Sustainability in the Regional Food Supply Chain of Lahti

Johanna Snell
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JOHANNA SNELL


Abstract:

Unsustainable food production and consumption patterns are threatening our living environment and our lives on earth. There is a need for profound transition in our ways to produce and consume food. Food, its production and consumption is a hot topic currently – as can be seen in media and in several projects run by various institutions. Circular economy and sustainable resource management address different actors as well. The City of Lahti joined the FISU-network and is taking steps towards sustainable resource management. This thesis contributes to the ongoing work of the City of Lahti in developing its food sustainability strategic work through its participation in the FISU-network. The study aims to investigate the state of the regional food supply chain of Lahti, Finland, and its path on sustainability transition. Further on, it examines how alternative food networks may impact different aspects of sustainable local development and what kind of a role actors of regional food supply chain play in promoting food sustainability. This study applied a case study approach and used qualitative research methods in the forms of workshop and semi-structured interviews. The results were examined applying the theoretical framework which included Activity theory, Co-Creation and Economy of Common Good. There are various policies and strategies on global, national and regional level aiming to sustain the food system, food production and consumption, as well as promoting the use of local food. Few of them were used to reveal the present state of the regional food supply chain together with the results gained at the workshop and interviews to find the desired way. Alternative food networks may shorten the food supply chain and allow everyone a chance to contribute to local food sustainability. They may have social meaning by bringing the food supply chain actors together and offering more value than purchasing goods. Consumers can act as co-creators having possibility to influence what is produced, where and how. Alternative food networks may not necessarily be ecological, but they may have wider implications for the regional and local communities on economic, social and cultural levels by offering jobs, interaction, as well as giving a face and a story to the food.

Keywords: Sustainable Development, food sustainability, producer-consumer relations, regional food supply chain, alternative food networks

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Sustainability in the Regional Food Supply Chain of Lahti

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Popular scientific summary:

Our food production and consumption patterns are not on sustainable level currently. It has negative environmental impacts, it uses a lot of natural resources and it is socially unequal on local and global level. There is a need for change to more just and environmentally friendly food production-consumption system. Food, its production and consumption is a hot topic at the moment – as can be seen in media and in several projects run by various institutions. Circular economy and sustainable resource management address different actors as well. The City of Lahti joined the FISU-network and is taking steps towards sustainable resource management. This thesis contributes to the ongoing work of the City of Lahti in developing its food sustainability strategic work through its participation in the FISU-network. The study tried to unveil the state of the regional food supply chain of Lahti, Finland, and how it could change towards sustainable way. Further on, it tried to examine how the Alternative food networks (food circles, on-farm sales etc.) impact to different aspects of sustainable development (economic, ecological, social and cultural), and what kind of a role do actors of regional food supply chain play in sustaining the food system. This study used workshop and interviews to gather information of the topic. There are various policies and strategies on global, national and regional level aiming to sustain the food system, food production and consumption, as well as promoting the use of local food. Few of them were used to reveal the present state of the regional food supply chain together with the results gained at the workshop and interviews to find the desired way. Alternative food networks can shorten the food supply chain between a farmer and a consumer, and allow everyone a chance to contribute to local food sustainability. They may have social meaning by bringing the food supply chain actors together and offering more value than buying food. Consumers may have possibility to influence what is produced, where and how. Alternative food networks may not necessarily be environmentally friendly, but they may have wider meaning for the regional and local communities on economic, social and cultural levels by offering jobs, interaction, as well as giving a face and a story to the food.

Keywords: Sustainable Development, food sustainability, producer-consumer relations, regional food supply chain, alternative food networks

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1. Introduction

This year, Finland’s overshoot day happened already by the start of April, in other words Finland used all its natural resources within a three month time period. Energy production, transport and food production are the main reasons behind Finland’s massive use of natural resources. The overshoot day is the day when humanity’s ecological footprint exceeds the world’s biocapacity, so to say the capacity to produce renewable natural resources and to handle the greenhouse gases caused by fossil fuels. (WWF Finland, 2017.) The mentioned depletion of natural resources along with other environmental impacts as eutrophication and acidification, population growth, unequal division of economic and social welfare are challenging the wellbeing of environment and people. (FAO, n.d.; Tukker et al., 2006: 15, 17.) Agriculture and more general the food system has come to the turning point, the modern way of producing and consuming food is unsustainable as seen in previously mentioned challenges (Nierenberg, 2013: 151). The food system defined by the OECD is “the set of activities and relationships that interact to determine what, how much, by what method, and for whom food is produced and distributed” (Tansey and Worsley, 2008: 216). According to Nierenberg (2013: 151) the world’s food system needs a strategy and a vision of how to feed the earth’s population in the way it stays in the planet’s carrying capacity. Food production and consumption requires transition towards socially just and environmentally sustainable direction. (Nierenberg, 2013: 151.)

Finland is sparsely populated country, primary production is mainly located in the countryside, where entrepreneurs who take care of fields and forests are needed. To gain social sustainability, rural areas should stay inhabited and vivid. Ecological sustainability is connected with material flows, which goes from primary production to consumer, and further on to waste management. Economic sustainability goes the other way round, from consumer to producer. Where the supply best meets the demand, there are better possibilities to prosper. (Tauriainen, 2008: 82.) Concept of sustainable development is further defined in chapter 3. Primary production is only one part of the food supply chain, and there are plenty of issues directing food production such as policies, subsidies and retail - so the producer has limited choices. Therefore, it is essential to emphasize social sustainability to maintain vivid countryside. Food industry and retail influences heavily whether the food supply chain functions enable consumers to purchase food genuinely contributing to sustainable development. (Tauriainen, 2008: 85.)

The food system is transforming and facing many challenges such as population growth, climate change, environmental sustainability and fast technological changes. Furthermore, uneven economic growth and social and economic changes are shaping food systems and diets. (FAO, n.d.; European Commission, 2016a.) To balance the social, economic and environmental aspects of sustainability in food and agriculture, the FAO (2014: 7) has set five key principles: “1) improving efficiency in the use of resources, 2) conserving, protecting and enhancing natural ecosystems, 3) protecting and improving rural livelihoods and social well-being, 4) enhancing the resilience of people, communities and ecosystems, and 5) promoting good governance of both natural and human systems.” These principles give appropriate guidance to national policies and strategies to gain sustainability in the agri-food (agricultural and food production) sector.

Food and drink consumption account for 20-30% of diverse environmental impacts of total consumption, and in the occurrence of eutrophication more than 50% on the basis of a report by the European Commission, Environmental Impact of Products (EIPRO) – Analysis of the life cycle environmental impacts related to the final consumption of the EU-25. The impact of the full production chain, entailing the agricultural production, have been considered in the results, so to say ‘from farm to fork’. From food and drink consumption area, meat and meat products constitute the major share of environmental impacts, and the assessed influence on global warming is 4-12% of all the products. (Tukker et al., 2006: 15, 17.) The discussed environmental impacts are abiotic depletion, global warming, ozone layer depletion, human toxicity and ecotoxicity, photochemical ozone formation, acidification and eutrophication (Tukker et al., 2006: 70). Ecotoxicity refers to environment, and human toxicity to human exposure to substances as chemicals and heavy metals (Tukker et al., 2006: 103). Further on, the food and drink value chain is responsible for 17% of direct greenhouse gas emissions and 28% of material resource use in the EU. The demand of water use is high. Yet, the amount of food waste is 180 kg per person yearly in the EU, covering the whole food supply chain, and in Finland 62-86 kg per person covering the supply chain from food industry to households (Silvennoinen et al., 2012: 6). (European Commission, 2011.) It is estimated that food...
food consumption in Finland is responsible for about 30% of greenhouse gases, and about 40% of other environmental impacts, including ecotoxic effects (Seppälä et al., 2009: 56) – following the line of the EIPRO results. Agriculture is the main source of nutrients in aquatic environments in Finland; 59% of phosphorus and 48% of nitrogen originated from agriculture in 2015 (Finland’s environmental administration 2017). In order to improve resource efficiency and food security; farmers, the food industry (manufacturers of food and drink), retailers and consumers should come together and aim for resource-efficient production techniques, sustainable food choices and decreasing food waste. (European Commission, 2011.)

Food, its production and consumption is a hot topic at the moment in Finland; it can be seen in media and in several programs and projects run by institutions and authorities. Food safety and food frauds (Lukinmaa, 2017) have been in the media spotlight recently. A new project to develop and pilot regional food systems launched in February by the ministry of agriculture and forestry (2017). This project sought groups to apply for funding. This thesis brings one aspect more to this highly fragmented topic which is currently addressing varied actors. It aims to promote better regional governance of food production and consumption in the city of Lahti. The gap in the research field this thesis aims to fill, appears mainly on regional level - my contribution to the field lies in local surroundings, reaching out to actors of the food supply chain and assisting the City of Lahti with its FISU roadmap work.

1.1. The Case of the City of Lahti

This thesis was initiated under the commission of the City of Lahti, the department of Technical and Environmental Services, within the Environmental Development Team. The department of Technical and Environmental Services is responsible for land use and regional plans, the urban environment along with construction and environmental supervision. The department promotes the growth of the city and the development of its areas, the aim is to have an attractive and vivid environmental city. (Lahti n.d.a.) The department is engaged in the FISU-network on behalf on the city of Lahti, and this thesis has contributed to the development of the city’s roadmap work for sustainable resource management, in relation to food production and consumption. FISU (Finnish Sustainable Communities) is a network of cities/municipalities aiming to move towards sustainable resource management; carbon neutral, waste-free and global sustainable consumption by 2050 (Fisu-network.fi, 2016a).

The City of Lahti, Finland, is an environmentally minded city, and is on its way to further improve its environmental scheme and sustainability. Lahti joined the FISU-network at the beginning of 2016 to start work towards sustainable resource management. (In Finnish, the used term is ressursviisaus, if translated directly in English, resource wisdom.) There are five lanes towards sustainable resource management in the municipality; energy production and consumption, mobility and infrastructure, resource use and circulation of resources, food production and consumption, and water use and natural water ways (Broadscope Oy, 2015: 7). The work is done by applying the roadmap approach, using those five lanes as guiding paths. Sustainable resource management is the ability to use resources (natural resources, raw materials, energy, products, time, services, space) rationally, and the way it enhances wellbeing and sustainable development. To be able to secure the wellbeing in future; ecological, social and economic challenges need to be addressed, and sustainable resource management could offer one solution. (Broadscope Oy, 2015: 6.)

1.2. Research aims and objectives

This thesis aims (1) to examine the role played by Alternative food networks (AFN) and its actors in promoting the economic, social and environmental sustainability of the regional food chain and (2) contribute to the ongoing work of the city of Lahti in developing its food sustainability strategic work through its participation in the FISU-network. An objective of this thesis is to review current policies and programs relating to the agri-food sector along with other literature. In addition, empirical material from workshop and interviews will assist in the understanding of the regional food supply chain and its actors.

Markets are telling us what to eat and how to consume. Consumers and producers may be taking in charge for example developing the Alternative food networks to have options for conventional market-based food
supply chains. Food production and consumption can be observed in many different angles and scales. This study has regional and local focus, it investigates the regional food supply chain of Lahti, Finland. The research questions are as follows: How do the alternative food networks (e.g. food circles and on-farm sales) contribute to the environmental, social, cultural and economic dimensions of sustainability? What role do actors of regional food supply chain play in sustaining the food system?
2. Background

2.1. Challenges in the food production and consumption system

We are facing global and local challenges in the agri-food industry. A major one of these is how to turn the agri-food sector onto a sustainable path. There are several issues that contribute to the sustainability of food systems, such as food security, health, safety, affordability, quality and environmental aspects such as climate change and biodiversity. (European Commission, 2016a.) Since the parts of the system are interconnected, for instance, the Western diet (high on meat, fat and sugar) is a risk for individual health, social systems and the environment – change of the diet has positive effect on health and at the same it lowers the environmental footprint in Europe and on global level (Freibauer et al. 2011: 130). There are several factors behind the food system, for example; population growth, food prices and availability, changing diets, food waste, changing supply chains, water, nutrients and biodiversity loss. (European Commission, 2016a.) The main trends and drivers affecting the change in the food system examined on global and sector specific level as illustrated in Figure 1.

![Figure 1](image)

**Figure 1.** Trends and drivers that impact the change in the food system. (Poutanen, 2017: 12.)

Along with environmental factors, eating meat may have negative health effects, as said before. The meat consumption in Finland was 79 kilos per person in 2015, which was 14% more than 2000 (Luke, 2016a). The Finnish nutritional recommendation suggests eating red meat and meat products maximum of 0.5 kilos per week, which counts for 26 kilos per year. Further on, the recommendation for the base of healthy and nutritious diet is on vegetables, berries and fruits, also whole grain products are recommendable daily, along with dairy. Fish is recommended to be eaten two to three times a week. (Valtion ravitsemusneuvottelukunta, n.d.)

Exponential population growth is one factor in the global food system. In 2011, global population reached seven billion. The world population is forecasted to grow up to 8.5 billion in 2030, and up to 9.7 billion in 2050, and to reach 11.2 billion by 2100. The fastest population growth is projected to happen in Africa, and in contrast, in Europe the population is estimated to decline over 15% by 2050. (United Nations, n.d.) Uneven contribution of food and other issues has led to the situation where people suffer from malnutrition and on the other hand obesity. There are 793 million people suffering from chronic hunger (FAO, n.d.) and according to WHO (2016) more than 1.9 billion overweight adults, from which over 600 million were obese in 2014. Obesity and overweight kills more worldwide than underweight. There are several reasons behind
overweight, such as changes in dietary and physical activities which relate to environmental and societal alteration. (WHO, 2016.)

2.2. Policies and strategies over food systems

The European Commission’s Food2030 report sets guidelines on how EU Research and Innovation policy could contribute to the global challenges of ensuring food and nutrition security. To ensure food and nutrition security in the long term, food systems should consider sustainability, link land and sea, and cover the whole food supply chain. The future-proof food system should be more sustainable, resilient, responsible, diverse, competitive and inclusive. (European Commission, 2016b: 4-5.)

There are plenty of options how to examine and plan the food system. The ‘Gent en Garde’, food policy launched by the City of Ghent in 2013 offers hands-on example how to design a food system of a city. The policy is divided in five strategic goals. “1) A shorter, more visible food chain. 2) More sustainable food production and consumption. 3) The creation of more social added value for food initiatives. 4) Reduce food waste. 5) Optimum reuse of food waste as raw material.” Further on, the City set up a food policy council which together refined above mentioned strategic goals into operational goals. (Goossens, 2016: 2.)

On top of the EU level goal settings, there are several strategies and projects on a national and regional level laid down to improve sustainability in the food production-consumption chain. As stated, mandates are given, the question is who takes action, when and how. Few of the programmes introduced below.

