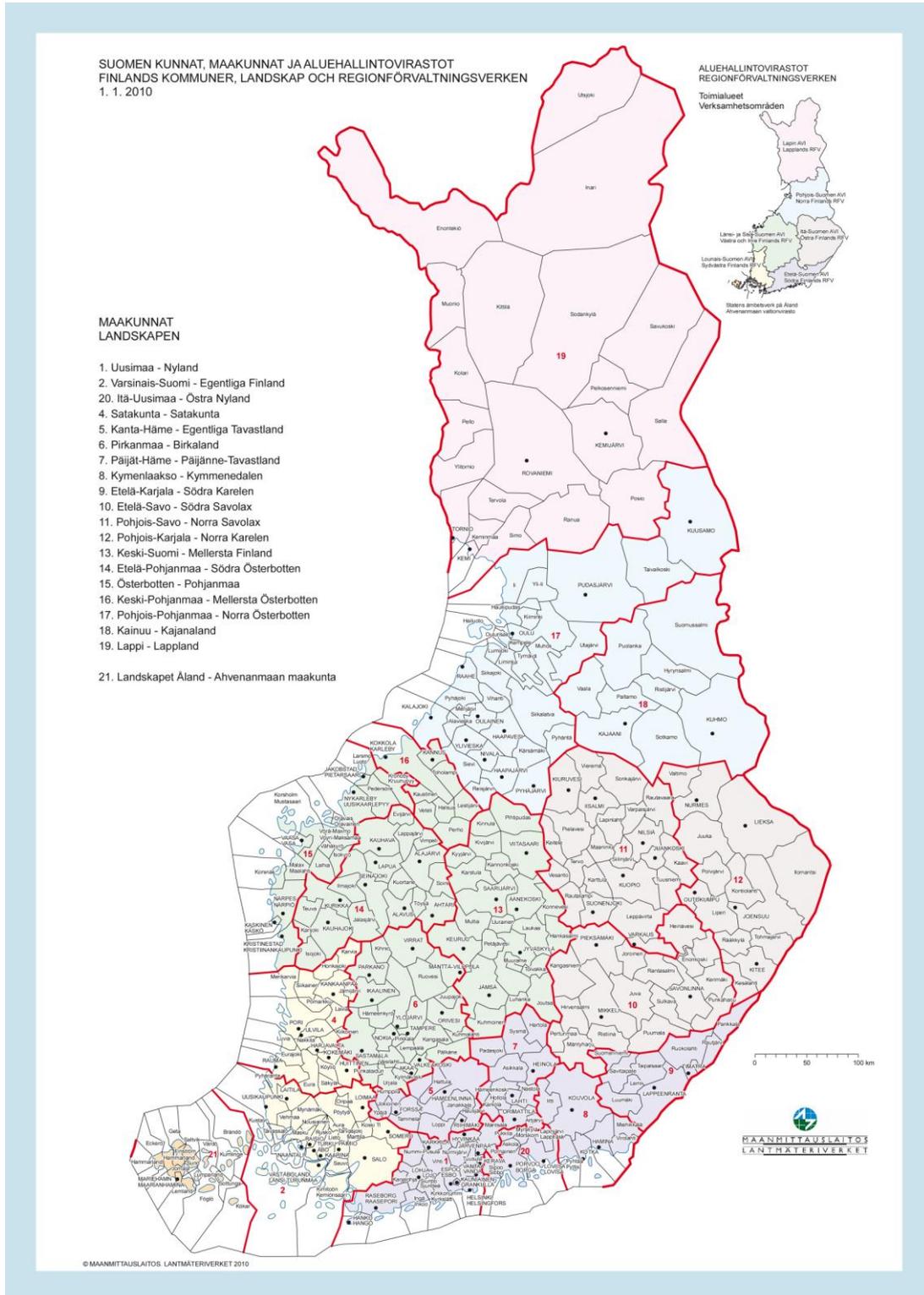
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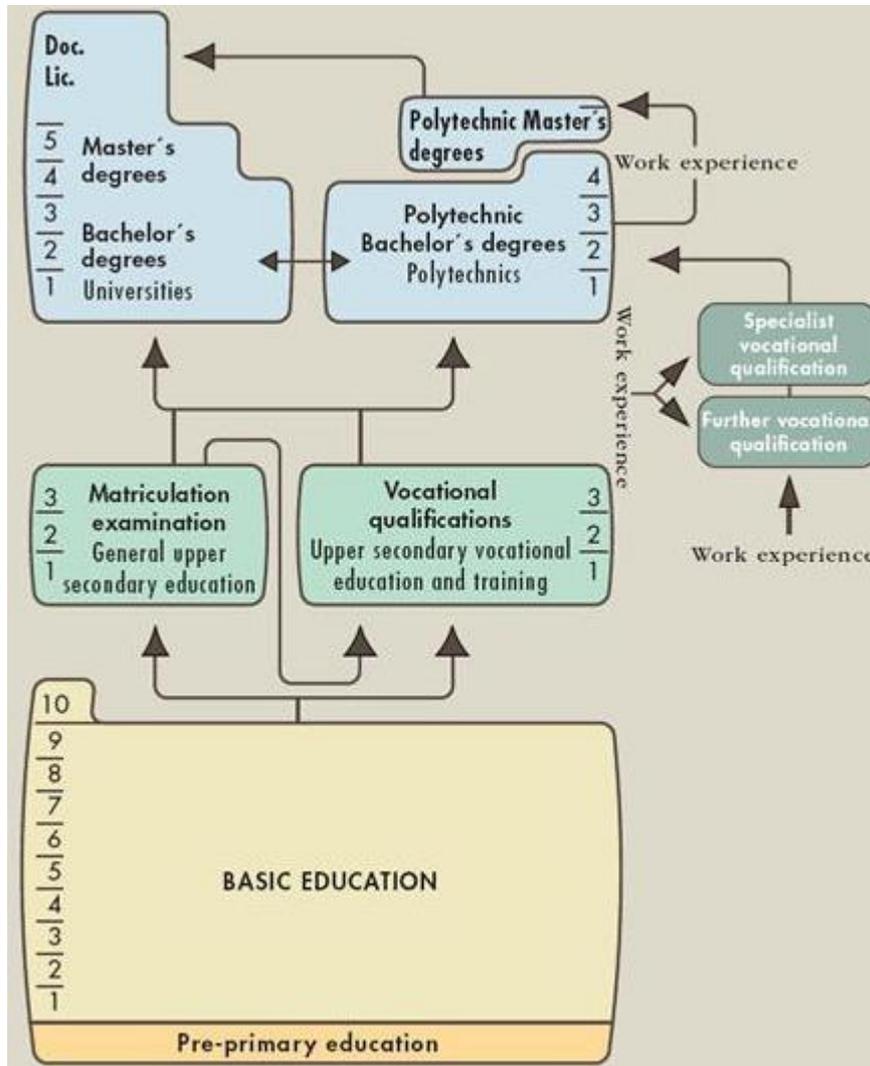
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Appendix 1 Municipal structure of Finland in 2010



