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## 8. Towards sustainable food systems through civic food education in schools and in public catering services

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### Introduction

Judged by the European standards, the statutory public catering plays an exceptionally important role in the Finnish food sector. It provides over half of all meals eaten outside homes, and the great majority, 83%, is at the response of the municipalities and the state (HORECA 2007). About one third of the population uses public catering services on weekdays, and all Finnish citizens are within its reach at some point of their lives (HORECA 2007). Because of the continuously shrinking economic resources the price has become in practice the decisive factor in public food procurements; the price-competitiveness tends to override other aspects of sustainability and, therefore, the societal significance of proper nutrition and the consequent long-term benefits for national economy and national health may be overlooked. Savings are sought across the whole process from procurement to meal preparation to cleaning (Taskinen 2007). Efficiency requirements have also led to increasing centralisation of public catering services; during the past years the amount of prepared meals has in-

creased; in 2002 public catering provided 420 million meals, but today this amounts to 440 millions. However, at the same time, the number of institutional kitchens has reduced by nearly 20%, from 6000 in 2002 to 5000 in 2007 (Mikkola 2009a).

In the midst of the structural and economic constraints of Finnish public catering, there seem to be caterers who try to procure local, organic and domestic food. Furthermore, they make efforts to save energy and water, as well as develop waste management (Taskinen & Tuikkanen 2004). These developments within Finnish public catering may be interpreted to represent trends of catering for sustainability, visible both in big cities and rural municipalities e.g. in Italy, UK, the US and Canada (Friedmann 2007, Mikkelsen et al. 2007, Morgan & Sonnino 2008, Mikkola et al. 2009).

Several European countries share a history of food service at schools as a collateral effort to improve the wellbeing of young people, often from modest backgrounds in the end of 19<sup>th</sup> century (Lintukangas et al. 2007, Bocchi et al. 2008, Morgan & Sonnino 2008, Hansen et al. 2010). In the beginning of the 20<sup>th</sup> century free school meals were also launched in Finland, initially by progressive private persons, communities and regulatory as social support for indigent families in order to enable school attendance also for their children bodies (Ahonen 2003, Lintukangas et al. 2007). The established statutory position of Finnish school catering as a welfare service stems from the mid of 20<sup>th</sup> century. Currently, free warm meal in accordance to nutritional guidelines is served to all children and pupils in the Finnish kinder gardens, primary schools and in secondary general and vocational schools on every school-day (VRN 2008, Lintukangas 2009). The service is organised by municipalities, and the meals are served in schools. The costs of the service, including procured food, salaries of caterers and other costs such as water, energy and waste management, are covered by taxes and were on the average 2,46 € per meal in 2008 (Mikkola 2009a); the share of food itself is about one third (Urho & Hasunen 2004).

The Finnish statutory school meal is regulated not only as a nutritional welfare service, but it is seen also as means for education for health, table manners and food culture (Lintukangas 2009). The educational task concerns teachers in terms of manners, and caterers in terms of food culture, as the menu planning and meal preparation are basically their responsibility. In addition, in Finnish basic education, food as a topic is also shared extensively by subjects such as biology, environmental knowledge and natural history, home economics and physical exercise and health education. Furthermore, as the Finnish national curriculum for basic education presents educational aims for particular subjects, it also sets aims for sustainability education in form cross-curricular approach; sustainability is thus seen as a relevant topic for young people growing to become adult members of the Finnish society (NCCBE 1994, 2004).

The school meal guidelines for caterers in Finland mention sustainable development as a framing for public catering at schools, conveying issues such as health, cultural and environmental education and increased co-operation among schools' catering and educational personnel (Lintukangas et al. 2007). Furthermore, there are national-level recommendations supporting the use of not only local but also organic and vegetarian food as a sustainable practice (Huvila 2007, Ministry of the Environment 2008, Ympäristöministeriö 2008, Ministry of the Environment 2009). The trajectory of public catering at schools seems to connect and mediate the nutritional needs of the individuals with the local livelihoods and those elsewhere with increased economic equity and environmental protection, according to normative principles of sustainable food systems active in the Green State (Morgan & Sonnino, 2008).

The educational framing of sustainable development regards both food provisioning by public catering as well as teaching and learning in Finnish basic education; the quest for sustainable food system seems to enter the school through these two separate channels. The simultaneous existence of parallel efforts and practices by teachers and caterers regarding food within the same

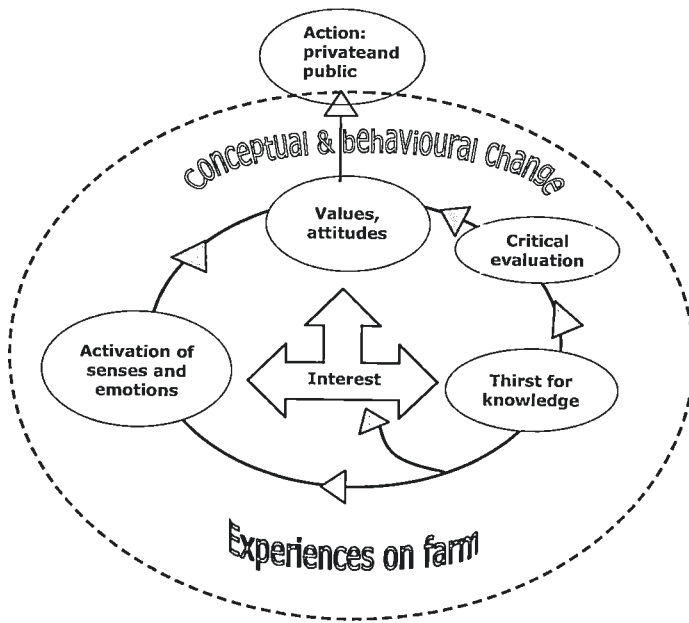
physical space suggests possibility for increased educational co-operation among these actors.