Ministry of agriculture and forestry launches new report of Finnish food policy in 2017, its main aim is: “In 2030, Finnish consumers eat tasty, healthy and safe Finnish food that has been produced sustainably and ethically. Consumers have the ability and possibility to make informed choices. A transparent, highly skilled, flexible, internationally competitive and profitable food system responds to the demand. The growth and advancement of the sector are supported by well-coordinated, high-level research and innovation.” (Ministry of agriculture and forestry, n.d.a.) The draft version is available, and states the global and local challenges of the food system. The key national challenges the food system is facing are; to secure the profitability and diversity of primary production, to improve the competitiveness of the food industry, to develop export as well as to maintain a high level of food safety. Challenges of food consumption are lifestyle diseases and how to promote a healthy diet to prevent and treat them. Increased demand for food will form opportunities and challenges for food system. Further on, unequal economic situation of people, ageing population and urbanization will challenge the system. (Finnish government, 2016a: 7-8.)

The Ministry of Environment’s (2012: 34) Sustainable consumption and production program renewal proposes regional and local climate friendly food supply chain to be one solution for the present situation of unsustainable food system. Furthermore, developing and piloting local, closed cycle (nutrition and water) based regional systems, in which the food is consumed where it is produced is suggested.

There are strategies to improve the appreciation of local food, such as Government Programme on Local Food and development objectives for the local food sector to 2020: Local Food – But of Course!.. It is a steering instrument to support the Government’s food policy, and its vision is to add value to local food, and its use in the entire food system, to increase employment, and have positive impact on local economy and food culture. (Finnish government, 2013: 3.)

Sustainable food and growth in Häme (Kestävää ruokaa ja kasvua Hämeessä) strategic development program combines different actors and considers the whole food supply chain from primary producer to consumer. The vision of the program is “Food production of Häme is competitive, interesting, and utilizes regional resources responsibly and creates wellbeing for the region. Consumer knows and values the food produced in Häme.” (MTK Häme, n.d.: 5.) In the core of the program is cooperation within the whole food supply chain (primary production, direct sales from farm, food industry, retail and food services, and consumer) to consider entrepreneurship, environment and wellbeing, along with the network of research, development and innovation (MTK Häme, n.d.: 5). Previous program, Growth in Häme 2007-2013, main achievements were coordinated development work, cooperation and aiming towards common goals, networking and shared positive communication to uplift the image of the food production in Häme (MTK Häme, n.d.: 11).
Another regional program is a Green growth of Häme, a regional plan for rural areas for 2014-2020 by Häme Centre for Economic Development, Transport and the Environment. The plan acts as a base to implement Rural Development Programme for Mainland Finland 2014-2020 (Manner-Suomen maaseudun kehittämisohjelma), and aims to develop Häme as green economy forerunner (Lindqvist, 2013: 2, 11). Rural areas are developed in ecologically sustainable way, and rural and urban areas in interaction create new cooperation and networks, equally benefitting both (Lindqvist, 2013: 12).

2.3. Sustainability assessment of agri-food production in the Lahti Region, REISKA-project

The REISKA-project, started at the beginning of 2015 (ongoing till end of 2017) aims to support the economic and environmental performance of agri-food systems of Lahti and to analyse eco-efficiency and sustainability. The research project tries to identify practices and technologies which support the way towards circular economy. Since the project is ongoing, the results are not available yet. Focus of the project lies on analysing the main production streams; nutrient cycle, waste, biodiversity and food delivery systems in Lahti Region. The following indicates some of the issues raised by the research. By closing the nutrient cycle there are possibilities to lower carbon footprint, reduce eutrophication and prevent climate change. By using sheep to graze on biotypes, it is possible to protect biodiversity and if green marketing is utilized, economic vitality could be reached. Logistics, technology and digitalization may bring various advantages to agri-food system, such as energy saving, efficiency and decreasing of food waste. Using locally fished roach instead of imported fish, it is possible to reduce greenhouse gases and prevent eutrophication in lakes. By having a global perspective, if crops such as oats were produced in Finland, rather than countries which suffer from water scarcity, sustainability could be reached in many ways. (Uusitalo et al., 2016: 56-59.)
2.4. The City of Lahti

In Finland, the cities are rather small, due to our small population of 5.5 million (Statistics Finland, 2016). The City of Lahti has a population of 119,341, which makes it the eight largest city of Finland (Lahti, 2016). The City forecast that its population will reach 125,000 by 2030. Lahti Region, which includes nearby municipalities, has about 167,000 residents. (Henriksson, 2016a: 2, 4.) Lahti is situated 105 kilometres from Helsinki to north and is part of Päijät-Häme Region as seen in Figure 2., which is part of Häme Region.

![Figure 2. Map of the Päijät-Häme Region (Päijät-Hämeen liitto. n.d.).](image-url)
Typical for demographic development of Lahti is that working age people (25-64 years) are decreasing and older citizens are increasing. Half of the population belongs to working age group, under 15 years’ group is 15%, 15-24 years 12% and over 65 years 22%. (Henriksson, 2016a: 8.) Unemployment rate was 9% in 2014 in Lahti (Henriksson, 2016b: 1) which complies with the whole country’s rate 8.7% (Statistics Finland, 2015). Social and health care was the main employer in Lahti with 19% of jobs, industry 16% and wholesale and retail 13% in 2014. In agriculture, forestry and fishery there were 273 jobs which equals 0.5% of jobs. 73% of employees in Lahti were locals in 2014. (Henriksson, 2016c: 1-2, 6.)

2.4.1. The strategy of the City and the environmental policy

There are various policies and strategies that guide cities on different levels, some obligatory and other optional. Lahti is and has taken part in varied international and national projects to improve its environmental friendliness, such as CoM (Covenant of Mayors for Climate & Energy), EU Cities Climate Adapt and ILKKA-project (Climate-Proof City). These projects are aiming to combat against climate change by reducing greenhouse gases along with other measures. There are issues considered such as ecosystem services, biodiversity, cultural heritage and ground water in the strategy and the environmental policy. (Lahden seudun ympäristölautakunta, 2015: 3-4.) Lahti has been shortlisted as finalist to European Green Capital Award 2019 competition with four other cities. The cities need to prove their commitment to environmental improvement and sustainable development to be awarded. (European Commission, 2017.) City’s renewed strategy and environmental policy are set towards a sustainable future. The following paragraphs list the main ideas of the strategy and the environmental policy.

Slogan and vision of the strategy is “We will thrive internationally as a bold environmental city for people and businesses!” One of the targets is to improve competitiveness and to take care of the environment. In 2030, Lahti will be a city that is interesting, known from its environment and self-proud. Lahti will study and value its environment. The urban structure will be developed in a social, economic and ecological manner. Surrounding rural areas will be active. A lot of investment will be put into the circular economy and the planning of carbon neutral and sustainable resource management of the city. The city will protect its nature, ground water and natural waters, and lower its greenhouse gases. (Lahti, 2017a; b; c.)

Environmental Policy has seven main targets, which further divides into target levels and operative target levels. Main targets are as follows (Lahden seudun ympäristölautakunta, 2015: 3, 5-10):

- Lahti will be climate-proof by 2030.
- Comfortable and healthy living environment is a key issue.
- Biodiversity and cultural environments are valued.
- Groundwater is the most important natural resource.
- Aquatic environment is seen as recreational source and valued natural asset.
- Residents in all age groups have possibilities to enhance the wellbeing of their environment.
- Organizations and corporations of the municipality support their personnel’s and policy-makers’ progress on environmental liability.

Since Lahti merged (formed one city) with the nearby municipality Nastola, a policy for rural areas was needed along with the strategy of the city. Few points from the policy which may have meaning for this study follows. New businesses such as bed and breakfasts and health-food should be located in the countryside. Local bio-economy possibilities will be searched to utilize bio-based raw material use. The city will increase the amount of local services and products in its procurement and emphasize economic impacts for the region in the procurement strategy. Social enterprises’ possibilities to produce services will be researched and developed. To enhance the use of local services and products, Support your local campaigns and knowledge sharing will be executed. Participation in policy-making in planning phase will be fixed in practices, such as updating the rural policy. (Lahden maaseutupoliittinen ohjelma 2017-2020 NELLI, n.d.: 16-21.)
When starting the FISU roadmap work, one step is to set the base for the work, including a review about the present strategies and goals which the city is agreed into (Broadscope Oy, 2015: 13). FISU roadmap work and its implementation are central part of the Lahti’s current strategy. The roadmap will be integrated into the new environmental policy. The roadmap work is also connected with SMART & CLEAN -process, started on spring 2016. (Permanto presentation, 20.10.2016.) The department of Technical and Environmental Services is currently working on the new environmental policy and the FISU roadmap. They had a workshop where all the roadmap lanes were worked with from actors of the city’s departments and other organizations. Aim was to set measures and targets to 2020 and 2030 accounting all lanes of the roadmap. Participants choose the lanes they wanted to work with. The plan will be presented to inhabitants and civic organizations, and thereafter to the city board during autumn 2017 and to be approved by the council later this year.

Lahti has clearly considered environmental issues and sustainability in its policies and strategies, but for instance small share of food production and consumption in them wonders. In the procurement policy, environmental friendly purchases which could lower greenhouse gases, and the use of energy and materials were mentioned (Lahti, n.d.b.: 6). Special note was made about enhancing local and seasonal products in foodstuffs (Lahti, n.d.b.: 6). Foodstuffs is part of the procurement units, where environmental friendliness should be considered, and target level for amount is set (Lahti, n.d.b.: 10). Policies and strategies may not offer tools to implement them in practice, and if not enough resources as manpower and money are not allowed, it may be impossible to act in a sustainable manner. The FISU roadmap could offer possibilities to further enhance the city’s environmental friendliness and sustainability, since it takes more topics into consideration and sets clearer targets to reach them.
2.5. FISU network

FISU (Finnish Sustainable Communities) is a network of cities/municipalities aiming towards sustainable resource management; carbon neutral, waste-free and global sustainable consumption by 2050. Municipality together with businesses and local actors plan a common vision and a roadmap to reach the targets. Purpose is to strengthen the regional economy, create jobs and enhance sustainable wellbeing. (Fisu-network.fi, 2016a.) There are eight municipalities involved in the FISU; four of them (Jyväskylä, Forssa, Turku, Lappeenranta) started their roadmap work in 2015, and rest of the four (Lahti, Ii, Kuopio, Vaasa) joined 2016 and are currently working their roadmaps (Fisu-network.fi, 2016b).

FISU work is done by applying a roadmap approach, Table 1. illustrates the used method. The table summarizes the goals in all five lanes, the roadmap example is from the city of Turku. All of the municipalities plan their own roadmaps towards sustainable resource management future. Goals are set for 2050, and 2020 and 2030 act as stepping stones. The roadmap is a practical tool for municipalities to reach the goals, it is planned in cooperation with municipality, businesses and other actors such as organizations, institutes and residents, and with the help of FISU-service center. Targets and actions are scheduled in the roadmap, which visualizes the targeted sustainable resource management. (Broadscope Oy, 2015: 5, 8.)

Table 1. Roadmap of sustainable resource management, the city of Turku (Fisu-network.fi, 2016b).

Sustainable resource management in the FISU work is divided in three main targets: no greenhouse gases, zero waste and no overconsumption. No greenhouse gases mean carbon neutral municipality. Zero waste indicate municipality to act in circular economy. And no overconsumption equal that natural resources are used in the scope of earth’s carrying capacity. (Broadscope Oy, 2015: 6.)
To reach these targets, five lanes are set to guide the work: energy production and consumption, mobility and infrastructure, resource use and circulation of resources, food production and consumption, and water use and natural water ways (Broadscope Oy, 2015: 6-7). In more details, the content of lanes in the following Table 2. (Broadscope Oy, 2015: 7).

<table>
<thead>
<tr>
<th>Lane</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Space efficiency.</td>
</tr>
<tr>
<td>Mobility and infrastructure</td>
<td>Smart and functioning transportation running on renewable fuels. Infrastructure that enables safe, healthy and sustainable mobility.</td>
</tr>
<tr>
<td>Resource use and circulation of resources</td>
<td>Use of virgin raw materials is sustainable and use of recycled materials is maximized. Reuse and recycle considered already in design. New consumption patterns in households and public economy; services, co-owning, renting and loaning.</td>
</tr>
<tr>
<td>Food production and consumption</td>
<td>Food that is produced and consumed in the capacity of one planet leads to wellbeing, health and economic growth.</td>
</tr>
<tr>
<td>Water use and natural water ways</td>
<td>Clean water ways, sustainable water consumption, capturing nutrients and recycling them.</td>
</tr>
</tbody>
</table>

Table 2. FISU lanes to sustainable resource management.

In the FISU guide, more detailed recommendations for food production and consumption were given, as follows. Meat protein should be replaced with plant based protein and Finnish sustainably produced fish. Insects may act as replacements as well in the future. Focus should be set on local, sustainably produced food, since it keeps the region vivid and strengthens the identity of the area. Food production will become more popular in the cities in the form of urban gardening. Greenhouses, hydroponic solutions and vertical farming allow commercial food production in the cities. Food waste need to be decreased. (Broadscope Oy, 2015: 41.)

2.6. Previous studies

Wide range of research has been made about food systems, food supply chains, local food, sustainable food etc. both on national and international level. In this part literature reviewed focused on local food and local food chain and their connection on sustainable development is presented, both in Finland and on international level. One example is a study about environmental and economic impacts of local and organic-local food on primary production in South Savo, Finland. The study looked at the phenomenon through different aspects, and had an interdisciplinary approach. (Seppänen et al., 2006: 12.) The study found out that enhancement of local food may be reasoned in economic and environmental benefits, but changes were rather small when compared to all human actions. Increasing use of local food in rural areas, may not lower environmental impacts, because rural areas produce food mainly for urban population. Food brings urban and rural actors together. Local food is not necessary more sustainable, but when the food is produced nearer, the environmental impacts are more visible and recognizable, and easier to come to terms with the fact that environmental costs need to be shared in a society. Agriculture has formed Finnish landscape, and maintaining cultural landscapes is a significant part of agriculture. Biodiversity can be maintained by grazing
livestock on pasture and cultivating perennial grass. Even the agri-food production is not notable economically on modern society, it may have larger meaning on local and company level. Local food is a way to maintain economics and jobs on rural areas, furthermore importance is taking care of local wellbeing. One of the conclusions was that local food may generate new possibilities and experiments for agriculture and food industry, and that it could serve as managing strategy for rural areas and an answer to challenges brought by globalized economy. (Seppänen et al., 2006: 101-103.)

Another study based on wide literature review on local food and its connection on aspects of sustainable development found out that different aspects of sustainability profiled somewhat differently in studies. According to review by Kuhmonen et al. (2015: 59) sustainability of local food is tied to the whole food system. Acts and regulations, agriculture and food policies as well as consumer behaviour are the issues behind the local food and its sustainability. Closeness of production and consumption, short supply chain, diverse local production and processing and possibility to use local raw materials, natural resources and traditions were seen as the corner stones of the local food. Economical sustainability of local food was bind to production and consumption which strengthens natural capacity, profitable production and local economy. Ecological sustainability was linked on closeness of production and consumption to lower the need of transportation. Social sustainability was related to fairness and participation and cultural sustainability on traditions, continuity and values. (Kuhmonen et al., 2015: 60-61.)

