



Sveriges lantbruksuniversitet
Swedish University of Agricultural Sciences

Faculty of Natural Resources and
Agricultural Sciences
Department of Food Science

Food products in line with the next generation of sustainability thinking

– and the example of cow's milk

Marie Olsson

– **Food products line with the next generation of sustainability thinking** - and the example of cow's milk

Marie Olsson

Supervisor: Monika Johansson, Swedish University of Agricultural Sciences,
Department of Food Science

Assistant Supervisor: Carina Holmberg, Valio

Examiner: Åse Lundh, Swedish University of Agricultural Sciences,
Department of Food Science

Credits: 30 hec

Level: Advanced A2E

Course title: Independent Project in Food Science

Course code: EX0396

Program/education: Master's Program Food – Innovation and Market

Place of publication: Uppsala

Year of publication: 2016

Title of series: Publikation/Sveriges lantbruksuniversitet, Institutionen för livsmedelsvetenskap

Serie no: 431

Online publication: <http://stud.epsilon.slu.se>

Keywords: Sustainability, Milk, Lactose Free, Retailer, Food Service, Wholesaler

Sveriges lantbruksuniversitet
Swedish University of Agricultural Sciences

Faculty of Natural Resources and Agricultural Sciences
Department of Food Science

Acknowledgements

I would like to express my gratitude to my supervisors Monika Johansson and Carina Holmberg for their motivational energy and optimistic spirit through this thesis. I would like to send my gratitude to Gunnel Rönnerberg at Valio for her engagement in this thesis from the very first start and I would like to thank program director Kristine Koch for making this thesis possible.

I would also like to extend my gratitude to all informants for devoting their time to participating in this project, regardless of their busy schedules.

Finally, I want to thank my friends and family for their encouragement.

Abstract

Dairy products are responsible for a large part of the environmental impact from foods, where milk bears a part of that burden. The dairy industry has a responsibility to provide high quality and sustainable products on a daily basis. Considering the whole dairy chain, the agricultural production and the dairy farm have the highest environmental impact.

So far, not much attention has been given to bringing together retailers, wholesalers, food service and their view of sustainability and milk and provide a possible future picture in line with this. This makes it interesting to investigate this area further. Therefore milk, and more specifically lactose free milk, will state example. The focus of this thesis was to explore sustainability thinking in selected actors in Sweden within retail, wholesale and food service, complemented with indications from farmer and consumer viewpoints. A qualitative study was conducted, interviews from each organization were analyzed and related to literature findings.

Findings in this thesis can be connected to organization level, food level, milk as an animal product and lactose free. Few findings are specifically connected to lactose free. Characteristics on product level are tied to milk in general, and dairy products, rather than lactose free.

Sales of organic foods and milk are increasing and empirical findings indicate a continued interest, possibly also concerning lactose free milk. Milk consumption has decreased, and is predicted to decrease. There is an increased focus on vegetable products and indications that vegetable and alternative products compete with milk.

Retailers have power in driving the sustainable development, but both retailers and the food service actors/caterers express their power to impact through their size. Food service are highly steered by regulatory forces, meanwhile retailers primarily are driven and hindered by market- and social related forces. Price is a steering factor in public procurement. Since sustainable products often are seen as more expensive this might slow down the sustainable development in food service and wholesale.

The demand for sustainable products puts pressure on actors in the food chain to provide desired products. The possibilities for future milk production on the farm are to support the farmers in actions towards a cyclic system, take help from technology, limit the antibiotic use and provide good animal welfare for the farmed cows.

If using palm oil and soy in feed, these should be sustainable produced.

Keywords: Sustainability, Milk, Lactose Free, Retailer, Food Service, Wholesaler

Table of contents

List of Figures	vi
Abbreviations	vii
1 Introduction	1
1.1 Problem background	1
1.2 Problem	2
1.3 Aim and objectives	2
1.4 Delimitation	3
1.5 Definitions	3
1.5.1 Sustainability	3
1.5.2 Sustainable development	3
1.5.3 Corporate Social Responsibility	4
1.6 External idea/project provider: Valio	4
2 Literature review	5
2.1 Sustainability and industry	5
2.2 Challenges	6
2.3 Forces and motivations	6
2.4 Food	9
2.5 Milk as an animal product	9
2.6 Lactose free	11
3 Method	13
3.1 Social research method	13
3.2 Qualitative method	13
3.3 Abductive reasoning	14
3.4 Literature review	14
3.5 Semi-structured interviews	14
3.5.1 Analysis	15
3.5.2 Validity and reliability	16
3.5.3 Ethical consideration	16
3.5.4 Method criticism	16
3.6 Choices made for the study	17
3.6.1 Retailers	18
3.6.2 Food wholesaler	18
3.6.3 Food service actors/caterers	18

3.6.4 Trade organization	19
3.6.5 Trend analyst, Strategist in the area of food	19
4 Results and discussion	20
4.1 Organization level	21
4.1.1 Sustainability as business practice	21
4.1.2 The size of the organization gives possibility to impact	23
4.1.3 Communication	23
4.1.4 Challenges	24
4.1.5 Forces and motivations	24
4.2 Food	26
4.2.1 Organic and Swedish	26
4.2.2 Conscious choices	27
4.2.3 Lack of food and low availability of organic foods	27
4.3 Milk as an animal product	28
4.3.1 Antibiotic and resistance	28
4.3.2 Palm oil	28
4.3.3 Animal welfare	28
4.3.4 Soy	29
4.3.5 Cyclic system	30
4.3.6 Vegetable and alternative products	31
4.4 Lactose free	32
4.4.1 Food safety - Lactose free important for those who need it	32
4.4.2 Organic and lactose free	32
4.5 Bringing it together	33
5 Conclusion	36
6 References	38
APPENDICES	52
APPENDIX 1: Development of sustainability	52
APPENDIX 2: Frameworks and guidelines	54
APPENDIX 3: Letter to informants	56
APPENDIX 4: Interview guide	58
APPENDIX 5: Informants interviewed	62
7 Popular scientific summary	63

List of Figures

- Figure 1.* Structure of the chapter following a funnel, ranging from characteristics on organization level to lactose free level. 20

Abbreviations

ASC	Aquaculture Stewardship Council
CSR	Corporate Social Responsibility
CSV	Creating Shared Values
EPA	Environmental Protection Agency
FAO	Food and Agricultural Organization of the United Nations
GRI	Global Reporting Initiative
IATE	Interactive Terminology
KRAV	Kontrollföreningen för Alternativ Odling
MSC	Marine Stewardship Council
OECD	Organization for Economic Co-operation and Development
RSPO	Round Table on Sustainable Palm Oil
RTRS	Round Table on Responsible Soy
UN	United Nations
UNEP	United Nations Environment Programme
WWF	World Wildlife Fund

1 Introduction

1.1 Problem background

The hockey legend Wayne Gretzky once said “The key is to go where the puck will be going, not where it is now” (Kiernan, 2009).

Food and sustainability

FAO means that food production need to increase by 70% the next 40 years to meet the demand (Alexandratos et al., 2012). Populations are growing, the possible expansion of agricultural land is limited, gains from production is declining and biofuels demand is growing (ibid.). At the same time food systems are responsible for 19-29% of total greenhouse gas emissions sprung from human activities (Vermeulen et al., 2012). The climate impact of today’s diet is dominated by animal foods, such as dairy products (Swedish Environmental Protection Agency, 2008). Public interest in issues related to this is increasing in Sweden. Sales of organic foods in Sweden increased with 38% in 2014, organic milk being part of that (www, LivsmedelsFöreningen & Livsmedel i fokus, 2015, 1). Also, sales of Fairtrade labelled foods have increased. The increases are driven by consumer request and food retail and in periods there has been a shortage of organic products.

Sustainability as an issue for global discussion emerged in 1972 at a United Nations Conference in Stockholm. (See Appendix 1 for more about the development of sustainability.) Currently a renewal and acceptance process of new sustainability goals for the period 2015-2030 are in progress.

Retailers, wholesalers and food service move foods to the point of sale, linking producers and consumers together. The size and position of retailers give them negotiating power and possibility to take action in enforcing sustainability in production and consumption (Chkanikova & Mont, 2011).

Research has shown that sustainability is seen as an integrated part of business practice today. Several types of forces can be related to sustainability initiatives, e.g. regulatory, market, resource and social forces. An understanding of sustainability thinking in food retail, wholesale and food service will assist in actions towards greater sustainability.

Dairy and lactose free milk

The main environmental load in the dairy chain consist of greenhouse gas emissions, energy use and water use (Eide, 2002; International Dairy Federation, 2005). Considering the life cycle of milk ranging from farming, through dairy processors, retailers and wholesalers, food service actors,

consumers and waste handling, the agricultural production and dairy farm have the highest impact in all categories (ibid.).

Milk and other dairy products are significant parts in the Swedish diet and important nutrient-rich food sources. In 2013 the production of milk for consumption in Sweden was 843 000 ton (www, Swedish Board of Agriculture, 2014). Compared to other products, milk is the product that is produced in largest amounts, although production has decreased (ibid.). 4-10% of the adult population in Sweden is lactose intolerant (www, National Food Agency, 2015) and about 5% of the total sales of milk consists of lactose free milk (Swedish Board of Agriculture, 2012).

1.2 Problem

Dairy products are responsible for a large part of the climate impact from foods, where milk bears a part of that burden. Much research has been conducted in the area of sustainability and business, as well as research connecting retail, sustainability and food. Less literature has been found regarding wholesale and food service in connection to sustainability and food. No literature has been found connecting retailers, wholesalers, food service, sustainability and milk altogether. This makes it interesting to investigate the chosen actors view on sustainability in connection to foods and exemplify with milk in order to bring the topic to product-level, thus more concrete. Lactose free milk will state example in this thesis. This decision is based on two assumptions. First, dairy products is a food category standing for part of the climate impact. Second, based on the range of lactose free dairy products Valio provides, milk is assumed to be a frequently sold product by retailers, wholesalers and food service actors in Sweden.

1.3 Aim and objectives

The purpose of this thesis is to identify and explore characteristics on basis of findings from investigating sustainability thinking of selected actors in the food chain and relate this to literature findings and thereby provide a picture of foods, exemplified with milk, in line with the next generation of sustainability thinking. The selected actors provide perspectives from retail, wholesale, food service and indications from farmer and consumer viewpoints in Sweden. The expression “next generation” is defined to range from year 2015, i.e. current year, and onwards inspired by the Post-2015 sustainability goals for the period 2015-2030 being in progress and under acceptance worldwide.

1.4 Delimitation

This thesis covers the results from a literature review and interviews with informants. Only selected literature (see references) is taken into account. Definitions of sustainability are provided and are subject for question in the interviews in order to decrease risk for misunderstandings. Areas emphasized in the field of sustainability are guided by the results from the interviews, thus not aiming for equal emphasis on the dimensions of sustainability. Nor is this related to best sustainable practice from scientific point of view. The informants participating in this study have some sort of responsibility for sustainability. The organizations included are active in food retail, wholesale and food service. Farmer perspective and consumer perspective are important because of the strong connection to the chosen actors. Because of the limited scope of this study, literature specifically connected to farmer perspective has not been included. Because of the strong connection between retail and consumer perspective, some literature covering consumers have been included in this thesis, but consumer perspective is not completely covered. Two interviews were conducted with informants representing farmer and consumer perspectives, providing a possible hint of these perspectives. This study covers the organizations investigated and cannot be generalized to other organizations or informants. As corporations change their way of thinking over time, this thesis reflects current thinking. The empirical delimitation is that one person per organization was interviewed, which doesn't completely cover the organizations perspective.

1.5 Definitions

1.5.1 Sustainability

The literature provides many definitions of sustainability, and the definition made by an organization depends on its interest. John Elkington was the one who developed and coined the Triple Bottom Line concept in 1997, combining the economic, environmental and social dimensions of sustainability and showing their dependencies of each other. These dimensions are also known as 'People, planet, profit' and the 'three pillars of sustainability'.

1.5.2 Sustainable development

The wide meaning of sustainable development and plurality of purpose in measuring has brought confusion in terminology and lack of universally accepted indicators in measuring sustainable development (Parris & Kates,

2003). Parris and Kates conclude that the minimal definition of sustainable development is meeting the needs of human and at the same time keeping the planet alive (2003). In 1987 the Brundtland report defined Sustainable development as *"...development that meets the needs of the present without compromising the ability of future generations to meet their own needs"* (World Commission on Environment and Development, 1987).

1.5.3 Corporate Social Responsibility

Corporate Social Responsibility (CSR) is defined by Cannon (1992) as the social, economic and moral responsibilities of the organization and management of activities within these areas. CSR is defined by the Commission for the European Communities (2001) as *"a concept whereby companies decide voluntarily to contribute to a better society and a cleaner environment"*. Thus, CSR means applying the concept of sustainability into the management of organizations and the approach to CSR varies.