The parallel educational aims and practices of the two groups of professionals could be used to outline food education for sustainability (FEfS) as a contextualisation of sustainability education (Mikkola 2009b, Mikkola et al. 2009). Food education is, in fact, gaining momentum in many countries. Although emphasis may vary from health aspects (e.g. Wilkins 2005, Ozer 2007, Rauzon et al. 2010) to environmental matters (e.g. Mayer-Smith et al. 2007, Carlsson-Kanyama & Gonzales 2009) and from local and organic food (Joshi et al. 2008, Morgan & Sonnino 2008) to food security and overall sustainability (Pacheco et al. 2006, Rojas et al. 2007) the overall many-faceted nature of food education is acknowledged. Our approach combines both comprehensiveness and contextuality into the learning process. Comprehensiveness means that knowledge, activity, emotions, values and all senses are involved in learning. In addition to the concepts and knowledge, the focal role of personal experiences, emotions and social interaction for learning is acknowledged. Contextuality, on the other hand, means that the new things are learned in the practical everyday life situations. This enables deepening and expanding the existing knowledge, so that the person is interested in the things to be learned, understands the links to the previous knowledge and is able to apply what she has learned in practical situations (Risku-Norja & Korpela 2009). Wals (2010) also emphasises education for sustainability as a co-operational work consisting of formal, informal and non-formal education; in short, social learning in different environments is seen crucial when more sustainable practices are to be adopted by young people.

During every meal the pupils are exposed to food education, which may be intentional or unintentional. Food education for sustainability aims at conceptual and behavioural change (Mezirow 2000) by influencing values and attitudes in order to change passive consumerism by encouraging people to proactively promote sustainable food culture. Conscious and determined food education is, thus, by nature value-based and transformative (Ehrenfeld 2008, Mor-

gan & Sonnino 2008). It is also transdisciplinary, because sustainable food culture cannot be universally pre-determined, but needs to be defined together with local actors. The transformative process of food education is shown in Figure 1.

Figure 1. The transformative process of food education. The figure is a modified version from that of Risku-Norja & Korpela (2009).



Before sketching the possibilities for future food education for sustainability in more detail, the understanding of current practices and perspectives for further developments and their conditions in schools is needed. This paper surveys an exhaustive national knowledge basis in terms sustainability regarding food as practiced by caterers and teachers as ‘two educational channels’. The paper

discusses these practices as growth points for future developments of food education for sustainability. The survey inquired into caterers' conceptions on sustainable food provisioning and their possibilities to promote it. Regarding the schools, the focus was on school lunches and other activities related to food, and their connection to the schools' educational goals in general and to the goals of schools' sustainability education in particular. The paper probes particularly into caterers' and teachers' possible mutual support and co-operation in schools, which could be interpreted as food education for sustainability in today's Finnish basic education. In the end, the implications for future development are discussed in light of the results.

## Materials and methods

The study is based on the results of two extensive Webropol questionnaires carried out and analysed in 2008-2009. The first questionnaire was sent to all Finnish and in Swedish speaking first grade schools of basic education in Finland. Along with the background data the questions dealt with food and sustainability education and the role of school meals in these. Therefore, information was asked concerning subject-specific educational goals, pupils' participation in the practicalities of the lunch arrangements, within-school co-operation among the educational and catering personals and food-related out-of-school activities. In addition, a content analysis of about 300 school curricula available through the Internet was carried out. These were searched for references to food education and sustainability education; in particular the links between schools' educational goals and school lunch were sought.

The second questionnaire was directed to the responsible actors within the municipal catering services. The aim was to compile basic information dealing with the practicalities of municipal catering as well as to get an overall picture on the viewpoints of the actors as to how they understand sustainability, how it

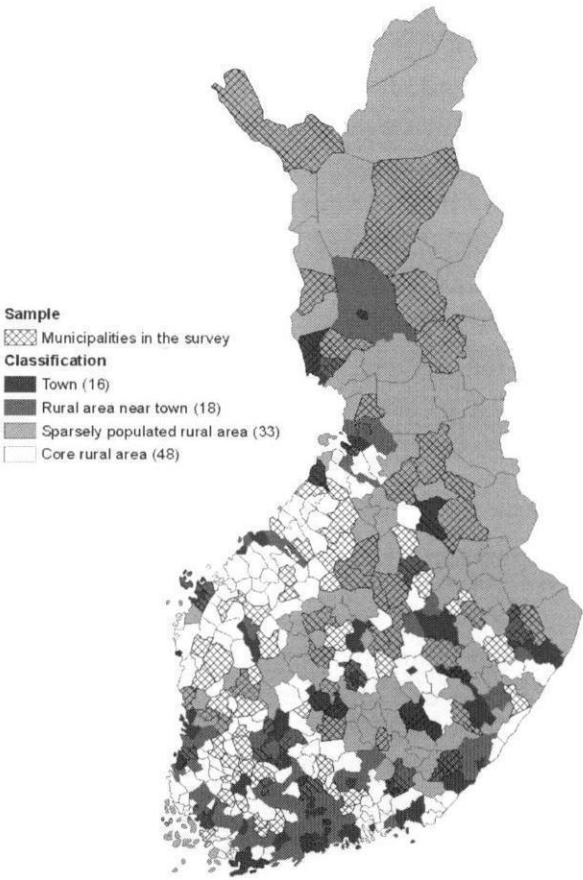
is accounted for and how it can be promoted within public catering. The questionnaire was sent to all Finnish and bilingual municipalities, but the Swedish speaking municipalities in the archipelago were left outside the survey. The exclusion of the Swedish speaking municipalities was considered as justified, because the legislation regarding provisioning the municipal catering services is strictly the same throughout the country. Besides the results from the school survey showed that there were no consequent differences between the Swedish and Finnish speaking schools; restricting the survey only to Finnish language relieved considerably the work load.