Closer to this study, Paloviita (2010: 1492) studied consumers’ perception on sustainability of the local food supply chain in Central Finland, and found out that the most important aspect of sustainability for consumers was the socio-cultural dimension. In order to develop the local food networks relationships with producers and consumers, social networks, educating of consumers and communication should be considered. Locally produced food and economic sustainability was related to producers, relations with producers and retailers, price and economic obstacles within the public sector (Paloviita, 2010: 1499). Environmental sustainability and locally produced food was linked with logistics, local conditions, processing of food, private car use, along with a mixture of local and organic production (Paloviita, 2010: 1501). Socio-cultural sustainability and locally produced food was connected with personal experiences, such as trust, familiarity, interaction and communication, and easy purchase. Regional issues like history, culture and traditions seemed to influence how people perceived locally produced food. (Paloviita, 2010: 1504.) It was noticed that, while consumers would rather buy locally produced food, shopping from supermarkets is an easier option in hectic life (Paloviita, 2010: 1506).

### 2.7. Agriculture in Finland

Total amount of agriculture and horticulture farms in Finland was 50 999 in 2015, since 2010 about 8 500 farms have ended farming. The amount of the farms has declined, and the size of the farms has grown; 1995 there were 100 000 farms and the average size was 22 hectares. The average cultivation area was 45 hectares in 2015.

Nearly 70% of the farms had crop production as main production and about 30% animal husbandry, dairy cattle being the most general. Main part, 86%, of the farms were family owned, and 8% were agricultural syndicates, the rest were owned by estates and limited companies. One fourth of the farmers were under 43 years and one fourth over age of 59. (Luke, 2016b: 5, 7.)

The profitability of farming has been declining since the beginning of the 21st century, while size of the farms and total profits have increased continuously. In general, the animal husbandry is more profitable than the crop production. Even if agriculture is low profit business (average return on capital -2%), the farms financial solidity is still on reasonably good level. (Luke, 2016b: 6, 28.) The prices paid for producers were shrinking on all meat products and on dairy, staying the same on cereals and rising a bit on eggs (Luke, 2016b: 25).

In 2015, the production of all livestock products increased. The shares of meat products were; pork 48%, poultry 30%, beef 22% and lamb under 0.5%. (Luke, 2016b: 10, 12.) Half of the cultivation land was used on growing cereals (barley, oats and wheat) and the rest mainly on grass and fallow, small amount on varied crops. Peas, broad beans, and field mustard and rapeseed have taken over the areas from decreasing cereal
production. Even the production of protein crops has increased, the amount of domestic protein feed was estimated to be as low as 15% (Luke, 2016b: 16-17.) The growing amount of organic livestock shows on the growing share of organic peas, beans and grass, which was 10-20%, while the share of organic cereals was only 2.3% in 2014 (Luke, 2016b: 19). Overall the share of organic farming has grown in recent years, and 10.7% of cultivation area was organic in 2016 (Pro Luomu, 2017: 3).

2.8. Actors of the regional food supply chain

The regional food supply chain consists of various actors, this study focused on food production and consumption, so the actors examined were primary producer, food industry, retail, food service and consumer. Since this study is limited, many of the actors were left outside, such as suppliers of materials for primary producers, transportation, whole sales and expert organizations. Simplified picture illustrating the food supply chain with more traditional longer supply chain as well as shorter supply chain is presented in Figure 3.

Food supply chain (primary production, food industry, retail and food service) employs 6 400 persons and turnover of the chain was approximately 1 370 million euros in 2012 in the Päijät-Häme Region (MTK Häme, n.d.:7). In the Lahti Region, the food industry employs around 2 500 people (Päijät-Hämeen viljaklusteri n.d.a). Main part of the companies in food industry are small, employing under 20 persons and focusing on bakery sector (MTK Häme, n.d.: 17). Lahti Region is a major grain processor and home to the Päijät-Häme Grain Cluster, which is the biggest grain supply chain actor of Finland, covering the whole supply chain from producer to consumer (Päijät-Hämeen Viljaklusteri n.d.a). The Grain Cluster is a network of producers and companies which are related to food industry of the area (Päijät-Hämeen Viljaklusteri n.d.a). Since there are malting, mills, bakeries and breweries in the area, the Grain Cluster is divided into the bread chain and the beer and beverage chain (Päijät-Hämeen Viljaklusteri n.d.b).

Local food and its producers are appreciated, and it seems that local food trend is here to stay, so it could be further on utilized on local level. The location of the region and its urban-rural connection could be better taken advantage of in marketing, both within and outside of the region. (MTK Häme, n.d.: 17.)

The following chapters introduce the actors of the regional food supply chain briefly.
2.8.1. Producers

The City of Lahti emerged with its neighbour Nastola municipality in the beginning of 2016, and gained more agricultural land and farms. There are 151 farms operating in Lahti on the cultivation land area that covers 6515 hectares (Määttä, email 16.1.2017; Luke, n.d.). Main primary production is growing crops (cereals), 21 farms have livestock; beef cattle on 10 farms, dairy cattle on 8 farms, pigs on 2, and laying hens on 1 farm. Furthermore, there are 10 farms with horses. The average cultivation area is 43 hectares per farm. (Määttä, email 16.1.2017.) Seven of the farms are organic farms, two of them have livestock (Määttä, email 17.1.2017). Currently the number of organic farms in Lahti is below the average number of organic farms in Finland, nearly nine percent of Finnish farms were organic in 2016 (Pro Luomu, 2017: 4).

There are few farms, which have on-farm sales and other services as well, such as cafe and catering in Lahti. Few examples presented as follows. Koiskalan kartano (Koiskala manor) is an organic farm; they have sheep, they farm different crops, have on-farm shop and café, and they give guided tours to groups (Koiskalan kartano, n.d.). Kinnari farm is a crop farm, which have on-farm interior decoration shop, mill, café, catering for groups and on-line sales. In addition to their own products they sell decoration, gift and gardening items. The mill is situated in another place than the farm and on-farm shop. There is a shop selling milling products and café at the mill as well. (Kinnarin tila, 2017.) Koivistoisien Mansikkapaikka is a farm that farm strawberries and offer pick-your-own for consumers. It has four locations, one of them in Lahti. They sell their produce at on-farm and off-farm spots. (Koivistoisen Mansikkapaikka, n.d.)

2.8.2. Food industry

In this study food industry covers the manufactures of food and drink products. In the Päijät-Häme Region, the food industry is concentrated on grain produce, but there are other sectors as seen in Table 3.

<table>
<thead>
<tr>
<th>Sector of food industry</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slaughtering and processing of meat</td>
<td>11</td>
</tr>
<tr>
<td>Processing of fish</td>
<td>5</td>
</tr>
<tr>
<td>Processing of vegetables, berries and fruits</td>
<td>14</td>
</tr>
<tr>
<td>Processing of milk</td>
<td>5</td>
</tr>
<tr>
<td>Manufacturing of mill products</td>
<td>4</td>
</tr>
<tr>
<td>Bakery sector</td>
<td>34</td>
</tr>
<tr>
<td>Manufacturing of beverages</td>
<td>11</td>
</tr>
<tr>
<td>Processing of other foodstuff</td>
<td>13</td>
</tr>
<tr>
<td>Total</td>
<td>97</td>
</tr>
</tbody>
</table>

Table 3. The food industry by sectors in the Päijät-Häme Region (MTK Häme n.d.: 16).

Food industry companies in the Päijät-Häme Region purchase around 30% of raw materials from primary production regionally. Remaining 50% comes from other parts of Finland, and from abroad about 20%. Approximately 20% of food industries’ products are sold regionally, about 60% to other parts of Finland and abroad around 20%. It varies a lot depending on the sector; fish processors sell all regionally, while others sell less than 30% of their products within the region. Processing of organic products is quite low, about 3%, but forecasted to grow in near future. (Viitaharju et al., 2014: 148.)

Oy Hartwall Ab is one of the large actors in the grain supply chain by manufacturing beverages. They have a beer which is brewed from the near produced barley, and is traceable for consumers (Oy Hartwall Ab, n.d.). Integrated to the brewery is a biofuel plant, which use brewery waste as feedstock to produce bioethanol and liquid animal feed as a side product (St1, 2017).
2.8.3. Retail

Grocery trade in Finland is highly centralized, and divided by two main actors; market share of S-Group is 47.2% and K-Group 36.2%. In addition, there is Lidl with market share of 9.3% and some smaller syndicates which have marginal part of the sales. (Finnish Grocery Trade Association n.d.) K-Group bought Suomen Lähikauppa Oy in 2016, which had market share of 6.4% in 2015 (Finnish Grocery Trade Association, 2016: 7). There were 4 004 stores total in 2015 in Finland. Large stores are popular, and cover mainly the grocery sales. Biggest sales in euros were in large supermarkets 37%, hypermarkets 28% and large markets 15%. Number of previously mentioned stores in percentage were large markets 26%, large supermarkets 15% and hypermarkets 4%. (Finnish Grocery Trade Association, 2016: 10.)

In addition to stores, Lahti has a market place and a market hall in the city centre. The market place is open from Monday to Saturday, and monthly markets takes place at the first Wednesday of the month. (Lahen tori, n.d.) The market hall has four shops selling meat, cheese, bakery products and such, along with three cafés (Lahden Kauppahalli, 2017).

2.8.4. Food service

Lahden Ateria is a significant public food service actor in Lahti. They serve approximately 22 000 portions a day, their main clients are schools and hospitals. They try to lower carbon footprint by raw material choices, and they participate in Portaat luomuun -programme. Portaat luomuun -programme (stairs to organic food) is for food service actors whom want to increase the use of organic food in their serving (Portaat luomuun, 2016). There are six stairs referring to the use of organic food in a food service (Portaat luomuun, 2016), at the moment Lahden Ateria is on the level one to two. Certain foodstuffs as potatoes and bread are sourced locally. Berries and meat are Finnish origin, and the aim is to use mainly Finnish raw materials. Products as canned food come from abroad. (Laine, email 18.4.2017.)

According to a report by Finnish national agency for education, the prices of the school food vary a lot, from 1,67 to 8,28 euros per student per day depending on municipality. In Lahti, the price of the school food was 2,29 euros per student, average price in Finland was 2,76 euros in 2015. One of the factors impacting the price is the size of the municipality, larger cities have lower costs on school food than smaller municipalities. In general, the larger unit allows lower costs; centralized cooking means less personnel and lower costs. Even if there are exceptions, some small municipalities have managed to get good local suppliers and personnel that work passionately which keep the costs down according to Koski from municipality of Tynävä. (Koskinen, 2017.)

Since agriculture together with food industry plays an important role in the region; agriculture’s share of GDP is around 2% and food industry’s share is around 13% of GDP, it could be smart to put more efforts on enhancing the use of local and regional products at the public food service. By favouring local and regional products, economy of the region could be boosted up. (Viitaharju et al., 2014: 151-152.)

There are several restaurants and cafés in Lahti. Special Vellamo-menu is designed to promote local products in cooperation with restaurants, small food processors, association of chefs of the Päijät-Häme Region and innovation company Agropolis Oy. Vellamo-menu highlights the local tastes and seasonal delicacies. It is served in seven restaurants of the region. The ones in Lahti are Roux, Lahden Seurahuone and Mukkulan Kartano. (Vellamomenu, n.d.)
2.8.5. Consumers

The chapter 2.4 presented the inhabitants of Lahti. Lahti as other cities and its residents are starting to show interest to city farming and alternative food networks. In Lahti, there are Community Supported Agriculture -group (CSA), Food Circle -group, and three REKO Circle -groups in action, short introduction of groups in the following paragraphs.

Community Supported Agriculture in Lahti

Lahden Ruokaosuuskunta, ROK, (Lahti food cooperative) is a community supported agriculture group, established in 2013. Currently there are about 150 members, 50 of them have bought harvest share for season 2017, the target for harvest shares is 75 (Bruder, email 12.5.2017). It is situated four kilometres from the city centre. Vision of the cooperative is to produce clean and tasty food for its members by respecting the nature. Mission is to enable membership and being a part of the cooperative to all. Aim of the cooperative is to grow food and cultivate in a communal way. The cooperative rents field and greenhouse from Aaltonen garden, and hires a gardener. Cultivation is done following the biodynamic principles. To fund its actions, members pay the participation share and joining fee, and yearly the harvest fee. The members share the risk of the yield, gardener gets paid – but members share whatever comes from the yield. The cooperative members may join the cultivation work by volunteering. (Lahden Ruokaosuuskunta, n.d.)

Currently there is one community supported agriculture group in Lahti, but second one could be on its way. There is an organic farmer in Hollola (neighbouring municipality of Lahti) who wishes to start more communal way of producing. At the moment, he is crop farmer, but would like to expand on growing vegetables. In order to get his share of markets, his plan is to develop CSA model or similar to form a community. (CSA workshop, 12 Mar 2017.)

Food Circle

Food Circle in Lahti has around 70 members (consumers) and around 16 producers/suppliers. In cooperation, they have formed a network with producers, whom supply their produce to Food Circle every week. There is a member fee, and all the work is done voluntarily. Local producers supply products such as grains, meat, vegetables, eggs, flours, cheese and herbs. Food Circle offer other foodstuffs as nuts, spices, rice, coffee and chocolate as well as cosmetics to its members. They act environmentally friendly and enhancing sustainable organic production. Orders are placed web-based and collected from the city centre. (Lahden Ruokapiiri ry, n.d.a.; n.d.b.)

REKO Circle

REKO Local Food Circle (Rejäl konsumtion, fair consumption) is a Facebook based system where consumers place their order by commenting producers’ posts. Delivery is done by producers at the market place or similar place in certain time for example every other week. Reko Circle started from west-coast of Finland in 2013 by Thomas Snellman and expanded fast. Founder Snellman received Local food act of the year -award in 2015. (Vihanta, 2015.) There are around 150 Reko Circles over Finland, which act locally. In Lahti, there are three groups. (Maria, 2017.)
3. Concepts and Theoretical Framework

In this chapter, the main concepts used in this study are explained along with the applied theoretical framework.

3.1. Sustainable development

Sustainable development has many definitions, and the original is the Brundtland Commission’s: “Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” (WCED, 1987: 41.) Sustainable development has three aspects; economic, ecological and social or socio-cultural. Consumption should occur in the scope of world’s ecological means, and human interventions should not endanger the natural life supporting systems on Earth. Economic growth should happen by increasing productive potential and by ensuring equal opportunities to all while meeting human needs. Needs are in relation to social and cultural aspects; therefore the promotion of values should consider consumption patterns that are bound within ecological limits and reasonable to all. (WCED, 1987: 42.) As there are varied definitions of sustainable development, there is a need to pin down the definition used in this study. In this thesis, sustainable development is seen as Hahn (2014: 339) describes it in Green Economy; social and economic development sustain ecosystems. More precisely “sustain the capacity of biosphere to deliver ecosystem services to human societies, including the resilience of integrated socioeconomic and ecological systems in periods of crises.” This kind of approach is illustrated in a way that the economy is a sub-system of the social system, which is a sub-system of the ecological system. There is further explanation of how the sustainability relates to food system later on.