1.6 External idea/project provider: Valio

The company Valio Sverige AB was approached with a suggestion for conducting a Master thesis for them focusing on sustainability. A meeting was held with discussion about possible topic for the thesis. The main idea for the project comes from Valio Sverige AB. Purpose, research questions and methodology were developed by the author. One of the authors' two supervisors is working at Valio and has provided in-depth knowledge in the area of Qualitative research methods.

When performing an academic project for a company, there is a risk that the author is driven by a wish to please the company. The fact that Valio did not compensate the author financially reduces the risk for this.

Valio will take part of the final thesis and publication will be delayed with six months on request.

2 Literature review

This chapter presents the literature findings related to the research focus.

2.1 Sustainability and industry

Business engagement in CSR has increased, which helps businesses to cope with and respond to changes in the business environment (Commission of the European Communities, 2002). These changes include taking responsibility for where companies source products and services from, as well as issues related to company image and reputation (ibid.). In order to be sustainable, sustainability has to be integrated in the corporate culture of the retailer (Claro et al., 2013). Okereke (2007) indicates that climate change has become part of strategic choice for businesses and Piacentini et al. (2000) claim that the CSR position of a food retailer is a reflection of its commercial strategy. A study of leading food retailers in UK shows that every retailer has its own approach to CSR integrated into the core business (Jones et al., 2005).

Supply chain

Decisions and actions taken in the value- and supply chain not only affect the acting company, but the whole chain (Albajes et al., 2013) and environmental effects in production must consider the whole chain (Sonesson & Berlin, 2003). It can be seen that companies' work with sustainability is turning more from company level to supply chain level (Kogg & Mont, 2012). It is claimed that the dairy industry has to take a supply chain approach and get input from non-food industries, in order to come up with ideas and create a sustainable and profitable industry (Augustin et al., 2013).

Regarding retail, government regulations have limited reach to retailers in global supply chains and retailers are starting to see environmental management as rational business practice (Styles et al., 2012). It is up to the organization itself to address areas where governance do not reach and CSR

is a way of self-regulation to serve public interest (Scherer et al., 2014). According to Baldwin (2012) the area where retailers have the greatest impact is related to the products they choose to offer in their stores.

Collaborations

Front-runner European retailers target implementation of improvements and use certification standards in addressing hot environmental issues (Styles et al., 2012). Collaborations, both in supply chain and with external organizations such as Rainforest Alliance and WWF, is also a way to address sustainability issues (Styles et al., 2012).

2.2 Challenges

A roadblock for large companies in improving its own sustainability performance is the supply chain. Companies have sustainability expectations on their suppliers, but few assist its suppliers in goal setting and reviewing (United Nations, 2013b). Wognum et al. (2011) mean that the challenges to improve sustainability in supply chain is that legal requirements behind sustainability bear high costs and a challenge is to reduce cost and increase benefits of information provision.

A future challenge regarding retail is to construct retail business models uniting sustainable consumption pattern and profitable business (Styles et al., 2012). Regarding food producers and processors, the biggest challenge is how to cope with and reduce environmental impacts and still stay competitive in the marketplace (Griffiths, 2010). In line with this is the dairy industry challenge to, in an environmentally sustainable and secure way, create innovation for profit (Augustin et al., 2013). A case study of a Swedish dairy producer shows that it is possible to combine sustainable business and profitability, being competitive (Svensson & Wagner, 2012).

2.3 Forces and motivations

Forces and motivations are important to consider when understanding what is driving organizations sustainability engagement and view on sustainable foods.

Forces

Hoffman claims that the sustainability agenda in organizations, in terms of environmental aspects, is constructed by forces in the external environment: regulatory, resource, market and social (2000). These forces are valid also for European retailers in driving and hindering implementation of corporate supply chain responsibility (Chkanikova & Mont, 2012). The Danish

Environmental Protection Agency (EPA) agree with regulations and market as forces, affecting sustainability in the Nordic Retail trade (The Danish Environmental Protection Agency, 2010a, 2010b). Regulation is also stressed by Schönberger et al. (2013) as a force driving retailers to include supply chain sustainability improvements into their work.

Motivations

Bansal & Roth (2000) list three motivations that they see drive organizations to take sustainability actions: competitiveness, legitimation and ecological responsibility. This is supported by Okereke (2007), who claims that motivations for climate actions are seen to be inherent in the organizations' wish for profitable business and comparative advantage. He lists the motivations as: profit; credibility and influencing development of climate policies; steward obligation; guiding against risk raising from inaction on climate change; and ethical considerations (ibid.). Glover et al. (2014) say that organizations driven by sustainable practices are doing so with the purpose to reduce costs. According to Jones et al. (2005) the motivator for retailers regarding integrating CSR in the core business is the belief that integrated CSR will facilitate long term economic viability as well as hold or enhance the market position. This is in line with Piacentini et al. (2000) who stress that customer pressure and profitability are two main motivators for retailers to engage in CSR behavior. United Nations, on the other hand, claims that companies address sustainability issues because of the belief that a better world will benefit everyone (2013b).

Frameworks and guidelines

There are many frameworks and guidelines covering the area sustainability worldwide and national. See Appendix 2 for more information about frameworks and guidelines. Steffen et al. (2015) have identified nine planetary boundaries that form the framework for the safe space in which humanity can operate in a stable Earth system. Four of these boundaries have been crossed, i.e.: climate change, loss of biosphere integrity, land-system change and altered biochemical cycles (phosphorus and nitrogen) (ibid.).

Regulations

The European Commission (2014) aims to build a circular economy in Europe, based on a cyclic thinking where products are designed to be recycled and waste is seen as raw material. They state that a system thinking change will need to take place, when 'consumer' translates to 'user' and behavior is steering towards renting, sharing, swapping, repairing and remanufacturing products (ibid.).

Taking a national stance, in the work with sustainable development the Swedish Government prioritize questions connected to urbanization; energy and water; ecosystem services; market development within business, agriculture, forestry, fisheries and trade; and biodiversity (Government Offices of Sweden, 2012). Sweden has a generational environmental goal, which is to deliver for the next generation a society where the largest environmental problems in Sweden have been solved without negatively affecting environment and health outside Sweden (Government Offices of Sweden, 2013). 16 national environmental objectives will help to reach this main goal.

Today Sweden has no national Food Strategy, but in the governmental public investigation from 1997 the need for a national Food Strategy is expressed as a necessity, contributing to a comprehensive view of the food chain where all parts affect each other (Ministry for Enterprise and Innovation, 1997). In the Budget Proposition for 2015 the Government intend to develop a long-term Food Strategy covering the entire value chain (Ministry of Finance, 2014). This strategy would provide a holistic approach for the food politics and is important in increasing food production in Sweden, support Swedish and environmental friendly food consumption and create employment in the Swedish countryside.

Public procurement

Public purchasing of foods is regulated and governments in the Nordic countries encourage the public catering sector to use local, organic and seasonal foods in order to become more sustainable (Post, 2011). The Swedish Government has national goals to increase public purchasing of organic products (Ryegård, 2013). The public sector has a responsibility to work towards the Swedish 16 national environmental quality objectives and an instrument in achieving these goals is Green Public Procurement of goods and services (Swedish Environmental Protection Agency, 2013).

Post (2011) claims that actors in the sector do not prioritize or implement sufficiently. This because of insufficient communication, dilemmas related to ideology, conflicting messages and lack of tools to integrate economic and environmental directives (ibid.). Few procurement officers in municipalities, county councils and agencies in Sweden always analyze needs and market from an environmental point of view before purchase (Swedish Environmental Protection Agency, 2013). There is an impression that environmental demands are associated to higher purchasing costs or appeal and that the purchasing procedure takes longer time (Swedish Environmental Protection Agency, 2013).

The Swedish Government has given the Swedish Competition Authority the task to implement competence-raising efforts within public procurement of foods connected to sustainability, especially considering

environmental aspects and animal welfare (The Swedish Government, 2014). Interesting to mention is that commercial restaurants in general use less organic foods compared to other catering categories (Post, 2011).

2.4 Food

Public interest in sustainability is rising and consumers have positive attitudes towards sustainability, but behavior is not always consistent with attitude (Kearney, 2010). Pearson et al. (2011) state that there is a gap between the actual purchases of organic foods and the positive attitude towards organic foods among consumers, which basically depends of the higher price and limited availability. Related to this is the challenge that producing in a sustainable way is not direct visible for the consumer, making price compensation of sustainability difficult (Kearney, 2010).

Statistics Sweden (www, 2015) reports that sales of organic foods and non-alcoholic beverages in Sweden increased with almost 12% during 2013 compared to previous year. Comparing sales of organic foods and beverages to total sales, the organic part made up 4.3%. Some food groups stand out where a large part of total sales are organic. Consumption milk with 1.5% fat (mellanmjölk) was one of 10 food products with highest part organic sales of total sales in 2013: 13%. (ibid)

Further on, it is reported that sales of Fairtrade labelled food products increased with 37% in 2014 (www, LivsmedelsFöreningen & Livsmedel i fokus, 2015, 2), and the increases are predicted to continue. The website livsmedel.se, hosted by the NGO LivsmedelsFöreningen and the independent magazine Livsmedel i fokus, claim that 2014 was the year of breakthrough for organic products. They report that the sales of organic foods in Sweden increased with 38% in 2014 and Swedish produced make up most of the increase (www, LivsmedelsFöreningen & Livsmedel i fokus, 2015, 1). The increase is driven by both consumer request and food retail and in periods the market has been characterized by shortage of organic products (ibid.).

The trends that can be seen in the public food market are: high price pressure; less meat; more seasonal menus; less of final and intermediate foods; and more organic products. Also, sales of locally produced foods with information about the manufacturer has increased, as well as Fairtrade labelled foods (Ryegård, 2013).

2.5 Milk as an animal product

The main environmental load in the dairy chain can be put in the following categories: climate change (global warming); water use; energy use;

eutrophication; acidification; photochemical oxidants; and eco toxicity (International Dairy Federation, 2005). The dairy farmers bear the largest impact burden in all categories (Eide, 2002; International Dairy Federation, 2005). Kambanou (2014) indicates in her Master thesis that the challenge for dairy processors, related to environmental impacts, is to work with primary production in terms of greenhouse gas emissions, land use and biodiversity loss.

In public food service sustainable procurement criteria have been developed based on the major environmental and sustainability aspects and are voluntary to use. The criteria for dairy, thus milk, cover: information about origin; antibiotics; organic product; pasture; GMO-free feed; soy admixture in feed; health reporting system; and carbon footprint (Swedish Competition Authority, 2015). The Master thesis by Kambanou (2014) suggests dairy processors to work more with issues related to animal health and welfare. Another opportunity, or must, is to work with antibiotic use. Antibiotics are used on farm animals in order to prevent that production diseases are transferred to the food chain. The antibiotic use has resulted in drug-resistant bacteria which is a world-wide threat to public health (European Union, 2009). Another area important to consider is palm oil which is used in some feed to dairy cows. One challenge with palm oil production is destruction of rainforest and other vegetation so that plantations of new palm get enough space, which impact on biodiversity (Köhne, 2014). RSPO is a stakeholder initiative regulating members and certifications, claiming to make palm oil production more sustainable (ibid.). Another ingredient used in feed for dairy cows is soybean. A few challenges with soybean production are rainforest destruction, water pollution, loss of biodiversity and social conflicts (www, Round Table on Responsible Soy Association, 2015). RTRS is a multi-stakeholder initiative assuring that soy is produced in a responsible manner, having a standard which is used within a voluntary certification system (Round Table on Responsible Soy Association, 2013).

Future dairy production and industry

Griffiths (2010) suggest possible steps towards more sustainable milk production on farm level, consisting of becoming more aware of the characteristics of the land and responsible use of soil and different inputs. Also he suggests steps towards reducing water use, emissions, energy consumption, farm wastes and chemicals. The case study of a sustainable business cycle of a Swedish dairy producer stress the importance of sourcing raw materials on the dairy farm and that there need to be a balance concerning arable land, animal feed and bovine animals (Svensson & Wagner, 2012).

The project “Sustainable food production” presents solution scenarios for sustainable future production chains for milk products and other products in Sweden (Bertilsson et al., 2014). The products are supposed to deliver the same value, but with less negative environmental impact and if possible larger positive environmental impact. The production system studied in this project includes farming, milk production, logistics, processing, packaging and waste handling, excluding trade and consumer (ibid.). Common explanations for the improvements in environmental impacts for the presented scenarios are better feed efficiency, less feed waste, decreased environmental impact from feed (for example less soy) and more efficient cultivation (Sonesson et al., 2014). In one scenario the improvements are thanks to lower recruitment and mortality and better udder health (ibid).

Other possibilities in dairy production are scientific and technological innovation and advances, which increase production efficiency and reduce costs in society (von Keyserlingk et al., 2013). A study of a dairy producer shows that investments in new technology and equipment enhance efficiency and affect the competitive position (Svensson & Wagner, 2012).