Both surveys contained several types of questions ranging from numerical data to simple statements and Likert-scaled options with a possibility to open comments with free wording by the respondents to fully open expressions of opinions. The results of the surveys were scrutinized by compiling the basic numerical data and analysing the free word expressions. Based on these, eventual differences among the types of the municipalities as well as differences among Finnish and Swedish-speaking schools were looked for. In this article, the emphasis is on the qualitative content analysis of the comments and answers of the open questions and of the schools' curricula. The answers to the questionnaires were analysed using the method of content analysis (Tuomi & Sarajarvi 2004) by referring to the criteria for sustainable food provision as outlined in the previous section.

In both surveys about 30% of the respondents answered the questionnaires. The responding schools and municipalities were located in different parts of Finland (Fig. 2). Regarding the population and the municipal type they proportionally represented the different municipal categories, i.e. sparsely populated, core and urban adjacent rural areas and urban areas thus improving the generalizability of the results.



Figure 2. The geographical location of the municipalities that responded to a) the survey directed to the municipal caterers and b) the survey directed to schools. Maps: Eeva Lehtonen, MTT Agrifood Research Finland.



## Municipal catering

The survey painted a kind of a portrait of the situation of public catering in Finland, describing the regulative frames and the style of public service by its approach to sustainability. An overview captured from the responses is presented here. However, the municipalities differ as to the population basis, economic resources, governance and decision-making as well as availability of local products and their assortment; this has an important bearing on the conclusions presented in the final section.

### Background

The major target group of the public statutory catering is children and youth. 80% of the catering services within the reach of this survey concern kindergartens and schools, whereas catering services for the elderly people comprise about 10%. The practical administrative arrangements are highly variable, the responsible municipal sector may be technical, educational, social, general administration or the responsibility is shared among two to several sectors of any of the possible combinations.

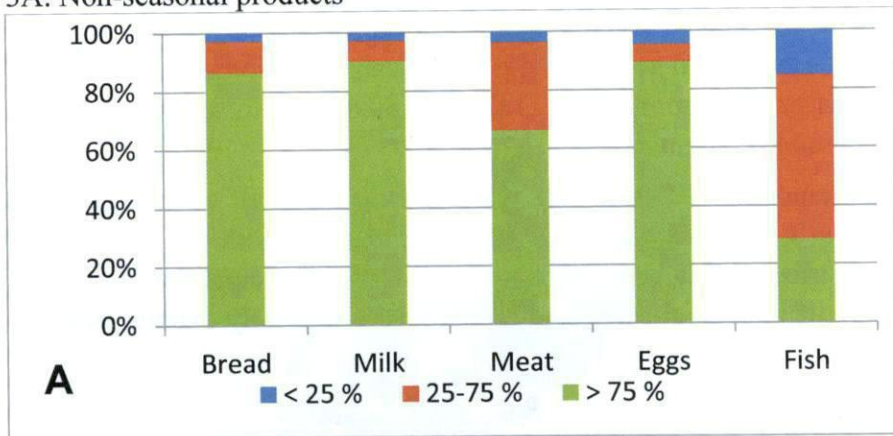
Central municipal kitchen is very important; in over half of the responded municipalities it provides the meals alone or together with the institutional service or distribution kitchens. In about 10% of the municipalities the service is taken care of municipal-owned enterprise, but completely externalized service is a rare exception.

## Provenance of food

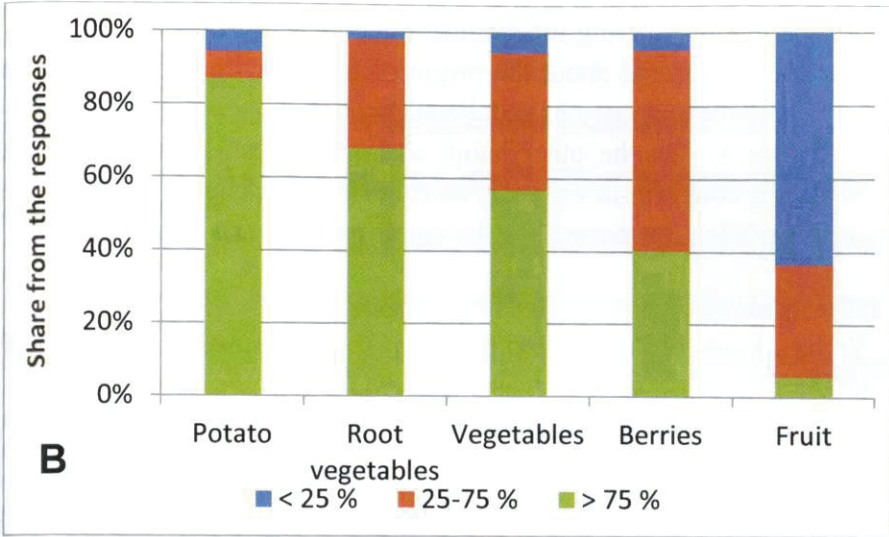
In regard to the basic food items the municipal catering services are firmly based on domestic products, only as regards to fruit and to lesser extent also to fish the share of import is considerable (Figure 3). The only fruit that grows in Finland in volumes of any practical significance is apple, and during the season 35% of the responded municipalities rely in their fruit offering mostly on domestic apple. The monotonous selection of fruit is compensated with a variety of domestic berries that are also abundantly used. The caterers are also interested in local products, out of which the seasonal products and fish are the most commonly used items. Instead, only six of the responded municipalities occasionally use organic products, in one of the municipalities organic products were clearly favoured, and in no fewer than 75% of the responded municipalities organic products are not used at all. Three of the responded municipalities regularly use Fair Trade products, mostly coffee/tea/cocoa and bananas.