3.1.1. Food sustainability

According to the FAO (2014:13) agriculture can be defined as: “the mechanism that utilizes natural resources (land, water, biodiversity, forests, fish, nutrients and energy) and environmental services and transforms them into agricultural products (food, feed, fibre, fuel) and the associated economic and social service (food security, economic growth and poverty reduction, health and cultural values).” As Marsden and Farioli (2015: 333) states “under the current circumstances we need to re-conceptualise the agri-food-energy-land nexus in terms of wider bio-economic and eco-economic framings.” In addition to agriculture there is a need to understand what is meant with sustainable food, sustainable food system or sustainable food production-consumption patterns in this study. Couple of key instruments are sustainable food and food security. Food security is defined by the FAO (1996) stating: “food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life.” Further on it allows adequate compensation to producers and production that uses natural resources in the scope of nature’s carrying capacity. Sustainable food production considers employees, farm animals and environment’s ethical norms of wellbeing. Referring to previous, sustainable food is produced environmentally friendly and is nutritious, safe and affordable. Food is related to culture – it illustrates the regional foods and traditions. As said, food production is strongly related to culture, land scape and environment. Though, social meaning is easily neglected – often in Finland the main argument about food is its price. Due to price competition, same products which are produced, are imported as well. (Risku-Norja and Mononen, 2012: 174, 178.) The choice of foodstuffs in a diet has the biggest impacts on environment; processing, transport and packaging have lower impacts. Meat and dairy have bigger impacts than fruits and vegetables – choosing seasonal and plant-based food could lower the impacts to environment. (Ministry of Environment 2012: 35-36.)

The transition is needed in agri-food system to reach sustainability. As Marsden (2013: 132) argues, the transition requires reflexive governance approaches, which would address wide range of actors including for instance health, nutrition and urban community planning among others. There is need for established connections between government and the private food sector to alter. The scene would be set for non-governmental organizations and consumers, but their fragmented agendas may hinder the outcome. (Marsden, 2013: 131.)
3.2. Local food

Local food is not necessarily more sustainable per se, but when the food is produced nearer, the environmental impacts are more visible and recognizable, and easier to come to terms with the fact that environmental costs need to be shared in a society (Seppänen et al. 2006: 99). It is important to realize that food need to be produced somewhere (Marsden, 2013: 125), if we would end farming in Finland we would outsource all the environmental impacts to other countries. This approach is essential when discussing the social responsibility of food production’s environmental impacts. (Seppänen et al. 2006: 99.) Local food systems have developed to counter the complex global-oriented food chains (Feagan, 2007: 25) controlled by couple of transnational corporations (Hinrichs, 2000: 295). There are different types of local food systems, as community supported agriculture, shorter food chains and farmers’ markets, in addition varied labelling (labels of origin) can occur (Feagan, 2007). Community supported or shared agriculture, CSA, is one example of local food systems, where community (the people of the place) and the place are bound tightly (Feagan, 2007: 27). Local food has many definitions, and often loose. In Finland, the definition of local food is, that it is produced close to where it is consumed, its origin, producer and manufacturer is known. Local food gives an option when safe, fresh and tasty food is needed. By purchasing local food, the wellbeing of the region is supported. (MTK, 2013.) Common to local food systems is that they are seen as sociocultural processes, where producer and consumer relationship and purchasing food is re-embedded in community and place (Feagan, 2007: 28).

3.3. Alternative food networks

Alternative food networks (AFN), short food supply chains (SFSC), local food - there are many terms, as Feagan (2007) in his study brought up, and they have their specific meaning which may alter between and even within countries (Renting et al., 2003: 394). Alternative food network may be used more as umbrella term and short food supply chain is more specific covering actors involved in the production, processing, distribution and consumption of food products (Renting et al., 2003: 394). As Feenstra (1997: 28) points out, regional food systems bring urban and rural people together, and form one community (people interested of similar issues). This community offers adequate food, farming in sustainable way, clean and safe environment, as well as social and cultural interaction. This kind of approach is in the heart of alternative food networks. People plan and implement sustainable, local food systems, which originate in specific places, strive to benefit farmers and consumers economically, produce and distribute ecologically, and improve social equity and democracy amongst all members of the community. (Feenstra, 1997: 28.) Short food supply chains allow to re-socialize and re-spatialize food (Feagan, 2007: 25). They offer alternatives to conventional industrial mode of food production and distribution (Renting et al., 2003: 398). The origin of the food is known and the producer-consumer relation is valued. It is more than just the product sold, there is a relationship between producer and consumer, which adds value and purpose to purchase. (Marsden et al., 2000: 425.) Shorter chains allow food production to come closer to locality, which may direct farming to more environmentally sustainable way (Renting et al., 2003: 398). Marsden et al. (2000) divides SFSC into three types. First one is face-to-face; there is direct purchase from producer to consumer. Presently, the purchase via Internet is seen as face-to-face as well. Second category is spatial proximity; local nature is the key, products are from specific region and sold there too. Third identity is spatially extended; consumers and producers do not share the region of production, but the information about the product and its producer are given to consumer. (Marsden et al., 2000: 425-426.) Examples of previous categories as follows. Face-to-face SFSCs may be for instance farmers’ markets, pick your own, box schemes and so on. Proximate SFSCs may be regional hallmarks, consumer cooperatives, community supported agriculture etc. And extended SFSCs may be illustrated with certification and production labels. (Renting et al., 2003: 399.)
3.4. Theoretical framework

Nuutila and Kurppa (2016) used the framework they developed to model the Finnish food supply chain, and further on to examine how to reach the organic food goals set by the Finnish government. In their study, they stated that the current food chain needs to change due to its negative externalities. Further on, they argued that goals set by the Finnish government on increasing the organic food have not been reached. Based on previous arguments different theories were used as a combination to set one framework to work with; theories used were Activity theory (AT) which was supported with Co-Creation (CC) and Economy of Common Good (ECG). AT was used as a frame to set the elements of the food chain activities, CC displayed the advantages of collaboration, mutual creativity and innovation, and ECG illustrated the attention from private good to common good. (Nuutila and Kurppa, 2016: 1) In the following paragraphs concepts of Co-Creation, Economy of Common Good along with Activity theory are introduced briefly to further comprehend their meaning.

A model by Nuutila and Kurppa (2016) gave a suitable framework to examine the local food and alternative food networks instead of the national food supply chain which they studied. Dividing elements of the regional food supply chain allowed investigating the supply chain and its actors in smaller parts, which assisted in understanding the development of producer-consumer system.

To develop the food supply chain the way consumers are involved in designing services and products, Nuutila and Kurppa chose the Co-creation theory (Nuutila and Kurppa, 2016: 3). Co-creation can be used in the processes that take place through the whole supply chain between the supplier and the customer to benefit and to give more value for the customer (Payne et al., 2008: 84). It can be seen as a dialogue between a customer and a supplier; customer’s relationship experience forms from emotion, cognition and behaviour and it encounters with supplier’s co-creation and relationship experience design (Payne et al., 2008: 86). Co-creation of value can be applied in different situations from supplier’s part to enhance the understanding of the customer’s needs, and to better communicate with customers (Payne et al., 2008: 93).

Since the financial profit is unequally distributed currently in the food supply chain, Nuutila and Kurppa (2016:4) suggested another type of economic theory such as theory of ECG. Economy of Common Good, ECG, is a movement which offers an alternative way to look at the economic system. The system that is value-based promoting the needs of the population entirely. For businesses ECG offer a tool to evaluate how well it manages to promote the common good based on values. For the political level, it aims to change the present legislation to bring good life for every living thing and for the planet. On the social level, ECG tries to encourage people to action in cooperation through awareness rising. (ECG, 2017.)

Elements of the food supply chain were set in the Activity theory model including government programs along with theories of CC and ECG (Nuutila and Kurppa, 2016: 4). Activity theory is applicable in the life practices, and particularly in the interrelations of work and learning (Engeström, 2014: 23). The aim of activity learning is the societal productive practice; it analyses and connects elements, it transforms them into solutions and expands them into new activity construction within societal productive practice (Engeström, 2014: 99). Activity theory is illustrated as a triangle, which include; subject, tools, outcome, object, rules, community and division of power as seen in Figure 4.
Figure 4. Activity theory model. (Nuutila and Kurppa, 2016: 5.)

In Figure 4, the arrows illustrate how the desired supply chain could be formed. The community expresses its will to allow better division of power among the supply chain. Communities values and rules as legislation and taxation impacts. Subject i.e. actors of the supply chain place the principles of Economy of Common Good to tools. Suitable tools enable to reach the object, and with adequate volume outcome could be reached. (Nuutila and Kurppa, 2016: 4.)
The model has been modified by Nuutila and Kurppa (2016) to fit into the Finnish food chain, and is applied in this study to set the elements of the regional food chain in it as shown in the Table 4. below.

<table>
<thead>
<tr>
<th>Elements of the activity model</th>
<th>Current food chain</th>
<th>Suggested food chain</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Outcome</strong></td>
<td>- common good not valued</td>
<td>- more value to common good</td>
</tr>
<tr>
<td></td>
<td>- unequal profit</td>
<td>- equal and fair profit to actors in food chain</td>
</tr>
<tr>
<td></td>
<td>- distribution in food chain</td>
<td>- regional and sustainably produced food available to wider amount of people, targets met</td>
</tr>
<tr>
<td></td>
<td>- targets set by government and other authorities not reached</td>
<td></td>
</tr>
<tr>
<td><strong>Object</strong></td>
<td>- external costs not included</td>
<td>- sustainable regional food supply chain</td>
</tr>
<tr>
<td></td>
<td>- financial profit of retailers</td>
<td>- different options available</td>
</tr>
<tr>
<td></td>
<td>- AFN available, but in margin</td>
<td></td>
</tr>
<tr>
<td><strong>Tools</strong></td>
<td>- processes, tools, manpower, knowledge, skills</td>
<td>- CC and ECG tools linked to sustainability</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- digitalisation, logistics, awareness, appreciation to improve processes</td>
</tr>
<tr>
<td><strong>Subject</strong></td>
<td>- actors of the food chain are not involved in the decision-making</td>
<td>- actors of the food chain involved</td>
</tr>
<tr>
<td><strong>Community</strong></td>
<td>- actors are not communicating through whole food chain</td>
<td>- wider interactions between all actors of food chain</td>
</tr>
<tr>
<td><strong>Rules</strong></td>
<td>- low level of access to legislation processes</td>
<td>- better access to legislation processes</td>
</tr>
<tr>
<td></td>
<td>- different rules and corporate responsibility</td>
<td>- commonly agreed rules</td>
</tr>
<tr>
<td></td>
<td>- strategies and policies to guide sustainability, but low impact</td>
<td>- strong guidance to develop sustainability from government and municipality</td>
</tr>
<tr>
<td><strong>Division of power</strong></td>
<td>- unequal distribution of power</td>
<td>- equal distribution of power in food chain</td>
</tr>
<tr>
<td></td>
<td>- food industry and retail have more say</td>
<td>- more alternatives to balance the relations in food chain</td>
</tr>
<tr>
<td></td>
<td>- monopolies and oligopolies</td>
<td></td>
</tr>
</tbody>
</table>

Table 4. The elements of the activity model applied in the regional food supply chain. (Nuutila and Kurppa, 2016: 4.)
The following sections introduce in more depth the different components of the model proposed by Nuutila and Kurppa (2016), and which will be subsequently applied in the rest of this thesis. The chapters review some of the strategies and policies to unveil the present state of the food supply chain and to find the desired food supply chain addressing the theory by Nuutila and Kurppa (2016) further on the study. Many of the strategy papers are on national level, but include similar goals and visions, as the regional ones presented in part 2.2. National and regional programs give mandate to policy-making and reasoning to reach targets set in them. They guided this study to focus on topics raised at the workshop and interviews, and applied model assisted to categorize issues further on.

3.4.1. Outcome of activities

According to Nuutila and Kurppa (2016: 4) outcome comprehend to reach government goals set to organic food, accessibility of common good and fair financial profit. As pointed out, the goals set by the Finnish government on organic production and public procurement are not reached (Nuutila and Kurppa, 2016: 2-3). This paragraph gives brief introduction to discussed programs. After Johannesburg (The World Summit on sustainable development) in 2002, Finland launched its Programme for sustainable consumption and production in 2005. The programme’s vision was to lift Finland on top level with eco-efficiency and cleantech along with decreasing the material consumption use and using natural resources in the scope of carrying capacity of the nature. (Ministry of Environment, 2012: 9.) To gain information on environmental impacts of production and consumption in Finland, ENVIMAT-project was carried out, and report was out in 2009 (Seppälä et al., 2009: 3). Government decision on sustainable choices in public procurement released in 2009 and renewed 2013 aims to lower material use and reduce harmful environmental impacts (SYKE, 2013). In 2016, Government decision on responsible choices in public procurement of food and food service purchases aims to guide public food service to use responsibly produced food. Purchasing food that has been produced by environmentally good cultivation and production methods, and by enhancing animal welfare and food safety, it is possible to reach high quality and overall economic sustainability. (Finnish Government, 2016b: 1.) To help purchasers, hands on guide on responsible choices on public procurement was published in March 2017 (Ministry of agriculture and forestry, n.d.b). Carbon footprint and other similar indicators could inform consumers on impacts of their choices and guide them to select products that are better for the environment (Ministry of Environment, 2012: 10, 16).

3.4.2. Object

Object sought after is sustainable performance of food system (Nuutila and Kurppa, 2016: 4). There is interest for organic food in both sides; producers and consumers show growing interest on organic food. Hinkkanen, expert on organic and crop production from ProAgria Southern Finland, says that one of the reasons to convert to organic farming is its profitability. Since 2008, organic production has been more profitable than conventional. Demand motivates to produce organic food as well, and currently there is demand for all organic food Hinkkanen states. (Kokko, 2017.) Organic farming is a part of sustainable food system.

3.4.3. Tools

To reach the goals such as organic food, appropriate tools are required for production, processing, sale, preparation and consumption of organic food (Nuutila and Kurppa, 2016: 6). These tools should apply principles of the Economy of Common Good and sustainability including organic food production (Nuutila and Kurppa, 2016: 4). Above mentioned programs could be applied as suitable tools – to make them work as wished, they need to be implemented, but if left on strategic level without actual targets, they may not do the work.

One important tool is teaching about food and sustainability. The food culture, relationship to food and its nutritional aspect should be learned in preschool and carried out all the way through school system. It increases the appreciation of food and its producers. (Finnish Government, 2013: 19.) The new school food recommendation by Finnish nutritional authority, Syödään ja opitaan yhdessä (Let’s eat and learn together),
lists important themes in which the joy of eating school food consists of: tasty, nutritional, sustainable, healthy and safe eating, food and sense-based food talk and learning of lifestyles which enhance wellbeing. It gives guidance for all actors of school food sector, considers how to arrange school food, food’s value as nutrition as well as learning food sense. In addition, it states that public food service can give possibilities to local food chain actors, be part of Finnish food security and sustainable development. (Valtion ravitsemusneuvottelukunta, 2017: 5, 14.)

Consumers wish information regarding origin of food and food production chain, such as animals’ well-being and environmental impacts (Ministry of Environment, 2012: 38). It is argued that even if consumers have the knowledge, which nowadays is fairly easy, they still make choices against it. Citizen preferences do not seem to match with consumer behaviour. Political action could have more effect than consumer choice. Nevertheless, consumers are encouraged to make good choices, to act responsibly, even if the impact is not that large. Especially consumers together, in form of movements promoting for instance ethical food, can raise awareness and influence policies. (Rundgren, 2016: 110-111.)