Appendix 2 Educational system in Finland in 2010



Appendix 3 Organic milk as a sustainability strategy for Finnish milk system



Organic milk as a sustainability strategy for Finnish milk system

Dairy farming in Finland is historically a mode of family farming, although modes like dairy farm companies and collaborative farms are increasing. Organic farmers are relatively young, well educated and their farms are modern and in the average, rather large. The use of automated milking systems (AMS) allows larger cattle sizes and makes work easier compared with previous methods. The organic cows' feed is mainly grown on the farm, which makes organic milk production truly local business. The feeding is based on clover-grass silage, barley, oats, pea and rape-seed, the latter being often commercial. The organic cows produce about 8 000 kg milk yearly featuring a fairly reasonable level of intensity. The relatively small cattle sizes support disease control, and salmonella prevalence is extremely low.

Quality of Finnish milk

According to food chemical analyses, the Finnish raw milk is practically as clean as milk can be. The concentration of foreign substances to milk like antibiotics, hormones, veterinary drug residues, industrial chemicals, pesticides or heavy metals ranges from extremely low to non-analyzable, and quality is continuously controlled by dairy laboratories. Dairy processes like pasteurization make milk safe in terms of pathogens, and homogenization disperses milk fat into the liquid. Organic milk is pasteurized but not homogenized.