Globally, milk consumption towards year 2050 is predicted to continue to fall, at least in developed countries (Kearney, 2010). In Sweden, the consumption of drinking milk has decreased, while consumption of cheese, yoghurt and sour milk has increased (Swedish Competition Authority, 2015). Augustin et al. (2013) predict that future dairy industry holds new nutritional products which combine benefits of dairy ingredients and non-dairy ingredients. They point out the importance of improving traceability of dairy products, not only for safety and quality assurance, but also for social concerns such as animal welfare, ethical production methods, and environmental concerns. Consumers want to make informed decisions when buying food products, thus requiring information related to traceability (ibid.). This is supported by Banati (2014) saying that food scandals, scares, outbreaks of animal diseases and chemicals present in food in non-acceptable amounts have resulted in European consumers being skeptic about food safety, although the food is much more safe today than ever. Food safety in dairy production is also expressed by von Keyserlingk et al. (2013).

Vinnari and Vinnari (2014) emphasize the need for transition from animal-originated foods towards sustainable plant based diets and claim that now, for the first time in history, this is possible thanks to technology.

2.6 Lactose free

Lactose free milk goes through the regular steps of milk processing (pre-heating, separation, standardization, homogenization, vitamiation and

pasteurization), followed by ultrafiltration, nanofiltration, concentration and enzymatic hydrolysis, which completely eliminates lactose (Tossavainen & Sahlstein, 2007).

The majority of the global population are able to digest lactose when they are young (Di Rienzo et al., 2013). These people have the lactase enzyme needed for hydrolyzing lactose into glucose and galactose, which is necessary for absorption of the carbohydrate. Some people are born without lactase enzyme, which is very rare (Jonsson et al., 2007). In most people worldwide the lactase activity decreases with time (Griffiths, 2010). The most common form of lactase deficiency is primary lactose intolerance when the lactase activity is down regulated to 5-10% during the first years of life or during teens (Jonsson et al., 2007). Lactose intolerance can also occur as a result of bowel disease, bowel injury or medication. Depending on the individual sensitivity and other factors, symptoms such as bloating, cramps, abdominal pain and diarrhea can occur (Griffiths, 2010).

3 Method

This chapter provides understanding of the research related choices made. Secondary data was collected through literature search and primary data was collected through semi-structured interviews.

3.1 Social research method

In natural sciences objects or processes of physical nature are studied and the goal is to understand the physical world by producing models and testing them through observations. Social research on the other hand, is research on areas related to social scientific fields, suitable when exploring developments and changes in society (Bryman, 2012). In contrast to natural science, results in social science are not possible to generalize to the same extent and theories have lower predictability. This thesis aims to provide understanding of reasoning and worldview of selected actors, in connection to food and lactose free milk as an example, and therefore social research method is suitable.

3.2 Qualitative method

Qualitative research method is suitable for this study where focus is on investigating the informants view, representing their organizations. A quantitative method is not suitable because of the small sample size as well as the character of the research questions. When studying a problem there are usually two types of explanatory models: *induction* and *deduction*. In induction empiricism is the basis for analysis, which is distilled into common rules (Alvesson & Sköldberg, 2008) and discoveries are made during the empiric process. The weakness with induction is that it claims that empirical findings can be generalized into general truth. Deduction is the opposite, when theoretic general rules are basis for analysis of empiric findings. This is the less risky explanatory model of the two. The

weaknesses are that deduction avoids explanation through authoritarian determination and that discrepancy between theory and reality result in speculations. (Ibid.)

3.3 Abductive reasoning

Abductive reasoning has traits from both induction and deduction, but is not a simple mix of these (Alvesson & Sköldberg, 2008). According to Bryman (2012) the theoretical basis in abduction is grounded in the worldview of the informants and is relying on explanation and understanding of the participants worldview. In abduction reasoning the analysis can be based on, or combined with, literature for possible discoveries of patterns which can provide understanding (ibid.). In the research process focus is shifting between theory and empiricism and both are reinterpreted in the light of each other. This must then be strengthened by new cases in order for it to be applicable to future studies (Alvesson & Sköldberg, 2008).

This thesis has an abductive approach, oscillating between empiricism and theory, reasoning both in inductive and deductive terms.

3.4 Literature review

Data collection started with identifying keywords connected to this thesis, applying IATE (Interactive Terminology) to find alternative search terms. The keywords were: challenge, dairy, driver, food service, future, lactose free, milk, motivation, opportunities, responsibilities, retailer, sustainability, and wholesaler. The keywords were used in different combinations in the databases Scopus and Web of Science, Proquest (collection of databases), SLU's online library Primo and Google Scholar.

3.5 Semi-structured interviews

The questions for the interview guide were carefully developed and composed based on the research focus and research questions, aiming for comparison to findings in the literature review and exploring new areas.

Semi-structured interviews were held in Swedish. The process of this type of interviews is flexible and the focus is on how the informant sees issues and what he/she think is important (Bryman, 2012). Semi-structured interviews are based on an interview guide with topics to cover, which doesn't have to follow a specific order (ibid.). The interview guide used for this study can be found in Appendix 4. The interviewer can also pick up on things the informant is saying and thus ask questions not included in the

interview guide (ibid.). Since sustainability is not a phenomenon covering only lactose-free milk, but also milk, dairy and food in general, the interview questions were wide and open and the informants were asked to relate to lactose-free milk. This is in line with Bryman (2012) suggesting that interview questions shall be formulated so that they can help answer the research questions, but at the same time not being too specific.

A letter was sent to each informant two workdays before each interview, covering short information about the project, practicalities regarding the interview and interview themes. See Appendix 3.

Five interviews were held face to face and two interviews were held over telephone. Two interviews were held in a bit noisy environments (one face-to-face and one over telephone). When transcribing these interviews a few words were hard to identify. It is assessed that these few single words don't affect the analysis. The interviews held face-to-face lasted for 40-60 minutes and the telephone interviews took half that time. Almost all informants seemed a bit stressed, but still present and interested. All informants were talkative, which the interviewer supported by posing follow-up questions, probing questions, interpreting questions, as well as allowing silence.

Every interview was transcribed immediately after each completed interview. Tone of voice and facial expressions were taken into account.

3.5.1 Analysis

Thematic analysis is conducted, which is a widely used approach when analyzing qualitative data (Bryman, 2012). A theme is a category being identified when going through the data, built on codes identified in the transcripts (ibid.). Following the strategy used in thematic analysis described by Bryman, central themes and subthemes were constructed from thorough reading and rereading of the transcripts, as well as re-listening to the interviews. The themes provide basis for theoretical understanding of the data, which can make a contribution to existing literature in the area of the research focus (ibid.). The basis when looking for themes were related to; exploring similarities and differences in primary data; reflecting on what is missing; and looking for topics recurring (ibid.). Most important in this search for themes was that the themes were relevant for, and related to, the research focus or research questions.

The advantages with thematic coding analysis are that it is very flexible and a good method for summarizing key concepts when having large amounts of qualitative data (Robson, 2011).

3.5.2 Validity and reliability

Validity is about the extent to which one investigates what is intended to be investigated. The focus of the interviews was to gain understanding of the actors both in terms of their reasoning on organization level, in connection to food and the example lactose free milk. The written interview with highlighted findings of interest for the thesis was e-mailed to the informants interested in taking a look at the material before being used for this study. Four informants validated the material. Validation confirms what was said and give the informant possibility to clarify, add or take away data. Informant validation is a way to make sure that researcher findings correspond to perspectives and experiences of the participant studied (Bryman, 2012) and increases the reliability. Reliability is about to which degree a reproduced study would give the same results. The findings in this study are oriented to this unique context at this specific time. At another time the context might be different and provide different results. This thesis intends to give good descriptions, providing the reader with information to make judgments about transferability of findings to other contexts (Bryman, 2012).

3.5.3 Ethical consideration

The interviews were conducted with consideration to: informed consent, confidentiality, consequences and the role of the researcher (Kvale & Brinkmann, 2009). In line with informed consent, information was provided to the informant about the purpose of the study and features of the design. Voluntary participation was obtained from each informant and information was given about the right to cancel their participation at any time. Confidentiality is about data identifying the participants. In this study all informants agreed on being public with name and organization. The issue about consequences consists of possible harm to the informants and expected benefits from participation. This includes researcher responsibility to consider both the informant and the organization he/she represent (ibid.). In this study it is stated that the informants' perspective does not cover the whole organizational perspective.

3.5.4 Method criticism

Since sustainability is not a phenomenon found only for one specific food product, the decision fell on formulating interview questions that both could be connected to foods in general and lactose free milk. Thereby letting the informants decide whether there was a difference or not between foods in general and lactose free milk.

The informants were working at different levels in their organizations, resulting in that each informant to a greater or lesser extent could relate specifically to lactose free milk.

Disadvantages with thematic coding analysis include that it is very flexible and much can be said about the data, which can inhibit the researcher when deciding on what parts to focus on (Robson, 2011).

The quality of the analyst is of critical importance. As a human observer, the analyst has shortcomings and biases. The shortcomings consist of limitations in the amount of data the analyst can deal with; early impressions preventing later revision; a tendency to ignore some information and emphasize some information; tendency to ignore novel and unusual information; tendency to overreact or underreact to information that is new; and being excessively confident in judgment (Robson, 2011).

3.6 Choices made for the study

The industry chosen for investigation is the food industry in Sweden. Retailers, wholesalers and food service actors move food products to the point of sale and form the links between manufacturers and consumers. Company size is significantly influencing sustainability performance, where large organizations are leading the way (United Nations, 2013b), having market power which is of great importance in proceeding towards more sustainable food products. Thus, the choice of organizations was based on large size and perceived high sustainability engagement. The perceived sustainability engagement was based on the authors knowledge, web based searches and expert recommendations. Case sampling, a type of purposive sampling, was used where specific dimensions of interest are exemplified with reference to the focus of the study (Bryman, 2012).

Seven informants participate in this study: an appropriate number in order to provide variety and depth. Two retailers, one wholesaler and two food service actors are represented. These informants and actors complement each other with the perspectives from an expert on sustainability representing a trade organization and a Trend analyst/Strategist specialized on food and milk. The informants were approached on behalf of the belief that they have a lot to tell in the topic. (See appendix 5 for information about the informants interviewed.) Some of the organizations also act in other countries, but in this project a Swedish perspective is taken. All organizations have offices situated in Stockholm or Södertälje. This facilitated the data collection, but location wasn't the basis for deciding on which actors to include.

3.6.1 Retailers

Coop Sverige AB is one of the largest food retailers in Sweden and a forefront runner in the area of sustainability engagement. A Sustainability Manager at Coop Sverige AB was asked for an interview. The request was forwarded to the Sustainability Strategist dietitian Anneli Bylund who said yes to an interview, which was conducted at Bylunds' workplace. The largest retailer in Sweden is ICA Sverige AB, also being a forefront runner in sustainability engagement. A Sustainability at ICA was contacted. The request was forwarded to a colleague who recommended to contact the purchasing division. After contact with three persons the request was forwarded to Anna Karin Lindberg, Manager Environmental & Social responsibility. She said yes to an interview, which was held via telephone.

Also, a Manager within the area of sustainability at Axfood was approached, with no response. Customer Service was contacted, which proposed contact with a person responsible within the area of sustainability, who forwarded the request to a colleague. Later this person suggested the author to join in an interview together with another student regarding another topic. The author was grateful, but friendly said no to the proposal.

3.6.2 Food wholesaler

Martin & Servera is the largest and leading full-range food wholesaler of foods in Sweden. The author approached the Sustainability- and Quality Manager AnnaLena Norrman by e-mail and received a yes for an interview, which was conducted at her workplace.

3.6.3 Food service actors/caterers

One private actor and one public actor within the food service sector was approached, both awarded for their sustainability work. Sodexo is the worldwide leader in Quality of Life services, of which meal service is one part. Per Liljedahl, the Manager for QHSE (Quality, Work environment, Environment and Food safety) at Sodexo was approached by e-mail and said yes to an interview at his work. The public food service actor approached was Södertälje Kostenhet. They serve about 20 000 different meals every day. The Head of Unit (result responsibility) Elin Waltersson was approached through e-mail and phone and said yes to an interview, which was held via telephone.

3.6.4 Trade organization

An organization for milk was of interest for this study. The organization Svensk Mjök was taken over by LRF, the Federation of Swedish Farmers, in 2012, and is now LRF Dairy Sweden. LRF Mjök was contacted and Hilda Runsten was approached, previously Environmental- and Climate Expert, but currently Expert on Sustainability for the whole LRF. She said yes to an interview, which was held at her workplace.

3.6.5 Trend analyst, Strategist in the area of food

A Trend analyst/Strategist in the area of food and milk with experience of the food industry and consumer insights was of interest for this thesis. Therefore Ingela Stenson, currently working at the analysis and strategy company United Minds, was approached via e-mail. She said yes to an interview, which was conducted at her workplace.

4 Results and discussion

In the following section the results from the interviews are presented and analyzed in the light of the literature, starting with a brief summary. Then the chapter follows the structure in figure 1. It starts with understanding the characteristics on organization level, proceeding towards the characteristics connected to lactose free milk. In the end of the chapter it is all brought together.

As figure 1 shows, characteristics have been identified on different levels on basis of the empirics: organizational level, food level, milk as an animal product, and lactose free.