Figure 3. The share of domestic food within municipal catering

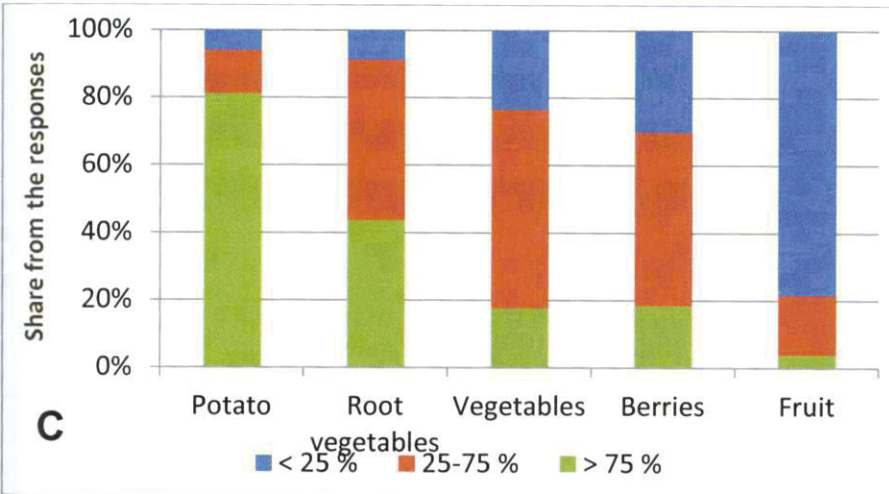
### 3A. Non-seasonal products



3B. Seasonal products during the season (summer and autumn).



C. Seasonal products outside the season (winter and spring).



## Customer information

The customers of public catering receive information, when they ask, but they are seldom actively informed about the origin of food, environmental impacts of production, prise formation, nutritional quality or about activity of the catering service (Figure 4). On the other hand, customers' feed-back is enquired regularly at least a couple times a year, and the feed-back received from the customers is one of the corner stones in developing the services (Figure 5).

Figure 4. Various kinds of information delivered to the customers of municipal catering, and the frequency of information delivery