3.4.4. Subject

Different actors of food chain i.e. subjects; producers, industry, retail, food service and consumers should all be considered, even there is a lot of talk about consumers and how they are not included in the decision-making and information sharing. Co-creation of value in the food supply chain should happen cooperatively among actors of the food chain. (Nuutila and Kurppa, 2016: 7.)

When there are options and possibilities to choose from, consumption can turn to low carbon and less environmentally burdening way. Consumers should be taken into negotiations and solving problems as co-creators. (Ministry of Environment, 2012: 16.) CSA is one way to co-create value; consumers and producers commonly agree how the food is produced and purchased (Luomutietopankki, 2014).

When consumers have not taken into consideration in decision-making and information sharing in society, they may start their own initiatives to be able to participate as in alternative food networks like food circle and CSA. As Coenen et al. (2008: 91) argues, participation in decision-making in sustainable consumption policies is crucial to have all actors of the supply chain heard. Acceptance of consumers, especially in policies aiming to change consumption patterns is important. Consumers can act as co-producers of policies, and help policy-making by bringing up local knowledge. They may also impact policy-making through market mechanism using consumer power. Participation can educate people of the environmental problems, bring awareness to consumers and lead to changes on consumer behaviour. (Coenen et al. 2008: 91-92.)

Lot of pressure is set to consumers, and large amount of knowledge is poured over them. The thought is, that in that way consumers can make sound choices. The thing is, as consumers become more individualistic, their consumption is determined by varied issues; preferences vary from organic, ethical, Finnish, vegetarian, healthy, taste – people make their own combinations. Values guide the decisions and personal choices have mainly impact on own health, quality of life and economics. Behaviour fluctuates; trends, purchase power and state of life influence on choices. Referring to previous, problems of the food production and consumption cannot be solved relying on consumer choices. Yet, when people get together, they can make a difference. That is why consumer education should include consumption criticism, which could lead to changes in consumption manners. Then people could agree that not all available foodstuff is needed all the time, seasonal and local products could have better stance. (Risku-Norja and Mononen 2012: 189-190.)

3.4.5. Community

Community is the food system, including consumers along with other communities (Nuutila and Kurppa, 2016: 4). Genuine cooperation between actors is a target set by Local Food - But Of Course! - programme. Scattered nature of development work in the sector, projects that are not taking all parts of the chain in consideration and lack of national coordination were some issues that were taken up in the mentioned programme. (Finnish government, 2013: 18.) Improving cooperation in the whole food supply chain is on agenda in the regional programs as well (MTK Häme, n.d.: 5). These are issues that raise discussion, and should be lifted up more in national and regional development programmes, and more importantly to be
implemented. Importance of interaction among the actors and having face-to-face contact with producer and consumer to create social capital were seen as positive impacts of alternative food networks which raised up in a study by Nousiainen et al. (2009: 584-585).

3.4.6. Rules

According to Nuutila and Kurppa (2016: 4) rules are set by the actors of the food chain and covering the government interaction as well. Food system acts in many levels, as does the institutions (public policies, corporate policies and civic actors) directing it. There is a gap between current actors and their policies; government regulations, commercial soft laws and civil societies’ voluntary initiatives. To have more sustainable production and consumption, these actors and their rules need to meet. (Smith et al., 2015: 48.) Policies for sustainable food system should cover the whole chain from producer supply to consumer demand. Rural infrastructure and agricultural research and development is also needed. Policy interventions should reach further than market mechanisms; consumers should have access to safe, healthy and affordable food. (Smith et al., 2015: 25.)

Private sector, state and municipalities in front line, should act as examples and activate and enable more sustainable life styles and consumption (Ministry of Environment, 2012: 11). One way to act is by public procurement as stated earlier. The importance of public procurement is its magnitude, the public sector spends 35 billion euros in goods and services, the share is 17% of the Finnish GPD (Motiva Ltd, 2016). One part of the public procurement is the food service. Through public procurement the public food service purchases about 15% on regional level, and the value is around 32 million euros. Approximately 65% of food products is from other parts of Finland, and from abroad about 20%. If the amount of local food would be higher in the public sector, it could increase the revenue left regionally and offer more jobs, as well as respond to demand and increase the appreciation of local food among consumers. On national level; share of agriculture is 2,8% of GDP and it employs 4,1% of employees and share of food industry is 7,1% of GDP and it employs 3,8%. (Viitaharju et al. 2014: 10.)

3.4.7. Division of power

Equality and fairness were sought after at the division of power in Nuutila and Kurppa (2016:4). As well known in general and stated in many reports and studies, as in Nuutila and Kurppa (2016: 8), retail companies and food industry have more power in the food supply chain than other actors. Concentrated and centralized food industry and retail are setting the frames for the food supply chain. Two main retail chains in Finland have intensified the power of purchasing in the food production. There are only few actors (purchasers, wholesale and retail) linking the producers and consumers. This kind of centralized power is seen both on national and global level. (Poutanen et al., 2017: 8.)
4. Methods

The present study uses qualitative methods for data collection and analysis. It aims to understand the regional food supply chain by investigating what people think of the food chain and how they perceive their role in it. (Kananen, 2014b: 62-63). As Kiviniemi (2015:84) argues, qualitative study is a coloured interpretation processed by researcher, so the data analysis and report can be seen as personal construction of researched phenomenon. The research can be conducted in interaction with the object of a study, and with subjective way by creating findings together with the informant (Guba and Lincoln, 110-111).

The method applied in this thesis was a case study approach (Stake, 2005: 443), based on qualitative research methods (Kananen, 2014b: 53); workshop and interviews. The case study is interested in a specific case - what can be learned about it (Stake, 2005: 443). Subject of a case study is often a phenomenon (Laine et al., 2007: 9), as in this study; sustainability of a regional food supply chain. The studied phenomenon is viewed as a whole, it is complex and contains various perspectives as well as societal processes (Häkiö and Niemenmaa, 2007: 42). As stated by Stake (2005: 444) “a case study is both a process of inquiry about the case and the product of that inquiry”. Theory was used to direct gathering and analysing the data, which is common in case studies (Laine et al., 2007: 38). The study gathered empirical data which was compared and explained with theoretical information, it made the study inductive (Kananen, 2014b: 52-53). The study combined different kind of methods to collect data to reach its aim. There was a literature review, a workshop and interviews conducted. In the scope of this study it was not possible to include all different actors involved in the regional food supply chain, but it tried to include the relevant actors to gain reliable picture of the issue at hand.

4.1. Empirical data

Empirical data was collected by having a workshop and interviewing actors in the field of regional food chain to get insights of the possibilities, hindrances and the prospects of the food chain, and more specifically to collect information on how the alternative food networks contribute to the environmental, economic and socio-cultural dimensions of sustainability. The data was analysed using the framework by Nuutila and Kurppa (2016), and with the help of literature.

4.1.1. Workshop

The workshop was chosen as one of the methods to gather information, because it abled to gain new ideas and visions in a rather short time. It is a way to gather people from different backgrounds, and get them to work together (Lauttamäki, 2014: 3). Furthermore, the workshop was used to get insights and to guide to set appropriate questions for interviews conducted at later occasion. The workshop was organized together with the commissioner. Workshop organizing included tasks as planning meeting, making an invitation and participation list along with preparing instructions. It took time to decide on the appropriate method for workshop and to plan the themes and a frame for the workshop. Furthermore, the place, catering and tools (paper, pens etc.) were arranged.

As stated by Jungk (1984), futures workshop was created to deepen democracy and to enhance common interest of the future in the late 1950s by Robert Jungk (Jungk and Müllert, 1989: 5). It expanded and was used widely to develop common issues by examining future challenges and possibilities to change and for better the future (Jungk and Müllert, 1989: 10). The workshop used a Futures workshop method, because it can be used for problem solving and to create plans for the future (Jungk and Müllert 1989: 12). Furthermore, the used ACTVOD-method allows to examine practical questions and design aims for desired future (Lauttamäki, 2014: 2). Usually the futures workshop contains a preparation phase and three workshop phases; critique, fantasy and implementation (Jungk and Müllert, 1989: 10). The preparation phase was done in cooperation with the commissioner. At the workshop, critique and fantasy phases were used, but not the last implementation phase, since the meaning of the workshop was to gather ideas for the interviews and to get the feeling what was in the minds of the actors of the supply chain concerning the regional food supply chain.
Actors from different sides of food supply chain were invited in order to get various perspectives and a fruitful outcome. Participants were chosen together with the commissioner. Invitations were sent to 20 people, but only nine of them were able to participate. Invitations were sent to primary producers, food service, retail, consumers and few organisations related to food production and consumption. Some of the participants were selected, because they are known actors, and could offer insights of their expertise of the topic.

The workshop was facilitated in cooperation with the commissioner. Facilitator’s role is to guide participators in their work at the workshop, and to give the workshop its physical surrounding and tools needed in the work (Lauttamäki, 2014: 5).

There were nine participants present at the workshop; three primary producers, member of the local community supported agriculture group ROK, two researchers from Lappeenranta University of Technology, member of the local association of chefs, two employees from the City of Lahti (Environmental development team). The workshop lasted for three hours. After the workshop, I summarized outcomes and sent a summary to all participants to be commented and/or corrected. Results of the workshop can be found on the result chapter, and analysis on the discussion chapter.

4.1.2. Interviews

To get specific information from different actors of food supply chain interviews took place. The interviews were semi-structured and questions were formed on the base of workshop and from theoretical data. The participants were sampled in a purposive manner. Participants of the workshop and interviews were not the same. The sample in the qualitative research was rather small, but emphasis was on the suitable interviewees - who would have knowledge of the issue and could give a clear picture of it. (Stake, 2005: 451.) The interviews were conducted in person and by email, and were in Finnish, except one that was in English. While gathering the data, researcher should be sceptic about information received; are respondent giving honest responses (Yin, 2012: 150). Since there is no one set method of how to analyse the gathered data in case study, one should focus on setting coded evidence together in a logic manner into wider theme, creating a unique form to profit the particular case (Yin, 2012: 150). To set the data into form for analysis, it was transcribed in the text form, and sent to interviewees to be checked for correctness. The transcript was done in the level of proposition. Further on, the data was analysed by setting it into themes based on the research questions and applied theory. (Kananen, 2014a: 99-100; Kananen, 2014b: 109.)

In total, there were nine interviewees, they represented different actors of the regional food supply chain. Producers, retail, food service and consumers were interviewed, more details on the result chapter.

4.2. Ethics

Ethics should be considered in the beginning of the study until the end of it - in all parts of the study it is important that researcher questions her ethical principles (Pohjola, 2007: 11-12). It is advisable to be transparent and to provide an explanation for the research processes throughout the study (Pohjola, 2007: 28). When workshop and interviews were conducted, the people involved were informed about the purpose of the study.

4.3. Quality of the study

To ensure trustworthy and quality of the study there is a need to think how validity and reliability relates to one’s own research. In a quantitative study, there are certain measurements that proof the validity and reliability of the study, but when it comes to qualitative study, there are different issues to be considered. (Kananen, 2014a: 145.) In general, the validity refers to planning of the study and analysing the data, and reliability refers to mainly conducting the study (Kananen, 2014a: 147). Documenting the work as it goes and stating reasons of the choices and decisions, is a way to ensure the credibility of the study. In the interviews, the validation can be reached by letting the interviewee to read the data gathered from her. A way to validate the data is to gather it from different sources and to compare it, which is called triangulation. If
different sources have similar outcomes, it confirms the data. Saturation is a way to verify the reliability. It means that results of the study from different sources start to recur. (Kananen, 2014a: 151-154.)
5. Results

5.1. Workshop

The workshop was held at 22 February 2017 in the evening. There were nine participants present, as listed in the method part. In the beginning of the workshop, short presentation of sustainable food supply chain was given, and primary producer told shortly about his point of view. Participants introduced themselves and instructions for the workshop was given in spoken and on paper.

The workshop applied Futures workshop method and included three parts; futures wheel, futures table and futures stories. Since the group size was fairly small, all participants jointly participated in all parts. The parts followed each other, they were conducted consecutively as seen below. The first part was futures wheel, and aim was to get the workshop started and gather information concerning sustainable food chain. The second part, futures table used the data gathered at futures wheel part. And the third part, futures stories was to tie up the workshop results in a story form. The workshop was held in Finnish, original results are shown in pictures and translated in English.

Three hours was reserved for the work, a schedule was compiled, but not followed accordingly, though the event ended as scheduled. Few of the participants were more active than others, but everyone had their say. Conversation was vivid and stayed mainly on the issue at hand. Participants told stories about their experiences concerning the food supply chain and issues referring the food. It seemed that two of the producers, had strongest opinions and were mostly speaking. It is understandable, they are the ones whom have the most contact with the issue and are hands-on it daily (having a farm and livestock to manage). One of the participants told that he had not really thought about the food supply chain, even he had worked as chef (currently retired), and in that way, was part of the chain.

5.1.1. Futures wheel

The aim of the futures wheel was to gather issues related to regional food supply chain, and view what kind of transitions could happen and what kind of consequences would these changes cause. The futures wheel was done applying the mind map method, Figure 5. The participants chose one person to write down the key words that they came up in their discussion.

![Futures wheel mind map created at the workshop.](image)

Figure 5. Futures wheel mind map created at the workshop.
It took some time for this part to get started, but after a while paper started to fill in. Sustainable food was written in the middle, as result of the discussion over food supply chain -term and critique on it. Few of the participants said that a chain is a wrong word, because it is linear and one-way, better could be for example a system. The use of the word sustainable, was on the table as well. Word sustainable is a buzz-word and its meaning varies among people. In the following Figure 6., main messages of the futures wheel are illustrated.

Figure 6. Main messages of futures wheel.

During the workshop I made notes, in order to remember and explain the results. By further elaborating the results of the futures wheel, summary of the discussed issues follows. Different kind of consumers and their various demands is growing phenomenon, some only eat to get nutrition and others look for enjoyment and experiences. This relates to knowledge, attitudes and health. How to change the attitudes of consumers and get the message of healthy and environmentally friendly eating across. Retail in Finland is highly centralized and has a lot of power over the other actors of the food supply chain. The role of the retail was discussed, as whether it is necessary in the future and to what extent. Retail act as bottleneck hindering sustaining the food supply chain. On the other hand, what kind of role will online sales take in the future. Public food service and Lahden Ateria, was a hot topic, especially among participants whom have children at school, and among two of the producers (who belong to same category). Lahden Ateria (public food service company of the City of Lahti) is a major actor in Lahti. The quality of the food was questioned, and what share of the price of the meal goes into raw materials. Producers were seen as enablers, but their attitudes may hinder sustaining the food supply chain. Education of producers was lifted up, as well as their poor economic status. Organic farming could serve in sustaining the supply chain, but producers’ attitudes need to change in order it to grow. Steering models as subsidies and acts have enabling and hindering effect over organic farming and in general sustaining the supply chain. Brands and branding could have powerful impact over consumption, it could push consumers to choose for example organic food.
5.1.2. Futures table

The aim of the futures table was to set issues raised in the previous phase on the ACTVOD-table. The ACTVOD-table includes; Actors, Customers, Transformation process, Values, Obstacles and Drivers. The instructions had a clarification of those as seen in Table 5.

| A | Actors: who produce and do things |
| C | Customers: to whom things are done |
| T | Transformation process: aim of the actions and actor’s operations; what is needed that certain issue reaches its goal |
| V | Values: values that are related to actions (values of actors and customers) |
| O | Obstacles: what things are hindering to reach the goals |
| D | Drivers: resources and other factors which enable to reach the goals |

Table 5. ACTVOD-table used at the workshop (Table by Hietanen, 2011 In Lauttamäki, 2014: 7).