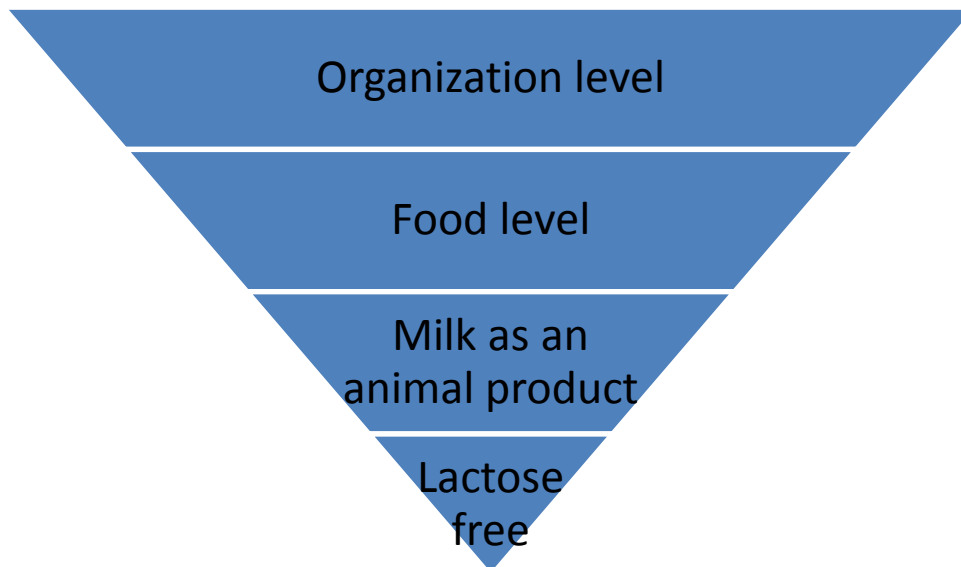


Figure 1. Structure of the chapter following a funnel, ranging from characteristics on organization to lactose free level.

One identified characteristic common for all actors participating in this study was that sustainability is seen as business practice. Common for all

retailers and food service actors are: expression that the organizational size gives possibility to impact, that there is a lack of food and low availability of organic foods. These found characteristics can be supported by the literature, as discussed later in this chapter.

The interview with Anna Karin Lindberg, *Manager Environmental & Social responsibility*, ICA, primarily brought up the wide perspective on organization level and food level. The interview with Anneli Bylund, *Sustainability strategist dietitian*, Coop deepened the connection to foods and milk as an animal product. Bylund is working with strategic questions regarding health, but also working much with questions related to raw materials e.g. sustainable cultivation of palm oil and soy for feed and strategic questions regarding fish (Pers. com., Bylund, 2015). The common characteristics identified specifically for the retailers are the stressed importance of communication, conscious choices and indications connected to lactose free.

The interview with AnnaLena Norrman, *Sustainability- and Quality Manager*, at Martin & Servera brought up the perspective on organization level, food and milk as an animal product.

The interview with Per Liljedahl, *Manager QHSE* at Sodexo primarily brought up the wide perspective on organization level, but also food level. The interview with Elin Waltersson, *Head of unit (result responsibility)*, at Södertälje Kostenhet deepened the connection to foods and milk as an animal product. Both Sodexo and Södertälje Kostenhet indicated characteristics connected to lactose free.

The interview with Hilda Runsten, *Expert on Sustainability*, at LRF brought up issues at organization level, as well as food level and milk as an animal product and indications for lactose free.

The interview with Ingela Stenson, *Trend analyst and Strategist* brought up issues on organization level, food level, milk as an animal product and indications for lactose free.

4.1 Organization level

4.1.1 Sustainability as business practice

The extent to which an organization incorporates sustainability into its business will reflect its' view on foods and sustainability. Common for all actors is that sustainability is integrated into business practice and seen as a natural part of it. It is important for all actors to work in a sustainable manner, sustainability being part of the organizational values, as well as creating value. The Trend analyst/Strategist claims that CSR, CSV and sponsoring have developed to engaging the whole business (Pers. com., Stenson, 2015). This is consistent with the literature saying that

sustainability is integrated into the business, as well as into retailer business, and its practice (Claro et al., 2013; Jones et al., 2005; Styles et al., 2012; Scherer et al., 2014; Piacentini et al., 2000; Okereke, 2007; United Nations, 2013b).

Stenson (Pers. com., 2015) says that today everything shall be sustainable and there is a risk that the concept is overused and macerated. Investigating the area of sustainability and business, immense quantity of literature can be found in the topic, which supports that the term sustainability is frequently used, is highly relevant and naturally connected to conducting business. This indicate that there is a risk that the sustainability concept is overused and macerated and possibly will become the new norm.

Supply chain

Coop works with sustainability from three perspectives: sustainable suppliers, sustainable stores and sustainable range of products (Pers. com., Bylund, 2015). Sodexo aims to maximize the number of own employees and not work with subcontractors (Pers. com., Liljedahl, 2015). This indicate that the whole supply chain is taken into consideration, which is in line with the literature (Kogg & Mont, 2012).

Augustin et al. stress that the dairy industry has to move away from a factory perspective and take a supply chain approach, as well as get input from non-food industries, in order to come up with ideas for creating a dairy industry that is both sustainable and profitable (2013). LRF claims that no other part of the food industry goes as far in its sustainability thinking as the dairy industry and that dairies have comprehensive sustainability work covering organic, economic and social sustainability, aiming for continuous improvements (Pers. com., Runsten, 2015).

Collaboration

Coop, ICA, Martin & Servera and Sodexo all have many collaborations. Coop communicates quite a lot with NGOs and participates in dialogues with food business actors, for example regarding palm oil, and have quite a large exchange through these dialogues (Pers. com., Bylund, 2015). They partake in discussions with for example KRAV, MSC, ASC and Fairtrade. Also, they are members in RSPO regarding palm oil and RTRS regarding certified soy (ibid.) ICA has many collaborations, which develop the way of working and promote positive development (Pers. com., Lindberg, 2015). Also, suppliers are quality certified and socially audited (Pers. com., Lindberg, 2015). Martin & Servera has several collaborations, e.g. regarding soy, standards for primary production, and regarding organic foods (Norrman, Pers. com., 2015). This is consistent with the literature pointing at collaborations both in supply chain and with external

organizations in addressing sustainability (Styles et al., 2012). The findings are also consistent with the literature meaning that companies self-regulate to serve public interest (Scherer et al., 2014) and that retailers target implementation improvements and use certification standards in addressing hot environmental issues (Styles et al., 2012).

4.1.2 The size of the organization gives possibility to impact

Coop, ICA, Sodexo and Kostenheten Södertälje all say that the size of their organizations give possibility, and responsibility, to impact. The retailers say that they have responsibility for the range of products they offer, which they address through requirements on goods and monitoring of suppliers (Pers. Com., Bylund, 2015; Pers. com., Lindberg, 2015). This is in line with the literature meaning that the size and bargaining power of retailers give them the position to enforce sustainability in production and consumption (Chkanikova & Mont, 2011). This is in line with Baldwin (2012) saying that the greatest sustainability impact retailers have is related to the products they choose to offer. On the other hand this is also connected to being competitive on the market, winning the consumers' trust. Coop, ICA and Kostenheten Södertälje also mention their responsibility for teaching consumers to live healthy and sustainable (Pers. Com., Bylund; Pers. com., Lindberg, 2015; Pers. com., Waltersson, 2015).

4.1.3 Communication

All actors mention the importance of communication. The retailers mention their possibility to reach out with communication in their stores. For Kostenheten Södertälje future work is about communicating better and reach out to the guests and explain how they have been thinking and why they've made the choices they've made when composing a meal (Pers. com., Waltersson, 2015). The importance of communication in public food service is also stressed in the literature, being insufficient so far (Post, 2011). Both Martin & Servera and Kostenheten Södertälje stress the importance of sustainability being understood internally and that the organization itself know why they act as they do (Pers. com, Norrman, 2015; Pers. com., Waltersson, 2015). The Trend analyst/Strategist says that there are big challenges in that people want to know much more behind the dining experience and that the food industry is well equipped, but have to learn to communicate what they are doing in the area of sustainability (Pers. com., Stenson, 2015). Stenson (Pers. com., 2015) mention Whole Foods in

the U.S. as a good example, communicating that their consumers contribute to a better world when shopping at Whole Foods.

4.1.4 Challenges

Sodexo says that one challenge is that procurement skills among purchasers in the public sector are low and that the offeror that promise the most win the case (Pers. com., Liljedahl, 2015). The problem is that the demands set on the offeror are not followed up (ibid.). Runsten (Pers. com., 2015) stress that farmers feel deceived by politicians who make up laws for food production, but consumers, and especially public sector will not buy. These indications are well in line with the literature showing that the Swedish Competition Authority is implementing competence-raising efforts in the area of public procurement of foods connected to sustainability (The Swedish Government, 2014).

Runsten (Pers. com., 2015) claims that it is very difficult to reach restaurants, where most restaurants use only small amounts of organic and Swedish products. This can be connected to Post (2011) stating that commercial restaurants use less organic foods compared to other catering categories.

4.1.5 Forces and motivations

The main forces claimed to construct the sustainability agenda in organizations are regulatory, resource, market and social (Chkanikova & Mont, 2012; Hoffman, 2000).

Regulatory forces

Regulatory forces are influencing the investigated actors, which is consistent with the literature (Chkanikova & Mont, 2012; Hoffman, 2000; Schönberger et al., 2013; The Danish Environmental Protection Agency, 2010a, 2010b) LRF says that the milk crisis makes the economic sustainability a large problem and imported milk take market shares from the Swedish milk (Pers. com., Runsten, 2015). Farmers have hard times economically and there is a skepticism towards the focus on sustainability and a belief that it was wrong to go forward with it (Pers. com., Runsten, 2015). Now is not the right time to introduce big steps forward. LRF mentions that the national food strategy is on its way and hope for political support before all farmers stop farming. This is consistent with the expressed need for a Swedish Food Strategy, which will support increased food production in Sweden and increased amounts of Swedish and organic foods consumed (Ministry of Finance, 2014).

Kostenheten Södertälje is to a large extent guided by environmental programs and goals in the municipality and they have an economical framework to stick to (Pers. com., Waltersson, 2015). When it comes to school meals they have a law to follow (Pers. com., Waltersson, 2015). This is in line with the literature stating that the public sector is responsible to work towards the Swedish environmental goals and that public procurement is an important instrument in this work (Swedish Environmental Protection Agency, 2013).

Resource related forces

Martin & Servera (Pers. com., Norrman, 2015) says that it is a challenge to be and do enough and that they do not have enough resources and therefore have to work with risk minimization. This is consistent with the literature stating that resources influence the sustainability agenda (Chkanikova & Mont, 2012; Hoffman, 2000; The Danish Environmental Protection Agency, 2010a, 2010b).

Market and social forces

Market and social forces are two forces influencing the investigated actors, which is consistent with the literature (Chkanikova & Mont, 2012; Hoffman, 2000; Schönberger et al., 2013). Martin & Servera says that they are customer driven to a very large extent and sometimes suppliers also put pressure on them regarding sustainability (Pers. com, Norrman, 2015). LRF agrees that sometimes suppliers put pressure, but stress that what started sustainability in the area of milk was consumer pressure or consumer interest, pressure from environmental- and consumer organizations and political will (Pers. com, Runsten, 2015).

Martin & Servera says that sustainability affect economy in a positive way, which in turn motivates some people in the company to work with it (Pers. com., Norrman, 2015). This is consistent with the literature stating that the motivation for climate actions are profitable business and comparative advantage (Okereke, 2007).

Both Coop and Sodexo mention that they are very value driven and have a wish to make good. Coop says that working with, for example, organic gives quite a lot back directly. Since they know that they have done certain choices they can all have a little better conscience for what they provide in the store (Pers. com., Bylund, 2015). This is in line with the United Nations claiming that companies address sustainability issues because they believe that a better world will benefit everyone (United Nations, 2013b). Seen from another perspective, the Trend analyst/Strategist says that it is important for organizations to be transparent and know the origin of the products they provide and why the organization itself is buying it (Pers. com., Stenson, 2015). If not, there is a risk that the

organization may encounter trouble in media and among consumers. Further on she says that corporations have to defend their position in the market and live up to their sustainability promises. This is often a question about ethics and moral. It is harder to see what one is doing which is immoral, compared to breaking the law (ibid.).

Frameworks and guidelines

The planetary boundaries as such have not been an issue brought up during the interviews, but several actors emphasized the climate aspect. For example, ICA says that their overarching goal for sustainability work is the climate goal (Pers. com., Lindberg, 2015). This can be connected to Climate change as one of four planetary boundaries being crossed (Steffen et al., 2015).