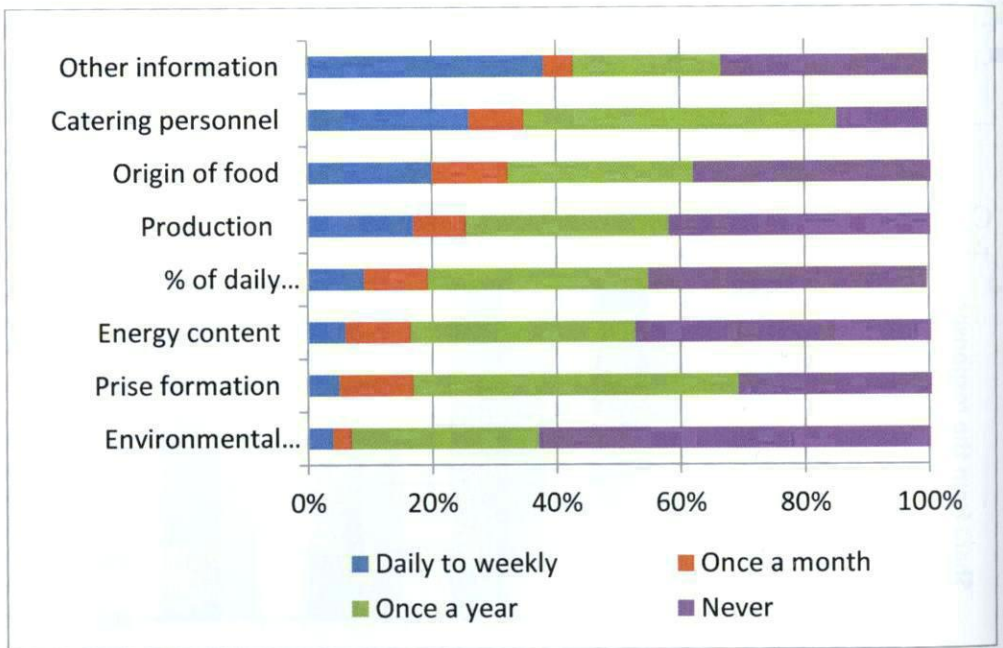
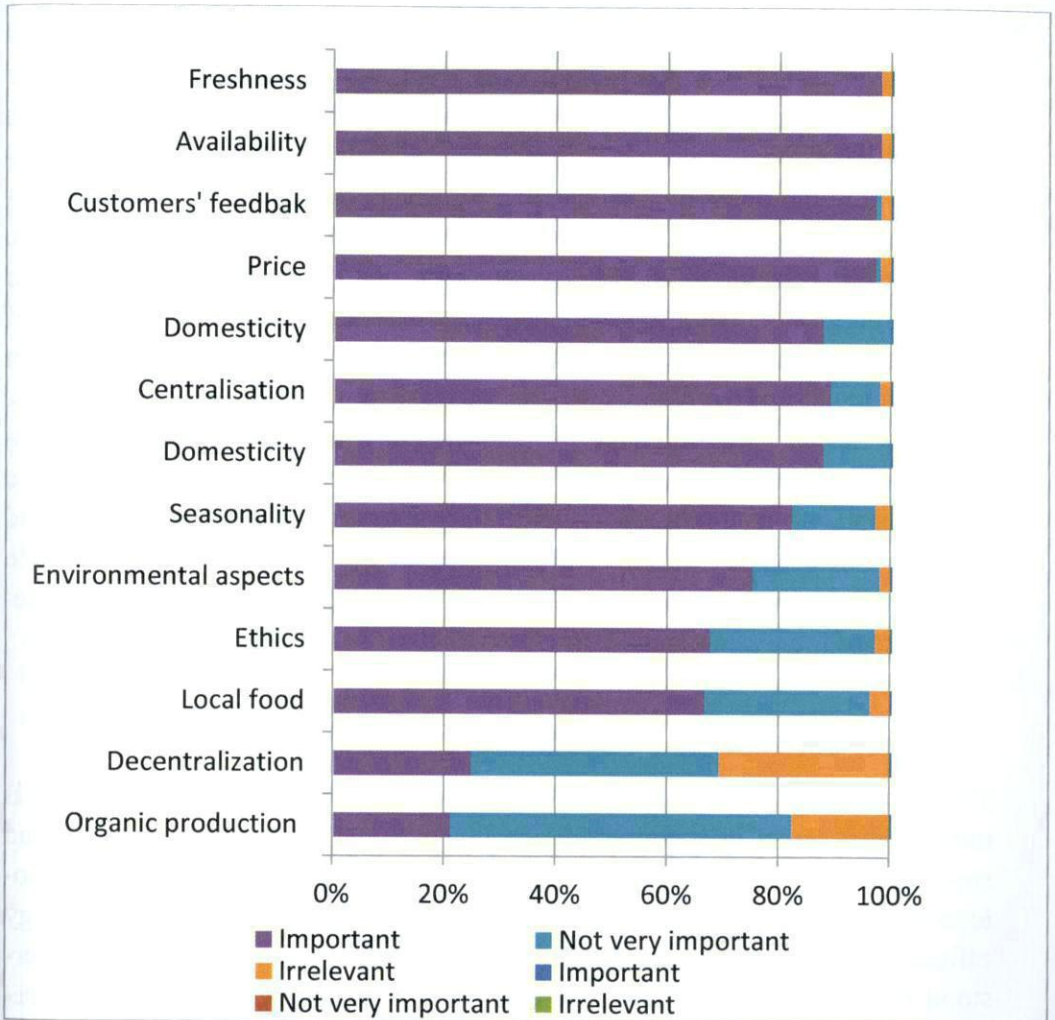


Figure 5. The relative importance of the factors contributing to the developing municipal catering services.



## Caterers' co-operation with various actors

The actor network around the catering services is extensive and comprises the professionals in their own as well as in other institutional kitchens, municipal authorities, elected officials, employees, producers, representatives of whole sale and retail, suppliers, logistics, waste management, extension organizations and research as well as customers and their guardians/relatives. The communication within the network was clarified by asking how often the catering personnel communicate about work-related matters with the other actor groups. Professional colleagues and customers or their guardians are those with whom the communication is most regular and most frequent. The great majority of the respondents discusses weekly or more often with the personnel of their own kitchen and 40% of the respondents also with the customers or their guardians. The personnel of other kitchens are contacted also at least once a month. Discussions with the suppliers and representatives of the municipalities take place 1-2 times a year. Communication with other actor groups takes place now and then, 1-2 times a year or more seldom. The two groups practically left outside the communicative network are the (food system) researchers and the representatives of the waste management.

## Caterers' conception on sustainable food provisioning

The results of the survey revealed, that the eco-social reality of the caterers is rather flat in terms of social and environmental matters pertaining to the food supply chains. For the caterers, the sustainability concept focuses on the ecological sustainability and on environmental questions such as recycling, energy efficiency, use of electricity and raw materials. The economic aspect is understood narrowly more or less synonymous to cost savings and efficiency requirements, and is seen rather as a hindrance for realisation of sustainability goals.