Result of the futures table in original version in Figure 7. and translated in Table 6. below.

Figure 7. Futures table made at the workshop.

| A | Actors | Food industry |
| C | Customers | Retail |
| T | Transformation process | Primary producer |
| | | Drinkers |
| V | Values | Media |
| O | Obstacles | Food service |
| D | Drivers | Marketing |
|   |   | EU State |
|   |   | Researchers |
|   |   | Social media |
|   |   | Internet |
|   |   | Media |
|   |   | The City of Lahti? |
|   |   | Community |
|   |   | Arianta arbustorum |
|   |   | Intergeneric knowledge |
|   |   | Chefs |
|   |   | Television |
|   |   | Knowledge |

Table 6. Futures table translated in English.
5.1.3. Futures stories

Aim of the futures stories phase was to connect issues raised in the futures table and set them into a story form. As seen in the above Figure 7, and Table 6., coloured circles illustrate the different paths created during the futures stories phase. Due to lack of time, participants had time to circle issues, but not to write their stories. I gathered circles coloured with same colours into sentences based on what I heard and understood at the workshop as follows.

- The food industry, primary producers and researchers develop new foods. Social media, media, chefs and television cooks enable introducing new foods.
- Retail could scale down their selection of foodstuff in the stores.
- Primary producer could shorten the food supply chain, attitudes of consumers and producers could hinder it.
- Eaters and drinkers could participate to shorten the food supply chain, and if needed eaters could start resistance to enforce it, attitudes of consumers and producers could hinder the process.
- Media and marketing could uplift the value of food and to promote the seasonal use of food. Social media, media, community, intergenerational knowledge, chefs and television cooks could act as drivers.
- The EU and the state could improve the sustainability of the system with financial steering models, Finnish way of interpretation of acts could stand in a way.

5.1.4. Summary of the workshop

I made notes of the themes and issues raised during the workshop and summarized the findings to get better understanding of the results shown above and of the occasion. This part summarizes the discussed issues of the entire workshop.

Role of the consumer and how they make their choices

- The price of the food is a determinative factor of the consumer choice. Further on easiness, images, appreciation and values guide the choices. Values and their importance on choosing the food.
- The eater should have bigger role in the supply chain. For example, Reko-group has gain success in a rather short time (short food supply chain acting in Facebook). Campaigns in social media could help eaters to have more say, for instance to demand organic food.

Role of the food service and public procurement

- Lahden Ateria (public food service company of Lahti) is a major actor in Lahti. It is hard to be accepted as a supplier (as primary producer), raw materials should not cost anything while the quality should be superior. Public procurement demands know-how, for criteria and scoring done correctly, to reach the result in demand (e.g. local organic food).
- Limiting factors such as natural circumstances, storage, logistics, EU directives and their interpretations. Natural circumstances meaning for example during winter in Finland one cannot cultivate on fields.

Role of the retail, markets and brands

- Importance of marketing and branding. Certain product may succeed, when it is branded and marketed in a right way, as in a case of Nyhtökaura (plant-based protein product).
- Relevance of retail in the future was questioned. Retail was seen as a bottleneck in sustaining the food supply chain. Online sales of food and smart storages. How can a consumer point out, that she is not buying a product which is not in the selection of a store?
- Retail keep producers down. Big players in the field (retail and food industry) have their own interests and superiority compared to other actors of the food supply chain. They are calling the shots.

- Availability of food, as seasonal products. Could it be possible to limit the selection of food in the stores?

- The brand of Finland; traditional foods of Finland are not seen very popular. How to change sweet potato to potato, and rice to barley or oats?

Knowledge, trends and continuity

- Importance of traceability.

- Food is an experience, not only nutrition.

- Processing of foodstuffs in the food industry, for example milk and its unsuitableness to some of the consumers. (There has been a debate in Finland on processing, such as homogenization of milk.)

- The role of the education should be lifted up, it should start from preschool and go all the way to the education of teachers.

- Passing traditions to the next generations; recipes, appreciation of food, use of natural products in health care.

Demand and supply

- Accessibility of food, everyone should be able to enjoy healthy and safe food, achievement of food security.

- Volumes; how to increase demand of organic food, and on the other hand how to reply to the growing demand of certain products. Consumer segments was seen as 5% are knowledgeable (purchase organic food) and 95% buy bulk.

- Processing of local food; cooperation among producers, shortening the supply chain. At the moment, there are too many sharers in the chain (everyone needs their share, which raises the costs).

- Reko-group versus food circle. Reko-group has spread strongly in Finland, it has caused confusion and some local products are not found in the stores anymore, due to producers selling all their products directly. It was questioned what is easy for consumers and producers. (Reko-group purchases are done by cash, outdoors in the dark of wintry evenings.)

- “Here and now, right away, for me!” -attitude. Social media enables customers to give prompt feedback, and it may lead to wrong images. If the product is not available, the producer get bad-mouthed right away.

5.2. Interviews

The interviews were held during March 2017 in different locations in Lahti. Eight interviewees were conducted in person and one by email, since it was more convenient for interviewee to participate by email. The questions asked were similar, but altered a bit due to difference in participants; from producer to consumer. Interviews lasted from half an hour till an hour and a half. Most of the interviews were recorded, notes were taken as well. One interview was not recorded, since the technology failed – the recorder did not work.

The purpose of the study was explained to interviewees while they were asked to participate. When interviews started, explanation of the study was given again, and definitions of the key issues were described. Permit to record the interview was checked, and agreed to send the text for approval.
To gain insights from different point of views, actors across regional food supply chain were interviewed. Due to time limits, not all actors of the chain could be included. Primary producer, retail, food service and consumer parts were interviewed. There was one primary producer, who is cereal farmer. Retail representatives were from the two main chains; from K-group a retailer entrepreneur of a hypermarket and from S-group a selection and development manager. From food service; a teacher of restaurant and catering, food service planner from public food services, restaurant owner and a chef. Representing the consumers was a member of a food circle. One of the interviewee is gardener of the CSA (Community supported agriculture), and represented alternative food network as consumer and producer.

5.2.1. Current food chain and suggested food chain

The following Table 7 summarizes the interviewees answers, categorized according applied theory.

<table>
<thead>
<tr>
<th>Elements of the activity model</th>
<th>Current food chain</th>
<th>Suggested food chain</th>
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</thead>
<tbody>
<tr>
<td>Outcome</td>
<td>- abundant food (IV01)</td>
<td>- independence (IV01)</td>
</tr>
<tr>
<td></td>
<td>- large selection in stores (IV07)</td>
<td>- shorter (IV01; IV04), finding local products again (IV04)</td>
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<tr>
<td></td>
<td>- puts food on the table (IV02)</td>
<td>- interest in organic farming among producers is rising (IV05)</td>
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<td></td>
<td>- subsidized (IV01)</td>
<td>- responsible; producers should get their fair share (IV04)</td>
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<tr>
<td></td>
<td>- affordability (less money, hard to buy organic) (IV02, IV01)</td>
<td>- emerging trends taken into consideration (IV06)</td>
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<td></td>
<td>- price determines, small budget in public food service (IV08)</td>
<td>- potential in food processing, e.g. in form of rehabilitative work experience (IV06)</td>
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<tr>
<td></td>
<td>- food circle, more than shopping food (IV02)</td>
<td>- as it is currently, interacting with other actors (IV04)</td>
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<tr>
<td></td>
<td>- “forced” to shop in hypermarkets, hard to find organic/Finnish meat in small stores (IV02)</td>
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<td></td>
<td>- large units in food service need processed foodstuff, hard to purchase directly from producers (IV04), similar in restaurants due to regulations (IV06)</td>
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<td></td>
<td>- efficient (IV05, IV07)</td>
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<td></td>
<td>- low share of profit for producers (cereals) (IV05; IV06)</td>
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<td></td>
<td>- food supply chain is on pretty sustainable foundation, especially before (IV04)</td>
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<tr>
<td></td>
<td>- working well, knows the producers and their items (IV06)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- working well, interaction need to continue (IV09)</td>
<td></td>
</tr>
</tbody>
</table>
| **Object** | - food circle good example (values are taken into consideration) (IV01)  
- Lahden Ruokaosuuskunta (ROK), Reko Circle (IV02, IV06)  
- on-farm sales and food circle profit for producers (IV05)  
- on-farm sales and food circle, consumers know where and how food is produced (IV05)  
- good to have different options as AFN (IV07, IV09)  
- organic crop farming is only profitable crop farming method at the moment (IV05)  
- share of organic food in retail low, under 1% of sales in hypermarket (IV07)  
- large selection is a competitive advantage (IV07) | - more different AFN options (IV01, IV06)  
- stores focused on local food (IV02)  
- market hall style (stores bundled together) (IV02)  
- larger market hall (IV10)  
- more local products to the market place (IV10)  
- regional food chain = food produced and processed in Finland (IV05)  
- potential in food stories in food service, local products (IV04; IV10)  
- more focus on food culture (IV04)  
- food chain more active (IV07, IV09)  
- and known to consumers, more visible (IV07)  
- openminded and eager to try new things (IV10)  
- more competition in Finnish markets (IV08) |
| **Tools** | - difficult to know the origin of food in supermarkets (IV02)  
- labelling available, fair trade, UTZ etc. (IV01)  
- value-based suppliers (gather information on behalf of customer) (IV01)  
- knowledge available, but only if interested or in a group, own bubbles (IV02)  
- name of the producer brought up in a restaurant, (IV06)  
- seasonal harvest calendar (satokausikalenteri) (IV04), seasonal thinking (IV09)  
- tools available for food service as carbon foot print calculator (IV04, IV08)  
- Portaat luomuun - programme (stairs to organic food) (IV08) | - transparency in production could increase local and organic food (in Finland quality is high) (IV05)  
- trusted certification (IV01)  
- awareness (IV07; IV02), consumers should know how food is produced in Finland vs other countries (IV05)  
- traceability (IV08)  
- value-based culture (to put money on organic or not) (IV06)  
- bringing up knowhow (IV04)  
- efficiency to get the organic costs near to conventional (IV07)  
- origin of food available in restaurants (IV02) |
| Subject | - How to inform customers about carbon footprint and such (IV04)  
- Digitalization in marketing and communicating of local food (IV05)  
- Information of products (digitalization) could guide consumers to healthy choices (IV09) and to choose quality over price (IV07) |
|---------|--------------------------------------------------------|
|         | - Consumers are only purchasers of goods (IV01)  
- Consumers can influence by making choices and giving feedback in retail (IV02; IV09; IV10), and industry (IV05; IV09) e.g. case rye  
- Consumers cannot be obliged to their decisions (IV07) |
| Community | - Food circle and ROK formed by people who share similar thoughts, more than shopping food (IV02)  
- Organizations as Pro Luomu (Finnish Organic Food Association) bring actors together (IV09) |
|          | - More responsibility to consumers, like in CSA (IV01)  
- Knowledge -> demand for local food (IV05)  
- Demand for organic food and quality (IV06)  
- Conversation between producer and consumer, as well as food industry and consumer (IV09) |
|          | - Farm visits for consumers, getting to know the producers (IV02)  
- Retail wish contacts from farmers (IV07; IV10), and manufacturers side (IV10)  
- Projects (IV04; IV09) and events to get actors together (IV04), themes/campaigns (IV07)  
- Networking important, time and resource limits (IV06)  
- Functioning conversation (IV09)  
- Openness, learning from each other (IV07)  
- Openness between demand and supply in food service (IV08)  
- Producers to schools and restaurant college to tell about their work (IV04)  
- Food hobbyist, could be more visible (IV04) |
| Rules | - commonly agreed rules on food circle and ROK (IV01), members can decide what is produced (IV06), and the level of involvement (IV01)  
- public procurement (IV04, IV08)  
- Green City, environmental demands (IV08)  
- Governments nutritional recommendations (IV08)  
- Governments decisions on sustainable and responsible choice in public procurement (IV08)  
- laws and acts (IV09)  
- responsibility of locality in cooperatives (retail) (IV09) | - support for SFSC, future is there (IV01)  
- government and municipality should have more powerful role sustaining food chains (IV01)  
- public procurement could be a possibility if done in cooperation and interaction (IV04)  
- subsidies on right places, not on fossil fuel (IV01)  
- municipality could support community gardens, allotment gardens, urban gardening (IV01, IV06)  
- municipality to educate people on gardening (IV01) |
| --- | --- | --- |
| Division of power | - centralized (IV01, IV05)  
- selection of retail stores is result by retail groups, and by demand (IV07; IV09; IV10)  
- monopolies (IV01)  
- producers have no power, food industry overpowers, dictating by pricing (IV05) | - despite of centralization, to get actors (consumers or non-governmental organizations) to develop the retail (IV07)  
- more AFNs, everyone gets chance to win (IV04)  
- added value to products and more value to producers (IV06)  
- bridging fair trade producers, products that do not grow in Finland (IV01) |

Table 7. Summary of interviews categorized on applied theory.
6. **Discussion**

In the discussion section, the findings from empirical collection were synthesized and compared with the results from Nuutila and Kurppa’s original study, which was, unlike this particular study, based on document analysis. Under each heading, the discussion is broadened by using other published material, especially policy documents.

This section examined the role of the alternative food networks and its actors in promoting the economic, social and environmental sustainability of the regional food chain. It tried to find answers for the questions: How do the alternative food networks contribute to the environmental, social, cultural and economic dimensions of sustainability? What role do actors of regional food supply chain play in sustaining the food system?

6.1. **Outcome of activities**

From the qualitative material, it could be found out that diversifying the sales outlets for regional products, both conventional (supermarkets) and alternative (farm shops), appears to central in order to sustain a regional food supply chain. This diversity creates multiple interfaces between producers, the products and consumers in the region.

An interviewee mentioned that sales of the organic food have increased last years, and the local food has become a trend (IV09). Yet, the share of organic food is very low in hypermarket, under 1% of sales, and it is not assumed to increase a lot according to retailer entrepreneur (IV07). On retailer side, there is more demand for local produce (IV07; IV09), and food that is traceable than organic food (IV07). The retailer (IV07) would like to sell fresh produce: “the more fresher and less processed or packaged, local and traceable, the better.” Supply and price effect on purchase decision, as well as strong trends – supply (IV09) and knowledge could add purchasing of organic food (IV07). There is a threat, that if food is not appreciated and understood what is the costs of it in Finland, it will be exported to other countries (IV04). Hence, sustaining the demand for regional ecological produces will necessitate the development of selling points outside the conventional food supply chain.