4.2 Food

4.2.1 Organic and Swedish

According to the retailer Coop it's all time high right now when it comes to organic sales and they've never had this high sales of organic foods before (Pers. com., Bylund, 2015). From a customer perspective organic has to be manifested through some kind of organic label in order for customers to feel that it is sustainable (ibid.). There is a belief that many consumers have the perspective that Swedish products are more sustainable which might be because of the closeness and very good animal welfare in Sweden, although that is no guarantee for being the best alternative from an environmental point of view (Pers. com., Bylund, 2015). This is in line with the increasing sales of organic foods in Sweden, especially Swedish produced (www, Statistics Sweden, 2015), and that year 2014 was the year when organic foods had a breakthrough, driven by consumer request and food retail (www, LivsmedelsFöreningen and Livsmedel i fokus, 2015, 1). The organic trend can also be seen in the public food caterer Kostenheten Södertälje, which has increased the organic amount of foods and has a goal to increase the amount of organic to at least 60% (Pers. com., Waltersson, 2015). Södertälje is a Fairtrade city, which includes that Kostenheten Södertälje shall buy Fairtrade certified products (Pers. com., Waltersson, 2015). This is supported by the literature saying that more organic products in the public food market is an ongoing trend (Ryegård, 2013), as well as increased sales of Fairtrade labelled food products (www, LivsmedelsFöreningen and Livsmedel i fokus, 2015, 2; Ryegård, 2013).

4.2.2 Conscious choices

The topic conscious choices was brought up by Coop, ICA and Stenson. According to Coop customers want to feel that they are making good choices, conscious choices and sometimes very emotionally attached (Pers. com., Bylund, 2015). This is also valid for ICA, who has a strategic priority to help customers to make sustainable healthy choices, for example more climate friendly choices (Pers. com., Lindberg, 2015). This is consistent with the literature saying that consumers want to make informed decisions when buying food products and require information related to traceability (Augustin et al., 2013). Coop indicates that especially young people see it as an obvious fact that the retailers keep an eye on the products, being for example organic and Fairtrade (Pers. com., Bylund, 2015). This is supported by Stenson (Pers. com., 2015) saying that consumers are becoming more of citizens, having a greater sense of responsibility and want to know where things come from. She indicates that young people, so called Millennials, want to live healthy and the norm will become that health and pleasure belong together.

4.2.3 Lack of food and low availability of organic foods

The great challenge according to ICA (Pers. com., Lindberg, 2015) is the growing population on Earth. More food is needed, the climate is affected and changes affect how we can cultivate and produce. Coop, Sodexo and Kostenheten Södertälje all mention the low availability of organic foods. Sodexo (Pers. com., Liljedahl, 2015) says that the low availability of locally produced and organic food in sufficient volumes is a challenge. Kostenheten Södertälje also expresses the low availability of organic and KRAV-labelled products because of the increased demand (Pers. com., Waltersson, 2015). This is supported by LivsmedelsFöreningen and Livsmedel i fokus (www, 2015, 1), stating that the market has been characterized by shortage of organic products in periods. Coop points at the challenge of availability at product level: that there are not enough sustainable products within the range of the regular goods that the consumer want, or for a price that the consumer is willing to pay (Pers. com., Bylund, 2015). It is the range of products that can prevent that the customer choose something which is more sustainable. For example the specific flavor of the tea the consumer wants might not exist as organic, with Fairtrade or Rainforest Alliance label. The best is when it is possible to provide exactly the same product as the consumer wants as a sustainable alternative and with small difference in price (ibid.). This can be connected to the literature showing that there is a gap between consumer attitude towards sustainability and actual behavior (Kearney, 2010). This gap, when

it comes to organic foods, basically depends on the higher price and limited availability (Pearson et al., 2011). Kearney (2010) means that price compensation of sustainability is difficult because it is not direct visible for the consumer.

4.3 Milk as an animal product

4.3.1 Antibiotic and resistance

Martin & Servera (Pers. com., Norrman, 2015) says that their public customers have had demands regarding antibiotic use and that this is a very important issue to some private customers as well. This is an area Martin & Servera pays attention to and works with. Antibiotic use in animal farming resulting in drug-resistant bacteria is a world-wide threat to public health (European Union, 2009). The dairy procurement criteria regarding antibiotics states that antibiotics must only be used when medically justified (Swedish Competition Authority, 2015).

4.3.2 Palm oil

Coop, Martin & Servera and LRF bring up the topic palm oil. Coop says that the work with palm oil is going on in the background, not always visible to the consumer, but being more about product development or securing that the product contains more sustainable palm oil (Pers. com., Bylund, 2015). Martin & Servera has demands on their suppliers regarding palm oil. Martin & Servera excludes or reduces unsustainable produced palm oil (Pers. com., Norrman, 2015). LRF clarify that palm oil is outstanding in production of feed, but that there is a need to handle it in some way, which can be done by using certified palm oil (Pers. com., Runsten, 2015). The stakeholder initiative RSPO regulates members and certification system, dealing with social and environmental issues (Köhne, 2014). This is claimed to make palm oil production more sustainable by being committed to and comply with principles in different areas (Round Table on Sustainable Palm Oil, 2013).

4.3.3 Animal welfare

During the interviews both Coop, Sodexo, Kostenheten Södertälje, LRF and Stenson made connections to animal welfare. Coop states that the connection between sustainability and lactose free milk is the animal welfare of the dairy cow, what the cow eats, if it is allowed to graze, if it gets soy from deforested rainforest land and so on (Pers. com., Bylund,

2015). The last 4-5 years the public customers of Martin & Servera have had detailed demands regarding animal care and realize that this is a very important issue to some private customers as well (Pers. com., Norrman, 2015). Martin & Servera works with this and have corresponding demands on their suppliers (ibid.). This is supported by Kostenheten Södertälje (Pers. com., Waltersson, 2015), who means that knowing that the living conditions of the animals are extra good adds value to animal products. As a help for this, the procurement criteria “Health reporting system” can be used when purchasing dairy products, which includes animal welfare (Swedish Competition Authority, 2015)

LRF and Stenson claim that Sweden is a forefront runner regarding sustainability in the dairy area because the animal welfare issues are of major concern and legislation is tough (Pers. com., Runsten, 2015; Pers. com., Stenson, 2015). Stenson (Pers. com., 2015) adds that there are opportunities to capitalize on this, which is supported in the Master thesis by Kambanou (2014), indicating opportunities for dairy processors, suggesting to work more with issues related to animal health and welfare. Stenson (Pers. com., 2015) states that a debate is needed where the cow is given credit for being the core for open landscapes.

4.3.4 Soy

Coop, Martin & Servera and LRF all bring up the topic soy. Coop works with sustainable soy in feed (Pers. com., Bylund, 2015) and Martin & Servera has demands on their suppliers regarding soy in feed, which is based on the procurement criteria from Swedish Competition Authority (Pers. com., Norrman, 2015). The procurement criteria for dairy covers soy admixture in feed, demanding that soy included in feed has been responsibly cultivated (Swedish Competition Authority, 2015). In line with the literature, conventional soybean production is associated to environmental degradation and social conflicts (www, Round Table on Responsible Soy Association, 2015) and therefore the RTRS provide a standard and certification system for producing soy in a responsible manner (Round Table on Responsible Soy Association, 2013).

According to LRF (Pers. com., Runsten, 2015) the most important policy decision in 2014 was when the dairy branch decided to phase out soy and that they have to continue to advance the positions in this area, because it gives large imprints on several fronts. LRF (Pers. com., Runsten, 2015) says that there are good examples where soy has been phased out and replaced by field beans, peas, rapeseed cake and other Swedish products.

4.3.5 Cyclic system

LRF says that the actions on the farm carry the largest sustainability burden. Decreasing climate impact has been in focus when it comes to milk and there is much to do in that area (Pers. com., Runsten, 2015), but Stenson (Pers. com., 2015) mention that people currently don't see the climate benefits cows provide, but predict that it will come. As research shows, climate change is one main environmental impacts of the dairy chain, and agricultural production and dairy farmers carry the largest impact burden (Eide, 2002; International Dairy Federation, 2005).

A cyclic system is emphasized by Coop and LRF. Coop says that a possibility regarding organic farmed milk is to connect this to the whole cyclic system, such as emissions and production of feed to the cows (Pers. com., Bylund, 2015). LRF (Pers. com., Runsten, 2015) says that a circular process on the farm would give less imprint and is desirable and that there are a smaller part of consumers who are willing to advance their positions and pay more for even better products. Organic farmers are stepping up by themselves. They are trying to become fossil free by replacing diesel with renewable energy, which is the next big thing for progressive farmers (ibid.). The work with becoming fossil free can be connected to Kambanou (2014) indicating in her Master thesis that the challenge for dairy processors, related to environmental impact, is to work with greenhouse gas emissions in primary production.

LRF mentions the project "*Paths to a sustainable food sector*" which reveals many possibilities to decrease environmental impact, including milk production (Pers. com., Runsten, 2015). The project "Sustainable food production" presents solution scenarios for future production chains of milk in Sweden with less environmental impact. The improvements were related to better feed efficiency, less feed waste, decreased environmental impact from feed (for example less soy) and more efficient cultivation, lower recruitment and mortality and better udder health (Sonesson et al., 2014).

Stenson (Pers. com., 2015) bring up the issue technology in connection to sustainability, predicting that investments in technology will take place, which will help solving problems. LRF (Pers. com., Runsten, 2015) means that new technologies in society can be useful in farming and that higher resource efficiency is possible. This is consistent with the literature pointing at the importance of scientific and technological innovation and advances in increasing dairy production efficiency (von Keyserlingk et al., 2013). Also, the study of a Swedish dairy producer shows that investments in new technology and equipment is a way to enhance efficiency and favour competitiveness (Svensson & Wagner, 2012).

The need for sustainable business cycles, also for other areas than the farm, are clearly expressed by changing consumer behaviors and

purchasing patterns as well as ambitions and interventions on political level worldwide.

4.3.6 Vegetable and alternative products

Coop can see that vegetarian food, as a sustainability issue, is increasing and meat declining among consumers (Pers. com., Bylund, 2015). This is also true for Kostenheten Södertälje, who aims to decrease the amount of served meat and use it effectively (Pers. com., Waltersson, 2015), which is in line with Ryegård (2013) reporting reduced use of meat in public food market. According to Stenson (Pers. com., 2015), right now and some time ahead, eating animal products and drinking milk will be questioned and vegetarian eating celebrated. There is a belief that cows and milk are destroying the environment and there is a typical Swedish view on animal products today: it is a "truth" in Sweden that we should eat less meat and maybe drink a bit less of milk (Pers. com., Stenson, 2015).

Stenson stresses that people are searching for alternative products to milk, which are seen as more climate friendly and sustainable, more healthy and better in every way (Pers. com., 2015). There is a tendency that the modern and conscious consumer choose almond milk or oat milk, turning away from animal's milk and that the more old-fashioned consumer choose animal milk (ibid.). Stenson (Pers. com., 2015) claims that alternative products are on their way to become their own phenomena, no longer just being replacement products for milk. This will continue and grow and the differentiation will increase. Further on, alternative products will compete with milk, not just as substitutes for those who cannot tolerate milk, but as an option for everyone. It's an offering to replace animal milk with plant based alternatives, which possibly are more climate friendly. (Pers. com., Stenson, 2015).

The belief that we should drink less milk can be connected to the decreasing milk consumption in Sweden (Swedish Competition Authority, 2015) and that global milk consumption towards year 2050 is predicted to fall, at least in developed countries (Kearney, 2010). The questioning of animal products and celebration of vegetable products is supported by the literature. Vinnari and Vinnari (2014) emphasize the need for transition from foods of animal origin foods towards sustainable plant based diets and claim that now this is possible thanks to technology. The increased focus on vegetables is supported by Augustin et al. (2013), who predict that future dairy industry holds new nutritional products, combining benefits of dairy- and non-dairy ingredients.

Stenson stresses the importance of how the product, its' image and position on the market is handled. This can be connected to LRF meaning that cheese is experienced as a totally different food, compared to milk

(Pers. Com., Runsten, 2015). There is a tendency that people want Swedish milk and want to give it to their children, but when the consumer comes to the cheese counter, that thought is gone (ibid). LRF claims that cheese is the problem with milk. Cheese is experienced as a totally different product and some consumers doesn't know what cheese is made of. This corresponds to statistics showing that meanwhile milk consumption is decreasing, consumption of cheese, yoghurt and sour milk has increased in Sweden (Swedish Competition Authority, 2015).

4.4 Lactose free

4.4.1 Food safety - Lactose free important for those who need it

When connecting sustainability to lactose free milk, Sodexo and ICA highlight the importance of providing the right food, i.e. lactose free, in a safe way to those who need it (Pers. com., Liljedahl, 2015; Pers. com., Lindberg, 2015). Stenson (Pers. com., 2015) cannot see a specific connection between lactose free milk and sustainability from consumer perspective. It's rather about if milk as such is sustainable or not (ibid.). The choice of lactose free milk is about being lactose intolerant or having a belief that lactose free milk is better than regular milk (ibid.). The importance of providing lactose free milk for those who need it can be seen as natural, not least, because of the painful and unpleasant symptoms that can occur from ingestion when being lactose intolerant (Griffiths, 2010). The literature is clearly supporting the importance of providing safe food and also express an increased attention towards food safety (Augustin et al., 2013; Banati, 2014; von Keyserlingk et al., 2013).