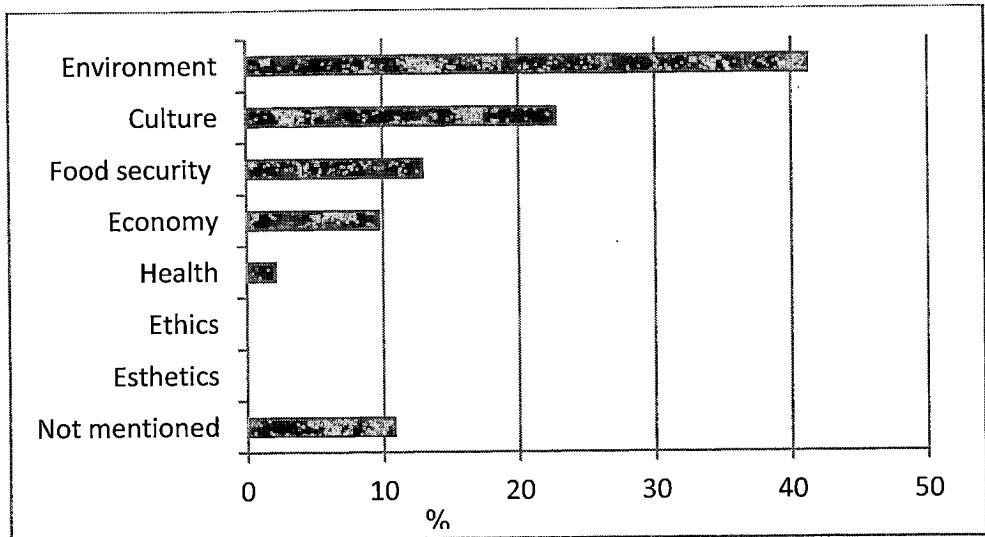


Content analysis of the open questions revealed a much more many-sided approach to sustainability. The caterers appreciate domestic and local food, and these are linked to sustainability through reduced need for transports; increased use of local food is often mentioned as a means to promote sustainability. On the other hand, often the caterers experience the means to influence the decisions regarding food as meagre or non-existent, because the decisions are made beyond their reach.

Although not consciously connected to sustainability concept, also other criteria of sustainable food provisioning seem to be to a varying extent present in municipal food services. The societal function of public catering is in promoting food security and welfare in the society, the nutritional recommendations are the axiomatic foundation and municipal legislation secures equity and justice. The cultural dimension is expressed by accounting for the various festivities and the associated food traditions, and also by providing options not only for health, but also for ethic and religious reasons. Ethics deal with concern about the wellbeing and working conditions of the catering personnel, but the concern is not extended so as to deal with the wellbeing of producers or production animals or with promoting Fair Trade. Neither is much attention paid to the aesthetic questions such as interior of the canteens, service layout and visual quality of food or the eating occasion itself (Fig. 6).



Figure 6. Incidence of the criteria for sustainable food provisioning in the caterers' responses



Source: Risku-Norja 2011.

## Schools

Also in schools, local food is appreciated, and the teachers are concerned with pupils' alienation from normal basic Finnish food. The teachers, however, feel powerlessness and see themselves as being forced to adapt to the continuously shrinking resources reserved for school lunch.

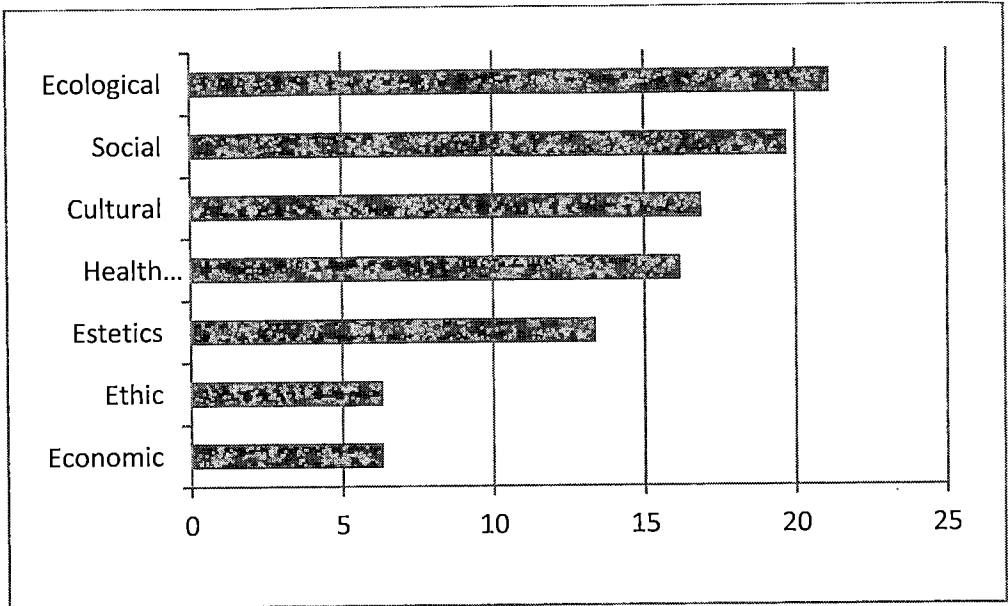
### School lunch and education

School meals are seen separate from the educational goals of the school. Together with health services they are part of the statutory care of the pupils, and as such strongly linked to learning about health, nutrition and good manners.

School lunch is only seldom mentioned in connection with sustainability education or with any of the subject-specific educational goals; if there is any interface to school subjects, it is to the subject “environmental knowledge and natural history” (Table 1 A). In the schools’ curricula, also mentions linking school lunch and sustainability are fairly few. Out of the over three hundred analysed curricula, the connection is explicitly expressed in only 40 curricula. In these the various aspects of sustainability are present, and often several of the criteria of sustainable food provisioning are mentioned (Fig. 7).

A more extensive concept of food education as part of sustainability education is not familiar, neither is it mentioned in the national core curriculum, which forms the common frame for the individual schools’ curricula. Whereas environmental education is well known, sustainability education is not, and it is mostly understood narrowly as environmental education; the emphasis is on recycling and source separation of wastes, energy and material efficiency and in nature protection. The positive contribution of personal behaviour to reducing the environmental impact is stressed.