Milk in public nutrition

Fresh milk and milk products are a central part of Finnish nutrition in that they provide in the average 17 % of the energy, 28 % of protein, 34 % of fat and 25 % of vitamin D and 63 % of calcium intake. The milk protein is in easily digestible form and milk also provides water for metabolism. Milk fat has been avoided due to the relation to cardiovascular diseases and low-fat products have increased in number. As healthy, relatively economical and ubiquitous products on the market milk commodities have a prominent position in Finnish food culture.



Economy and market development

In Finland, approximately 2 300 million litres of raw milk is produced yearly and the value on the market equals roughly 1 700 million euros. Of this milk flow, circa 30 million litres or 1,3 % is organic. Organic milk is processed in dairies currently into different products, like fresh non-fat milk, fresh low-fat milk, buttermilk, yoghurt, cream, edam cheese and a typical Finnish sour cream product. Organic milk is more expensive than conventional milk due to the scale of economy for dairies, which is so far limited, and the premium price (9 c per litre of raw milk) paid to the contract dairy farmers. However, it is in the interest of the dairy company to secure the availability of organic milk, which also could be used for additional product lines in case of increased demand. Additionally, the price of up market high-tech products like non-lactose milk or functional milk products is comparable or higher than that of fresh organic milk.

Environment

Organic farms do not use synthetic fertilizers nor pesticides, but rely on biological nitrogen fixation, nutrient cycling, crop rotation and other applied crop protection methods. However, nutrient leakage takes place on organic farms as well to watercourses, and because of the more extensive land use the Green House Gas (GHG) emissions may be roughly equal or somewhat higher in organic farming than in conventional farming (1). However, organic farming supports high level biodiversity and the conditions of cows allow for rather relaxed and species specific behaviour.

R&D of organic milk

The domestic feed for cows can be developed by new plants, which are being tested to be used in milk production. Due relative poverty of selenium in Finnish soils, the feed for organic cows contains rather scarcely selenium, leading to low selenium content in organic milk. The quality of organic milk is researched at the University of Joensuu (2), where addition of selenium rich yeast to feed has been found to increase selenium level to that of conventional milk. Additionally, the fatty acid composition of organic milk is under lively investigation. The new results, not yet published, evidence about nutritionally advantageous composition of organic milk in terms of fatty acids due to the clover rich feed.

Organic milk in catering

Finnish organic milk pasteurized in dairies does not contain vitamin D like in Sweden and the USA. If the demand for organic milk would increase considerably in catering, it would enable the development of catering size packaging (so called Novo-boxes) and along this process vitamin D could be added as well. The organic milk sold in retail in milk cartons could still represent original organic milk without this fortification(3,4).

Sustainability status

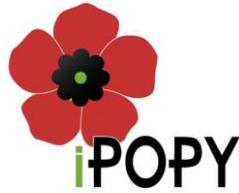
Public nutrition, Finnish food culture, bioregional and ecological features as well as market value, research and development, organized and fair production modes support the characterization of organic milk as sustainable choice. Organic milk of today can be understood as an "intermediate mediating strategy" (5) towards sustainability realized through the market and along the milk supply chain.



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The iPOPY project

The aim of the project “innovative Public Organic food Procurement for Youth - iPOPY” ([http://www.agrsci.dk/ipopy /](http://www.agrsci.dk/ipopy/)) was to study how increased consumption of organic food may be achieved by the implementation of strategies and instruments used for public procurement of organic food in serving outlets for young people. Supply chain management, procedures for certification of serving outlets, stakeholders' perceptions and participation as well as the potential of organic food in relation to health and obesity risks was analysed. The research project was a co-operation between Norway, Denmark, Finland and Italy. German researchers also participated, funded by the Research Council of Norway. iPOPY was one of totally eight projects that were funded through a joint call of the ERA net CORE Organic I in November, 2006.

Project manager: Anne-Kristin Løes, Bioforsk Organic Food and Farming

Project partners:

Norway: Bioforsk Organic Food and Farming and SIFO, National Institute for Consumer Research

Germany: University of Applied Sciences, Münster and Center for Technology and Society, Technical University Berlin

Denmark: Aalborg University

Finland: University of Helsinki, Ruralia Institute

Italy: State University of Milano and ProBER (Association of organic and biodynamic producers of Emilia Romagna)

iPOPY Publications:

All publications can be downloaded from the open digital archive Organic E-prints: www.orgprints.org. Search for the keyword iPOPY.