4.4.2 Organic and lactose free

Coop and Kostenheten Södertälje emphasize the organic aspect in connection to lactose free. Kostenheten Södertälje (Pers. com., Waltersson, 2015) says that lactose free products are hard to find as organic alternatives.

Coop believes that the lactose free range of products will increase, as well as the organic lactose free range, and a possibility is to very clearly connect to the organic properties of these products (Pers. com., Bylund, 2015). Same thing if the product is Swedish: to very clearly connect to that. If, for example, the dairy cow in Sweden is allowed to be outside a bit more one can connect to pasture land in Sweden (Pers. com., Bylund, 2015). Coop indicates that the lactose intolerant consumer also can be the

conscious consumer and in the future some products might only exist as organic and not found as conventional lactose free products (ibid.).

LRF doubts that the smaller farmers that are trying to close the circular process on the farm right now, for example Sju gårdar and Hjordnära, provide lactose free milk at the moment (Pers. com., Runsten, 2015). According to the websites of these farmers they do not provide lactose free products (www, Hjordnära, 2015; www, Sju gårdar, 2015).

4.5 Bringing it together

In line with what the hockey legend Wayne Gretzky once said “The key is to go where the puck will be going, not where it is now” (Kiernan, 2009, 123), a picture of lactose free milk in a wide context is provided below based on findings identified on different levels.

Empirical findings support statistics showing increasing sales of organic foods (www, Statistics Sweden, 2015) and Fairtrade labelled foods (www, LivsmedelsFöreningen and Livsmedel i fokus, 2015, 2), which is also true in the food service sector (Ryegård, 2013). A “boom” for organic foods was seen in year 2014 (www, LivsmedelsFöreningen and Livsmedel i fokus, 2015, 1). Statistics show that milk with 1,5% fat (mellanmjölk) was one of 10 food products with highest part organic sales of total sales in 2013 (www, Statistics Sweden, 2015). Empirical findings indicate that this interest will continue and possibly also include lactose free milk. Further on, empirical findings point at the possibility for better communication of product characteristics that are perceived to be connected to sustainability. On the other hand, empirical findings and literature show that the use of animal products and milk consumption have decreased (Swedish Competition Authority, 2015) and is predicted to continue decreasing (Kearney, 2010). At the same time an increase in vegetable food products can be seen (Augustin et al., 2013) and empirics indicate that alternative products are competing with milk as a product.

It can be seen that retailers have big power in driving the sustainable development forward (Chkanikova & Mont, 2011), but both retailers and food service actors/caterers express their power to impact through their size. The forces steering these actors are connected to regulations, resources, market and social factors (ibid.). The connection to regulatory forces is stronger for food service, but no direct connection can be seen to retailers. Retailers primarily seem to be driven and hindered by market- and social related forces. Price is a steering factor in procurement and sustainable products are perceived as more expensive compared to conventionally produced products, possibly resulting in conventional products dominating (Ryegård, 2013). Since price still is a steering factor in public procurement, competition among wholesalers to get public

customers includes providing cheap products (ibid.), which in many cases means conventionally produced products with less focus on sustainable production. On the other hand Green Procurement Criteria is an instrument for positive development, although price competition might slow down this development.

The demand for organic foods has resulted in shortage on the market (www, LivsmedelsFöreningen and Livsmedel i fokus, 2015, 1), putting pressure on the investigated actors to provide the desired products, which in turn puts pressure on producers and farmers and limitation of Swedish raw materials can be the result. An economically tough situation for farmers makes it tough to reschedule on the farm. The possibilities for future milk production, including lactose free milk products, are to support the farmers in actions towards a cyclic system, limit the antibiotic use and provide good animal welfare for the farmed cows. If using palm oil and soy in feed, these should be sustainably produced.

Less findings of this thesis could be specifically connected to lactose free milk, most were related to organization level, food level and milk as an animal product. If this project only would have focused on lactose free milk, the meaningfulness could have been questioned. This because so much is connected to the other levels; levels that also concern lactose free milk. Another option would have been to focus on milk or dairy products, and not specifically lactose free. This because characteristics on product level are tied to milk in general, and dairy products, rather than lactose free.

Method discussion

The author of this project has a wish to contribute to sustainable development and has a lens consisting of own world-view, experience, perception and belief about possible development which affect the project.

Less literature was found regarding wholesalers and food service actors, which makes it less reliable to relate results from these to the literature. Literature from a general perspective on business has been used, as well as literature from other parts of the world. This is not ideal. Ideal would be to relate to literature covering the specific type of actors being investigated and preferably in Sweden. Because of the changeable area investigated and the fact that this thesis focus on possible development, newly produced literature findings have been valuable. It is important to bear in mind that previous development over time also is valuable in predicting possible development. Important to note is that the most recent reasoning can change quickly and that the latest information about reasoning, activities and developments also can be found in less reliable sources of information. Google Scholar has been used as a source for information when material was hard to find elsewhere, but this material was used with caution.

In the interviews the word sustainability was frequently used, which might affect the answers. The informants indicate that the word sustainability is very frequently used in general and specific topics and actions might, or might not, be perceived as particularly attached to it.

The informants participating in the interviews were informed that the main idea for the project came from Valio. This might have affected the informants' answers. For example by taking the chance to reach out with demands or withhold information.

The author became more confident in conducting interviews during the process of interviewing and developed the ability to more quickly grasp and connect answers to questions not yet posed as well as connecting the answers to previous interviews. This might affect the outcome.

It shall be noted that the themes developed during the analysis are based on the topics brought up in the interviews. If themes were not identified in interviews with some actors, this doesn't automatically mean that the theme isn't valid for the organization as a whole.

5 Conclusion

On basis of findings from exploring sustainability thinking in selected actors and relating to literature, a possible future picture of milk is provided.

Dairy products are responsible for a large part of the environmental impact from foods, lactose free milk being a part of that burden. Considering the whole dairy chain, the agricultural production and the dairy farm have the highest environmental impact and the dairy industry has a responsibility to provide high quality and sustainable products.

Findings in this thesis are connected to organization level, food level, milk as an animal product and lactose free. Few findings are specifically connected to lactose free. Characteristics on product level are tied to milk in general, and dairy products, rather than lactose free.

Sales of organic and Fairtrade labelled foods are increasing, including sales of organic milk. Empirical findings indicate continued interest, possibly also concerning lactose free milk. Milk consumption has decreased, and is predicted to decrease. An increased focus on vegetable products is seen and indications that vegetable, alternative products compete with milk.

Retailers have power in driving sustainable development, but food service also express their power to impact through their size. Food service is steered by regulatory forces, meanwhile retailers primarily seem to be driven and hindered by market and social related forces. Price is a steering factor in public procurement and sustainable products are perceived as expensive. Green Procurement Criteria is an instrument for development towards sustainability, but price competition might slow this down.

The demand for organic foods has resulted in shortage on the market, putting pressure on the actors to provide the desired products, which in turn puts pressure on producers and farmers and shortage of Swedish raw materials can be the result. An economically tough situation for farmers makes it tough to reschedule on the farm. The possibilities for future milk production on the farm are to support the farmers in actions towards a

cyclic system, limit the antibiotic use and provide good animal welfare for the farmed cows. If using palm oil and soy in feed, these should be produced in a sustainable manner.

A suggestion for future research is to compare the provided picture in this thesis with scientific documentation on sustainable best practices in the food chain and identify gaps. How does the perception of sustainable food and milk among the selected actors differ from sustainable practice according to scientific documentation? Another possibility is to focus deeper on farmers' views and consumers' views, as well as gain deeper insights into the selected actors, and possibly also other actors and bring all views together.

6 References

Literature and publications

- Albajes, R., Cantero-Martínez, C., Capell, T., Christou, P., Farre, A., Galceran, J., ... Voltas, J. (2013). Building bridges: an integrated strategy for sustainable food production throughout the value chain. *Molecular Breeding*, 32(4), 743–770.
<http://doi.org/10.1007/s11032-013-9915-z>
- Alexandratos, N., Bruinsma, J., & others. (2012). World agriculture towards 2030/2050: the 2012 revision. *ESA Work. Pap*, 3. Retrieved from
<http://large.stanford.edu/courses/2014/ph240/yuan2/docs/ap106e.pdf>
- Alvesson, M., & Sköldberg, K. (2008). *Tolkning och reflektion. Vetenskapsfilosofi och kvalitativ metod* (2nd ed.). Lund: Studentlitteratur.

- Augustin, M. A., Udabage, P., Juliano, P., & Clarke, P. T. (2013). Towards a more sustainable dairy industry: Integration across the farm–factory interface and the dairy factory of the future. *International Dairy Journal*, 31(1), 2–11.
<http://doi.org/10.1016/j.idairyj.2012.03.009>
- Baldwin, C. (2012). *Sustainability in the Food Industry*. Singapore: John Wiley & Sons.
- Bansal, P., & Roth, K. (2000). WHY COMPANIES GO GREEN: A MODEL OF ECOLOGICAL RESPONSIVENESS. *Academy of Management Journal*, 43(4), 717–736.
<http://doi.org/10.2307/1556363>
- Bertilsson, J., Barr, U.-K., Borch, E., Gunnarsson, S., Hamberg, L., Lindbom, I., ... Östergren, K. (2014). *Hållbara matvägar - referens- och lösningsscenarier för mjölkproduktion och framställning av konsumtionsmjölk och lagrad ost - Rapport steg 3* (SIK-rapport No. 886).
- Bryman, A. (2012). *Social research methods* (4th ed.). Oxford: Oxford University Press.
- Cannon, T. (1992). *Corporate responsibility*. London: Financial Times. Pitman Publishing.

Chkanikova, O., & Mont, O. (2011). Overview of sustainability initiatives in European food retail sector. Retrieved from <http://lup.lub.lu.se/record/2364054>

Chkanikova, O., & Mont, O. (2012). Corporate Supply Chain Responsibility: Drivers and Barriers for Sustainable Food Retailing: Sustainable Food Retailing. *Corporate Social Responsibility and Environmental Management*, n/a–n/a.
<http://doi.org/10.1002/csr.1316>

Claro, D. P., Laban Neto, S. A., & de Oliveira Claro, P. B. (2013a). Sustainability drivers in food retail. *Journal of Retailing and Consumer Services*, 20(3), 365–371.
<http://doi.org/10.1016/j.jretconser.2013.02.003>

Claro, D. P., Laban Neto, S. A., & de Oliveira Claro, P. B. (2013b). Sustainability drivers in food retail. *Journal of Retailing and Consumer Services*, 20(3), 365–371.
<http://doi.org/10.1016/j.jretconser.2013.02.003>

Commission for the European Communities. (2001). *Promoting a European Framework for Corporate Social Responsibility*.

Commission of the European Communities. (2002). *Corporate Social Responsibility: A business contribution to sustainable development*. Office for Official Publications of the European Communities.

- Di Rienzo, T., D'angelo, G., D'aversa, F., Campanale, M. C., Cesario, V., Montalto, M., ... Ojetti, V. (2013). Lactose intolerance: from diagnosis to correct management. *Eur Rev Med Pharmacol Sci*, 17(2 Suppl), 18–25.
- Eide, M. H. (2002). Life cycle assessment (LCA) of industrial milk production. *The International Journal of Life Cycle Assessment*, 7(2), 115–126.
- European Commission, & Environment Directorate-General. (2014). *The circular economy: connecting, creating and conserving value*.
- European Union, European Centre for Disease Prevention and Control, European Union, & European Medicines Agency. (2009). *The bacterial challenge: time to react. A call to narrow the gap between multidrug-resistant bacteria in the EU and development of new antibacterial agents*. Luxembourg: EUR-OP.
- Forum for the Future. (2011). *Dairy 2020 - A vision and framework for a sustainable UK dairy industry*.
- Gardberg, N. A., & Fombrun, C. J. (2006). Corporate citizenship: Creating intangible assets across institutional environments. *Academy of Management Review*, 31(2), 329–346.
- Global Reporting Initiative. (2015). About GRI. Retrieved May 12, 2015, from <https://www.globalreporting.org/information/about-gri/Pages/default.aspx>

- Government Offices of Sweden. (2006). EU:s arbete för hållbar utveckling. Retrieved May 12, 2015, from <http://www.regeringen.se/sb/d/12367>
- Government Offices of Sweden. (2012). Hållbar utveckling. Retrieved May 12, 2015, from <http://www.regeringen.se/sb/d/1591>
- Government Offices of Sweden. (2013). *The Swedish environmental objectives system* (No. M2013.01).
- Government Offices of Sweden. (2015). *Seminarium om utvecklingsagendan post-2015*.
- Griffiths, M. (2010). *Improving the safety and quality of milk. Volume 2: Improving the safety and quality of milk products*. Oxford: Woodhead Publishing.
- Hjordnära. *Våra produkter*. <http://www.hjordnara.se/vaara-produkter/>
[2015-05-22]
- Hoffman, A. J. (2000). *Competitive environmental strategy. A guide to the changing business landscape*. Washington: Island Press.
- International Dairy Federation. (2005). Guide on life cycle assessment towards sustainability in the dairy chain, 398.
- Jones, P., Comfort, D., Hillier, D., & Eastwood, I. (2005). Corporate social responsibility: a case study of the UK's leading food retailers. *British Food Journal*, 107(6), 423–435.
<http://doi.org/10.1108/00070700510602192>