Figure 7. Incidence of the mentions, that link school food to the criteria for sustainable food provisioning in schools' curricula



### Expressions of food education

A remarkable notion is that no less than 75% of the respondents take their pupils out into the forest to pick berries and mushrooms, also fishing is fairly common (Table 1). This kind of activity is usually confined within the educational goals of the school subject environmental knowledge and natural history. Also farm visits in some form are fairly common (Table 2); these are seen as very convenient means to familiarise the pupils to the origin of food and with food producers. Co-operation with farms is seen as important in strengthening societal cohesion and integrating schools into the surrounding society.

## Co-operation among teachers and caterers

In about half of the responded schools the school has own kitchen, where the food is prepared from the beginning. Own kitchen is clearly more common in rural schools than in the cities. Another 20% has a service kitchen where the meal is heated and/or partly prepared. These kitchens are used in many ways with the pupils, and the catering personnel participate actively in guiding the pupils in these situations as well as in planning various festivities and thematic activities and in their realisation (Table 4). However, because of the many formal restrictions and rules dealing particularly with the hygienic aspects, the pupils rarely participate in preparation or distribution of explicitly the school lunch. Instead, in about half of the responded schools the pupils help in clearing the canteen afterwards (Table 5).

	Care of the pupils	Natural history	Other school subject	Thematic entity	Festivities etc	Other mentions	Not mentioned
Number of mentions	208	123	18	52	106	62	133
% of mentions	30	18	3	7	15	9	19
% of schools	44	26	4	11	23	13	28

	School garden	Wild berries and mushrooms	Fishing	Harvesting bee	No possibility	total
Number of mentions	54	475	136	72	176	913
% from mentions	6	52	15	8	19	
% from schools	9	76	22	11	28	629

	At least once a year	occasionally	No farm visits	Total number
number of responses	266	1709	879	2854
% from responses	9	60	31	

	Themes	Excursion	School bazaar	other	No cooperation
number of mentions	514	548	450	107	28
% from mentions	31	33	27	6	2
% from schools	74	79	65	15	5

	Cleaning	Distribution	Setting the table	Preparation	Other
number of mentions	352	106	162	12	153
% from mentions	36	11	17	1	16
% from schools	51	15	23	2	22

## Discussion

The northern location and severe natural circumstances greatly restrict the possibilities for farming and food production in Finland. In spite of this, municipal public catering is still today largely based on food of domestic origin. This fosters faith that even in extreme circumstances national food security is possible. Both the teachers in schools and the actors of municipal catering also appreciate domestic and local food, and it is linked to sustainability through reduced need of transports and through socio-cultural considerations. However, food security is not perceived as constituting an essential ingredient of sustainable food provision, and the respondents do not necessarily consider domesticity as an important perspective in future. Thus, the preferences are not always in line with their perceptions about the anticipated future development trends. This poses a risk that future development is not based on domestic products, and in search for immediate cost savings the green state ideal of catering for sustainability may be undermined by sacrificing the quality of public catering services (Morgan & Sonnino 2007, Morgan & Sonnino 2008). This concern was brought up by the catering personnel as well as by the teachers,

who feel that the decisions are made beyond their reach and without paying much attention to their preferences. The situation reflects the decisive role of the prize in public food procurement, which has to be submitted to the suppliers' open competitive bidding according to public procurement regulations. In addition, the purchases are often concentrated to purchasing units, and the decision-making is beyond the catering personnel. This is seen to decrease their possibilities to influence the repertoire of the food items.

This study and other studies (Mikkola 2009a, Mikkola 2009b) showed that the personnel of municipal catering service are aware of the development needs, and they have ample professional interest to gear their own activity towards improved sustainability. However, their position seems to be the one locked in efficient performance. They may be asked to do something beyond their capacity or more precisely, anybody's capacity at the moment. Therefore, sustainable public food services should not be left only as the concern of the catering personnel, but the aims need be incorporated into the overall municipal development strategy (Collins & Fairchild 2007). In schools, implementation of this strategy would be concretely expressed in form of school lunch.

Both in schools and among the municipal catering personnel sustainability is often seen only from the environmental point of view. The strivings to promote sustainability focus largely on sorting and recycling of wastes and on improvement of energy and material efficiency. Despite the fairly narrow view on sustainability, other aspects of sustainability are nevertheless intuitively accounted for in public food services, although not perceived as part of sustainability strivings.

This implies that the concept of sustainable food provision has to be concretised to the actors. A frame of reference is provided by the premises of sustainability science, a new emerging field of research that is characterised by problem-based approach, normativeness and transformativeness, transdisciplinarity, interactive learning and linkage to challenges of global dimension (Clark 2007,

Luks & Siebenhüner 2007, Tappeiner et al. 2007, Morgan & Sonnino 2008). This frame is useful in contextualising the sustainability concept and in constructing an action model for sustainable public catering in a participatory process together with the actors. The practical context of municipal, public food service defines the problem-based approach. Because the aim is to promote sustainability, research and development are implicitly normative and transformative or value-based aiming at conceptual and behavioural change. Transdisciplinarity is realised by using food services as the common framework for the various research fields and by producing data and defining goals in mutual understanding between the researchers and the various local actor groups involved in catering. An essential ingredient is interactive learning as a result of which sustainability may gradually become a self-directing process where activities and goals are continuously adapted to changing circumstances and to new knowledge. The questions dealing with food security, equity and sovereignty link the public municipal catering to the global food system based on the network of sustainable local food systems.