Pricing, low availability, large purchase quantities, small packages and low processing degree were seen as challenges to purchase organic or local food with the local food service (IV04; IV06; IV08). Processing of local food in cooperation among producers could shorten the food supply chain and to better meet the demand of food service (Workshop). There could also be potential to process raw materials for example by rehabilitative work experiment (IV06). Restaurant can decide to serve only organic food, and make that an asset; organic food is value-based choice and their image, as well as the reason why consumers come by (IV06).

One of the respondents would rather shop at smaller stores, but lack of organic or Finnish meat takes her to hypermarkets (IV02). Some of the interviewees considered AFN to offer good alternative to purchase food (IV07; IV09), and to give producer fairer share of profit (IV04; IV05). Food circle was thought to act as good example, because it takes values into consideration (IV01). More alternatives were wished for; small local food stores, market hall type systems and more local food available at the market place (IV01; IV02; IV10). There have been few small shops focused on local and/or organic food in Lahti, but not succeeding, one reason could be the pricing of products compared to supermarkets, and availability of those products in supermarkets (IV06).

In their study Nuutilla and Kurppa (2016: 3) expressed that consumers and other actors of the food chain have positive opinions towards organic food and its production, which offers basis to the fact that suggested food chain could include more organic food production and consumption.

Guidance from government side was considered essential, and suitable tools should be developed for the whole supply chain including production, processing, sale, preparation and consumption of organic food to reach the object – organic food production (Nuutila and Kurppa 2016: 6). Government do offer some tools and guidance as introduced in the following paragraph. Access to common good among food chain actors
could increase the wellbeing of the environment, humans and animals. Fair financial profit for actors of the chain enables to maintain economically healthy food chain, and to involve more entrepreneurs in the chain. (Nuutila and Kurppa, 2016: 6.)

The amount of organic products of food sales in retail was 2% in 2016, it increased 14% from 2015 (Pro Luomu, 2017: 11). Production method, selection and availability should be improved to answer the consumers demand on organic food. Demand for organic livestock products is bigger than supply. Livestock production is focused on cattle, there are only few organic pig and broiler farms in Finland. According to surveys, most consumers who buy organic food, would like to buy especially Finnish organic food. Even main part of organic food is purchased from supermarkets, consumers are appealed on short food supply chains, and would like to buy their food somewhere else than large supermarkets. (Finnish Government, 2014: 12-13.)

There are several programs which aim to increase the production of organic farming as well as to increase the use of organic food at public food service. Goal of the Sustainable consumption and production program renewal for 2020 is for Finns to eat seasonal healthy plant-based food without wasting it. For day-care and school to offer 20% of its food as organic, and triple the organic food sales in retail and public food sector, compared to 2012. (Ministry of Environment, 2012: 34.) Development program for organic sector have several goals to increase the organic farming and organic products. It has similar goals than previously mentioned program, but on larger scale. One is to enhance the availability of organic food through public food service – state and government procurement entities kitchens and food services 20% of served food should be organic by 2020. (Finnish Government, 2014: 19.) The use of organic products in public food service is growing strongly, but in order it to grow further on, there are issues that need to be solved, as stated above; pricing, low availability, large purchase quantities, small packages and low processing level. (Finnish Government, 2014: 11.)

6.2. Object

As could be seen from the workshop and interviews there is growing interest for organic production and consumption, along with local food and shortening the food chain. The challenges preventing the expansion of organic production were seen for instance in attitudes, which could be improved by education. Regulations, need of processed foods and amounts available were hindering the use of local food and direct purchases in food service.

According to one of the interviewee, growing number of producers show interest on organic farming, and they have started to take course on organic farming (IV05), similar development is shown in reports. Higher subsidies for organic production may appeal to farmers whom are not genuinely into organic farming, and wish to have better income without actually producing (IV05). At the workshop, attitudes of farmers were seen as an obstacle for organic farming to increase. At the moment, there seems to be interest for organic food among producers and consumers, certain organic products are highly asked for, yet more demand on consumer side is needed. Interest for organic and vegetarian food can be seen as well in food service; on top of regular customers, new customers have started to come into the restaurant which serves vegetarian food in Lahti (IV06). Education of farmers could be one answer to change their attitudes and to raise interest for organic farming. Strong brands could tempt consumers to try organic food and influence consumption. (Workshop.)

As stated by one of the interviewee (IV05): “I have positive feeling about on-farm sales and local food circles, because the profit goes to the one who has done the job and buyers know how and where the food is produced.” Shorter chains were seen benefitting all parts and give the producer fairer share of profit (IV04; IV05). Primary producers and consumers could shorten the supply chain, but their attitudes might be in a way. If needed, consumers could enforce shortening the supply chain with the help of campaigns. (Workshop.) The use of direct
purchase from farmers in food sector is challenging due to use of processed foodstuff (IV04), regulations (IV06), the amounts available, as well as high criteria on food inspector’s side (IV08). On the other side, smaller actors as a restaurant knows what farmers have and the quality of the products, on top the delivery can be done fast (IV06).

Nuutila and Kurppa (2016: 6) brought up the issue of financial profit of the current food chain. Instead of individual profit seeking, object should be common good including environment, social welfare, safe and healthy food as well ethical treatment of production animals. Sustainable farming in terms of organic farming and sustainable food chain are targeted. Co-creation enables design of products jointly with producers and consumers benefitting both. (Nuutila and Kurppa, 2016: 6.)

Organic farming interests 11% of crop farmers in the Häme Region. There is work to do to develop the supply chain, obstacles limiting the growth of organic sector lay for example in attitudes, heavier work load and lack of manure. Crop farms and livestock farms enable development of nutrient cycle and experimental platform for resource efficient farming in the Häme Region. Cooperation between those farms brings possibilities on grain and protein feed purchases directly, which saves logistics and wholesale charges, and improves profitability. (MTK Häme, n.d.: 14.)

One of the solutions for current unsustainable food systems could be climate friendly food supply chain which considers regional and local conditions. Regional systems should focus on more closed nutrient and water cycles, and the food should be used where it is produced. (Ministry of Environment, 2012: 34.) There is great potential for local food in the Häme Region, and growth potential for organic farming. As consumer interest in origin and production method of food is growing, interaction amongst food supply chain actors is welcomed. (Lindqvist, 2013: 13.)

Even if general trend in agriculture is fewer and bigger farms, the local food trend and short food supply chains may bring alternatives where profitability is not searched by growing the unit but creating value on products and taking larger share of profit of the supply chain. Though main part of the raw materials is still going through longer supply chains. (MTK Häme, n.d.: 12.)

6.3. Tools

The respondents lifted up varied tools which could be helpful sustaining the food supply chain, such as education, transparency, traceability and digitalization. The Finnish efficiency should not be the only determining factor, culture and individual needs should be considered as well. Giving face to farmers and bringing up food stories could promote the use of local food and interest consumers, since consumers are interested where the food comes from.

In order to develop the regional supply chain, one of the interviewee (IV07) said: “Local food chain should be significantly more active and know to consumers.” Lack of knowledge, appreciation and consumer awareness of food are issues that were thought hindering the use of organic and local food (IV02; IV05; IV07). As one of the interviewee (IV02) expressed: “There is knowledge available, if you look for it, if you are interested, but you can be ignorant as well. It is like these bubbles, if you are in your own organic bubble, there seems to be a lot of information flowing.” Importance of education, from pre-school to teaching teachers, was taken up at the workshop, for people to change their attitudes and understanding of healthy and environmentally friendly eating. Learning food and sustainability was highlighted at the public food service (role of school kitchens) and when teaching new professionals for the food sector (IV04; IV08). Food is a universal thing, so it gives easy access to bring forth various topics. Tools, as seasonal food calendar helps in education, it also considers global issues which gives more perspective. (IV04.)

At food service, tools as carbon footprint calculators are in use, but one question is how to bring the information for customers in an understandable way (IV04). FISU-network and its roadmap-work is a tool to guide the city and its inhabitants towards sustainable lifestyles in different areas of life, as in food production and consumption (Fisu-network.fi, 2016b). There are plate models available for different age groups, which help to choose healthy food, along with information on sustainable food choices by Finnish nutritional authority (Evira, 2016).
As found out, education is one tool to develop the regional food supply chain towards sustainability. In public food service, school kitchens have an important educational role (IV04, IV08), it is a way to display sustainable kitchen (IV04) and food culture (IV08).

Public food service follow the Finnish nutritional authority’s recommendations (IV08) and nutritional issues are learned at the restaurant college (IV04). Finns have the nutritional and healthy issues on high level, but cultural part of food is set on side (IV04). How to brand Finnish traditional food and food culture? Media in its many forms could help to uplift the value of food and to promote seasonal use of food, this could be done with the help of chefs and television cooks, since they are appreciated and followed in Finland. Passing traditions to next generations in the form of recipes and using natural products in health care could help lifting the appreciation of food. (Workshop.)

Efficiency should not be the only factor in public food service, social and cultural aspects should be considered as well (IV04). There are different consumer segments and they have different needs – at school food is educational, and for elderly it could be the only highlight of a day (IV04).

It came up at the interviews, that consumers are interested in the origin of food, and would like to know it in the restaurants as well (IV02). Restaurants could use food stories to bring up the origin of food (IV04). They could take an advantage of local food (IV04) and give face to farmers (IV06). Restaurants can encourage farmers to process their produce, and to inform them on alternative markets (AFN) (IV06). Transparency in production could increase the use of local and organic food, if the consumers would have more knowledge of how the raw materials are produced in Finland and in other countries (IV05). Traceability should be easier, in order to have more information on products when purchasing for food service (IV08). Food industry can use local producers and their produce to form great images of products, as Viipurilainen kotileipomo (bakery) has made – raw materials come from neighbouring municipality Asikkala and is milled and baked in the same municipality Vääksy, both municipalities are part of the Lahti Region (IV05). Using local produce, food industry and retail can add value to products, as was with a certain beer; consumer was able to examine the supply chain via Internet – from seeding the grain, weather, harvesting, malting and brewing the beer (IV05).

Preventing and lowering food waste in primary production, food service and retail seems to be well in hands (IV04; IV05; IV06; IV07; IV08), but on consumer side it appears more challenging (IV07). Preventing food waste demands know-how and reacting for example by pricing in retail (IV07), and directing selection store-wise (IV09). Both retail groups donate the food for charity that otherwise would be wasted (IV07; IV09). In food service, preventing food waste starts with the planning of a menu (IV06). Public food service measures the food waste (IV08), and it is learned at the restaurant college (IV04). A lot is measured, but to make it more valuable, there should be more information such as reference values to compare to understand which things make a difference (IV04). To lower food waste, some schools have started to sell the left-over food after lunch for outside customers, Lahden Ateria have started to test that in few places with the help of ResQ-application (IV08). Downside of ResQ type of applications is, that some customers are only interested to buy left over food from the restaurants (IV10). Food waste is one issue when massive centralized kitchens are planned, how to lower food waste in those (IV04). Should there be a step back, to make food locally at school kitchens or doing “cook and chill” -food in centralized kitchens which is heated at the service kitchens (IV04).

Lahden Ateria follows the government decisions on sustainable procurement, but in practise, financial limitations have more influence on purchasing. They would like to use more organic food, but currently only few items are organic. (IV08.) Lahden Ateria was criticized at the workshop on primary producer’s side for being difficult to be accepted as supplier, and for requiring top quality in low price.

Digitalization was seen as a good tool on marketing and communicating about local food, even it is on early stages (IV05). With the help of digital solutions, farmers can reach consumers easily, and sell meat without middle man as was brought up by one of the respondent (IV05). According to respondent (IV07), with the help of digitalization: “knowledge about products could be easier, and that could lead to choices and attention from price to quality.” Information of products with the help of digitalization could guide consumers for better choices; in retail, it could guide consumers preferring quality over price (IV07) and to make healthier choices (IV09). New kind of digital systems could help producers and small manufacturers to
get their products for markets, available for food service and retail. Small batches and logistics were seen challenging in retail in interviews (IV07; IV08; IV09). Developing logistics and smart storages were thought to be helpful sustaining the food supply chain in the future (Workshop). Lack of branding a product, and lack of attractive package may hinder the willingness of taking a product for sale (IV10). Logistics and lack of knowledge for example on standardizing of packages may challenge the purchasing directly from producer on retail side (IV07).

New plant-based protein products, as Nyhtökaura, can act as stepping stone for consumers to lead them to eat more plant-based foods (IV06). It is questioned why those products mimic meat, reason might be in consumer habits, Finns are used to load their plate in a way that one part is meat (IV06). There are also possibilities to take advantage of wild fish, as Lahden Ateria have done. They participated in experiment to serve roach patties in three units, made of fish catch from food web management of lake, from the nearby Lake Vesijärvi. The product got good reception. The challenge with large number of portions is to secure availability of raw materials and the price of processing. If a product is set on the menu, it must be available when it is listed. (IV08.)

Farm visits (IV02) and producers visiting schools and restaurant college to tell about food and its production could enhance openness between producer and consumer (IV04).

According to Nuutila and Kurppa (2016: 6) appropriate tools were important in order to reach the wished outcome. Mentioned tools were in relation to processes, manpower, knowledge and skills. Common good was required to reduce negative externalities on current food chain, and to be able to gain safe and healthy food, environmentally friendly and ethical production, human dignity and social justice. Cooperation in food chain and commitment of actors of the food chain is needed to design necessary tools and taking them in action. (Nuutila and Kurppa, 2016: 6.) In above listed findings, many tools were presented, so there is a lot of going on already and respondents were able to lift up important topics which are in need of further development.

The food culture, relationship to food and its nutritional aspect should be learned in preschool and carried out all the way through school system. It increases the appreciation of food and its producers. (Finnish Government, 2013: 19.)

In order to decrease food waste, Sustainable consumption and production program renewal for 2020 by Ministry of environment (2012: 38) instructs public food service and retail to donate food for charity. Food service is obliged to follow the amount of food produced, used and wasted. (Ministry of Environment, 2012: 38.) Easy way for consumers to lower their harmful impacts to environment, is to cut down food waste, almost 5% of purchased food is wasted. Households are responsible for double the amount of wasting food than retail, and food service is estimated to waste a bit more than retail. (Ministry of Environment, 2012: 37).

Public food service serves meals for over million child and young people on weekdays, and over half of all professional kitchen meals are cooked by public food service. Due to wide spread public food service in Finland; origin, quality and supply chain of the foodstuff has great influence for the environment, and for public health and food security. (Ministry of Environment, 2012: 37.)

6.4. Subject

What came up from the empirical material was consumer power and demand; some felt that consumers are only purchasers of goods, and others that consumers can influence. Price was lifted up in many turns, as well as the role of the consumer and how it could be enforced. Fragmented consumer segments challenge the supply and demand – some eat for joy and some to stay alive.