- Jonsson, L., Marklinder, I., Nydahl, M., & Nylander, A. (2007).
Livsmedelsvetenskap. Lund: Studentlitteratur.
- Kambanou, M. L. (2014). *Eating our way to sustainability: Are European meat and dairy processors living up to our expectations?*. Lund University, Lund.
- Kearney, J. (2010). Food consumption trends and drivers. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 365(1554), 2793–2807. <http://doi.org/10.1098/rstb.2010.0149>
- Kiernan, M. J. (2009). *Investing in a sustainable world: why GREEN is the new color of money on Wall Street [Electronic resource]*.
- Kogg, B., & Mont, O. (2012). Environmental and social responsibility in supply chains: The practise of choice and inter-organisational management. *Ecological Economics*, 83, 154–163.
<http://doi.org/10.1016/j.ecolecon.2011.08.023>
- Köhne, M. (2014). Multi-stakeholder initiative governance as assemblage: Round Table on Sustainable Palm Oil as a political resource in land conflicts related to oil palm plantations. *Agriculture and Human Values*, 31(3), 469–480. <http://doi.org/10.1007/s10460-014-9507-5>
- LivsmedelsFöreningen & Livsmedel i fokus. (2015-01-29). 1.
Ekoförsäljningen ökade med 38 procent
2014. <http://livsmedel.se/nyheter/ekoforsaljningen-okade-med-38-procent-2014/> [2015-05-04]

- LivsmedelsFöreningen & Livsmedel i fokus. (2015-04-23). 2. *Fairtrade-märkt ökar med 37 procent*. <http://livsmedel.se/nyheter/fairtrade-markt-okar-med-37-procent/> [2015-05-04]
- Ministry for Enterprise and Innovation, The Swedish Government. (1997). *En livsmedelsstrategi för Sverige* (SOU No. 1997:1667).
- Ministry of Finance. (2014). *Budgetpropositionen för 2015* (Prop. No. 2014/15:1). Stockholm.
- National Food Agency. (2015). *Mjolk och laktos*. <http://www.livsmedelsverket.se/matvanor-halsa--miljo/sjukdomar-allergier-och-halsa/allergi-och-overkanslighet/mjolk-och-laktos/> [2015-05-18]
- (Nel) Wognum, P. M., Bremmers, H., Trienekens, J. H., van der Vorst, J. G. A. J., & Bloemhof, J. M. (2011). Systems for sustainability and transparency of food supply chains – Current status and challenges. *Advanced Engineering Informatics*, 25(1), 65–76.
<http://doi.org/10.1016/j.aei.2010.06.001>
- Okereke, C. (2007). An Exploration of Motivations, Drivers and Barriers to Carbon Management: *European Management Journal*, 25(6), 475–486. <http://doi.org/10.1016/j.emj.2007.08.002>
- Organisation for Economic Co-operation and Development. (2011). *OECD Guidelines for Multinational Enterprises - OECD*. Retrieved May 12, 2015, from

<http://www.oecd.org/corporate/mne/oecdguidelinesformultinationalenterprises.htm>

Parris, T. M., & Kates, R. W. (2003). CHARACTERIZING AND MEASURING SUSTAINABLE DEVELOPMENT. *Annual Review of Environment and Resources*, 28(1), 559–586.

<http://doi.org/10.1146/annurev.energy.28.050302.105551>

Pearson, D., Henryks, J., & Jones, H. (2011). Organic food: What we know (and do not know) about consumers. *Renewable Agriculture and Food Systems*, 26(02), 171–177.

<http://doi.org/10.1017/S1742170510000499>

Piacentini, M., MacFadyen, L., & Eadie, D. (2000). Corporate social responsibility in food retailing. *International Journal of Retail & Distribution Management*, 28(11), 459–469.

<http://doi.org/10.1108/09590550010356822>

Post, A. (2011). *Nordic stakeholders and sustainable catering*. Göteborg: University of Gothenburg : Distribution, Acta Universitatis Gothoburgensis.

Robson, C. (2011). *Real world research: a resource for users of social research methods in applied settings* (3rd ed.). Chichester: Wiley.

Round Table on Responsible Soy Association. (2013). *RTRS Standard for Responsible Soy Production Version 2.0_ENG*. Retrieved from

<http://www.responsiblesoy.org/documentos/rtrs-standard-for-responsible-soy-production/>

Roundtable on Responsible Soy Association (RTRS). (2014). *FAQ about soy*. <http://www.responsiblesoy.org/en/preguntas-frecuentes/> [2015-05-19]

Round Table on Sustainable Palm Oil. (2013). *Principles and Criteria for the Production of Sustainable Palm Oil 2013*. Retrieved from www.rspo.org/publications/download/224fa0187afb4b7

Scherer, A. G., Palazzo, G., & Matten, D. (2014). The business firm as a political actor a new theory of the firm for a globalized world. *Business & Society*, 53(2), 143–156.

Schönberger, H., Galvez Martos, J. L., Styles, D., & Institute for Prospective Technological Studies. (2013a). *Best environmental management practice in the retail trade sector learning from frontrunners*. Luxembourg: Publications Office. Retrieved from <http://dx.publications.europa.eu/10.2791/1775>

Schönberger, H., Galvez Martos, J. L., Styles, D., & Institute for Prospective Technological Studies. (2013b). *Best environmental management practice in the retail trade sector learning from frontrunners*. Luxembourg: Publications Office. Retrieved from <http://dx.publications.europa.eu/10.2791/1775>

Sju gårdar. *Produkter*. <http://www.sjugardar.se/produkter> [2015-05-22]

- Sonesson, U., & Berlin, J. (2003). Environmental impact of future milk supply chains in Sweden: a scenario study. *Journal of Cleaner Production*, *11*(3), 253–266.
- Sonesson, U., Lorentzon, K., Florén, B., Krewer, C., Kumm, K.-I., Nilsson, K., & Woodhouse, A. (2014). *Hållbara matvägar - resultat och analys - Rapport steg 4* (SIK-rapport No. 891).
- Statistics Sweden (SCB). (2014-10-23). *Ökad försäljning av ekologiska livsmedel*. http://www.scb.se/sv_/Hitta-statistik/Artiklar/Okad-forsaljning-av-ekologiska-livsmedel/ [2015-04-22]
- Steffen, W., Richardson, K., Rockstrom, J., Cornell, S. E., Fetzer, I., Bennett, E. M., ... Sorlin, S. (2015). Planetary boundaries: Guiding human development on a changing planet. *Science*, *347*(6223), 1259855–1259855. <http://doi.org/10.1126/science.1259855>
- Styles, D., Schoenberger, H., & Galvez-Martos, J.-L. (2012). Environmental improvement of product supply chains: A review of European retailers' performance. *Resources, Conservation and Recycling*, *65*, 57–78. <http://doi.org/10.1016/j.resconrec.2012.05.002>
- Svensson, G., & Wagner, B. (2012). Implementation of a sustainable business cycle: the case of a Swedish dairy producer. *Supply Chain Management: An International Journal*, *17*(1), 93–97. <http://doi.org/10.1108/13598541211212230>

- Swedish Board of Agriculture. (2012). *Marknadsöversikt – mjölk och mejeriprodukter* (Report No. 2012:7).
- Swedish Board of Agriculture. (2014). *Handel med mjölk och mjölkprodukter*. <http://www.jordbruksverket.se/amnesomraden/handel/kottmjolkochagg/handelmedkottmjolkochagg/handelmedmjolkochmjolkprodukter.4.3a3862f81373bf24eab80001786.html> [2014-12-02]
- Swedish Competition Authority. (2015). *The Swedish Competition Agency's procurement criteria for DAIRY*.
- Swedish Environmental Protection Agency. (2008). *Konsumtionens klimatpåverkan* (Report No. 5903).
- Swedish Environmental Protection Agency. (2013). *Green public procurement. A tool for achieving national environmental quality objectives* (No. 6600).
- The Dairy Sustainability Framework. (2014). *Global Criteria – Providing a holistic approach to sustainability*. <http://dairysustainabilityframework.org/dsf-membership/global-criteria/> [2015-05-19]
- The Danish Environmental Protection Agency. (2010a). *Barriers to sustainability in the Nordic Retail trade*.
- The Danish Environmental Protection Agency. (2010b). *Drivers to sustainability in the Nordic Retail trade*.

- The Swedish Government. (2014). *Uppdrag att genomföra kompetenshöjande insatser inom offentlig upphandling av livsmedel* (Government decision No. L2014/1808/DL). Stockholm.
- Tossavainen, & Sahlstein. (2007, October 24). European patent specification. Process for producing a lactose-free milk product. Helsinki.
- United Nations. (2013a). Architects of a Better World: Building the Post-2015 Business Engagement Architecture. *UN Global Compact Reports*, 5(1), 29–49.
- United Nations. (2013b). Global corporate sustainability report 2013. *UN Global Compact Reports*, 5(1), 1–28.
- United Nations. (2014). *The road to dignity by 2030: ending poverty, transforming all lives and protecting the planet. Synthesis report of the Secretary-General on the post-2015 sustainable development agenda* (General Assembly No. A/69/700).
- United Nations Environment Programme. (2002). *Global environment outlook 3: past, present and future perspectives*. Nairobi, Kenya; London; Sterling, VA: UNEP ; Earthscan.
- Vinnari, M., & Vinnari, E. (2014). A Framework for Sustainability Transition: The Case of Plant-Based Diets. *Journal of Agricultural and Environmental Ethics*, 27(3), 369–396.
<http://doi.org/10.1007/s10806-013-9468-5>

Von Keyserlingk, M. A. G., Martin, N. P., Kebreab, E., Knowlton, K. F., Grant, R. J., Stephenson, M., ... Smith, S. I. (2013). Invited review: Sustainability of the US dairy industry. *Journal of Dairy Science*, 96(9), 5405–5425. <http://doi.org/10.3168/jds.2012-6354>

World Commission on Environment and Development. (1987). *Report of the World Commission on Environment and Development: Our Common Future*. Retrieved from <http://www.un-documents.net/our-common-future.pdf>

Zaman, A. U. (2015). A comprehensive review of the development of zero waste management: lessons learned and guidelines. *Journal of Cleaner Production*, 91, 12–25. <http://doi.org/10.1016/j.jclepro.2014.12.013>

Video

Government Offices of Sweden. *Seminarium om utvecklingsagendan post 2015*. (2015). <http://www.regeringen.se/sb/d/19853/a/253431> [2015-01-30]

Personal communication

Bylund, Anneli
Coop. Sustainability strategist reg. dietitian
Personal contact (2015-04-21)

Liljedahl, Per
Sodexo. Manager QHSE
Personal contact (2015-03-16)

Lindberg, Anna-Karin
ICA Sverige AB. Manager Environmental & Social responsibility
Personal contact (2015-04-01)

Norrman, AnnaLena
Martin & Servera. Chief Sustainability & Quality
Personal contact (2015-03-19)

Runsten, Hilda
LRF. Expert on sustainability
Personal contact (2015-03-25)

Stenson, Ingela
United Minds. Trend analyst, Strategist.
Personal contact (2015-04-14)

Waltersson, Elin
Kostenheten Södertälje. Head of Unit responsible for results
Personal contact (2015-04-01)

APPENDICES

APPENDIX 1: Development of sustainability

The focus of sustainability and CSR has developed from understanding the reasons for *Why* engage in CSR and *What* CSR is, to *How* to best act and engage in decisions within organizations supporting CSR (Gardberg & Fombrun, 2006).

The global discussion about sustainability began in 1972 at the United Nations Conference on the Human Environment. At that conference developing and industrialized nations came together to outline common principles to guide and inspire for common efforts for preservation and enhancement of human environment (United Nations Environment Programme, 2002). The conference was followed of many world-wide meetings and achievements in the area. In 1992 the United Nations Conference on Environment and Development (Earth Summit) was held in Rio de Janeiro, resulting in major achievements. Agenda 21 was one of these: a blueprint for protection of our planet and sustainable development into the 21st century. In year 2000 world leaders gathered and adopted the Millennium Development Goals with a deadline of 2015 (UNEP, 2002). The foundation for the current renewal process of the sustainable development goals was set in 2012 and new goals are set for 2015-2030. This post-2015 sustainable development agenda consists of 17 main goals and 169 sub goals (United Nations, 2014). In September 2015 the United Nations Summit will take place and the post-2015 agenda will be adopted. It is said that this generation is the last generation to change. The United Nations Environment Programme Finance Initiative recognize that sustainable development is a responsibility that lies on both government, business and individuals (1997). In the *Building the Post-2015 Business Engagement Architecture* UN claims that scaling up business sustainability action needs collective effort. Individual companies, corporate sustainability organizations, governments, investors, business

schools, civil society, labor and consumers all have important roles in detecting where action is needed (United Nations, 2013a). The Swedish Government priorities with the post-2015-agenda are: sustainability in the dimensions; climate; equality; employment and labor rights; and consensus (steered by Sveriges politik för global utveckling on national level in Sweden and Policy Coherence for Development on EU-level) (Government Offices of Sweden, 2015) ([www, Government Offices of Sweden, 2015](http://www.government.se)).