The major customer group of public catering is children and young people. Therefore, much more attention should be paid to schools and their food education. Also many of the enduring eating patterns are created in the early age rendering the school meal system as an especially promising means to promote healthy and sustainable eating (Cho & Nadow 2004, Blair 2009). Proper meal during the school days is also a prerequisite for learning. School lunch should therefore not be regarded as a necessary term of expenditure, but rather as an investment to future. Through food and sustainability education school lunch also provides an educational resource that has been hardly used so far. It provides means to bring sustainability education into practical context by showing the connections of food to the environment, society, economy and culture both at local and global scale.

In the responses both the catering personnel and the teachers brought up the feeling of own powerlessness, because the decisions regarding food are made



by the municipal authorities. Still the teachers emphasize for their pupils the significance of personal behavior and choices in promoting sustainability. Although the success of food education may be shown as changes in personal food choices, the progress towards sustainability cannot be relied on individuals' personal behavior. This is because the consumer behavior and attitudes towards food are not consistent; citizens have different perceptions about sustainability, they express various demands and wishes that change over time and depend on the general overall trends as well as on personal circumstances, including purchasing power. In consequence, the direct impact of the changes in individual food consumption habits is extremely restricted and can only be gauged over a very long time span, if at all (Risku-Norja et al. 2009). Consumer information regarding the impacts of food choices is an important part of civic food education. Personal food choices show to what extent the message has been adopted, but the impact of acting in private sphere is limited to personal health and economy. The significance of the consumer information is that increased awareness among citizens is likely to increase pressure towards the decision-makers to act proactively to make use of the robust tools of policy-making. Therefore, an important part of food education deals with empowering the people by providing means and channels of citizen activity in order to influence decision-making; in doing this the catering personnel and the teachers empower themselves, too.

Food education is the meeting point where both the teachers' and caterers views on sustainability can be translated into action so as to promote the sustainable food system idea of the Green State (Morgan & Sonnino 2008). There are ample possibilities for co-operation, and co-operation is well established in those schools that have own kitchen and catering personnel in situ (Table 1 D, E). An essential ingredient in diffusion of the idea of sustainable food consumption is social learning (Brekke et al. 2003, Starr 2009, Young 2009, Wals 2010). Therefore, food education is best implemented in practice by developing the every day eating in schools and working places as a pleasant occasion of

social interaction. Compared with individual citizens, institutional consumers and public catering represent a more homogeneous consumer group with better prerequisites for consistent behaviour. The emphasis in public catering and in school catering is on healthiness and nutrition. The results of this civic education are evident in gradual change of food consumption habits such as increased use of vegetarian products and decreased use of salt and saturated animal fats. If public catering were committed to the principles of sustainable food provisioning, it could provide a more effective channel for improving sustainability in the food sector. This is done to some extent through the sheer volume of public food purchases, but most importantly through civic food and sustainability education. Public catering already plays an important role in guiding nutritional behavior among Finns, and it has contributed to increased use of vegetarian products and improved public health (Prättälä 2003). Similarly to nutritional education, public catering could take an active role in social learning by providing a clear signal regarding the kind of food that meets the sustainability criteria. It is important that the whole school community is committed to the goals of food and sustainability education. The commitment is strengthened when the so called whole school approach is applied; this means that the goals are formulated together, and food education - school lunch as part of it - is integrated into the educational goals of the school (Morgan & Sonnino 2008).

The survey directed to the municipal catering personnel revealed that the municipalities differ as to the foci and development needs. There are, thus, no universal solutions, but the solutions have to be slotted to the prevailing local circumstances and reconciled in mutual understanding among the actors. Innovative networks involving municipal actors, researchers and an expert seem to provide one promising channel for finding the local way to improve sustainability of public catering dialogue (Mikkola 2009b). This requires empowering the actors and encouraging the change in attitude from that of an outsider consumer towards proactive engagement for sustainable food culture. Brokering for sustainability may be developed through participatory action research allowing the

participants to work out both outcomes and methods (Bruges & Smith 2008). The approach implies that the practitioners have valuable knowledge about the system, the application of which is needed when developing activities. Participatory research, thus, embraces participants' own activities and meaning making in collaboration with researchers; the practitioners are the actors who are responsible not only for change but for running the system after the change has been implemented.

## Conclusions

The link between food security and sustainability needs to be highlighted. The case of the Finnish public catering shows that national food security is feasible even in climatically difficult conditions. Food and eating provide means to improve awareness about the various dimensions of sustainability by contextualising the concept through problem-based approach.

More attention needs to be paid to food and sustainability education in schools and in kinder gardens, since these are the major customers of the Finnish municipal catering. School lunch is a so far almost unexploited resource for teaching. The whole school approach involving both the educational and kitchen staff in schools into food education for sustainability is to be persuaded.

The perception of school lunch among decision-makers needs to be changed from that of necessary cost to investment for future. Responsibility for sustainability cannot solely be pushed onto the individuals. An important part of food education deals with empowering the people by providing means and channels of citizen activity in order to influence decision-making.

The solutions of improving sustainability of food provisioning are not universal, but should be sought in a transdisciplinary process of learning, and

tailored according to the local circumstances and in mutual understanding among the local actors.

Participatory action research involving teachers, caterers and researchers are suggested to provide one promising channel for finding the local way to implement food education for sustainability. This would convey the empowerment of both groups of professionals in their efforts for sustainable food culture.

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