In Lahden Ruokaosuuskunta (ROK) members are co-creators, they can influence what is produced (IV08). Some members of ROK value the involvement and supporting of local people. One of the principles is that food should be affordable to all. Still, price and quality raise discussions and, members want value for their money. (IV01.) Food Circle in Lahti is good example of a group of consumers whom want to know where and how the food is produced, and are willing to work (voluntarily to organise etc.) for it (IV02), in addition they take values in consideration (IV01). The economic situation of consumers and price of the food gives
limitations in the use of organic products. In food circle, some of the organic products are cheaper than in the supermarkets, but if the consumer does not care to buy organic, then it is cheaper to buy from supermarkets. (IV02)

One of the respondent felt that consumers are only purchasers of goods, and that they should take more responsibility like in CSA (IV01), this was taken up at the workshop as well, consumers should have more active role in the supply chain. On the other hand, some felt that consumers can influence by demand (IV02; IV05; IV09; IV10.) Consumers form the selection in retail by purchasing – “sales is the best customer feedback” (IV09). Consumers should acknowledge their power and demand for more local and organic food (IV06). Role of the consumer is important, and it showed in the case of Finnish rye bread. Consumers demanded for bakery to use only Finnish rye in their breads, and the bakery decided to do so. Now the demand and price of rye has increased, and another large bakery has decided to follow the same path. (IV05) Selection at the retail stores is based on demand, supply of retail groups, business idea and the size of the store (IV07; IV09). Consumers could jointly demand for local and organic food from retail, it could be easily organized for example via Reko Circle. They could together decide to demand organic food for certain time from stores. (IV06.) This idea was brought forth at the workshop as well.

Price was seen the most ruling factor on choosing the food for consumers. Easiness, images, appreciation and values were other factors influencing the choices. For ever fragmenting and individualizing consumer segments and their various demand is growing phenomenon (IV09), which challenges the supply and demand. Some of the consumers eat only to get nutrition, and for some it is enjoyment and experience (Workshop). More attention should be set on attitudes and behaviour of consumers, what could be done to influence for better (IV01).

Subjects of the food chain are all its different actors as producers, industry, retail, food service and consumers. Nuutila and Kurppa (2016) argued that consumers are left out of the chain, they are not included in the decision-making and information sharing. To take consumers as co-creators it may give possibilities to gain value in the food supply chain. (Nuutila and Kurppa, 2016: 7.)

6.5. Community

Interviews and workshop emphasized the need to improve interaction and cooperation across the whole supply chain, projects and events as fairs could be applied to improve communication. The collaboration could be enhanced with the help of organizations. People interested in similar issues may join their forces and start up a food circle. Food circle brings more to consumers than shopping food; they may share their interest, and at the same shorten the supply chain.

Interviewees kept interaction and cooperation between supply chain actors significant. There was willingness and wishes among interviewees to bring food chain actors together in form of projects and events, and cooperation and networking was seen important, but time and resource limitations were restricting factors (IV04; IV06; IV07; IV09). Themes and campaigns were seen useful methods as well, to improve the regional food chain (IV07). Functioning conversation among food chain actors (IV09), openness and learning from each other was appreciated (IV07; IV08).

Retail would be interested to communicate with Alternative food network groups to gain information about what they would like to purchase from stores, and in cooperation with communities to understand trends and issues as vegetarianism. Consumers or non-governmental organizations are welcomed to develop retail, to have other aspects as economic considered. It could help for example on bringing up local produce. (IV07.)

Consumers, who get together and figure out how they want to purchase their food, or even how they want it to be produced, are potential starters of CSA or food circle. These people share similar thoughts, and for them belonging in a food circle is more than purchasing food (IV02).

Nuutila and Kurppa (2016: 7) expressed that interaction with actors of food supply chain in different levels need to be improved to develop the food supply chain to the desired way. In order to create common good among food chain actors, openness and mutual decision-making is needed from all parts of the supply chain (Nuutila and Kurppa, 2016: 7).
6.6. Rules

According to respondents, rules are important in sustaining the supply chain, but they might be in a way if interpreted incorrectly. Public procurement is essential in public food service, and may be a challenge or opportunity, depending how it is used. It offers possibilities to set focus on local and/or organic food, but acquires know-how to gain the desired result. Members (consumers) of alternative food networks may together set their rules and then in cooperation with producer set appropriate rules for purchasing.

Steering models as subsidies and acts were seen as enabling and restricting factors sustaining the supply chain. Especially Finnish way to interpret acts is challenging. With the right kind of financial steering models from the EU and national level sustainability of the food system could be improved (Workshop; IV01.)

As has come clear, public food service is an important part of the regional food supply chain, and in Lahti 22 000 portions are served for customers varying from day-care to elderly (IV08). Challenges food service is facing that hinder the use of organic and local food is the large scale, tight budget frame, availability and continuity of products (IV08). Lahden Ateria is trying to follow the strategy of the city by participating in Portaat luomuun-programme and lowering carbon foot print (IV08).

Public procurement was seen as enabler and limiter concerning the use of local food in public food service, it could be a possibility if all actors would share the same language and it would be done in cooperation and interaction (IV04). It demands know-how to reach the desired result, such as local organic food (Workshop). Purchasing is changing from regional to city level. That enables the city to set criteria to better follow its strategy. (IV08.) The service supplier (public food service) should have a responsibility on sustainability (IV04). The council of the city should place criteria for service supplier in a way the whole package would be responsible (IV04).

Meaning of labelling differs according to interviewees. By purchasing from for example CSA, food circle, or directly from farm consumer knows how the food is produced and where, they can trust the farmer, so labelling is not necessary. But when the purchase is done from supermarket, labels become worthier to ensure the production method and origin. (IV01; IV02.)

Rules are acting on varied levels, from official legislation to company level procedures. The food supply chain is regulated by official legislation, in addition companies may have their own corporate procedures which direct their actions. (Nuuutila and Kurppa, 2016: 7.) Nuuutila and Kurppa (2016: 7) stated that presently the members of the community do not have sufficient access for legislative processes. Common good principles obtain the possibility for all to participate in legislative processes. Further on, Co-creation enables the implementation of legislation to operational level, and designing of products and processes that serve common good. Government have possibility to support sustainability of food chains by “green” taxation, subsidies, and public procurement. (Nuuutila and Kurppa, 2016: 7-8.)

Programmes as Local Food – But Of Course! supports the idea that local food should be taken more into account in public food service, and use public procurement wisely by setting the criteria in a way it gives local actors better changes (Finnish government, 2013: 14).

Government is trying to guide municipalities in a stronger way, by recommending for all municipalities to have public food service part of their strategies, and to define how they will implement the government decision on sustainable (2013) and responsible public procurement (2016). Target to move towards environmental responsibility is given to public food service for example by taking part of Portaat luomuun-programme (stairs to organic food) or applying for environment label Joutsenmerkki. (Ministry of Environment, 2012: 38.)
6.7. Division of power

The empirical material pointed out the power imbalances of the supply chain and willingness of actors of the chain to balance it by shortening the supply chain. The role of the municipality in sustaining and supporting initiatives was brought up, more responsibility and courage from its side was hoped for. Could there be possibilities for municipality to bring forth local producers and products – to gain appreciation, knowledge, transparency along with supporting local production.

One of the respondents (IV05) commented the role of the producer: “The role of the producer in the food chain is very weak, purchasers (food industry) are centralized and big.” As the retail is highly centralized, and food industry is dominating, farmers and consumers start to seek other options (IV01; IV05; Workshop) for example from Alternative food networks. There are options available such as on-farm sales, own processing and so on, but that asks for manpower, skills and other resources.

Digitalization enables new forms for distribution and getting into markets such as platforms for different actors and on-line sales. As stated earlier, retail and food service would appreciate cooperation with different actors of food supply chain and would like to develop the food chain interactively. More different options such as short food chains were wished for, which could balance the power relations in the supply chain (IV04). Added value to products and value to producers should be gained (IV06). Local food production cuts costs in transportation for producers. Due to low price of cereals, producer farms crops that can be processed nearby, otherwise he would end up even less of the already low value. (IV05.)

Municipality should have more powerful role in sustaining the food supply chain (IV01). They should support community gardens, allotment gardens and urban gardening (IV01; IV06) as well they could educate inhabitants on gardening (IV01). There should be own gardeners at the day-care centres, and there should be cooperative gardeners and more community supported agriculture groups. More courage is needed on municipality’s side to test new innovations. (IV06.) It is important to have initiatives, as short food supply chains, to gain experience of alternative ways to handle food production-consumption system for the future (IV01).

In Finland, as well in other western countries retail companies and food industry have more power in the food supply chain than other actors. Alternative food networks may balance the power between actors in the food chain. By taking Economy of Common Good and Co-creation principles into account, the division of power could spread more evenly among food chain, as well cooperation and different options in marketing could improve the fairer power relations. (Nuutila and Kurppa, 2016: 8.)

To even the power relations, there are various means such as actions listed in the plan for Green growth of Häme; supporting the cooperation among actors of food sector (research-counselling-education-industry), improving communication, and taking new communication methods in action, strengthen the food production and open up the meaning of regional food chains. Cooperation, networking, innovation and management skills are important in enhancing the competitiveness of agriculture. (Lindqvist, 2013: 14.)

Consumers and other actors of the food supply chain could join forces and create alternative ways to share risks and balance the power relations. Short food supply chains should be promoted in the means to develop primary production, for producers to improve their income. Even if the consumer prices have increased, the producers are getting less. Local food brings producers and consumers together. (Finnish government, 2013: 15-16.)
7. Concluding remarks: towards a regional food supply chain in Lahti

The aim of the thesis was rather grand and was not totally reached. Thesis aimed to examine the role of the alternative food networks and its actors in promoting the economic, social and environmental sustainability of the regional food chain as well as to contribute to the work of the city of Lahti in developing its food sustainability strategic work through its participation in the FISU-network. Better comprehension of sustainability of the regional food supply chain and its actors could have reached, which could further on assist the FISU work and more in general improve the food production and consumption chain.

The research questions set for this study were mainly answered by the results of the workshop and interviews along with the help of theoretical framework and other literature. The questions were: How do the alternative food networks contribute to the environmental, social, cultural and economic dimensions of sustainability? What role do actors of regional food supply chain play in sustaining the food system?

As Feenstra (1997), Marsden (2000) and Paloviita (2010) among other scholars pointed out, and what came out in this study as well, community offering adequate food, sustainable farming, clean and safe environment as well social and cultural interaction are key issues in alternative food networks. These illustrate aspects of sustainability; economic, ecological, social and cultural. Members of the community plan and implement sustainable food production-consumption system which aims to benefit both parties economically, produce and distribute food locally as well as improve social equity and democracy. Valued producer-consumer relationship brings more meaning to purchase, co-creation of product adds value and purpose.

Due to small sample size of the study, the results cannot be generalized in wider context, but may offer guidelines in the region to some extent. Even the results seemed to correspond to the previous studies. The sample size of interviews was rather small, and participant number at the workshop was similar, yet there were certain patterns that could be found from previous studies and the one I did. Part of the producer was seen weakest at the conventional long food supply chain, and shorter supply chain was seen benefitting the producer. Shorter chain offers benefits to consumers as well, in terms of better supply and affordability. Knowledge, awareness, traceability, transparency, value-based choices were brought up in many turns. Networking, cooperation and knowledge sharing were also sought after. Main part of the actors seemed willing to interact with other actors of the food supply chain, but issues as time limitations were in a way. There seemed to be interest in organic farming and organic food, but attitudes and price appeared as restricting factors. Since there is willingness among actors of the food supply chain to interact and cooperate, there should be a platform or a place where actors could meet. To start up the interaction, a coordinator could be helpful. To create understanding and common ground, it is not enough if one part of the chain tries to do the job - there is need for systematic collaboration among supply chain actors.

The main message how the Alternative food networks could help sustaining the regional food supply chain is by shortening the chain - everyone gets chance to win, in other words financial profit and other benefits are divided more equally. Further on, producers may have added value for products and fairer share of profit in shorter chain, and consumer may have better availability to organic food and local food in terms of supply and prices. Alternative food networks have significance in social meanings; bringing people together and offering more value than purchasing goods. Consumers can have bigger role in AFN than in longer supply chain, they can co-create the products and commonly agree rules – they have possibility to influence what is produced, where and how. They can also choose the level of involvement, and prioritize their actions based on values. Interaction and cooperation among actors of food chain, especially between producer and consumer are highly appreciated. Alternative food networks provide more on economic and social aspects of sustainability than ecological or cultural, by offering jobs and economical possibilities to the region, forming communities and giving chance to participate and influence. Ecological and cultural aspects are not that visible, but some issues as organic farming and value-based culture are seen in Alternative food networks.

No matter how deep I tried to dive, I only managed to scratch the surface of this highly complex issue, the food system or more precisely the food supply chain. There are so many factors interconnected, that when you think you have reached a clear point, you find something new behind the next corner to make it messy again. There are so many layers in every level that it offers plenty of research possibilities to dig into. To
better understand the complexity of the issue at hand, and to be able to improve the sustainability of the food system, different aspects should be counted and the system should be examined as whole. Food supply chain is only small part of the food system as came very clear to me during this study, even the supply chain is a lot to get a grasp on with limited resources.

Plenty of knowledge is available, but how to address citizens to enable transition towards sustainable choices and better future. It would be interesting to know why main part of the policies and strategies do not to seem be implemented and reach the grassroots level. As has come evident, there are studies concerning of local food and alternative food networks and their impacts on sustainable development. One area of future research could be sustainability of regional food systems concentrating on verifying and measuring the sustainability. Reiska-project (presented at chapter 2.3) is aiming to that currently, and I am looking forward to the results. Since the mentioned project is regional, focused on Lahti, it may offer tools to apply to other regions. Role of the consumers could also offer research field, as well as more deeper investigation of the roles of different actors of the food supply chain. Research on interaction and collaboration between actors of the supply chain, as well as behaviour and attitudes of producers and consumers could help to find out the reasons behind choices made and how to influence for better.

The timing is perfect to consider how to sustain the food production and consumption in Lahti, while the FISU work is prepared and integrated into the Environmental policy of the City. There are plenty of policies and strategies to build on and adjust to regional level to fit to local needs. The regional ones; Green growth of Häme and Sustainable food and growth in Häme offer good backbone. The City could consider having more influence on public procurement and follow the Government decisions on sustainable choices 2013 and responsible choices 2016 more closely at the public food service. There are good examples that could inspire as Ghent’s food policy. There are several associations and organizations acting in the field of food production and consumption; Ladec, The Martha Organization (Martat), Rural Women’s Advisory Organisation (Maa- ja kotitalousnaiset), ProAgria Rural Advisory Organization, Central Union of Agricultural Producers and Forest Owners (MTK), Further education Salpaus and Natural resources institute Finland (Luke) etc. It could be beneficial to get these actors familiar with the FISU work, and utilize their knowledge and get their voices heard and accounted. Some of previously mentioned actors take part of the Sustainable food and growth in Häme, and certainly have valuable knowledge and networks. Commitment of inhabitants is needed in transition, so they should be accounted already in the planning phase. Participation of all actors is in the heart of the FISU work. There is no need to re-invent things, just to set wise heads together and allow enough resources to create sustainable regional food supply chain.

Considering all actors of the food supply chain and involving them could offer valuable insights and allow better chance of implementing the FISU work. Participating different actors is time consuming, but when addressing long term planning, it might be worth it. Suitable and practical targets should be set in the roadmap to get them into the real life. Possibilities that alternative food networks could offer, should be accounted. Education has a significant role by bringing up future consumers, so it should be a part in the roadmap in many levels. Social entrepreneurship could also be lifted up as a possibility to assist persons with special needs to get employed and to shorten the food supply chain allowing producers to get their products to food service. The roadmap offers the city a practical tool to take more responsibility on future choices.
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