APPENDIX 2: Frameworks and guidelines

There are many frameworks and guidelines covering the area sustainability worldwide and national. Steffen et al. (2015) have identified nine planetary boundaries that form the framework for the safe space in which humanity can operate in a stable Earth system. These consist of: Climate change, Change in biosphere integrity, stratospheric ozone depletion, Ocean acidification, Biogeochemical flows, land-system change, Freshwater use, Atmospheric aerosol loading, and so called Novel entities. Four of these boundaries have been crossed, being: climate change, loss of biosphere integrity, land-system change and altered biochemical cycles (phosphorus and nitrogen) (ibid.).

FN Global Compact has ten globally accepted principles regarding human rights, labor, environment and anti-corruption, meant to be aligned with strategies and operations in corporations (United Nations, 2013b). ISO 26 000 is a global guiding standard, which facilitates for organizations in working with responsibility and social responsibility. The Global Reporting Initiative (GRI) provide guidelines for sustainability reporting, which shall ensure quality content and facilitates reporting and measuring of sustainability work in organizations (Global Reporting Initiative, 2015). In 2008 the Swedish Government decided that governmentally owned organizations in Sweden shall report in line with GRI. Further on, the Organization for Economic Co-operation and Development (OECD) provides guidelines for multinational organizations, which have jointly been brought together by 44 governments (2011). These guidelines are about taking responsibility for, and act on, the negative impact that the company has caused or contributed to.

Taking a European stance, sustainable development is an overall goal for the EU, and the strategy for this is connected to seven main challenges (Government Offices of Sweden, 2006).

The European Commission (2014) aims to build a circular economy in Europe, in opposite to the linear economy model which has been dominating until now. In a linear model consumption is based on a 'take-make-dispose' thinking where a product is expected to reach its end-of-life at some point. The circular economy has a different focus, a cyclic thinking, where products are designed to be recycled and waste is seen as raw material. In this cyclic thinking materials and products are reused, repaired, refurbished and recycled and residual waste is almost zero. This means that a system thinking change will need to take place, when 'consumer' translates to 'user', 'owner' translates to 'sharer' and behavior is steering towards renting, sharing, swapping, repairing and remanufacturing products (ibid.). Zero waste is an approach related to this. It is an approach on handling waste related issues in society in the 21st

century, which has been embraced by policymakers. This approach is under development and various ideas, policies and strategies have been put into practice in cities in order to meet zero waste goals (Zaman, 2015).

Specifically for the dairy industry, the Global Dairy Agenda for Action, a commitment by the global dairy sector provides a program for aligning and connecting sustainability initiatives globally: the Dairy Sustainability Framework. This program has defined eleven key sustainability criteria relevant for the dairy sector, consisting of: Greenhouse gas emissions; Soil nutrients; Waste; Water; Soil; Biodiversity; Market Development; Rural Economies; Working Conditions; Product Safety & Quality; and Animal Care (www, the Dairy Sustainability Framework, 2015). The UK dairy industry is an example of key organizations and people coming together in order to create a common vision and framework for a sustainable dairy sector. This vision and framework is called Dairy 2020 and has eight guiding principles consisting of: regularly monitor and evaluate the UK dairy sector performance in a national and global perspective; innovate and invest in technology, science and business models for long-term economic value; cooperate across the supply chain; build skills and attract talented staff; engage consumers in debates; minimize environmental impact; protect and enhance ecosystems; and finally improve animal welfare (Forum for the Future, 2011).

Regarding production of palm oil used in animal feed, RSPO is a stakeholder initiative regulating members and certifications, claiming to make palm oil production more sustainable (Köhne, 2014). According to RSPO, sustainable palm oil production shall be committed and comply with principles in areas regarding: transparency; laws and regulations; long-term economic and financial viability; use of best practice by growers and millers; conservation of natural resources and biodiversity; responsibility for employees, and of individuals and communities affected; responsible development of new plantings; and continuous improvement in key areas of activity (Round Table on Sustainable Palm Oil, 2013).

Soy bean are also used in animal feed. A few challenges with soybean production are rainforest destruction, water pollution, loss of biodiversity and social conflicts (www, Round Table on Responsible Soy Association, 2015). RTRS is a multi-stakeholder initiative with the objective to assure that soy production is environmentally, socially and economically viable and they have a standard which is used within a voluntary certification system. This standard consists of five principles for producing soy in a responsible manner, covering commitment and compliance with: legislation and good business practice; responsible labor conditions; responsible community relations; environmental responsibility; and good agricultural practice (Round Table on Responsible Soy Association, 2013).

APPENDIX 3: Letter to informants

This letter was sent in Swedish via e-mail to all informants two workdays before each interview. For the letter to the Trend analyst/Strategist Ingela Stenson one theme was added: trends.

Swedish University of Agricultural Sciences
The Department of Food Science

Hi,

I am taking the Master program Food – Innovation & Market at the Swedish University of Agricultural Sciences and I am writing my Master's project at the Department of Food Science. The project aims to increase the possibility to develop sustainable lactose-free milk products in line with the next generation of sustainability thinking through a higher understanding of unique actors in the food sector value chain. The main idea for the project comes from Valio Sverige. Purpose and research questions are developed by me. Valio will take part of the final result. You have been asked to participate in an interview for this project because you are a food profile with strategic and analytical skills, because you work with sustainability in an organization that acts as food retailer, food wholesaler, trade organization or is active within food service in Sweden.

I will ask you to talk about the following topics during the interview:

- Definition of sustainability
- Sustainability work, future, responsibilities, opportunities
- Strategy
- Challenges
- Motivation and forces

- Above listed topics connection to foods and specific lactose-free when possible

The interview will be conducted at agreed place and takes maximum one hour. You decide whether you want to participate or not and can end the interview at any time without having to explain why. The interview will be recorded and transcribed (written down word for word). The result will be presented at a seminar at the Swedish University of Agricultural Sciences for other students, supervisors and examiners.

If you have any questions or concerns, please don't hesitate to get in touch with me

Marie Olsson

Phone: 0735 25 70 77

E-mail: mca.olsson@gmail.com

Kind regards,

Marie

APPENDIX 4: Interview guide

The interview guide is semi-structured, with mostly open questions, except from where the informants are asked to relate to lactose free milk. This gives the informants freedom to develop their answers in different ways. Interview guide A was used for all informants but one. A slightly different formulation at the questions was used for the interview with Ingela Stenson, Trend analyst and Strategist. See interview guide B. All questions were posed in Swedish to the informants.

Interview guide A

General information

Interview is only going to be used for a Master thesis. Information about this.

Optional to answer the questions. Right to end the interview at any time without having to explain why.

Participation as named expert representing his/her organization.

This interview is recorded on tape.

Is it OK?

Questions

Initial questions

- What is your position in the organization?
- How long have you worked here?

Research related questions

Sustainability, motivation and forces

- How do you define "sustainability" in your organization?
- How do you look at sustainability in connection to lactose-free milk?
- How do you work with sustainability in your organization?

- What is your strategy for sustainability?
- What motivates your sustainability activities?
- What guide you in your sustainability efforts?
- What responsibility does your organization has when it comes to sustainability?
- Is there any difference on your sustainability responsibility when it comes lactose-free milk, compared to sustainability responsibilities in the wider perspective?

Future, challenges, opportunities

- What opportunities do you see in your sustainability work?
- What opportunities do you see in sustainability efforts in connection to lactose-free milk?
- Which sustainability-related challenges are you facing?
- Is there any difference between sustainability-related challenges in terms of lactose-free milk compared to the bigger picture?
- How does your future sustainability work look like?
- Is there a difference between how you see the future sustainability work for lactose-free milk compared to the bigger picture?
- How would work on sustainability look like in your organization in an ideal situation?
- Which are your role models regarding sustainability efforts?

Please, complete this sentence: **Sustainability is not about...**

Is there anything you would like to add?

Interview guide B

General information

Interview is only going to be used for a Master thesis. Information about this.

Optional to answer the questions. Right to end the interview at any time without having to explain why.

Participation as named expert representing his/her organization.

This interview is recorded on tape.

Is it OK?

Questions

Initial questions

- What is your professional position?
- How long have you had this position?

Research related questions

Sustainability, motivation and forces

- How do you define "sustainability"?
- How do you look at sustainability in connection to lactose-free milk?
- How do you perceive the sustainability work in retail, wholesale and food service organizations?
- What strategies for sustainability do you see?
- What responsibility do these organizations have when it comes to sustainability?

- Is there any difference on sustainability responsibility when it comes lactose-free milk, compared to sustainability responsibilities in the wider perspective?

Future, challenges, opportunities

- What opportunities do you see in sustainability work?
- What opportunities do you see in sustainability efforts in connection to lactose-free milk?
- How does future sustainability work look like in the food sector?
- Is there any difference between the future sustainability work regarding lactose-free milk compared to the bigger picture?
- Which sustainability-related challenges is the food sector facing?
- Is there any difference between sustainability-related challenges in terms of lactose-free milk compared to the bigger picture?
- What motivates sustainability activities in the food sector?
- How would work on sustainability look like in an ideal situation?
- Do you see any actors in the food sector that are outstanding regarding sustainability efforts?
- What guide the actors in their sustainability efforts?

Please, complete this sentence: **Sustainability is not about...**

Is there anything you would like to add?

APPENDIX 5: Informants interviewed

The informants interviewed can be seen in the table below.

Organization	Person and professional role	Interview	Transcribed	Validated
Coop Sverige AB	Anneli Bylund, <i>Sustainability strategist dietitian</i>	2015-04-21 (face-to-face)	2015-04-23	2015-04-24
ICA Sverige AB	Anna Karin Lindberg, <i>Manager Environmental & Social responsibility</i>	2015-04-01 (telephone)	2015-04-01	2015-04-02
Martin & Servera	AnnaLena Norrman, <i>Sustainability- and Quality Manager</i>	2015-03-19 (face-to-face)	2015-03-20	-
Sodexo	Per Liljedahl, <i>Manager QHSE (Manager for Quality, Work environment, Environment and Food safety)</i>	2015-03-16 (face-to-face)	2015-03-18	2015-03-27
Kostenheten Södertälje	Elin Waltersson, <i>Head of unit (result responsibility)</i>	2015-04-01 (telephone)	2015-04-02	2015-04-07
The Federation of Swedish Farmers (LRF)	Hilda Runsten, <i>Expert on Sustainability</i>	2015-03-25 (face-to-face)	2015-03-26	-
United Minds	Ingela Stenson, <i>Trend analyst, Strategist</i>	2015-04-14 (face-to-face)	2015-04-15	-

7 Popular scientific summary

The focus of this thesis was to explore sustainability thinking in selected actors in the food chain and relate to literature findings and thereby provide a picture of foods, exemplified with milk and more specifically lactose free milk. In order to approach this area a literature review was performed and interviews were conducted with the perspectives of retail, wholesale, food service, as well as indications from farmer and consumer viewpoints.

Findings in this thesis are connected to organization level, food level, milk as an animal product and lactose free. Few findings are specifically connected to lactose free. Characteristics on product level are tied to milk in general, and dairy products, rather than lactose free.

Sales of organic and Fairtrade labelled foods are increasing, as well as sales of organic milk. Empirical findings indicate a continued interest, possibly also concerning lactose free milk. The use of animal products and milk consumption has decreased, and is predicted to decrease, together with increased focus on vegetable products. Empirical findings indicate that vegetable products and alternative products compete with milk.

Retailers have power in driving the sustainable development forward, but both retailers and the food service actors/caterers express their power to impact through their size. The forces steering these actors are connected to regulations, resources, market and social factors. Price is a steering factor in public procurement and sustainable products are perceived as more expensive. Green Procurement Criteria is an instrument for development towards sustainability, but price competition might slow down the development.

The demand for organic foods has resulted in shortage on the market, putting pressure on the actors to provide the desired products, which in turn puts pressure on producers and farmers and limitation of Swedish raw materials can be the result. An economically tough situation for farmers makes it tough to reschedule on the farm. The possibilities for future milk production on the farm, including lactose free milk products, are to support

the farmers in actions towards a cyclic system, limit the antibiotic use and provide good animal welfare for the farmed cows. If using palm oil and soy in feed, these should be sustainable produced.

A suggestion for future research is to compare the provided picture in this thesis with scientific documentation on sustainable best practices in the food chain and identify gaps. How does the perception of sustainable food and milk among the actors differ from what scientific documentation consider sustainable practice? Another possibility is to focus deeper on farmers view and consumers view, as well as gain deeper insights into the selected actors, and possibly also other actors and bring all views together.